

# Dell PowerEdge XR8620t

## 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 XR8620t system configurations and features

The PowerEdge XR8620t system is a 2U half-width, single processor server sled that supports:

- One 5th Generation Intel Xeon Scalable processor with up to 16 cores or One 4th Generation Intel Xeon Scalable processor with up to 32 cores
- Eight DDR5 DIMM slots
- PCI Express® (PCIe) 5.0 enabled expansion slots
- 2 x M.2 2280 or 22110 direct connect NVMe drives on ROR-N1 module (RAID) or dual M.2 NVMe direct riser module (non-RAID) or BOSS-N1 with 2 x 2280 NVMe SSDs.

**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 XR8620t](#)
- [System configurations - rear view for PowerEdge XR8620t](#)
- [System configurations - inside view for PowerEdge XR8620t](#)
- [Locating the Express Service Code and Service Tag](#)
- [System information label](#)

## System configurations - front view for PowerEdge XR8620t

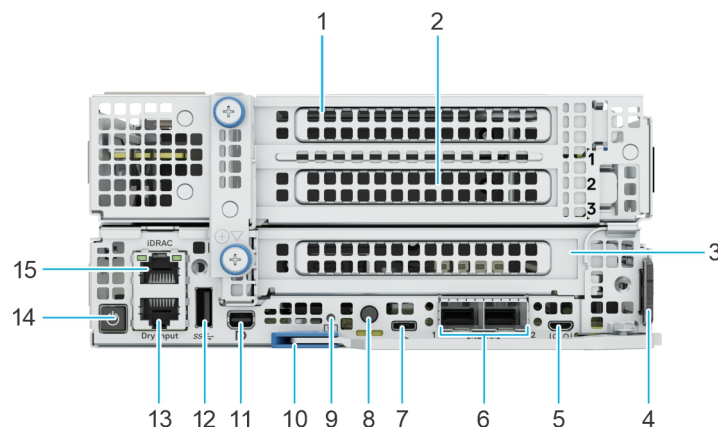






Figure 1. Front view for PowerEdge XR8620t




Table 1. Front view of the sled

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card slot 1	N/A	Enables you to access the PCIe expansion card installed on Riser 1 in the system.

**Table 1. Front view of the sled (continued)**

Item	Ports, panels, or slots	Icon	Description
2	PCIe expansion card slot 2	N/A	Enables you to access the PCIe expansion card installed on Riser 1 in the system.
3	PCIe expansion card slot 3	N/A	Enables you to access the PCIe expansion card installed on Riser 2 in the system.
4	Information Tag	N/A	The Information tag is a slide-out label panel that contains Service Tag, QRL barcode and iDRAC MAC address.
5	Serial port		<p>Enables you to connect a serial device to the system.</p> <p><b>i</b> <b>NOTE:</b> The serial port is a micro USB type port. It only supports serial connection functions. The serial port does not support any USB functions.</p> <p><b>i</b> <b>NOTE:</b> When Intel(R) Ethernet 100G 2P adapter or Intel(R) Ethernet 25G 4P adapter with RBT cable connected, Micro USB does not function.</p>
6	2x SFP28 LOM ports (Optional)		The LOM ports are optional and are embedded on the system board.
7	iDRAC Direct port (Micro-AB USB)		The iDRAC Direct (Micro-AB USB) port enables you to access the iDRAC direct Micro-AB USB features. For more information, see the <i>Integrated Dell Remote Access Controller User's Guide</i> at <a href="#">PowerEdge Manuals</a> .
8	System identification button		<p>The System Identification (ID) button is available on the front of the system. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access the BIOS using the step-through mode. When pressed, the system ID LED in the front panel blinks until the front button is pressed again. Press the button to toggle between on or off mode.</p> <p><b>i</b> <b>NOTE:</b> If the server stops responding during POST, press and hold the</p>

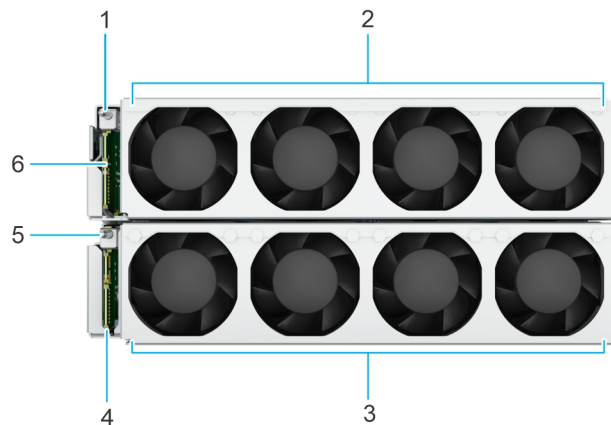
**Table 1. Front view of the sled (continued)**

Item	Ports, panels, or slots	Icon	Description
			<p><b>System ID</b> button for more than five seconds to enter the BIOS progress mode.</p> <p><b>NOTE:</b> To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the <b>System ID</b> button for more than 15 seconds.</p>
9	Heater LED		<p>The Heater LED explains the heater status of the chassis. The LEDs have a bi-color property: they can display a green or amber status.</p> <p><b>NOTE:</b> LED lights Green when system pre-heating is enabled and will turn off when system pre-heating is completed. The heater manager will continue to maintain proper temperature on the system after preheating, but the LED will stay off while the system is on.</p> <p><b>NOTE:</b> LED flashes Amber with a 1 Hz frequency when any required heater or thermal sensor is absent or has failed.</p>
10	Sled handle	N/A	Enables you to remove the sled from the enclosure.
11	Mini-DisplayPort		Enables you to connect a display device to the system.
12	USB 3.0 port		The USB port is 9-pin, 3.0-compliant. This port enables you to connect USB device to the system.
13	RJ45 Dry Input	N/A	<p>It is a RJ45 Dry Input port. Enhance penetration in the IoT space. These are interruptible inputs to iDRAC. Dry means that no energy is supplied to the contacts.</p> <p><b>NOTE:</b> Update iDRAC to 6.10.43.05 or later to enable dry contact feature.</p>

**Table 1. Front view of the sled (continued)**

Item	Ports, panels, or slots	Icon	Description
14	Sled power button	N/A	Enables you to power on the sled. Indicates if the system is powered on or off. Press the power button to manually power on or off the system. <b>NOTE:</b> When XR8620t is installed in the XR8000r chassis, the power button LED indicator status may be delayed for up to two minutes while the sled is initializing. The power button LED will start slowly blinking to indicate the system is performing the power on sequence after this time period.
15	iDRAC9 RJ45 dedicated port	iDRAC	Enables you to remotely access iDRAC. For more information, see the <i>Integrated Dell Remote Access Controller User's Guide</i> at <a href="#">PowerEdge Manuals</a> .

## System configurations - rear view for PowerEdge XR8620t



**Figure 2. Rear view for PowerEdge XR8620t**

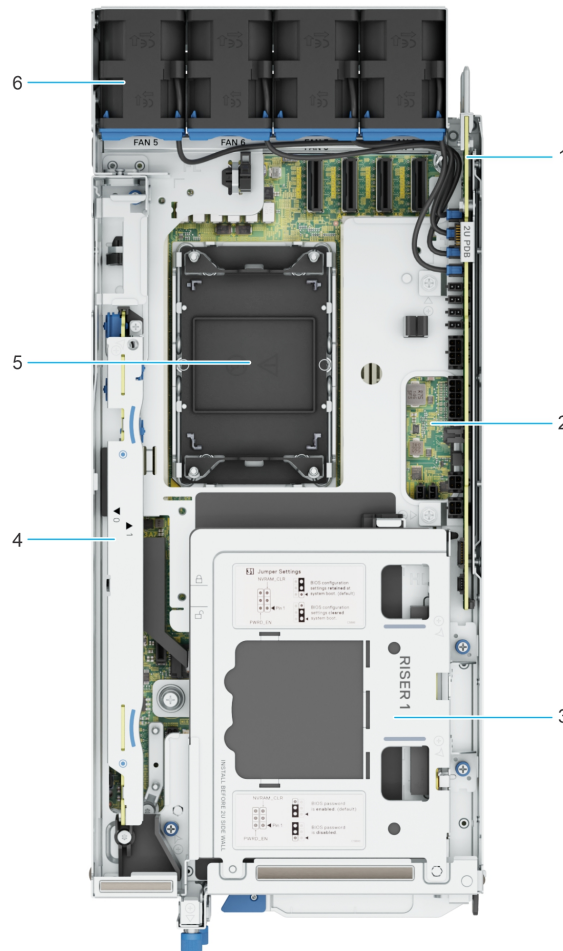
**Table 2. Rear view of the sled**

Item	Ports, panels, or slots	Icon	Description
1	Upper layer 2U guiding pin	N/A	Guiding pin for the 2U sled.
2	Upper layer fans rear view	N/A	Supports 4 cabled cooling fans
3	Bottom layer fans rear view	N/A	Supports 4 cabled cooling fans

**Table 2. Rear view of the sled (continued)**

Item	Ports, panels, or slots	Icon	Description
4	Bottom layer 1U Power Distribution Board (PDB)	N/A	Provides power to bottom layer cooling fans
5	Bottom layer 1U guiding pin	N/A	Guiding pin for the 1U sled.
6	Upper layer 2U Power Distribution Board (PDB)	N/A	Provides power to upper layer cooling fans

## System configurations - inside view for PowerEdge XR8620t



**Figure 3. Inside view of the PowerEdge XR8620t sled**

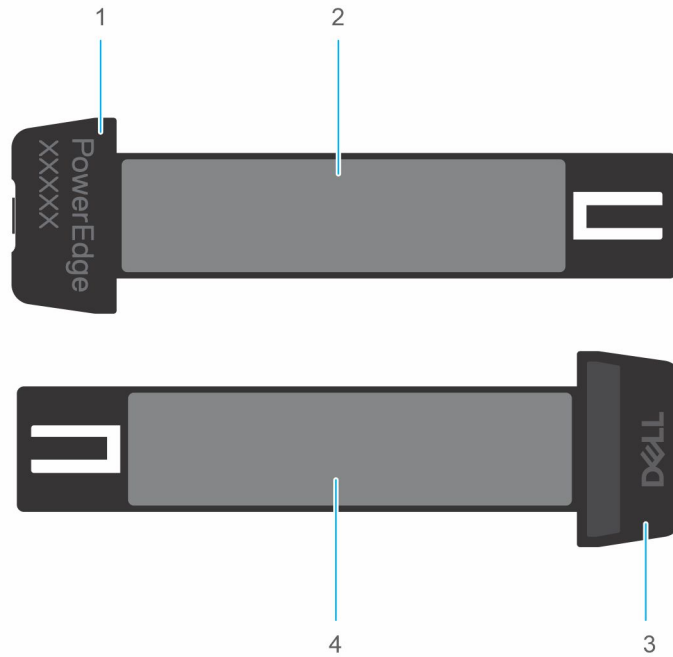
- |                                      |                        |
|--------------------------------------|------------------------|
| 1. 2U Power Distribution Board (PDB) | 2. System Board        |
| 3. Riser 1                           | 4. M.2 Direct Riser    |
| 5. Processor                         | 6. 2U sled cooling fan |

## Locating the Express Service Code and Service Tag

The unique Express Service Code and Service Tag are used to identify the system.

The information tag is located on the front of the system that includes system information such as iDRAC MAC address, Express Service Tag label, Quick Resource Locator.



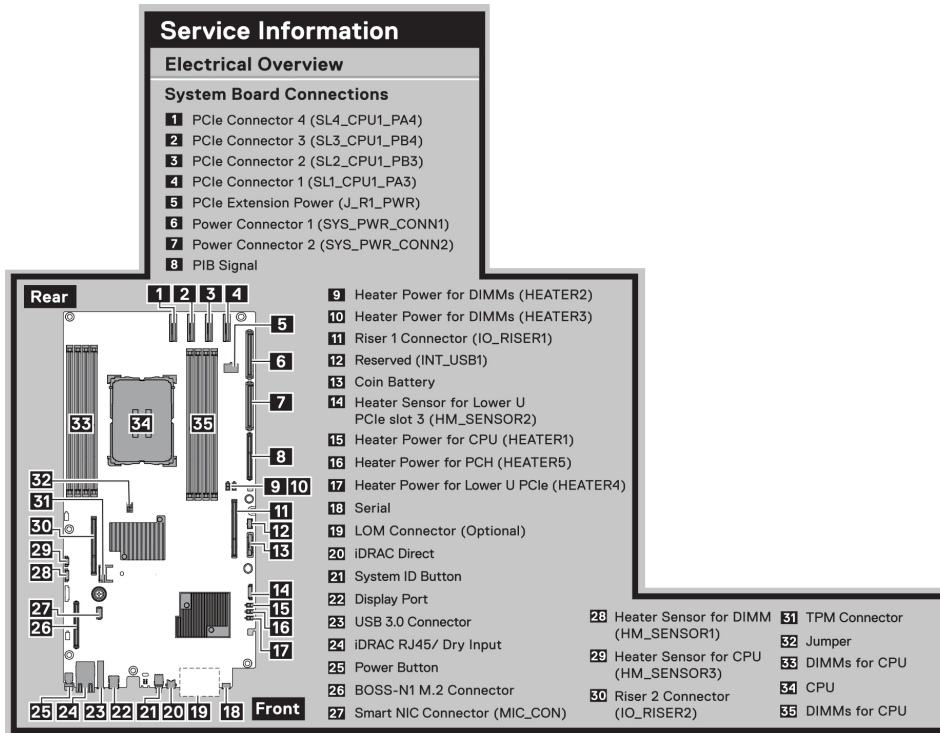


**Figure 4. Locating the Service Tag of your system**

1. Information tag (right view)
2. iDRAC MAC address information label
3. Information tag (left view)
4. Express Service Tag label and QRL

## System information label

The system information label is located on the back of the system cover.



**Figure 5. Service information**

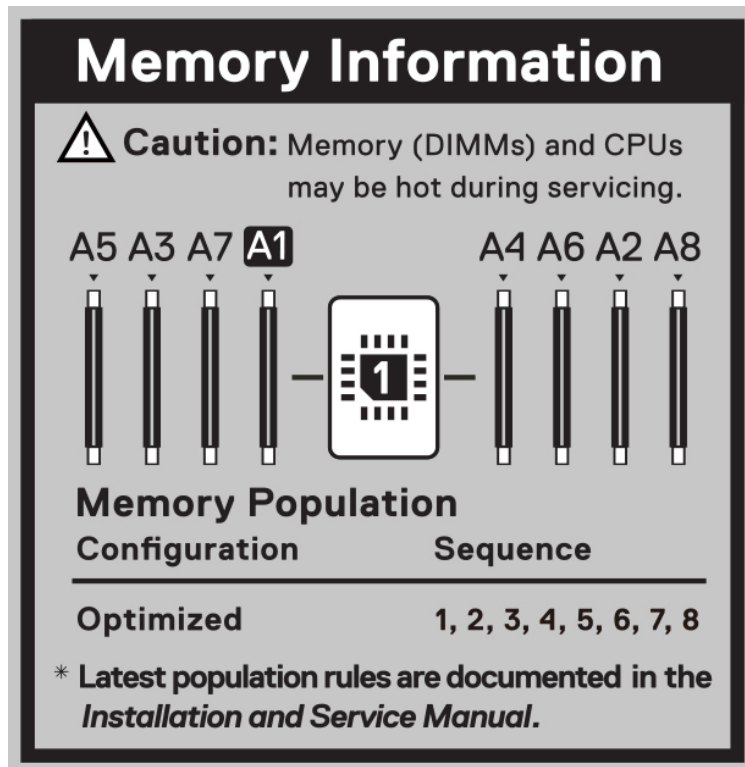


Figure 6. Memory information

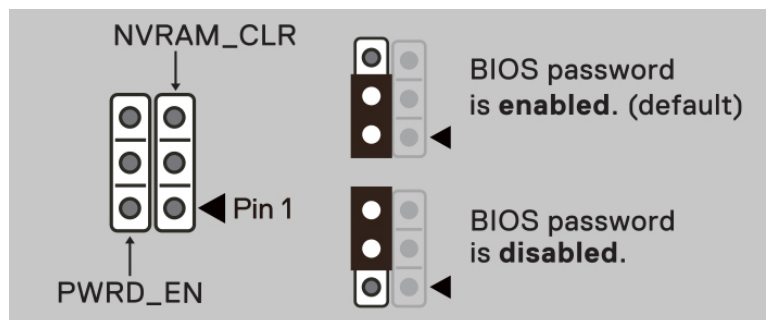


Figure 7. Jumper information

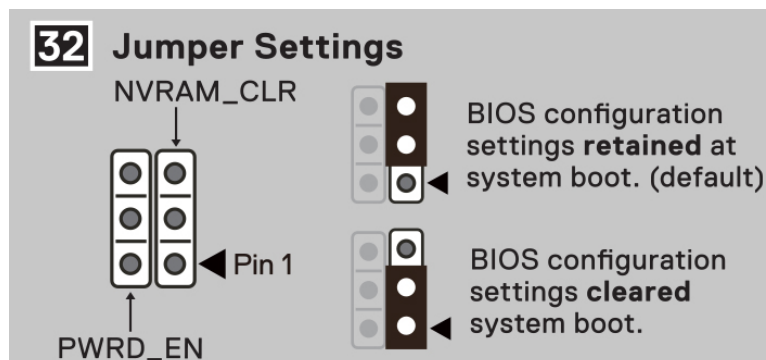


Figure 8. Jumper settings

# Technical specifications

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

## Topics:

- Sled dimensions
- System weight
- Processor specifications
- Cooling fan specifications
- Supported operating systems
- System battery specifications
- Memory specifications
- Heater Solution
- Expansion card riser specifications
- Drives
- Ports and connectors specifications
- Video specifications
- Environmental specifications

## Sled dimensions

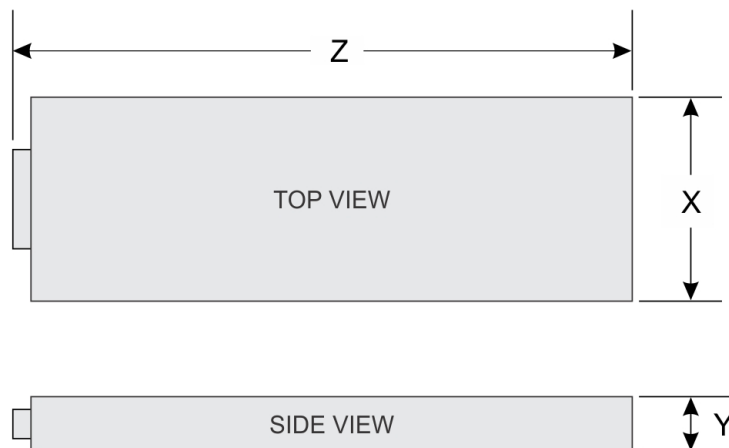


Figure 9. Sled dimensions

Table 3. PowerEdge XR8620t sled dimensions

X	Y	Z (handle closed).
184.8 mm (7.28 inches)	83.28 mm (3.28 inches)	433.5 mm (17.07 inches)

# System weight

Table 4. PowerEdge XR8620t system weight

System configuration	Maximum weight
1x DIMM, 1x M.2 NVMe SSDs on M.2 riser	5.197 kg (11.45 pound)
8x DIMMS, 2x M.2 NVMe SSDs on M.2 riser	5.326 kg (11.74 pound)
1x DIMM, Riser1, Riser2 without PCIe cards	4.071 kg (8.97 pound)
8x DIMMS, Riser1, Riser2 with PCIe cards	7.071 kg (15.58 pound)
8x DIMMS, 2x M.2 NVMe SSDs on M.2 riser, Riser1, Riser2 with PCIe cards	7.149 kg (15.76 pound)

# Processor specifications

Table 5. PowerEdge XR8620t processor specifications

Supported processor	Number of processors supported
5 <sup>th</sup> Generation Intel Xeon Scalable and Edge-Enhanced processors with up to 16 cores or 4 <sup>th</sup> Generation Intel Xeon Scalable and Edge-Enhanced processors with up to 32 cores	One

**NOTE:** It is recommended to use a maximum of two add-in cards with SPR EE-LCC CPU. Three add-in cards are supported, but this may result in an overall system performance degradation. .

# Cooling fan specifications

The PowerEdge XR8620t system supports up to eight cabled cooling fans for airflow.

# Supported operating systems

The PowerEdge XR8620t system supports the following operating systems:

- Red Hat Enterprise Linux
- SUSE Linux Enterprise Linux
- VMware ESXi
- WindRiver Solution
- Dell NativeEdge OS

For more information, go to [OS support](#).

# System battery specifications

The PowerEdge XR8620t system supports CR 2032 3.0-V lithium coin cell system battery.

# Memory specifications

The PowerEdge XR8620t system supports the following memory specifications for optimized operation.

**Table 6. Memory specifications**

DIMM type	DIMM rank	DIMM capacity	Single processor	
			Minimum RAM	Maximum RAM
RDIMM	Single rank	16 GB	32 GB	128 GB
	Dual rank	32 GB	64 GB	256 GB
	Dual rank	64 GB	128 GB	512 GB

**Table 7. Memory module sockets**

Memory module sockets	Speed
8, 288-pin	5600 MT/s, 4800 MT/s

**NOTE:** The processor may reduce the performance of the rated DIMM speed.

**NOTE:** Memory DIMM slots are not hot swappable.

## Heater Solution

### Heater Solution Summary

XR8000 needs to support an operating temperature range of -20 to 65°C with a non-operational range of -40 to 65°C. The following major components do not support an industrial range and may need to be heated before they can be powered on:

- Intel Xeon-SP SPR CPU – minimum temperature is 0°C
- Intel Emmitsburg PCH south bridge – minimum temperature is 0°C
- iDRAC temperature range of 0°C to 70°C
- CPLD temperature range of 0°C to 85°C
- DIMM memory – minimum temperature is 0°C
- M.2 drives – temperature range is 85°C with selected range of 0°C to 85°C
- Adapter cards – temperature ranges vary depending on the manufacturer.

**NOTE:** Only XR8620t supports Heater Solution configuration.

**NOTE:** After pressing the power button, it takes approximately 5.5 minutes for the heater to warm the system from -20°C to 5°C before the power is applied to initiate system startup.

**NOTE:** Heater Manger is tested to -20°C.

**NOTE:** Heater Manager will monitor and maintain each heater zone's temperature while system is on.

### Sub-System details

In cold environments components will need to be heated to an operational temperature range before they can be powered up. A small industrial range microcontroller called the heater manager is needed to measure the temperature via strategically placed temperature sensors and to apply current to the heating pad(s).

System heating is separated into a maximum of ten zones for different parts of the system. Each zone has one or more heating pads (connected in parallel) and one or more temperature sensors. Each zone can have a different minimum temperature but in general they are all the same and above 0C. Below table shows a potential list of heater modules in Dell PowerEdge XR8000. Heaters in the top U will connect to the 2U\_PDB for easy serviceability.

Once the heater manager has power, it turns on the green heater LED (HM\_SYS\_PH\_LED\_N) and determines the temperature of each zone. Any zone below the threshold (e.g., 4°C) will have its heater turned on until the zone is up to temperature. The heater manager should continue to monitor the temperature and turn on the heater pad if the temperature ever drops below a threshold (e.g., 2°C). If no heating is required because the system is already above the heating thresholds, then the LED should

still be flashed briefly for visible feedback that the system is in fact starting up. A jumper can be used to power the system without heating.

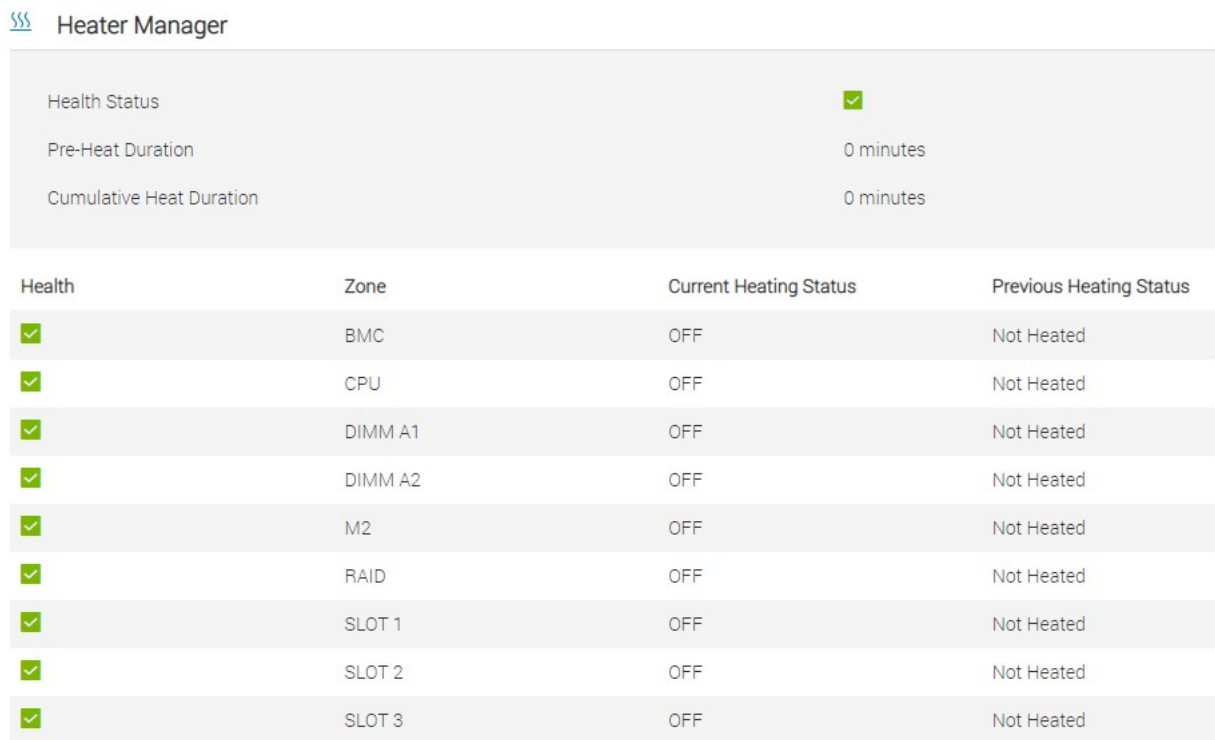


Figure 10. iDRAC interface for Heater Manager

**NOTE:** Please be advised not to rely on the heat duration data for your assessment, as this information will be excluded in the upcoming iDRAC release.

**NOTE:** Refer to Table - Zone Definition and Location in next topic for Zone details

Monitoring is added in each zone to ensure that the heating pad is present. A blinking amber heater LED (HM\_SYSTEM\_PH\_FAULT\_LED\_N) indicates a problem with the heating sub-system. This flashing LED is the only indication of a problem because iDRAC is not yet available for problem logging. Any failure in the heating system, flashes the amber heater status LED, and initiates a system shutdown if the temperature starts to drop below the temperature threshold. If the ambient temperature is high enough (e.g., 10°C), then the iDRAC and shared NIC is powered to ensure that the problem is logged with iDRAC and is available on a remote iDRAC console.

**NOTE:** All heater modules for XR8620t should be at point of sale.

**NOTE:** No APOS Cust kit for heater modules is available. The XR8620t heater module (ET) involves complex hardware connections, including thermal/heater pad/sensors, etc. Due to this complexity, it is not easy for customers to modify the configuration after shipment or change any M.2s connected to ROR-N1.

## Troubleshooting- Heater Manager

### Heater Manager Error Check Allocation

Step 1: Heater Error LED

- LED lights Green when system pre-heating is enabled and will turn off when system pre-heating is completed. The heater manager will continue to maintain proper temperature on the system after preheating, but the LED will stay off while the system is on.
- LED flashes Amber with one blink per second frequency when any required heater or thermal sensor is absent or has failed.

Step 2: Check the iDRAC Life Cycle Log:

- The Lifecycle log can be accessed via iDRAC GUI -> Maintenance -> Lifecycle Log.

## HM Errors and Troubleshooting Guide

**Table 8. HM Errors and Troubleshooting Guide**

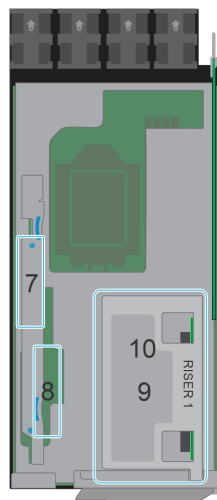
Message ID	Severity	Zone (N)	Message/ Description	Action Required
HTR0005	Informational	-	The health status of the Heater Manager is OK.	No response action is required.
HTR0010	Critical	-	The health of the Heater Manager is in a Critical state.	Review the corresponding additional message(s) for the cause of the critical state and its recommended response action below.
HTR0020	Critical	-	An unrecoverable hardware issue with Error Code <2009/3005/3006> is detected in the Heater Manager Subsystem.	<ul style="list-style-type: none"> <li>• Restart the server</li> <li>• If the issue persists, check all the sensor cables and heater cables connections in the sled.</li> <li>• If the issue persists, replace 2U PDB</li> <li>• If the issue persists, replace the planar.</li> </ul> Most likely not to happen in factory.
HTR0022	Critical	-	An unrecoverable hardware issue with Error Code <2002/2003/3004/5008> is detected in the Heater Manager Subsystem.	<ul style="list-style-type: none"> <li>• Replace planar.</li> </ul> Most not likely to happen in a factory.
HTR0030	Critical	Zone	A hardware issue has occurred in the Heater Manager Subsystem. The required sensor < sensorNum > for the < zoneName > zone is not present.	<ul style="list-style-type: none"> <li>• Power off the server and ensure that the sensor cable is connected to the zone identified in the message.</li> <li>• If the issue persists, replace the sensor cable connected to the zone.</li> </ul>
HTR0040	Critical	Zone	A hardware issue has occurred in the Heater Manager Subsystem. The < zoneName > zone has reported a high-temperature error.	<ul style="list-style-type: none"> <li>• Power off the server and ensure that the heater cable assembly for the identified zone is properly attached and not loose or hanging.</li> <li>• If the issue persists, replace both Heater and Sensor cable of that zone.</li> <li>• If the issue persists, replace the board that the heater cable is connected to accordingly.</li> </ul>
HTR0051	Critical	Zone	A hardware issue has occurred in the Heater Manager Subsystem. The required heater for <zoneName> zone is not present.	<ul style="list-style-type: none"> <li>• Power off the server and ensure that the heater for the zone identified in the message is connected.</li> <li>• If the issue persists, replace the board that the heater cable is connected to accordingly.</li> </ul>
HTR0052	Critical	Zone	A hardware issue has occurred in the Heater Manager Subsystem. The heater <b>control</b> for <zoneName> zone has stopped functioning.	Power off the server and replace 2U PDB for <Zone 7/8/9/10> or replace 1U PDB for <Zone 4> or replace planar for <Zone 1/2/3/5>.
HTR0053	Critical	Zone	A hardware issue has occurred in the Heater Manager Subsystem. The heater <b>control</b> for <zoneName> zone is not working correctly.	Power off the server and replace 2U PDB for <Zone 7/8/9/10> or replace 1U PDB for <Zone 4> or replace planar for <Zone 1/2/3/5>.
HTR0054	Critical	Zone	A hardware mismatch is identified for the <ZoneName> zone in the Heater Manager Subsystem.	Power off the server and ensure that the heater and sensor cable assembly for the zone that is identified in the message are plugged into the correct connectors and the sensors are properly positioned.
HTR0055	Critical	Zone	A hardware issue has occurred in the Heater Manager Subsystem. The heater	<ul style="list-style-type: none"> <li>• Power off the server and ensure that the heater and sensor cable assembly for the zone identified</li> </ul>

**Table 8. HM Errors and Troubleshooting Guide (continued)**

Message ID	Severity	Zone (N)	Message/ Description	Action Required
			for <zoneName> zone may not be heating correctly.	<p>in the message are plugged into the correct connectors and the sensor cable assembly is properly positioned.</p> <ul style="list-style-type: none"> <li>If the issue persists, replace both heater and sensor of that zone.</li> </ul>
HTR0060	Critical	Zone	A hardware issue has occurred in the Heater Manager Subsystem. The required sensor < sensorNum > for the < zoneName > zone is shorted.	<ul style="list-style-type: none"> <li>Power off the server and ensure that the sensor cable assembly for the zone identified in the message is properly positioned.</li> <li>If the issue persists, replace the sensor cable of that zone.</li> </ul>

**Table 9. Zone Definition and Location**

System	Zone	Heating Item	Heater pad location
Lower U	1	CPU	Top of CPU heatsink
	2	DIMM	Back of PCB
	3	DIMM	Back of PCB
	4	Lower U PCIe Riser Slot3	PCIe back of PCB
	5	PCH, BMC, CPLD, and LOM	Back of PCB
	6	Not Used	-
Upper U	7	ROR-N1 or M.2 NVMe A side	Under AL plate & beneath M.2
	7	ROR-N1 or M.2 NVMe B side	Under AL plate & beneath M.2
	8	ROR-N1 RAID chip	Top of Raid Controller
	9	Upper U PCIE Riser Slot2	On the back of PCIe Card
	10	Upper U PCIE Riser Slot1	On back of Bracket



**Figure 11. Zone Definition and Location - Upper U**



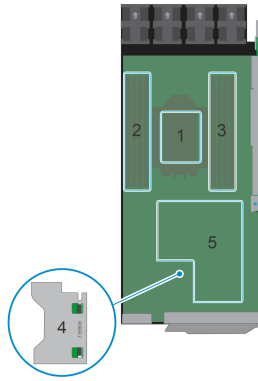


Figure 12. Zone Definition and Location - Lower U

## Expansion card riser specifications

**⚠️ WARNING:** Consumer-Grade GPU should not be installed or used in the Enterprise Server products.

The PowerEdge XR8620t system supports three PCI express (PCIe) expansion card risers.

Table 10. Expansion card slots supported on the 2U sled

PCIe slots	Expansion card riser	Processor connection	Height	Length	Slot width
Slot 1	R1A	Processor 1	Full Height	Half Length	x16 PCIe (Gen 5)
Slot 2	R1A	Processor 1	Full Height	Half Length	x16 PCIe (Gen 5)
Slot 3	R2A	Processor 1	Full Height	Half Length	x16 PCIe (Gen 5)

## Drives

The PowerEdge XR8620t system supports either 2 x M.2 NVMe SSDs (M.2 2280 and M.2 22110) on the M.2 riser or 2 x M.2 NVMe SSDs (M.2 2280) installed on BOSS-N1 card.

## Ports and connectors specifications

### USB ports specifications

Table 11. PowerEdge XR8620t USB specifications

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

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

### Network port specifications

The PowerEdge XR8620t system supports two (optional) SFP28 LAN on Motherboard (LOM) ports.

**Table 12. Network port specification for the system**

Feature	Specifications
LOM	2 x 25 GbE SFP 28 LOM connectors (optional).

## Serial connector specifications

The PowerEdge XR8620t system supports one Micro USB Type B serial connector, on front of the system.

## Display port

The PowerEdge XR8620t system supports One Mini-DisplayPort on front of the system.

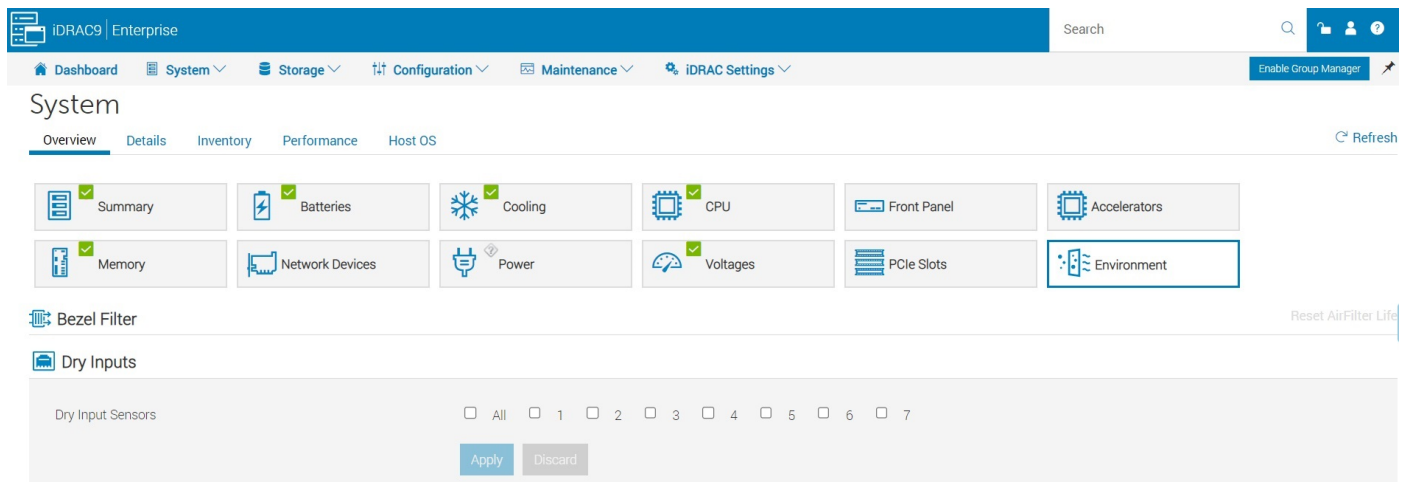
## iDRAC port specifications

The PowerEdge XR8620t system supports one RJ45 with port status LEDs for iDRAC remote management (dedicated port only) on front of the system.

## RJ-45 dry contact port

The PowerEdge XR8620t system supports 1 x RJ45 for dry contact on front of the system.

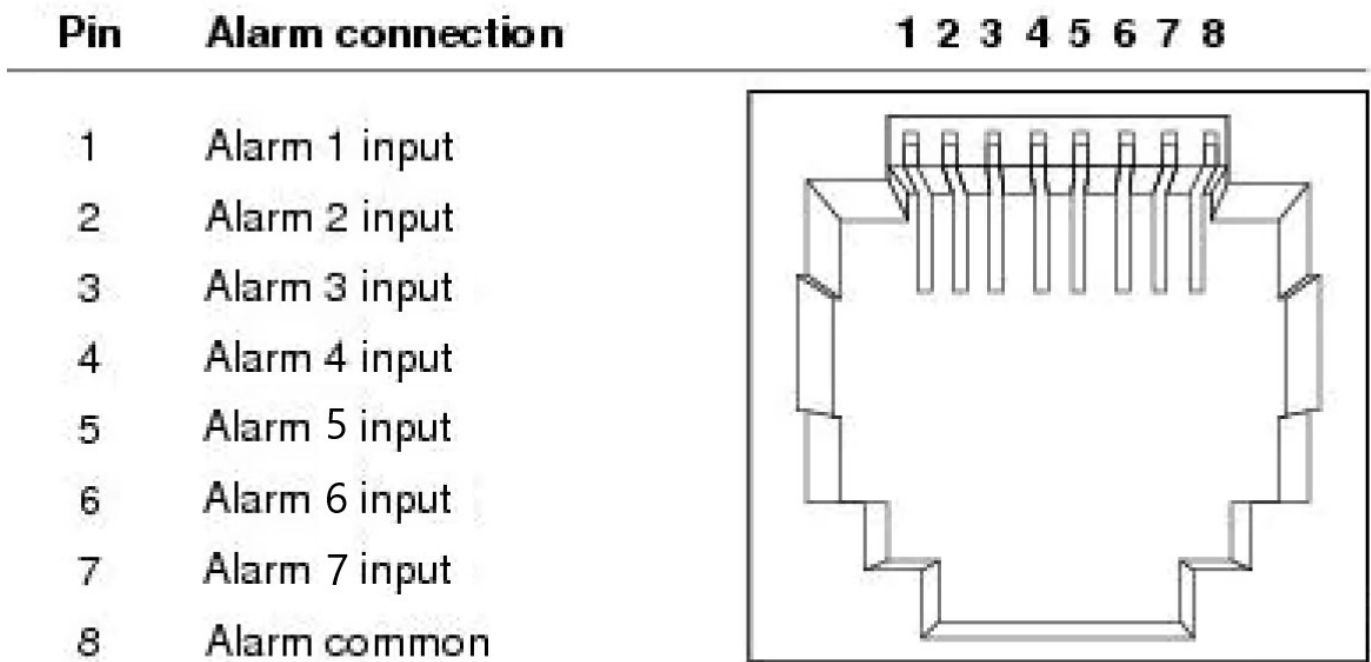
To enhance usage in the IoT space, the XR8620t comes with a dry input sensor. Each input is configurable and manageable in the iDRAC interface. These are interruptible inputs to iDRAC. Dry means that no energy is supplied to the contacts. The dry contact connection cable with RJ45 connector on one end is custom to each installation and must be provided by the end user.



**Figure 13. iDRAC interface for Dry Input sensors**

**NOTE:** The RJ45 for dry contact does not support IP function.

The default states of the dry inputs are off/disabled. The user has seven (one for each dry input) enable/disable (default) control that must be enabled before logging occurs.



**Figure 14. Dry input connection diagram**

The seven dry inputs are interruptible inputs to iDRAC. They have the following characteristics:

- Monitored by iDRAC for state transition and LC event are for each state transition.
- NOT modeled as IPMI sensors but LC event only sensors. The current state of the input is not monitored or displayed anywhere.
- Event log - transitions (Open to close or close to Open) are logged in LC only.

**Debounce** — A debounce of 100mseconds is provided on all inputs.

**Table 13. Event and Error Messages**

Message ID	Message	RRA	DD	Severity
DCI1000	Dry input <input index> is transitioned to Open state.	None.	None	Severity -3 (Info)
DCI1001	Dry input <input index> is transitioned to Close state.	None.	None	Severity -3 (Info)

## Video specifications

The PowerEdge XR8620t system supports integrated Matrox G200 graphics controller embedded in the iDRAC (BMC) chip with 16 MB of video frame buffer.

**Table 14. Supported video resolution options**

Resolution	Refresh rate (Hz)	Color depth (bits)
640 x 480	60	8, 16, 32
800 x 600	60	8, 16, 32
1024 x 768	60	8, 16, 32
1152 x 864	60	8, 16, 32
1280 x 800	60	8, 16, 32

**Table 14. Supported video resolution options (continued)**

Resolution	Refresh rate (Hz)	Color depth (bits)
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1400 x 1050	60	8, 16, 32
1440 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

The PowerEdge XR8620t operates in these environmental categories: ASHRAE A2, NEBS3, GR3108C1+, GR3108C1-L and NEBS3-H.

**i** **NOTE:** For additional information about environmental certifications, refer to the Product Environmental Datasheet located with the Documentation > Regulatory Information on [Dell Support](#).

**Table 15. Continuous operation specifications for ASHRAE A2**

Feature	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	10–35°C (50–95°F) with no direct sunlight on the equipment
Humidity percent range (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 16. Continuous operation specifications for NEBS3**

Feature	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	-5° to 55°C (23 to 131°F) with no direct sunlight on the equipment
Humidity percent range (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/80 m (1.8°F/263 Ft) above 900 m (2953 Ft)

**Table 17. Continuous operation specifications for GR3108C1+**

Feature	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	-20° to 65°C (-4 to 149°F) with no direct sunlight on the equipment. Cold boot support at -20°C
Humidity percent range (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/58 m (1.8°F/190 Ft) above 900 m (2953 Ft)

**Table 18. Continuous operation specifications for GR3108C1-L**

Feature	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	-20° to 55°C (-4 to 131°F) with no direct sunlight on the equipment. Cold boot support at - 20°C
Humidity percent range (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/80 m (1.8°F/263 Ft) above 900 m (2953 Ft)

**Table 19. Continuous operation specifications for NEBS3-H**

Feature	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	-5° to 65°C (23 to 149°F) with no direct sunlight on the equipment
Humidity percent range (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/58 m (1.8°F/190 Ft) above 900 m (2953 Ft)

**Table 20. Common environmental specifications for ASHRAE A2, NEBS3, GR3108C1+, GR3108C1-L and NEBS3-H**

Feature	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 hardware
Non-operational temperature limits	-40 to 65°C (-40 to 149°F).
Non-operational humidity limits (Non-Condensing at all times)	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 21. Maximum vibration specifications**

Maximum vibration	Specifications
Operating	0.21 G <sub>rms</sub> at 5 Hz to 500 Hz (all operation orientations)
Storage	1.88 G <sub>rms</sub> at 10 Hz to 500 Hz for 15 minutes (all six sides tested)

**Table 22. 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 (4 pulse on each side on the system)
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

## Environmental considerations

The PowerEdge system is targeted for edge deployments and it meets all the additional standards for thermal, shock, and vibration parameters.

**Table 23. Environmental considerations**

Industry	Configuration	Description
Telco	GR-1089-CORE	Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment
	GR-63-CORE	NEBS Requirements: Physical Protection
	SR-3580 (NEBS Level 3)	NEBS Criteria Levels
	GR-3108-CORE (Class 1)	Network Equipment in the Outside Plant (OSP). An exception is made for cold boot at +5C instead of -5C for systems without the Heater Manager subsystem enabled.
Military	N/A	
Marine	N/A	
Power Industry	N/A	
Safety	N/A	LDV, IEC/EN, CFR, CSA
EMC	N/A	EN, CISPR, ES, DTAG, CFR, ICES, VCCI
EMV	N/A	RoHS, WEEE, EN, ECE

## Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any equipment damage or failure from particulates and gaseous contamination. If the levels of particulates or gaseous pollution exceed the specified limitations and result in equipment damage or failure, you may must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

**Table 24. Particulate contamination specifications**

Particulate contamination	Specifications
Conductive dust	Air must be free of conductive dust, zinc whiskers, or other conductive particles. <i>i</i> <b>NOTE:</b> This condition applies to data center and non-data center environments.
Corrosive dust	<ul style="list-style-type: none"> <li>Air must be free of corrosive dust.</li> <li>Residual dust present in the air must have a deliquescent point less than 60% relative humidity.</li> </ul> <i>i</i> <b>NOTE:</b> This condition applies to data center and non-data center environments.

**Table 25. Gaseous contamination specifications**

Gaseous contamination	Specifications
Copper coupon corrosion rate	<300 Å/month per Class G1 as defined by ANSI/ISA71.04-2013
Silver coupon corrosion rate	<200 Å/month as defined by ANSI/ISA71.04-2013

## Environmental Requirements for installing XR8000

A proper installation of XR8000 protects the system and its components from damage that is caused by external environmental conditions. So, to ensure normal operation and avoid any unplanned downtime and maintenance activity it is highly imperative that there is a proper planning and preparation of the site before installing the XR8000 . Also, it is to be noted that the same site sanity must be maintained during the entire life cycle of the XR8000 server to ensure smooth operations.

General guidelines for maintaining the XR8000:

1. It is recommended to keep the system from heat sources and obstructions blocking the airflow.
2. It is recommended not to allow spillage of liquid into the system and not to operate when the system is wet.
3. If there are any openings in the system, it is recommended not to insert any objects into those points.
4. It is highly advised not to tamper and modify any power cables or PSUs as it could potentially damage the systems.

Site Planning Recommendation:

1. The site should have proper cooling facilities to take care of the operating temperature range of the server.
2. The rack or cabinet where the server is going to be installed should have adequate space for cable routing.
3. The Rack or cabinet should have enough strength to hold the weight of the server.
4. For Conductive dust, the air must be free of conductive dust, zinc whiskers, or other conductive particles. This protects the system from any contamination.
5. For corrosive dust, the air must be free from any corrosive dust and the Residual dust present in the air must have a deliquescent point less than 60% relative humidity. Note this condition applies for both data center and non-data center environments.
6. The system is best found to operate at -5C to 55C and for some conditions from -20C to 65C , so the site conditions could maintain the optimum operating condition.
7. For protection of the system from humidity it is expected to have an environment with a humidity percent range of 8% RH with -12°C minimum dew point to 80% RH with 21°C (69.8°F) maximum dew point.
8. For seismic zones , the maximum operating vibration is 0.21 G<sub>rms</sub> at 5 Hz to 500 Hz (all operation orientations).

## Thermal restriction matrix

**Table 26. XR8620t Thermal Restriction - CPU and Memory**

Sled Config			XR8620t Thermal Restriction				
Ambient Temperature			ASHRAE A2 (Max 35°C)	NEBS3 (Max 55°C)	GR3108C1-L (Max 55°C)	NEBS3-H (Max 65°C)	GR3108C1+ (Max 65°C)
CPU	Intel® Xeon® Gold 4514Y	150W	Supported	Supported	Supported	Not Supported	Not Supported
CPU	Intel® Xeon® Gold 6433N	205W	Supported	Supported	Supported	Not Supported	Not Supported
	Intel® Xeon® Gold 6423N	195 W	Supported	Supported	Supported	Supported	Supported
	Intel® Xeon® Gold 6403N	185 W	Supported	Supported	Supported	Supported	Supported
	Intel® Xeon® Gold 4510	150 W	Supported	Supported	Supported	Supported	Supported
	Intel® Xeon® Gold 5423N	145 W	Supported	Supported	Supported	Supported	Supported
	Intel® Xeon® Gold 4509Y	125 W	Supported	Supported	Supported	Supported	Supported
	CPU	Intel® Xeon® Gold 6438N	205W	Supported	Supported	Supported	Not Supported
Intel® Xeon® Gold 6421N		185W	Supported	Supported	Supported	Supported	Supported
Intel® Xeon® Gold 5411N		165W	Supported	Supported	Supported	Supported	Supported
Memory	DDR5 RDIMM 4800 MT/s 64G		Supported	Supported	Supported	Not Supported	Not Supported
	DDR5 RDIMM 4800 MT/s 32G		Supported	Supported	Supported	Supported	Supported

**Table 26. XR8620t Thermal Restriction - CPU and Memory (continued)**

Sled Config		XR8620t Thermal Restriction				
Ambient Temperature		ASHRAE A2 (Max 35°C)	NEBS3 (Max 55°C)	GR3108C1-L (Max 55°C)	NEBS3-H (Max 65°C)	GR3108C1+ (Max 65°C)
	DDR5 RDIMM 4800 MT/s 16G	Supported	Supported	Supported	Supported	Supported
	DDR5 RDIMM 5600 MT/s 96G	Supported	Supported	Supported	Not Supported	Not Supported
	DDR5 RDIMM 5600 MT/s 64G	Supported	Supported	Supported	Not Supported	Not Supported
	DDR5 RDIMM 5600 MT/s 32G	Supported	Supported	Supported	Supported	Supported
	DDR5 RDIMM 5600 MT/s 16G	Supported	Supported	Supported	Supported	Supported

**NOTE:** The heater Manager subsystem is required for “GR3108C1L” and “GR3108C1+” environment class.

**NOTE:** The heater Manager Subsystem is required for system to perform a cold startup below 5°C.

**Table 27. XR8620t Thermal Restriction - Raid Controller and Storage(ROR-N1)**

Sled Config				XR8620t Thermal Restriction				
Ambient Temperature				ASHRAE A2 (Max 35°C)	NEBS3 (Max 55°C)	GR3108C1-L (Max 55°C)	NEBS3-H (Max 65°C)	GR3108C1+ (Max 65°C)
ROR-N1 M2 2280/2210	Micron 7400 Hynix PE8010	2280	480G	Supported	Supported	Supported	Supported	Supported
		2280	800G	Supported	Supported	Supported	Not Supported	Not Supported
		2280	960G	Supported	Supported	Supported	Not Supported	Not Supported
		22110	1.92T	Supported	Supported	Supported	Not Supported	Not Supported
	Micron 7450	2280	480G	Supported	Supported	Supported	Supported	Supported
		2280	960G	Supported	Supported	Supported	Not Supported	Not Supported
	Hynix PE9010	2280	480G	Supported	Supported	Supported	Supported	Supported
		2280	960G	Supported	Supported	Supported	Not Supported	Not Supported
		2280	1.92T	Supported	Supported	Supported	Not Supported	Not Supported

**NOTE:** The heater Manager subsystem is required for “GR3108C1L” and “GR3108C1+” environment class.



**Table 28. XR8620t Thermal Restriction - Raid Controller and Storage(Non-Raid Riser)**

Sled Config				XR8620t Thermal Restriction				
Ambient Temperature				ASHRAE A2 (Max 35°C)	NEBS3 (Max 55°C)	GR3108C1-L (Max 55°C)	NEBS3-H (Max 65°C)	GR3108C1+ (Max 65°C)
Non-Raid Riser  M2 2280/2210	Micron 7400  Hynix PE8010	2280	480G	Supported	Supported	Supported	Supported	Supported
		2280	800G	Supported	Supported	Supported	Not Supported	Not Supported
		2280	960G	Supported	Supported	Supported	Not Supported	Not Supported
		22110	1.92T	Supported	Supported	Supported	Not Supported	Not Supported
	Micron 7450	2280	480G	Supported	Supported	Supported	Supported	Supported
		2280	960G	Supported	Supported	Supported	Not Supported	Not Supported
	Hynix PE9010	2280	480G	Supported	Supported	Supported	Supported	Supported
		2280	960G	Supported	Supported	Supported	Not Supported	Not Supported
		2280	1.92T	Supported	Supported	Supported	Not Supported	Not Supported

**NOTE:** The heater Manager subsystem is required for “GR3108C1L” and “GR3108C1+” environment class.

**Table 29. XR8620t Thermal Restriction - Raid Controller and Storage(Mancini BOSS-N1)**

Sled Config				XR8620t Thermal Restriction				
Ambient Temperature				ASHRAE A2 (Max 35°C)	NEBS3 (Max 55°C)	GR3108C1-L (Max 55°C)	NEBS3-H (Max 65°C)	GR3108C1+ (Max 65°C)
Mancini BOSS-N1  M2 2280	Micron 7400	2280	480G	Supported	Supported	Not Supported	Supported	Not Supported
		2280	800G	Supported	Supported	Not Supported	Not Supported	Not Supported
	Hynix PE8010	2280	960G	Supported	Supported	Not Supported	Not Supported	Not Supported
		2280	480G	Supported	Supported	Not Supported	Not Supported	Not Supported
		2280	960G	Supported	Supported	Not Supported	Not Supported	Not Supported
	Micron 7450	2280	480G	Supported	Supported	Not Supported	Not Supported	Not Supported
		2280	960G	Supported	Supported	Not Supported	Not Supported	Not Supported
	Hynix PE9010	2280	480G	Supported	Supported	Not Supported	Not Supported	Not Supported
		2280	960G	Supported	Supported	Not Supported	Not Supported	Not Supported
2280		1.92T	Supported	Supported	Not Supported	Not Supported	Not Supported	

**NOTE:** The heater Manager subsystem is required for “GR3108C1L” and “GR3108C1+” environment class.

**Table 30. XR8620t Thermal Restriction - RAN DPU**

Sled Config	XR8620t Thermal Restriction				
	ASHRAE A2 (Max 35°C)	NEBS3 (Max 55°C)	GR3108C1-L (Max 55°C)	NEBS3-H (Max 65°C)	GR3108C1+ (Max 65°C)
Nvidia GPU L4	Supported	Supported	Not Supported	Not Supported	Not Supported
Qualcomm X100 DPU	Supported	Supported	Not Supported	Not Supported	Not Supported
Dell 100GbE QSFP28 DPU	Supported	Supported	Not Supported	Not Supported	Not Supported
Nokia Cloud RAN SmartNIC 2x QSFP56-DD DPU	Supported	Supported	Not Supported	Not Supported	Not Supported

**Table 31. XR8620t Thermal Restriction - Commodities**

Sled Config	XR8620t Thermal Restriction				
	ASHRAE A2 (Max 35°C)	NEBS3 (Max 55°C)	GR3108C1-L (Max 55°C)	NEBS3-H (Max 65°C)	GR3108C1+ (Max 65°C)
PCIe Card	<ul style="list-style-type: none"> <li>Above 55°C only PCIe cards with Extended Operating Temperature (EOT) Range is supported for "NEBS3-H" &amp; "GR3108C1+."</li> <li>Non-Dell PCIe cards are not supported.</li> </ul>				
Active Optical Cables/ Transceivers	<ul style="list-style-type: none"> <li>Optic cables/transceivers with 70C spec is not supported for "NEBS3-H" &amp; "GR3108C1+."</li> <li>Optic cables / transceivers with 85C spec can support up to 65°C.</li> </ul>				
PSU	-	<ul style="list-style-type: none"> <li>Dual PSUs are required.</li> <li>Only eTemp range PSU is supported for NEBS3-H, GR3108C1L and GR3108C1+.</li> </ul>			

**NOTE:** The heater Manager subsystem is required for "GR3108C1L" and "GR3108C1+" environment class.

## Other Restrictions

- Hot-swap fans are not supported.
- Minimum cold boot temperature +5°C w/o heater manager subsystem.
- Minimum cold boot temperature -20°C with heater manager subsystem.
- Dual PSUs are required while ambient  $\geq$  55°C.
- Only PSU with eTemp range is supported for NEBS3 H, GR3108C1 L & GR3108C1+ environment class.
- Non-Dell PCIe Cards are not supported.
- DIMM Blank is required in empty slots.
- Sled blank is required in empty slots.
- PCIE blank is required in empty slots for slot-1&2.
- PCIE blank is required in the empty slot for slot-3.
- PSU blank is required in an empty slot.
- Heater Module is not supported with Intel Ethernet 100G 2P E810-2C.

## Heater Manager subsystem

- Telco systems are deployed in remote locations where the systems need to operate in extended (-20C to 65C) or extreme (-20C to 55C) temperature ranges. As many of the hardware components (such as iDRAC, 40 CPU, DIMM, SSD, etc.) used in the system cannot operate below 0C, the system needs to be pre-heated to above 5C before the system can power on. Heater Manager subsystem (HM) will pre-heat the system, make sure all the heater zones (9 zones total) are above 5C. The HM will heat the system as needed such that the temperature of all zones will be above 5C

- Heater Manager subsystem (HM) is only supported in 2U XR8620t.
- Heater Manager subsystem (HM) heating from -20C to system start booting: ~4 minutes
- The max power draw per 2U HM sled is about 750W during the preheat process

# 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](#)
- [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 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 1.3 or later versions), after the iDRAC is configured on the OME. For more information, see the *OME-Modular User's Guide* at [PowerEdge Manuals](#).

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

 **NOTE:** When XR8620t is installed in the XR8000r chassis, the power button LED indicator status may be delayed for up to two minutes while the sled is initializing. The power button LED will start slowly blinking to indicate the system is performing the power on sequence after this time period.


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

## 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 32. Interfaces to set up iDRAC IP address**

Interface	Documentation links
iDRAC Settings utility	Integrated Dell Remote Access Controller User's Guide at <a href="#">iDRAC Manuals</a> or for system specific Integrated Dell Remote Access Controller User's Guide, go to <a href="#">PowerEdge Manuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> . <i>i</i> <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <a href="#">KB78115</a> .
OpenManage Deployment Toolkit	Dell OpenManage Deployment Toolkit User's Guide available at <a href="#">OpenManage Manuals</a> > OpenManage Deployment Toolkit.
iDRAC Direct	Integrated Dell Remote Access Controller User's Guide at <a href="#">iDRAC Manuals</a> or for system specific Integrated Dell Remote Access Controller User's Guide, go to <a href="#">PowerEdge Manuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> . <i>i</i> <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <a href="#">KB78115</a> .
Lifecycle Controller	Dell Lifecycle Controller User's Guide at <a href="#">iDRAC Manuals</a> or for system specific Dell Lifecycle Controller User's Guide, go to <a href="#">PowerEdge Manuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> . <i>i</i> <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <a href="#">KB78115</a> .

*i* **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, if the system is set it to share iDRAC port with OS as an OS NIC or shared LOM mode enabled.

## 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 the 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 are prompted to create a password of your choice before proceeding. You can also log in by using your Single Sign-On or Smart Card.

*i* **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](#)

*i* **NOTE:** To determine the most recent iDRAC release for your platform and for the latest documentation version, see KB article [KB78115](#).



You can also access iDRAC using command-line protocol - RACADM. For more information, see the [Integrated Dell Remote Access Controller RACADM CLI Guide](#) .


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](#).

## 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 33. Resources to install the operating system**

Resource	Documentation links
iDRAC	<a href="#">Integrated Dell Remote Access Controller User's Guide</a> or for system specific <a href="#">Integrated Dell Remote Access Controller User's Guide</a> , go to <a href="#">PowerEdge Manuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> .  <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at <a href="#">KB78115</a> .
Lifecycle Controller	Dell Lifecycle Controller User's Guide at <a href="#">iDRAC Manuals</a> or for system specific <a href="#">Dell Lifecycle Controller User's Guide</a> , go to <a href="#">PowerEdge Manuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> . Dell recommends using Lifecycle Controller to install the OS, since all required drivers are installed on the system.  <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at <a href="#">KB78115</a> .
OpenManage Deployment Toolkit	<a href="#">OpenManage Manuals</a> > OpenManage Deployment Toolkit
Dell certified VMware ESXi	<a href="#">Virtualization solutions</a>

 **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 the 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 34. Options to download firmware**

Option	Documentation link
Using Integrated Dell Remote Access Controller Lifecycle Controller (iDRAC with LC)	<a href="#">iDRAC Manuals</a>
Using Dell Repository Manager (DRM)	<a href="#">OpenManage Manuals</a>
Using Dell Server Update Utility (SUU)	<a href="#">OpenManage Manuals</a>
Using Dell OpenManage Deployment Toolkit (DTK)	<a href="#">OpenManage Manuals</a>
Using iDRAC virtual media	<a href="#">iDRAC Manuals</a>

## 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 35. Options to download and install OS drivers**

Option	Documentation
Dell support site	<a href="#">Downloading drivers and firmware</a> section.
iDRAC virtual media	<a href="#">Integrated Dell Remote Access Controller User's Guide</a> or for system specific, go to <a href="#">Integrated Dell Remote Access Controller User's Guide &gt; Product Support</a> page of your system > <b>Documentation</b> . <b>i</b> <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see <a href="#">Integrated Dell Remote Access Controller Release Notes</a> .

## 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 [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.  
**i** **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)

**NOTE:** To enable TDC/SGS features, requires populating all DIMM slots to support and enable in BIOS setup menu.

### Topics:

- [System Setup](#)

## 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 36. System Setup Main Menu**

Option	Description
<b>System BIOS</b>	Enables you to configure the BIOS settings.
<b>iDRAC Settings</b>	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 <a href="#">PowerEdge Manuals</a> .



**Table 36. System Setup Main Menu (continued)**

Option	Description
<b>Device Settings</b>	Enables you to configure device settings for devices such as storage controllers or network cards.
<b>Service Tag Settings</b>	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 37. System BIOS details**

Option	Description
<b>System Information</b>	Provides information about the system such as the system model name, BIOS version, and Service Tag.
<b>Memory Settings</b>	Specifies information and options related to the installed memory.
<b>Processor Settings</b>	Specifies information and options related to the processor such as speed and cache size.
<b>NVMe Settings</b>	Specifies options to change the NVMe settings.
<b>Boot Settings</b>	Specifies options to specify the Boot Mode (UEFI). Enables you to modify UEFI boot settings.
<b>Network Settings</b>	Specifies options to manage the UEFI network settings and boot protocols. Legacy network settings are managed from the <b>Device Settings</b> menu.
<b>Integrated Devices</b>	Specifies options to manage integrated device controllers and ports, specifies related features, and options.
<b>Serial Communication</b>	Specifies options to manage the serial ports, its related features, and options.
<b>System Profile Settings</b>	Specifies options to change the processor power management settings, memory frequency.
<b>System Security</b>	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.
<b>Redundant OS Control</b>	Sets the redundant OS information for redundant OS control.
<b>Miscellaneous Settings</b>	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 38. System Information details**

Option	Description
<b>System Model Name</b>	Specifies the system model name.
<b>System BIOS Version</b>	Specifies the BIOS version installed on the system.
<b>System Management Engine Version</b>	Specifies the current version of the Management Engine firmware.
<b>System Service Tag</b>	Specifies the system Service Tag.
<b>System Manufacturer</b>	Specifies the name of the system manufacturer.

**Table 38. System Information details (continued)**

Option	Description
<b>System Manufacturer Contact Information</b>	Specifies the contact information of the system manufacturer.
<b>System CPLD Version</b>	Specifies the current version of the system Complex Programmable Logic Device (CPLD) firmware.
<b>UEFI Compliance Version</b>	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 39. Memory Settings details**

Option	Description
<b>System Memory Size</b>	Specifies the size of the system memory.
<b>System Memory Type</b>	Specifies the type of memory that is installed in the system.
<b>System Memory Speed</b>	Specifies the speed of the system memory.
<b>Video Memory</b>	Specifies the size of video memory.
<b>System Memory Testing</b>	Specifies whether the system memory tests are run during system boot. The two options available are <b>Enabled</b> and <b>Disabled</b> . This option is set to <b>Disabled</b> by default.
<b>Memory Operating Mode</b>	Specifies the memory operating mode. The option is available and is set to <b>Optimizer Mode</b> , 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.
<b>Current State of Memory Operating Mode</b>	Specifies the current state of the memory operating mode.
<b>Fault Resilient Mode Memory Size [%]</b>	Select to define the percent of total memory size that must be used by the fault resilient mode, when selected in the Memory Operating mode. When Fault Resilient Mode is not selected, this option is grayed out and not used by Fault Resilient Mode. Option is displayed when 8 DIMMs are installed on the sled.
<b>Node Interleaving</b>	Enables or disables the Node interleaving option. Specifies if the Non-Uniform Memory Architecture (NUMA) is supported. If this field is set to <b>Enabled</b> , memory interleaving is supported if a symmetric memory configuration is installed. If the field is set to <b>Disabled</b> , the system supports NUMA (asymmetric) memory configurations. This option is set to <b>Disabled</b> by default.
<b>ADDDC Setting</b>	Enables or disables the ADDDC Setting feature. When Adaptive Double DRAM Device Correction (ADDDC) is enabled, failing DRAMs are dynamically mapped out. When set to <b>Enabled</b> it can impact the system performance under certain workloads. This feature is applicable for x4 DIMMs only. This option is set to <b>Enabled</b> by default.
<b>Memory Training</b>	<p>When the option is set to <b>Fast</b> and memory configuration is not changed, the system uses previously saved memory training parameters to train the memory subsystems. The system boot time is also reduced. If memory configuration is changed, the system automatically enables <b>Retrain at Next Boot</b> to force one-time full memory training steps, and then go back to <b>Fast</b> afterward.</p> <p>When option is set to <b>Retrain at Next Boot</b>, the system performs the force one-time full memory training steps at next power on and boot time is slowed on next boot.</p>

**Table 39. Memory Settings details (continued)**

Option	Description
	When option is set to <b>Enable</b> , the system performs the force full memory training steps on every power on and boot time is slowed on every boot.
<b>DIMM Self Healing (Post Package Repair) on Uncorrectable Memory Error</b>	Enables or disables Post Package Repair (PPR) on uncorrectable memory error. This option is set to <b>Enabled</b> by default.
<b>Correctable Error Logging</b>	Enables or disables correctable error logging. This option is set to <b>Disabled</b> by default.
<b>Memory Paging Policy</b>	This field sets memory paging policy.
<b>Memory Map Out</b>	This option controls DIMM slots on the system. This option is set to <b>Enabled</b> 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 40. Processor Settings details**

Option	Description
<b>Logical Processor</b>	Each processor core supports up to two logical processors. If this option is set to <b>Enabled</b> , the BIOS reports all the logical processors. If this option is set to <b>Disabled</b> , the BIOS reports only one logical processor per core. This option is set to <b>Enabled</b> by default.
<b>Virtualization Technology</b>	Enables or disables the virtualization technology for the processor. This option is set to <b>Enabled</b> by default.
<b>Kernel DMA Protection</b>	This option is set to <b>Disabled</b> by default. When option is set to <b>Enabled</b> , BIOS and Operating System will enable direct memory access protection for DMA capable peripheral devices using virtualization technology.
<b>Directory Mode</b>	Enables or disables the directory mode. This option is set to <b>Enabled</b> by default.
<b>Adjacent Cache Line Prefetch</b>	Optimizes the system for applications that need high utilization of sequential memory access. This option is set to <b>Enabled</b> by default. You can disable this option for applications that need high utilization of random memory access.
<b>Hardware Prefetcher</b>	Enables or disables the hardware prefetcher. This option is set to <b>Enabled</b> by default.
<b>DCU Streamer Prefetcher</b>	Enables or disables the Data Cache Unit (DCU) streamer prefetcher. This option is set to <b>Enabled</b> by default.
<b>DCU IP Prefetcher</b>	Enables or disables the Data Cache Unit (DCU) IP prefetcher. This option is set to <b>Enabled</b> by default.
<b>Sub NUMA Cluster</b>	Enables or disables the Sub NUMA Cluster. This option is set to <b>Disabled</b> by default.
<b>MADT Core Enumeration</b>	Determines how BIOS enumerates processor cores in the ACPI MADT table. When set to <b>Round Robin</b> , processor cores are enumerated in round robin order to evenly distribute

**Table 40. Processor Settings details (continued)**

Option	Description
	interrupt controllers for the OS across all Sockets and Dies. When set to <b>Linear</b> , processor cores are enumerated across all Dies within a socket before enumerating additional sockets for a linear distribution.
<b>UMA Based Clustering Status</b>	It is a read-only field and displays as <b>Quadrant</b> , when Sub NUMA Cluster is set to 2Way or 4Way then it displays as <b>Disable</b> .
<b>UPI Prefetch</b>	Enables you to get the memory read started early on DDR bus. The Ultra Path Interconnect (UPI) Rx path spawns the MemSpecRD to Integrated Memory Controller (iMC) directly. This option is set to <b>Enabled</b> by default.
<b>XPT Prefetch</b>	This option is set to <b>Enabled</b> by default.
<b>LLC Prefetch</b>	Enables or disables the LLC Prefetch on all threads. This option is set to <b>Enabled</b> by default.
<b>Dead Line LLC Alloc</b>	Enables or disables the Dead Line LLC. This option is set to <b>Enabled</b> by default. You can enable this option to opportunistically fill the dead lines in LLC or disable the option to not fill the dead lines in LLC.
<b>Directory AtoS</b>	Enables or disables the Directory AtoS. AtoS optimization reduces remote read latencies for repeat read accesses without intervening writes. This option is set to <b>Disabled</b> by default.
<b>AVX P1</b>	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 <b>Normal</b> by default.  <b>NOTE:</b> This option is only available on certain stock keeping units (SKUs) of the processors.
<b>Dynamic SST -Performance Profile</b>	Enables you to reconfigure the processor via Dynamic or Static SST-PP Select. This option is set to <b>Disabled</b> by default.
<b>SST-Performance Profile</b>	Enables you to reconfigure the processor via Speed Select Technology(SST).
<b>Intel SST-BF</b>	Enables Intel SST-BF. This option is displayed if Performance Per Watt (OS) or Custom (when OSPM is enabled) system profiles are selected. This option is set to <b>Disabled</b> by default.  <b>NOTE:</b> This option requires a supported CPU.
<b>Intel SST-CP</b>	Enables Intel SST-CP. This knob controls whether SST-CP is enabled. When enabled it activates per core power budgeting. This option is set to <b>Disabled</b> by default.
<b>x2APIC Mode</b>	Enables or disables x2APIC mode. This option is set to <b>Enabled</b> by default.
<b>AVX ICCP Pre-Grant License</b>	Enables or disables AVX ICCP Pre-Grant License. This option is set to <b>Disabled</b> by default.
<b>Opportunistic Snoop Broadcast</b>	Opportunistic Snoop Broadcast(OSB) is a feature within the PCIe protocol that enhances system performance by reducing latency and improving data transfer efficiency. <b>Auto</b> is default and controlled by SI Compatibility and Directory Mode <b>Enabled/Disabled</b> .

**Table 40. Processor Settings details (continued)**

Option	Description
<b>Dell Controlled Turbo</b>	
<b>Dell Controlled Turbo Setting</b>	Controls the turbo engagement. Enable this option only when System Profile is set to <b>Performance</b> or <b>Custom</b> , and CPU Power Management is set to <b>Performance</b> . This option is set to <b>Disabled</b> by default.
<b>Dell AVX Scaling Technology</b>	Enables you to configure the Dell AVX scaling technology. This option is set to <b>0</b> 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.
<b>Number of Cores per Processor</b>	Controls the number of enabled cores in each processor. This option is set to <b>All</b> by default.
<b>CPU Physical Address Limit</b>	Limit CPU physical address to 46 bits to support older Hyper-V. If enabled, automatically disables TME-MT. This option is set to <b>Enabled</b> by default.
<b>AMP Prefetch</b>	This option enables one of the Mid-Level Cache (MLC) AMP hardware Prefetcher. This option is set to <b>Disabled</b> by default.
<b>Homeless Prefetch</b>	This option allows L1 Data Cache Unit (DCU) to prefetch, when the Fill Buffers (FB) is full. Auto maps to hardware default setting. This option is set to <b>Auto</b> by default.
<b>Uncore Frequency RAPL</b>	This setting controls whether the Running Average Power Limit (RAPL) balancer is enabled or not. If enabled, it activates the uncore power budgeting. This option is set to <b>Enabled</b> by default.
<b>Processor Core Speed</b>	Specifies the maximum core frequency of the processor.
<b>Local Machine Check Exception</b>	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 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 <b>Enabled</b> by default.
<b>CPU Crash Log Support</b>	This field controls Intel CPU Crash Log feature for collection of previous crash data from shared SRAM of Out-of-Band Management Service Module at post reset. This option is set to <b>Disabled</b> by default.
<b>PROCESSOR n</b>	<p> <b>NOTE:</b> 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 41. Processor n details**

Option	Description
<b>Family-Model-Stepping</b>	Specifies the family, model, and stepping of the processor as defined by Intel.

**Table 41. Processor n details (continued)**

Option	Description
<b>Brand</b>	Specifies the brand name.
<b>Level 2 Cache</b>	Displays the amount of memory in the processor cache.
<b>Level 3 Cache</b>	Displays the amount of memory in the processor cache.
<b>Number of Cores</b>	Specifies the number of cores per processor.
<b>Microcode</b>	Specifies the processor microcode version.

## NVMe Settings

This option sets the NVMe drive mode.

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

**Table 42. NVMe Settings details**

Option	Description
<b>NVMe Mode</b>	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 <b>RAID Mode</b> . You may also need to change the Boot Mode setting to <b>UEFI</b> . Otherwise, you should set this field to <b>Non RAID Mode</b> . The option is set to <b>Non RAID</b> mode by default.
<b>BIOS NVMe Driver</b>	Dell Qualified NVMe drives always use the UEFI NVMe driver built into the Dell BIOS. When this option is set to <b>All Drives</b> , the BIOS driver will also be used with any NVMe drives in the system that has not been qualified by Dell. <i>i</i> <b>NOTE:</b> When this option is set to <b>All Drives</b> and non-Dell qualified NVMe drives are present, you have a configuration that has not been validated which may lead to unexpected behavior. The available options are <b>Dell Qualified Drives</b> and <b>All Drives</b> . This option is set to <b>Dell Qualified Drives</b> by default.

## Boot Settings

**Boot Settings** 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.


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

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

**Table 43. Boot Settings details**

Option	Description
<b>Boot Mode</b>	Enables you to set the boot mode of the system. This option is set to <b>UEFI</b> by default.
<b>Boot Sequence Retry</b>	Enables or disables the Boot sequence retry feature or resets the system. When this option is set to <b>Enabled</b> and the system fails to boot, the system re-attempts the boot sequence after 30 seconds. When this option is set to <b>Reset</b> and the

**Table 43. Boot Settings details (continued)**


Option	Description
	system fails to boot, the system reboots immediately. This option is set to <b>Enabled</b> by default.
<b>Generic USB Boot</b>	Enables or disables the generic USB boot placeholder. This option is set to <b>Disabled</b> by default.
<b>Hard-disk Drive Placeholder</b>	Enables or disables the Hard-disk drive placeholder. This option is set to <b>Disabled</b> by default.
<b>Clean all SysPrep variables and order</b>	When this option is set to <b>None</b> , BIOS will do nothing. When set to <b>Yes</b> , 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 <b>UEFI Boot Mode</b> . This option is set to <b>None</b> by default.
<b>UEFI Boot Settings</b>	Specifies the UEFI boot sequence. Enables or disables UEFI Boot options.  <b>NOTE:</b> This option controls the UEFI boot order. The first option in the list will be attempted first.

**Table 44. UEFI Boot Settings**

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

## 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 45. Network Settings details**

Option	Description
<b>UEFI PXE Settings</b>	Enables you to control the configuration of the UEFI PXE device.
<b>Number of PXE Devices</b>	This field specifies the number of PXE devices. This option is set to <b>4</b> by default.
<b>PXE Device n (n = 1 to 4)</b>	Enables or disables the device. When enabled, a UEFI PXE boot option is created for the device.
<b>PXE Device n Settings (n = 1 to 4)</b>	Enables you to control the configuration of the PXE device.
<b>UEFI HTTP Settings</b>	Enables you to control the configuration of the UEFI HTTP device.
<b>HTTP Device n (n = 1 to 4)</b>	Enables or disables the device. When enabled, a UEFI HTTP boot option is created for the device.
<b>HTTP Device n Settings (n = 1 to 4)</b>	Enables you to control the configuration of the HTTP device.
<b>UEFI iSCSI Settings</b>	Enables you to control the configuration of the iSCSI device.
<b>iSCSI Initiator Name</b>	Specifies the name of the iSCSI initiator in IQN format.
<b>iSCSI Device1</b>	Enables or disables the iSCSI device. When disabled, a UEFI boot option is created for the iSCSI device automatically. This is set to <b>Disabled</b> by default.
<b>iSCSI Device1 Settings</b>	Enables you to control the configuration of the iSCSI device.
<b>UEFI NVMe-oF Settings</b>	Enables you to control the configuration of the NVMe-oF devices.

**Table 45. Network Settings details (continued)**

Option	Description
<b>NVMe-oF</b>	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 <b>Disabled</b> by default.
<b>NVMe-oF Host NQN</b>	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 <b>nqn.1988-11.com.dell:&lt;model name&gt;.&lt;model number&gt;.&lt;service tag&gt;</b> by default.
<b>NVMe-oF Host Id</b>	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. This is set to <b>FFFFFFFF-FFFF-FFFF-FFFF-FFFFFFFFFFFFFF</b> by default.
<b>Host Security Key Path</b>	This field specifies the Host security key path.
<b>NVMe-oF SubSystem Settings</b>	This field controls the parameters for the NVMe-oF subsystem n connections.

**Table 46. PXE Device n Settings details**

Option	Description
<b>Interface</b>	Specifies NIC interface used for the PXE device.
<b>Protocol</b>	Specifies Protocol used for PXE device. This option is set to <b>IPv4</b> or <b>IPv6</b> . This option is set to <b>IPv4</b> by default.
<b>VLAN</b>	Enables VLAN for PXE device. This option is set to <b>Enabled</b> or <b>Disabled</b> . This option is set to <b>Disabled</b> by default.
<b>VLAN ID</b>	Shows the VLAN ID for the PXE device
<b>VLAN Priority</b>	Shows the VLAN Priority for the PXE device.

**Table 47. HTTP Device n Settings details**

Option	Description
<b>Interface</b>	Specifies NIC interface used for the HTTP device.
<b>Protocol</b>	Specifies Protocol used for HTTP device. This option is set to <b>IPv4</b> or <b>IPv6</b> . This option is set to <b>IPv4</b> by default.
<b>VLAN</b>	Enables VLAN for HTTP device. This option is set to <b>Enable</b> or <b>Disable</b> . This option is set to <b>Disable</b> by default.
<b>VLAN ID</b>	Shows the VLAN ID for the HTTP device
<b>VLAN Priority</b>	Shows the VLAN Priority for the HTTP device.
<b>DHCP</b>	Enables or disables DHCP for this HTTP device. This option is set to <b>Enable</b> by default.
<b>IP Address</b>	Specifies IP address for the HTTP device.
<b>Subnet Mask</b>	Specifies subnet mask for the HTTP device.
<b>Gateway</b>	Specifies gateway for the HTTP device.
<b>DNS info via DHCP</b>	Enables or disables DNS Information from DHCP. This option is set to <b>Enable</b> by default.
<b>Primary DNS</b>	Specifies the primary DNS server IP address for the HTTP Device.
<b>Secondary DNS</b>	Specifies the secondary DNS server IP address for the HTTP Device.




**Table 47. HTTP Device n Settings details (continued)**

Option	Description
<b>URI</b> (will obtain from DHCP server if not specified)	Obtain URI from the DHCP server if not specified
<b>TLS Authentication Configuration</b>	Specifies the option for TLS authentication configuration.

**Table 48. TLS Authentication Configuration screen details**

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

**Table 49. iSCSI Device1 Settings screen details**

Option	Description
<b>Connection 1</b>	Enables or disables the iSCSI connection. This option is set to <b>Disabled</b> by default.
<b>Connection 2</b>	Enables or disables the iSCSI connection. This option is set to <b>Disabled</b> by default.
<b>Connection 1 Settings</b>	Enables you to control the configuration for the iSCSI connection.
<b>Connection 2 Settings</b>	Enables you to control the configuration for the iSCSI connection.
<b>Connection Order</b>	Enables you to control the order for which the iSCSI connections will be attempted.
<b>iSCSI F1/F2 Prompt on Error</b>	<p>This field determines whether the BIOS stops and displays a prompt when iSCSI connection errors occur during POST. The BIOS will display the prompt when this setting is Enabled; otherwise, the BIOS will continue through POST and attempt to boot an operating system.</p> <p> <b>NOTE:</b> This setting will be grayed out if F1/F2 Prompt on Error in the Miscellaneous Settings menu is <b>Disabled</b></p>

**Table 50. Connection n Settings screen details**

Option	Description
<b>Interface</b>	NIC interface used for this iSCSI connection.
<b>Protocol</b>	This field controls the Internet Protocol used for this iSCSI connection.
<b>VLAN</b>	VLAN Enable/Disable for this iSCSI connection.
<b>VLAN ID</b>	VLAN ID for this iSCSI connection.
<b>VLAN Priority</b>	VLAN priority for this iSCSI connection.
<b>Retry Count</b>	Retry Count for this iSCSI connection.
<b>Timeout</b>	Timeout for this iSCSI connection in milliseconds.
<b>DHCP</b>	DHCP Enable/Disable for this iSCSI connection.
<b>Initiator IP Address</b>	Initiator IP Address for this iSCSI connection.
<b>Initiator Subnet Mask</b>	Initiator Subnet Mask for this iSCSI connection.
<b>Initiator Gateway</b>	Initiator Gateway for this iSCSI connection.
<b>Target info via DHCP</b>	Target DHCP Enable/Disable for this iSCSI connection.
<b>Target Name</b>	Target name for this iSCSI connection in IQN format.

**Table 50. Connection n Settings screen details (continued)**

Option	Description
<b>Target IP Address</b>	Target IP Address for this iSCSI connection.
<b>Target Port</b>	Target Port for this iSCSI connection. The standard port number for iSCSI connections is 3260.
<b>Target Boot Lun</b>	Target LUN for this iSCSI connection. The value format is a string containing a hexadecimal-encoded representation of the 64-bit SCSI Logical Unit Number in the format described in the T10 SCSI Architecture Model specification. This format consists of four 2-byte fields separated by dashes. In most cases, the human-oriented logical unit number will be in the high-order two bytes and the low-order six bytes will be zero. Examples are: 4752-3A4F-6b7e-2F99, 6734-9-156f-127, 4186-9 or 0.
<b>ISID</b>	ISID (Initiator Session ID) to use for this iSCSI connection. The value is 6 hexadecimal numbers - such as 3ABBCCDDEEFF or 000000000000. If left blank, the ISID will be derived from the MAC ID of the assigned NIC interface for the connection.
<b>Authentication Type</b>	Authentication type for this iSCSI connection.
<b>CHAP Type</b>	CHAP type for this iSCSI connection.
<b>CHAP Name</b>	CHAP name for this iSCSI connection.
<b>CHAP Secret</b>	CHAP secret for this iSCSI connection. Minimum length is 12 and maximum is 16.
<b>Reverse CHAP Name</b>	Reverse CHAP name for this iSCSI connection.
<b>Reverse CHAP Secret</b>	Reverse CHAP secret for this iSCSI connection. Minimum length is 12 and maximum is 16.

**Table 51. NVMe-oF SubSystem Settings screen details**

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

**Table 52. NVMe-oF SubSystem Settings**

Option	Description
<b>Interface</b>	NIC interface used for NVMe-oF connections.
<b>Transport Type</b>	This field sets the value of transport type for NVMe-oF connection. This option is set to <b>TCP</b> by default.
<b>Protocol</b>	This field sets the value of protocol type for NVMe-oF connection. This option is set to <b>IPv4</b> by default.
<b>VLAN</b>	Enables or disables VLAN for this NVMe-oF connections. This option is set to <b>Disabled</b> by default.
<b>VLAN ID</b>	Specifies the VLAN Id for this NVMe-oF connection. This option is set to <b>1</b> by default.
<b>VLAN Priority</b>	Specifies the VLAN priority for this NVMe-oF connection. This option is set to <b>0</b> by default.
<b>Retry Count</b>	Specifies the retry count for this NVMe-oF connection. This option is set to <b>3</b> by default.
<b>Timeout</b>	Specifies the time out for this NVMe-oF connection. This option is set to <b>10000</b> by default.

**Table 52. NVMe-oF SubSystem Settings (continued)**

Option	Description
<b>DHCP</b>	Enables and disables the DHCP for this NVMe-oF connection. This option is set to <b>Disabled</b> by default.
<b>Host IP Address</b>	Specifies the Host IP Address for this NVMe-oF connection.
<b>Host Subnet Mask</b>	Specifies the Host Subnet Mask for this NVMe-oF connection.
<b>Host Gateway</b>	Specifies the Host Gateway for this NVMe-oF connection.
<b>NVMe-oF Subsystem info via DHCP</b>	Enables and disables the NVMe-oF subsystem's DHCP for this connection. This option is set to <b>Disabled</b> by default.
<b>NVMe-oF Subsystem NQN</b>	Specifies the NVMe-oF subsystem's NQN for this connection.
<b>NVMe-oF Subsystem Address</b>	Specifies the NVMe-oF subsystem's IP address for this connection.
<b>NVMe-oF Subsystem Port</b>	Specifies the NVMe-oF subsystem's port for this connection. This option is set to <b>4420</b> by default.
<b>NVMe-oF Subsystem NID</b>	Specifies the NamespaceID (NID) for this NVMe-oF connection.
<b>NVMe-oF Subsystem Controller ID</b>	Specifies the NVMe-oF subsystem's Controller ID for this connection. This option is set to <b>0</b> by default.
<b>Security</b>	Enables or disables the security option for this NVMe-oF connection. This option is set to <b>Disabled</b> by default.
<b>Authentication Type</b>	Specifies the authentication type for this NVMe-oF connection. This option is set to <b>None</b> by default.
<b>SecurityKeyPath</b>	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 53. Integrated Devices details**

Option	Description
<b>User Accessible USB Ports</b>	Configures the user accessible USB ports. Selecting <b>All Ports Off</b> disables all USB ports. ; Selecting <b>All Ports Off (Dynamic)</b> disables all USB ports during POST. Front ports can be enabled or disabled dynamically by authorized users without resetting the system. This option is set to <b>All Ports On</b> by default.  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.
<b>iDRAC Direct USB Port</b>	The iDRAC Direct USB port is managed by iDRAC exclusively with no host visibility. This option is set to <b>ON</b> or <b>OFF</b> . When set to <b>OFF</b> , iDRAC does not detect any USB devices that are installed in this managed port. This option is set to <b>On</b> by default.
<b>Embedded NIC1 and NIC2</b>	Enables or disables the Embedded NIC1 and NIC2. If set to <b>Disabled (OS)</b> , the NIC may still be available for shared network access by the embedded management controller. This option is set to <b>Enabled</b> by default.
<b>I/OAT DMA Engine</b>	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 <b>Disabled</b> by default.
<b>Embedded Video Controller</b>	Enables or disables the use of the Embedded Video Controller as the primary display. When set to <b>Enabled</b> , the Embedded Video Controller will be the

**Table 53. Integrated Devices details (continued)**

Option	Description
	<p>primary display even if add-in graphic cards are installed. When set to <b>Disabled</b>, 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 the POST and preboot environment. The embedded video will then be disabled right before the operating system boots. This option is set to <b>Enabled</b> by default.</p> <p><b>NOTE:</b> When there are multiple add-in graphic cards that are installed in the system, the first card that is 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>
<b>I/O Snoop HoldOff Response</b>	<p>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 available option is <b>2K Cycles</b> by default.</p>
<b>Current State of Embedded Video Controller</b>	<p>Displays the current state of the embedded video controller. The <b>Current State of Embedded Video Controller</b> 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 <b>Embedded Video Controller</b> setting is set to <b>Disabled</b>.</p>
<b>SR-IOV Global Enable</b>	<p>Enables or disables the BIOS configuration of Single Root I/O Virtualization (SR-IOV) devices. This option is set to <b>Disabled</b> by default.</p>
<b>OS Watchdog Timer</b>	<p>If your system stops responding, this watchdog timer aids in the recovery of your operating system. When this option is set to <b>Enabled</b>, the operating system initializes the timer. When this option is set to <b>Disabled</b> (the default), the timer does not have any effect on the system.</p>
<b>NIC ACPI</b>	<p>Enables or disables NIC ACPI device name information. When set to Enabled, publish ACPI device name for NICs on PCIe slots. This option is set to <b>Disabled</b> by default.</p> <p><b>NOTE:</b> Changing this setting will cause the NIC name to change under Linux.</p>
<b>Empty Slot Unhide</b>	<p>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 <b>Disabled</b> by default.</p>
<b>IIO PCIe Data Link Feature Exchange</b>	<p>This field allows globally disabling PCIe Data Link Feature Exchange. This may be needed to support certain legacy hardware.</p>
<b>Slot Disablement</b>	<p>Enables or disables the available PCIe slots on your system. The slot disablement feature controls the configuration of the PCIe cards that are 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 slots that are present on the system will be available for control. <b>Slot n:</b> Enables or disables or only the boot driver is disabled for the PCIe slot n. This option is set to <b>Enabled</b> by default.</p>
<b>Slot Bifurcation</b>	<p><b>Auto Discovery Bifurcation Settings</b> allows <b>Platform Default Bifurcation</b>, <b>Auto Discovery of Bifurcation</b> and <b>Manual Bifurcation Control</b>.</p>
	<p>This option is set to <b>Platform Default Bifurcation</b> by default. The slot bifurcation field is accessible when set to <b>Manual Bifurcation Control</b> and is grayed out when set to <b>Platform Default Bifurcation</b> and <b>Auto Discovery of Bifuraction</b>.</p> <p><b>NOTE:</b> The slot bifurcation supports on PCIe slot only, does not support slot type from Paddle card to Riser and Slimline connector to Riser.</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 XR8620t system. The Serial Communication option is applicable only if the serial COM port is installed in the system.

**Table 54. Serial Communication details**

Option	Description
<b>Serial Communication</b>	<p>Enables the serial communication options. Selects serial communication devices (Serial Device 1 and Serial Device 2) in BIOS. BIOS console redirection can also be enabled, and the port address can be specified.</p> <p>The options available for System are <b>On without Console Redirection</b>, <b>On with Console Redirection via COM1</b>, <b>On with Console Redirection via COM2</b>, <b>Off</b>, <b>Auto</b>. This option is set to <b>Auto</b> by default.</p>
<b>Serial Port Address</b>	<p>Enables you to set the port address for serial devices. This option is set to <b>Serial Device1=COM2, Serial Device2=COM1</b> by default.</p> <p><b>NOTE:</b> 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><b>NOTE:</b> 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 BIOS setup utility may not always revert the serial MUX setting to the default setting of Serial Device 1.</p>
<b>External Serial Connector</b>	<p>Enables you to associate the External Serial Connector to <b>Serial Device 1</b>, <b>Serial Device 2</b>, or the <b>Remote Access Device</b> by using this option. This option is set to <b>Serial Device 1</b> by default.</p> <p><b>NOTE:</b> 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><b>NOTE:</b> 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>
<b>Failsafe Baud Rate</b>	<p>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 <b>115200</b> by default.</p>
<b>Remote Terminal Type</b>	<p>Sets the remote console terminal type. This option is set to <b>VT100/VT220</b> by default.</p>
<b>Redirection After Boot</b>	<p>Enables or disables the BIOS console redirection when the operating system is loaded. This option is set to <b>Enabled</b> by default.</p>

## 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 55. System Profile Settings details**

Option	Description
<b>System Profile</b>	<p>Sets the system profile. If you set the System Profile option to a mode other than <b>Performance Per Watt (DAPC)</b>, the BIOS automatically sets the rest of the options. You can only change the rest of the options if the mode is set to <b>Custom</b>. This option is set to <b>Performance Per Watt (DAPC)</b> by default. Other options include <b>Performance</b>, <b>Performance Per Watt (OS)</b>, <b>Workstation Performance</b> and <b>Custom</b>.</p> <p><b>i</b> <b>NOTE:</b> All the parameters on the system profile setting screen are available only when the <b>System Profile</b> option is set to <b>Custom</b>.</p>
<b>Optimized Power Mode</b>	<p>When set to <b>Enabled</b>, processor is tuned for lower power consumption. Also sets C1E to <b>Enabled</b>, sets CPU Power Management to System DBPM mode, sets Energy-Efficient Policy to Performance, sets Uncore Frequency to Dynamic, and sets Dynamic Load Line Switch to <b>Enabled</b>.</p>
<b>CPU Power Management</b>	<p>Sets the CPU power management. This option is set to <b>System DBPM (DAPC)</b> by default. Other options include <b>Maximum Performance, OS DBPM</b>.</p>
<b>Memory Frequency</b>	<p>Sets the speed of the system memory. This option is set to <b>Maximum Performance</b> by default.</p>
<b>Turbo Boost</b>	<p>Enables or disables the processor to operate in the turbo boost mode. This option is set to <b>Enabled</b> by default.</p>
<b>Energy Efficient Turbo</b>	<p>Energy Efficient Turbo (EET) is a mode of operation where a processor's core frequency is adjusted within the turbo range based on workload. This option is set to <b>Enabled</b> by default.</p>
<b>C1E</b>	<p>Enables or disables the processor to switch to a minimum performance state when it is idle. This option is set to <b>Enabled</b> by default.</p>
<b>C-States</b>	<p>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 <b>Enabled</b> (OS controlled) or when set to <b>Autonomous</b> (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 <b>Enabled</b> by default.</p>
<b>Memory Patrol Scrub</b>	<p>Sets the memory patrol scrub mode. This option is set to <b>Standard</b> by default.</p>
<b>Memory Refresh Rate</b>	<p>Sets the memory refresh rate, this option is set to <b>1x</b> by default.</p>
<b>Uncore Frequency</b>	<p>Enables you to select the <b>Uncore Frequency</b> option. <b>Dynamic</b> 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 <b>Energy Efficiency Policy</b> option.</p>
<b>Dynamic Load Line Switch</b>	<p>Dynamic Load Line Switch control. Dynamic Load Line (DLL) is a Power Management feature, which dynamically switches to the performance mode during periods of high CPU utilization. Read-only unless System Profile is set to <b>Custom</b>.</p>
<b>Energy Efficient Policy</b>	<p>Enables you to select the <b>Energy Efficient Policy</b> 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 <b>Balanced Performance</b> by default.</p>
<b>Monitor/Mwait</b>	<p>Enables the Monitor/Mwait instructions in the processor. This option is set to <b>Enabled</b> for all system profiles, except <b>Custom</b> by default.</p> <p><b>i</b> <b>NOTE:</b> This option can be disabled only if the C States option in the Custom mode is set to disabled.</p> <p><b>i</b> <b>NOTE:</b> When C States is set to Enabled in the Custom mode, changing the Monitor/Mwait setting does not impact the system power or performance.</p>
<b>Workload Profile</b>	<p>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 <b>Not Configured</b> by default. Below is the list of available profiles:</p> <ul style="list-style-type: none"> <li>• Not Configured</li> <li>• HPC Profile</li> </ul>

**Table 55. System Profile Settings details (continued)**

Option	Description
	<ul style="list-style-type: none"> <li>• Low Latency Optimized Profile</li> <li>• Virtualization Optimized Performance Profile</li> <li>• Virtualization Optimized Performance Per Watt Profile</li> <li>• Database Optimized Performance Profile</li> <li>• Database Optimized Performance Per Watt Profile</li> <li>• SDS Optimized Performance Profile</li> <li>• SDS Optimized Performance Per Watt Profile</li> <li>• Telco Optimized Profile</li> <li>• NFVI FP Optimized Turbo Profile</li> <li>• NFVI FP Energy-Balance Turbo Profile</li> </ul>
<b>CPU Interconnect Bus Link Power Management</b>	Enables or disables the CPU Interconnect Bus Link Power Management. This option is set to <b>Enabled</b> by default.
<b>PCI ASPM L1 Link Power Management</b>	Enables or disables the PCI <b>ASPM L1 Link Power Management</b> . This option is set to <b>Enabled</b> by default.
<b>Workload Configuration</b>	This field controls the Energy Performance Bias settings to allow BIOS to choose a configuration that improves performance on certain workload. The two options for selection are <b>Balance</b> and <b>IO Sensitive</b> . This option is set to <b>Balance</b> 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 56. System Security details**

Option	Description
<b>CPU AES-NI</b>	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 <b>Enabled</b> by default.
<b>Strong Password Status</b>	If <b>Enabled</b> , you must set up a password that has at least one character in lowercase, uppercase, digit, and a special character. Also, you have the option to set the minimum number of characters in both the new passwords. If <b>Disabled</b> , you can set a password that has any character in it but the password must not have more than 32 characters. Changes that are made by enabling or disabling this feature become immediately effective.
<b>Strong Password Minimum Length (8 to 32)</b>	Controls the minimum number of characters when setting a system or setup password. You can specify <b>8-32</b> characters.
<b>System Password</b>	Sets the system password. This option is read-only if the password jumper is not installed in the system.
<b>Setup Password</b>	Sets the setup password. This option is read-only if the password jumper is not installed in the system.
<b>Password Status</b>	Locks the system password. This option is set to <b>Unlocked</b> by default.
<b>TPM Information</b>	Indicates the type of Trusted Platform Module, if present.

**Table 57. TPM 2.0 security information**

Option	Description
<b>TPM Information</b>	
<b>TPM Security</b>	 <b>NOTE:</b> The TPM menu is available only when the TPM module is installed.



**Table 57. TPM 2.0 security information (continued)**

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

**Table 58. System Security details**

Option	Description
<b>Intel(R) TXT</b>	Enables you to set the Intel Trusted Execution Technology (TXT) option. To enable the <b>Intel TXT</b> option, virtualization technology and TPM Security must be enabled with Pre-boot measurements. This option is set to <b>Off</b> by default. It is set <b>On</b> for Secure Launch (Firmware Protection) support.
<b>Memory Encryption</b>	Enables or disables the Intel Total Memory Encryption (TME) and Multi-Tenant (Intel® TME-MT). When option is set to <b>Disabled</b> , BIOS disables both TME and TME-MT technology. When option is set to <b>Single Key</b> BIOS enables the TME technology. When option is set to <b>Multiple Keys</b> , BIOS enables the TME-MT technology. This option is set to <b>Disabled</b> by default.
<b>Global Memory Integrity</b>	Allows enabling or disabling of the Intel Global Memory Integrity. The Global Mem Integrity can be <b>enabled</b> only if Processor Settings -> CPU Physical Address Limit is <b>disabled</b> .
<b>TME Encryption Bypass</b>	Enables you to bypass the Intel Total Memory Encryption. This option is set to <b>Disabled</b> by default.
<b>Intel Trust Domain Extension(TDX)</b>	Intel Trust Domain Extension (TDX) is a hardware-based trusted execution environment. It is designed to protect sensitive data and applications in Trust Domain(TD) or Virtual Machine(VM) from unauthorized access. Memory Encryption must be set to Multiple Keys for TDX to be enabled. TDX is set to <b>Disabled</b> by default
<b>TME-MT/TDX Key Spilt to non-zero value</b>	When the TME-MT/TDX Key Spilt to non-zero value is set to 1, 2, 3, 4, 5, or 6, it designates the number of bits for TDX usage, while the rest will be used by TME-MT. It is set to <b>1</b> by default.
<b>TDX Secure Arbitration Mode Loader(SEAM)</b>	This SW module runs in a new CPU Secure Arbitration Mode (SEAM) as peer virtual machine manager (VMM). This SEAM module supports TD entry and exit using the existing virtualization infrastructure. It is set to <b>Disabled</b> by default.
<b>Intel(R) SGX</b>	Enables you to set the Intel Software Guard Extension (SGX) option. To enable the <b>Intel SGX</b> 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 <b>Off</b> by default. When this option is to <b>Off</b> , BIOS disables the SGX technology. When this option is to <b>On</b> , BIOS enables the SGX technology.
<b>Power Button</b>	Enables or disables the power button on the front of the system. This option is set to <b>Enabled</b> by default.



**Table 58. System Security details (continued)**

Option	Description
<b>AC Power Recovery</b>	Sets how the system behaves after AC power is restored to the system. This option is set to <b>Last</b> by default. <b>i</b> <b>NOTE:</b> The host will not power up until iDRAC completes cryptographic verification of BIOS to ensure platform security. Host power on will be delayed by few minutes after AC power is applied.
<b>AC Power Recovery Delay</b>	Sets the time delay for the system to power up after AC power is restored to the system. This option is set to <b>Immediate</b> by default. When this option is set to <b>Immediate</b> , there is no delay for power up. When this option is set to <b>Random</b> , the system creates a random delay for power up. When this option is set to <b>User Defined</b> , the system delay time is manually to power up.
<b>User Defined Delay (120 s to 600 s)</b>	Sets the <b>User Defined Delay</b> option when the <b>User Defined</b> option for <b>AC Power Recovery Delay</b> is selected. The actual AC recovery time needs to add iDRAC cryptographic verification of BIOS time.
<b>UEFI Variable Access</b>	Provides varying degrees of securing UEFI variables. When set to <b>Standard</b> (the default), UEFI variables are accessible in the operating system per the UEFI specification. When set to <b>Controlled</b> , 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.
<b>In-Band Manageability Interface</b>	When set to <b>Disabled</b> , 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 <b>Enabled</b> by default. <b>i</b> <b>NOTE:</b> 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.
<b>SMM Security Mitigation</b>	Enables or disables the UEFI SMM security mitigation protections. It is set to <b>Disabled</b> by default.
<b>Intel (R) In-Field Scan</b>	The Intel(R) In-field Scan feature allows software to scan processor cores for latent faults. The scan can be performed in the field after the server is deployed. When this setting is <b>Enabled</b> , the BIOS configures all processors to respond to software scan requests. When this setting is <b>Disabled</b> , the processors will not respond to software scan requests.
<b>Secure Boot</b>	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 <b>Disabled</b> by default.
<b>Secure Boot Policy</b>	When the Secure Boot policy is set to <b>Standard</b> , the BIOS uses the system manufacturer's key and certificates to authenticate pre-boot images. When the Secure Boot policy is set to <b>Custom</b> , the BIOS uses the user-defined key and certificates. The secure Boot policy is set to <b>Standard</b> by default.
<b>Secure Boot Mode</b>	Configures how the BIOS uses the Secure Boot Policy Objects (PK, KEK, db, dbx). Below are the details of different boot modes available in the <b>Secure Boot Mode</b> option.  <b>User Mode</b> In <b>User Mode</b> , PK must be installed, and BIOS performs signature verification on programmatic attempts to update policy objects. The BIOS allows unauthenticated programmatic transitions between modes.  <b>Deployed Mode</b> <b>Deployed Mode</b> is the most secure mode. In <b>Deployed Mode</b> , PK must be installed and the BIOS performs signature verification on programmatic attempts to update policy objects. <b>Deployed Mode</b> restricts the programmatic mode transitions.

**Table 58. System Security details (continued)**

Option	Description
<b>Secure Boot Policy Summary</b>	Specifies the list of certificates and hashes that secure boot uses to authenticate images.
<b>Secure Boot Custom Policy Settings</b>	Configures the Secure Boot Custom Policy. To enable this option, set the Secure Boot Policy to <b>Custom</b> option.
<b>UEFI CA Certificate Scope</b>	This field specifies how Secure Boot uses the UEFI CA certificate in the Authorized Signature Database (db). When this field is set to Device Firmware and OS, Secure Boot will apply the UEFI CA certificate to all images, including device firmware, operating system loaders, and UEFI applications. When this field is set to Device Firmware, Secure Boot will apply the UEFI CA certificate only to device boot firmware, such as UEFI drivers for RAID or NIC devices. In this case, operating system loaders and UEFI applications will not execute if they are signed only by the UEFI CA key, even though the UEFI CA certificate is in db. This field is configurable only when the Secure Boot Policy is <b>Custom</b> . Otherwise, the value of this field is selected automatically based on the Secure Boot Policy setting.

## 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 59. Redundant OS Control details**

Option	Description
<b>Redundant OS Location</b>	Enables you to select a backup disk from the following devices: <ul style="list-style-type: none"> <li>None</li> <li>BOSS PCIe Cards (Internal M.2 Drives) <ul style="list-style-type: none"> <li><b>NOTE:</b> RAID configurations and NVMe cards are not included, as BIOS does not have the ability to distinguish between individual drives in those configurations.</li> </ul> </li> <li>NVMe Direct Riser (Internal M.2 NVMe Direct Riser Disk n)</li> </ul>
<b>Redundant OS State</b>	<ul style="list-style-type: none"> <li><b>NOTE:</b> This option is disabled if <b>Redundant OS Location</b> is set to <b>None</b>.</li> </ul> <p>When set to <b>Visible</b>, the backup disk is visible to the boot list and OS. When set to <b>Hidden</b>, the backup disk is disabled and is not visible to the boot list and OS. This option is set to <b>Visible</b> by default.</p> <ul style="list-style-type: none"> <li><b>NOTE:</b> BIOS disables the device in hardware, so it is not accessed by the OS.</li> </ul>
<b>Redundant OS Boot</b>	<ul style="list-style-type: none"> <li><b>NOTE:</b> This option is disabled if <b>Redundant OS Location</b> is set to <b>None</b> or if <b>Redundant OS State</b> is set to <b>Hidden</b>.</li> </ul> <p>When set to <b>Enabled</b>, BIOS boots to the device specified in <b>Redundant OS Location</b>. When set to <b>Disabled</b>, BIOS preserves the current boot list settings. This option is set to <b>Disabled</b> 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 60. Miscellaneous Settings details**

Option	Description
<b>System Time</b>	Enables you to set the time on the system.
<b>System Date</b>	Enables you to set the date on the system.
<b>Time Zone</b>	Enables you to set the time zone on the system.

**Table 60. Miscellaneous Settings details (continued)**

Option	Description
<b>Daylight Savings Time</b>	Enables you to set whether the Daylight Savings Time is enabled or disabled.
<b>Asset Tag</b>	Specifies the asset tag and enables you to modify it for security and tracking purposes.
<b>Keyboard NumLock</b>	Enables you to set whether the system boots with the NumLock enabled or disabled. This option is set to <b>On</b> by default.  <b>NOTE:</b> This option does not apply to 84-key keyboards.
<b>F1/F2 Prompt on Error</b>	Enables or disables the F1/F2 prompt on error. This option is set to <b>Enabled</b> by default. The F1/F2 prompt also includes keyboard errors.
<b>Load Legacy Video Option ROM</b>	Enables you to let the system BIOS determine whether it will load legacy video (INT 10h) option ROM from the video controller, in UEFI Boot Mode. This option is set to <b>disabled</b> by default
<b>Dell Wyse P25/P45 BIOS Access</b>	Enables or disables the Dell Wyse P25/P45 BIOS Access. This option is set to <b>Enabled</b> by default.
<b>Power Cycle Request</b>	Enables or disables the Power Cycle Request. This option is set to <b>None</b> 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 [iDRAC Manuals](#).


## Device Settings

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

## Minimum configuration to POST

The components listed below are the minimum configuration to POST:

- One processor (CPU) in processor socket
- Two memory module (DIMM) in socket A1 and A2
- One power supply unit
- XR8000r chassis (Power Distribution Board, cables)
- System board
- XR8620t sled

 **NOTE:** The system may generate errors when it is in a minimum to POST configuration. This behavior is expected as the configuration is not validated for operational use, instead, only for troubleshooting or diagnostic purposes.

# Installing and removing system components

## Topics:

- Safety instructions
- Before working inside your system
- After working inside your system
- XR8000r chassis
- Sled cover
- Air shroud
- M.2 direct riser module
- ROR N1 module
- 2U sled
- Storage interposer module
- Cooling fans
- Expansion cards and expansion card risers
- BOSS-N1 card
- Power distribution board
- Cable routing
- System memory
- Processor and heat sink module
- System battery
- System board
- Trusted Platform Module

## Safety instructions

**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.

**NOTE:** System with a cold start requirement will require active heating. When the temperature is below 5°C, it will continue to heat up to below 10°C and stop heating.

## Before working inside your system

### Prerequisites

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

### Steps

1. Power off the sled.
2. Remove the sled from the enclosure.

# After working inside your system

## Prerequisites

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

## Steps

Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.

# XR8000r chassis

## Removing a sled blank

### Prerequisites

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

### Steps

Pull the sled blank to remove it from the enclosure.



Figure 15. Removing a sled blank

### Next steps

Install a sled or sled blank.

## Installing a sled blank

### Prerequisites

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

### Steps

1. Align the sled blank with the bay of the chassis.
2. Insert and push the sled blank, until it locks into place.



Figure 16. Installing a sled blank


## Removing a sled

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Remove the front bezel, if applicable.

### Steps

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

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

 **CAUTION:** Support the system with both hands while sliding it out of the enclosure.



Figure 17. Removing a sled from XR8000r

### Next steps

[Installing the sled](#)

## Installing a sled

### Prerequisites

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

### Steps

1. Pull the blue lever on the sled to free the sled handle.
2. Holding the sled with both hands, align the sled along the sled-bay into the chassis.
3. Slide the sled into the chassis, ensure that the sled handle is in lock position.
4. Push the sled handle inwards so that it locks into place and secures the sled in the chassis.

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





**Figure 18. Installing a sled into XR8000r**

### Next steps

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

## Sled cover

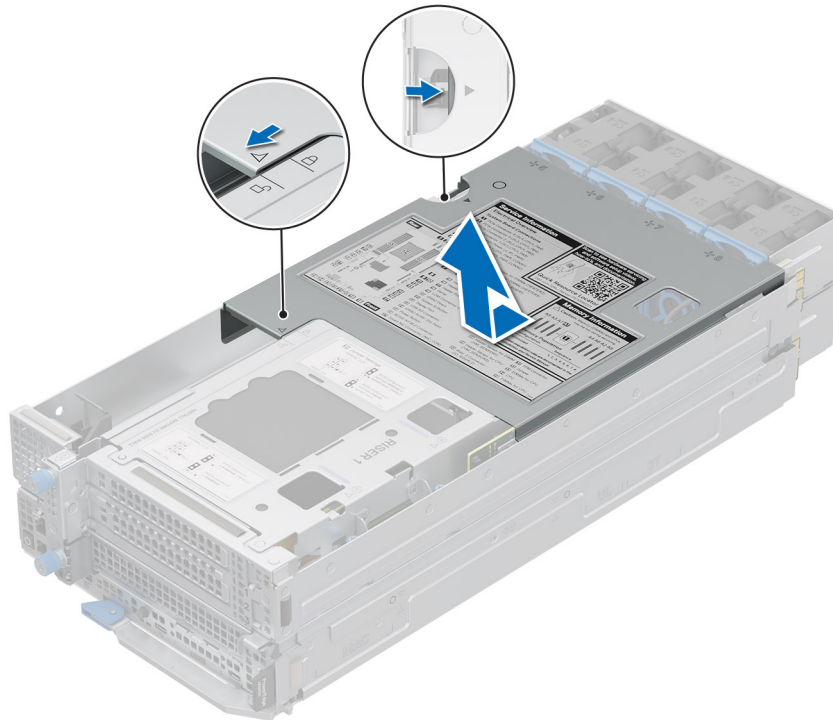
### Removing the sled cover

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Power off the sled, and any attached peripherals.
3. Follow the steps for [Removing a sled](#).
4. Place the sled on the flat surface with the top cover facing upwards.

#### Steps

1. Press the latch and slide the cover toward the front of the server until it reaches the unlock position.
2. Lift the cover from the sled.



**Figure 19. Removing the sled cover**

#### **Next steps**

Follow the procedure listed in [Replace the sled cover](#).

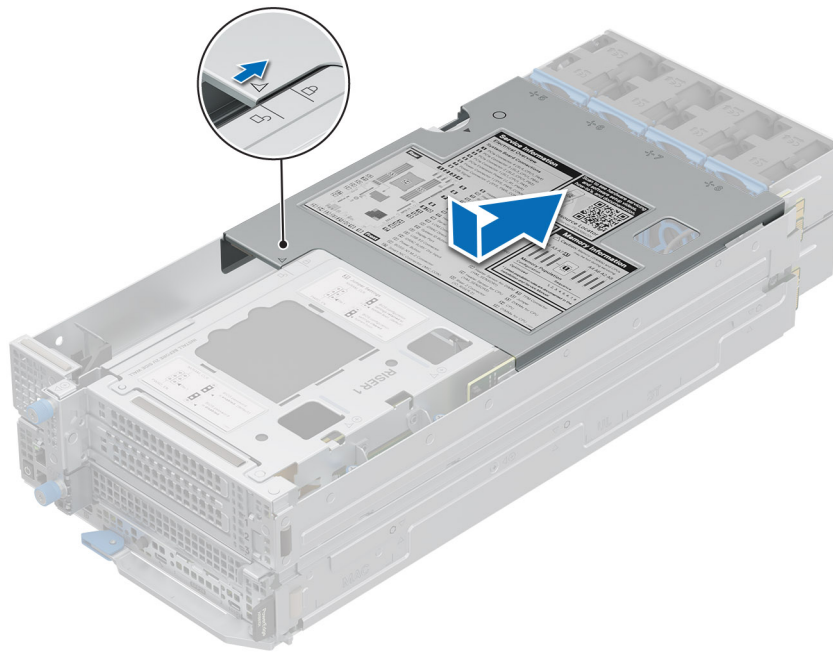
## **Installing the sled cover**

#### **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 sled cover with the guide slots on the sled and place down the sled cover.
2. Slide the cover towards the rear of the system until it locks in to place.



**Figure 20. Installing the sled cover**

**Next steps**

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 the [Before working inside your system](#).

### Steps

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

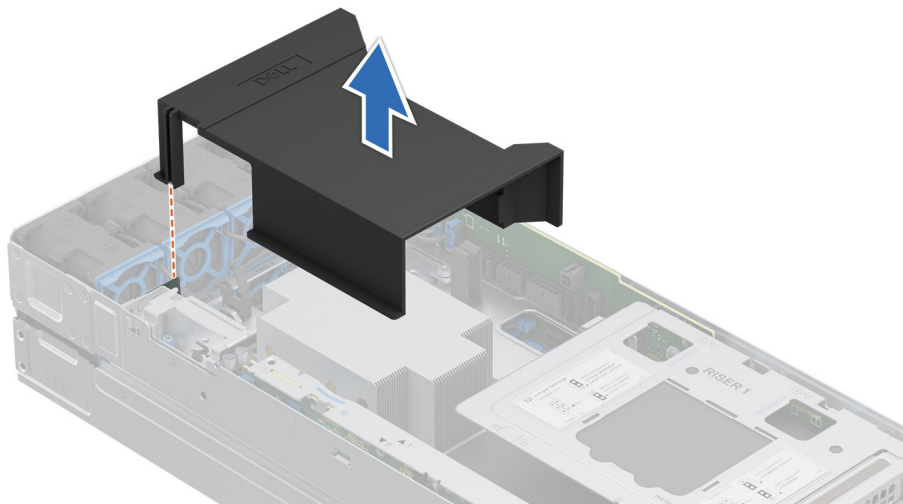


Figure 21. Removing the air shroud

### Next steps

[Replace the air shroud.](#)

## Installing the air shroud

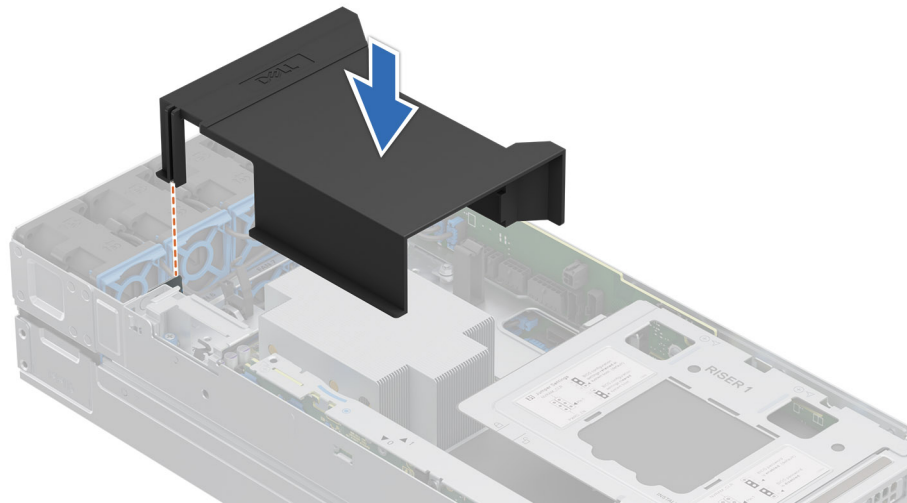
### Prerequisites

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

### Steps

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

**NOTE:** Ensure the air shroud and cables do not interfere each other.



**Figure 22. Installing the air shroud**

### **Next steps**

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

## **M.2 direct riser module**

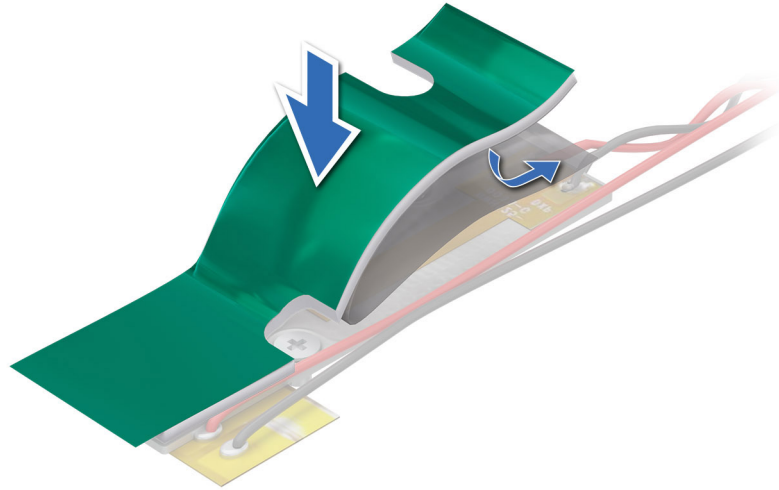
### **Installing the thermal pad to M.2 direct riser module**

#### **Prerequisites**

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

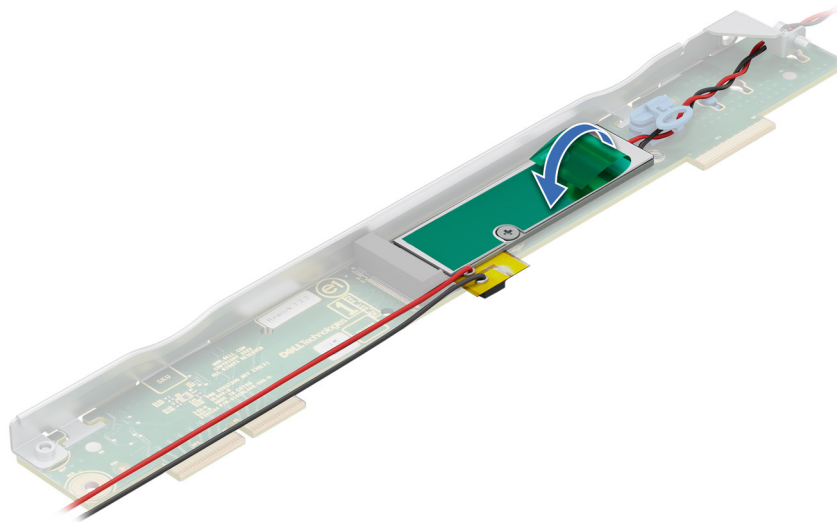
#### **Steps**

1. Peel off the release paper and paste thermal pad onto the M.2 direct riser module.



**Figure 23. Removing the release paper from thermal pad**

2. Pull to remove the cover from thermal pad.



**Figure 24. Removing cover from thermal pad**

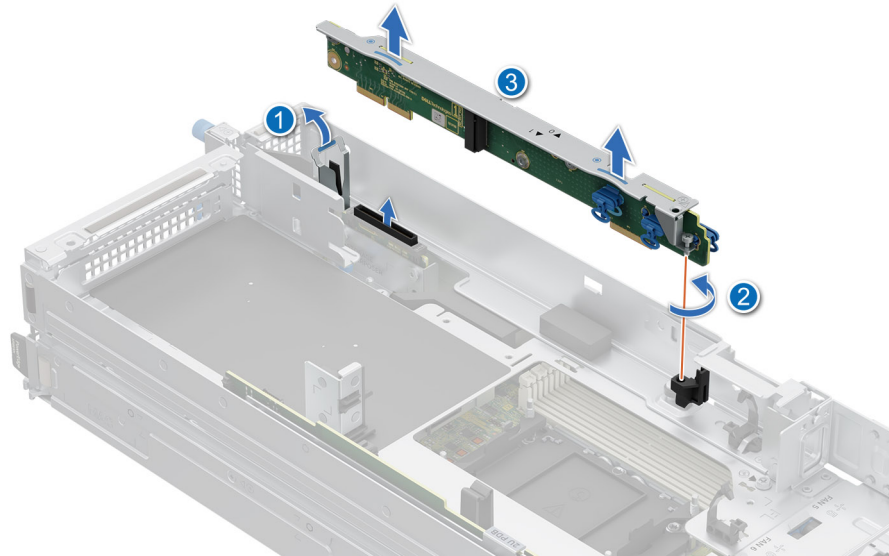
## Removing the M.2 direct riser module

### Prerequisites

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

### Steps

1. Using a Phillips 2 screwdriver, loosen the captive screw that secure the M.2 direct riser.
2. Lift the riser using the blue touch point to disengage it from the connector on the system board.



**Figure 25. Removing the M.2 direct riser**

### Next steps

Replace the M.2 direct riser.

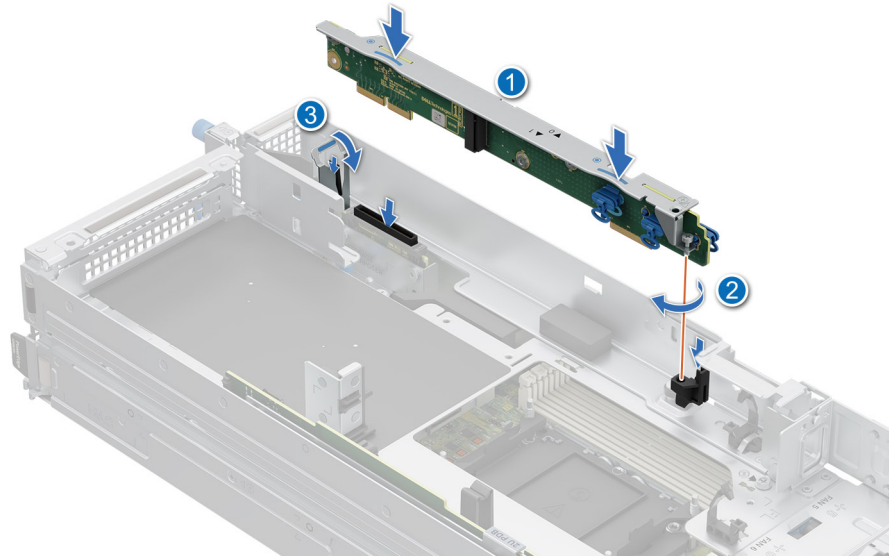
## Installing the M.2 direct riser module

### Prerequisites

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

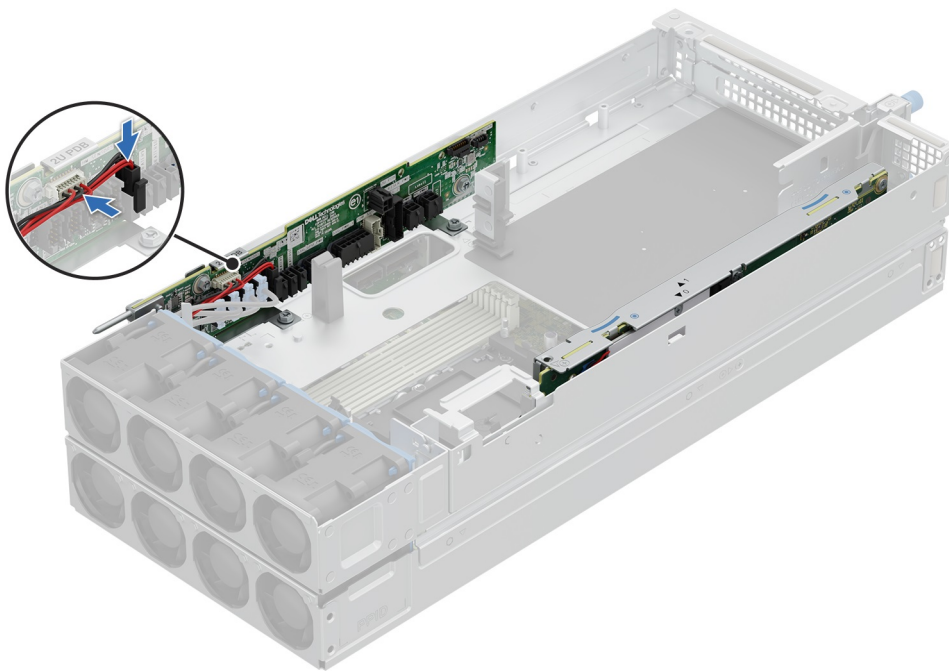
### Steps

1. Align the M.2 module with the system board and insert it firmly using the blue touch point until the riser is fully seated in the slot.
2. Using a Phillips 2 screwdriver, tighten the screw to secure the riser to the system board.



**Figure 26. Installing the M.2 direct riser**

3. For HM Configuration, connect the cable from M.2 direct riser module to 2U power distribution board.



**Figure 27. Connecting cable from M.2 direct riser module to 2U PDB**

### **Next steps**

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

## **Removing the M.2 NVMe module from the M.2 direct riser module**

### **Prerequisites**

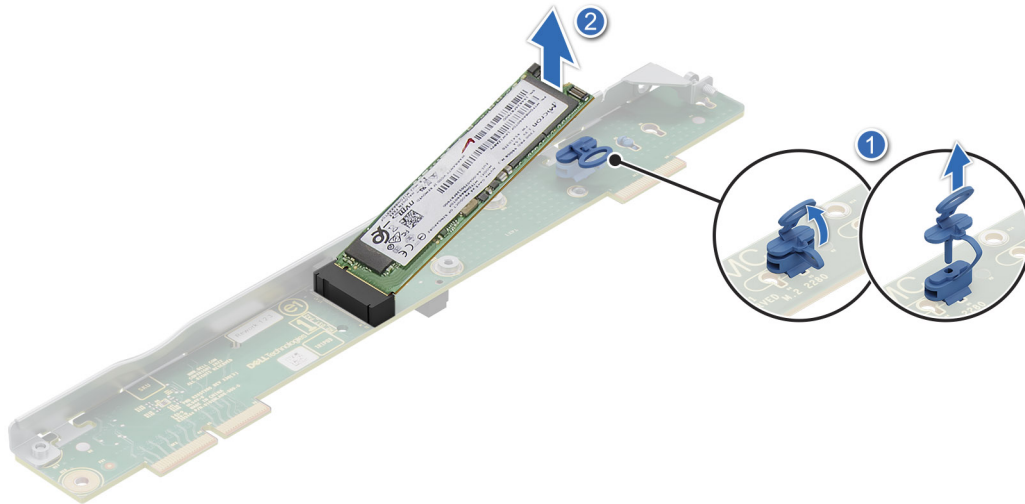
1. Follow the safety guidelines listed in [Safety instructions](#).



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

### Steps

1. To remove the M.2 NVMe module from the M.2 direct riser, rotate the latch to a horizontal position and then pull out the engage pin.
2. Pull the M.2 NVMe module to remove it from the M.2 direct riser.



**Figure 28. Removing the M.2 NVMe module**

### Next steps

Replace the M.2 NVMe module.

## Installing the M.2 NVMe module on the M.2 direct riser

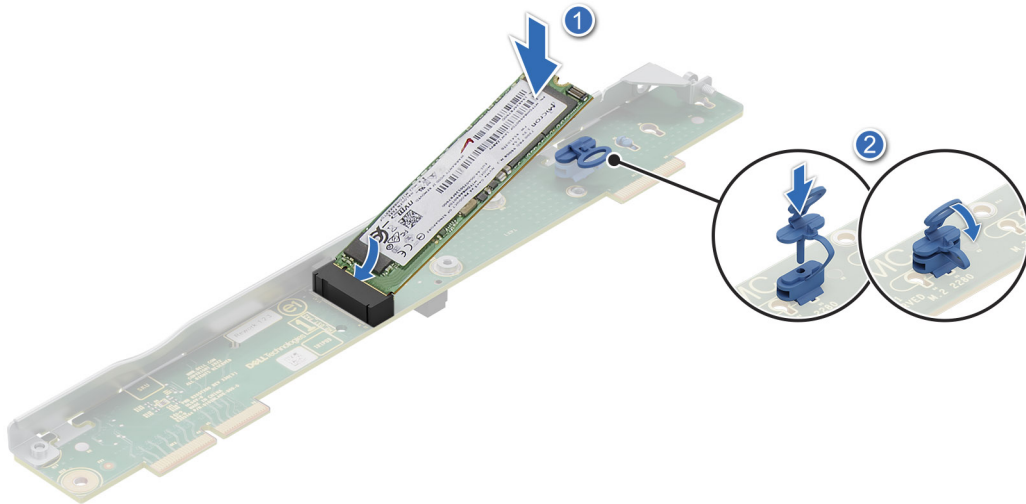
### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. Remove the latch on the snap clip and rotate the latch to a vertical position.

**NOTE:** The position of the blue latch used for the M.2 2280 and M.2 22110 NVMe drives are different.

### Steps

1. Align the M.2 NVMe module at an angle with the M.2 direct riser connector.
2. Insert the M.2 NVMe module firmly until it is fully seated in the M.2 direct riser connector.
3. To secure the M.2 NVMe module on the M.2 direct riser module, insert the engage pin to rotate the latch to a vertical position and then insert the latch into the snap clip.



**Figure 29. Installing the M.2 NVMe module**

#### **Next steps**

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

## **ROR N1 module**

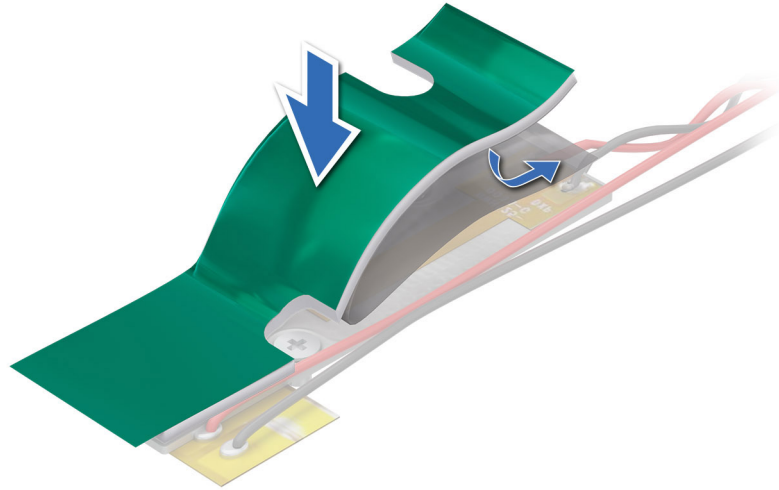
### **Installing the thermal pad to ROR N1 module**

#### **Prerequisites**

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

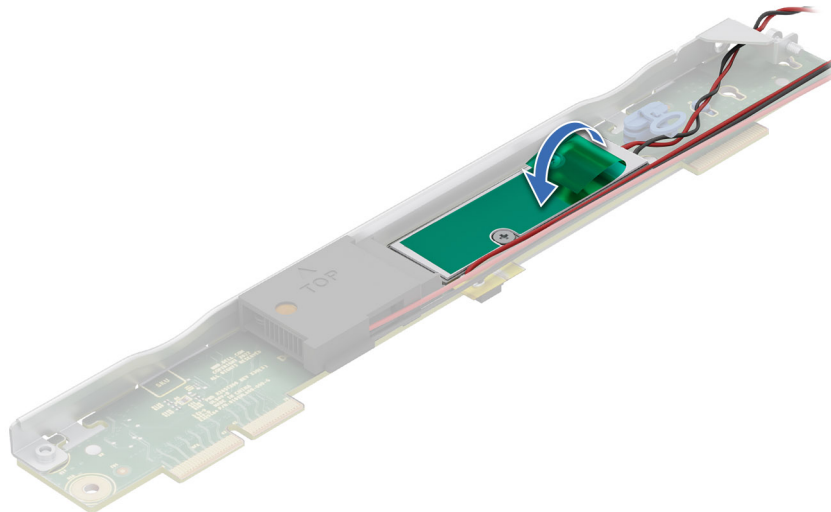
#### **Steps**

1. Peel off the release paper and paste thermal pad onto the ROR N1 module.



**Figure 30. Removing the release paper from thermal pad**

2. Pull to remove the cover from thermal pad.



**Figure 31. Removing cover from thermal pad**

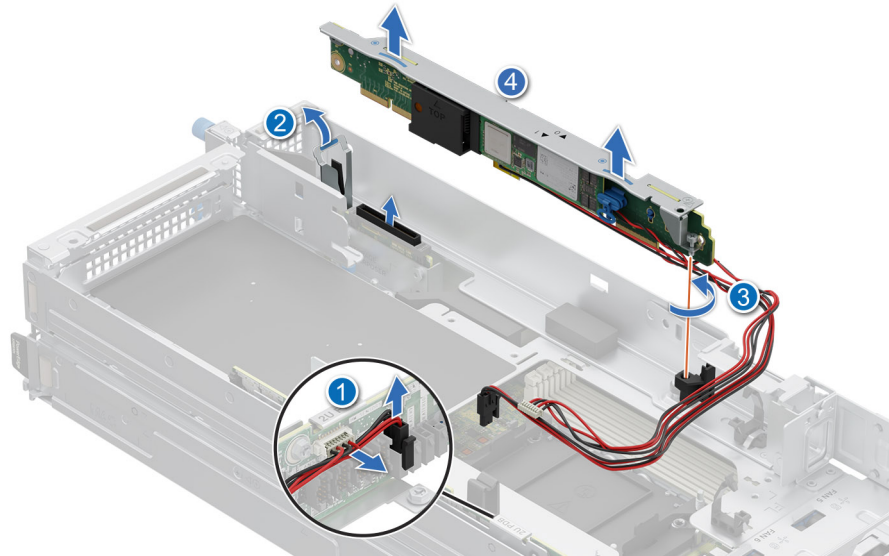
## Removing the ROR N1 module

### Prerequisites

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

### Steps

1. Disconnect the cable connected from ROR N1 module to 2U power distribution board.
2. Using a Phillips 2 screwdriver, loosen the captive screw that secures the ROR N1 module.
3. Lift the riser using the blue touch point to disengage it from the connector on the system board.



**Figure 32. Removing the ROR N1 module**

### Next steps

Replace the ROR N1 module.

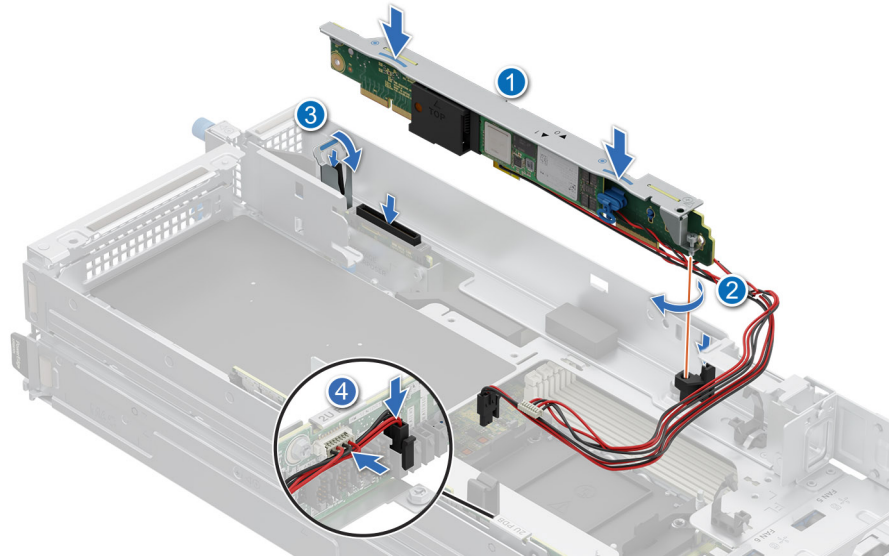
## Installing the ROR N1 module

### Prerequisites

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

### Steps

1. Align the ROR N1 module with the system board and insert it firmly using the blue touch point until the riser is fully seated in the slot.
2. Using a Phillips 2 screwdriver, tighten the screw to secure the riser to the system board.
3. Connect the cable connected from ROR N1 module to 2U power distribution board.



**Figure 33. Installing the ROR N1**

**Next steps**

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

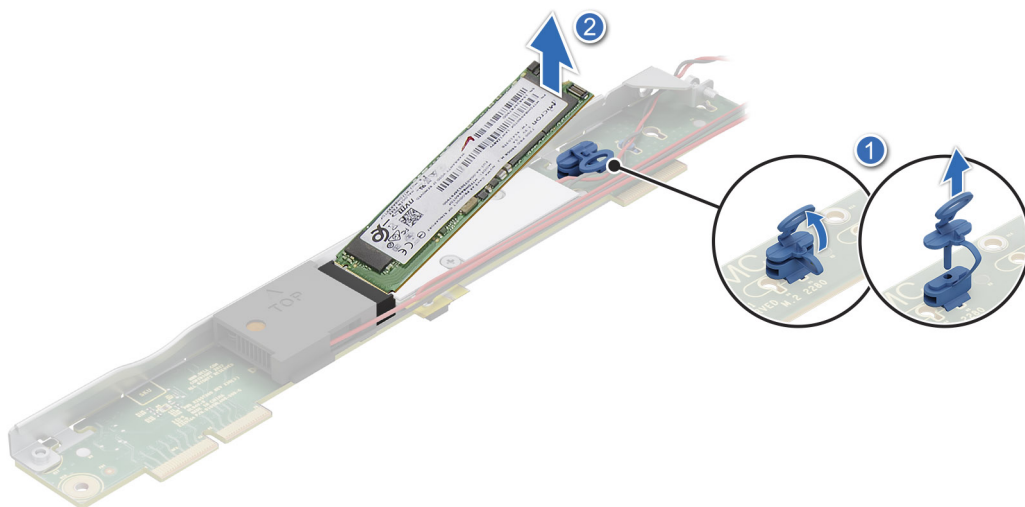
## Removing the NVMe module from the ROR N1 module

**Prerequisites**

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

**Steps**

1. To remove the NVMe module from the ROR N1 module, rotate the latch to a horizontal position and then pull out the engage pin.
2. Pull the NVMe module to remove it from the ROR N1 module.



**Figure 34. Removing the NVMe module from ROR N1 module**

### Next steps

Replace the ROR N1 NVMe module.

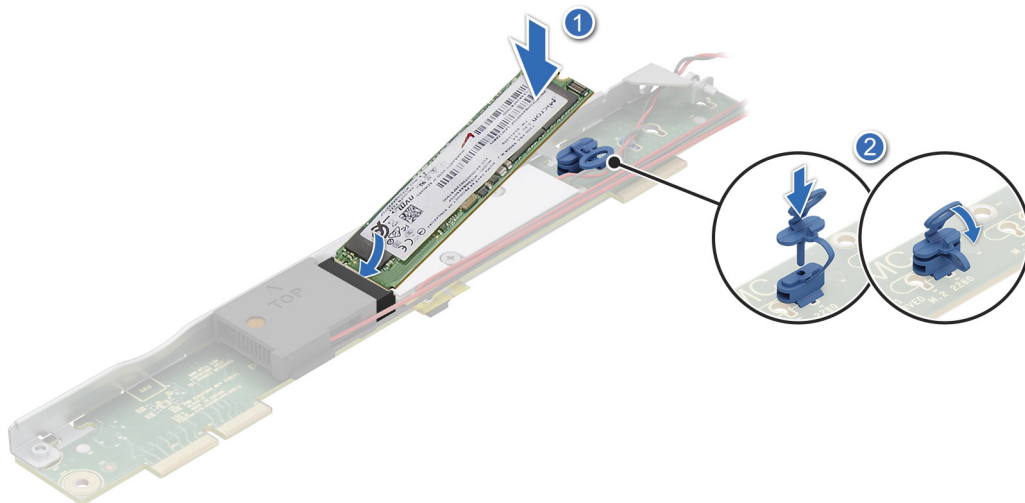
## Installing the NVMe module on the ROR N1 module

### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. Remove the latch on the snap clip and rotate the latch to a vertical position.

### Steps

1. Align the NVMe module at an angle with the ROR N1 module connector.
2. Insert the NVMe module firmly until it is fully seated in the ROR N1 module connector.
3. To secure the NVMe module on the ROR N1 module, insert the engage pin to rotate the latch to a vertical position and then insert the latch into the snap clip.



**Figure 35. Installing the ROR N1 NVMe module**

### Next steps

1. [Installing the ROR N1 module](#).
2. Follow the procedure listed in the [After working inside your system](#).

## 2U sled

This is a service technician replaceable part only.

## Removing the side cover

### Prerequisites

1. Follow the safety guidelines listed in [Safety Instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the M.2 direct riser module](#).

### Steps

1. Using the Phillips 2 screwdriver, loosen the captive screws that secure the side cover to the 2U sled.
2. Slide the side cover outward to remove it from the sled.

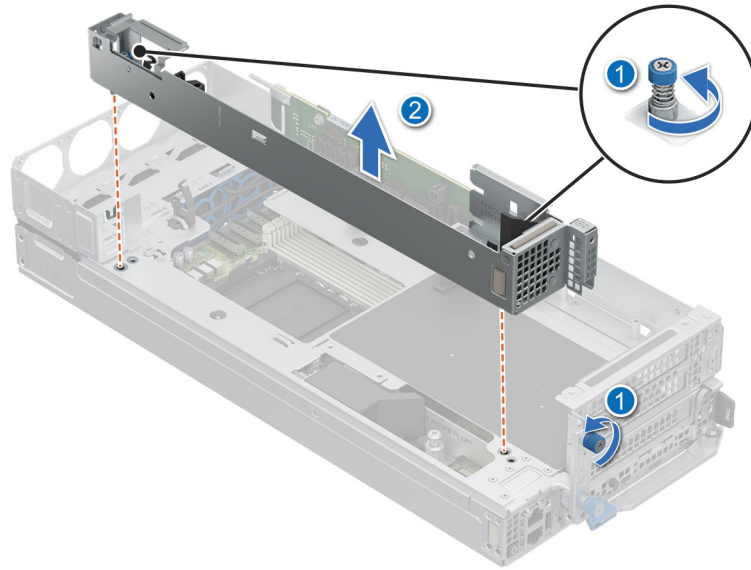


Figure 36. Removing the 2U side cover

### Next steps

Remove the 2U top sled from the 2U node.

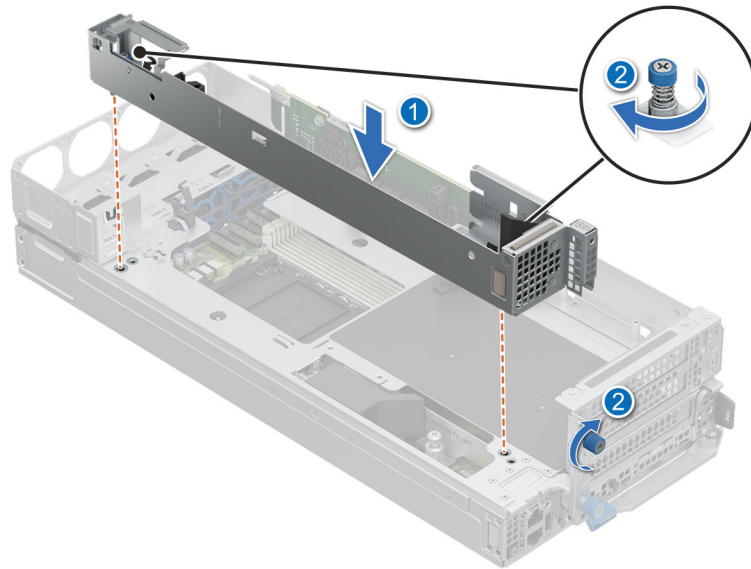
## Installing the side cover

### Prerequisites

1. Follow the safety guidelines listed in [Safety Instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Install the 2U top sled on the 2U node](#).

### Steps

1. Align the side cover with the slot on the 2U sled.
2. Using a Phillips 2 screwdriver, tighten the captive screws to secure the 2U side cover.



**Figure 37. Installing the 2U sled side cover**

### Next steps

Install the M.2 direct riser module.

## Removing the 2U top sled from the 2U node

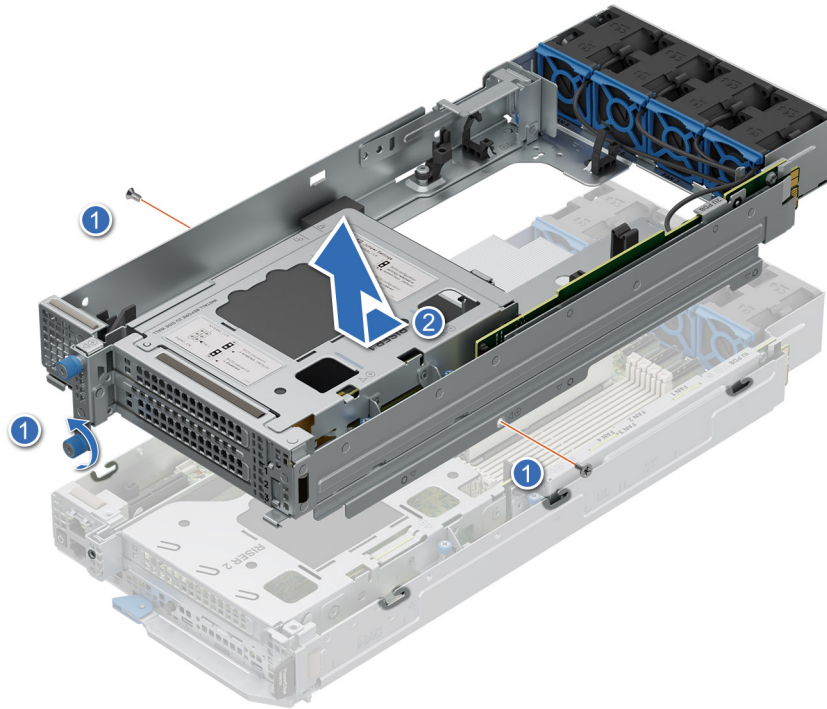
### Prerequisites

1. Follow the safety guidelines listed in [Safety Instructions](#).
2. Follow the procedure listed in [Before working inside your system](#)
3. [Remove the sled cover](#).
4. [Remove the air shroud](#).
5. [Remove the M.2 direct riser](#)
6. [Remove the side cover](#)
7. Remove the Riser1 4x signal cables from connectors on the system board
8. Remove the sideband cables between the 1U and 2U PDBs

### Steps

1. Using Phillips 1 screwdriver, remove the side screws and loosen the front captive screw that secure the 2U top sled from the 2U node.
2. Using both hands, slide forward and lift the 2U top sled from the 2U node.





**Figure 38. Removing the 2U top sled from the 2U node**

### Next steps

Replace the 2U top sled from the 2U node.

## Installing the 2U top sled on the 2U node

### Prerequisites

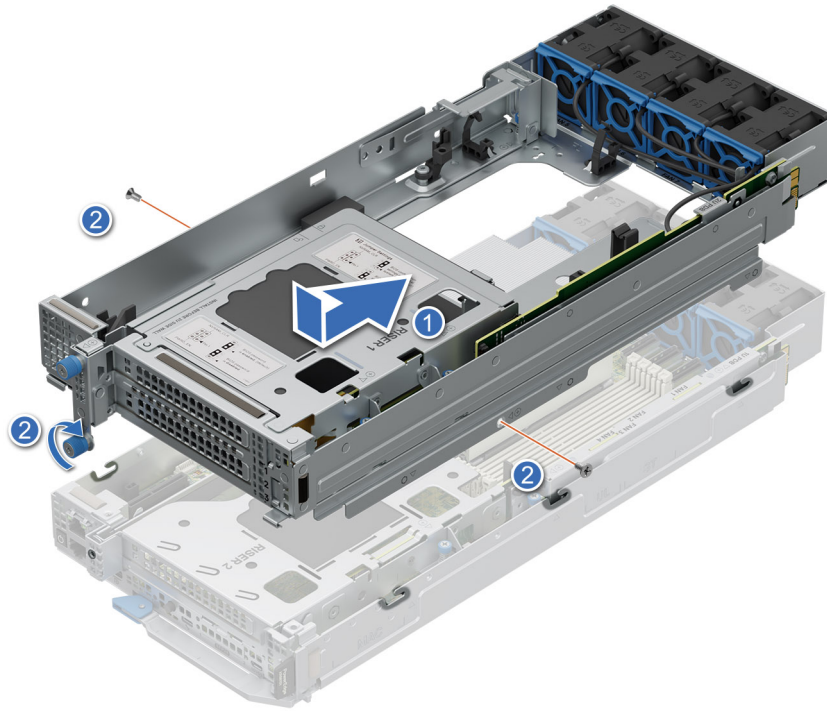
1. Follow the safety guidelines listed in [Safety Instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).

### Steps

1. Align the 2U top sled horizontally and place it on top of the 2U node.

**CAUTION:** Support the 2U top sled with both hands while placing it on the 2U node.

2. Using Phillips 1 screwdriver, tighten the side screws and front captive screw that secure the 2U top sled on the 2U node.



**Figure 39. Installing the 2U top sled on the 2U node**

#### **Next steps**

1. Connect the sideband cables between the 1U and 2U PDBs
2. Connect the Riser1 4x signal cables to connectors on the system board
3. [Install the side cover.](#)
4. [Install the M.2 direct riser](#)
5. [Install the air shroud.](#)
6. [Install the sled cover.](#)
7. Follow the procedure listed in [After working inside your system](#)

## **Storage interposer module**

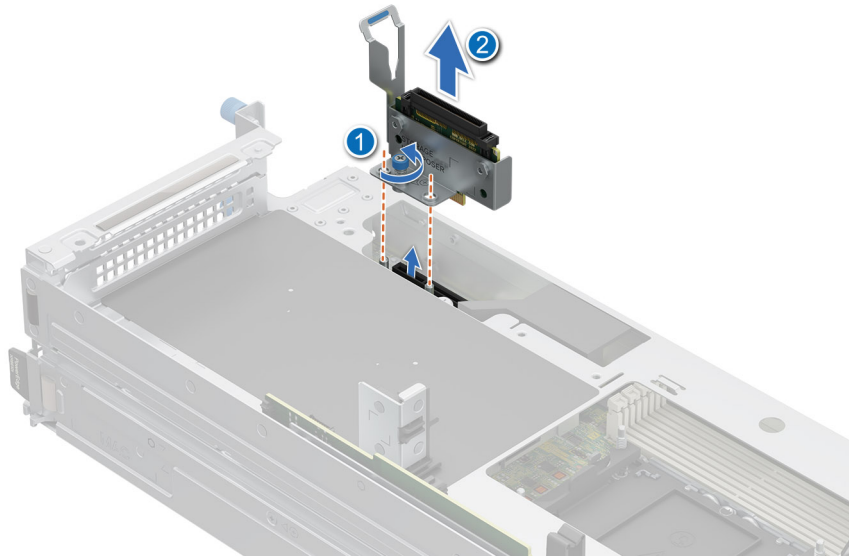
### **Removing the storage interposer module**

#### **Prerequisites**

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

#### **Steps**

1. Using Phillips 2 screwdriver, remove the screw that secure the storage interposer module to the system.



**Figure 40. Removing the storage interposer module**

2. Lift the board to remove it from the system.

#### **Next steps**

[Replace the storage interposer module.](#)

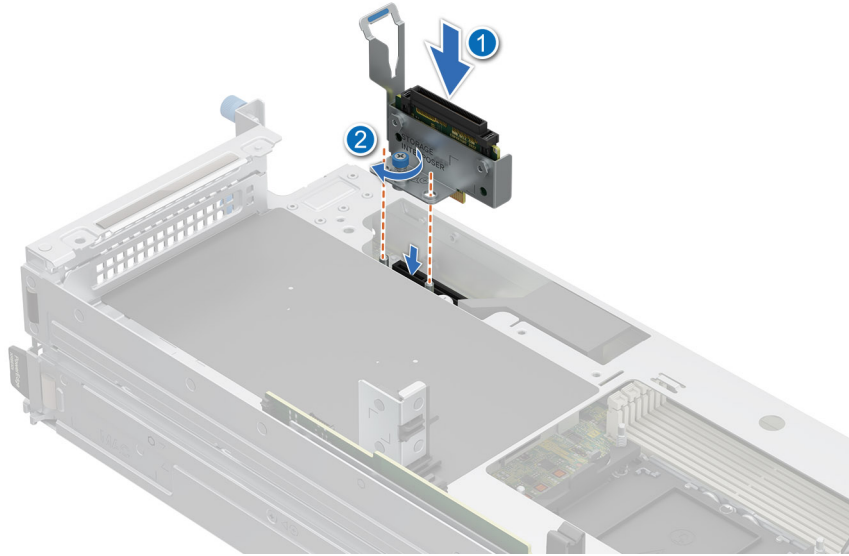
## **Installing the storage interposer module**

#### **Prerequisites**

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

#### **Steps**

1. Align the storage interposer module with the connector on the system board.
2. Using a Phillips 2 screwdriver, tighten the screw to secure the storage interposer module on the system board.



**Figure 41. Installing the storage interposer module**

#### Next steps

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

## Cooling fans

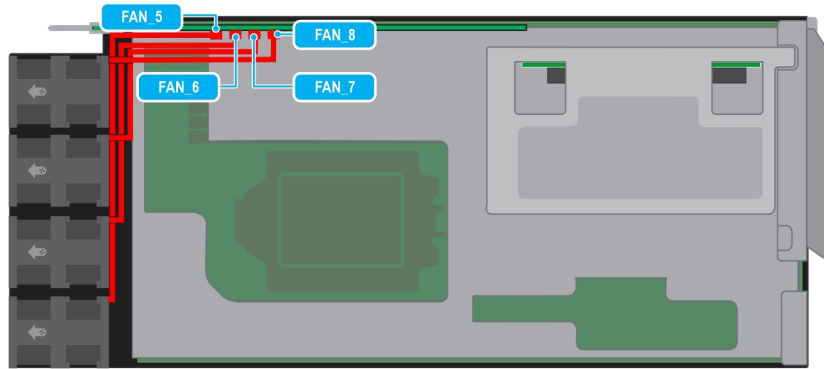
### Removing a cooling fan on 2U sled

#### Prerequisites

1. Follow the safety guidelines listed in [Safety Instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the air shroud](#)  
**i** **NOTE:** Observe the fan cable routing or make a note of the fan cable routing.

#### Steps

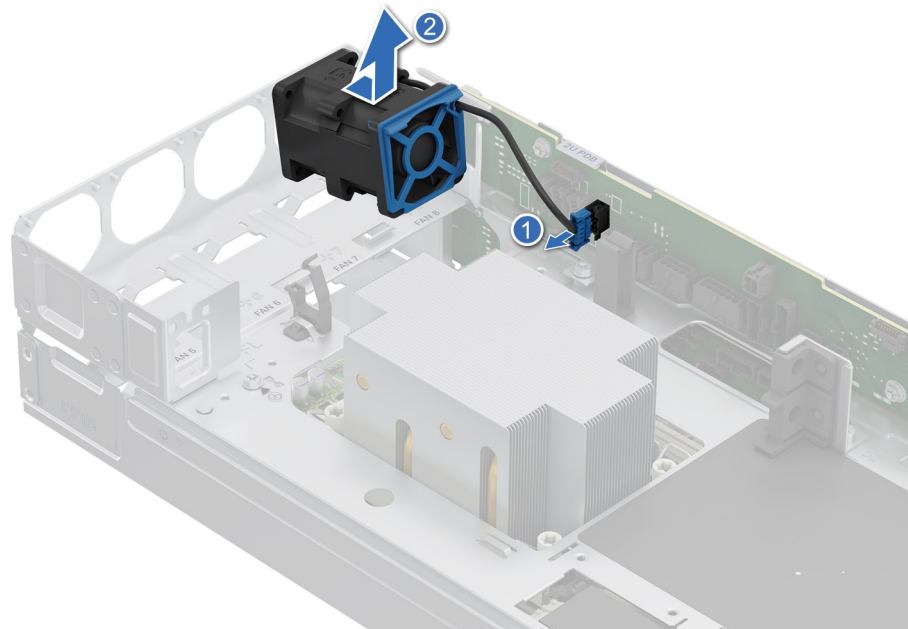
1. Route the fan cables properly through the fan guard and disconnect the cable from the connector on the power distribution board (PDB) of the 2U sled.  
**i** **NOTE:** Fan 5, 6, 7 and 8 are connected to the 2U PDB.



**Figure 42. 2U sled fan cable routing**

2. Pull slightly to disengage the fan cable from the fan guard and then lift the fan module out of the fan cage.

**NOTE:** The airflow directional arrow outward on the fan indicates Reverse-Air-Flow (RAF).



**Figure 43. Removing a cooling fan**

#### Next steps

1. [Replace a fan](#)
2. [Install the air shroud](#)

## Installing a cooling fan on 2U sled

#### Prerequisites

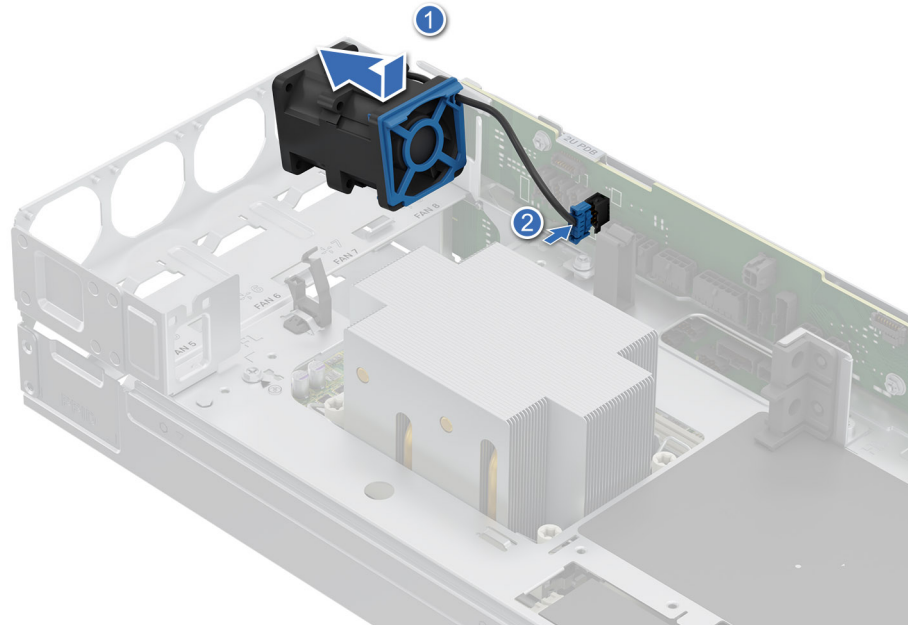
1. Follow the safety guidelines listed in [Safety Instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the air shroud](#).

**NOTE:** Observe the fan cable routing or make a note of the fan cable routing.

### Steps

1. Lower the fan module into the cage until it is seated firmly.

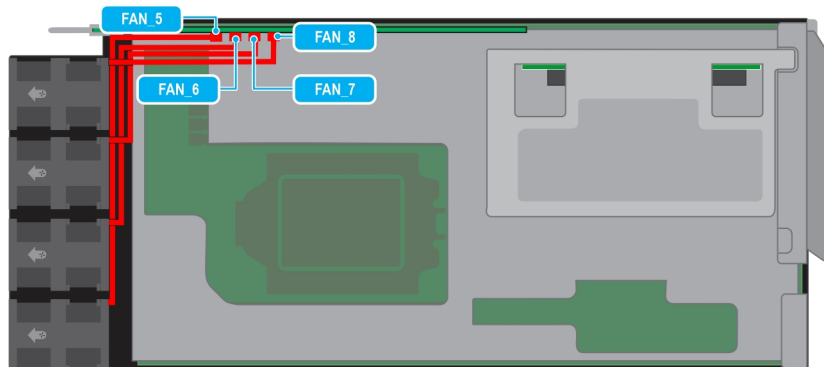
**NOTE:** The airflow directional arrow outward on the fan indicates Reverse-Air-Flow (RAF).



**Figure 44. Installing a cooling fan**

2. Route the fan cables properly through the fan guard and connect the cable to the connector on the power distribution board (PDB) of the 2U sled as shown in the image below.

**NOTE:** Fan 5, 6, 7 and 8 are connected to the 2U PDB.



**Figure 45. 2U sled fan cable routing**

### Next steps

Install the air shroud .

# Removing a cooling fan on 1U sled

## Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the 2U sled from 1U node](#).  
**NOTE:** Observe the fan cable routing or make a note of the fan cable routing.

## Steps

1. Route the fan cables properly through the fan guard and disconnect the fan cable connected to the connector on the power distribution board (PDB) of the 1U sled.  
**NOTE:** Fan 1, 2, 3 and 4 are connected to the 1U PDB.

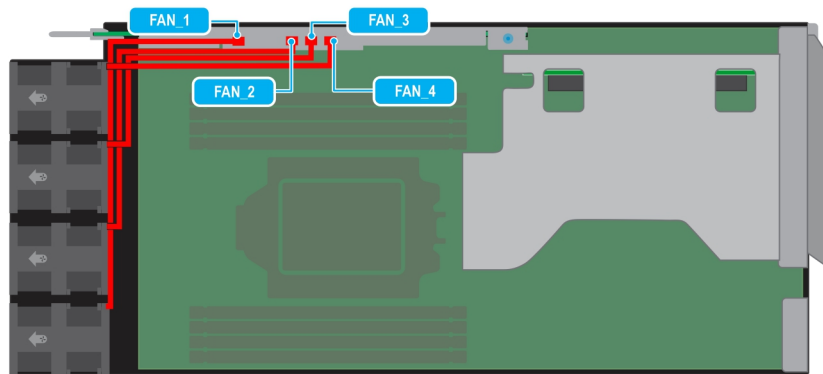


Figure 46. 1U sled fan cable routing

2. Pull slightly to disengage the fan cable from the fan guard and then lift the fan module out of the fan cage.  
**NOTE:** The airflow directional arrow outward on the fan indicates Reverse-Air-Flow (RAF).

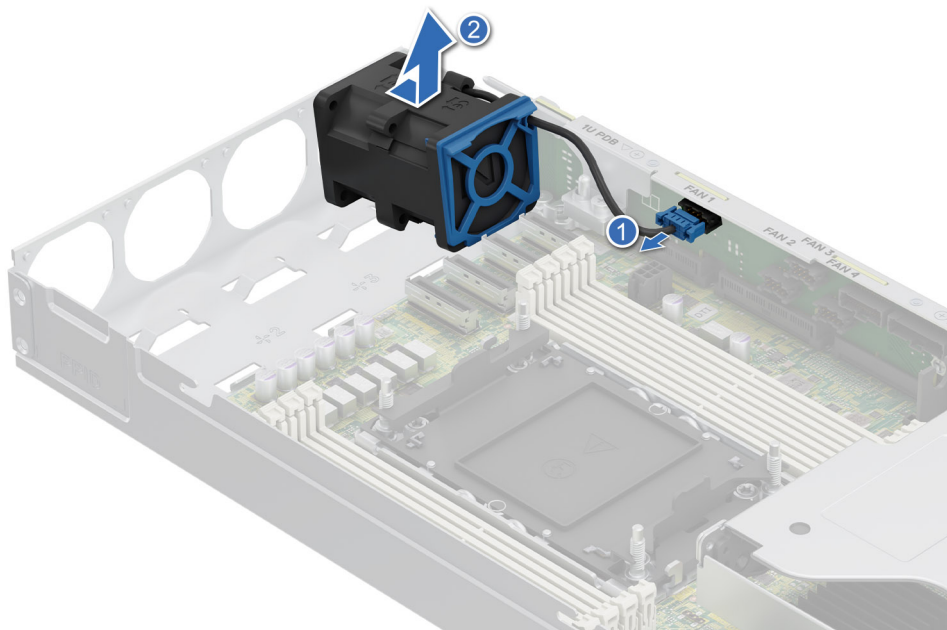


Figure 47. Removing a cooling fan



### Next steps

1. [Replace a fan on 1U sled](#)
2. [Install the 2U sled on 1U node](#)

## Installing a cooling fan on 1U sled

### Prerequisites

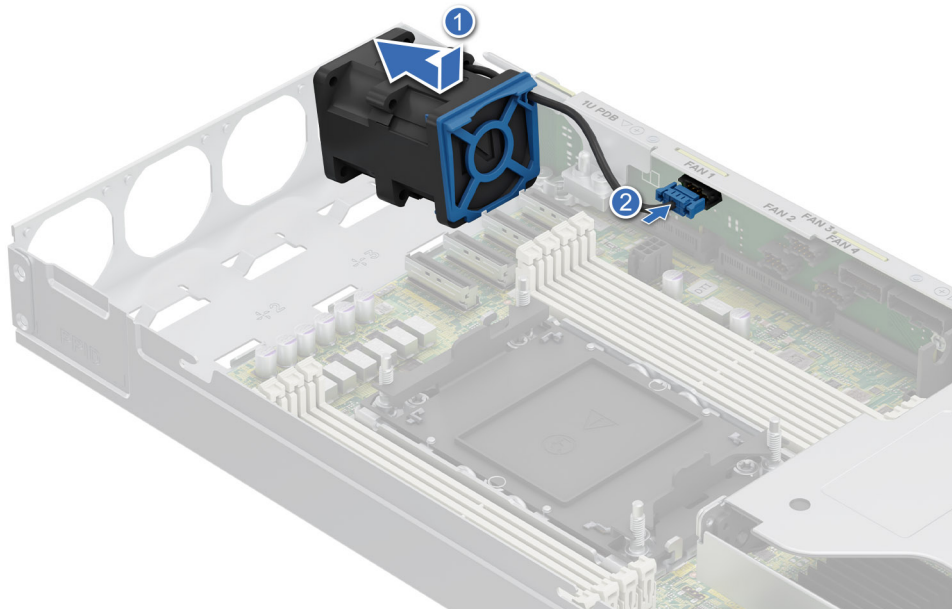
1. Follow the safety guidelines listed in [Safety Instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the 2U sled from 1U node](#).

**i** **NOTE:** Observe the fan cable routing or make a note of the fan cable routing.

### Steps

1. Lower the fan module into the cage until it is seated firmly.

**i** **NOTE:** The airflow directional arrow outward on the fan indicates Reverse-Air-Flow (RAF).

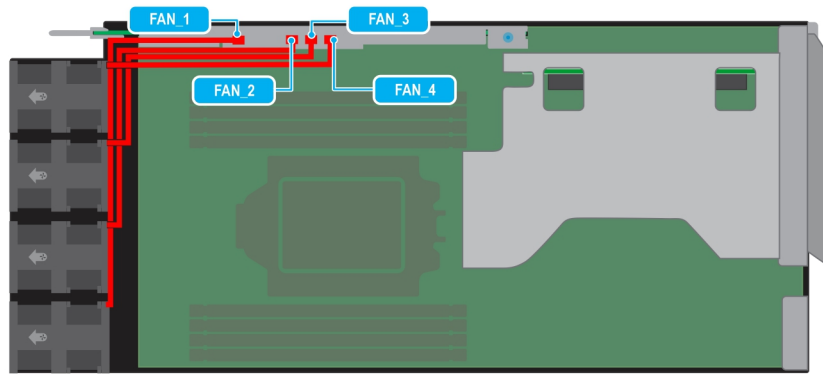


**Figure 48. Installing a cooling fan**

2. Route the fan cables properly through the fan guard and connect the cable to the connector on the power distribution board (PDB) of the 1U sled as shown in the image below.

**i** **NOTE:** Fan 1, 2, 3 and 4 are connected to the 1U PDB.





**Figure 49. 1U sled fan cable routing**

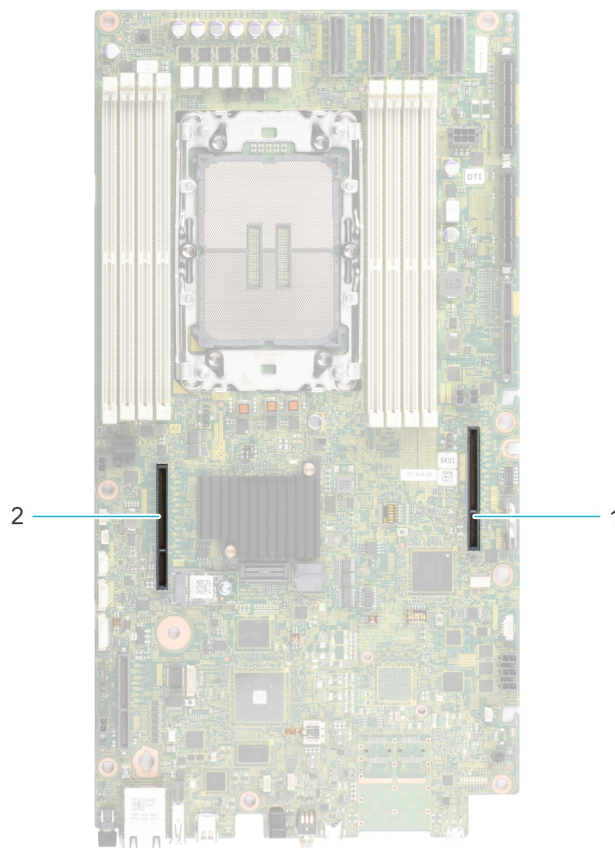
### Next steps

Install the 2U sled on 1U node.

## Expansion cards and expansion card risers

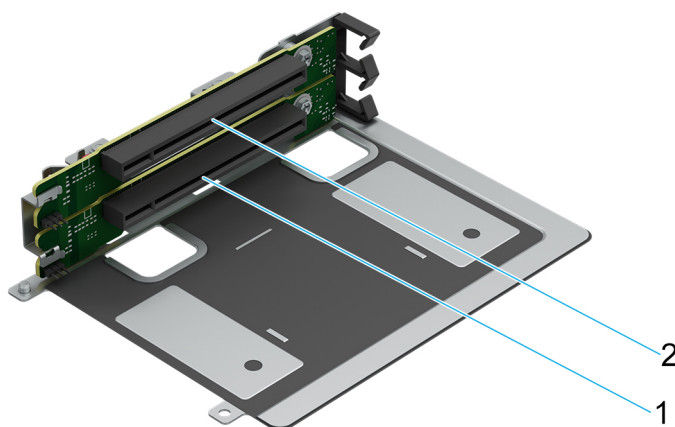
**NOTE:** When an expansion card is not supported or missing, the iDRAC and Lifecycle Controller logs an event. This does not prevent your system from booting. However, if a F1/F2 pause occurs with an error message, see Troubleshooting expansion cards section in the PowerEdge Servers Troubleshooting Guide at [PowerEdge Manuals](#).

## Expansion card installation guidelines



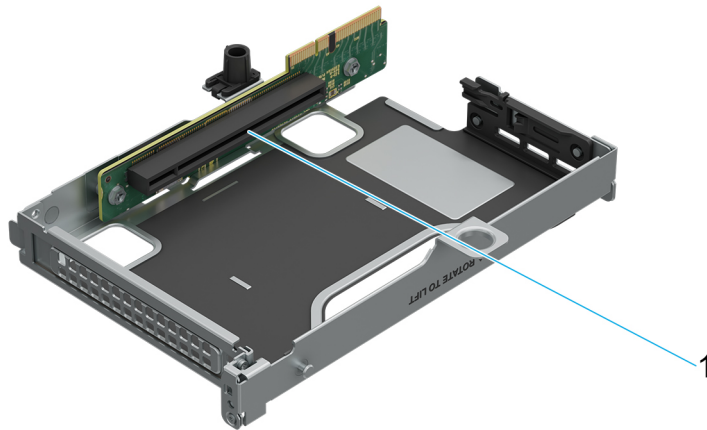
**Figure 50. Expansion card slot connector**

1. Riser 1U connector(Riser 2)
2. Reserved (IO\_RISER2)



**Figure 51. Riser 1A slots**

1. Slot 1
2. Slot 2



**Figure 52. Riser 2A slot**

1. Slot 3

**Table 61. Riser Configurations**

Config #	RSR Configuration	# of CPUs	PERC type supported	Rear Storage Possible	x16 CPU1	X16 CPU2
0	No riser	1	No	No	0	0
1	R1A+R2A	1	No	No	3	0

**NOTE:** The expansion-card slots are not hot-swappable.

The following table provides guidelines for installing expansion cards to ensure proper cooling and mechanical fit. The expansion cards with the highest priority should be installed first using the slot priority indicated. All the other expansion cards should be installed in the card priority and slot priority order.

**Table 62. Configuration 0: No Riser**

Card type	Slot priority	Maximum number of cards
M.2 NVMe Riser HW Non-RAID	Integrated slot	1
ROR-N1	Integrated slot	1
M.2 NVMe Riser HW Non-RAID HM	Integrated slot	1
ROR-N1 HM	Integrated slot	1

**Table 63. Configuration 1: R1A\_HL+R2A**

Card type	Slot priority	Maximum number of cards
INTEL (NIC: 25GB, FH, adapter)	3, 2, 1	3
INTEL (NIC: 100GB, FH, adapter)	3, 2, 1	3
INTEL (NIC: 100GB, FH, adapter)	3,1	2
DELL (PCIe: INTFC, 3.0, FH)	1, 2, 3	3
NOKIA (NIC:100GB, FH)	1, 2, 3	3
QUALCOMM (NIC: 100GB, FH)	1, 2, 3	3
INTEL(NIC: MacLaren, FH, adapter)	3, 2, 1	1
Mellanox (NIC: 100GB, FH, adapter)	3, 2, 1	3

**Table 63. Configuration 1: R1A\_HL+R2A (continued)**

Card type	Slot priority	Maximum number of cards
NVIDIA (GPU: L4, 24GB, FH)	3, 2, 1	1
M.2 NVMe Riser HW Non-RAID	Integrated slot	1
BOSS-N1	Integrated slot	1
ROR-N1	Integrated slot	1


**Table 64. Configuration 5\_Config1 wHM**

Card type	Slot priority	Maximum number of cards
INTEL (NIC: 25GB, FH, adapter)	3, 2, 1	3
INTEL (NIC: 100GB, FH, adapter)	3, 2, 1	3
INTEL(NIC: MacLaren, FH, adapter)	3, 2, 1	1
M.2 NVMe Riser HW Non-RAID HM	Integrated slot	1
FOXCONN ROR-N1 HM	Integrated slot	1

## Removing the expansion card riser 1

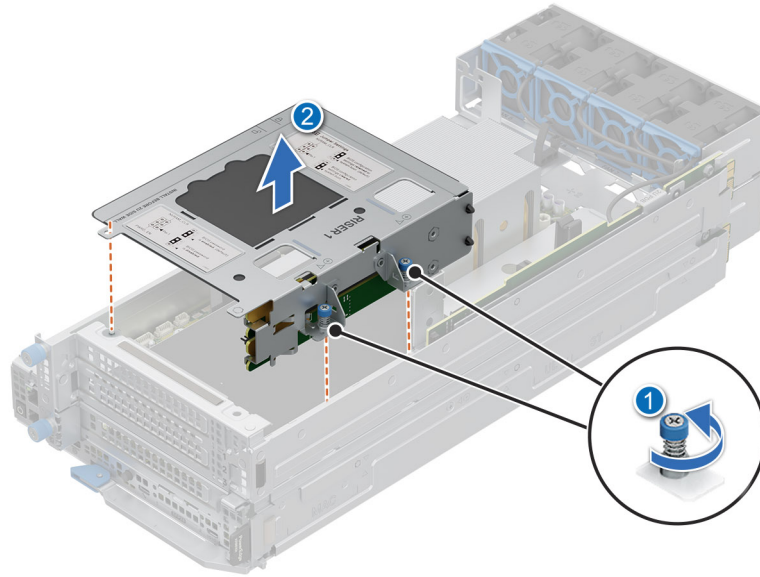
### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the air shroud](#)
4. [Remove the M.2 direct riser](#)
5. [Remove the side cover](#) .
6. Disconnect the riser card power cables from 2U PDB and 4x signal cables from connectors on the system board.

 **NOTE:** Observe the routing of the cable as you remove it from the system.

### Steps

1. Using the Phillips 2 screwdriver, loosen the captive screws that secure the riser 1 on the 2U sled.
2. Hold the expansion card riser 1 by the edges and lift the expansion card riser from the riser connector on the 2U sled.



**Figure 53. Removing the expansion card riser 1**

#### **Next steps**

Replace the expansion card riser 1.

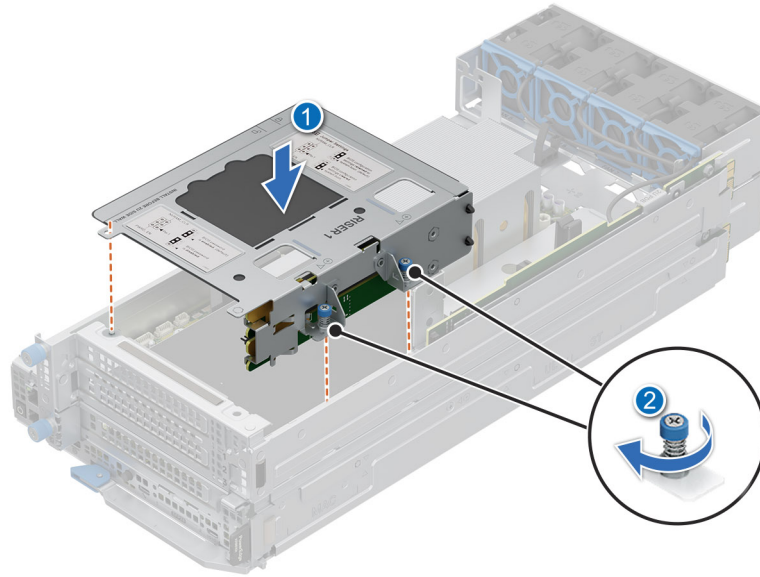
## **Installing the expansion card riser 1**

#### **Prerequisites**

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the air shroud](#)
4. [Remove the M.2 direct riser](#)
5. [Remove the side cover](#).

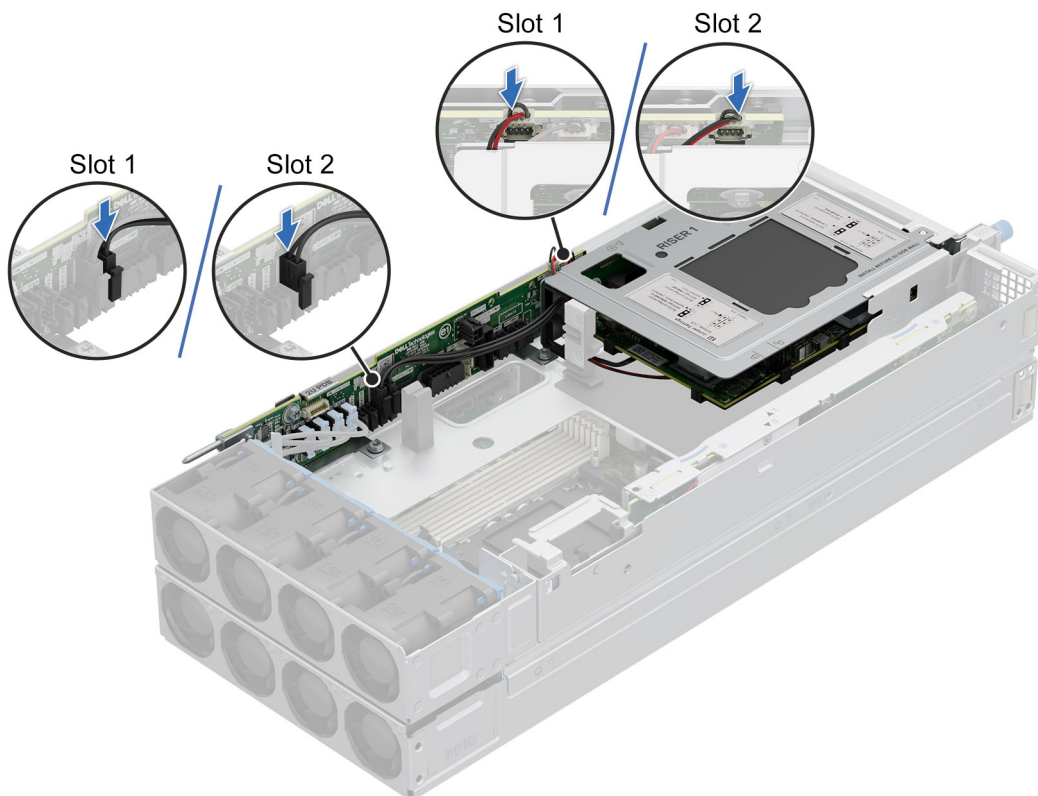
#### **Steps**

1. Align the riser with the riser slot on the 2U sled.
2. Using both hands, lower the riser 1 until it is seated firmly.
3. Using a Phillips 2 screwdriver, tighten the captive screws to secure the expansion card riser 1 on to the 2U sled.



**Figure 54. Installing the expansion card riser 1**

4. Connect the riser card power cables to 2U PDB and 4x signal cables to connectors on the system board.
5. For HM Configuration, connect heater cables from the HM PCIe card on the riser to the 2U power distribution board (heater 9, heater 10), and connect sensor cables from the PCIe card to sensor ports on the system board (sensor 4, sensor 8).



**Figure 55. Connecting cables from Riser 1 to 2U PDB**

### Next steps

After working inside your system.

## Removing the expansion card riser 2

### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the 2U top sled from the 2U node](#).

### Steps

1. Using the Phillips 2 screwdriver, loosen the captive screw that secure the riser 2 on the 1U node.
2. Hold the expansion card riser 2 by the edges and lift the expansion card riser from the riser connector on the 1U node.

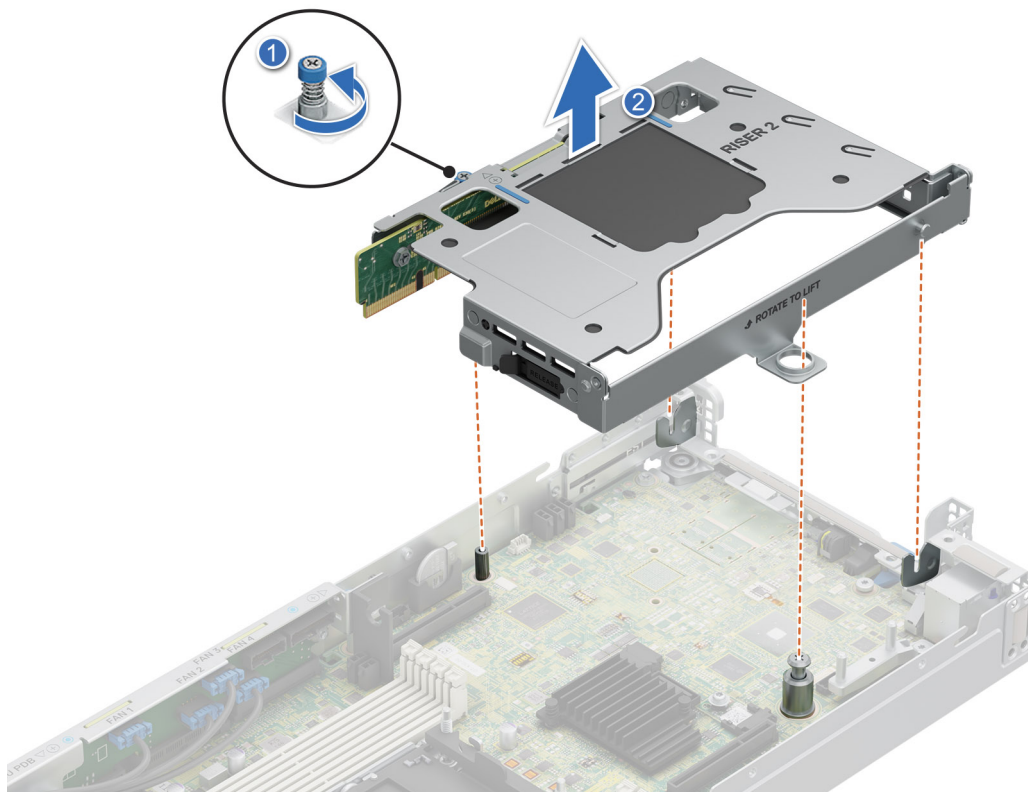


Figure 56. Removing the expansion card riser 2

### Next steps

Replace the expansion card riser 2.

## Installing the expansion card riser 2

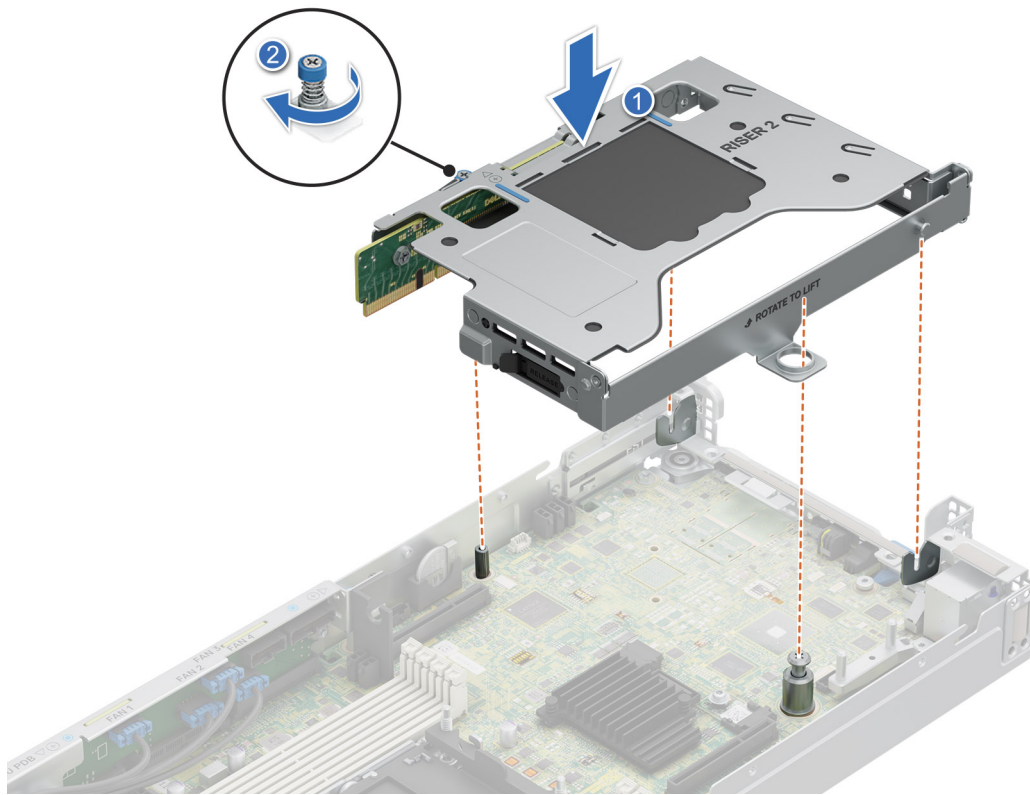
### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the 2U top sled on the 2U node](#).



## Steps

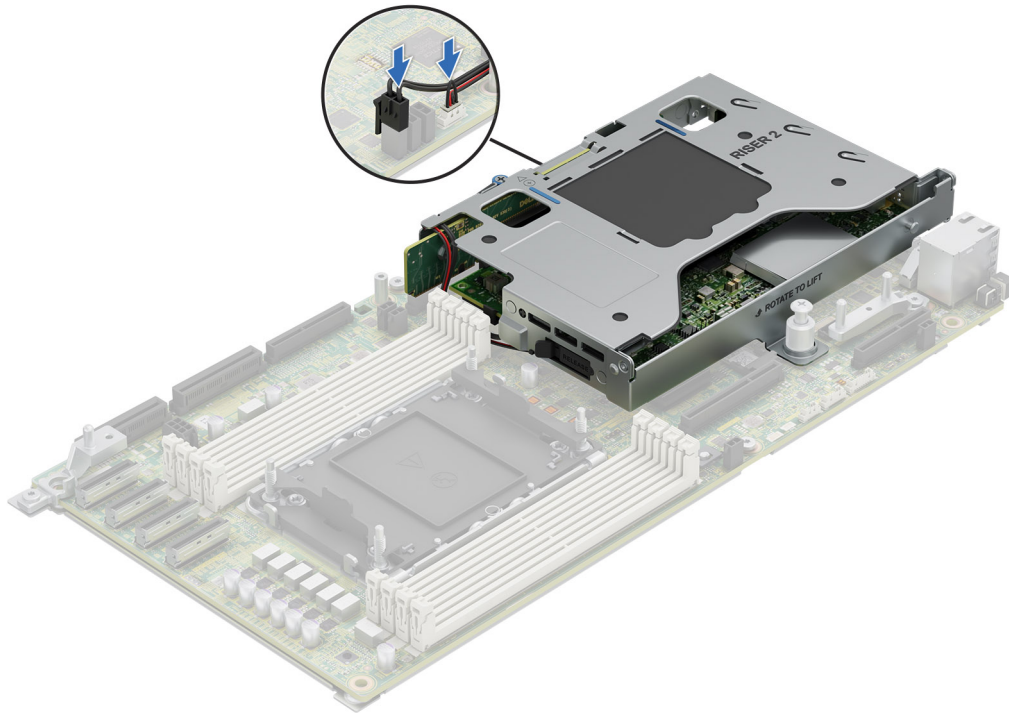
1. Align the riser with the riser slot on the 1U node.
2. Using both hands, lower the riser 2 until it is seated firmly.
3. Using a Phillips 2 screwdriver, tighten the captive screw to secure the expansion card riser 2 on to the 1U node.



**Figure 57. Installing the expansion card riser 2**

4. For HM Configuration, connect heater and sensor cables from the HM PCIe card on the riser to heater(heater 4) and sensor(sensor 2) ports on the system board.





**Figure 58. Connecting cables from Riser 2 to system board**

### Next steps

Install the 2U top sled on the 2U node.

## Removing the PCIe card from Riser

### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the air shroud](#).
4. [Remove the M.2 direct riser](#)
5. [Remove the side cover](#)

### Steps

1. Using both hands, hold the PCIe card by the edges and pull the card away from the riser slot.

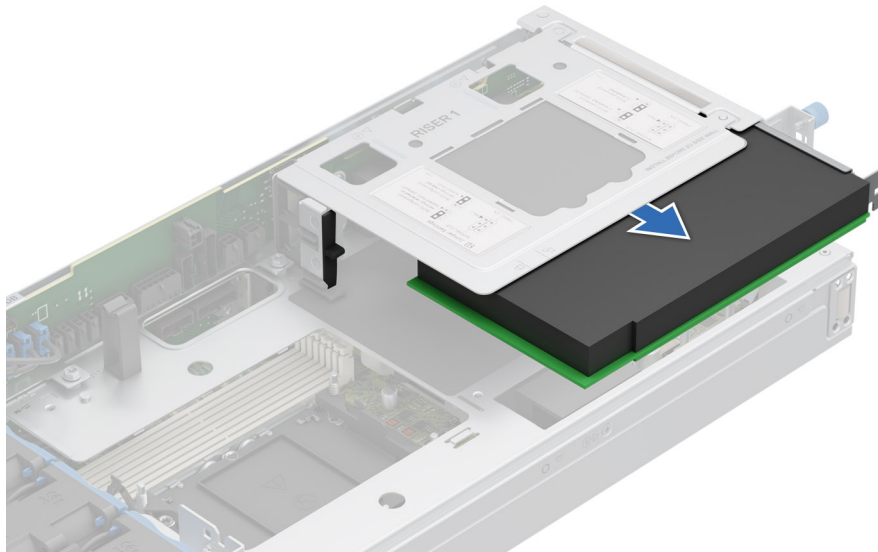


Figure 59. Removing the PCIe card from Riser1

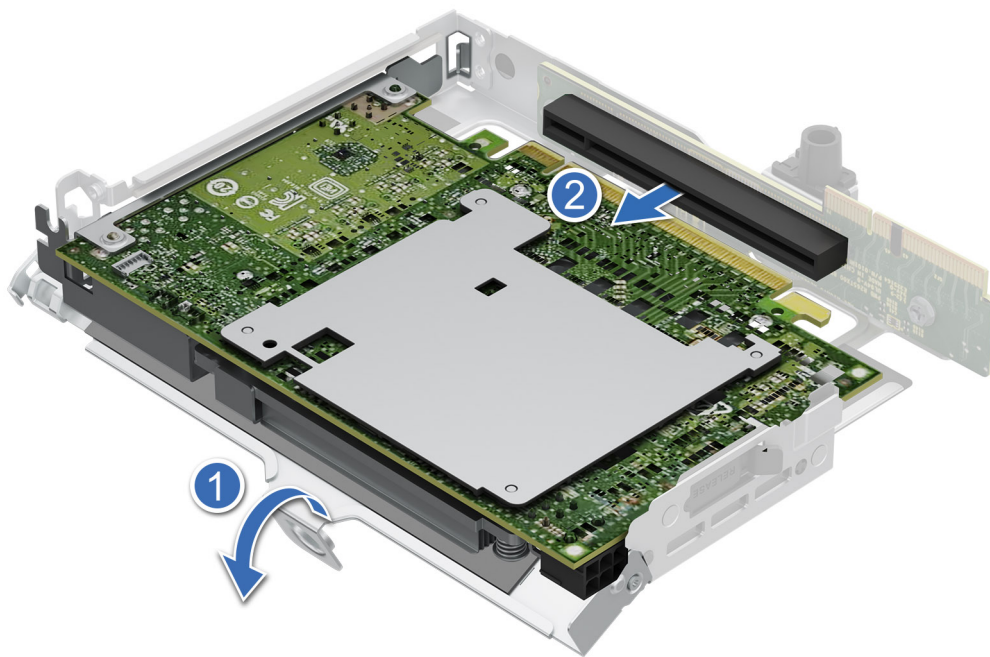
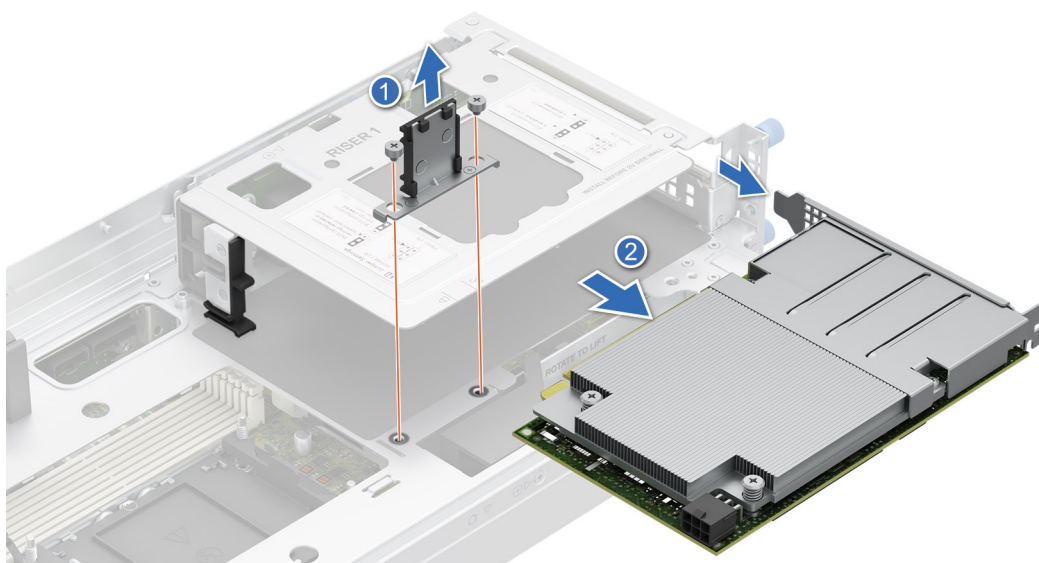


Figure 60. Removing the Dell 100GbE QSFP28 from the Riser 2

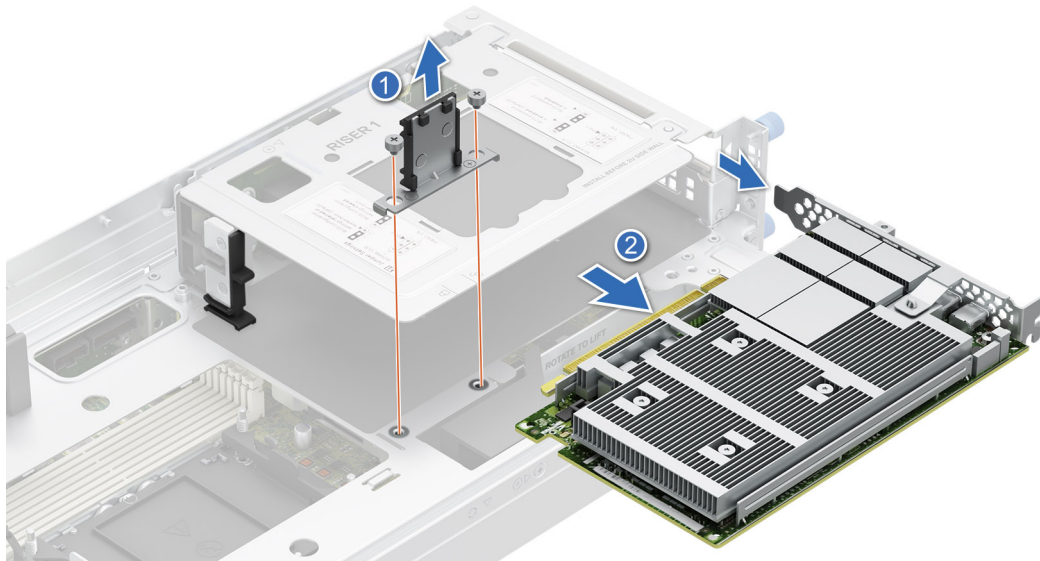


**Figure 61. Removing the Nokia Cloud RAN SmartNIC 2x QSFP56-DD from the Riser 2**

2. Using the Phillips 1 screwdriver, loosen the captive screws. Using both hands, hold the PCIe card by the edges and pull the card away from the riser slot.

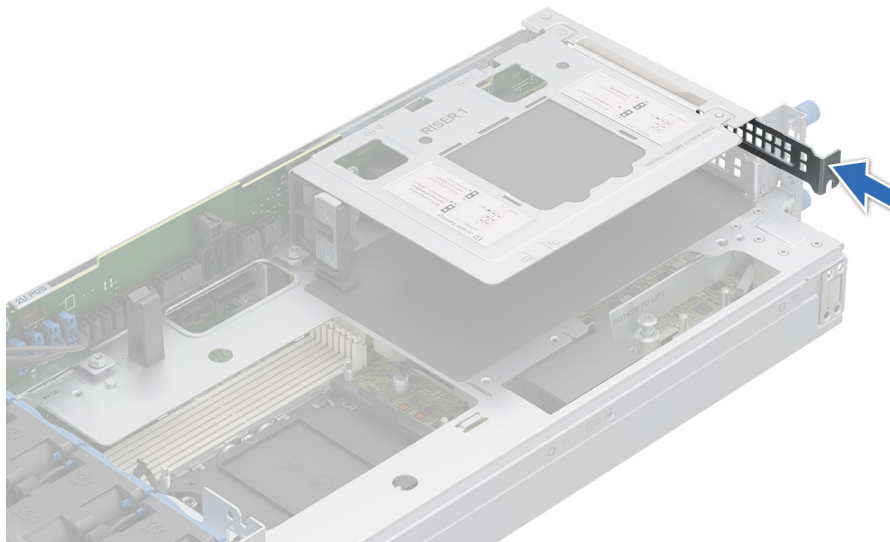


**Figure 62. Removing the Dell 100GbE QSFP28 card from Riser 1**



**Figure 63. Removing the Nokia Cloud RAN SmartNIC 2x QSFP56-DD card from Riser 1**

3. Replace the expansion card filler bracket.



**Figure 64. Installing the expansion card filler bracket**

### Next steps

Replace the PCIe card on Riser.

## Installing the PCIe card on Riser

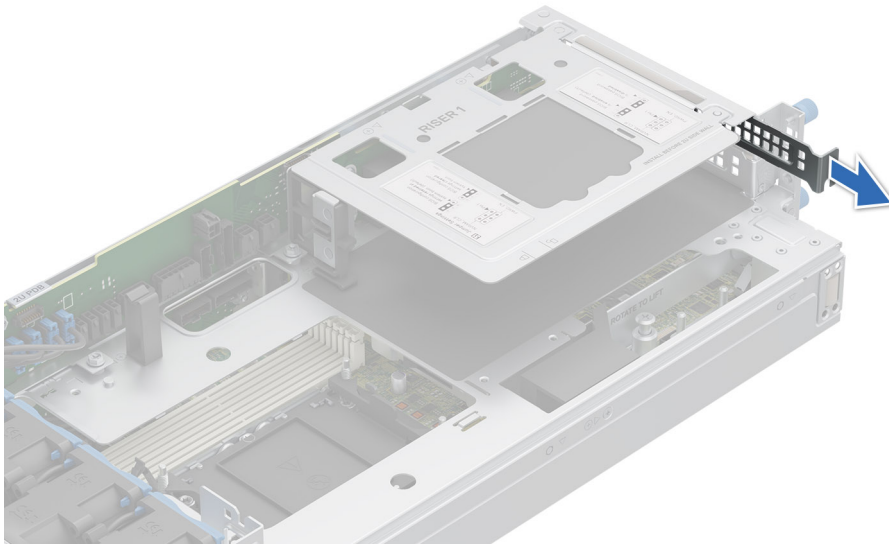
### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the air shroud](#).
4. [Remove the M.2 direct riser](#)
5. [Remove the side cover](#)



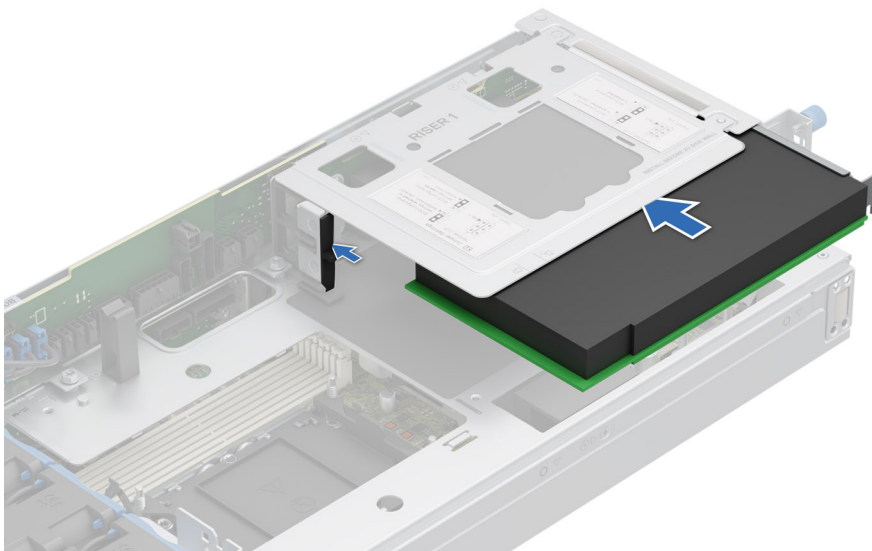
## Steps

1. Remove the expansion card filler bracket by sliding it out of the sled.



**Figure 65. Removing the expansion card filler bracket**

2. Using both hands, insert the PCIe card into the riser slot till it clicks into place.



**Figure 66. Installing the PCIe card on Riser1**

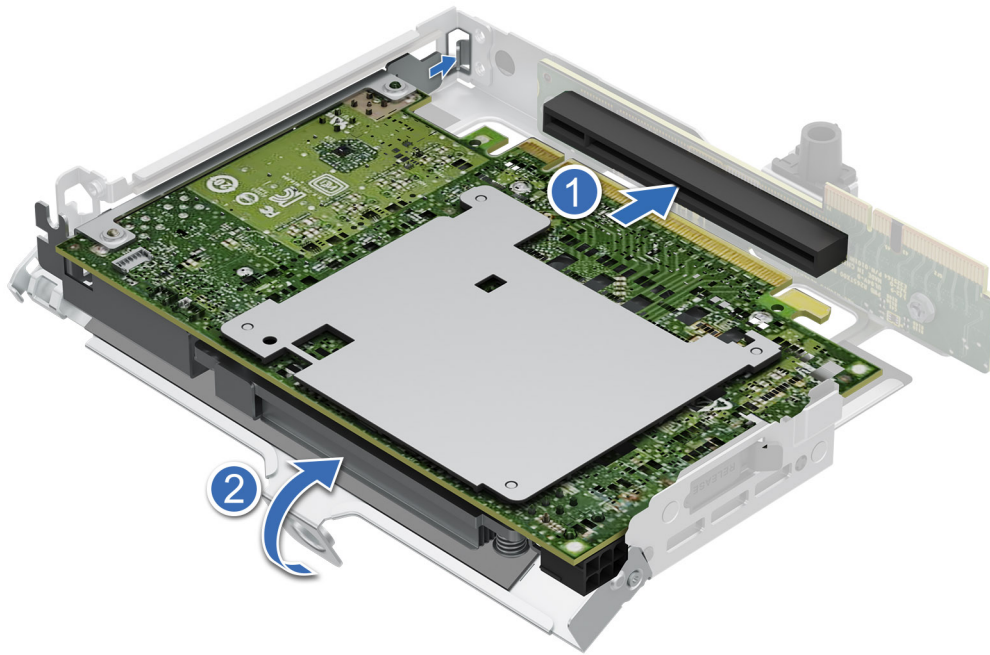


Figure 67. Installing the Dell 100GbE QSFP28 card into the riser 2

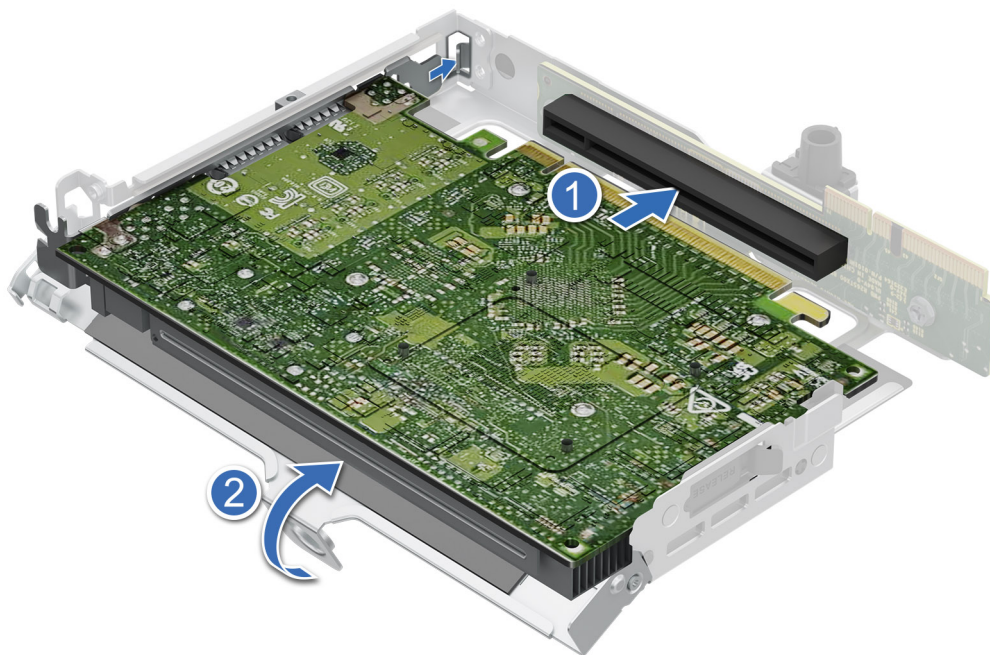


Figure 68. Installing the Nokia Cloud RAN SmartNIC 2x QSFP56-DD card into the riser 2

3. Using both hands, insert the PCIe card into the riser slot till it clicks into place. Using the Phillips 1 screwdriver, tighten the captive screws to secure the card into the riser.

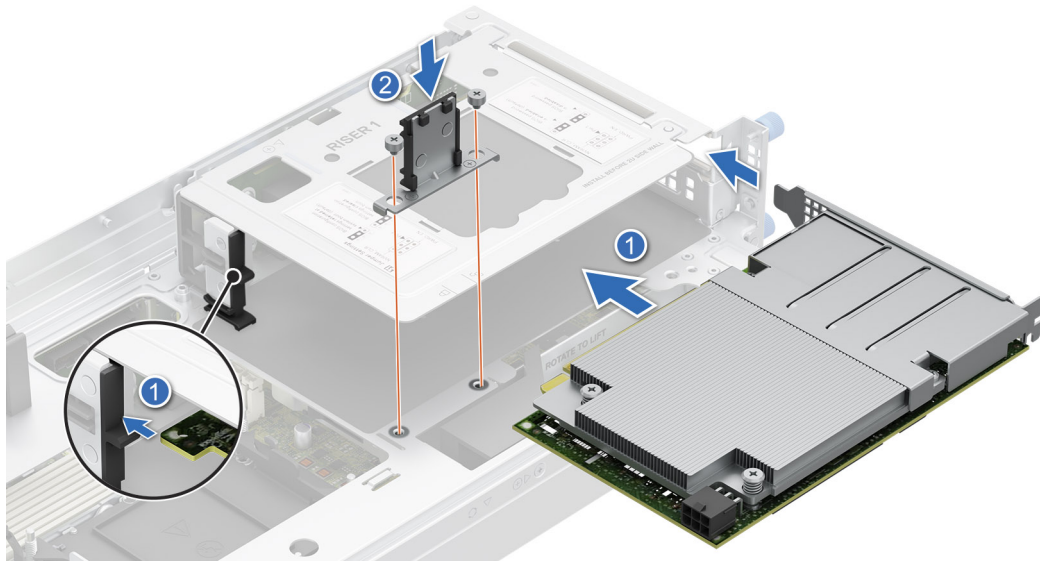


Figure 69. Installing the Dell 100GbE QSFP28 card into riser 1

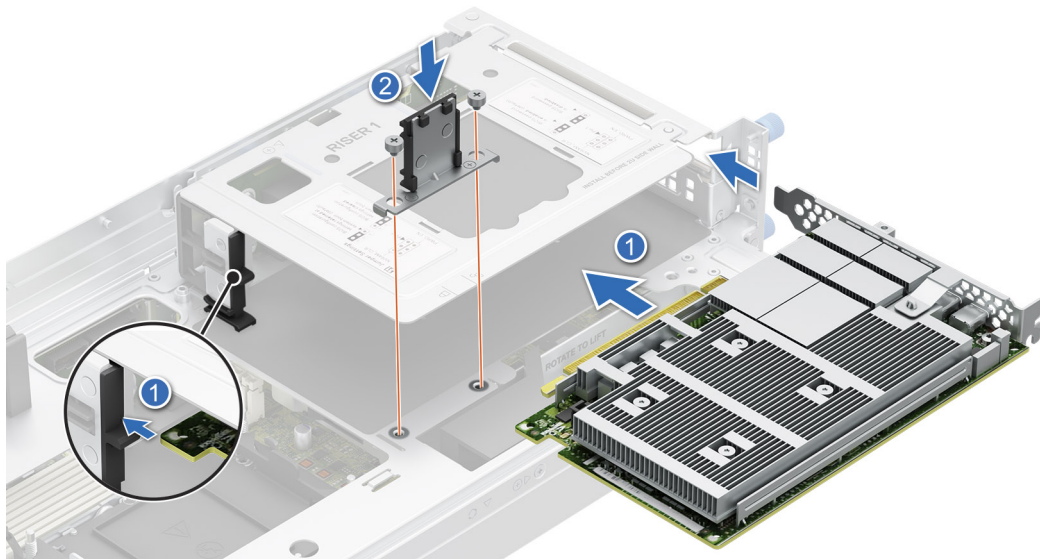


Figure 70. Installing the Nokia Cloud RAN SmartNIC 2x QSFP56-DD card into the riser 1

### Next steps

Replace the side cover.

## BOSS-N1 card

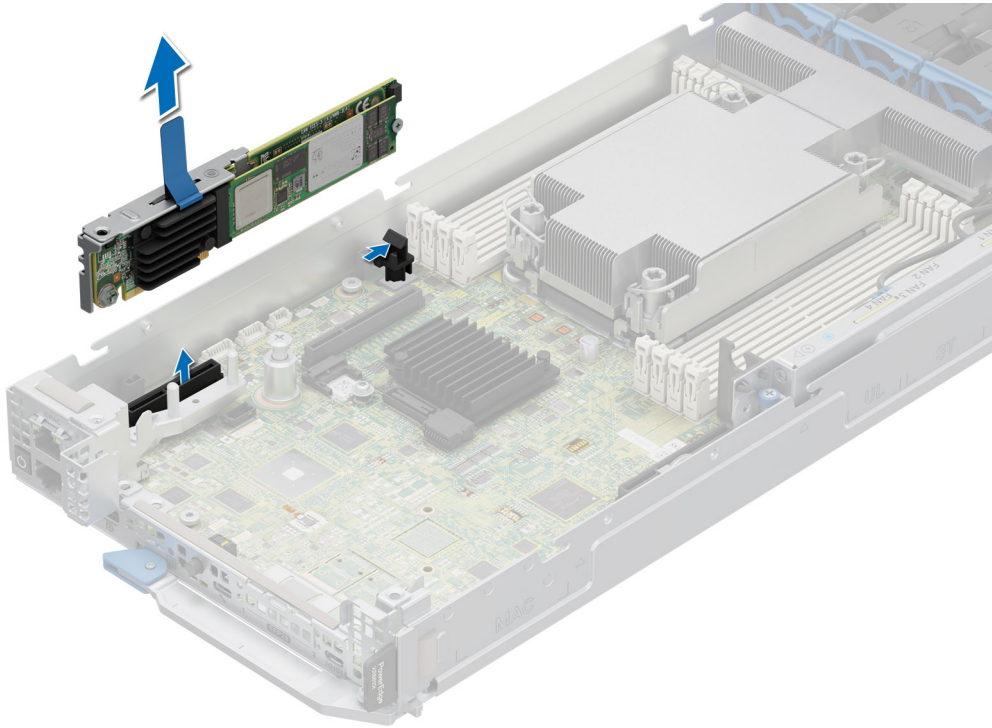
### Removing the BOSS-N1 card

#### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. Remove the 2U top sled from the 2U node.

## Steps

1. Press the latch located on system board to unlock the BOSS-N1 card from the system.
2. Pull the blue pull tab to remove the BOSS-N1 card from the slot on system board.



**Figure 71. Removing the BOSS-N1 card**

## Next steps

Replace the BOSS-N1 card.

## Installing the BOSS-N1 card

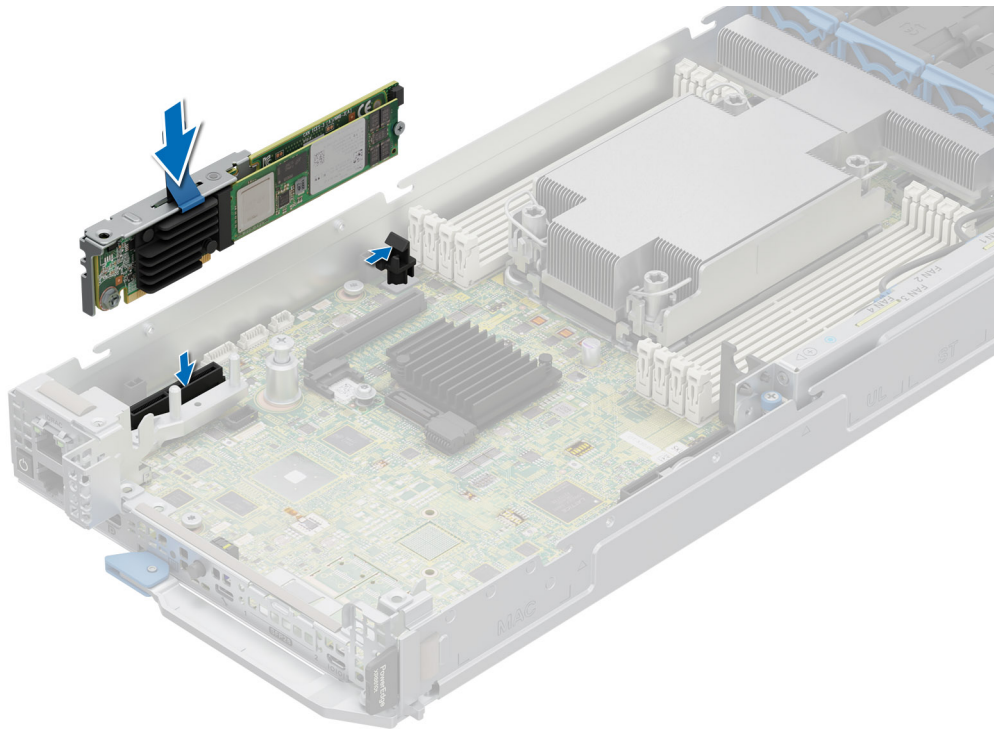
### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the 2U top sled from the 2U node](#).

## Steps

1. Align the notch on the BOSS-N1 card with the slot on the system board.
2. Press the BOSS-N1 card and insert it firmly until the card is fully seated in the slot and locked to the latch on the system board.





**Figure 72. Installing the BOSS-N1 card**

#### **Next steps**

Follow the procedure listed in [Install the 2U top sled on the 2U node](#).

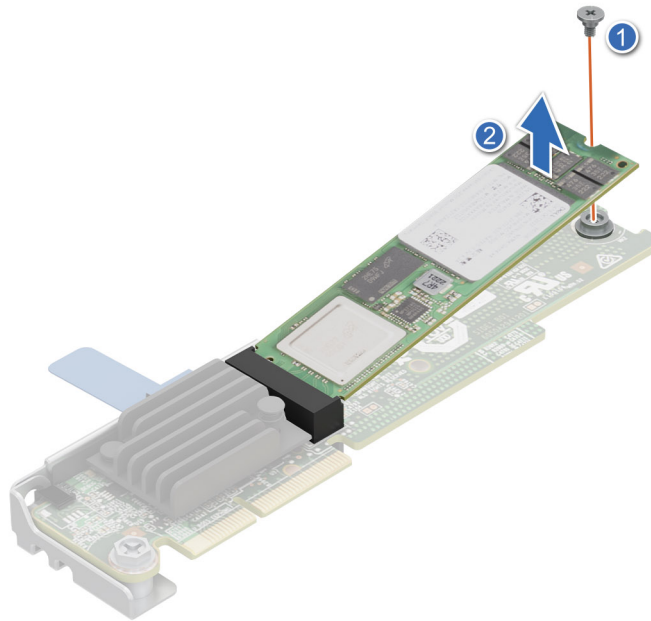
## **Removing the M.2 SSD module from the BOSS-N1 card**

#### **Prerequisites**

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

#### **Steps**

1. Remove the screw that is on the BOSS-N1 card using Philips 2 screwdriver.
2. Pull the M.2 SSD module from the M.2 slot on the BOSS-N1 card.



**Figure 73. Removing the M.2 SSD module**

### Next steps

Replace the M.2 SSD module.

## Installing the M.2 SSD module on the BOSS-N1 card

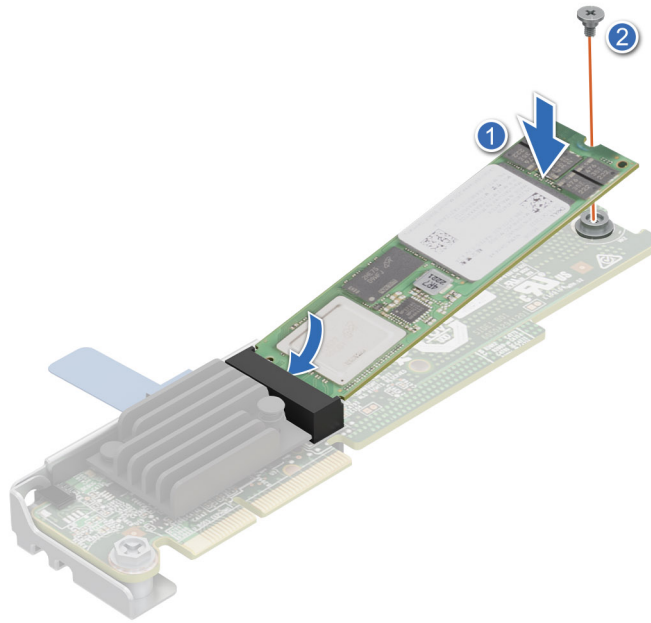
### Prerequisites

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

### Steps

1. Align the M.2 NVMe module at an angle with the M.2 direct riser connector on BOSS-N1 card.
2. Insert the M.2 NVMe module firmly until it is fully seated in the M.2 direct riser connector.
3. Replace the screw and tighten it to secure the M.2 SSD module on the BOSS-N1 card.

**NOTE:** The BOSS-N1 card can accommodate two M.2 SSD modules, repeat the same procedure to install the second M.2 SSD module.



**Figure 74. Installing the M.2 SSD module**

#### Next steps

1. [Installing the BOSS-N1 card.](#)
2. Follow the procedure listed in the [After working inside your system.](#)

## Power distribution board

This is a service technician replaceable part only.

## Removing the 2U power distribution board

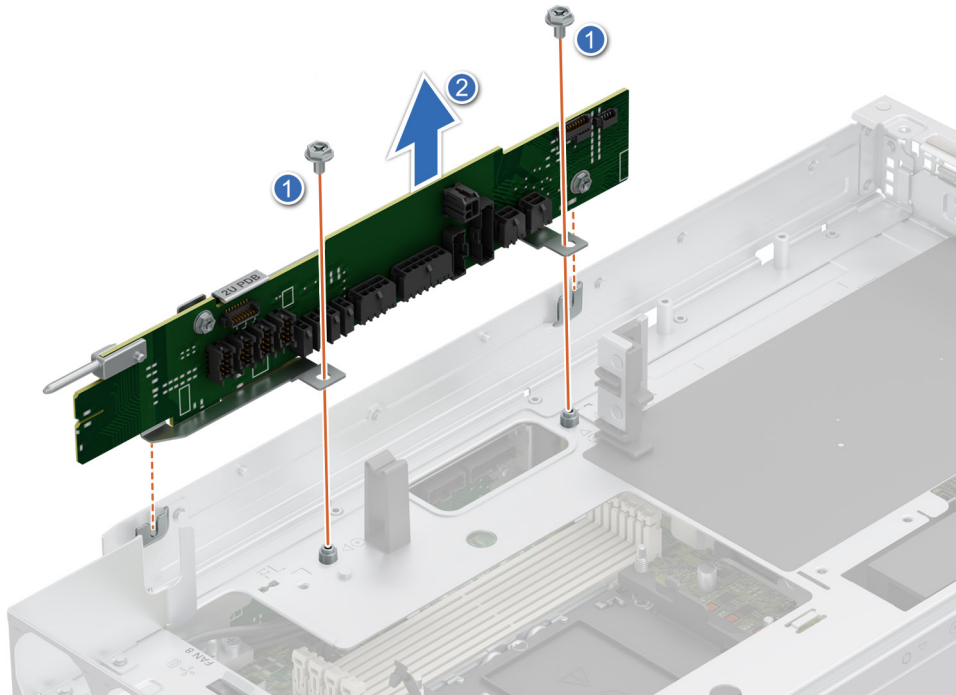
#### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions.](#)
2. Follow the procedure listed in [Before working inside your system.](#)
3. [Remove the air shroud.](#)
4. [Remove the M.2 direct riser.](#)
5. [Remove the side cover.](#)
6. [Remove the Riser 1.](#)
7. Disconnect the cables connected from cooling fans and system board to the 2U power distribution board (PDB).

**NOTE:** Observe the routing of the cable as you remove it from the system.

#### Steps

1. Using a Phillips 2 screwdriver, remove the screws that secure the PDB to the system.



**Figure 75. Removing the 2U power distribution board**

2. Lift the board to remove it from the system.

#### **Next steps**

Replace the power distribution board.

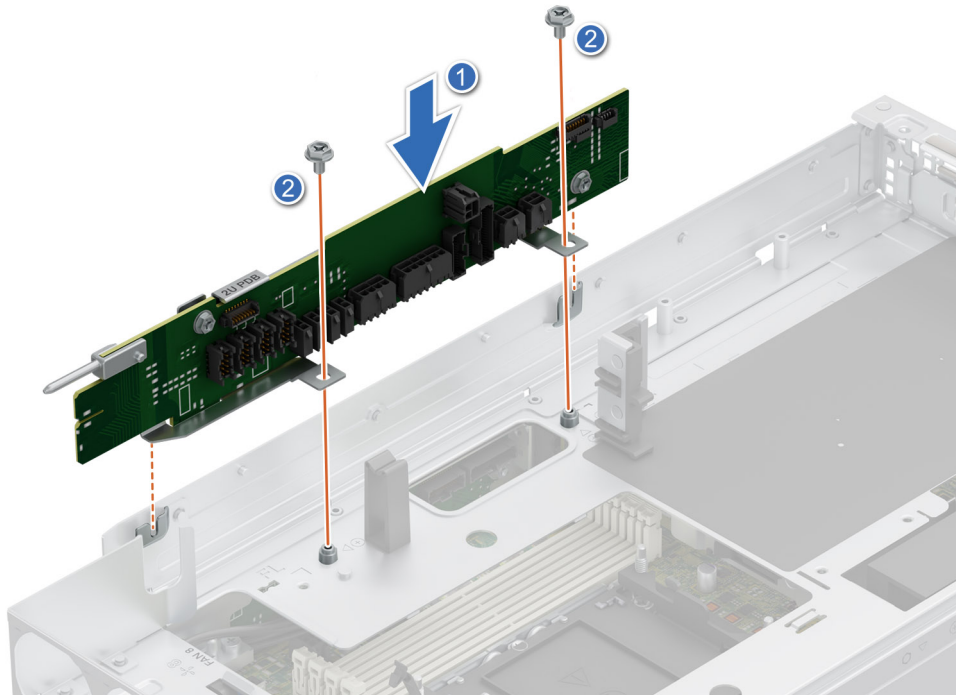
## **Installing the 2U power distribution board**

#### **Prerequisites**

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

#### **Steps**

1. Align the slots of the Power distribution board (PDB) with the fix hook on the 2U sled.
2. Using a Phillips 2 screwdriver, tighten the screws to secure the PDB on the 2U sled.



**Figure 76. Installing the 2U power distribution board**

#### Next steps

1. Connect the cables connected from cooling fans and system board to the 2U power distribution board (PDB).
2. [Install the Riser 1](#)
3. [Install the air shroud](#)

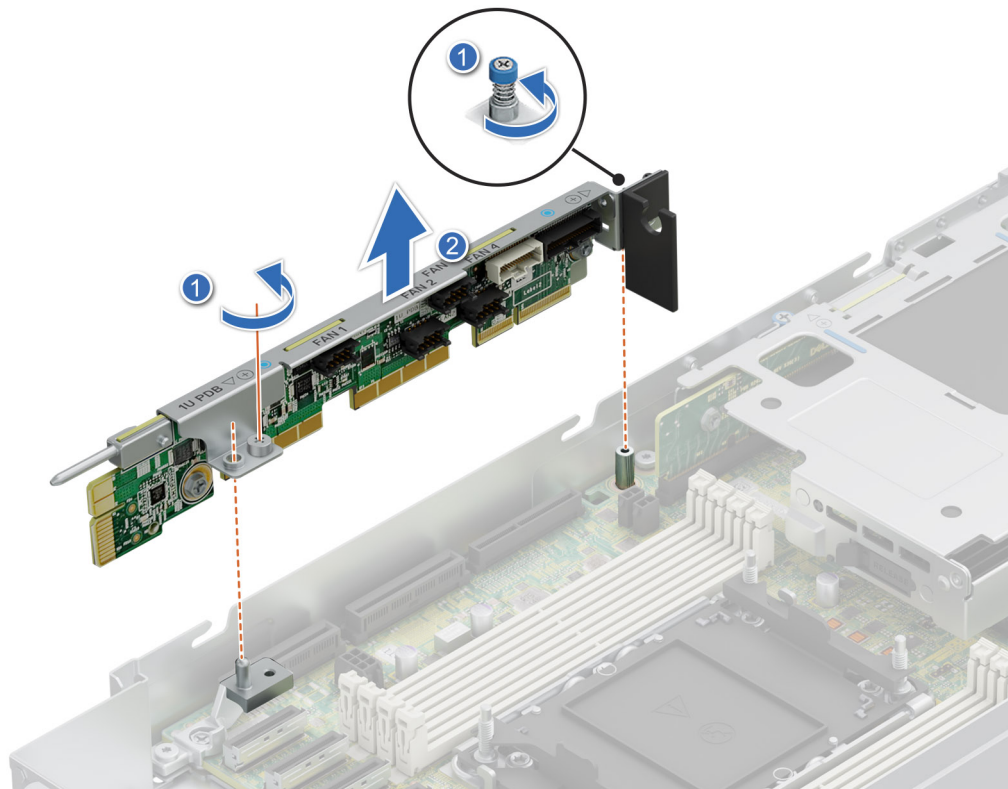
## Removing the 1U power distribution board

#### Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the 2U top sled from the 2U node](#).
4. Disconnect the cables connected from cooling fans and system board to the 1U power distribution board (PDB).  
**i** **NOTE:** Observe the routing of the cable as you remove it from the system.

#### Steps

1. Using a Phillips 2 screwdriver, loosen the screws that secure the PDB to the system.



**Figure 77. Removing the 1U power distribution board**

2. Lift the board to remove it from the system.

#### **Next steps**

Replace the 1U power distribution board.

## **Installing the 1U power distribution board**

#### **Prerequisites**

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the 2U top sled from the 2U node](#).
4. [Remove the Riser 2](#).

#### **Steps**

1. Align the slots of the Power distribution board (PDB) with the fix hook on the 1U node.
2. Using a Phillips 2 screwdriver, tighten the screws to secure the PDB on the 1U sled.

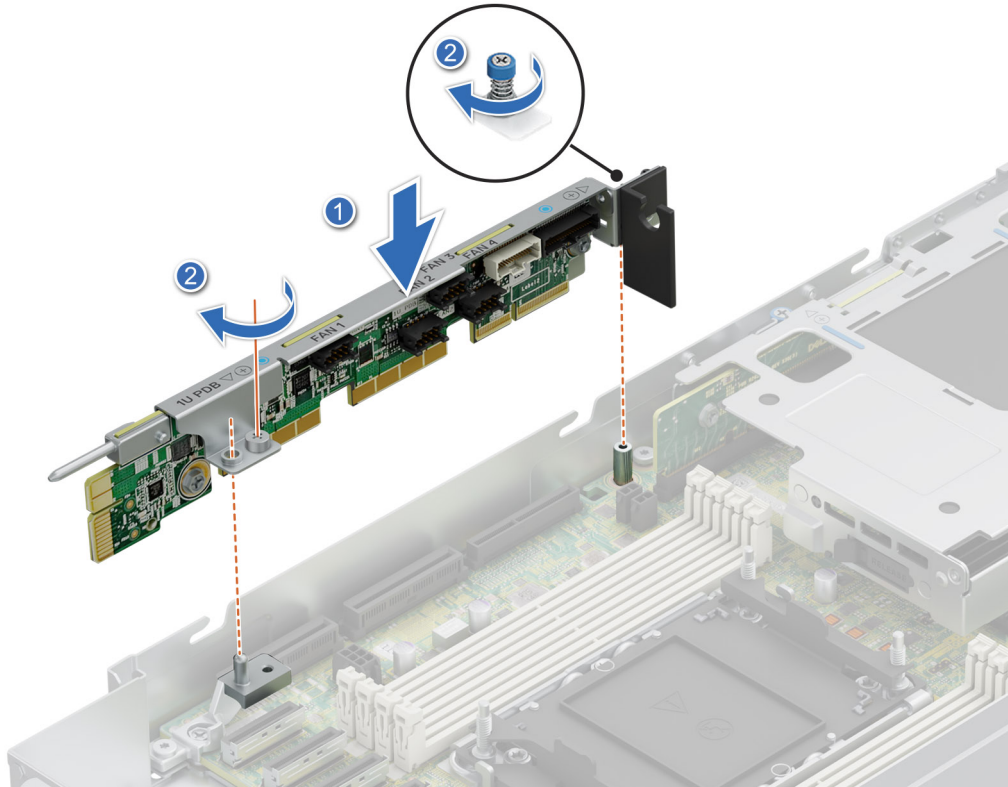


Figure 78. Installing the 1U power distribution board

**Next steps**

1. Connect the cables connected from cooling fans and system board to the 1U power distribution board (PDB).
2. Install the Riser 2
3. Install the 2U top sled on the 2U node

## Cable routing

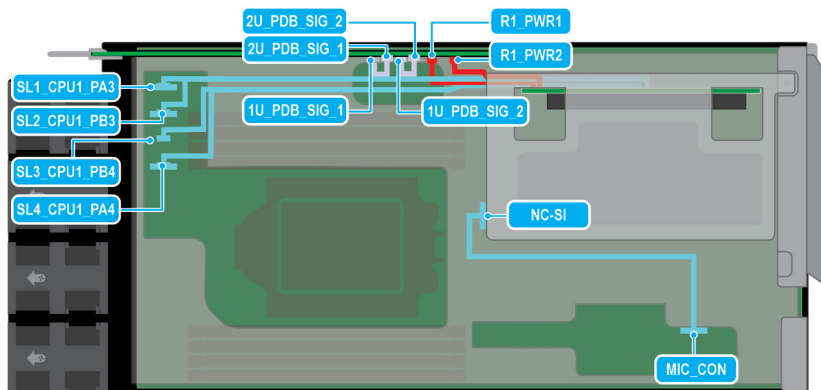
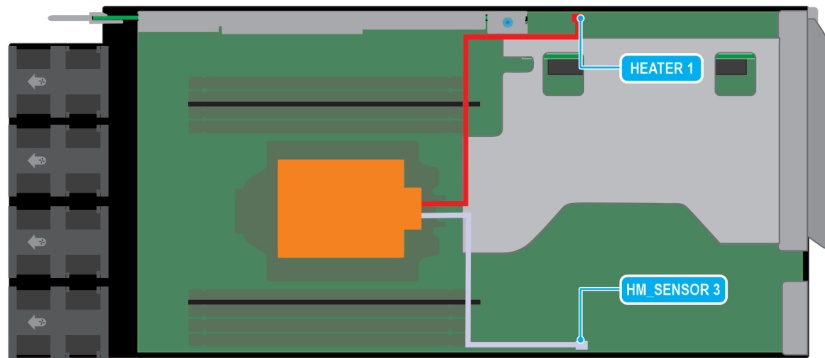


Figure 79. Configuration 1

**Table 65. Configuration 1**

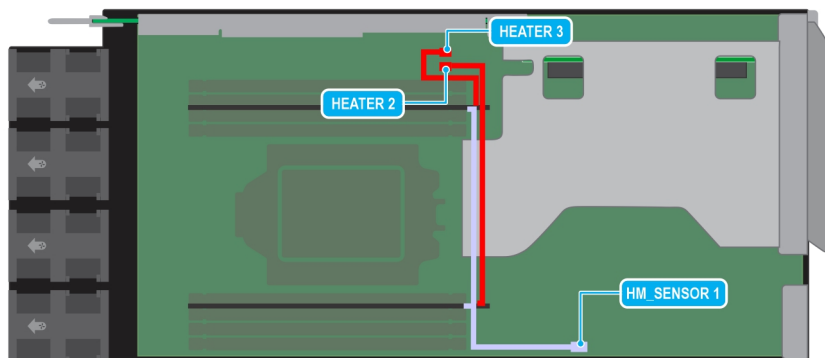
Order	From	To
1	Riser 1 (Slot 1)	R1_PWR1 (power distribution board power connector)
2	Riser 1 (Slot 1)	SL1_CPU1_PA3 (PCIe connector 1 on system board) and SL2_CPU1_PB3 (PCIe connector 2 on system board)
3	Riser 1 (Slot 2)	R1_PWR2 (power distribution board power connector)
4	Riser 1 (Slot 2)	SL3_CPU1_PA3 (PCIe connector 3 on system board) and SL4_CPU1_PB3 (PCIe connector 4 on system board)
5	1U_PDB_SIG_1 (1U power distribution board signal connector)	2U_PDB_SIG_1 (2U power distribution board signal connector)
6	1U_PDB_SIG_2 (1U power distribution board signal connector)	2U_PDB_SIG_2 (2U power distribution board signal connector)
7	MIC_CON (Smart NIC connector)	NC-SI (NC-SI Connector)



**Figure 80. CPU Heater Manager Module**

**Table 66. CPU Heater Manager Module**

Order	From	To
1	CPU Heater Manager	HM heater (MB_HEATER1)
2	CPU Heater Manager	HM sensor (HM_SENSOR3)

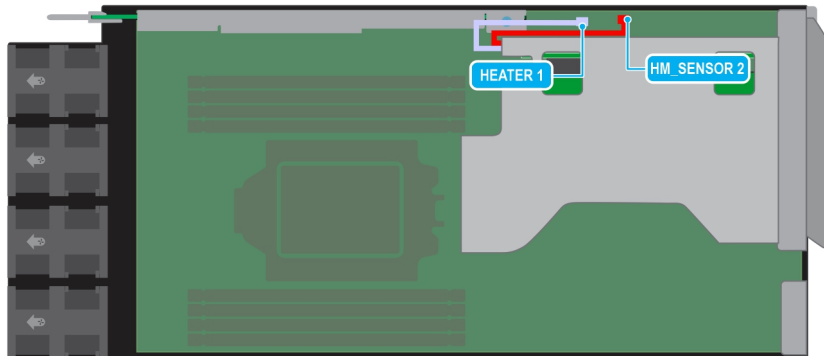


**Figure 81. DIMM sensor clips heater manager**



**Table 67. DIMM sensor clips heater manager**

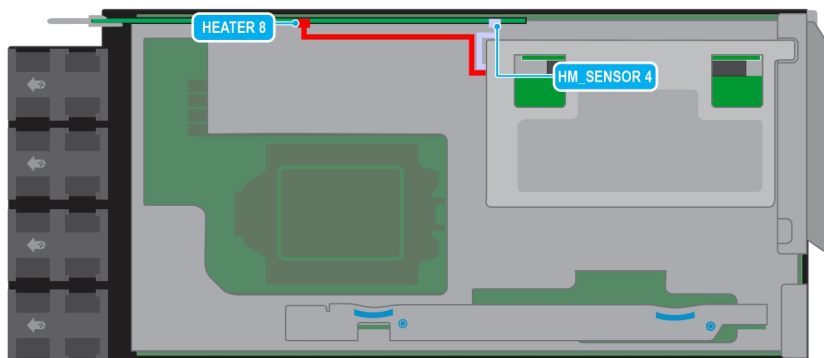
Order	From	To
1	DIMM sensor clip A1 and A2	HM sensor (MB_SENSOR1)



**Figure 82. Riser 2 heater manager**

**Table 68. Riser 2 heater manager**

Order	From	To
1	PCIe from Riser 2	HM heater (MB_HEATER1)
2	PCIe from Riser 2	HM sensor (MB_SENSOR2)



**Figure 83. Riser 1 heater manager (Slot 1)**

**Table 69. Riser 1 heater manager (Slot 1)**

Order	From	To
1	PCIe from Riser 1 Slot 1	HM heater (2U_PDB_HEATER9)
2	PCIe from Riser 1 Slot 1	HM sensor (MB_SENSOR4)

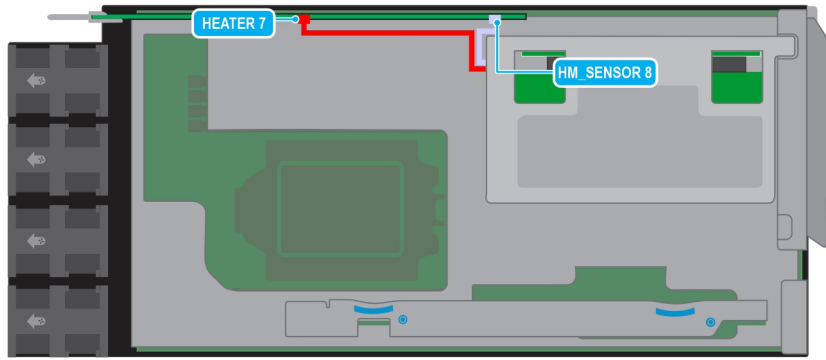


Figure 84. Riser 1 heater manager (Slot 2)

Table 70. Riser 1 heater manager (Slot 2)

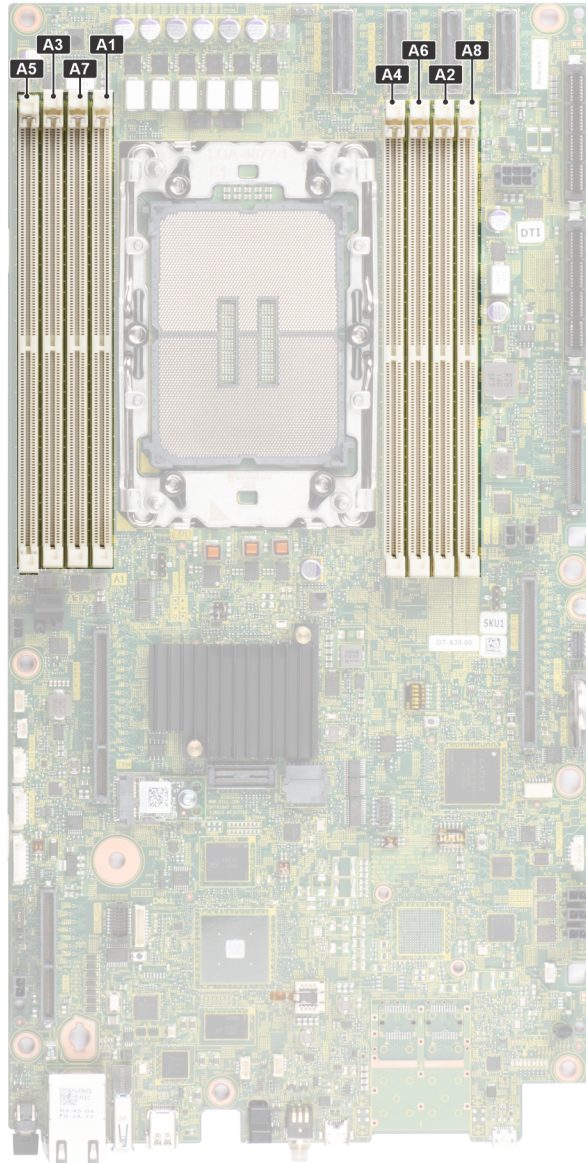
Order	From	To
1	PCIe from Riser 1 Slot 2	HM heater (2U_PDB_HEATER10)
2	PCIe from Riser 1 Slot 2	HM sensor (MB_SENSOR8)

## System memory

### System memory guidelines

The PowerEdge XR8620t system supports DDR5 registered DIMMs (RDIMMs). System memory holds the instructions that are performed by the processor.

Your system memory is organized into eight channels(one memory slot per channel).



**Figure 85. Memory channels**

Memory channels are organized as follows:

**Table 71. Memory channels**

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
Processor 1	Slots A1	Slots A7	Slots A3	Slots A5	Slots A4	Slots A6	Slots A2	Slots A8

**Table 72. Supported memory matrix**

DIMM type	Rank	Capacity	DIMM rated voltage	Operating Speed
				1 DIMM per channel (DPC)
RDIMM	1 R	16 GB	DDR5 (1.1 V)	4800 MT/s
	2 R	32 GB, 64 GB	DDR5 (1.1 V)	4800 MT/s

**NOTE:** The processor may reduce the performance of the rated DIMM speed.

# 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 5600 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 following are the recommended guidelines for installing memory modules:

- All DIMMs must be DDR5.
- 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.
- In **Optimizer Mode**, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

**Table 73. Memory population rules**

Processor	Memory population	Memory population information
Single processor	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}	8 DIMMs are supported per system.

- Not more than two DIMM part numbers allowed in the system.
- x4 and x8 DRAM based memory modules can be mixed.
- For best performance, populate all memory channels equally (8DIMMs per CPU) using identical DIMMs.
- Supported total number of RDIMMs in system: 2DIMMs, 4DIMMs, 6DIMMs, 8DIMMs.
- 3 DIMMs, 5 DIMMs, 7DIMMs configurations are not supported.
- Population order requires the largest capacity DIMM be placed first. For example, if we are populating with 32GB and 64GB RDIMMs, we would populate 64GB RDIMMs first.

## Removing a memory module

### Prerequisites

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

**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.

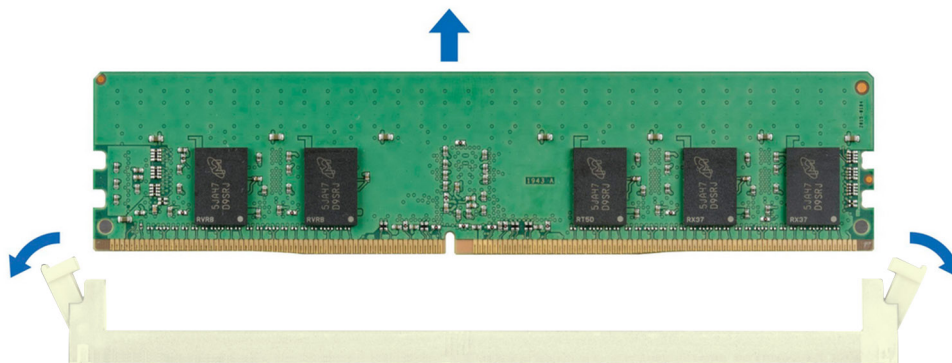
**NOTE:** To ensure proper system cooling, memory module blanks must be installed in any memory socket that is not occupied. Remove memory module blanks only if you intend to install memory modules in those sockets.

### Steps

1. Locate the appropriate memory module socket.
2. To release the memory module from the socket, simultaneously press the ejectors on both ends of the memory module socket to fully open.

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

3. Lift the memory module away from the system.



**Figure 86. Removing a memory module**

#### Next steps

1. [Installing the 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.

## Removing the DIMM sensor clips

There are two DIMM sensor clips installed on memory slots A1 and A2.

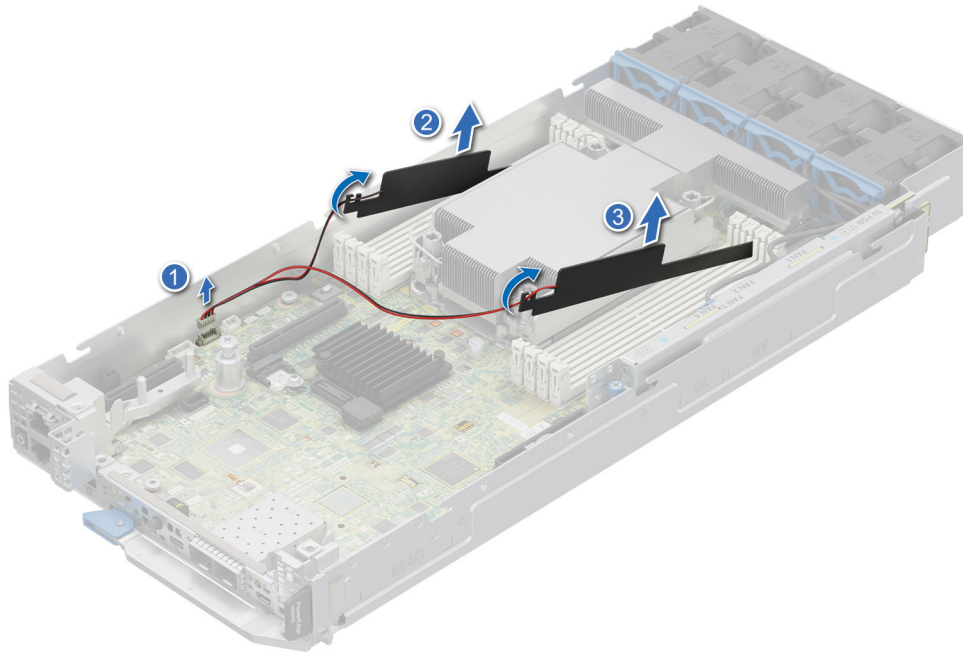
#### Prerequisites

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

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

#### Steps

1. Locate the appropriate DIMM sensor clips A1 and A2 and the respective cables connected to the system board.
2. Disconnect the cables connected from DIMM sensor clips A1 and A2 to heater ports on the system board.
3. To release the DIMM sensor clips, pull up and lift them from the front-facing side of the sled's DIMM slots to disengage them.



**Figure 87. Removing the DIMM sensor clips**

#### Next steps

1. [Installing the DIMM sensor clips.](#)

## Installing the DIMM sensor clips

There are two DIMM sensor clips installed on memory slots A1 and A2.

#### Prerequisites

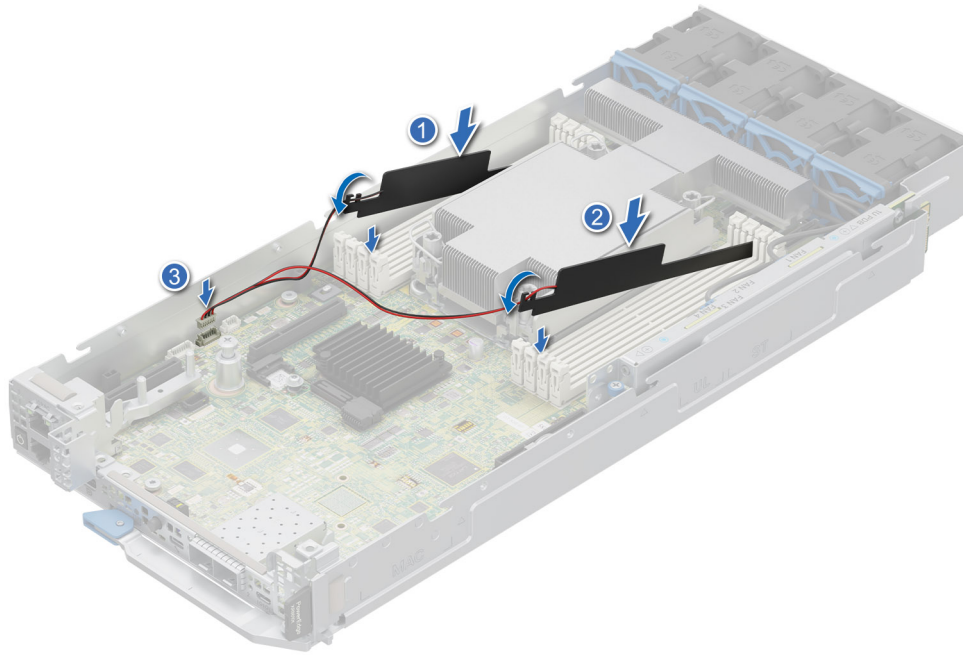
1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).

#### Steps

1. Locate the DIMM clips A1 and A2 and press in the DIMM latches to lock the respective memory module sockets A1 and A2.
2. Place the DIMM clips A1 and A2 at a tilting angle with the cable facing towards the front of the sled.

**NOTE:** Avoid using excessive force while placing the DIMM clips at a tilting angle, as it is made of plastic and can be easily broken.

3. Press down until the DIMM clips are seated into place and touch the surface of system board.
4. Connect the DIMM clips A1 and A2 to the heater ports in the system board.



**Figure 88. Installing the DIMM sensor clips**

#### Next steps

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

## Installing a memory module

#### Prerequisites

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

#### 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. 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.

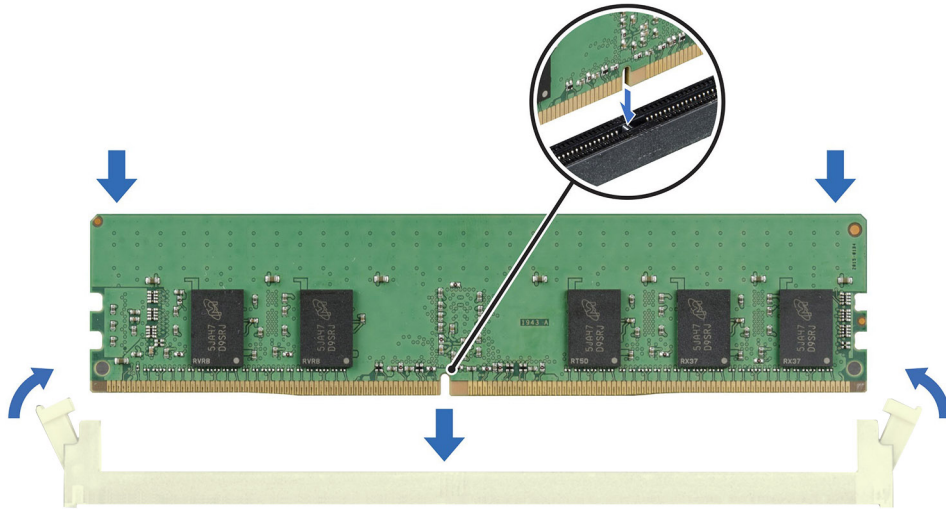
**CAUTION:** To prevent damage to the memory module or the memory module socket during installation, do not bend or flex the memory module; insert both ends of the memory module simultaneously.

**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.

3. 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 89. Installing a memory module**

#### Next steps

1. Follow the procedure listed in [After working inside your system](#).
2. 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.
3. 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.
4. Run the system memory test in system diagnostics.

## Processor and heat sink module

This is a service technician replaceable part only.

## Removing the processor and heat sink module

#### Prerequisites

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

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

#### Steps

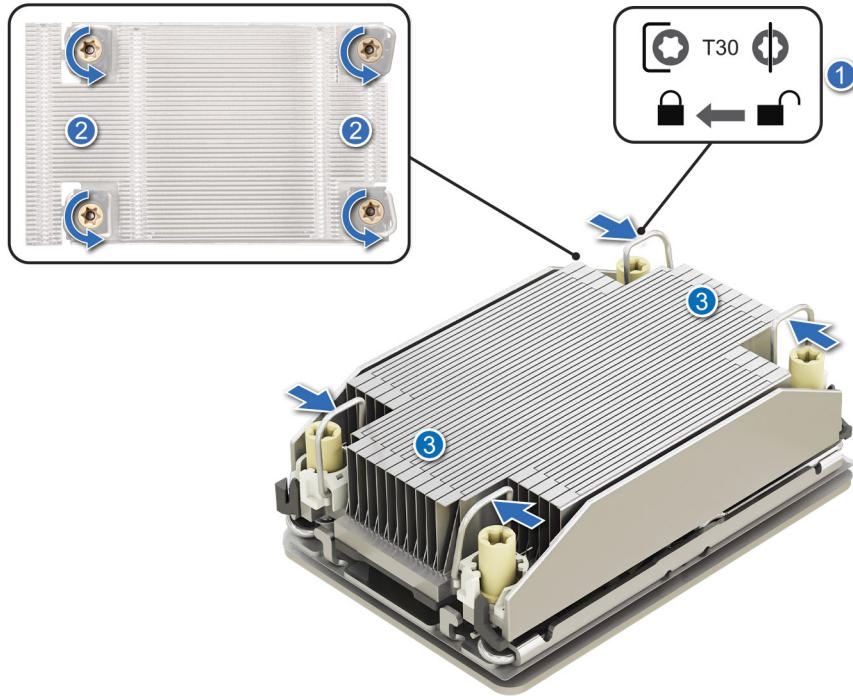
1. For HM configuration, disconnect the cables connected from processor heater manager module to heater and sensor ports on the system board.
2. Ensure all four anti-tilt wires are in the locked position (outward position), and then using a Torx T30 screwdriver, loosen the captive nuts on the processor heat sink module (PHM) 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 and loosen it completely.

**i** **NOTE:** Ensure that the anti-tilt wires on the PHM are in locked position when loosening the captive nuts.

- 3. Set all the anti-tilt wires to unlocked position (inward position).



**Figure 90. Removing the processor heat sink module**

- 4. Lift the PHM from the system and set the PHM aside with the processor side facing up.

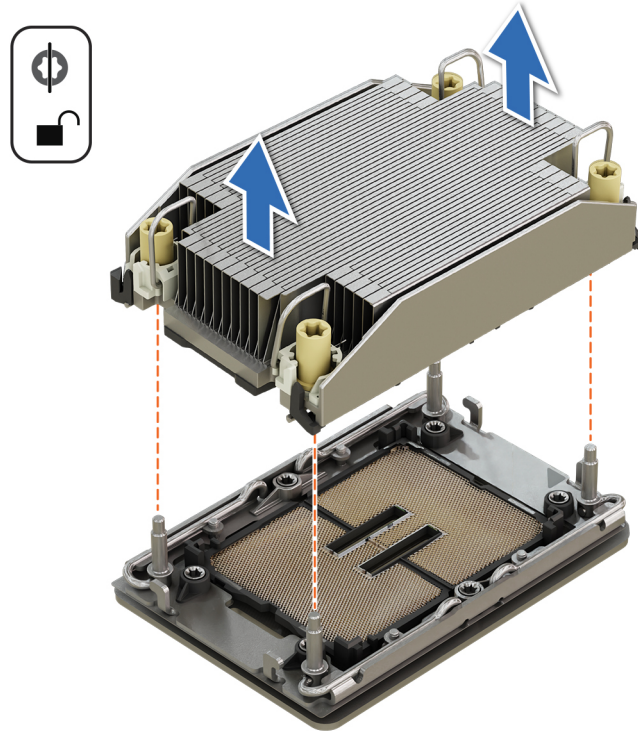


Figure 91. Removing a heat sink

### Next steps

If you are removing a faulty heat sink, [replace the heat sink](#), if not, [remove the processor](#).

## Removing the processor

### Prerequisites

**WARNING:** Remove the processor from 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 the [Before working inside your system](#).
3. [Remove the 2U sled from 1U node](#)
4. [Remove the processor heat sink module](#).

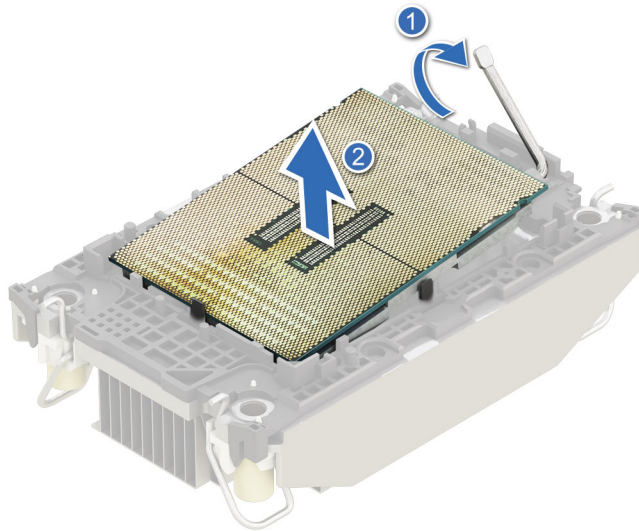
**CAUTION:** You may find the CMOS battery loss or CMOS checksum error that is displayed during the first instance of powering on the system after the processor or system board replacement which is expected. To fix this, simply go to setup option to configure the system settings.

### Steps

1. Place the heat sink with the processor side facing up.
2. Using your thumb, lift the thermal interface material (TIM) break lever to release the processor from the TIM and retaining clip.
3. Holding the processor by the edges, lift the processor away from the retaining clip.

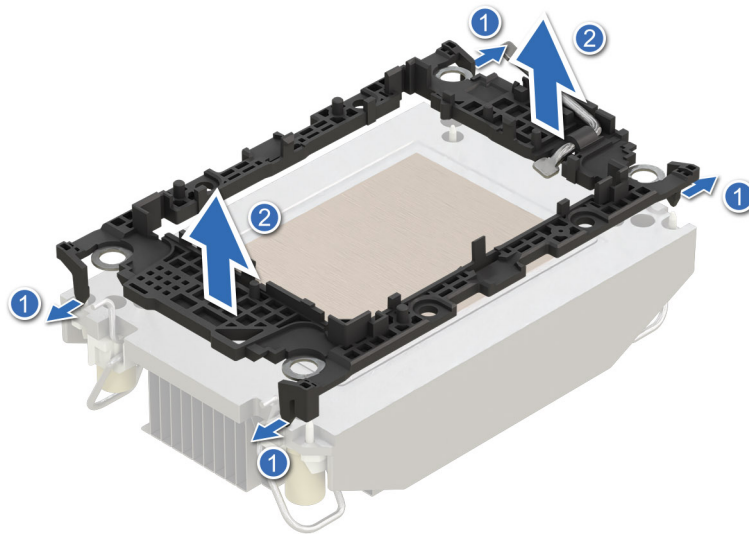
**NOTE:** Ensure to hold the retaining clip to the heat sink as you lift the TIM break lever.

Figure 92. Removing the processor



**NOTE:** Ensure to return the TIM break lever back to 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 93. Removing the retaining clip**

### Next steps

Replace the processor.

## Installing the processor

### 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 2U sled from 1U node](#)

#### 4. Remove the processor.

##### Steps

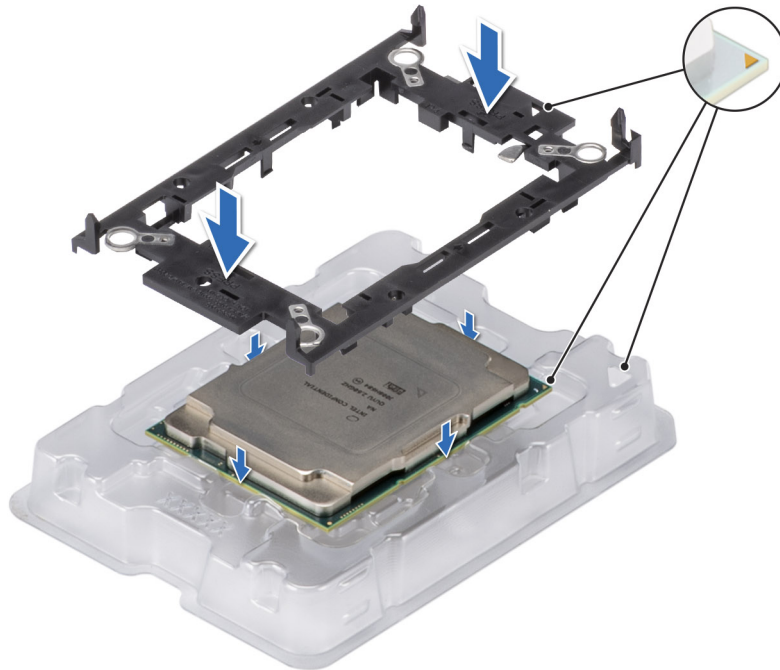
1. Place the processor in the processor tray.

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

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

**i** **NOTE:** Ensure 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.

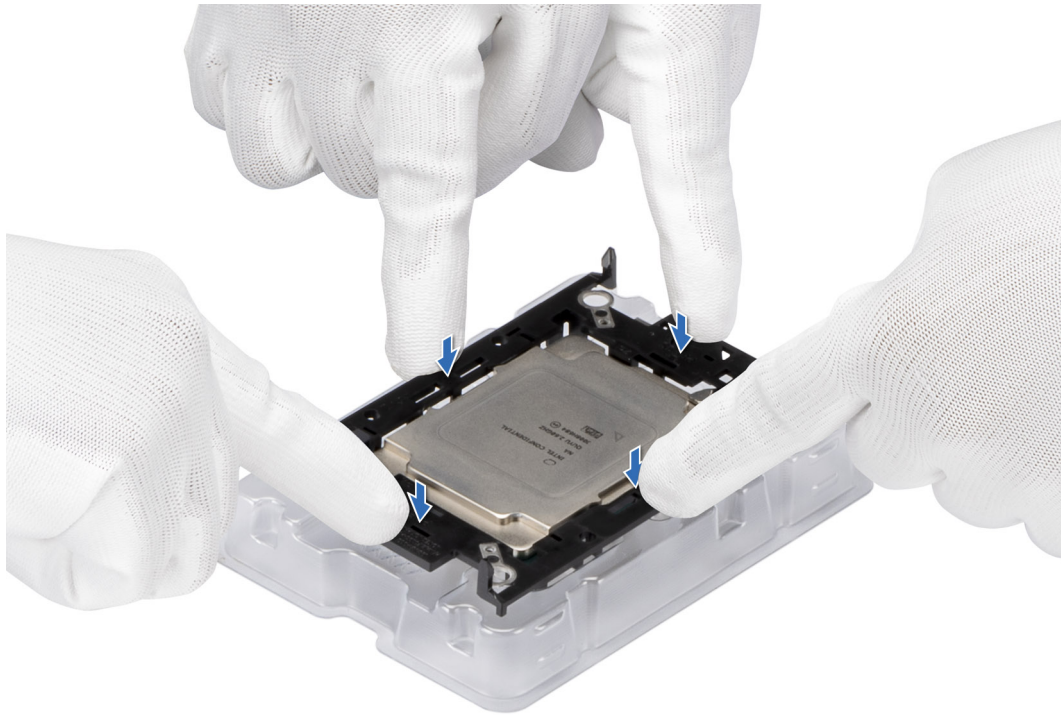
**i** **NOTE:** Before you install the heat sink, ensure to place the processor and retaining clip in the tray.



**Figure 94. Installing the retaining clip**

3. Align the processor with retaining clip, by using your fingers 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 retaining clip.

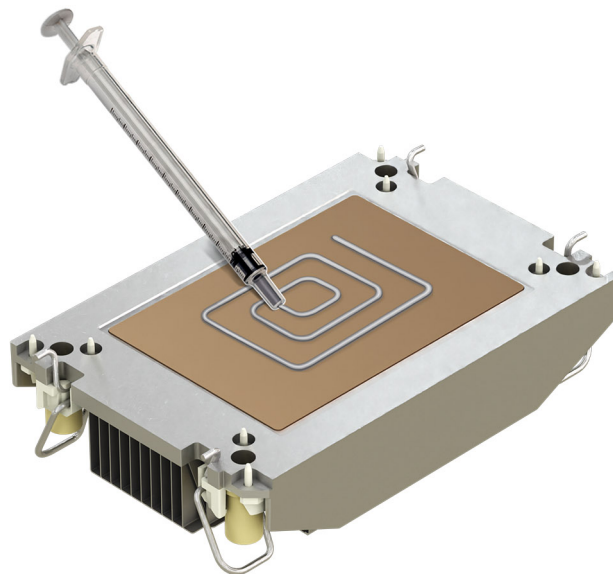


**Figure 95. Press the retaining clip on the four sides**

4. If you are using an existing heat sink, remove the thermal grease from the heat sink by using a clean lint-free cloth.
5. Apply the thermal grease in a thin spiral design on the bottom of the heat sink.

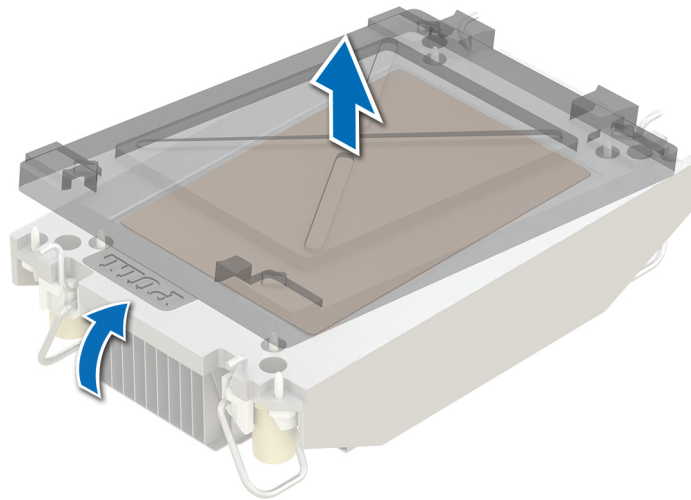
**CAUTION:** Applying too much thermal grease can result in excess grease coming in contact with and contaminating the processor socket.

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



**Figure 96. Applying thermal grease**

6. For new heat sink, pull and remove the plastic cover from the base of heat sink.



**Figure 97. Removing the cover**

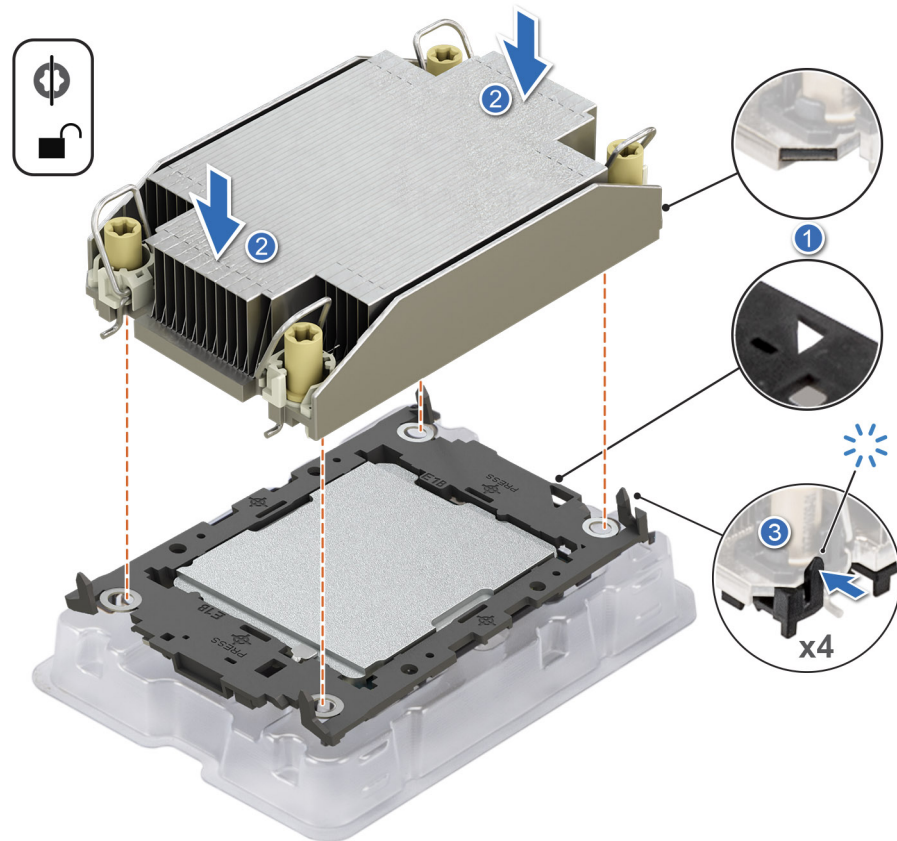
7. Place the heat sink on the processor and press the base of the heat sink until the retaining clip locks onto the heat sink at all the four corners.

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

**NOTE:**

- Ensure latching features on retaining clip, and heat sink are aligned during assembly.
- 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 retaining clip.





**Figure 98. Installing the heat sink onto the processor**

### Next steps

1. Install the processor heat sink module.
2. Install the 2U sled on 1U node
3. Follow the procedure listed in [After working inside your system.](#)

## Installing the processor and heat sink module

### Prerequisites

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

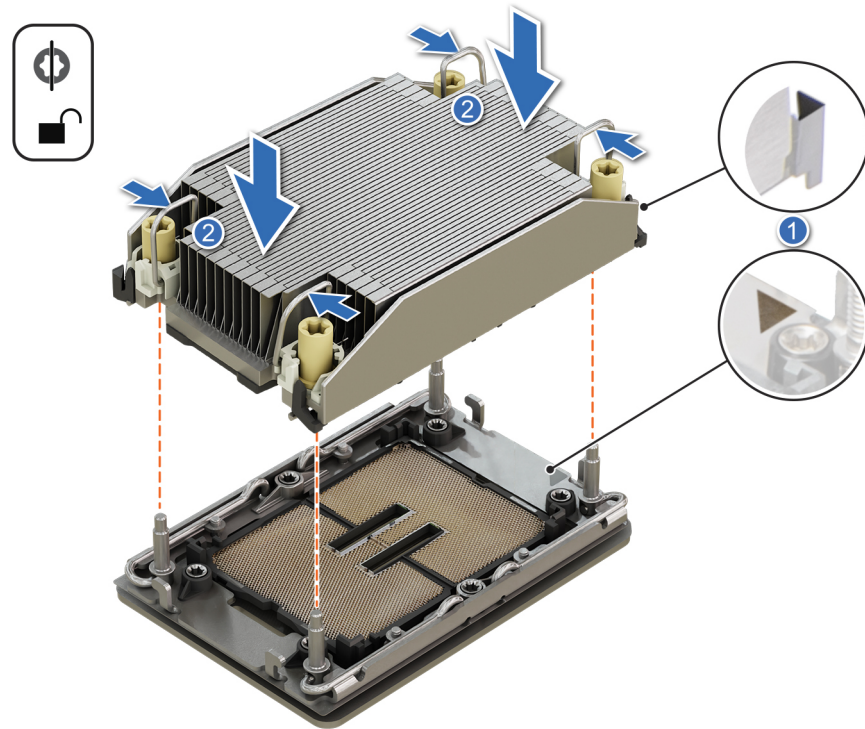
1. Follow the safety guidelines listed in the [Safety instructions.](#)
2. Follow the procedure listed in the [Before working inside your system.](#)
3. [Remove the 2U sled from 1U node](#)
4. If installed, remove the processor dust cover.

### 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 heat sink module (PHM) on the processor socket.

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

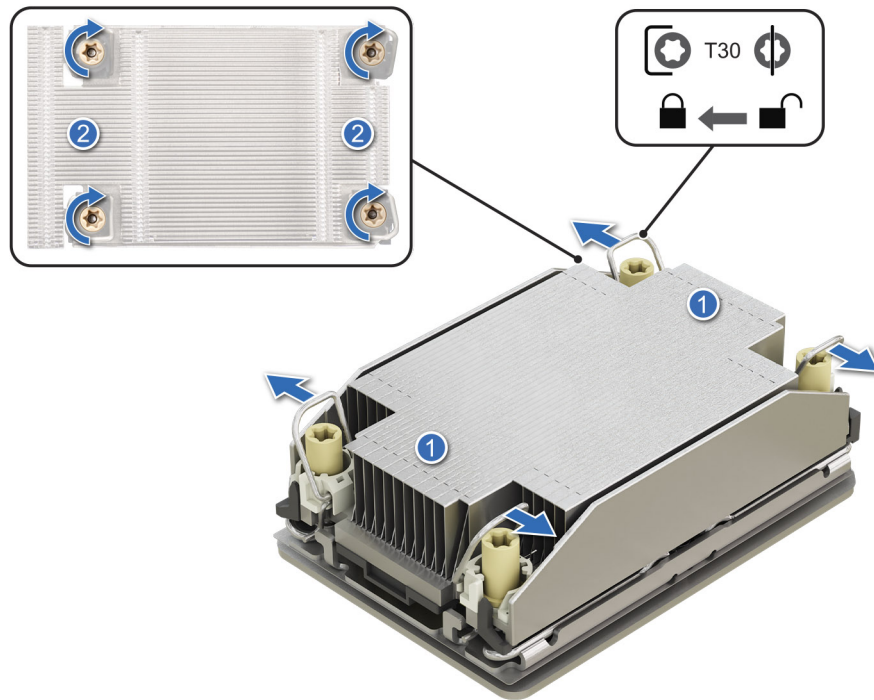
**NOTE:** Ensure that the PHM is held parallel to the system board to prevent damaging the components.



**Figure 99. Installing the processor heat sink**

3. Set the anti-tilt wires to the locked position (outward position), and then using the Torx T30 screwdriver, 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 that 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 100.** Set the anti-tilt wires to the locked position and tightening the nuts

4. For HM Configuration, connect the cables connected from processor heater manager module to heater and sensor ports on the system board.

#### Next steps

1. [Install the 2U sled on 1U node](#)
2. Follow the procedure listed in the [After working inside your system](#).

## System battery

This is a service technician replaceable part only.

## Replacing the system battery

#### Prerequisites

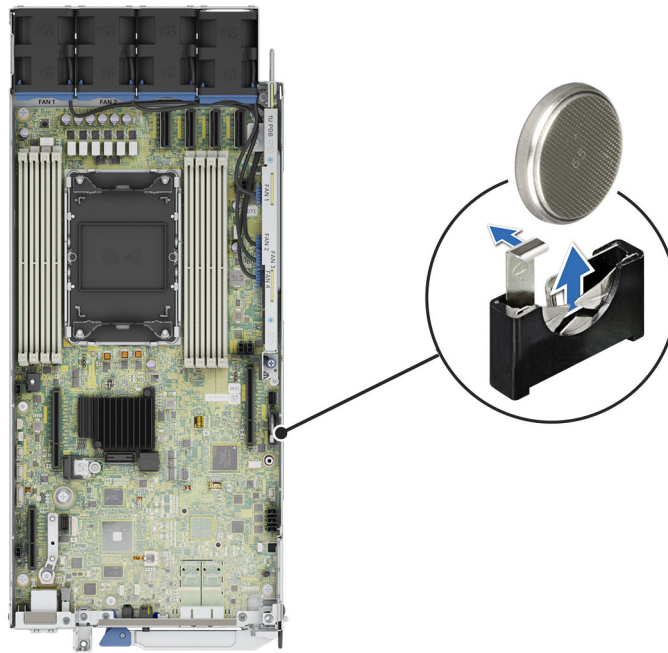
**⚠ WARNING:** There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. See the Safety instructions that came with your system for more information.

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

#### Steps

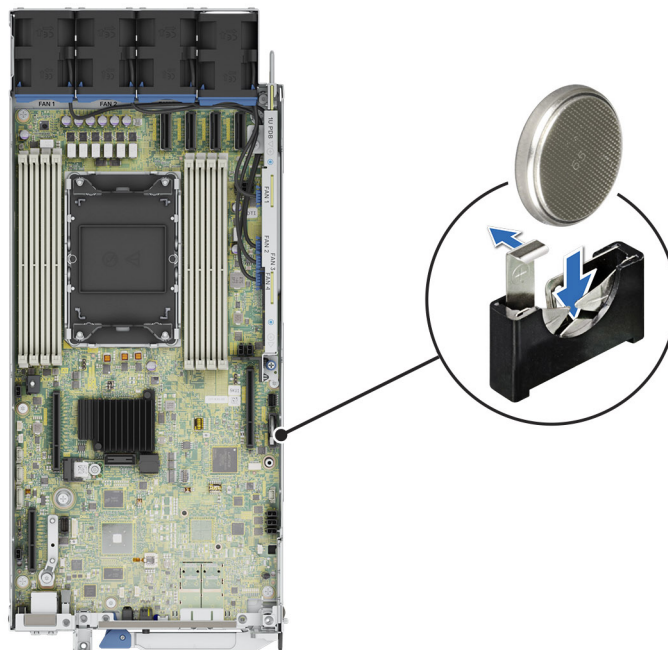
1. To remove the battery:
  - a. Use a plastic scribe to pry out the system battery.

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



**Figure 101. 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 102. Installing the system battery**

#### **Next steps**

1. Follow the procedure listed in the [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.

 **CAUTION:** To avoid damage to the system board, ensure that the system board does not touch the side walls of the sled chassis, while sliding the system board into the sled.

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. Remove the following components:
  - a. [Air shroud](#)
  - b. [M.2 Direct Riser](#)
  - c. [Storage Interposer module](#)
  - d. [Side cover](#)
  - e. [Riser 1](#)
  - f. [2U Cooling fans](#)
  - g. [2U Power distribution board](#)
  - h. [2U sled from the 1U sled](#)
  - i. [1U Power distribution board](#)
  - j. [Riser 2](#)
  - k. [Memory modules](#)
  - l. [Heatsink](#)
  - m. [Processor](#)
  - n. [Trusted platform module \(TPM\)](#).  
 **NOTE:** The TPM Module must be replaced only while installing new system board.
  - o. Disconnect all 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 a Phillips 2 screwdriver, remove the screws that secure the system board to the chassis.
2. To disengage the ports from the slots on the chassis, slide the system board toward the rear of the chassis. Lift the system board out of the chassis.

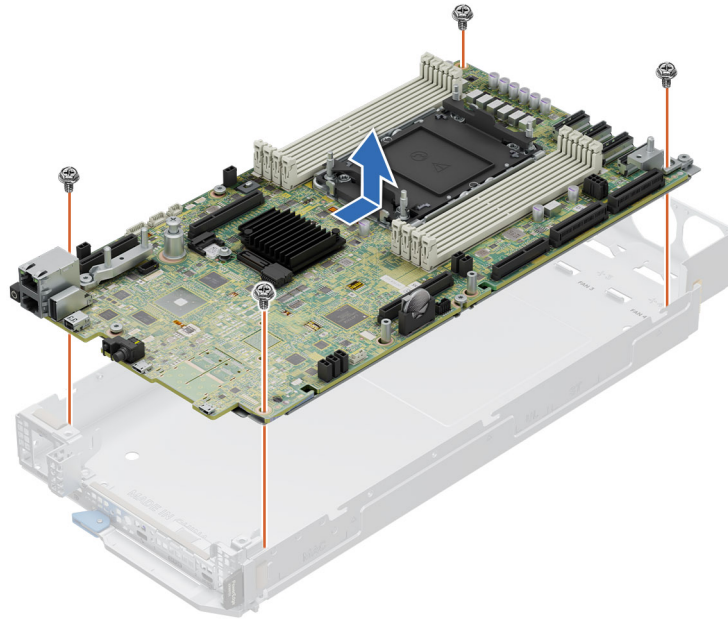


Figure 103. Removing the system board

### Next steps

Installing the system board.

## Installing the system board

### Prerequisites

**i** **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 [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 [removing the system board](#) section.

**⚠ CAUTION:** To avoid damage to the system board, ensure that the system board does not touch the side walls of the sled chassis, while sliding the system board into the sled.

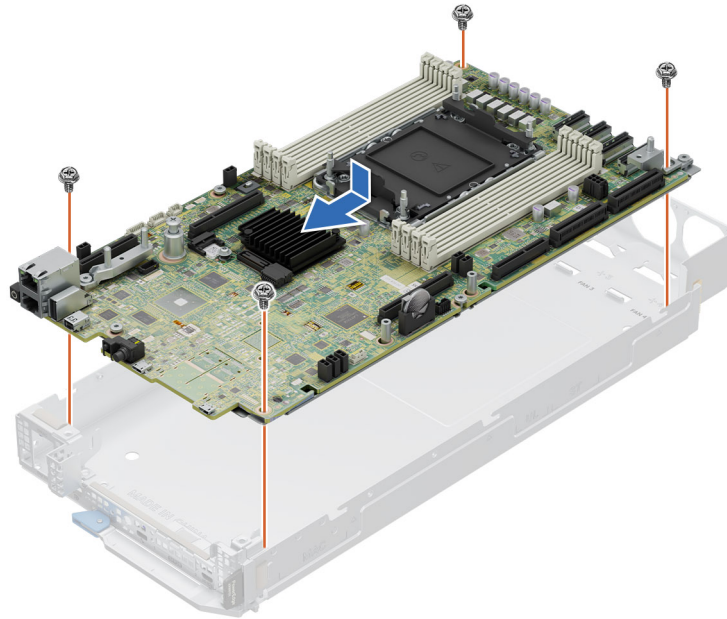
### Steps

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 the edges, lower the system board into the chassis.
3. Incline the system board at an angle and align the connectors on the system board with the slots on the front of the chassis until the connectors are firmly seated in the slots.
4. Using a Phillips 2 screwdriver, tighten the screws that secure the system board to the chassis.



**Figure 104. Installing the system board**

### Next steps

1. Replace the following components:
  - a. [Trusted platform module \(TPM\)](#).
    - i** **NOTE:** The TPM Module must be replaced only while installing new system board.
  - b. [Processor](#)
  - c. [Heatsink](#)
  - d. [Memory modules](#)
  - e. [Riser 2](#)
  - f. [1U Power distribution board](#)
  - g. [2U sled from the 1U sled](#)
  - h. [2U Power distribution board](#)
  - i. [2U Cooling fans](#)
  - j. [Riser 1](#)
  - k. [side cover](#)
  - l. [Storage Interposer module](#)
  - m. [M.2 Direct Riser](#)
  - n. [Air shroud](#)
2. Reconnect all cables to the system board.
  - i** **NOTE:** Ensure that the cables inside the system are routed along the chassis wall and secured using the cable securing bracket.
3. Ensure that you perform the following steps:
  - a. Use the Easy Restore feature to restore the Service Tag. See the [Restoring the system by using the Easy Restore feature](#) section.
  - b. If the service tag is not backed up in the backup flash device, enter the system service tag manually. See the [Manually update the Service Tag by using System Setup](#) section.
  - c. Update the BIOS and iDRAC versions.
    - Re-enable the Trusted Platform Module (TPM). See the [upgrading the Trusted Platform Module](#) section.
4. 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](#)
5. Follow the procedure listed in [After working inside your system](#).



## 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:

#### Steps

1. Restore the service tag, license, and diagnostics information, press **Y**
2. Navigate to the Lifecycle Controller based restore options, press **N**
3. 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.
4. Restore data from a previously created **Hardware Server Profile**, press **F10**
5. To restore the system configuration data, press **Y**
6. 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. Incorrectly entered service tag will lead to system board replacement.
5. Click **OK**.

# Trusted Platform Module

This is a service technician replaceable part only.


## Upgrading the Trusted Platform Module

### Removing the TPM

#### Prerequisites

##### 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

#### Steps

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

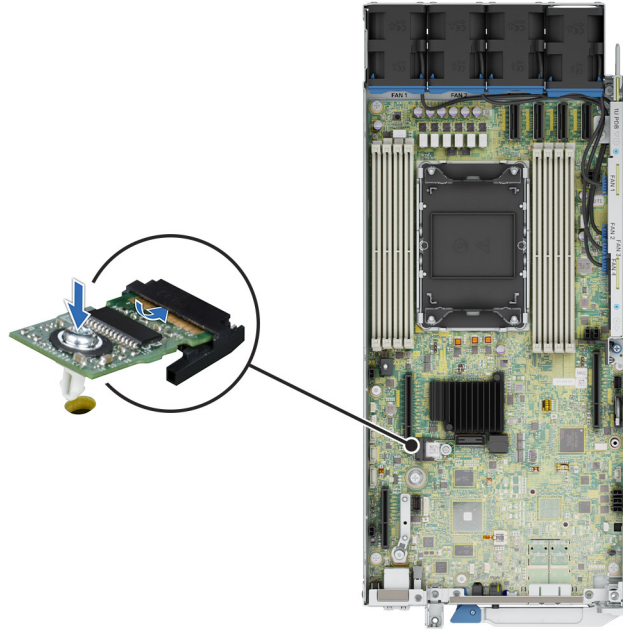


Figure 105. Installing the TPM

## Initializing TPM for users

### Steps

1. Initialize the TPM.  
For more information, see [Initializing the TPM 2.0 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.



# 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

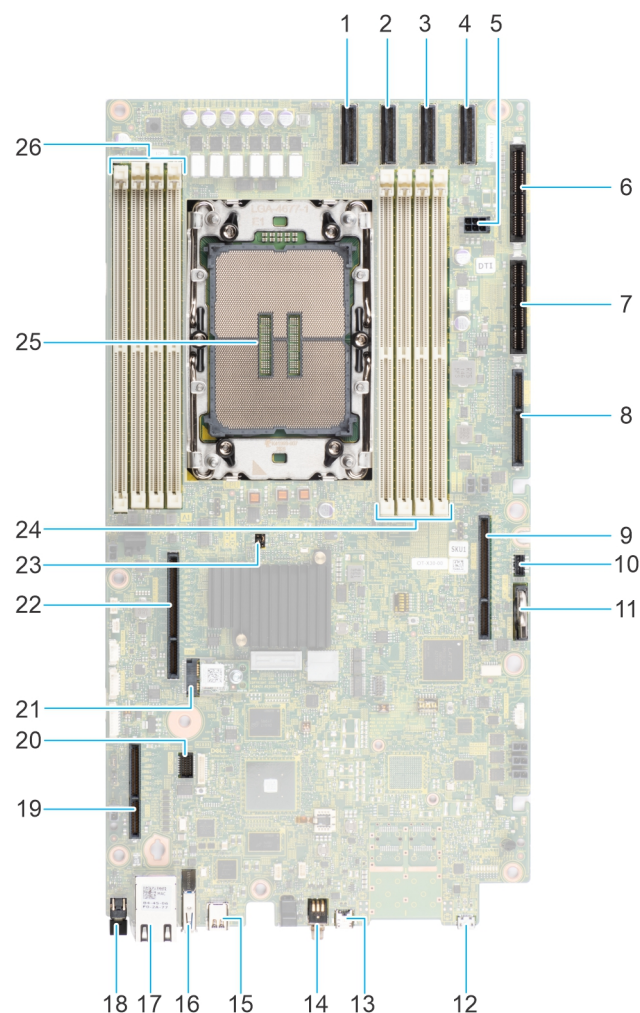


Figure 106. System board connectors

**Table 74. System board connectors description**



Item	Connector	Description
1	SL4_CPU1_PA4	PCIe connector 4
2	SL3_CPU1_PB4	PCIe connector 3
3	SL2_CPU1_PB3	PCIe connector 2
4	SL1_CPU1_PA3	PCIe connector 1
5	J_R1_PWR	PCIe Extension Power
6	SYS_PWR_CONN1	Power connector 1
7	SYS_PWR_CONN2	Power connector 2
8	PIB Signal	PIB Signal
9	IO_RISER1	Riser 1 connector
10	Reserved(INT_USB1)	Reserved for debug purpose
11	Coin cell battery	Coin cell battery
12	Micro-USB Serial	Micro-USB Serial Port
13	iDRAC_DIRECT	iDRAC Direct Port
14	SYS_ID	System ID button
15	Display	Display Port
16	USB	USB 3.0 connector
17	iDRAC RJ45/Dry Input	iDRAC RJ45/Dry Input
18	POWER	Power button
19	BOSS-N1	BOSS-N1 M.2 connector
20	MIC_CON	Smart NIC connector
21	TPM	TPM connector
22	Reserved(IO_RISER2)	Riser 2 connector
23	JUMPER	BIOS password and NVRAM jumper
24	A4, A6, A2, A8	DIMM slots (A4, A6, A2, A8)
25	CPU	Processor socket
26	A5, A3, A7, A1	DIMM slots (A5, A3, A7, A1)

**NOTE:** J\_R1 PWR1 and J\_R1\_PWR2 is for PCIE Riser1 Slot1 Slimline power and Slot2 Slimline power. They are located on 2U PDB board



## System board jumper settings

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

**Table 75. System board jumper settings**

Jumper	Setting	Description
PWRD_EN	 2 4 6 (default)	The BIOS password feature is enabled.
	 2 4 6	The BIOS password feature is disabled. The BIOS password is now disabled and you are not allowed to set a new password.

**Table 75. System board jumper settings (continued)**

Jumper	Setting	Description
NVRAM_CLR		The BIOS configuration settings are retained at system boot.
		The BIOS configuration settings are cleared at system boot.

**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 system and all attached peripherals. Disconnect the system from the electrical outlet, and disconnect the peripherals.
2. [Remove the system cover.](#)
3. Move the jumper on the system board from pins 2 and 4 to pins 4 and 6.
4. [Replace the system cover.](#)
  - NOTE:** The existing passwords are not disabled (erased) until the system boots with the jumper on pins 4 and 6. However, before you assign a new system and/or setup password, you must move the jumper back to pins 2 and 4.
  - NOTE:** If you assign a new system and/or setup password with the jumper on pins 4 and 6, the system disables the new password(s) the next time it boots.
5. Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.
6. Power off the system.
7. [Remove the system cover.](#)
8. Move the jumper on the system board from pins 4 and 6 to pins 2 and 4.
9. [Replace the system cover.](#)
10. Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.
11. Assign a new system and/or setup password.

# 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 76. 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 [How to Recycle](#) 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 [Dell Support](#).
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 Express service tag in the front of the XR8620t system, to access information about PowerEdge XR8620t. There is also another QRL for accessing product information 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 [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 XR8620t system



Figure 107. Quick Resource Locator for PowerEdge XR8620t 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 [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 77. Additional documentation resources for your system**

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



**Table 77. Additional documentation resources for your system (continued)**

Task	Document	Location
	For information about installing the operating system, see the operating system documentation.	<a href="#">Operating System Manuals</a>
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	<a href="#">Drivers</a>
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	<a href="#">PowerEdge Manuals</a>
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	<a href="#">OpenManage Manuals</a>
	For information about installing and using Dell Secure Connect Gateway, see the Dell Secure Connect Gateway Enterprise User's Guide.	<a href="#">Software Serviceability Tools</a>
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	<a href="#">OpenManage Manuals</a>
Working with the Dell PowerEdge RAID controllers (if applicable)	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	<a href="#">Storage Controller Manuals</a>
Understanding event and error messages	For information about the event and error messages generated by the system firmware and agents that monitor system components, go to <a href="#">QRL</a> > <b>Look Up</b> > <b>Error Code</b> , type the error code, and then click <b>Look it up</b> .	<a href="#">QRL</a>
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	<a href="#">PowerEdge Manuals</a>