Dell PowerEdge R770

Installation and Service Manual

Regulatory Model: E111S
Regulatory Type: E111S001
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DELL Technologies

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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Contents

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Introduction

This document provides a system overview, information about installing and replacing components, diagnostic tools, and guidelines for installing certain components.

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, go to How to Recycle and select the relevant country or region.

Automated support with secure connect gateway

Secure connect gateway is an optional Services offering that automates technical support for your server, storage, and networking devices. A secure connect gateway in your IT environment provides the following benefits:

- Automated issue detection: Monitors your devices and detects hardware issues.
- Automated case creation: Detects issues and opens a support case with Technical Support.
- Automated diagnostic collection: Collects system state information and uploads it securely to Dell Support. This information is used by Technical Support to troubleshoot the issue.
- Proactive contact: Technical Support agents contacts you about the support case.

The available benefits vary depending on the Service entitlement that is purchased for your device. For more information about secure connect gateway, go to secureconnectgateway.

2

PowerEdge R770 system configurations and features

The PowerEdge R770 system is a 2U server that supports:

- Two Intel Xeon 6 processors with up to 144 E-Cores or 86 P-cores
- Optional Direct Liquid Cooling (DLC) for required CPU SKU and/or configurations
- 32 DIMM slots
- Two AC or DC power supply units
- No backplane configuration
- Up to 8x EDSFF E3.S NVMe drives FIO configuration
- Up to 16x EDSFF E3.S NVMe drives FIO configuration
- Up to 16 x EDSFF E3.S NVMe drives
- Up to 32 x EDSFF E3.S NVMe drives
- Up to 40 x EDSFF E3.S NVMe drives
- Up to 4 x EDSFF E3.S NVMe drives on the rear
- Up to 8 x 2.5-inch SATA/NVMe drives
- Up to 8 x 2.5-inch Universal drives
- Up to 16 x 2.5-inch SATA drives
- Up to 24 x 2.5 inch SATA drives
- Up to 24 x 2.5 inch SATA/NVMe (8 NVMe + 16 SATA) drives

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

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

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

Topics:

System configurations - front view for PowerEdge R770 system

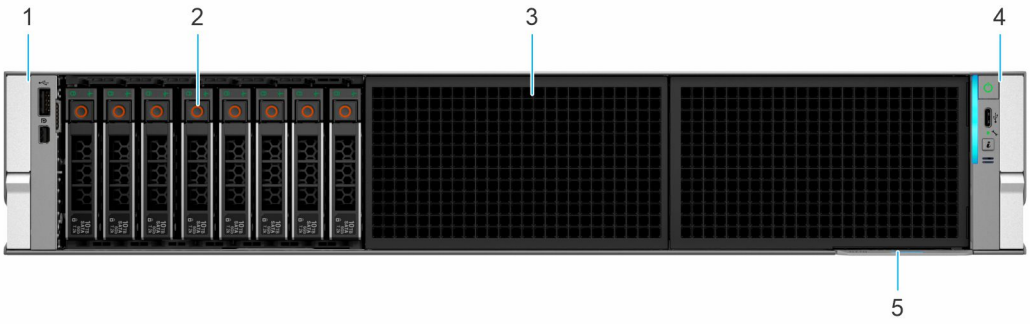


Figure 1. Front view of 8 x 2.5-inch drive system

Table 1. Front view of the 8 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Contains the USB port and Mini-Displayport. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Drive blank.	N/A	Drive blank is available in eight drive configuration and should not be removed.
4	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
5	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

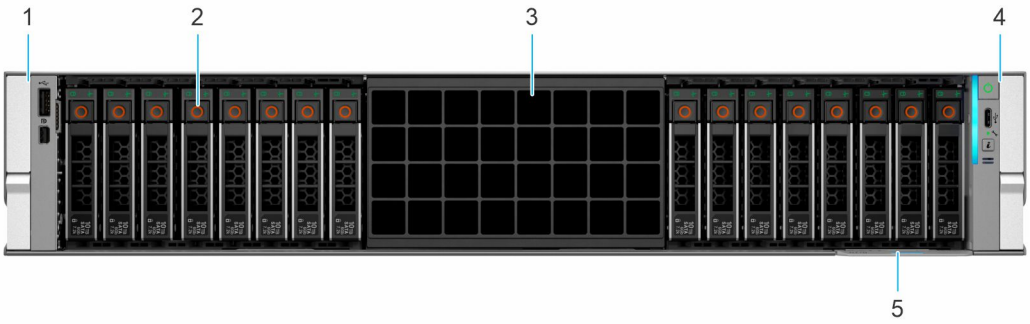


Figure 2. Front view of 16 x 2.5-inch drive system

Table 2. Front view of the 16 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Contains the USB port and Mini-Displayport. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	Drive	N/A	Enables you to install drives that are supported on your system.

Table 2. Front view of the 16 x 2.5-inch drive system (continued)

Item	Ports, panels, and slots	Icon	Description
3	Drive blank.	N/A	Drive blank is available in 16 drive configuration and should not be removed.
4	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
5	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

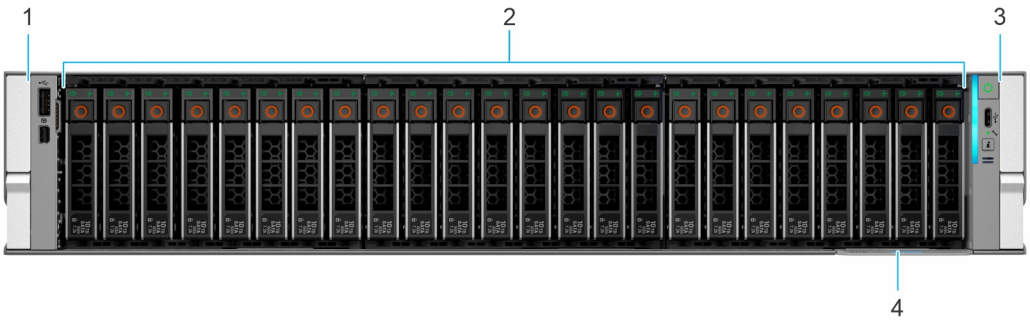


Figure 3. Front view of 24 x 2.5-inch drive system

Table 3. Front view of 24 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Contains the USB port and Mini-Displayport. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
4	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

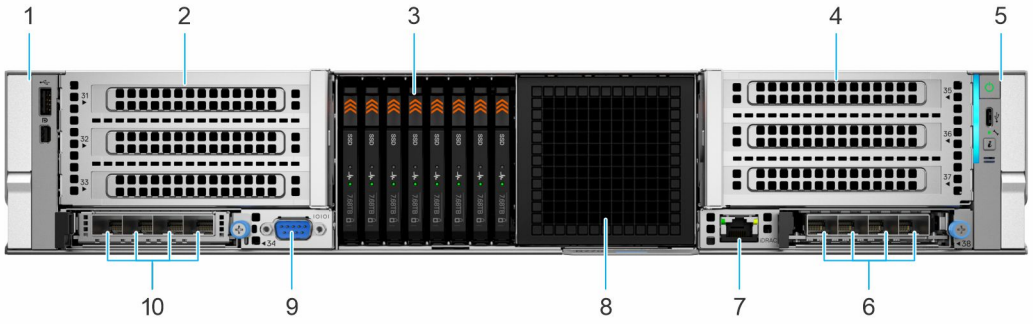


Figure 4. Front view of 8 x EDSFF E3.S drive system with front I/O configuration

Table 4. Front view of 8 x EDSFF E3.S drive system with front I/O configuration

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Contains the USB port and Mini-Displayport.

Table 4. Front view of 8 x EDSFF E3.S drive system with front I/O configuration (continued)

Item	Ports, panels, and slots	Icon	Description
			NOTE: The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	PCIe front expansion card riser 1 (slot 31, slot 32 and slot 33)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
3	Drive	N/A	Enables you to install drives that are supported on your system.
4	PCIe front expansion card riser 3 (slot 35, slot 36 and slot 37)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
5	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
6	Primary OCP NIC (slot 38 in front riser 4)	N/A	The OCP NIC slot supports the OCP 3.0 complaint networking card . The NIC ports are integrated on the OCP card which is connected to the system board. **NOTE:** The primary OCP NIC card shares a NIC port with the iDRAC.
7	Dedicated iDRAC Ethernet port (part of front riser 4)	N/A	Enables you to access iDRAC port.
8	Drive blank.	N/A	Drive blank is available in eight drive configuration and should not be removed.
9	Serial COM port (part of front riser 2)		Enables you to connect a serial device to the system.
10	OCP NIC or BOSS-N1 DC-MHS (Slot 34 in front riser 2)	N/A	Enables you to install a secondary OCP or BOSS-N1 DC-MHS controller, based on riser configuration. **NOTE:** Secondary OCP does not support the shared NIC feature.

Figure 5. Front view of 16 x EDSFF E3.S drive system with front I/O configuration

Table 5. Front view of 16 x EDSFF E3.S drive system with front I/O configuration

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Contains the USB port and Mini-Displayport. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	PCIe front expansion card riser 1 (slot 31, slot 32 and slot 33)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.

Table 5. Front view of 16 x EDSFF E3.S drive system with front I/O configuration (continued)

Item	Ports, panels, and slots	Icon	Description
3	Drive	N/A	Enables you to install drives that are supported on your system.
4	PCIe front expansion card riser 3 (slot 35, slot 36 and slot 37)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
5	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
6	Primary OCP NIC (slot 38 in front riser 4)	N/A	The OCP NIC slot supports the OCP 3.0 complaint networking card . The NIC ports are integrated on the OCP card which is connected to the system board. **NOTE:** The primary OCP NIC card shares a NIC port with the iDRAC.
7	Dedicated iDRAC Ethernet port (part of front riser 4)	N/A	Enables you to access the iDRAC port.
8	Serial COM port (part of front riser 2)		Enables you to connect a serial device to the system.
9	OCP NIC or BOSS-N1 DC-MHS (Slot 34 in front riser 2)	N/A	Enables you to install a secondary OCP or BOSS-N1 DC-MHS controller, based on riser configuration. **NOTE:** Secondary OCP does not support the shared NIC feature.

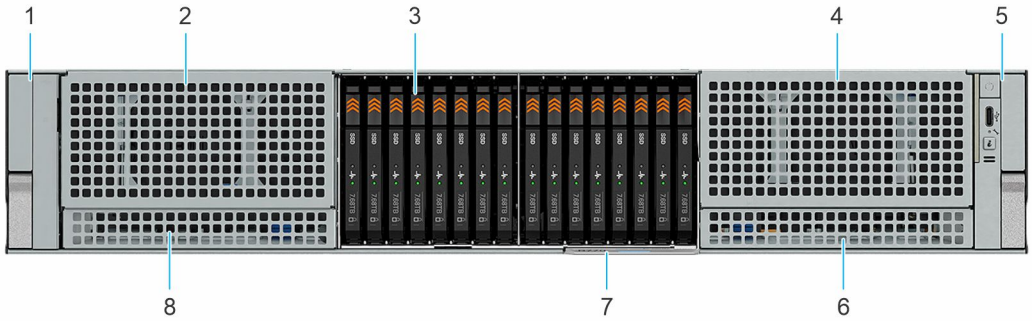


Figure 6. Front view of 16 x EDSFF E3.S drive system with rear I/O configuration

Table 6. Front view of 16 x EDSFF E3.S drive system with rear I/O configuration

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Left control panel blank. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	PCIe front expansion card riser 1 blank	N/A	In the rear I/O configuration, the riser blank is installed in the expansion card riser bay.
3	Drive	N/A	Enables you to install drives that are supported on your system.
4	PCIe front expansion card riser 3 blank	N/A	In the rear I/O configuration, the riser blank is installed in the expansion card riser bay.
5	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
6	PCIe front expansion card riser 4 blank	N/A	In the rear I/O configuration, the riser blank is installed in the expansion card riser bay.

Table 6. Front view of 16 x EDSFF E3.S drive system with rear I/O configuration (continued)

Item	Ports, panels, and slots	Icon	Description
7	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.
8	PCIe front expansion card riser 2 blank	N/A	In the rear I/O configuration, the riser blank is installed in the expansion card riser bay.

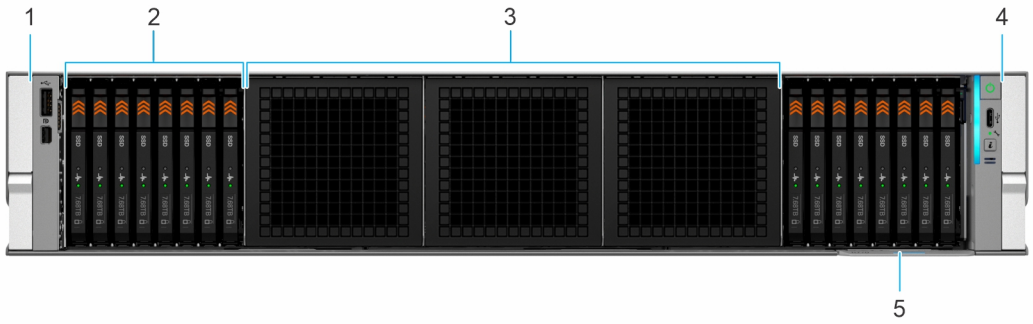


Figure 7. Front view of 16 x EDSFF E3.S drive system

Table 7. Front view of the 16 x EDSFF E3.S drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Contains the USB port and Mini-Displayport. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Drive blank.	N/A	Drive blank is available in 16 drive configuration and should not be removed.
4	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
5	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

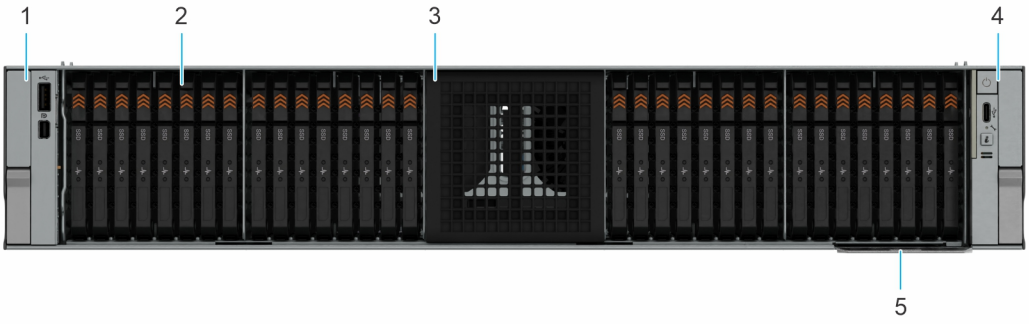


Figure 8. Front view of 32 x EDSFF E3.S drive system

Table 8. Front view of 32 x EDSFF E3.S drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Left control panel blank.

Table 8. Front view of 32 x EDSFF E3.S drive system (continued)

Item	Ports, panels, and slots	Icon	Description
			NOTE: The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Blank Panel	N/A	Blank panel is available in 32 drive configuration and should not be removed.
4	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
5	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

Figure 9. Front view of 40 x EDSFF E3.S drive system

Table 9. Front view of 40 x EDSFF E3.S drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Left control panel blank. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
4	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

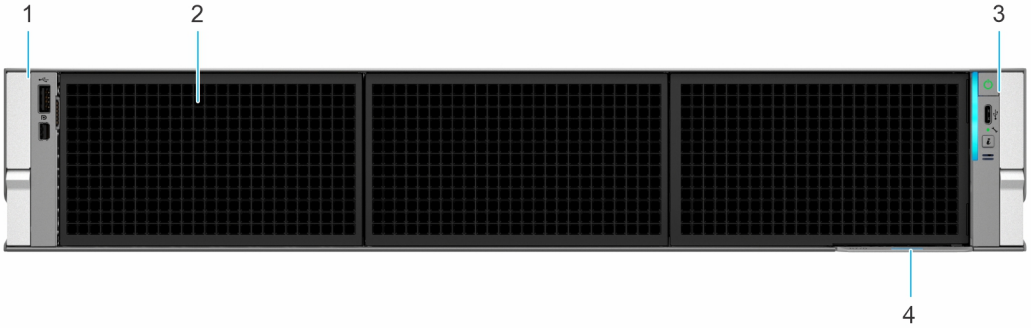


Figure 10. Front view of no BP configuration system

Table 10. Front view of no BP configuration system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) - Secondary	N/A	Contains the USB port and Mini-Displayport. **NOTE:** The KVM module is optional, and LCP - Secondary blank is default in the left control panel.
2	Drive blank.	N/A	Drive blank is available in no BP configuration and should not be removed.
3	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
4	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

Left Control Panel (LCP) - Secondary view

Figure 11. Left Control Panel (LCP) - Secondary with blank

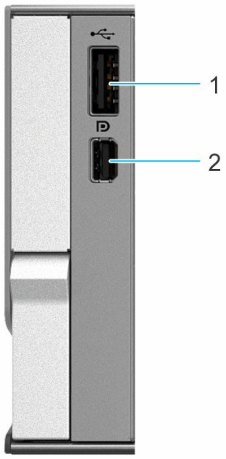


Figure 12. Left Control Panel (LCP) - Secondary with optional KVM

Table 11. Left Control Panel (LCP) - Secondary with optional KVM

Item	Ports	Icon	Description
1	USB 2.0-compliant port		The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
2	Mini-DisplayPort		Enables you to connect a display device to the system.

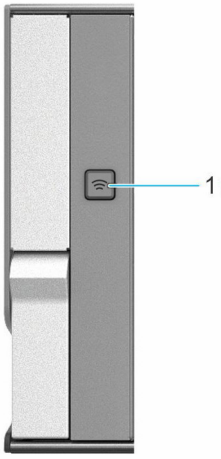


Figure 13. Left Control Panel (LCP) - Secondary with optional Quick Sync 2.0

1. Quick Sync 2.0 button

Right Control Panel (RCP) - Primary view

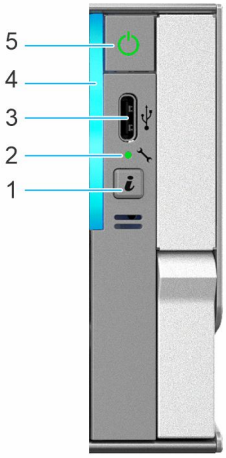


Figure 14. Right Control Panel (RCP) - Primary

Table 12. Right Control Panel (RCP) - Primary

Item	Indicator or button	Icon	Description
1	System ID button		System ID allows user to physically locate the system. For more information, see the System health and system ID indicator codes section.
2	Host mode LED		LED to identify the Host USB signal.

Table 12. Right Control Panel (RCP) - Primary (continued)

Item	Indicator or button	Icon	Description
			NOTE: When the Type C USB port is owned by the host, the LED is off.
3	Type C USB 2.0		The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
4	System health and System ID indicator	N/A	Indicates the status of the system. For more information, see the System health and system ID indicator codes section.
5	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system.

System configurations - rear view for PowerEdge R770 system

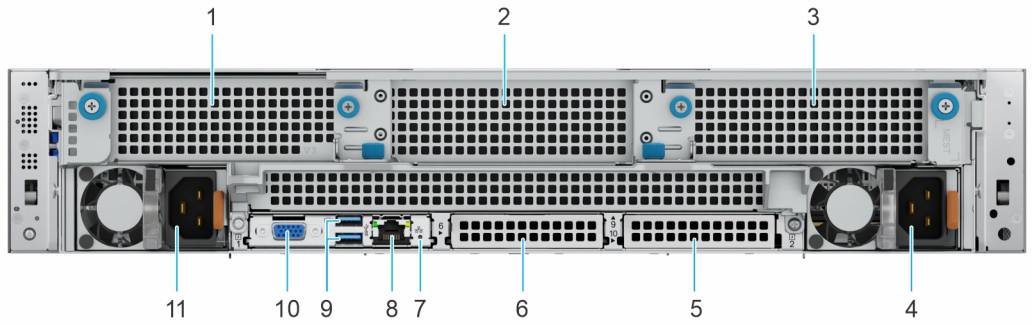


Figure 15. Rear view of the system with front I/O configuration

Table 13. Rear view of the system with front I/O configuration

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 blank	N/A	In front I/O configuration, the riser blank is installed in the expansion card riser bay.
2	PCIe expansion card riser 3 blank	N/A	
3	PCIe expansion card riser 5 blank	N/A	
4	Power supply unit (PSU2)	2	PSU2 is the secondary PSU of the system.
5	OCP NIC card filler bracket	N/A	In the front I/O configuration, an OCP filler bracket is installed in the OCP NIC card bay.
6	BOSS filler bracket	N/A	In the front I/O configuration, the BOSS file bracket is installed in BOSS-N1 DC-MHS bay.
7	SID LED	N/A	Rear system identification LED
8	iDRAC dedicated port		Enables you to remotely access iDRAC. When the front iDRAC port is connected to the network, the rear iDRAC port is automatically disabled.
9	USB 3.0 port		The USB port is 9-pin and 3.0-compliant. This port enables you to connect USB devices to the system.
10	VGA port		Enables you to connect a display device to the system.

Table 13. Rear view of the system with front I/O configuration (continued)

Item	Ports, panels, or slots	Icon	Description
11	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

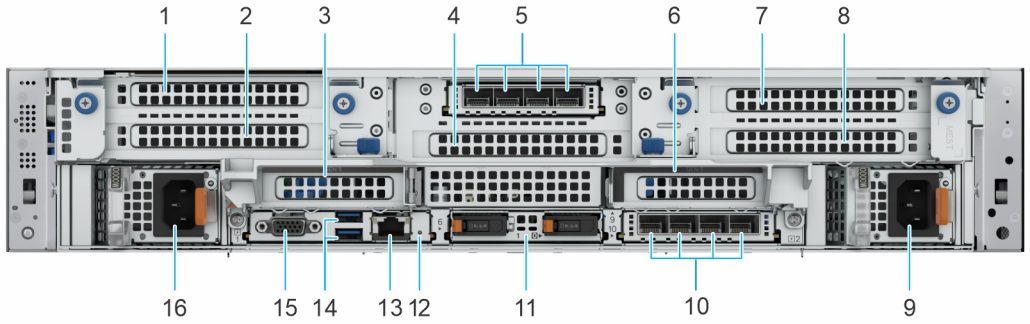


Figure 16. Rear view of the system with rear I/O configuration

Table 14. Rear view of the system with rear I/O configuration

items	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
2	PCIe expansion card riser 1 (slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
3	PCIe expansion card riser 2 (slot 3)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
4	PCIe expansion card riser 3 (slot 5)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
5	OCP NIC card (slot 4 in PCIe expansion card riser 3)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board and also supports the iDRAC shared NIC feature.
6	PCIe expansion card riser 4 (slot 9)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
7	PCIe expansion card riser 5 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
8	PCIe expansion card riser 5 (slot 8)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
9	Power supply unit (PSU2)	2	PSU2 is the secondary PSU of the system.
10	OCP NIC card (slot 10)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board and also

Table 14. Rear view of the system with rear I/O configuration (continued)

items	Ports, panels, or slots	Icon	Description
			supports the iDRAC shared NIC feature.
11	BOSS-N1 DC-MHS module (slot 6)	N/A	BOSS module for internal system boot.
12	SID LED	N/A	Rear system identification LED
13	iDRAC dedicated port		Enables you to remotely access iDRAC. When the front iDRAC port is connected to the network, the rear iDRAC port is automatically disabled.
14	USB 3.0 port		The USB port is 9-pin and 3.0-compliant. This port enables you to connect USB devices to the system.
15	VGA port		Enables you to connect a display device to the system.
16	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

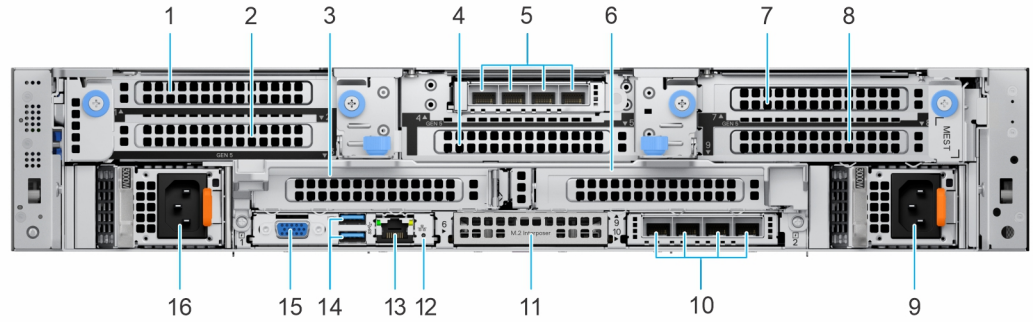


Figure 17. Rear view of the system with rear I/O configuration and M.2 Interposer board

Table 15. Rear view of the system with rear I/O configuration

items	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
2	PCIe expansion card riser 1 (slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
3	PCIe expansion card riser 2 (slot 3)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
4	PCIe expansion card riser 3 (slot 5)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
5	OCP NIC card (slot 4 in PCIe expansion card riser 3)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP

Table 15. Rear view of the system with rear I/O configuration (continued)

items	Ports, panels, or slots	Icon	Description
			card which is connected to the system board and also supports the iDRAC shared NIC feature.
6	PCIe expansion card riser 4 (slot 9)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
7	PCIe expansion card riser 5 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
8	PCIe expansion card riser 5 (slot 8)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
9	Power supply unit (PSU2)		PSU2 is the secondary PSU of the system.
10	OCP NIC card (slot 10)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board and also supports the iDRAC shared NIC feature.
11	M.2 Interposer board	N/A	M.2 Interposer board for internal system boot.
12	SID LED	N/A	Rear system identification LED
13	iDRAC dedicated port		Enables you to remotely access iDRAC. When the front iDRAC port is connected to the network, the rear iDRAC port is automatically disabled.
14	USB 3.0 port		The USB port is 9-pin and 3.0-compliant. This port enables you to connect USB devices to the system.
15	VGA port		Enables you to connect a display device to the system.
16	Power supply unit (PSU1)		PSU1 is the primary PSU of the system.

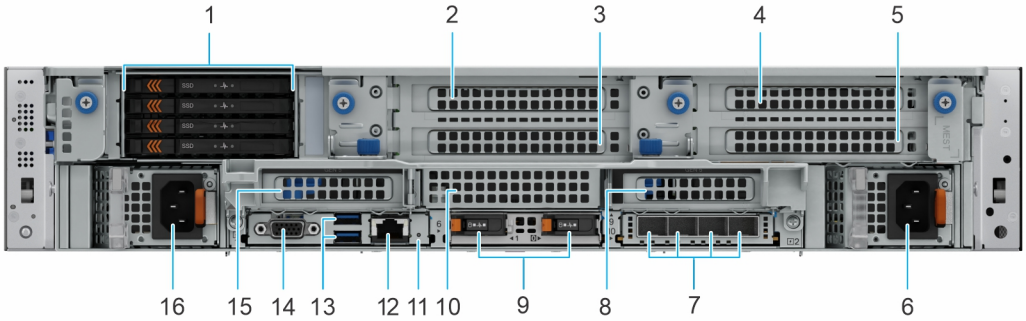


Figure 18. Rear view of the system with 4 x EDSFF E3.S rear drives

Table 16. Rear view of the system with 4 x EDSFF E3.S rear drives

items	Ports, panels, or slots	Icon	Description
1	Drive	N/A	Enables you to install drives that are supported on your system.
2	PCIe expansion card riser 3 (slot 4)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
3	PCIe expansion card riser 3 (slot 5)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
4	PCIe expansion card riser 5 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
5	PCIe expansion card riser 5 (slot 8)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
6	Power supply unit (PSU2)	⚡2	PSU2 is the secondary PSU of the system.
7	OCP NIC card (slot 10)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board and also supports the iDRAC shared NIC feature.
8	PCIe expansion card riser 4 (slot 9)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
9	BOSS-N1 DC-MHS module (slot 6)	N/A	BOSS module for internal system boot.
10	PCIe expansion card riser 2 blank	N/A	The riser blank is installed in the expansion card riser bay.
11	SID LED	N/A	Rear system identification LED
12	iDRAC dedicated port		Enables you to remotely access iDRAC. When the front iDRAC port is connected to the network, the rear iDRAC port is automatically disabled.
13	USB 3.0 port		The USB port is 9-pin and 3.0-compliant. This port enables you to connect USB devices to the system.
14	VGA port		Enables you to connect a display device to the system.
15	PCIe expansion card riser 2 (slot 3)	N/A	Enables you to connect a display device to the system.
16	Power supply unit (PSU1)	⚡1	PSU1 is the primary PSU of the system.

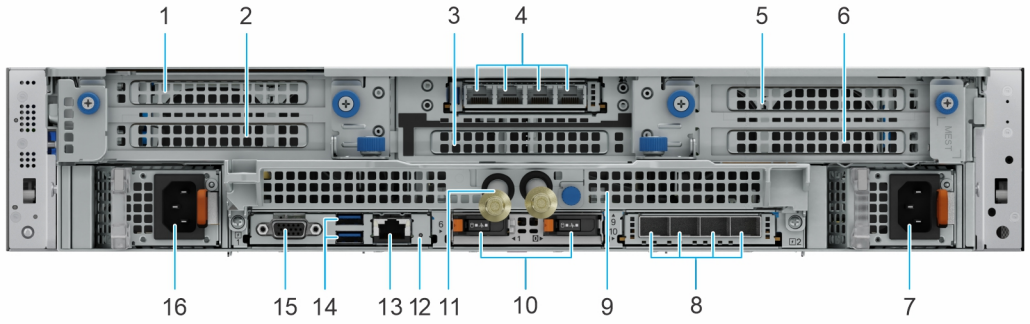


Figure 19. Rear view of the liquid cooling configuration

Table 17. Rear view of the liquid cooling configuration

items	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
2	PCIe expansion card riser 1 (slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
3	PCIe expansion card riser 3 (slot 5)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
4	OCP NIC card (slot 4 in PCIe expansion card riser 3)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board and also supports the iDRAC shared NIC feature.
5	PCIe expansion card riser 5 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
6	PCIe expansion card riser 5 (slot 8)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
7	Power supply unit (PSU2)	⚡2	PSU2 is the secondary PSU of the system.
8	OCP NIC card (slot 10)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board and also supports the iDRAC shared NIC feature.
9	PCIe expansion card riser 4 blank	N/A	The liquid cooling blank is installed in the expansion card riser bay.
10	BOSS-N1 DC-MHS module (slot 6)	N/A	BOSS module for internal system boot.
11	Liquid cooling module tubes	N/A	Cold coolant flows into the system from one tube and hot coolant leaves the system from another tube.

Table 17. Rear view of the liquid cooling configuration (continued)

items	Ports, panels, or slots	Icon	Description
12	SID LED	N/A	Rear system identification LED
13	iDRAC dedicated port		Enables you to remotely access iDRAC. When the front iDRAC port is connected to the network, the rear iDRAC port is automatically disabled.
14	USB 3.0 port		The USB port is 9-pin and 3.0-compliant. This port enables you to connect USB devices to the system.
15	VGA port		Enables you to connect a display device to the system.
16	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

System configurations - inside view for PowerEdge R770 system

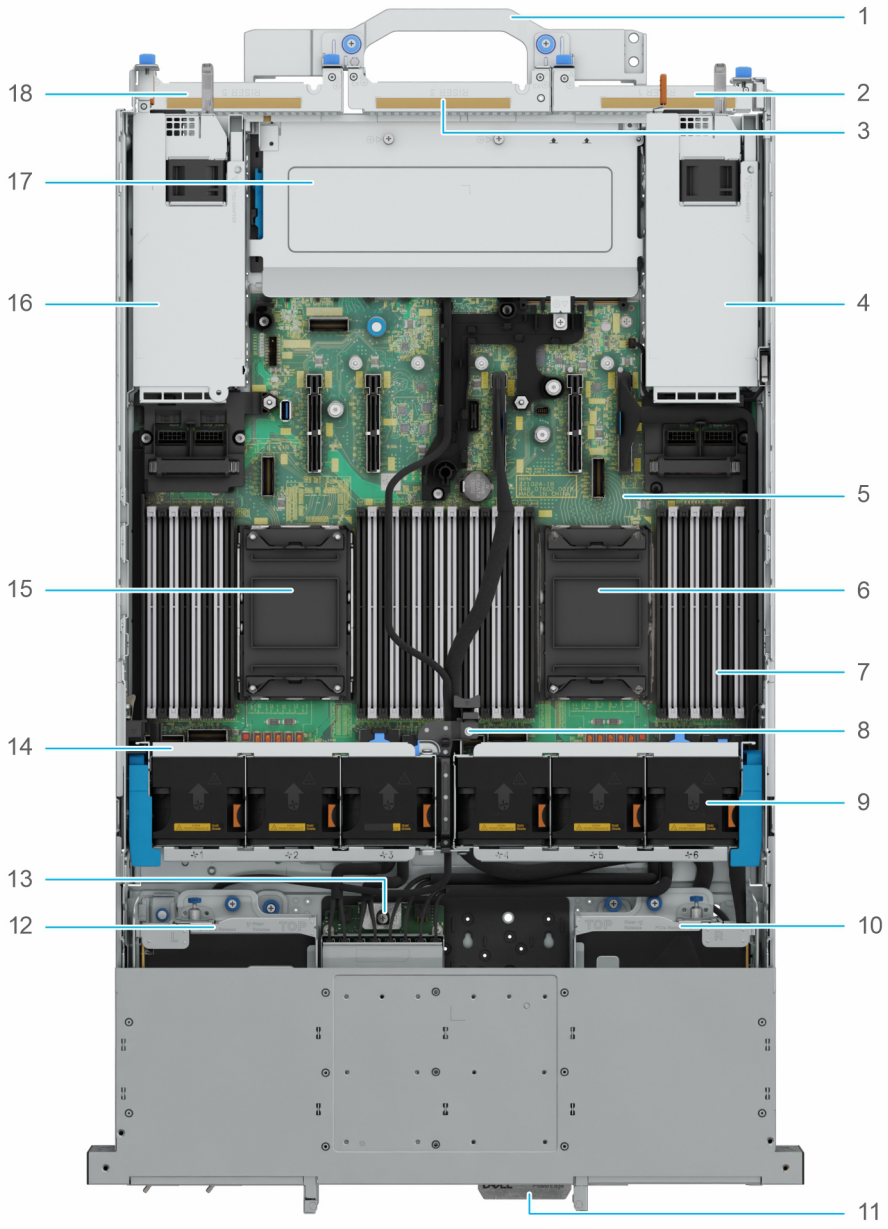


Figure 20. Inside the system with front I/O configuration

1. System handle
2. Rear riser 1 blank
3. Rear riser 3 blank
4. Power supply unit (PSU1)
5. System board or Host Processor Module (HPM)
6. Dust cover for processor 1
7. Memory module slots (DIMM)
8. Cooling cage cable holder
9. Cooling fan
10. Front riser 3
11. Express Service Tag
12. Front riser 1
13. E3.S backplane module
14. Cooling fan cage
15. Dust cover for processor 0
16. Power supply unit (PSU2)
17. Rear riser 2 and riser 4 blank
18. Rear riser 5 blank

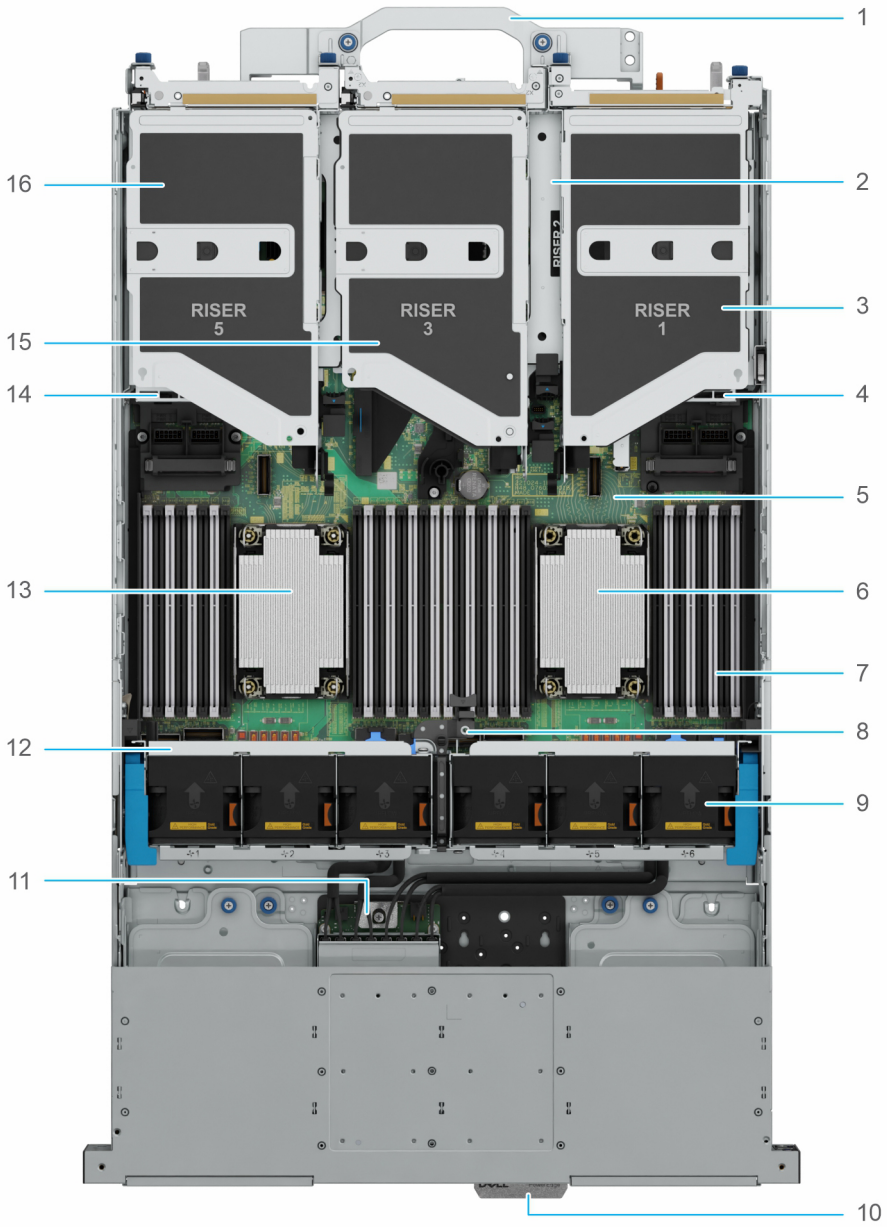


Figure 21. Inside the system with rear I/O configuration

1. System handle
2. Rear riser 2
3. Rear riser 1
4. Power supply unit (PSU1)
5. System board or Host Processor Module (HPM)
6. Processor heat sink module for processor 1
7. Memory module slots (DIMM)
8. Cooling cage cable holder
9. Cooling fan
10. Express Service Tag
11. E3.S backplane module
12. Cooling fan cage
13. Processor heat sink module for processor 0
14. Power supply unit (PSU2)
15. Rear riser 3
16. Rear riser 5

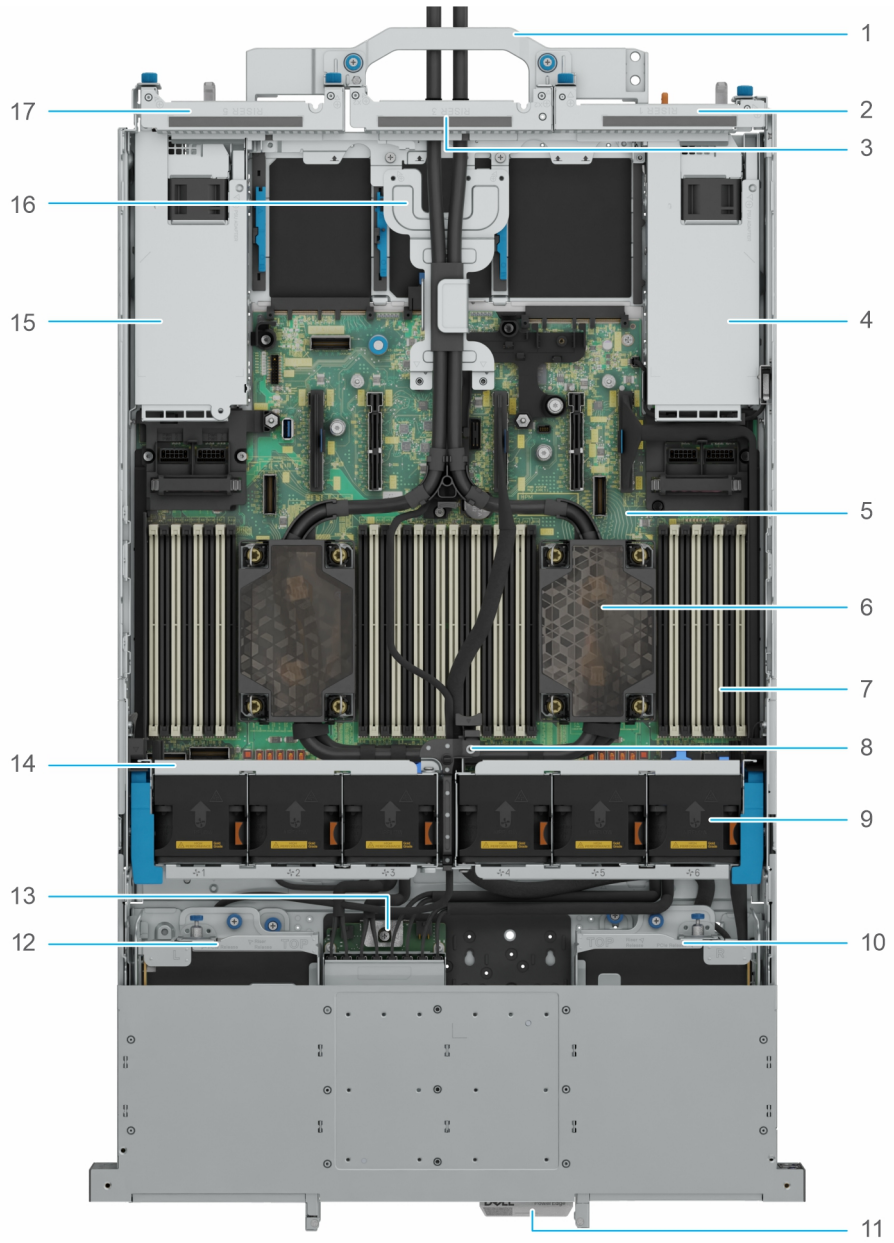


Figure 22. Inside the system with processor liquid cooling module

1. System handle
2. Rear riser 1 blank
3. Rear riser 3 blank
4. Power supply unit (PSU1)
5. System board or Host Processor Module (HPM)
6. Processor liquid cooling module
7. Memory module slots (DIMM)
8. Cooling cage cable holder
9. Cooling fan
10. Front riser 3
11. Express Service Tag
12. Front riser 1
13. E3.S backplane module
14. Cooling fan cage
15. Power supply unit (PSU2)
16. DLC blank
17. Rear riser 5 blank

Locate 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 the Service Tag, Express Service Code, Manufacture date, NIC, MAC address, and QRL label.

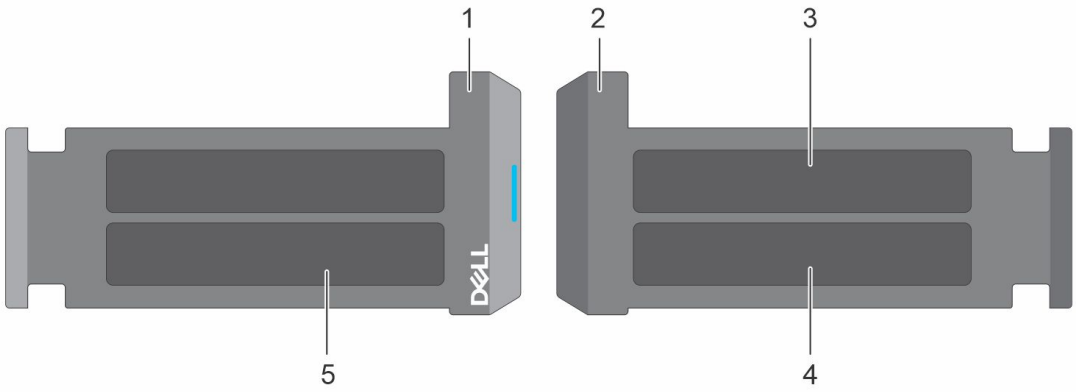


Figure 23. Locating the Express Service Code and Service tag

1. Express Service Tag (front view)
2. Express Service Tag (rear view)
3. OMM (not applicable)
4. Password and MAC address
5. Service Tag, Express Service Code, My Dell QRL label

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

System information label

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

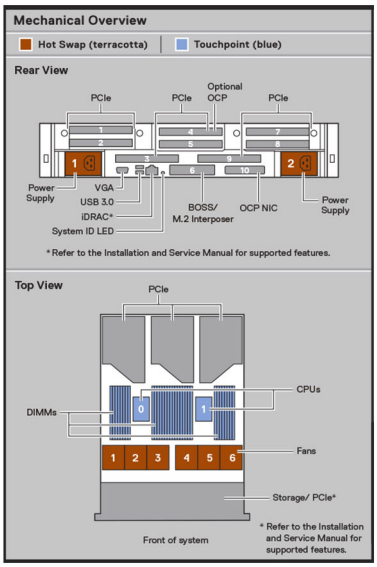


Figure 24. Mechanical overview

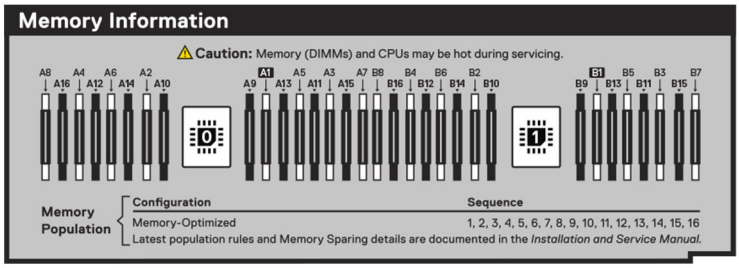


Figure 25. Memory information

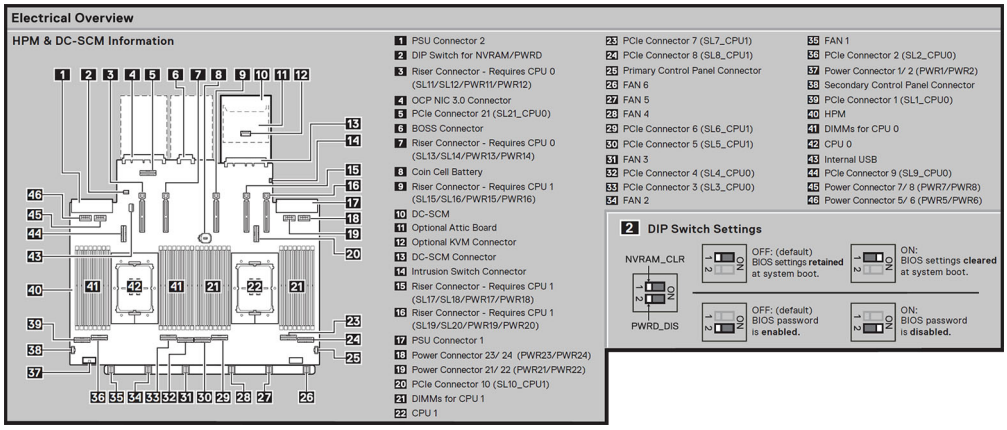


Figure 26. Electrical overview

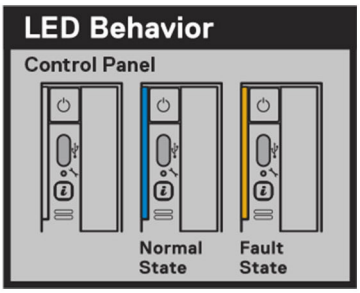


Figure 27. LED behavior

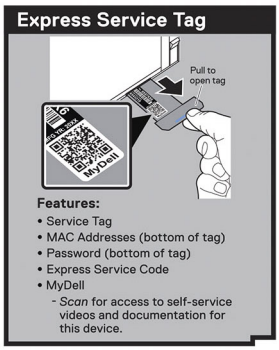


Figure 28. Express Service Tag

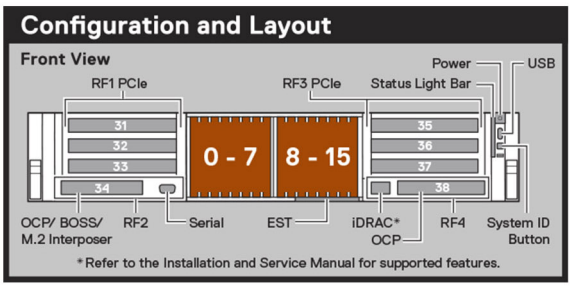


Figure 29. Configuration and Layout

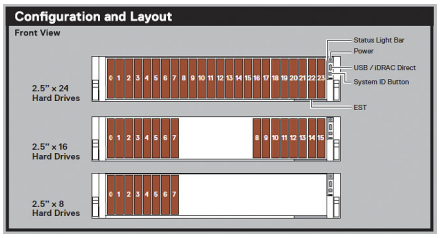


Figure 30. Configuration and layout for 2.5-inch drive system

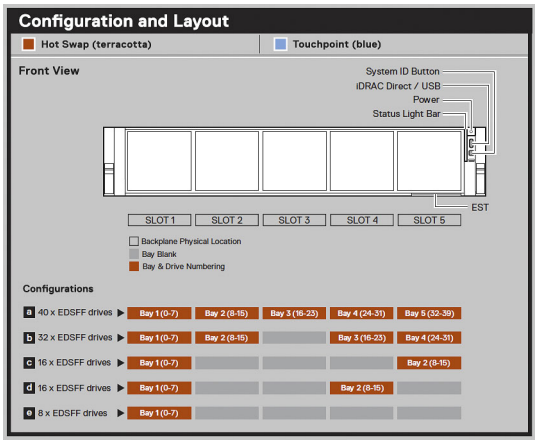


Figure 31. Configuration and layout for EDSFF E3.S drive system

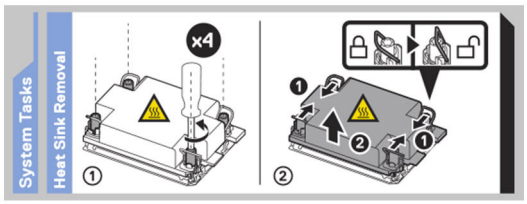


Figure 32. System task

Figure 33. EDSFF carrier removal

Rail sizing and rack compatibility matrix

For specific information about the rail solutions compatible with your system, see the *Dell Enterprise Systems Rail Sizing and Rack Compatibility Matrix* available at rail-rack-matrix.

The document provides the information that is listed below:

- Specific details about rail types and their functionalities.
- Rail adjustability range for various types of rack mounting flanges.
- Rail depth with and without cable management accessories.
- Types of racks that are supported for various types of rack mounting flanges.

3

Technical specifications

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

NOTE: This document provides a comprehensive list of product features. However, features marked with an asterisk (*) may not be available at launch but introduced in future updates. Please note that this document does not confirm the availability or release timeline of any feature. For the most accurate and up-to-date information on feature availability, please refer to the product configurator page on dell.com.

Topics:

Chassis I/O Configuration

Dell Servers offer choices for the location of Networking Interface and Systems Management cable connections.

Rear I/O (Input/Output) is the most common configuration. With Rear I/O network connections are at the rear of the Server. Systems management cables are connected at the rear by a dedicated port or a selectable shared port with a network interface controller. The power supplies and power cables are at the rear of the Server.

Figure 34. Rear I/O configurations

NOTE: Sample chassis configurations; these may not match your configuration.

Front I/O (Input/Output) is an option where PCIe risers and OCP network interface controllers are in the front of the Server. Systems management cables are connected at the front of the server by a dedicated port or a selectable shared port with a network interface controller. The power button and system status indicators are at the front of the Server.

Figure 35. Front I/O configurations

NOTE: Sample chassis configurations; these may not match your configuration.

Both configurations have their benefits, but the most common reason for choosing Front I/O is the desire to connect I/O and Systems Management cables to the front of the server. There are certain rack infrastructure products that take advantage of a front I/O location.

Chassis dimensions

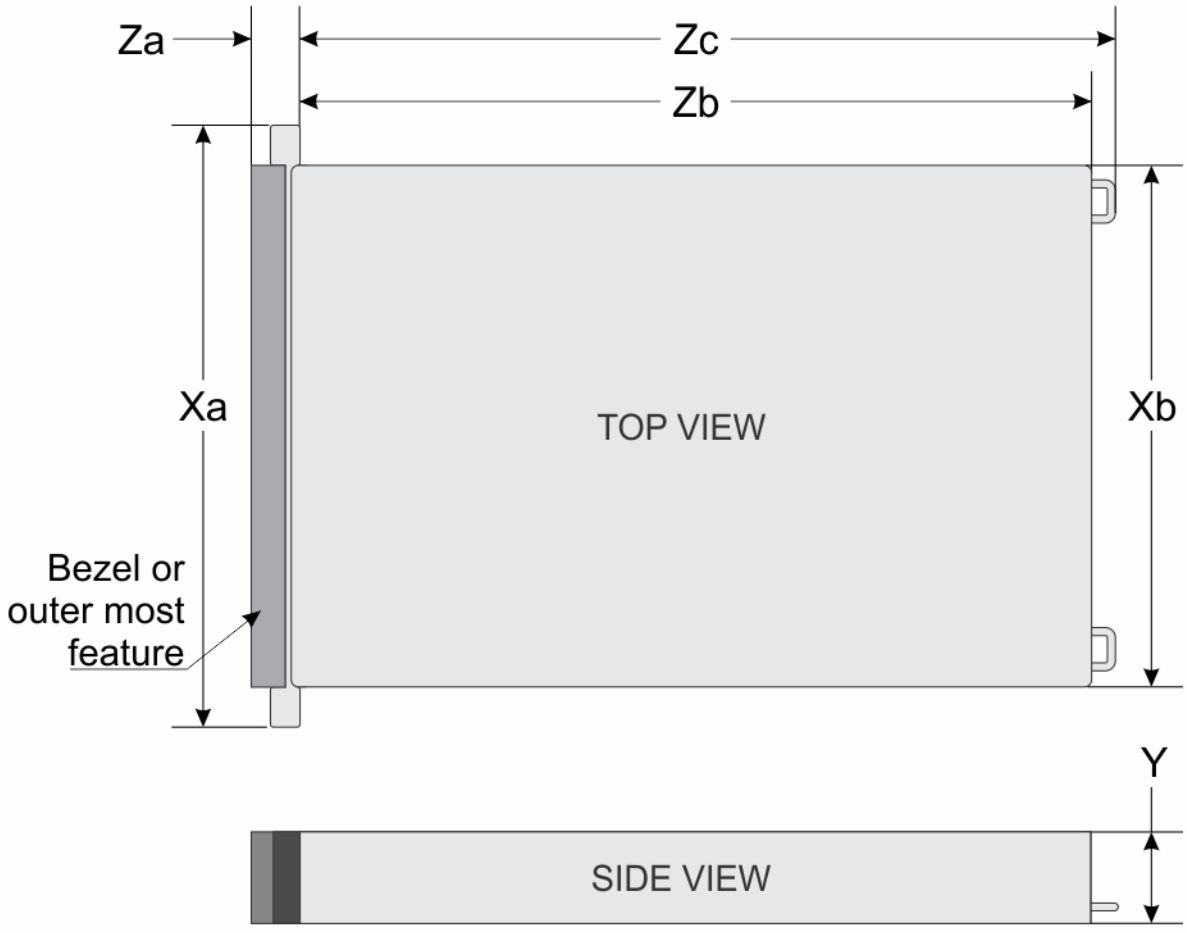


Figure 36. Chassis dimensions

Table 18. PowerEdge R770 chassis dimensions

Drives	Xa	Xb	Y	Za	Zb	Zc
• 8 x EDSFF E3.S (Front I/O) • 16 x EDSFF E3.S (Front I/O)	482.0 mm (18.97 inches)	434.0 mm (17.08 inches)	86.8 mm (3.41 inches)	42.9 mm (1.68 inches) Without bezel	700.7 mm (27.58 inches) Ear to rear wall	771.62 mm (30.37 inches) Ear to PSU handle
• 8 x 2.5-inch SATA • 8 x 2.5-inch Universal • 16 x 2.5-inch SATA • 16 x 2.5-inch + 8 x 2.5-inch SATA • 24 x 2.5-inch SATA • 16 x EDSFF E3.S • 32 x EDSFF E3.S • 40 x EDSFF E3.S	482.0 mm (18.97 inches)	434.0 mm (17.08 inches)	86.8 mm (3.41 inches)	30.78 mm (1.21 inches) With bezel 29.89 mm (1.18 inches) Without bezel	700.7 mm (27.58 inches) Ear to rear wall	771.62 mm (30.37 inches) Ear to PSU handle

NOTE: Zb is the nominal rear wall external surface where the system board I/O connectors reside.

System weight

Table 19. PowerEdge R770 system weight

System configuration	Maximum weight (with all drives/SSDs)
8 x EDSFF E3.S	25.89 kg (57.07 pound)
16 x EDSFF E3.S	28.53 kg (62.89 pound)
8 x 2.5-inch SATA drives	27.2 kg (59.96 pounds)
8 x 2.5-inch Universal	27.2 kg (59.96 pounds)
16 x 2.5-inch SATA drives	29.5 kg (65.03 pounds)
16 x 2.5-inch + 8 x 2.5-inch SATA drives	31.33 kg (69.07 pounds)
24 x 2.5-inch SATA drives	32.08 kg (70.72 pounds)
32 x EDSFF E3.S	31.24 kg (68.87 pounds)
40 x EDSFF E3.S	30.96 kg (68.25 pounds)

Table 20. PowerEdge R770 weight handling recommendations

Chassis weight	Description
40–70 pounds	Recommend two people to lift
70–120 pounds	Recommend three people to lift
≥ 121 pounds	Recommend to use a server-lift

Processor specifications

Table 21. PowerEdge R770 processor specifications

Supported processor	Number of processors supported
Intel® Xeon® 6 E-Core processor	Two
Intel® Xeon® 6 P-Core processor	Two

Table 22. Minimum Firmware version requirement for Intel® Xeon® 6 P-Core Processors

Processors	iDRAC	BIOS	FPGA
6787P	1.20.25.00	1.2.6	107.114.104
6767P			
6760P			
6747P			
6740P			
6736P			
6737P			
6730P			
6530P			
6527P			
6520P			
6724P			
6517P			
6515P			
6505P			
6714P			
6507P			

PSU specifications

The PowerEdge R770 system supports up to two AC or DC power supply units (PSUs).

Table 23. R770 PSU specifications

PSU	Class	Heat dissipation (maximum) (BTU/hr)	Frequency (Hz)	AC Voltage			DC Voltage			Current (A)
				200—240 V	100—120 V	277 V	240 V	- (48—60) V	336 V	
800 W mixed mode	Platinum	3000	50/60	800 W	800 W	N/A	N/A	N/A	N/A	9.2—4.5
	N/A	3000	N/A	N/A	N/A	N/A	800 W	N/A	N/A	3.7
	Titanium	3000	50/60	800 W	800 W	N/A	N/A	N/A	N/A	9.2—4.5
	N/A	3000	N/A	N/A	N/A	N/A	800 W	N/A	N/A	3.7
1100 W mixed mode	Platinum	4125	50/60	1100 W	1050 W	N/A	N/A	N/A	N/A	12—6.1
	N/A	4125	N/A	N/A	N/A	N/A	1100 W	N/A	N/A	5.1

Table 23. R770 PSU specifications (continued)

PSU	Class	Heat dissipation (maximum) (BTU/hr)	Frequency (Hz)	AC Voltage			DC Voltage			Current (A)
				200—240 V	100—120 V	277 V	240 V	- (48—60) V	336 V	
	Titanium	4125	50/60	1100 W	1050 W	N/A	N/A	N/A	N/A	12—6.1
	N/A	4125	N/A	N/A	N/A	N/A	1100 W	N/A	N/A	5.1
1400 W -48 VDC*	N/A	5310	N/A	N/A	N/A	N/A	N/A	1400 W	N/A	33
1500 W mixed mode	Titanium	5625	50/60	1500 W	1050 W	N/A	N/A	N/A	N/A	12—8.2
	N/A	5625	N/A	N/A	N/A	N/A	1500 W	N/A	N/A	6.8
1500 W 277Vac & HVDC*	Titanium	5625	50/60	N/A	N/A	1500 W	N/A	N/A	N/A	6.1
	N/A	5625	N/A	N/A	N/A	N/A	N/A	N/A	1500 W	4.91
1800 W HLAC*	Titanium	6750	50/60	1800 W	N/A	N/A	N/A	N/A	N/A	9.8—8.2
1800 W HVDC	N/A	6750	N/A	N/A	N/A	N/A	1800 W	N/A	N/A	8.2
2400 W mixed mode*	Titanium	9000	50/60	2400 W	1400 W	N/A	N/A	N/A	N/A	16—13.2
	N/A	9000	N/A	N/A	N/A	N/A	2400 W	N/A	N/A	10.9
3200 W mixed mode	Titanium	12000	50/60	2900 W** 3200 W***	N/A	N/A	N/A	N/A	N/A	16
	N/A	12000	N/A	N/A	N/A	N/A	3200 W	N/A	N/A	14.5
3200 W 277Vac & HVDC*	Titanium	12000	50/60	N/A	N/A	3200 W	N/A	N/A	N/A	12.9
	N/A	12000	N/A	N/A	N/A	N/A	N/A	N/A	3200 W	10.47

NOTE: *Feature not available at product launch in June 2025. Please refer to the product configurator page on Dell.com to confirm feature availability.

NOTE:

- **200-220 V
- *** 220.1-240 V

NOTE: PowerEdge R770 supports up to two mixed mode power supplies with non-redundancy (1+0, 2+0), as the iDRAC does not calculate system power consumption.

NOTE: Heat dissipation is calculated using the PSU wattage rating.

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

Figure 37. PSU power cords

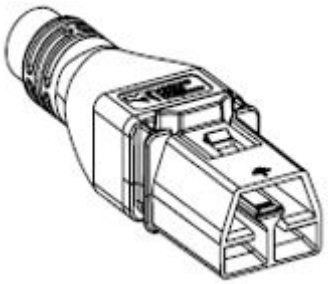


Figure 38. APP 2006G1 power cord

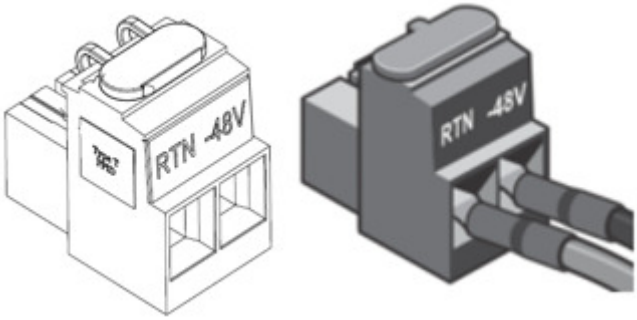


Figure 39. Lotes DC PSU connector

Table 24. PSU power cords

Form factor	Output	Power cord
60 mm	800 W mixed mode	C13
	1100 W mixed mode	C13
	1400 W -48 VDC	Lotes RN5T2
	1500 W mixed mode	C13
	1500 W mixed mode 277Vac & HVDC	APP/Saf-D-Grid
	1800 W mixed mode	C13
73.5 mm	2400 W mixed mode	C19
	3200 W mixed mode	C19
	3200 W mixed mode 277Vac & HVDC	APP/Saf-D-Grid

Cooling fan specifications

The PowerEdge R770 system supports up to six High performance Silver (HPR SLVR) fans or High performance Gold (HPR GOLD) fans or High Performance Platinum (HPR Pltm) fans .

Table 25. Cooling fan specifications

Fan type	Abbreviation	Label color	Label image
High performance Silver (HPR SLVR) fans	HPR SLVR	Silver	
High performance Gold (HPR GOLD) fans	HPR GOLD	Gold	
High Performance Platinum (HPR Pltm) fans	HPR PLTM	Platinum	

Table 25. Cooling fan specifications (continued)

Fan type	Abbreviation	Label color	Label image
x4 E3 Rear Fan	x4 E3 Rear Fan	N/A	

NOTE: Cooling fans rotate at a slower speed, even while the system is in standby mode, and the fan speed varies in response to changes in the ambient temperature.

Supported operating system

The PowerEdge R770 system supports the following operating systems:

- Canonical Ubuntu Server LTS
- Microsoft Windows Server with Hyper-V
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware ESXi
- Dell NativeEdge OS*

NOTE: *Features marked with an asterisk (*) may not be available at product launch. Please refer to the product configurator page on Dell.com to confirm feature availability.

For specifications and interoperability details, see OS support.

System battery specifications

The PowerEdge R770 system uses one CR 2032 3.0-V lithium coin cell battery.

Expansion card riser specifications

The PowerEdge R770 system supports up to four PCI express (PCIe) slots (Gen5 slots), dual OCP NIC and BOSS on the system board.

Table 26. Expansion card slots supported on the system board

PCIe slot	Expansion card riser	Processor connection	Height	Length	Slot width
Slot 1	R1a	Processor 1	Full Height	Half Length	x8
Slot 2	R1b	Processor 1	Full Height	Half Length	x16
	R1a	Processor 1	Full Height	Half Length	x8
Slot 3	R2b	Processor 1	Full Height	Half Length	x16
	R2a	Processor 1	Low Profile	Half Length	x16
Slot 4	R3c (OCP)	Processor 1	N/A	N/A	x8
	R3e (OCP)	Processor 1	N/A	N/A	x16

Table 26. Expansion card slots supported on the system board (continued)

PCIe slot	Expansion card riser	Processor connection	Height	Length	Slot width
	R3a	Processor 1	Full Height	Half Length	x8
Slot 5	R3a	Processor 1	Full Height	Half Length	x8
	R3c	Processor 1	Full Height	Half Length	x16
Slot 6	BOSS	Processor 0	N/A	N/A	x4
Slot 7	R5a	Processor 0	Full Height	Half Length	x8
	R5b	Processor 0	Full Height	Half Length	x16
	R5c	Processor 0	Full Height	Half Length	x16
Slot 8	R5a	Processor 0	Full Height	Half Length	x8
	R5c	Processor 0	Full Height	Half Length	x16
Slot 9	R4b	Processor 0	Full Height	Half Length	x16
	R4c	Processor 0	Full Height	Half Length	x8
	R4a	Processor 0	Low Profile	Half Length	x16
Slot 10	OCP	Processor 0	N/A	N/A	x16
Slot 31	RF1a	Processor 0	Full Height	Half Length	x16
Slot 34	BOSS	Processor 0	N/A	N/A	x4
Slot 34	RF2 (BOSS/OCP)	Processor 0	N/A	N/A	x4/x16
Slot 36	RF3a	Processor 1	Full Height	Half Length	x16
Slot 38	RF4a (OCP)	Processor 1	N/A	N/A	x16

Memory specifications

The PowerEdge R770 system supports the following memory specifications for optimized operation.

Table 27. Memory specifications

DIMM type	Rank	Capacity	Dual processors			
			Intel® Xeon 6 E- core processor		Intel® Xeon 6 P- core processor	
			Minimum system capacity	Maximum system capacity	Minimum system capacity	Maximum system capacity
RDIMM	1 R	16 GB	N/A	N/A	32 GB	256 GB
	2 R	32 GB	64 GB	512 GB	64 GB	1 TB
		64 GB	1 TB	2 TB	512 GB	2 TB
		96 GB	N/A	N/A	1.5 TB	3 TB
		128 GB	N/A	N/A	2 TB	4 TB
	8 R	256 GB	N/A	N/A	8 TB	8 TB

NOTE: Only 32 GB allowed for 1 DIMM per processor for E- core processors with limited features.

NOTE: Only 16 GB or 32 GB allowed for 1 DIMM per processor for P- core processors with limited features.

NOTE: Memory mirroring is supported only on P- core processors.

NOTE: Fault resilient mode (FRM) is supported only on P- core processors with 8 or 16 DIMMs per processor.

Table 28. Memory module sockets

Memory module sockets	Speed
32, 288-pin	6400 MT/s

NOTE: Memory DIMM slots are not hot pluggable.

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

NOTE: DIMM mixing configurations are not allowed. All DIMM slots must be populated with the exact same DIMMs (one Dell PN).

Storage controller specifications

The PowerEdge R770 system supports the following controller cards:

Table 29. Storage controller cards

Supported storage controller cards
Internal controllers: • H965i Front DC-MHS • H365i Front DC-MHS • H975i Front DC-MHS
External controllers • H965e • HBA465e
Internal Boot • Boot Optimized Storage Subsystem (BOSS-N1 DC-MHS): HWRAID 1, 2 x M.2 NVMe SSDs or • M.2 Interposer board (DC-MHS): 2 x M.2 NVMe SSDs or • USB
Software RAID: N/A
SAS Hot Bus Adapters (HBA): HBA465e

NOTE: For the ESXi operating system, H975i is supported on 9.0 or later versions.

Drives

The PowerEdge R770 system supports:

- Up to 8 x EDSFF E3.S hot-swappable NVMe drives FIO configuration
- Up to 16 x EDSFF E3.S hot-swappable NVMe drives FIO configuration
- Up to 16 x EDSFF E3.S hot-swappable NVMe drives
- Up to 32 x EDSFF E3.S hot-swappable NVMe drives
- Up to 40 x EDSFF E3.S hot-swappable NVMe drives
- Up to 4 x EDSFF E3.S hot-swappable NVMe drives on the rear
- Up to 8 x 2.5-inch hot-swappable SAS/SATA/NVMe drives
- Up to 8 x 2.5-inch hot-swappable Universal drives
- Up to 16 x 2.5-inch hot-swappable SAS/SATA drives
- Up to 24 x 2.5 inch hot-swappable SAS/SATA/NVMe drives

NOTE: For more information about how to hot swap NVMe PCIe SSD device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at Dell Support page **> Browse all products** > **Infrastructure** > **Data Center Infrastructure** > **Storage**

Adapters & Controllers > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Select This Product** > **Documentation** > **Manuals and Documents**.

GPU Specifications

The PowerEdge R770 system supports

- Up to four NVIDIA L4 24 GB, 72 W single-width GPUs
- Up to six NVIDIA L4 24 GB, 72 W single-width GPUs
- Up to two NVIDIA L4 24 GB, 72 W single-width GPUs
- Up to two NVIDIA H100 NVL 94 GB, 350 W double-width GPUs
- Up to two NVIDIA L40s 48 GB, 350 W double-width GPUs
- Up to two NVIDIA A16 64 GB, 250 W double-width GPUs
- Up to two NVIDIA H200 NVL 141 GB, 450 W double-width GPUs
- Up to two NVIDIA RTX Pro 6000 96 GB, 450 W double-width GPUs

NOTE:

- For A16, L40s, L4, and H100 GPUs, RHEL, SLES, Ubuntu, and Windows operating systems are supported.
- For H200 and NVIDIA RTX Pro 6000, only Ubuntu operating system is supported.
- ESXi version 8.0 operating system support is available for all GPUs except NVIDIA RTX Pro 6000 and H200.

NOTE: See Supported operating system section for information about the supported operating systems.

NOTE: The NVIDIA H200 NVL and NVIDIA RTX Pro 6000 are designed to support up to 600 W, however, they are power capped to 450 W support on R770.

NOTE: The NVIDIA H200 NVL and NVIDIA RTX Pro 6000 require Ubuntu operating system 24.04.02 with Kernel 6.11 or later.

NOTE: Minimum requirements for supporting NVIDIA H200 NVL and NVIDIA RTX Pro 6000 GPUs and R770 GPU ready configuration with riser configuration Riser Config 6-2 and Riser Config 11-2:

- All fan modules must be High performance Platinum Fan (HPR Platinum) type.
- The iDRAC version must be at least 1.20.60.55; otherwise, a potential FAN type mismatch error may appear in the LC log, and the FAN speed will be limited to 50% capacity.
- The puck power cables that are required for GPU installations are specific to the slot: DPN: DCNHT for slot 2 and DPN: K8FW0 for slot 7.
- Cables with extended soldering are intended for use with L40S, H100, H200, and RTX Pro 6000 GPUs.

Table 30. Cable connector for GPUs

Cable connector image with extended soldering	Cable connector image without extended soldering
	
Figure 40. Cable with the extended soldering supports L40S, H100, H200, and RTX Pro 6000 DW GPUs.	**Figure 41. Cable without the extended soldering is compatible only with L40S and H100 DW GPUs.**

NOTE: The system supports up to 75 W of PCIe slot power without the use of an extra auxiliary power cable.

NOTE: *Features marked with an asterisk (*) may not be available at product launch. Please refer to the product configurator page on Dell.com to confirm feature availability.

DPU Specifications

The PowerEdge R770 platform accommodates Data Processing Units (DPUs). These units are system-on-chip solutions that combine ARM cores, high-performance NICs, and programmable acceleration engines to offload and accelerate data center infrastructure services.

Table 31. Supported Data Processing Units(DPU) Cards

Feature	NVIDIA BlueField-3 2 x 200 GbE B3220	NVIDIA BlueField-3 1 x 400 GbE B3140H
Type	Data Processing Units (DPU)	Data Processing Units (DPU)
Networking	2 x 200 GbE	1x 400 GbE
Form Factor	FHHL	FHHL
Interface	PCIe Gen5 x16	PCIe Gen5 x16
Power Consumption	150 W	75 W
Compatible Risers	RC 1 (Slots 31,36), RC 2 (Slots 31,36), RC 6-2 (Slots 7,2), RC 11-2 (Slots 7,2)	RC 1 (Slots 31,36), RC 2 (Slots 31,36), RC 6-2 (Slots 7,2), RC 11-2 (Slots 7,2,5)

NOTE:

- Riser configurations RC 6-2 and RC 11-2 support installation of GPU RTX Pro 6000 and DPUs on the same system.
- For riser configuration RC 11-2, slot 5 supports installation of the NVIDIA BF3 DPU 1 x 400 GbE B3140H when slot 7 and slot 2 are populated with NVIDIA RTX Pro 6000 GPUs.

Ports and connectors specifications

NIC port specifications

The PowerEdge R770 system supports Network Interface Controller (NIC) ports that are embedded on the Open Compute Project (OCP) NIC cards.

Table 32. NIC port specification for the system

Feature	Specifications
OCP NIC 3.0 card	1 GbE x 4, 10 GbE x 2, 10 GbE x 4, 25 GbE x 2, 25 GbE x 4, 100 GbE x 2

NOTE: The OCP NIC card can be installed in front or rear of the system, depending on the system I/O configuration.

Serial connector specifications

The PowerEdge R770 system system supports one optional card type serial connector, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant .

The optional serial connector card is available only in front I/O configuration.

Top USB port on DC-SCM supports external DB9 Dongle.

USB ports specifications

Table 33. PowerEdge R770 USB specifications

Front		Rear		Internal (Optional)	
USB port type	**No. of ports**	**USB port type**	**No. of ports**	**USB port type**	**No. of ports**
USB 2.0-compliant port	One (optional)	USB 3.1-compliant ports	Two	Internal USB 3.1-compliant port	One
USB 2.0 Type C port	One				

VGA ports specifications

The PowerEdge R770 system supports VGA port on the rear I/O of the Datacenter Secure Control Module (DC-SCM).

Video specifications

The PowerEdge R770 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 34. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32

Table 34. Supported video resolution options (continued)

Resolution	Refresh rate (Hz)	Color depth (bits)
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

Environmental specifications

NOTE: For additional information about environmental certifications, refer to the **Product Environmental Datasheet** located with the **Manuals & Documents** on Dell Support.

Table 35. Continuous Operation Specifications for ASHRAE A2

Specifications	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 36. Continuous Operation Specifications for ASHRAE A3

Specifications	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	5–40°C (41–104°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 85% RH with 24°C (75.2°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/175 m (1.8°F/574 Ft) above 900 m (2953 Ft)

Table 37. Continuous Operation Specifications for ASHRAE A4

Specifications	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	5–45°C (41–113°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/125 m (1.8°F/410 Ft) above 900 m (2953 Ft)

Table 38. Continuous Operation Specifications for Rugged Environment

Specifications	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	5–55°C (41–131°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

Table 38. Continuous Operation Specifications for Rugged Environment (continued)

Specifications	Allowable continuous operations
Operational altitude de-rating	Maximum temperature is reduced by 1°C/125 m (1.8°F/410 Ft) above 900 m (2953 Ft)

Table 39. Common Environmental Specifications for ASHRAE A2, A3, A4, and Rugged

Specifications	Allowable continuous operations
Maximum temperature gradient (applies to both operation and non-operation)	20°C in an hour* (36°F in an hour) and 5°C in 15 minutes (9°F in 15 minutes), 5°C in an hour* (9°F in an hour) for tape **NOTE:** * - Per ASHRAE thermal guidelines for tape hardware, these are not instantaneous rates of temperature change.
Non-operational temperature limits	-40 to 65°C (-104°F to 149°F)
Non-operational humidity limits	5% to 95% RH with 27°C (80.6°F) maximum dew point
Maximum non-operational altitude	12,000 meters (39,370 feet)
Maximum operational altitude	3,048 meters (10,000 feet)

Table 40. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.21 G_{rms} at 5 Hz to 500 Hz (all operation orientations)
Storage	1.38 G_{rms} at 7 Hz to 250 Hz for 15 minutes (all six sides tested)

Table 41. Maximum shock pulse specifications

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

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 must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 42. Particulate contamination specifications

Particulate contamination	Specifications
Air filtration: Conventional Data Center only	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit **NOTE:** Filtering room air with a MERV8 filter, as specified in ANSI/ASHRAE Standard 127, is a recommended method for achieving the necessary environmental conditions. **NOTE:** Air entering the data center must have MERV11 or MERV13 filtration. **NOTE:** This condition applies to data center environments only. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor.

Table 42. Particulate contamination specifications (continued)

Particulate contamination	Specifications
Walk-Up Edge Data Center or Cabinet (sealed, closed loop environment)	Filtration is not required for cabinets that are anticipated to be opened six times or less per year. Class 8 per ISO 1466-1 filtration as defined above is required otherwise. **NOTE:** In environments commonly above ISA-71 Class G1 or that may have known challenges, special filters may be required.
Conductive dust: data center and non-data center environments	Air must be free of conductive dust, zinc whiskers, or other conductive particles. **NOTE:** Conductive dust, which can interfere with equipment operation, can originate from various sources, including manufacturing processes and zinc whiskers that may develop on the plating of raised floor tiles. **NOTE:** This condition applies to data center and non-data center environments.
Corrosive dust: data center and non-data center environments	• Air must be free of corrosive dust. • Residual dust present in the air must have a deliquescent point less than 60% relative humidity. **NOTE:** This condition applies to data center and non-data center environments.

Table 43. Gaseous contamination specifications

Gaseous contamination	Specifications	Notes
Copper coupon corrosion rate	ISA-71 Class G1: <300 Å/month	Per ANSI/ISA71.04
Silver coupon corrosion rate	ISA-71 Class G1: <200 Å/month	Per ANSI/ISA71.04

Thermal restriction matrix

Table 44. Label reference

Label	Description
STD	Standard
HPR (Silver)	High performance Silver (HPR SLVR) fan
HPR (Gold)	High performance Gold (HPR GOLD) fan
HSK	Heat sink
LP	Low profile
FH	Full height
EXT	Extend
L-type	L-shaped

Table 45. Processor and heat sink matrix

Heat sink	Processor TDP
2U EXT HSK	1. For configs without rear GPUs and CPU TDP ≥ 200 W 2. For all CPUs in FIO RC 1/2 configs
1U EXT HSK	≤ 250 W (GPU shroud should be installed with rear GPU/FGPA/long PCIe cards)
L-type HSK	> 250 W (GPU shroud should be installed with rear GPU/FGPA/long PCIe cards)
1U STD HSK	For configs without rear GPUs and CPU TDP < 200 W

Table 45. Processor and heat sink matrix (continued)

Heat sink	Processor TDP
DLC Module	Vendor DELTA. For all DLC configs
	Vendor COOL-IT. For all DLC configs

NOTE: The configuration's ambient temperature is dictated by its critical component. For example, if the processor's ambient temperature is 35°C, the DIMM is 35°C, and the GPU is 30°C, the configuration's ambient temperature can only be 30°C.

Table 46. Thermal restriction matrix for Non-GPU Configurations E-Core processors

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01	C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01/03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2	RC 1/2/6	RC 0/6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11/12	RC 6/7/11/12/15	RC7	RC14	
Processor	TDP	Cores	Fan											
6710E	205 W	64	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	35°C
6756E	225 W	128	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	35°C
6740E	250 W	96	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	35°C
6746E	250 W	112	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	35°C

Table 46. Thermal restriction matrix for Non-GPU Configurations E-Core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01	C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01/03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2	RC 1/2/6	RC 0/6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11/12	RC 6/7/11/12/15	RC7	RC14	
Processor	**TDP**	**Cores**	**Fan**											
6766E	250 W	144	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	35°C
6780E	330 W	144	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR SLVR + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	HPR GOLD + 2U-EXT HSK	35°C
RDIMM	**1 DPC power**	**2 DPC power**	**DIMM configuration**											
32 GB	8 W	N/A	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
64 GB	13 W	10 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A

Table 47. Thermal restriction matrix for Non-GPU Configurations P-Core processors

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01	C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01/03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2	RC 1/2/6	RC 0/6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11/12	RC 6/7/11/12/15	RC7	RC14	
Processor	TDP	Cores	Fan											
6507P	150 W	8	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	35°C
6505P	150 W	12	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	35°C
6515P	150 W	16	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	35°C
6714P	165 W	8	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR SILVER Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	HPR GOLD Fan+ 1U STD HSK	35°C
6517P	190W	16	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR GOLD Fan+ 1U	HPR GOLD Fan+ 1U	HPR GOLD Fan+ 1U	HPR GOLD Fan+ 1U	35°C

Table 47. Thermal restriction matrix for Non-GPU Configurations P-Core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01	C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01/03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2	RC 1/2/6	RC 0/6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11/12	RC 6/7/11/12/15	RC7	RC14	
Processor	TDP	Cores	Fan											
			1U STD HSK	1U STD HSK	1U STD HSK	1U STD HSK	1U STD HSK	1U STD HSK	1U STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	
6736P	205 W	36	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6724P	210 W	16	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6520P	210 W	24	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6530P	225 W	32	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C

Table 47. Thermal restriction matrix for Non-GPU Configurations P-Core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01	C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01/03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2	RC 1/2/6	RC 0/6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11/12	RC 6/7/11/12/15	RC7	RC14	
Processor	TDP	Cores	Fan											
6730P	250 W	32	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6527P	255 W	24	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6737P	270 W	32	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6740P	270 W	48	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6747P	330 W	48	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR SILVER Fan+	HPR GOLD Fan+ 2U-	HPR GOLD Fan+ 2U-	HPR GOLD Fan+ 2U-	HPR GOLD Fan+ 2U-	35°C

Table 47. Thermal restriction matrix for Non-GPU Configurations P-Core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01	C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01/03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2	RC 1/2/6	RC 0/6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11/12	RC 6/7/11/12/15	RC7	RC14	
Processor	TDP	Cores	Fan											
			2U-EXT HSK	2U-EXT HSK	2U-EXT HSK	2U-EXT HSK	2U-EXT HSK	2U-EXT HSK	2U-EXT HSK	EXT HSK	EXT HSK	EXT HSK	EXT HSK	
6760P	330 W	64	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6767P	350 W	64	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
6787P	350 W	86	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR SILVER Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	HPR GOLD Fan+ 2U-EXT HSK	35°C
RDIMM	1 DPC power	2 DPC power	DIMM configuration											
16 GB	6 W	N/A	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
32 GB	8 W	6	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
64 GB	13 W	10 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
96 GB	15	11	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A

Table 47. Thermal restriction matrix for Non-GPU Configurations P-Core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01	C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01/03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2	RC 1/2/6	RC 0/6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11/12	RC 6/7/11/12/15	RC7	RC14	
Processor	TDP	Cores	Fan											
128 GB	16	12	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	N/A
256 GB	N/A	15	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	HPR GOLD 35°C	N/A

NOTE: "High-Performance GOLD" is required for DIMM ≥ 128 GB

NOTE: Both Front I/O and Rear I/O configurations are supported, using the same chassis.

Table 48. Thermal Restriction for GPU Configurations for E-core processors

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2[NOTE 1]	RC1/2[NOTE 1]	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
6710E	205 W	64	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C
6756E	225 W	128	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C
6740E	250 W	96	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C
6746E	250 W	112	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C
6766E	250 W	144	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C
6780E	330 W	144	1U L-TYPE HSK	2U-EXT HSK	2U-EXT HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C
RDIMM	1 DPC power	2 DPC power	DIMM ambient temperature													
32 GB	8 W	N/A	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A

Table 48. Thermal Restriction for GPU Configurations for E-core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2[NOTE 1]	RC1/2[NOTE 1]	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
64 GB	13 W	10 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
GPU		TDP	GPU ambient temperature													
L4 24 GB		72 W	CPU >=300 W, 30°C	35°C	35°C	CPU >=300 W, 30°C	CPU >300 W, 30°C	30°C [NOTE 4]	30°C [NOTE 2]	30°C [NOTE 2]	CPU >300 W, 30°C	CPU >300 W, 30°C [NOTE 4]	30°C [NOTE 3]	30°C	30°C	N/A
H100 NVL 94 GB		400 W	35°C	Not supported	Not supported	35°C	35°C	35°C	30°C	35°C	35°C	35°C	35°C	Not supported	Not supported	N/A
L40S 48 GB		350 W	35°C	Not supported	Not supported	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	Not supported	Not supported	35°C
A16 64 GB		250 W	35°C	Not supported	Not supported	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	Not supported	Not supported	35°C
Nvidia H200 NVL[NOTE 6]		450 W	HPR PLTM Fan	Not supported	Not supported	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan, 30°C	HPR PLTM Fan, 30°C	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan	Not supported	Not supported	35°C

Table 48. Thermal Restriction for GPU Configurations for E-core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2[NOTE 1]	RC1/2[NOTE 1]	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
RTX Pro 6000[NOTE 6]	450 W		HPR PLTM Fan	Not supported	Not supported	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan, 30°C	HPR PLTM Fan, 30°C	HPR PLTM Fan, 30°C	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan, 30°C	Not supported	Not supported	35°C
DPU[NOTE 5]		Cable	DPU ambient temperature													
B3140H (400G x 1P)		Active (70C)	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	N/A
		Passive	35°C	35°C	35°C	35°C	35°C	35°C	30°C	30°C	35°C	35°C	35°C	Not supported	Not supported	N/A
B3220 (200G x 2P)		Active (70C)	35°C	35°C	35°C	35°C	35°C	35°C	CPU ≤ 300 W, 30°C	CPU ≤ 300 W, 30°C	30°C	30°C	30°C	Not supported	Not supported	N/A
		Passive	35°C	35°C	35°C	35°C	35°C	35°C	CPU ≤ 300 W, 30°C	CPU ≤ 300 W, 30°C	30°C	30°C	30°C	Not supported	Not supported	N/A

NOTE:

- NVIDIA L4, H100 NVL, L40s and A16 GPU configurations require the High-Performance GOLD fan.

- NOTE 1: RC 1/2 supports front half-length GPU with power lower than 75 W with regular shroud and 2U EXT HSK.
- NOTE 2: L4 GPU supported on slot7/9 for riser config 6, supports CPU<300 W and slot9 only for riser config 7 and, supports on slot5/7 for riser config 11.
- NOTE 3: L4 GPU supported on slot2/7/9 for riser config 6.
- NOTE 4: L4 GPU support on slot2/5/7/9 for riser config 11.
- NOTE 5: A full-length riser is required, and the blanks on the GPU shroud must be removed when DPU cards are installed.
- NOTE 6: The HPR Platinum Fan is required when either the Nvidia H200 NVL or RTX Pro 6000 is installed.
- HPR Platinum Fan is required for GPU-ready configurations RC 6-2 and RC 11-2 that support installation of any DW GPUs.
- HPR Platinum Fan is required when L4 GPUs are installed in a GPU-ready configuration. For all other configurations using L4 GPUs, the minimum requirement is a High-Performance Gold fan.

Table 49. Thermal Restriction for GPU Configurations for P-core processors

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2NOTE 1	RC1/2 NOTE 1	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
6507P	150 W	8	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C
6505P	150 W	12	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C
6515P	150 W	16	1U-EXT HSK	2U-EXT HSK	2U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	1U-EXT HSK	35°C

Table 49. Thermal Restriction for GPU Configurations for P-core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2[NOTE 1]	RC1/2[NOTE 1]	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
6714P	165W	8	1U-EXTHSK	2U-EXTHSK	2U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	35°C
6517P	190W	16	1U-EXTHSK	2U-EXTHSK	2U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	35°C
6736P	205W	36	1U-EXTHSK	2U-EXTHSK	2U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	35°C
6724P	210W	16	1U-EXTHSK	2U-EXTHSK	2U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	35°C
6520P	210W	24	1U-EXTHSK	2U-EXTHSK	2U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	35°C
6530P	225W	32	1U-EXTHSK	2U-EXTHSK	2U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	35°C
6730P	250W	32	1U-EXTHSK	2U-EXTHSK	2U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	1U-EXTHSK	35°C
6527P	255W	24	1U L-TYPE HSK	2U-EXTHSK	2U-EXTHSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C

Table 49. Thermal Restriction for GPU Configurations for P-core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2[NOTE 1]	RC1/2[NOTE 1]	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
6737P	270 W	32	1U L-TYPE HSK	2U-EXT HSK	2U-EXT HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C
6740P	270 W	48	1U L-TYPE HSK	2U-EXT HSK	2U-EXT HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C
6747P	330 W	48	1U L-TYPE HSK	2U-EXT HSK	2U-EXT HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C
6760P	330 W	64	1U L-TYPE HSK	2U-EXT HSK	2U-EXT HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C
6767P	350 W	64	1U L-TYPE HSK	2U-EXT HSK	2U-EXT HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C
6787P	350 W	86	1U L-TYPE HSK	2U-EXT HSK	2U-EXT HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	1U L-TYPE HSK	35°C
RDIMM	1 DPC power	2 DPC power	DIMM ambient temperature													
16 GB	6 W	N/A	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A

Table 49. Thermal Restriction for GPU Configurations for P-core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2 NOTE 1	RC1/2 NOTE 1	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
32 GB	8 W	6 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
64 GB	13 W	10 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
96 GB	15 W	11 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
128 GB	16 W	12 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
256 GB	N/A	15 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	N/A
GPU		TDP	GPU ambient temperature													
L4 24 GB		72 W	CPU >=300 W, 30°C	35°C	35°C	CPU >300 W, 30°C	CPU >=300 W, 30°C	30°C NOTE 4	30°C NOTE 2	30°C NOTE 2	CPU >300 W, 30°C	CPU >300 W, 30°C NOTE 4	30°C NOTE 3	30°C	30°C	N/A
H100 NVL 94 GB		400 W	35°C	35°C	35°C	35°C	35°C	35°C	30°C	35°C	35°C	35°C	35°C	Not supported	Not supported	35°C
L40S 48 GB		350 W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	Not supported	Not supported	35°C

Table 49. Thermal Restriction for GPU Configurations for P-core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2[NOTE 1]	RC1/2[NOTE 1]	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
A16 64 GB	250 W		35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	Not supported	Not supported	35°C
Nvidia H200 NVL[NOTE 6]	450 W		HPR PLTM Fan	Not supported	Not supported	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan, 30°C	HPR PLTM Fan, 30°C	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan	Not supported	Not supported	35°C
RTX Pro 6000[NOTE 6]	450 W		HPR PLTM Fan	Not supported	Not supported	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan, 30°C	HPR PLTM Fan, 30°C	HPR PLTM Fan, 30°C	HPR PLTM Fan	HPR PLTM Fan	HPR PLTM Fan, 30°C	Not supported	Not supported	35°C
DPU[NOTE 5]	Cable		DPU ambient temperature													
B3140H (400G x 1P)	Active (70C)		Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	N/A
	Passive		35°C	35°C	35°C	35°C	35°C	35°C	30°C	30°C	35°C	35°C	35°C	Not supported	Not supported	N/A
B3220 (200G x 2P)	Active		35°C	35°C	35°C	35°C	35°C	35°C	CPU ≤ 300	CPU ≤ 300	30°C	30°C	30°C	Not supported	Not supported	N/A

Table 49. Thermal Restriction for GPU Configurations for P-core processors (continued)

Configuration			No BP	FIO 8 x EDSFF E3.S NVMe	FIO 16 x EDSFF E3.S NVMe		8 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA	16 x 2.5 inch SAS/SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/SATA	16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe	Ambient temperature
Storage configuration			No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	No rear drives	No rear drives	No rear drives		No rear drives	No rear drives	4 x Rear EDSFF E3.S with 1x Rear-Fan	
Storage configuration number			C0-01	C01-01	C02-01/02		C04-01~09	C05-01/02	C06-01/02/06/07	C07-01/02	C09-01	C09-03	C08-01/02/04	C10-01	C10-02	
Riser configuration			RC 6/7/11	RC 2[NOTE 1]	RC1/2[NOTE 1]	RC 6	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 6/7/11	RC 7/11/12	RC 6/12/15	RC 7	RC 14	
Air shroud type			GPU	Regular	Regular	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	GPU	
Processor	TDP	Cores	Heat-sink													
		(70C)							W, 30°C	W, 30°C						
		Passive	35°C	35°C	35°C	35°C	35°C	35°C	CPU ≤ 300 W, 30°C	CPU ≤ 300 W, 30°C	30°C	30°C	30°C	Not supported	Not supported	N/A

NOTE:

- NVIDIA L4, H100 NVL, L40s and A16 GPU configurations require the High-Performance GOLD fan.
- NOTE 1: RC 1/2 supports front half-length GPU with power lower than 75 W with regular shroud and 2U EXT HSK.
- NOTE 2: L4 GPU supported on slot7/9 for riser config 6, supports CPU<300 W and slot9 only for riser config 7 and, supports on slot5/7 for riser config 11.
- NOTE 3: L4 GPU supported on slot2/7/9 for riser config 6.
- NOTE 4: L4 GPU support on slot2/5/7/9 for riser config 11.
- NOTE 5: A full-length riser is required, and the blanks on the GPU shroud must be removed when DPU cards are installed.
- NOTE 6: The HPR Platinum Fan is required when either the Nvidia H200 NVL or RTX Pro 6000 is installed.
- HPR Platinum Fan is required for GPU-ready configurations RC 6-2 and RC 11-2 that support installation of any DW GPUs.
- HPR Platinum Fan is required when L4 GPUs are installed in a GPU-ready configuration. For all other configurations using L4 GPUs, the minimum requirement is a High-Performance Gold fan.

Table 50. Thermal restriction for Liquid-Cooling for Non-GPU Configurations (ALL processors).

Configuration		No BP	8 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA	16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2	24 x 2.5 inch SAS/ SATA	16 x EDSFF E3.S NVMe	32 x EDSFF E3.S NVMe	40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe
Storage configuration		**No rear drives**	**No rear drives**	**No rear drives**	**No rear drives**	**No rear drives**	**No rear drives**	**No rear drives**	**4 x Rear EDSFF E3.S with 1x Rear-Fan**
Storage configuration number		**C0-01**	**C04-01/ 08**	**C05-01/ 02**	**C06-01/ 02/06/0 7**	**C07-01/ 02**	**C09-01/ 03**	**C08-02**	**C10-02**
Riser configuration		**RC 11**	**RC 0/ 11**	**RC 11**	**RC 11**	**RC 11**	**RC 11**	**RC 11**	**RC14**
Air Shroud Type		**Regular shroud**	**Regular shroud**	**Regular shroud**	**Regular shroud**	**Regular shroud**	**Regular shroud**	**Regular shroud**	**Regular shroud**
Processor s	All	HPR SILVER Fan 35°C	HPR SILVER Fan 35°C	HPR SILVER Fan 35°C	HPR SILVER Fan 35°C	HPR SILVER Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C
DDR5 Memory	16 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	32 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	64 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	96 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	128 GB RDIMM(3DS)	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C
	256 GB RDIMM(3DS)	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C

NOTE: "High-Performance GOLD" is required for DIMM ≥ 128 GB.

Table 51. Thermal restriction for Liquid-Cooling for GPU Configurations (ALL processors).

Configuration		No BP		8 x 2.5 inch SAS/ SATA		16 x 2.5 inch SAS/ SATA		16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2		24 x 2.5 inch SAS/ SATA		16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe		40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe
Storage configuration		No rear drives		No rear drives		No rear drives		No rear drives		No rear drives		No rear drives		No rear drives		4 x Rear EDSFF E3.S with 1x Rear-Fan
Storage configuration number		C0-01		C04-01/08		C05-01/02		C06-01/02 /06/07		C07-01/02		C09-01/03		C08-02		C10-02
Riser configuration		RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC14
Air Shroud Type		GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud
Processors	All	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C	HPR GOLD Fan 35°C
DDR5 Memory	16 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	32 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	64 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	96 GB RDIMM	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	128 GB RDIMM(3DS)	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	256 GB RDIMM(3DS)	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
GPU	L4 24 GB	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	H100 NVL 94 GB	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported
	L40S 48 GB	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported

Table 51. Thermal restriction for Liquid-Cooling for GPU Configurations (ALL processors). (continued)

Configuration			No BP		8 x 2.5 inch SAS/ SATA		16 x 2.5 inch SAS/ SATA		16 x 2.5 inch SAS/ SATA + 8 x 2.5 inch U.2		24 x 2.5 inch SAS/ SATA		16 x EDSFF E3.S NVMe		32 x EDSFF E3.S NVMe		40 x EDSFF E3.S NVMe + 4 x Rear EDSFF E3.S NVMe
Storage configuration			No rear drives		No rear drives		No rear drives		No rear drives		No rear drives		No rear drives		No rear drives		4 x Rear EDSFF E3.S with 1x Rear-Fan
Storage configuration number			C0-01		C04-01/08		C05-01/02		C06-01/02 /06/07		C07-01/02		C09-01/03		C08-02		C10-02
Riser configuration			RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC 11-1 (HL)	RC 11-2 (FL)	RC14
Air Shroud Type			GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud	GPU shroud
	A16 64 GB		Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported
	Nvidia H200 NVL[NOTE 6]		Not supported	HPR PLTM Fan, 35°C	Not supported	HPR PLTM Fan, 35°C	Not supported	HPR PLTM Fan, 35°C	Not supported	HPR PLTM Fan, 30°C	Not supported	HPR PLTM Fan, 30°C	Not supported	HPR PLTM Fan, 35°C	Not supported	HPR PLTM Fan, 35°C	Not supported
	RTX Pro 6000[NOTE 6]		Not supported	HPR PLTM Fan, 35°C	Not supported	HPR PLTM Fan, 35°C	Not supported	HPR PLTM Fan, 30°C	Not supported	HPR PLTM Fan, 30°C	Not supported	HPR PLTM Fan, 30°C	Not supported	HPR PLTM Fan, 35°C	Not supported	HPR PLTM Fan, 30°C	Not supported
DPU	B3140H (400G x1P)	Active (70C)	Not supported	30°C	Not supported	30°C	Not supported	30°C	Not supported	30°C	Not supported	30°C	Not supported	30°C	Not supported	30°C	Not supported
		Passive	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported
	B3220 (200Gx 2P)	Active (70C)	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	30°C	Not supported	30°C	Not supported	35°C	Not supported	35°C	Not supported
		Passive	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported	35°C	Not supported

NOTE:

- “High-Performance GOLD” is required for DIMM ≥ 128 GB.
- A full-length riser is required, and the blanks on the GPU shroud must be removed when DPU cards are installed.
- NOTE 6: The HPR Platinum Fan is required when either the Nvidia H200 NVL or RTX Pro 6000 is installed.

NOTE: In front I/O configuration, RC 1/2 use regular air shroud and 2U EXT HSK, regardless of GPU presence.

Other Restrictions

- For rear IO configurations, 25Gb and above 25Gb PCIe/OCP cards require DAC or 85degC active optics.
  - 85degC active optics are M14MK(SFP28), 4WGYD(QSFP+)
- L4 GPU
  - Support up to 30degC system ambient when CPU≥300W in system configs No BP(C0), 8x2.5”(C04).
  - Support up to 30degC system ambient when CPU>300W in system configs FIO 16xE3.s(C02+RC6) and 16xE3.s(C09).
  - L4 GPU support on slot2/5/7/9 for riser config 11 in 16xE3.s(C09-03).
  - Support up to 30degC system ambient for all CPUs in system config 16x2.5”(C05); Support slot 2/5/7/9 only for riser config 11
  - Support up to 30degC system ambient in system config (16+8)x2.5”(C06) and 24x2.5”(C07); Support on slot 7/9 only for riser config 6; Support CPU<300 W and slot 9 only for riser config 7; Support on slot 5/7 for riser config 11
  - Support up to 30degC system ambient in system config 32xE3.s(C08); Support on slot 2/7/9 only for riser config 6
- DPU restrictions
  - “Long” riser cage is requested and “Removed” blanks on GPU shroud , when DPU cards installed.
  - DPUs are supported on designated riser configs of RC1, RC2, RC6-2 and RC11-2.
  - DPU BF-3 B3140H (6CMW1/KK4NR) restrictions
    - Required DAC(passive cable), not support 70degC active optics until 85degC active optics available.
    - Support up to 30degC system ambient with DAC(passive cable) in system configs (16+8)x2.5”(C06) and 24x2.5”(C07)
  - DPU BF-3 B3220 restrictions
    - Support both active/passive cables
    - Support up to 30degC system ambient and CPU up to 300 W in system configs (16+8)x2.5”(C06) and 24x2.5”(C07)
    - Support up to 30degC system ambient for all CPUs in system configs 16xE3.s(C09) and 32xE3.s(C08)
- Single Port Network card restrictions
  - Support up to 35degC system ambient with DAC(passive cable)
  - Support up to 30degC system ambient with active cable
    - FIO 8xE3(C01) and FIO 16xE3(C02) with RC1/2 which can support up to 35degC with active cable
    - (16+8)x2.5"(C06)+(RC11-2): support on slot 3/5 only
    - 24x2.5"(C07)+(RC11-2): support on slot 3/5 only

Thermal restriction for liquid cooling configurations

- No thermal restriction to support all CPU SKUs with liquid cooling configurations.
- DPU restrictions
  - “Long” riser cage is requested and “Removed” blanks on GPU shroud , when DPU cards installed.
  - DPUs are supported on designated riser configs of RC1, RC2, RC6-2 and RC11-2.
  - DPU BF-3 B3140H (6CMW1/KK4NR) restrictions
    - Support up to 30degC system ambient with temperature spec is 70degC active optics until 85degC active optics available.
    - Support up to 35degC system ambient with DAC(passive cable)
  - DPU BF-3 B3220 restrictions
    - Support up to 30degC system ambient with temperature spec is 70degC active optics in system configs (16+8)x2.5”(C06) and 24x2.5”(C07).
    - Support up to 35degC system ambient in system configs 8x2.5”(C04), 16x2.5”(C06) and 16xE3.s(C09).
    - Support up to 35degC system ambient with DAC(passive cable).

4

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

Perform the following steps to set up the system:

Steps

1. Unpack the system.
2. Install the system into the rack. For more information, see the rail installation and cable management accessory guides relevant to your rail and cable management solution at PowerEdge Manuals.
3. Connect the peripherals to the system and the system to the electrical outlet.
4. Power on the system.

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

   NOTE: For information about managing the basic settings and features of the system, see the Pre-operating system management applications chapter.

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 an iDRAC IP address, see the documentation links provided in the table below.

Table 52. Interfaces to set up iDRAC IP address

Interface	Documentation links
iDRAC Settings utility	Integrated Dell Remote Access Controller User's Guide at iDRAC Manuals or for system specific Integrated Dell Remote Access Controller User's Guide, go to PowerEdge Manuals > **Product Support** page of your system > **Documentation.**

Table 52. Interfaces to set up iDRAC IP address (continued)

Interface	Documentation links
	NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article KB305325.
iDRAC Direct	Integrated Dell Remote Access Controller User's Guide at iDRAC Manuals or for system specific Integrated Dell Remote Access Controller User's Guide, go to PowerEdge Manuals > **Product Support** page of your system > **Documentation**. **NOTE:** To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article KB305325.
iDRAC Direct and Quick Sync 2 (optional)	Integrated Dell Remote Access Controller User's Guide at iDRAC Manuals or for system specific Integrated Dell Remote Access Controller User's Guide, go to PowerEdge Manuals > **Product Support** page of your system > **Documentation**. **NOTE:** To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article KB305325.

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 a USB to Type C cable.

Options to log in to iDRAC

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

You can log in to iDRAC as:

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

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

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

For more information about logging in to the iDRAC and iDRAC licenses, see the latest Integrated Dell Remote Access Controller User's Guide

NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article KB305325.

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 in the table below. For information about how to install the operating system, see the documentation links provided in the table below.

Table 53. Resources to install the operating system

Resource	Documentation links
iDRAC	Integrated Dell Remote Access Controller User's Guideor for system-specific Integrated Dell Remote Access Controller User's Guide, go to PowerEdge Manuals > **Product Support** page of your system > **Documentation**. **NOTE:** To determine the most recent iDRAC release for your platform and for the latest documentation version, see KB article at KB305325.

NOTE: For more information about installation and how-to videos for operating systems that are 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 54. Options to download firmware

Option	Documentation link
Using Integrated Dell Remote Access Controller (iDRAC)	iDRAC Manuals
Using iDRAC virtual media	iDRAC Manuals

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 55. Options to download and install OS drivers

Option	Documentation
Dell support site	Downloading drivers and firmware section.
iDRAC virtual media	Integrated Dell Remote Access Controller User's Guide or for system specific, go to Integrated Dell Remote Access Controller User's Guide > **Product Support** page of your system > **Documentation** . **NOTE:** To determine the most recent iDRAC release for your platform and for the latest documentation version, see Integrated Dell Remote Access Controller Release Notes.

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.

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.

5

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
- Boot Manager
- Preboot Execution Environment (PXE)

Topics:

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 56. System Setup Main Menu

Option	Description
System BIOS	Enables you to configure the BIOS settings.
iDRAC Settings	Enables you to configure the iDRAC settings. The iDRAC utility is an interface to set up and configure the iDRAC parameters . You can enable or disable various iDRAC parameters by using the iDRAC utility. For more information about this utility, *Integrated Dell Remote Access Controller User's Guide* at PowerEdge Manuals.
Device Settings	Enables you to configure device settings for devices such as storage controllers or network cards.
Service Tag Settings	Enables you to configure the System Service Tag.

System BIOS

See the common options of the System BIOS here: Support for General Solution Resources | Documentation | Dell US > **Manuals and Documents** > **Set up BIOS on 17th Generation Dell PowerEdge Servers.**

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.

Boot Manager

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

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

Table 57. Boot Manager details

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

PXE boot

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

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

6

Minimum to POST and system management configuration validation

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

Topics:

Minimum configuration to POST

The components that are listed below are the minimum configuration to POST:

- One processor in processor socket 0
- One memory module (DIMMs) in slot A1. (Only 32 GB allowed for 1DIMM per processor with limited features)
- One power supply unit
- Intrusion switch + dongle cable
- Host Processor Module (HPM)* + Data Center Secured Control Module (DC-SCM)

NOTE: HPM is also known as System board.

7

Configuration validation

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

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

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

Table 58. Configuration validation error

Error	Description	Possible cause and recommendations	Example
Config Error	A configuration element within the closest match contains something that is unexpected and does not match any Dell qualified configuration.	Wrong configuration	Config Error: Backplane cable CTRS_SRC_SA1 and BP-DST_SA1
		The element reported in HWC8010 errors are assembled incorrectly. Verify element (cable, risers, etc) placement in the system.	Config Error : SL Cable PLANAR_SL2 and CTRL_DST_PA1
Config Missing	iDRAC found a configuration element missing within the closest match detected.	Missing or damaged cable, device, or part	Config Missing: Float card front PERC/HBA, adapter PERC/HBA
		Missing element or cable is reported in HWC8010 error logs. Install the missing element (cable, risers, etc).	Config Missing : SL cable PLANAR_SL8 and CTRL_DST_PA1
Comm Error	A configuration element is not responding to iDRAC using the management interface while running an inventory check.	System management sideband communication	Comm Error: Backplane 2
		Unplug AC Power, reseat the element and replace the element if the problem persists.	

8

Disassembly and reassembly

Topics:

Safety instructions

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

CAUTION: Ensure that two or more people lift the system horizontally from the box and place it on a flat surface, rack lift, or into the rails.

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

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

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or

telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that are shipped with your product.

NOTE: It is recommended that you always use an antistatic mat and antistatic strap while working on components inside the system.

CAUTION: To ensure proper operation and cooling, all system bays and fans must always be populated with a component or a blank.

NOTE: Only use certified Optical Fiber Transceiver Class I Laser Products.

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.

Before working inside your system

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

1. Power off the system and all attached peripherals.
2. Disconnect the system from the electrical outlet and disconnect the peripherals.
3. If applicable, remove the system from the rack.
   For more information, see the *Rail Installation Guide* relevant to your rail solutions at PowerEdge manuals.
4. Remove the system cover.

   NOTE: While removing the hot-swappable components from the front or rear of the system, do not remove the system cover.

After working inside your system

Prerequisites

Follow the safety guidelines listed in Safety instructions.

Steps

1. Replace the system covers.
2. If applicable, install the system into the rack.
   For more information, see the *Rail Installation Guide* relevant to your system at PowerEdge manuals.
3. Reconnect the peripherals and connect the to the electrical outlet, and then power on the system.

Recommended tools

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

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

- ESD mat
- Needle-nose pliers

Optional front bezel

Removing the front bezel

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Keep the bezel key handy.

NOTE: The bezel key is part of the bezel package.

Steps

1. Unlock the bezel.
2. Press the release button, and disengage the left end of the bezel.
3. Unhook the right end, and remove the bezel.

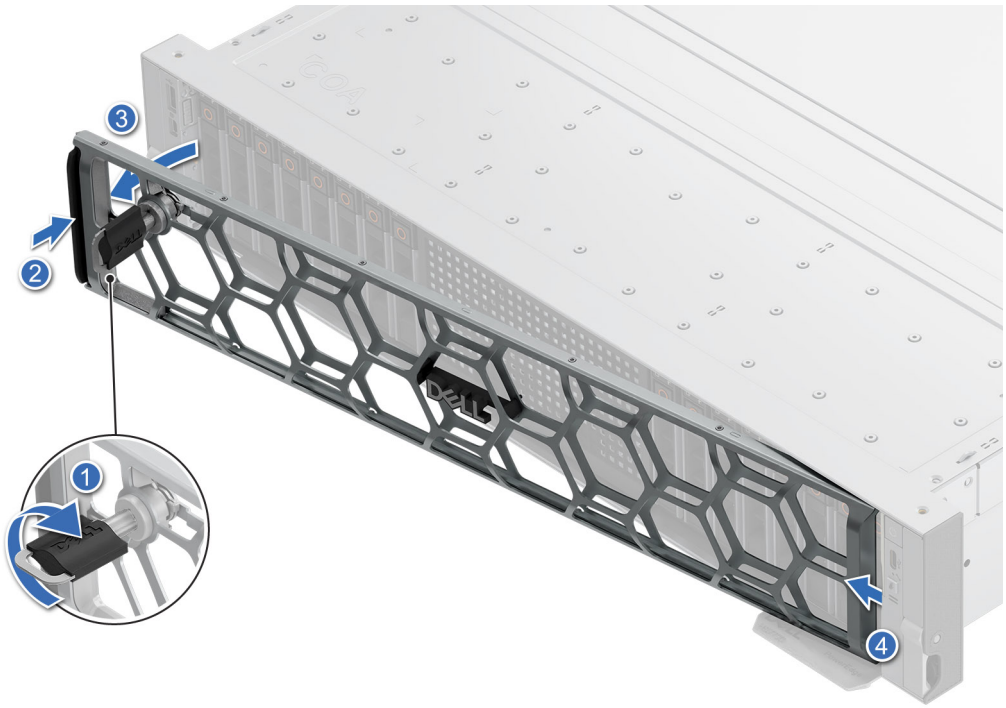


Figure 42. Removing the front bezel

Next steps

Replace front bezel.

Installing the front bezel

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Locate and remove the bezel key.

NOTE: The bezel key is part of the bezel package.

Steps

1. Align and insert the tabs on the bezel into the slots on the system.
2. Press the bezel until the release button clicks in place.
3. Lock the bezel.

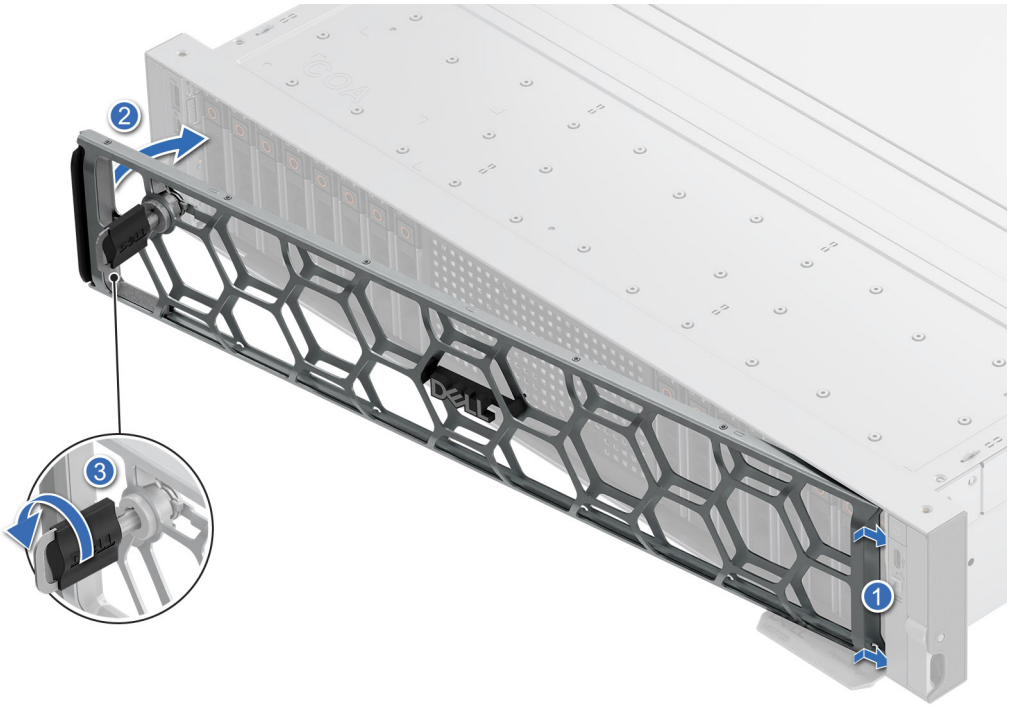


Figure 43. Installing the front bezel

System cover

Removing the system cover

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Power off the system, and any attached peripherals.
3. Disconnect the system from the electrical outlet and peripherals.

Steps

1. Using a 1/4-inch flat head or a Phillips 2 screwdriver, rotate the lock counterclockwise to the unlocked position.
2. Lift the release latch until the system cover slides back.
3. Lift the cover from the system.

Figure 44. Removing the system cover

Next steps

1. Replace the system cover.

Installing the system cover

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Ensure that all internal cables are connected and routed properly, and no tools or extra parts are left inside the system.

Steps

1. Align the tabs on the system cover with the guide slots on the system and slide the system cover.
2. Close the system cover release latch.
3. Using a 1/4-inch flat head or Phillips 2 screwdriver, rotate the lock clockwise to the locked position.

Figure 45. Installing the system cover

Next steps

1. Follow the procedure listed in After working inside your system.

Air shroud

Removing the air shroud

Prerequisites

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Remove the cables from the air shroud notch and place them on other shroud.

Steps

1. Press the latch on the air shroud.

   NOTE: To remove the left air shroud, press the latch on the right air shroud in the opposite direction.

2. Hold the edges of the air shroud, lift the air shroud out of the system.

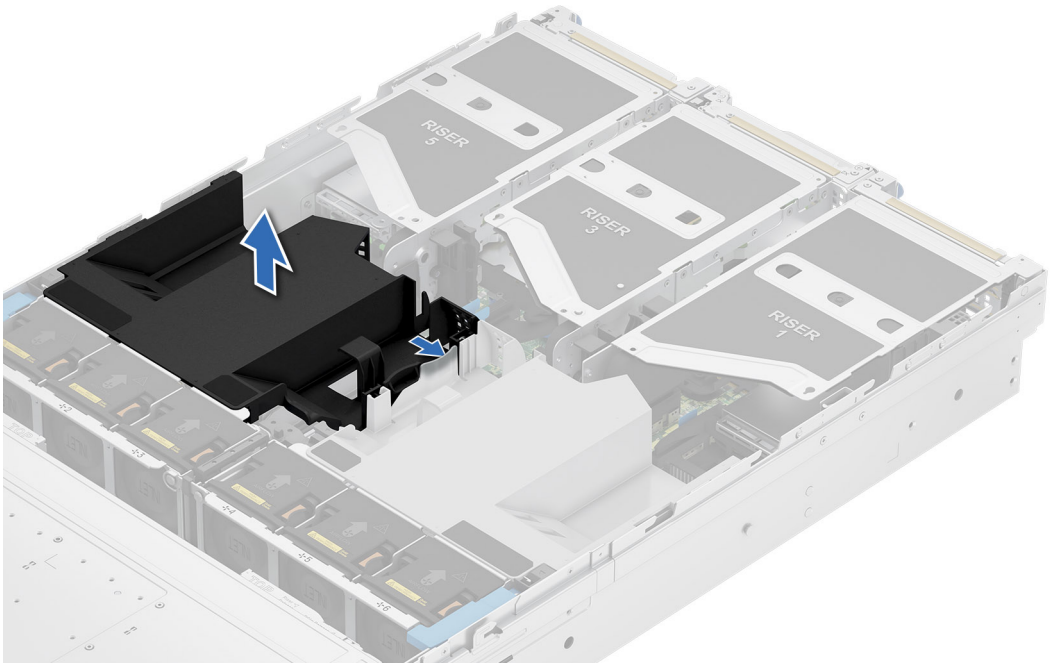


Figure 46. Removing the left air shroud

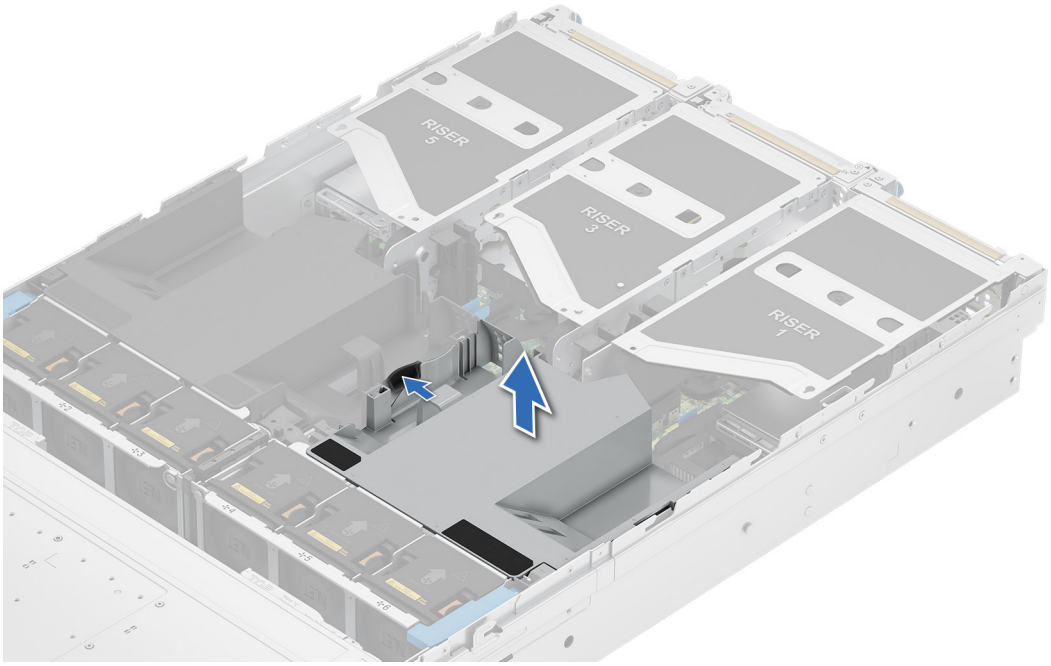


Figure 47. Removing the right air shroud

NOTE: The left and right air shrouds can also be removed together.

Next steps

1. 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 Before working inside your system.
3. Remove the cables from the air shroud notch and place them on the other shroud.

Steps

1. Align the slot on the air shroud with the tab on the left or right air shroud.
2. Lower the air shroud into the system until it is firmly seated.

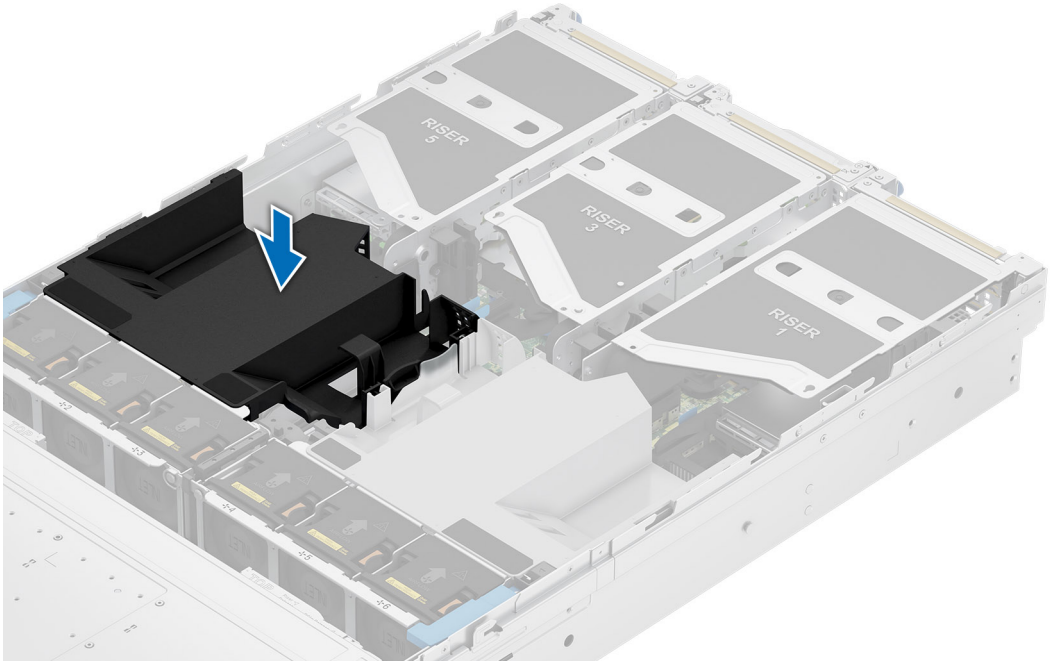


Figure 48. Installing the left air shroud

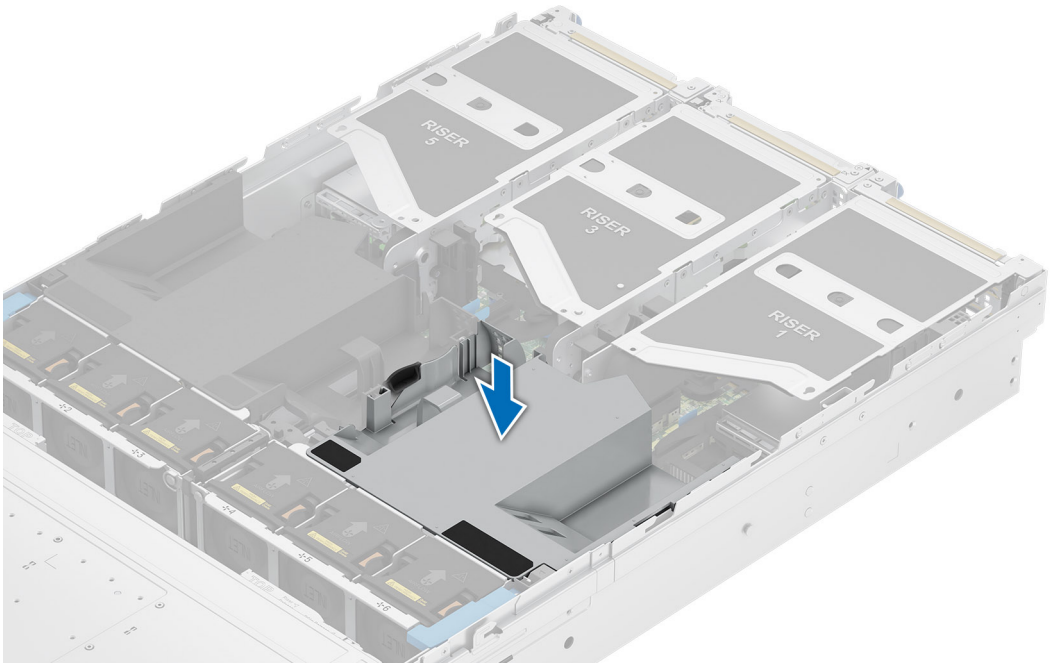


Figure 49. Installing the right air shroud

NOTE: The left and right air shrouds can also be installed together.

Next steps

1. Route the cables along the air shroud notch.
2. Follow the procedure listed in After working inside your system.

Removing the air shroud blank

Prerequisites

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Remove the cables from the air shroud notch and keep them aside.
4. Remove the air shroud and keep air shroud blank side facing up.

Steps

Press the release tabs and lift the air shroud blank from the air shroud .

NOTE: System with 2U heat sink must have the air shroud blank removed.

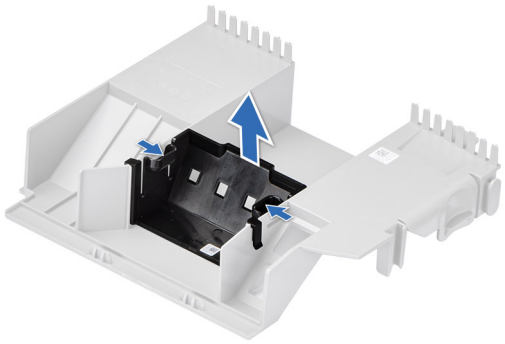


Figure 50. Removing the air shroud blank

Next steps

1. Replace the air shroud blank.

Installing the air shroud blank

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 cables from the air shroud notch and keep them aside.
4. Remove the air shroud and keep air shroud blank side facing up.

Steps

Align and lower the air shroud blank into the air shroud until it is firmly seated.

NOTE: System with 1U heat sink must have an air shroud blank installed for proper thermal management.

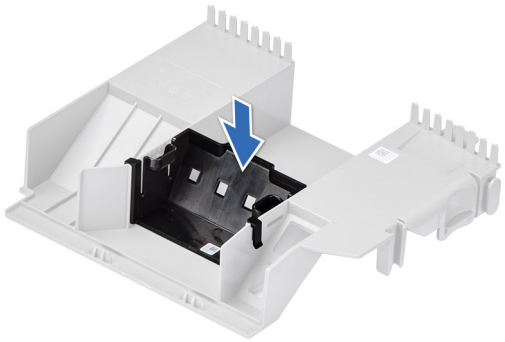


Figure 51. Installing the left air shroud

Next steps

1. Install the air shroud.
2. Follow the procedure listed in After working inside your system.

Removing the GPU air shroud

Prerequisites

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

Holding the edges lift the GPU air shroud out of the system.

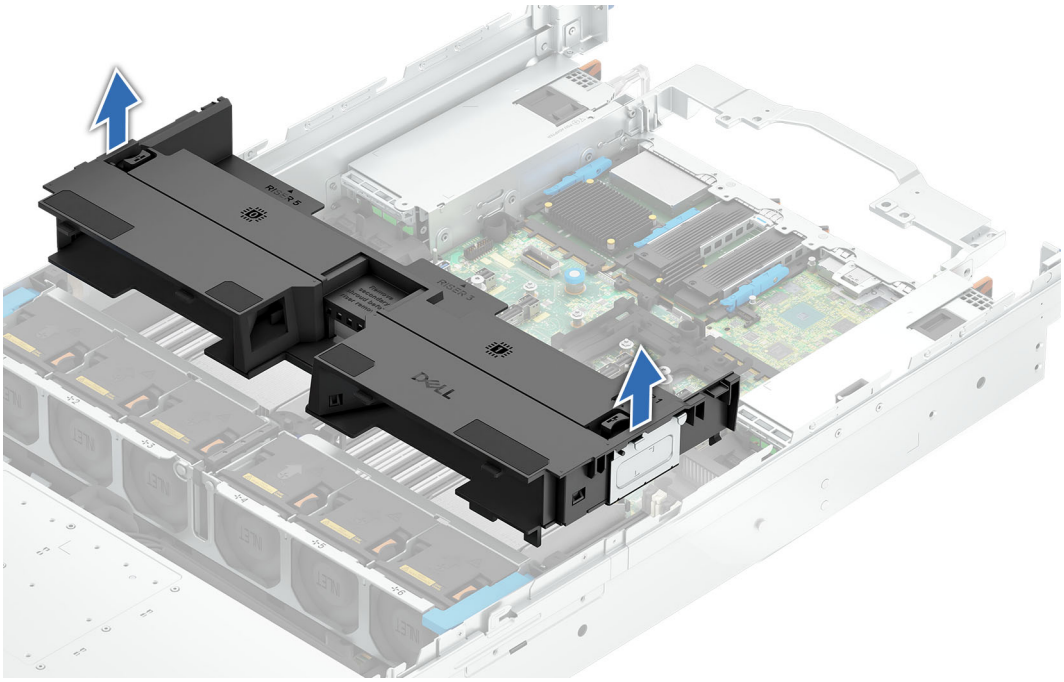


Figure 52. Removing the GPU air shroud

Next steps

1. Replace the GPU air shroud.

Installing the GPU air shroud

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Align the tabs on the GPU air shroud with the slots on the system.
2. Lower the GPU air shroud into the system until it is firmly seated.

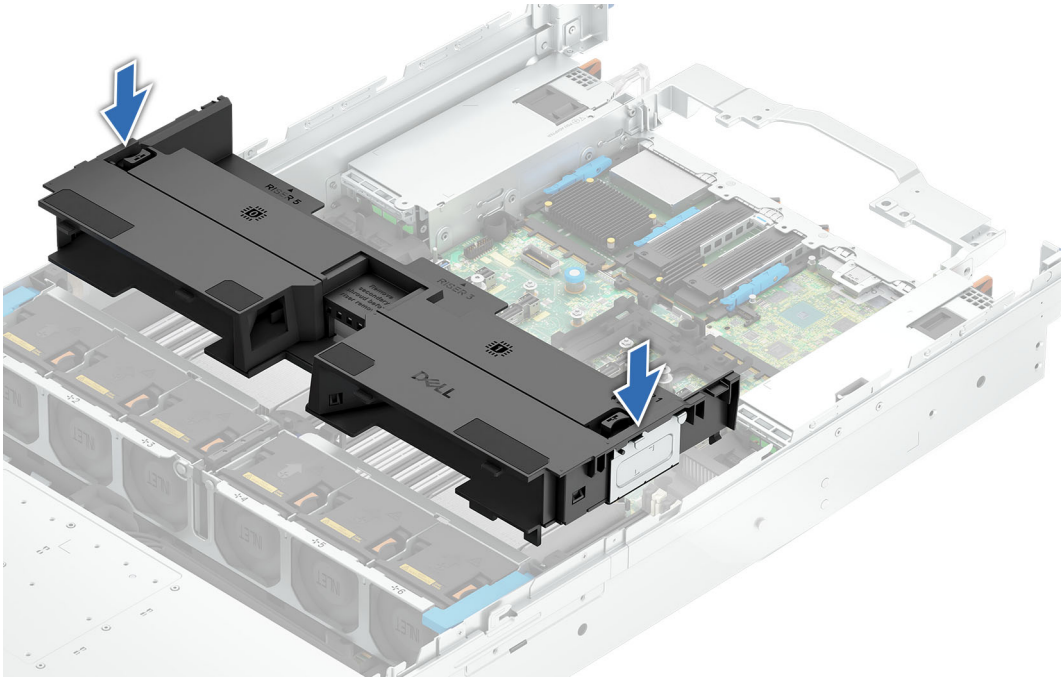


Figure 53. Installing the GPU air shroud

Next steps

1. Follow the procedure listed in After working inside your system.

PERC modules

Removing the rear mounting front PERC 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. Disconnect all the cables from the PERC, observe the cable routing.

Steps

1. Using a Phillips 2 screwdriver, loosen the thumbscrews on the front PERC module.
2. Pull the front PERC module to disengage from the connector on the drive backplane.

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

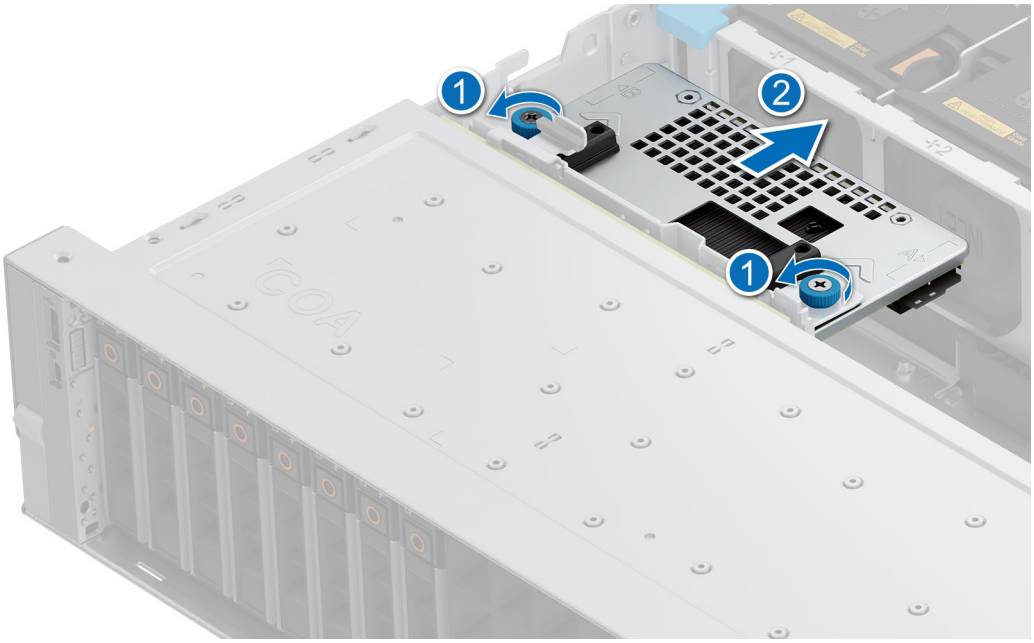


Figure 54. Removing the rear mounting front PERC module

3. Remove the front PERC battery cables from the cable clip.

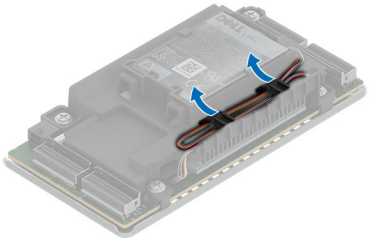


Figure 55. Removing the front PERC battery cables from the cable clip

4. Remove the battery with its holder out of the PERC shroud on the tray. Using a Phillips 2 screwdriver, loosen the screws to remove the shroud from the front PERC, then remove the front PERC from the tray.

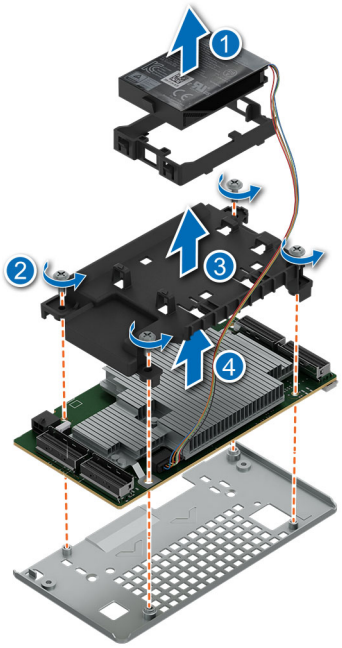


Figure 56. Removing the rear mounting front PERC module from the PERC tray

Next steps

Replace the rear mounting front PERC module.

Installing the rear mounting front PERC module

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Route the cable properly to prevent the cable from being pinched or crimped.

Steps

1. Align the front PERC and the shroud with the screw-guide pins on the PERC tray. Using a Phillips 2 screwdriver, tighten the screws to secure them in place. Insert the front PERC battery into the holder.

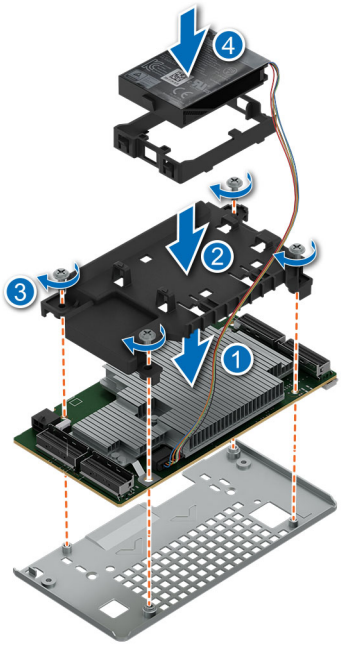


Figure 57. Installing the rear mounting front PERC module on the PERC tray

2. Route the front PERC battery cables through the cable clip.

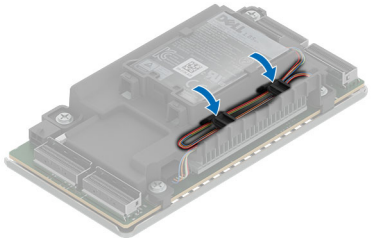


Figure 58. Installing the front PERC battery cables

3. Align the connectors on the front PERC module with the connectors on the drive backplane.
4. Slide the front PERC module until the module is connected to the drive backplane.
5. Using a Phillips 2 screwdriver, tighten the thumbscrews on the front PERC module.

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

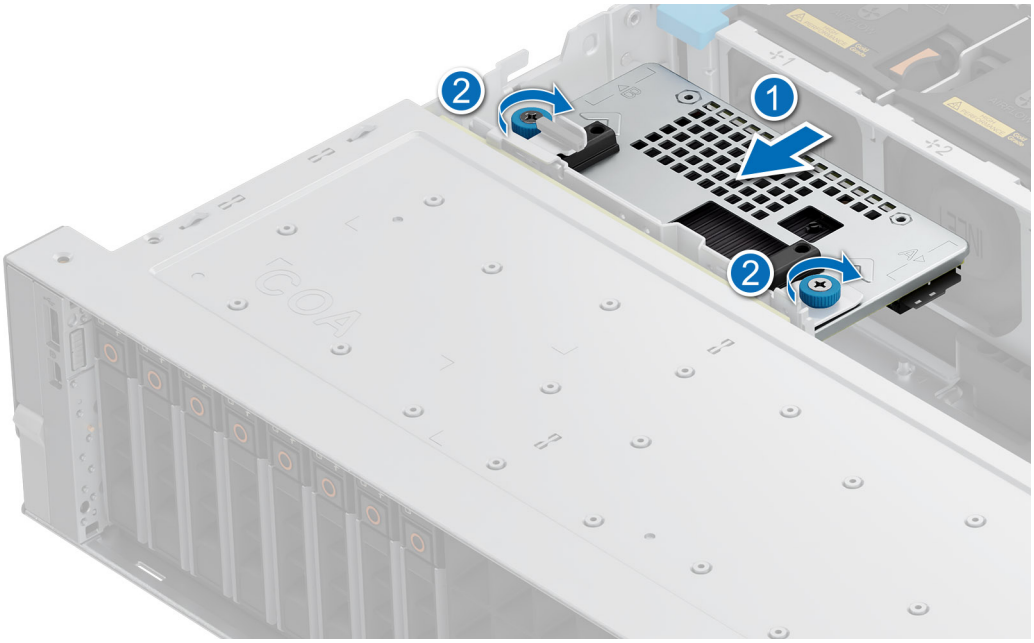


Figure 59. Installing the rear mounting front PERC module

Next steps

1. Reconnect all the required cables.
2. Follow the procedure listed in After working inside your system.

Removing the front H975i PERC 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 drive backplane cover.
4. Disconnect the cables from PERC, observe the cable routing.

Steps

1. Press the release latches in the direction of the arrows that are marked on the PERC tray and lift the tray out from the system.

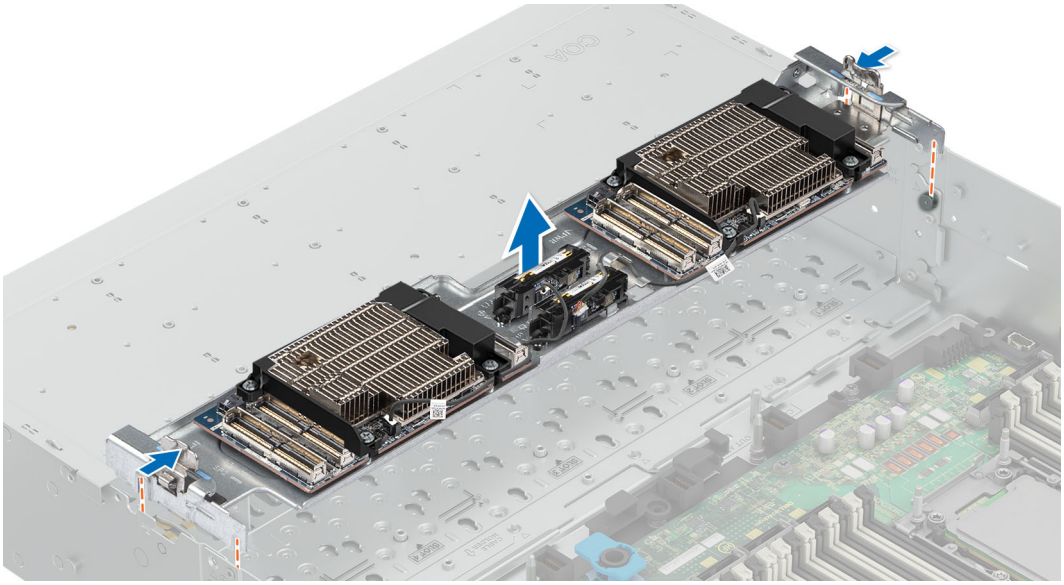


Figure 60. Removing the PERC H975i module

2. Disconnect the battery cables from the PERC H975i and unroute it from the cable holders and remove them.

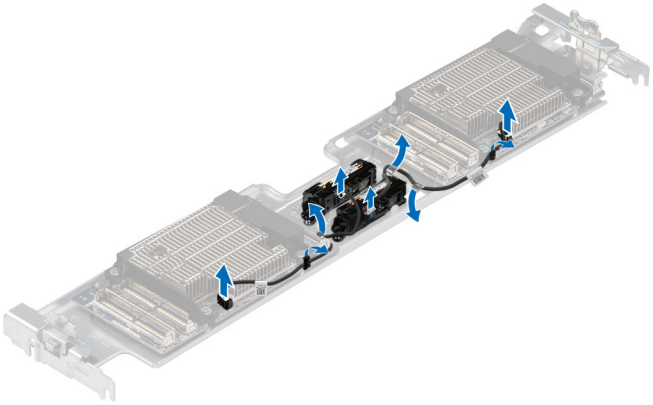


Figure 61. Removing the battery cables

3. Using a Phillips 2 screwdriver, loosen the screws and remove the H975i from the tray, and the shroud from the H975i.

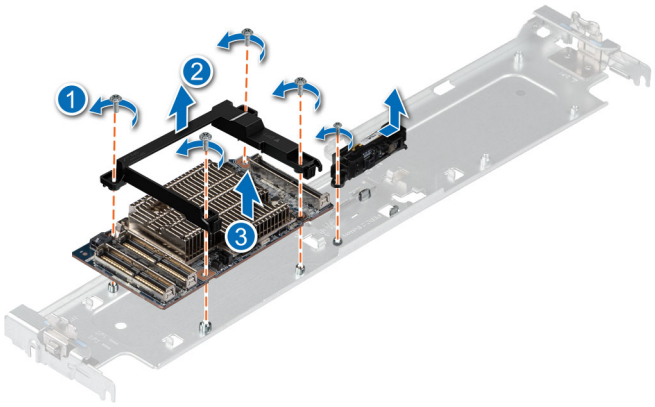


Figure 62. Removing the PERC H975i, shroud, and battery holder

4. Using a Phillips 2 screwdriver, loosen the screw and slide the battery holder out from the cage and remove it.

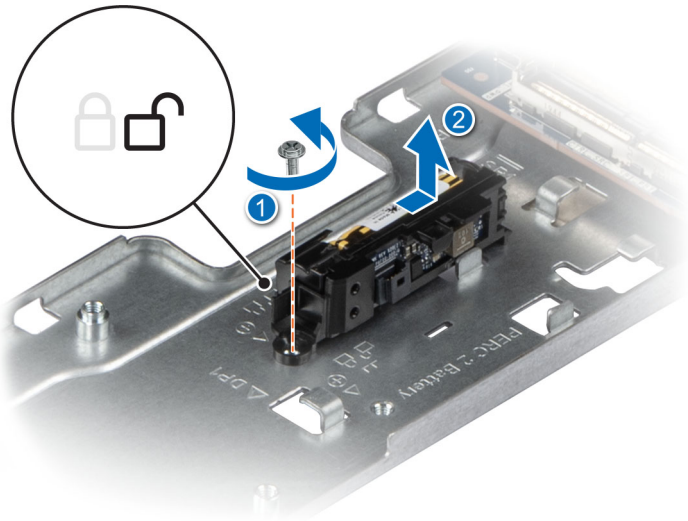


Figure 63. Removing the battery holder

Next steps

1. Replace the front PERC module.

Installing the front H975i PERC 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 drive backplane cover.

Steps

1. Align the H975i and the shroud with the screw-guide pins on the PERC tray. Using a Phillips 2 screwdriver, tighten the screws to secure them in place.
2. Insert the battery holder into the cage and slide it forward to secure it in place on the PERC tray. Using a Phillips 2 screwdriver, tighten the captive screw to secure the battery holder to the PERC tray .

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

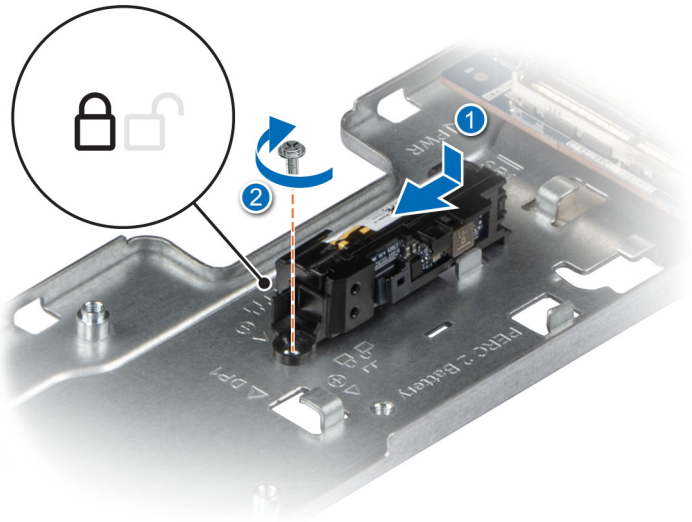


Figure 64. Installing the battery holder

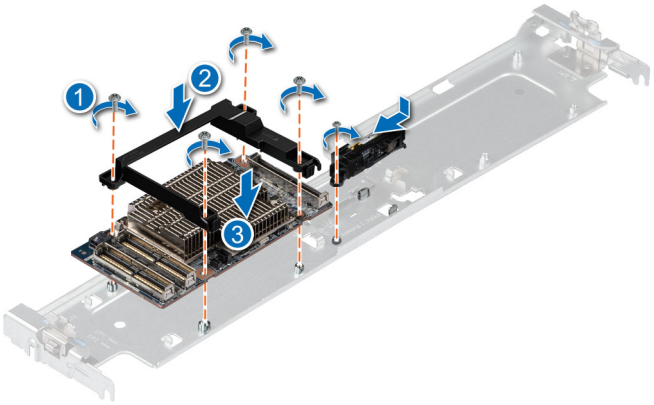


Figure 65. Installing the PERC H975i, shroud and battery holder

3. Route the battery cable correctly into the cable holders. Connect the battery cable to the PERC H975i.

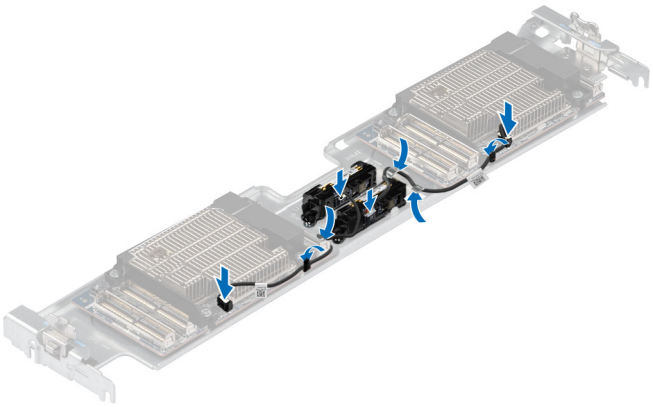


Figure 66. Routing the battery cables

4. Align the PERC tray with the guide slots on the chassis.
5. Lower the PERC tray towards the chassis and press down on both sides of the tray to ensure both the T-pin and latch locks in place.

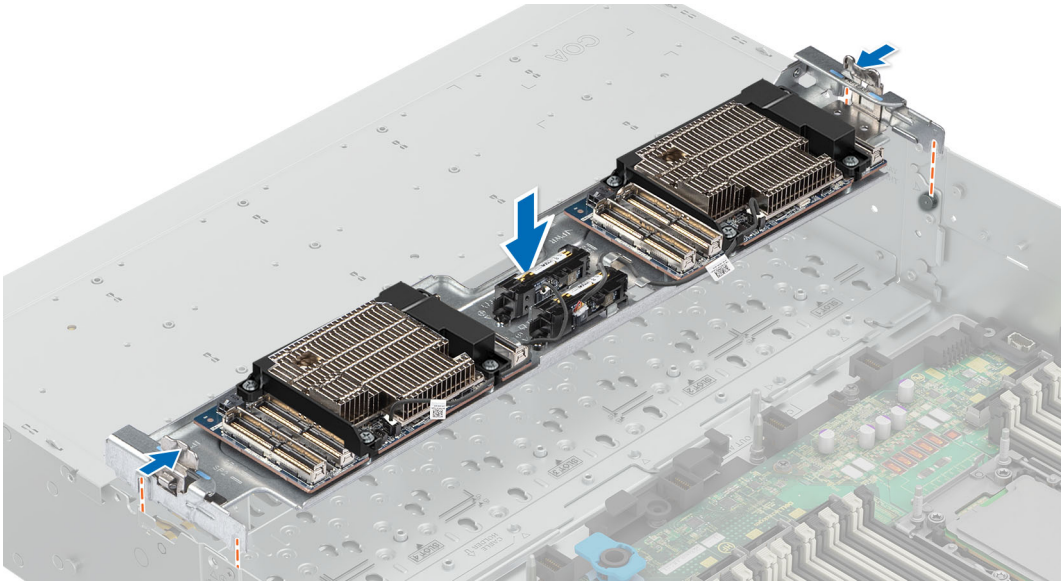


Figure 67. Installing the PERC H975i module

Next steps

1. Reconnect the required cables.
2. Route the cable properly to prevent the cable from being pinched or crimped.
3. Install the drive backplane cover.
4. Follow the procedure listed in After working inside your system.

Cooling fans

Removing a cooling fan

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

NOTE: The procedure for removing a high-performance silver grade (HPR SLVR), or high-performance gold grade (HPR GOLD) fan is the same.

Steps

Press the orange release tab and lift the cooling fan to disconnect the fan from the connector on the fan board.

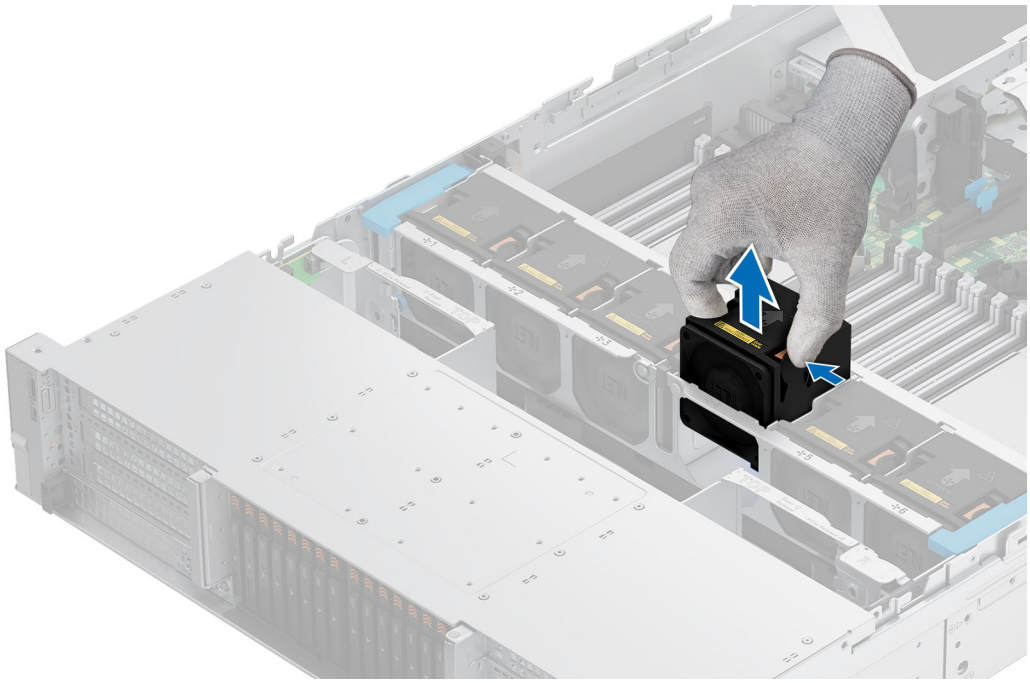


Figure 68. Removing a cooling fan

Next steps

1. Replace a cooling fan.

Installing a cooling fan

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

NOTE: The procedure to install a high-performance silver grade (HPR SLVR), or high-performance gold grade (HPR GOLD) fan is the same.

Steps

Align and lower the cooling fan into the cooling fan assembly until the fan clicks into place.

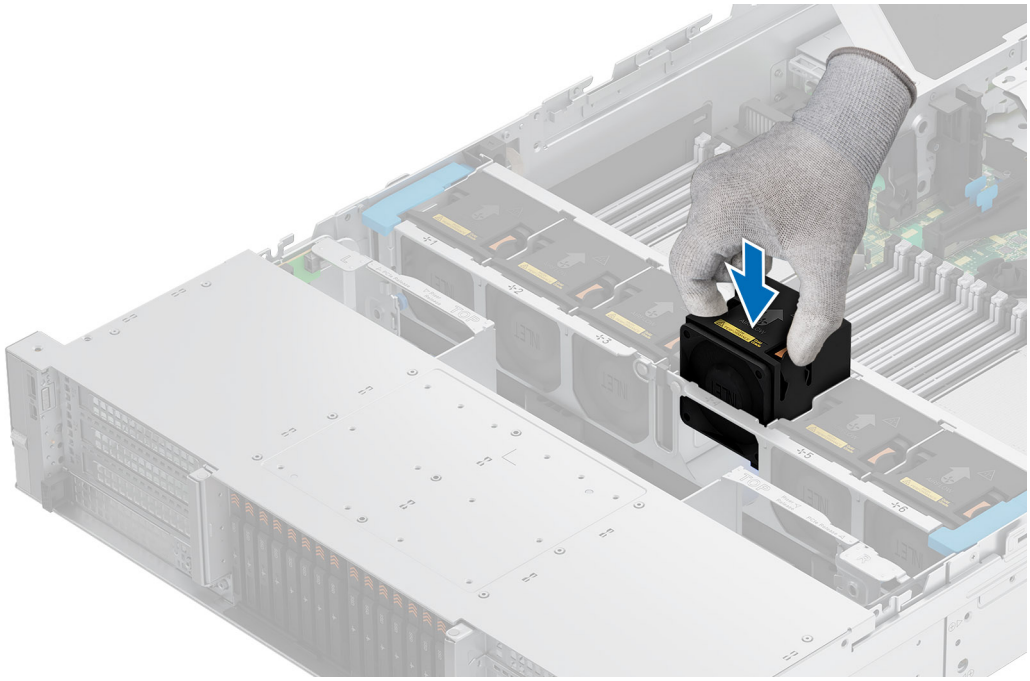


Figure 69. Installing a cooling fan

Next steps

1. Follow the procedure listed in After working inside your system.

Removing the cooling fan cage assembly

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the cables that pass through the cooling fan cage assembly.
4. If required, remove the air shroud or remove the GPU air shroud.

Steps

1. Lift the blue release levers to unlock the cooling fan cage assembly from the system.
2. Hold the release levers, and lift the cooling fan cage assembly away from the system.

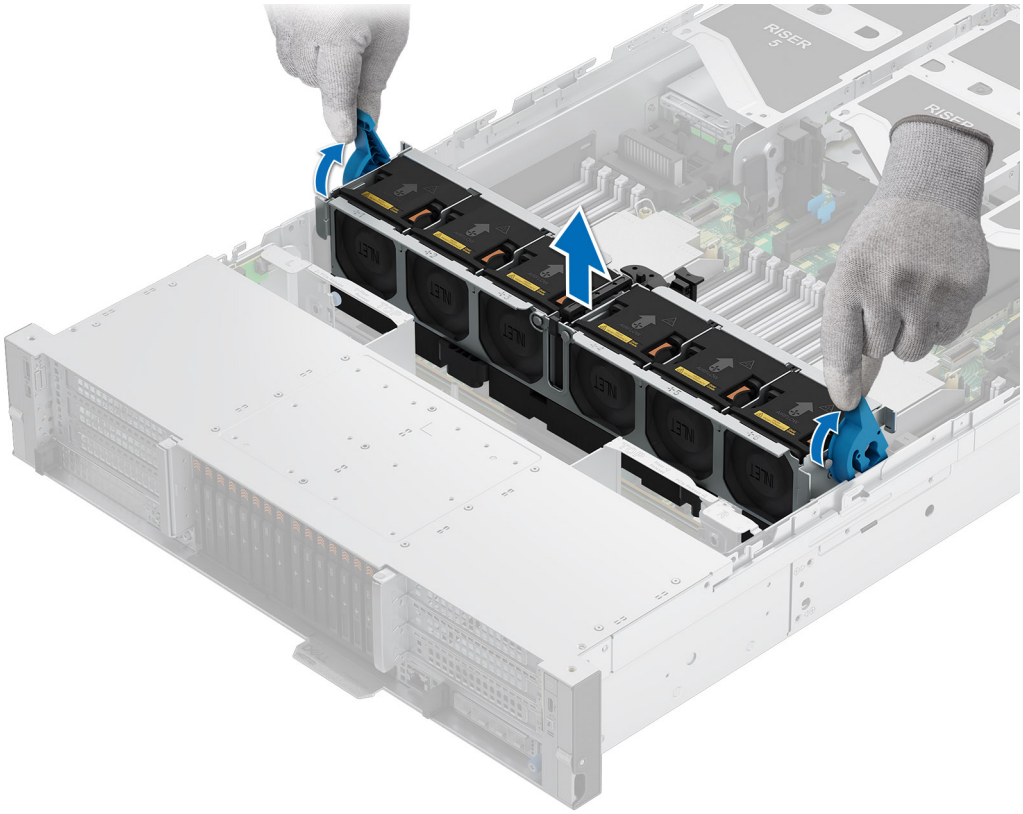


Figure 70. Removing the cooling fan cage assembly

Next steps

1. Replace the cooling fan cage assembly.

Installing the cooling fan cage assembly

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

   CAUTION: Before installing the cooling fan cage assembly, ensure that the cables inside the system are properly installed and retained by the cable retention brackets. Cables that are not properly installed may be damaged.

2. Follow the procedure listed in Before working inside your system.
3. If required, remove the cables that pass through the cooling fan cage assembly.
4. If installed, remove the air shroud or remove the GPU air shroud.

Steps

1. Holding the blue release lever of the cooling fan cage, align the guide rails with the guides on the system.
2. Lower the cooling fan cage assembly into the system until seated firmly.
3. Lower the blue release lever and press to lock the cooling fan cage assembly into the system.

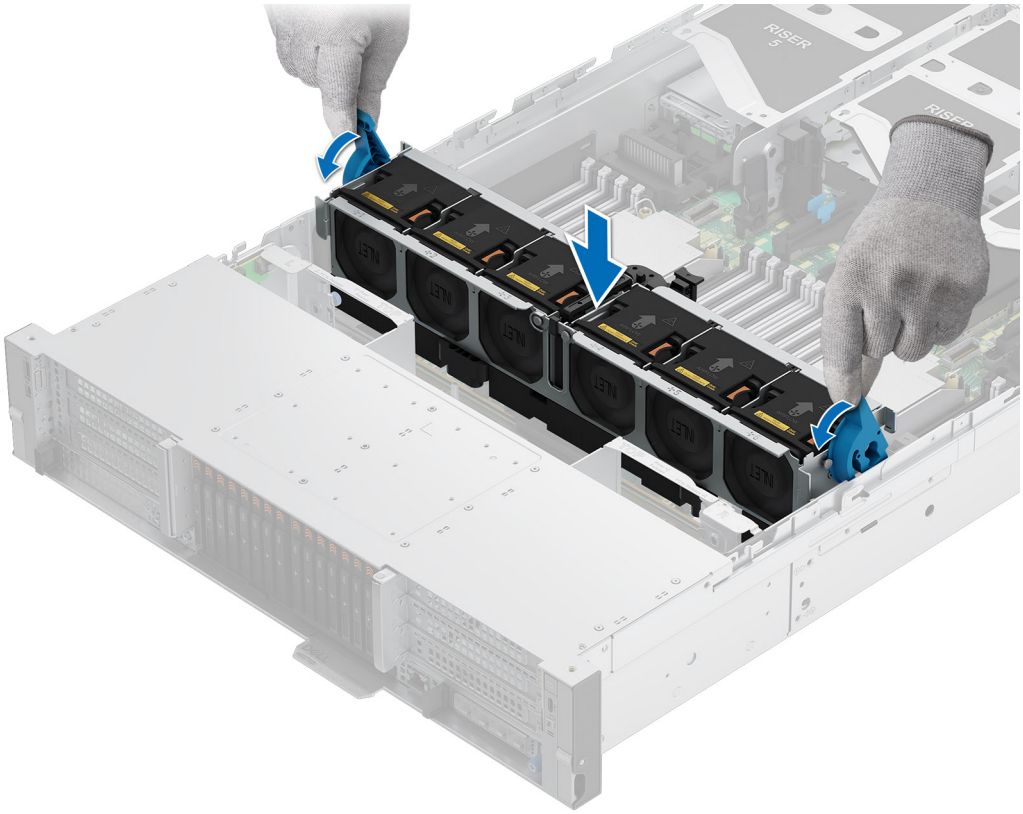


Figure 71. Installing the cooling fan cage assembly

Next steps

1. If removed, install the air shroud or install the GPU air shroud.
2. Follow the procedure listed in After working inside your system.

Drive backplane cover

Removing the drive backplane cover

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Slide the drive backplane cover in the direction of the arrows marked on the drive backplane cover.
2. Lift the drive backplane cover from the system.

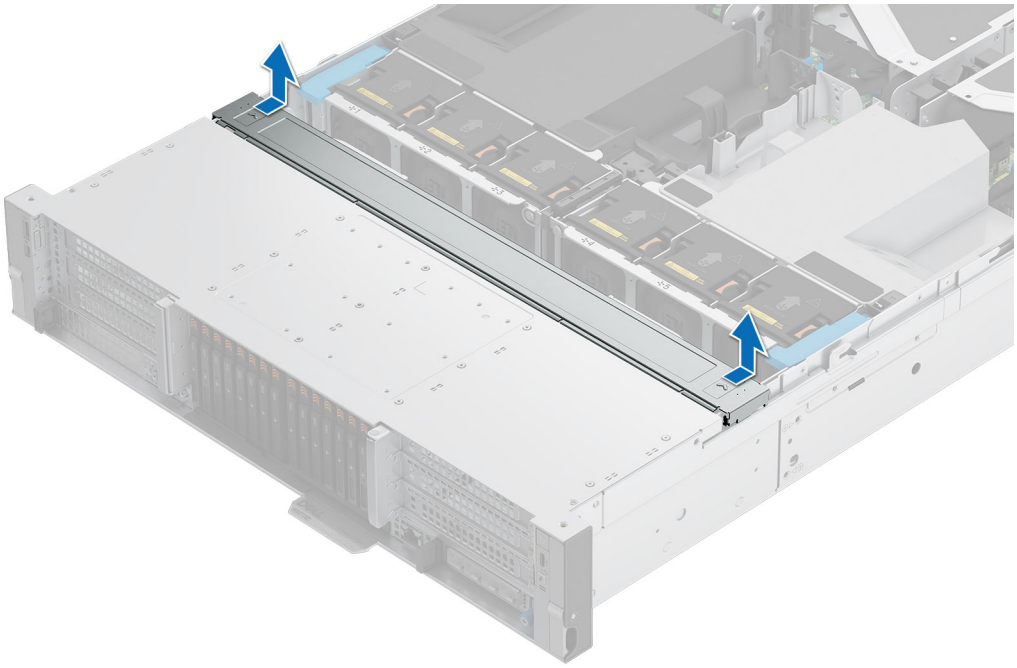


Figure 72. Removing the drive backplane cover

Next steps

1. Replace the drive backplane cover.

Installing the drive backplane cover

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Align the drive backplane cover with the guide slots on the system.
2. Slide the drive backplane cover to the front of the system until the drive backplane cover fits into place.

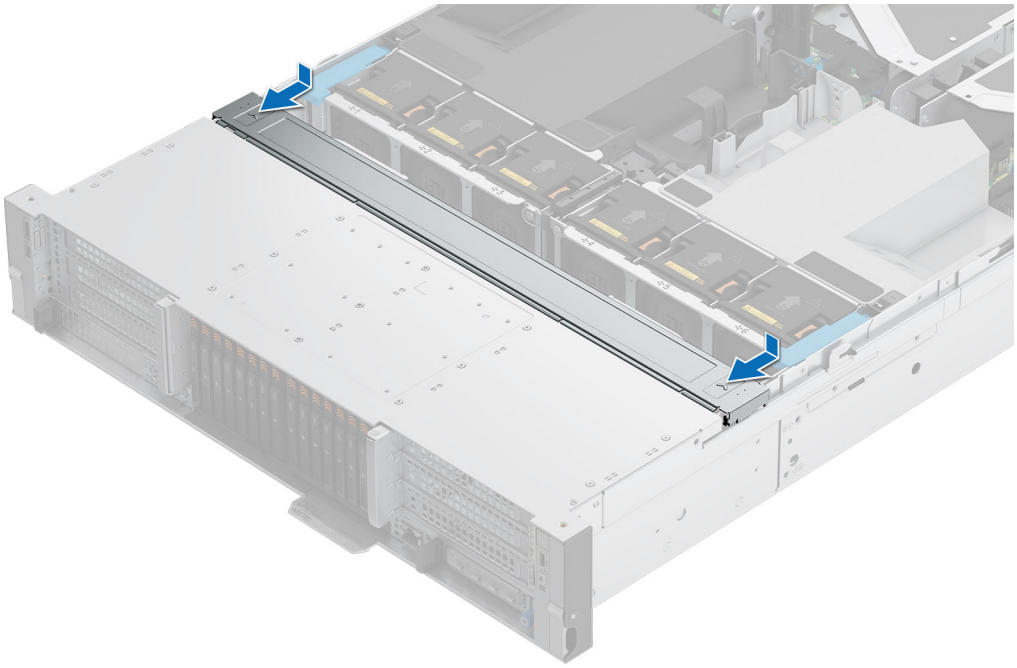


Figure 73. Installing the drive backplane cover

Next steps

1. Follow the procedure listed in After working inside your system.

Drives

Removing a 2.5-inch drive blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. If installed, remove the front bezel.

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

Steps

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

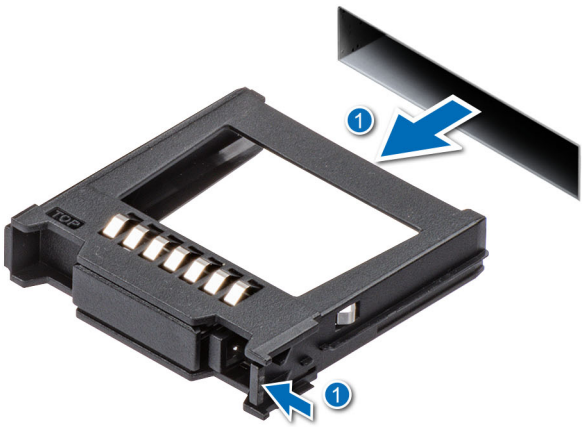


Figure 74. Removing a 2.5-inch drive blank

Next steps

1. Replace the 2.5-inch drive blank.

Installing a 2.5-inch drive blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. If installed, remove the front bezel.

Steps

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

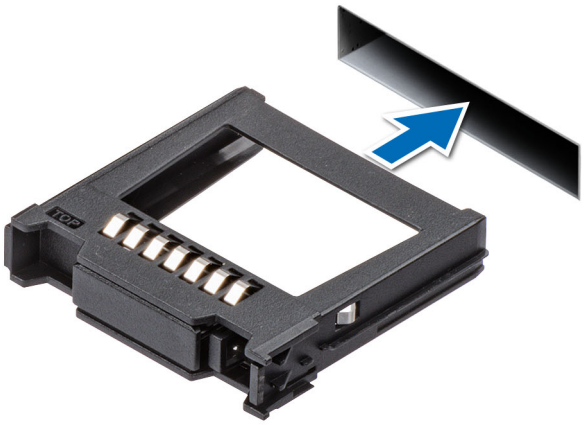


Figure 75. Installing a 2.5-inch drive blank

Next steps

1. If removed, install the front bezel.

Removing a 2.5-inch drive carrier

Prerequisites

1. Follow the safety guidelines listed in Safety instructions.
2. Remove the front bezel.

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

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

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

Steps

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

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

Figure 76. Removing a 2.5-inch drive carrier

Next steps

Replace the 2.5-inch drive or install the 2.5-inch drive blank.

Removing a 2.5-inch drive from the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Remove the drive carrier.

Steps

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

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

2. Lift the drive out of the drive carrier.

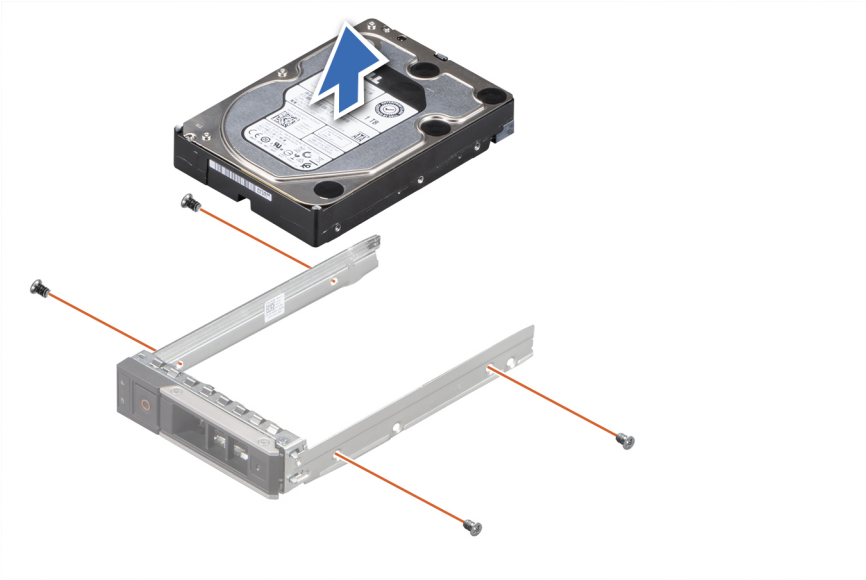


Figure 77. Removing the 2.5-inch drive from the drive carrier

Next steps

Install a 2.5-inch drive into the drive carrier.

Installing a 2.5-inch drive into the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Remove the drive carrier.

Steps

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

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

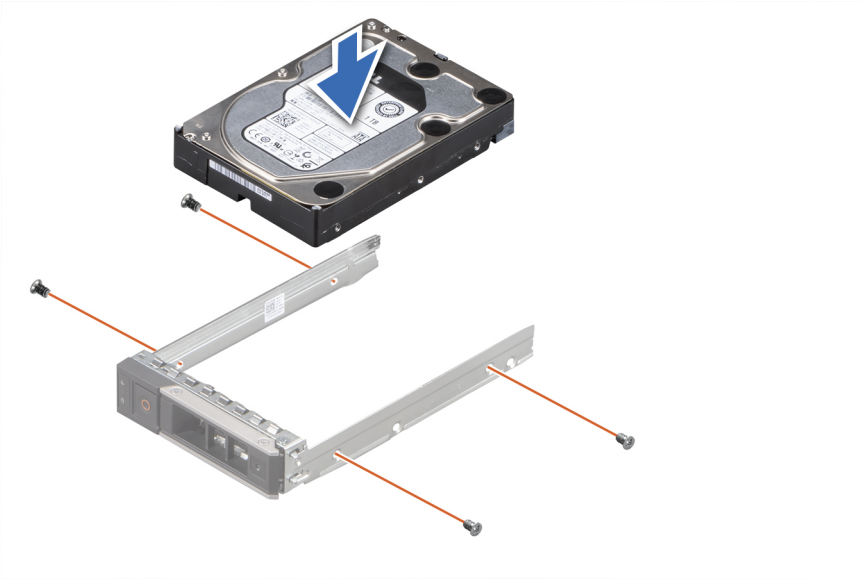


Figure 78. Installing a drive into the drive carrier

Next steps

1. Install the drive carrier.

Installing a 2.5-inch drive carrier

Prerequisites

CAUTION: Before removing or installing a drive while the system is running, see the Storage Controller Manuals documentation for the storage controller card to ensure that the host adapter is configured correctly to support drive removal and insertion.

CAUTION: Combining SAS and SATA drives in the same RAID volume is not supported.

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

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

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

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

1. Follow the safety guidelines listed in Safety instructions.
2. Remove the front bezel.
3. Remove the drive carrier or remove the drive blank when you want to assemble the drive into the system.

Steps

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

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

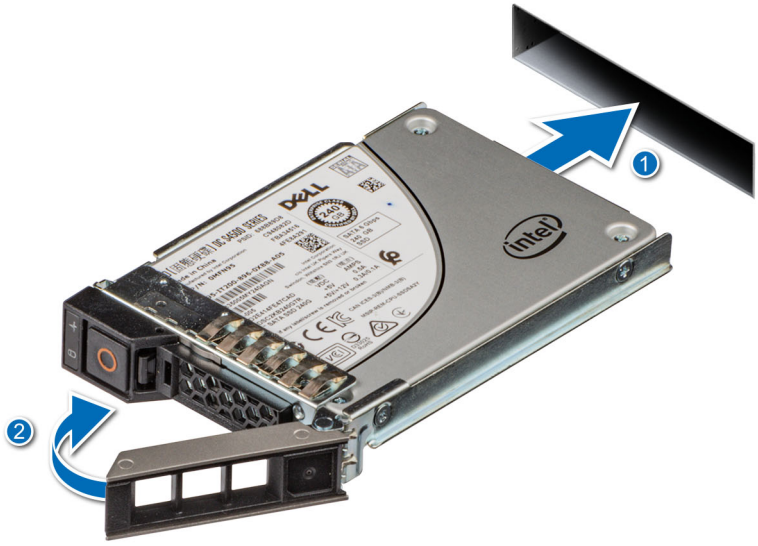


Figure 79. Installing a 2.5-inch drive carrier

Next steps

install the front bezel.

Removing an EDSFF E3.S drive blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

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

Steps

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

Figure 80. Removing an EDSFF E3.S drive blank

Next steps

1. Replace the EDSFF E3.S drive blank.

Installing an EDSFF E3.S drive blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

Steps

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

Figure 81. Installing an EDSFF E3.S drive blank

Removing an EDSFF E3.S drive carrier

Prerequisites

1. Follow the safety guidelines listed in Safety instructions.
2. Using the management software, prepare the drive for removal. If the drive is online, the green activity or fault indicator flashes while the drive is turning off. When the drive indicators are off, the drive is ready for removal. For more information, see the storage controller documentation.

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

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

Steps

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

NOTE: If you are not replacing the drive immediately, install an EDSFF E3.S drive blank in the empty drive slot to maintain proper system cooling.

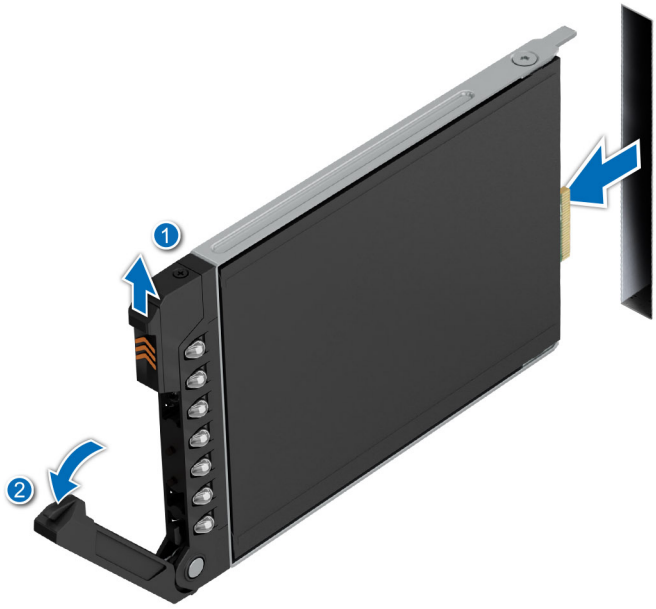


Figure 82. Removing an EDSFF E3.S drive carrier

Next steps

Replace the EDSFF E3.S drive or an EDSFF E3.S drive blank.

Installing an EDSFF E3.S drive carrier

Prerequisites

CAUTION: Before removing or installing a drive while the system is running, see the Storage Controller Manuals documentation for the storage controller card to ensure that the host adapter is configured correctly to support drive removal and insertion.

CAUTION: Combining SAS and SATA drives in the same RAID volume is not supported.

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

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

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

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

1. Follow the safety guidelines listed in Safety instructions.
2. Remove the drive carrier or remove the drive blank when you want to assemble the drive into the system.

Steps

1. Slide the drive carrier into the drive slot and push until the drive connects with the backplane.
2. Close the drive carrier release handle to lock the drive in place.

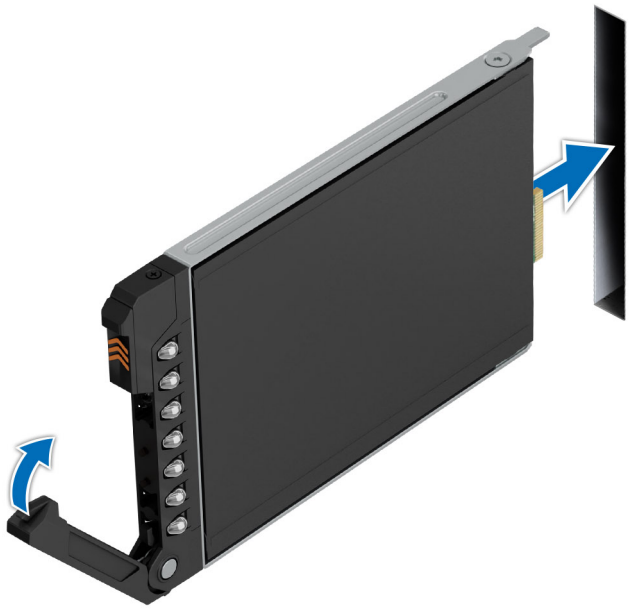


Figure 83. Installing an EDSFF E3.S drive carrier

Removing an EDSFF E3.S drive from the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Remove the drive carrier.

Steps

1. Using a Torx 6 screwdriver, remove the screws from the slide rails on the drive carrier.
2. Lift the drive out of the drive carrier.

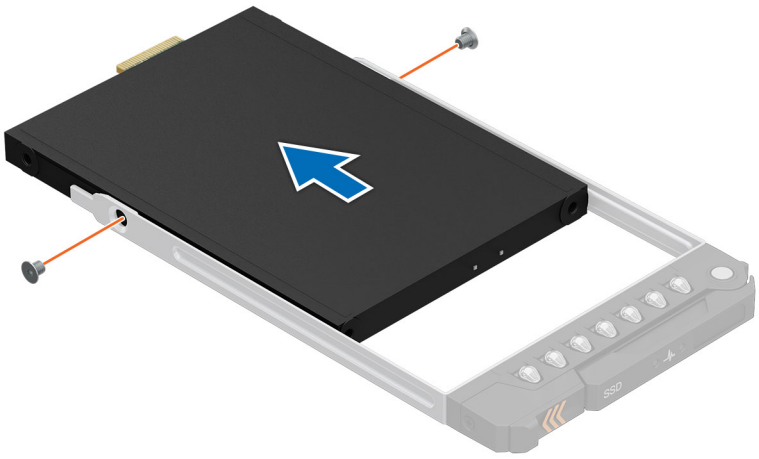


Figure 84. Removing an EDSFF E3.S drive from the drive carrier

Next steps

Install an EDSFF E3.S drive into the drive carrier.

Installing an EDSFF E3.S drive into the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Remove an EDSFF E3.S drive blank or Remove an EDSFF E3.S drive carrier.

Steps

1. Insert the drive into the drive carrier with the drive connector facing towards the rear of the carrier.
2. Align the screw holes on the drive with the screw holes on the drive carrier.
3. Using a Torx 6 screwdriver, secure the drive to the drive carrier with the screws.

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

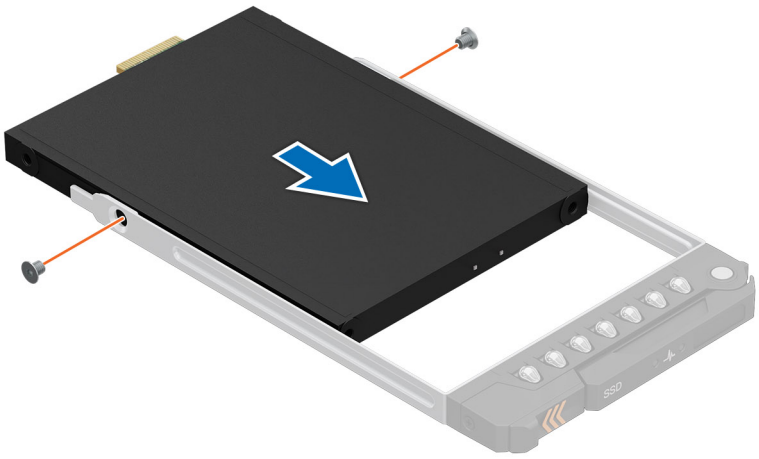


Figure 85. Installing an EDSFF E3.S drive into the drive carrier

Next steps

1. Install the drive carrier.

Drive backplane

This is a service technician replaceable part only.

Drive backplane

Depending on your system configuration, the drive backplanes that are supported are listed here:

Table 59. Supported backplane options

System	Supported hard drives options
PowerEdge R770	EDSFF E3.S (x8) NVMe backplane

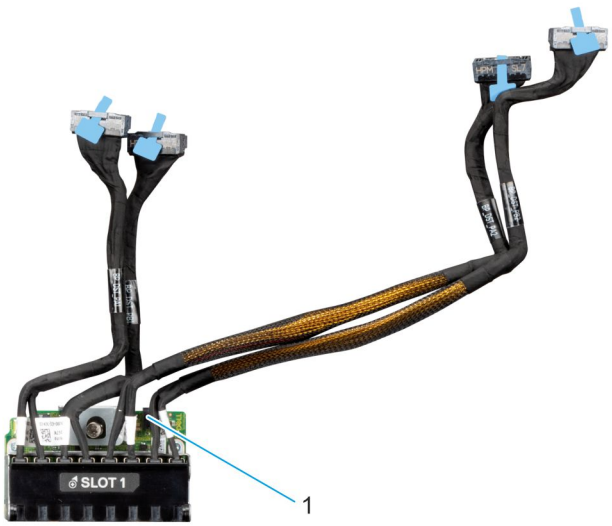


Figure 86. EDSFF E3.S NVMe drive backplane

1. BP_PWR_1 (backplane power cable to system board)

Removing the EDSFF E3.S backplane 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 cooling fans.
4. Remove the drive backplane cover.
5. Remove the EDSFF E3.S drives.
6. If required, remove the L-type processor heatsink module .

NOTE: The L-type heatsink prevents the removal of E3.S backplane connectors from the system board.

7. Disconnect the power cable and other required cables, observe the cable routing.

NOTE: See cable routing section.

Steps

1. Using a Phillips 2 screwdriver, loosen the captive screws on the EDSFF E3.S backplane module.
2. Slide and remove the EDSFF E3.S backplane module from the system.

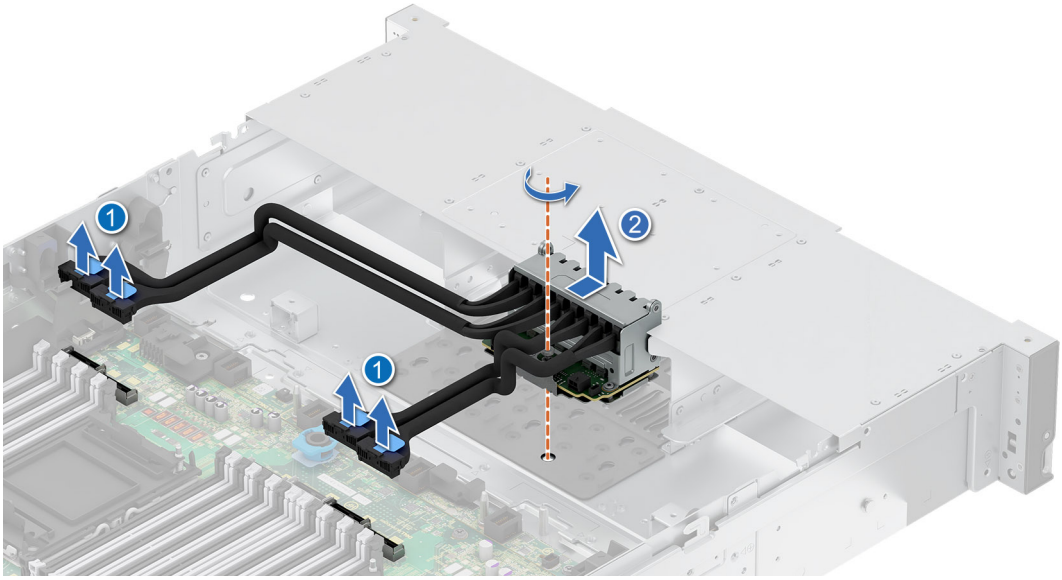


Figure 87. Removing the EDSFF E3.S backplane module

Next steps

1. Replace the EDSFF E3.S backplane module.

Installing the EDSFF E3.S backplane 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 cooling fans.
4. Remove the drive backplane cover.
5. Remove the EDSFF E3.S drives.
6. If required, remove the L-type processor heatsink module .

NOTE: The L-type heatsink prevents the removal of E3.S backplane connectors from the system board.

7. Disconnect the power cables and other required cables, observe the cable routing.

NOTE: See cable routing section.

Steps

1. Align the guides on the EDSFF E3.S backplane module with the slots on the system.

NOTE: Locate and place the EDSFF E3.S backplane module on the unlocked position line.

2. Slide the EDSFF E3.S backplane module towards the front of the system, until it is firmly seated .
3. Using a Phillips 2 screwdriver, tighten the captive screws on the EDSFF E3.S backplane module.

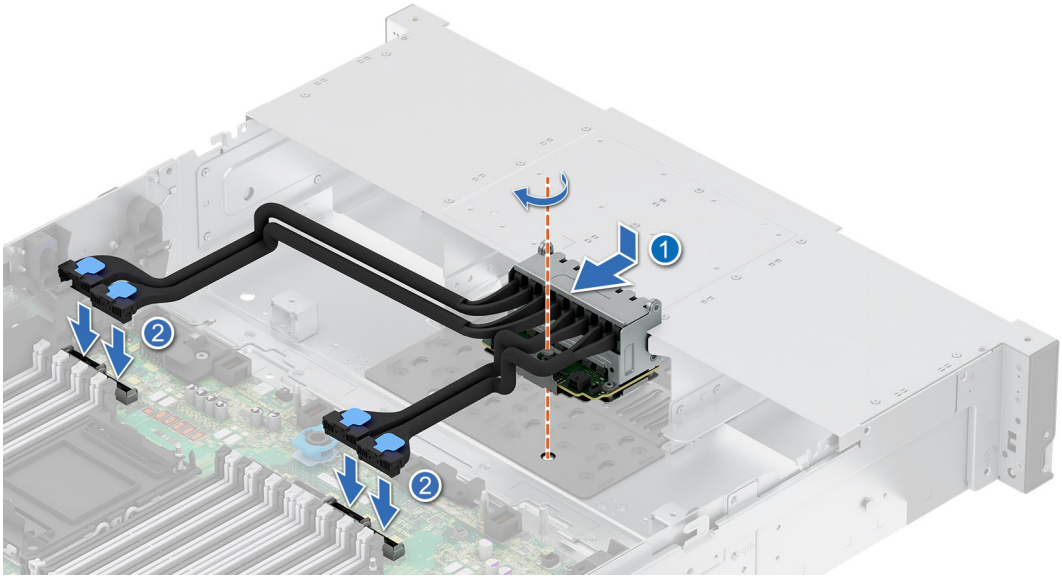


Figure 88. Installing the EDSFF E3.S backplane module

Next steps

1. Connect all the cables, and ensure that all the cables are routed through the respective cable clip.

NOTE: See cable routing section.

2. If removed, install the L-type processor heatsink module .

NOTE: The L-type heatsink prevents the installation of E3.S backplane connectors from the system board.

3. Install the EDSFF E3.S drives .
4. Install the drive backplane cover.
5. Install the cooling fans.
6. Follow the procedure listed in After working inside your system.

Side wall brackets

.

Removing the side wall bracket

There are two side wall brackets, one on either side of the system. The procedure to remove is similar.

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the drive backplane cover.
4. If installed, remove the air shroud or remove the GPU air shroud.
5. Remove the cooling fan cage assembly.

NOTE: Ensure that you note the routing of the cables as you remove them from the system board. Route the cables properly when you replace them to prevent the cables from being pinched or crimped.

Steps

1. Press the side tabs to release the side wall cable holder.

   NOTE: Move the cables out of the side wall cable holder.

2. Press the center tab to release the bracket from the chassis, and lift it away from the system.

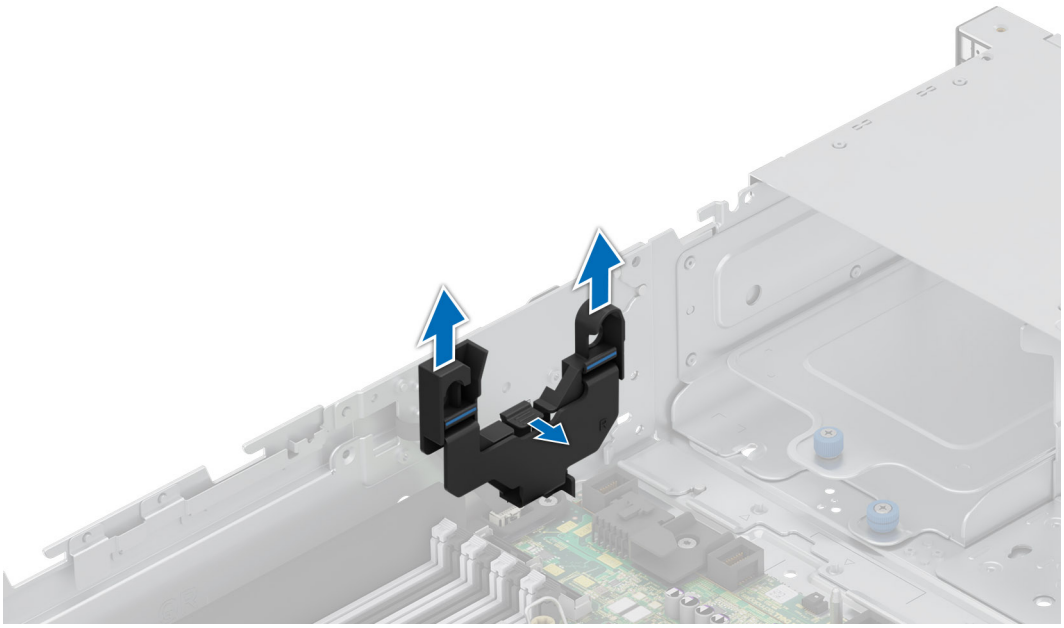


Figure 89. Removing the side wall bracket

Next steps

1. Replace the side wall bracket.

Installing the side wall bracket

There are two side wall brackets on either side of the system. The procedure to install is similar.

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the drive backplane cover.

4. If installed, remove the air shroud or remove the GPU air shroud.
5. Remove the cooling fan cage assembly.

NOTE: Ensure that you note the routing of the cables as you remove them from the system board. Route the cables properly when you replace them to prevent the cables from being pinched or crimped.

Steps

1. Align the guide slots on the side wall bracket with the guides on the system and slide until the cover is seated firmly.

   NOTE: Route the cables through the side wall cable holder.

2. Close the side wall cable holder until the holder clicks into place.

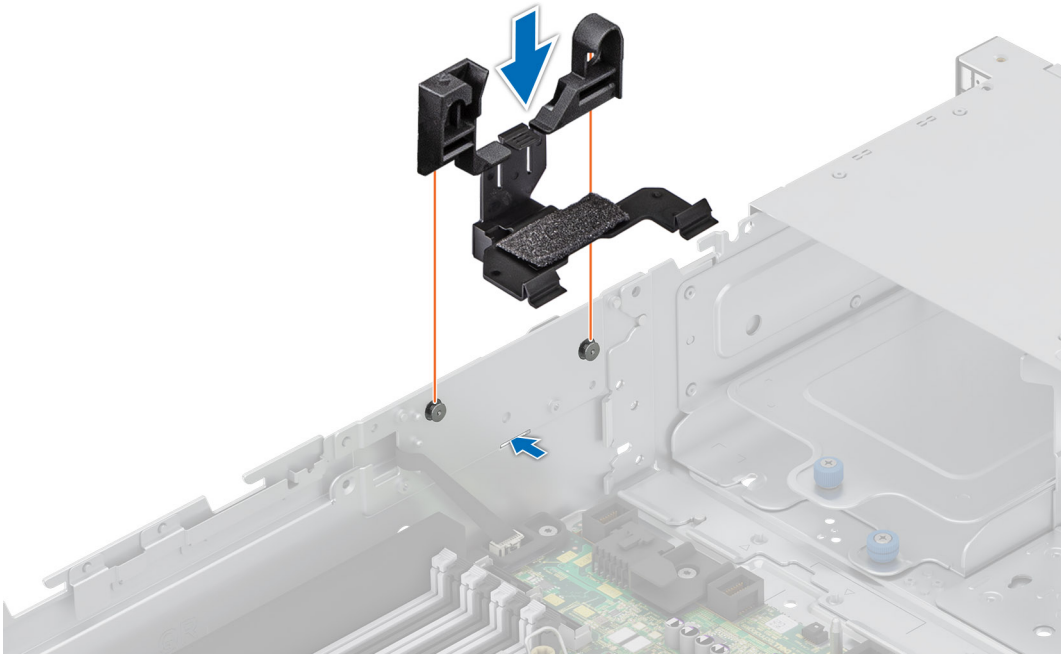


Figure 90. Installing the side wall bracket

Next steps

1. Install the cooling fan cage assembly.
2. If removed, install the air shroud or install the GPU air shroud.
3. If removed, install the drive backplane cover.
4. Follow the procedure listed in the After working inside your system.

Cable routing

Figure 91. C00-01: No Backplane

Table 60. C00-01: No Backplane

Order	From	To
1	HPM_PCP (signal connector on system board)	Right control panel (RCP)
2	Intrusion switch	HPM(J2) (signal connector on system board)

NOTE: The intrusion switch connects to the J2 connector through the additional dongle cable.

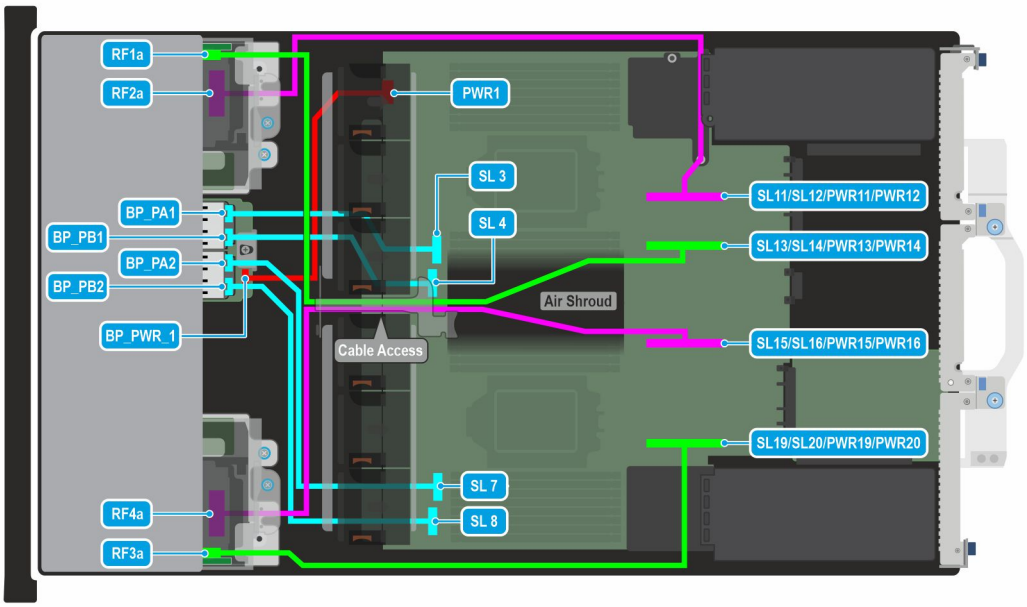


Figure 92. C01-01: FIO 8 x E3.S (G5x4 NVMe direct)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 61. C01-01-RC2 : FIO 8 x E3.S (G5x4 NVMe direct)

Order	From	To
1	SL3 (signal connector on system board)	BP_PA1 (backplane signal connector)
2	SL4 (signal connector on system board)	BP_PB1 (backplane signal connector)
3	SL7 (signal connector on system board)	BP_PA2 (backplane signal connector)
4	SL8 (signal connector on system board)	BP_PB2 (backplane signal connector)
5	PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
6	SL15/SL16/PWR15/PWR16 (signal connector on system board)	RF4a (front riser cable)
7	SL13/SL14/PWR13/PWR14 (signal connector on system board)	RF1a (front riser cable)
8	SL19/SL20/PWR19/PWR20 (signal connector on system board)	RF3a (front riser cable)
9	SL11/SL12/PWR11/PWR12 (signal connector on system board)	RF2a (front riser cable)

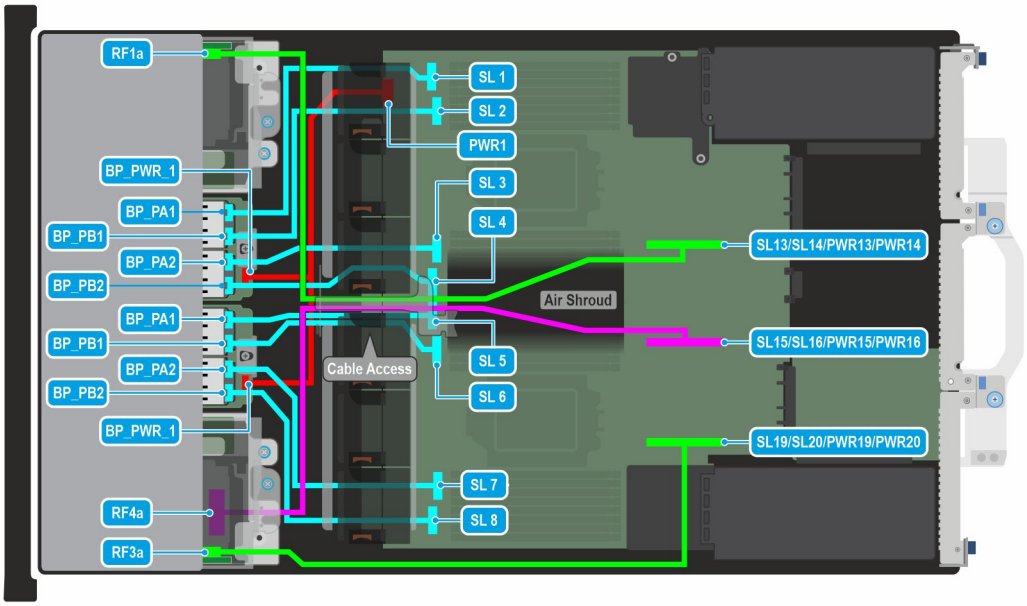


Figure 93. C02-01-RC1 : FIO 16 x E3.S (G5x4 NVMe direct)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 62. C02-01-RC1 : FIO 16 x E3.S (G5x4 NVMe direct)

Order	From	To
1	SL1 (signal connector on system board)	BP_PA1 (backplane signal connector)
2	SL2 (signal connector on system board)	BP_PB1 (backplane signal connector)
3	SL3 (signal connector on system board)	BP_PA2 (backplane signal connector)

Table 62. C02-01-RC1 : FIO 16 x E3.S (G5x4 NVMe direct) (continued)

Order	From	To
4	SL4 (signal connector on system board)	BP_PB2 (backplane signal connector)
5	SL5 (signal connector on system board)	BP_PA1 (backplane signal connector)
6	SL6 (signal connector on system board)	BP_PB1 (backplane signal connector)
7	SL7 (signal connector on system board)	BP_PA2 (backplane signal connector)
8	SL8 (signal connector on system board)	BP_PB2 (backplane signal connector)
9	PWR_1 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
10	SL15/SL16/PWR15/PWR16 (signal connector on system board)	RF4a (front riser cable)
11	SL13/SL14/PWR13/PWR14 (signal connector on system board)	RF1a (front riser cable)
12	SL19/SL20/PWR19/PWR20 (signal connector on system board)	RF3a (front riser cable)

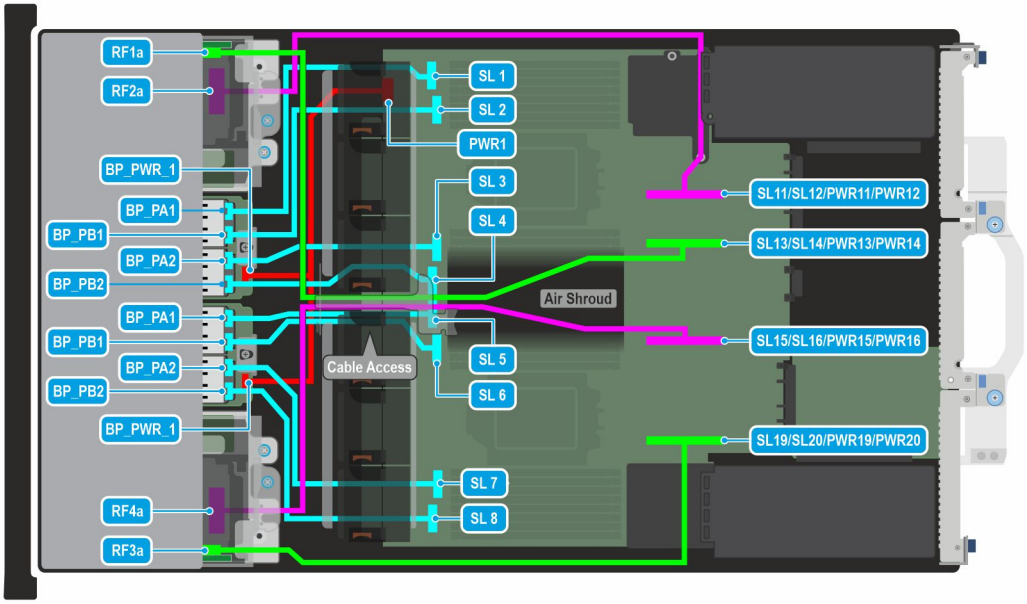


Figure 94. C02-01-RC2 : FIO 16 x E3.S (G5x4 NVMe direct)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 63. C02-01-RC2 : FIO 16 x E3.S (G5x4 NVMe direct)

Order	From	To
3	SL1 (signal connector on system board)	BP_PA1 (backplane signal connector)
4	SL2 (signal connector on system board)	BP_PB1 (backplane signal connector)
5	SL3 (signal connector on system board)	BP_PA2 (backplane signal connector)
6	SL4 (signal connector on system board)	BP_PB2 (backplane signal connector)
7	SL5 (signal connector on system board)	BP_PA1 (backplane signal connector)

Table 63. C02-01-RC2 : FIO 16 x E3.S (G5x4 NVMe direct) (continued)

Order	From	To
8	SL6 (signal connector on system board)	BP_PB1 (backplane signal connector)
9	SL7 (signal connector on system board)	BP_PA2 (backplane signal connector)
10	SL8 (signal connector on system board)	BP_PB2 (backplane signal connector)
11	PWR_1 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
13	SL15/SL16/PWR15/PWR16 (signal connector on system board)	RF4a (front riser cable)
1	SL13/SL14/PWR13/PWR14 (signal connector on system board)	RF1a (front riser cable)
12	SL19/SL20/PWR19/PWR20 (signal connector on system board)	RF3a (front riser cable)
2	SL11/SL12/PWR11/PWR12 (signal connector on system board)	RF2a (front riser cable)

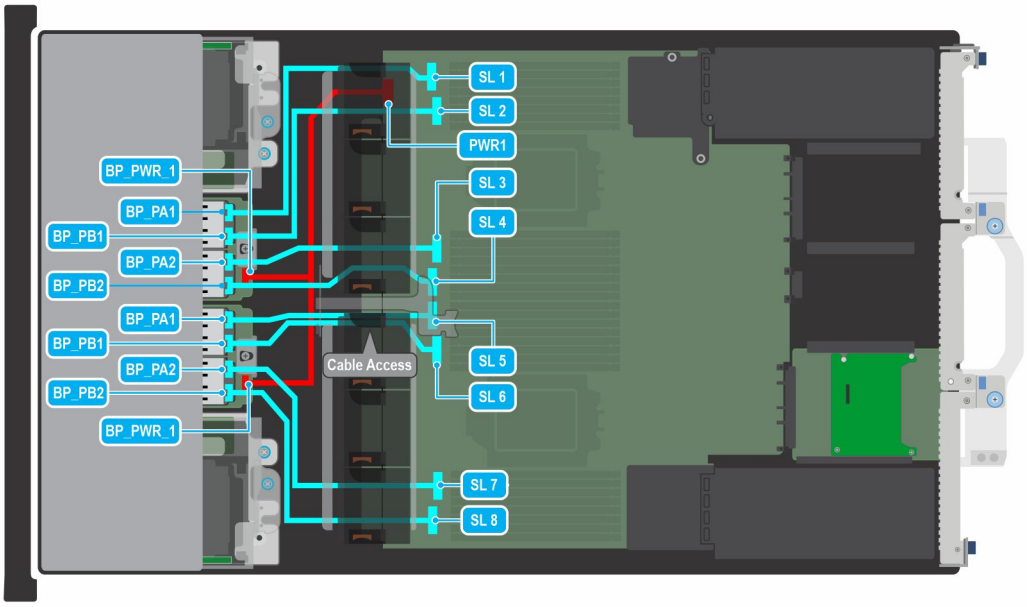


Figure 95. C02-01-RC6: FIO 16 x E3.S (G5x4 NVMe direct)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 64. C02-01-RC6: FIO 16 x E3.S (G5x4 NVMe direct)

Order	From	To
1	SL1 (signal connector on system board)	BP_PA1 (backplane signal connector)
2	SL2 (signal connector on system board)	BP_PB1 (backplane signal connector)
3	SL3 (signal connector on system board)	BP_PA2 (backplane signal connector)
4	SL4 (signal connector on system board)	BP_PB2 (backplane signal connector)
5	SL5 (signal connector on system board)	BP_PA1 (backplane signal connector)
6	SL6 (signal connector on system board)	BP_PB1 (backplane signal connector)

Table 64. C02-01-RC6: FIO 16 x E3.S (G5x4 NVMe direct) (continued)

Order	From	To
7	SL7 (signal connector on system board)	BP_PA2 (backplane signal connector)
8	SL8 (signal connector on system board)	BP_PB2 (backplane signal connector)
9	PWR_1 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)

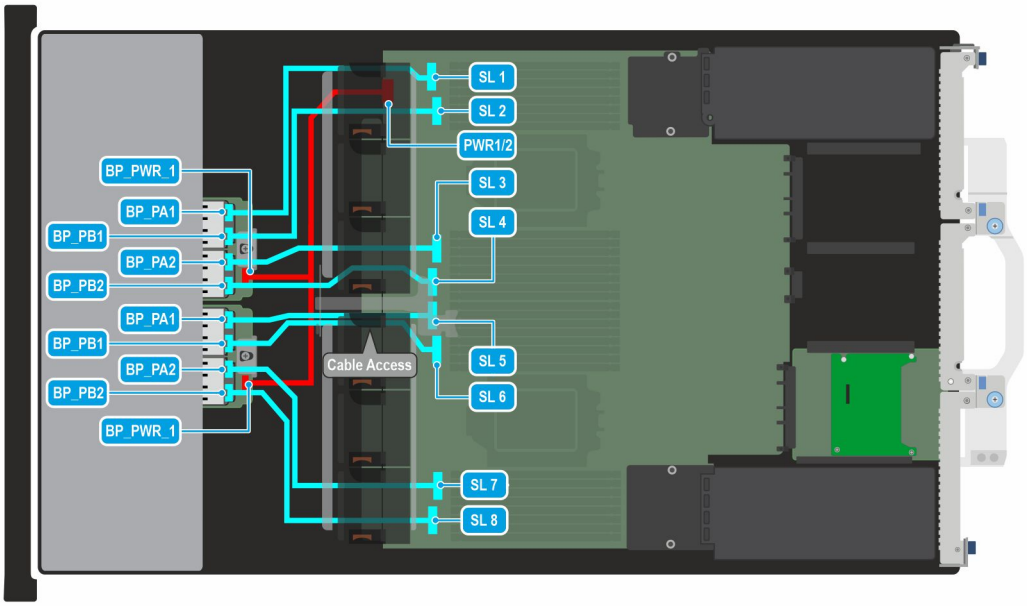


Figure 96. C02-02-RC6: FIO 16 x E3.S (G5x4 NVMe direct).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 65. C02-02-RC6: FIO 16 x E3.S (G5x4 NVMe direct).

Order	From	To
1	SL1 (signal connector on system board)	BP_PA1 (backplane signal connector)
2	SL2 (signal connector on system board)	BP_PB1 (backplane signal connector)
3	SL3 (signal connector on system board)	BP_PA2 (backplane signal connector)
4	SL4 (signal connector on system board)	BP_PB2 (backplane signal connector)
5	SL5 (signal connector on system board)	BP_PA1 (backplane signal connector)
6	SL6 (signal connector on system board)	BP_PB1 (backplane signal connector)
7	SL7 (signal connector on system board)	BP_PA2 (backplane signal connector)
8	SL8 (signal connector on system board)	BP_PB2 (backplane signal connector)
9	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)

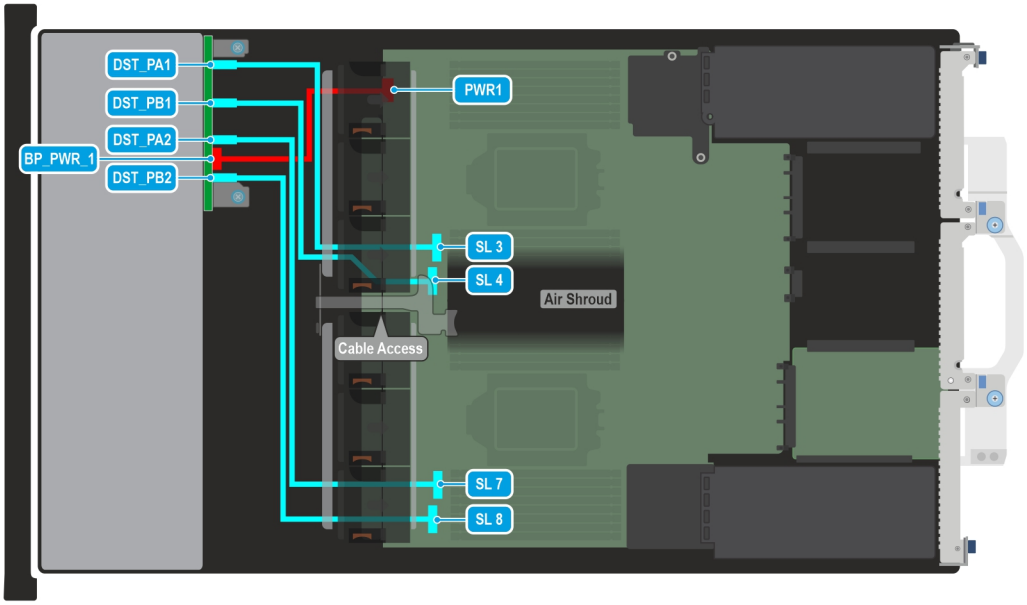


Figure 97. C04-01: 8 x 2.5-inch (G4x4 NVMe direct)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 66. C04-01: 8 x 2.5-inch (G4x4 NVMe direct)

Order	From	To
1	PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SL3 (signal connector on system board)	DST_PA1 (backplane signal connector)
3	SL4 (signal connector on system board)	DST_PB1 (backplane signal connector)
4	SL7 (signal connector on system board)	DST_PA2 (backplane signal connector)
5	SL8 (signal connector on system board)	DST_PB2 (backplane signal connector)

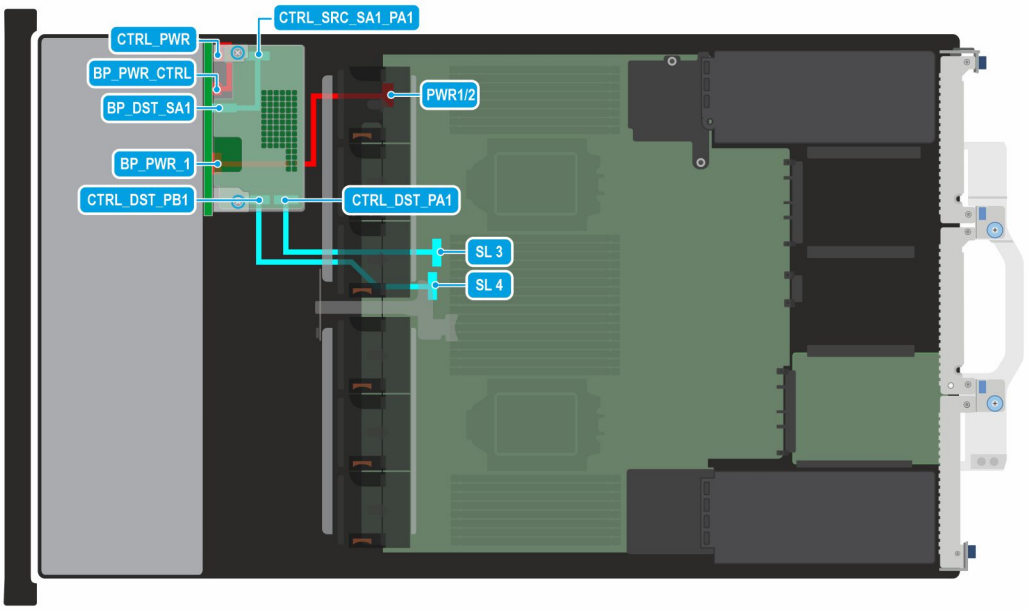


Figure 98. C04-02: 8 x 2.5-inch (SAS4/SATA).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 67. C04-02: 8 x 2.5-inch (SAS4/SATA).

Order	From	To
1	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
2	PWR1/2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_ SA1 (backplane signal connector)
4	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)
5	SL4 (signal connector on system board)	CTRL_DST_PB1 (controller connector on front PERC)

Figure 99. C04-03: 8 x 2.5-inch (SAS4/SATA).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 68. C04-03: 8 x 2.5-inch (SAS4/SATA).

Order	From	To
1	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
2	PWR1/2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_ SA1 (backplane signal connector)
4	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)

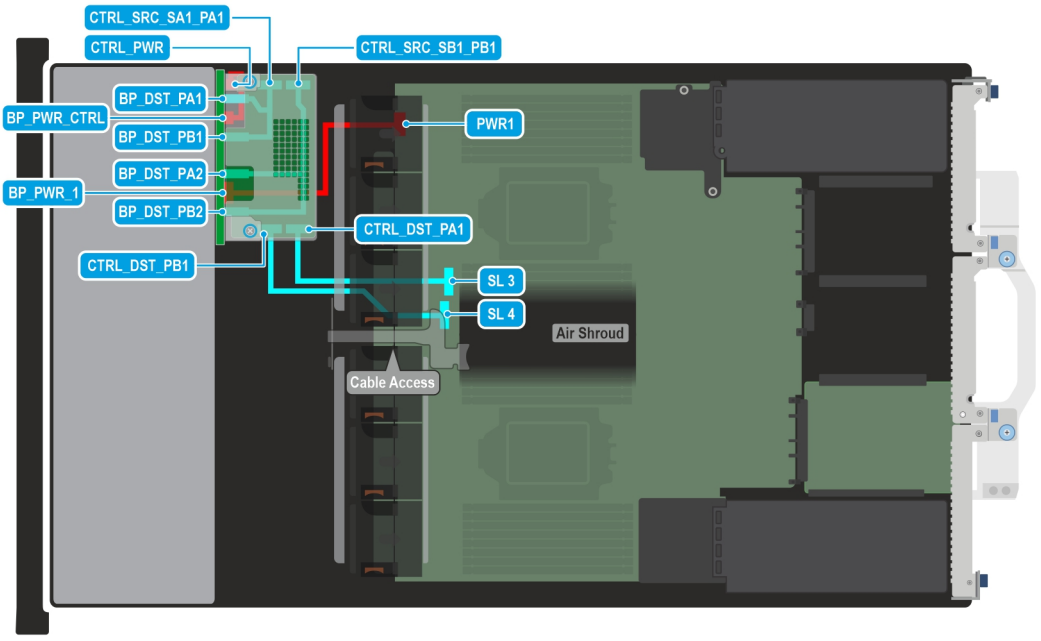


Figure 100. C04-05: 8 x 2.5-inch (G4 NVMe RAID)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 69. C04-05: 8 x 2.5-inch (G4 NVMe RAID)

Order	From	To
1	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_PA2 and BP_DST_PB2 (backplane signal connectors)
2	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_PA1 and BP_DST_PB1 (backplane signal connectors)
3	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
4	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)
5	SL4 (signal connector on system board)	CTRL_DST_PB1 (controller connector on front PERC)
6	PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

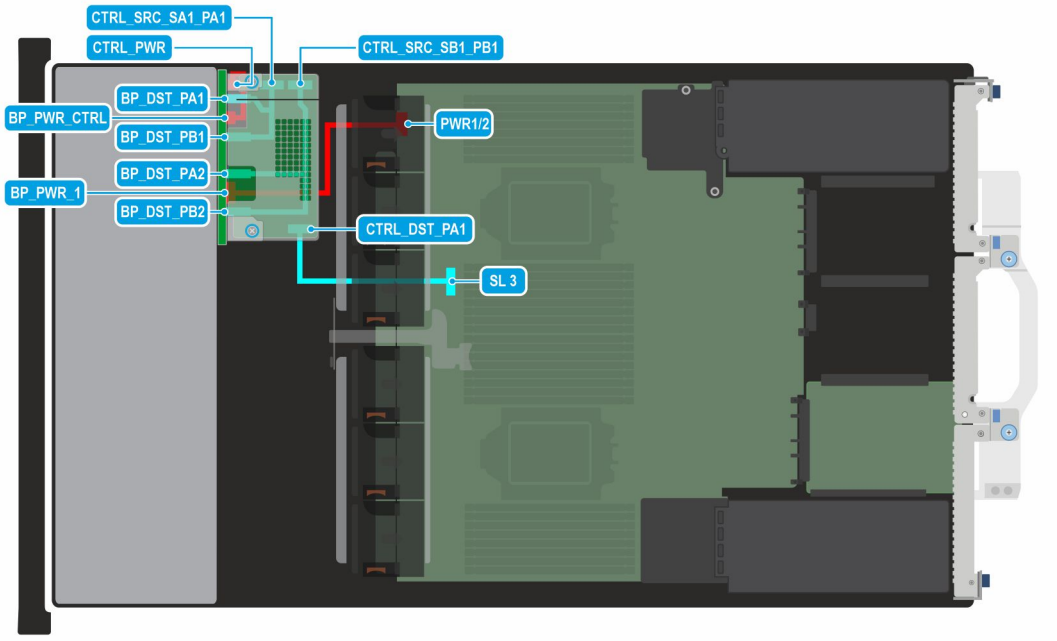


Figure 101. C04-06 : 8 x 2.5-inch (G4NVMe RAID).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 70. C04-06 : 8 x 2.5-inch (G4NVMe RAID).

Order	From	To
1	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
2	PWR1/2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_PA2 and BP_DST_PB2 (backplane signal connectors)
4	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	DST_PA1 and BP_DST_PB1 (backplane signal connectors)
5	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)

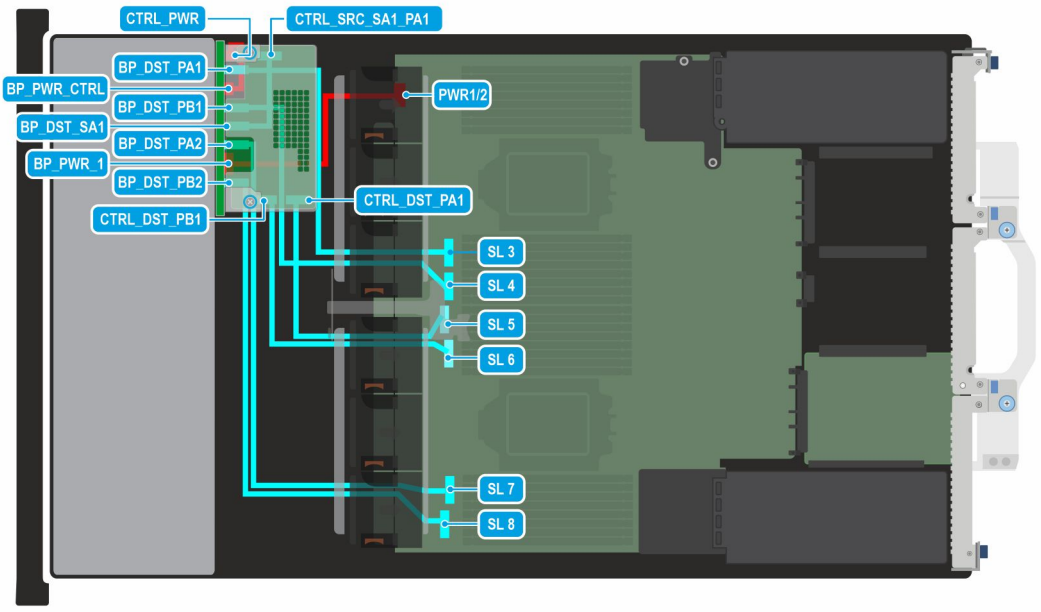


Figure 102. C04-08 : 8 x 2.5-inch Universal.

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 71. C04-08 : 8 x 2.5-inch Universal.

Order	From	To
1	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
2	PWR1/2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
4	SL3 (signal connector on system board)	BP_DST_PA1 (backplane signal connector)
5	SL4 (signal connector on system board)	BP_DST_PB1 (backplane signal connector)
6	SL5 (signal connector on system board)	CTRL_DST_PA1 (controller connector)
7	SL6 (signal connector on system board)	CTRL_DST_PB1 (controller connector)
8	SL7 (signal connector on system board)	BP_DST_PA2 (backplane signal connector)
9	SL8 (signal connector on system board)	BP_DST_PB2 (backplane signal connector)

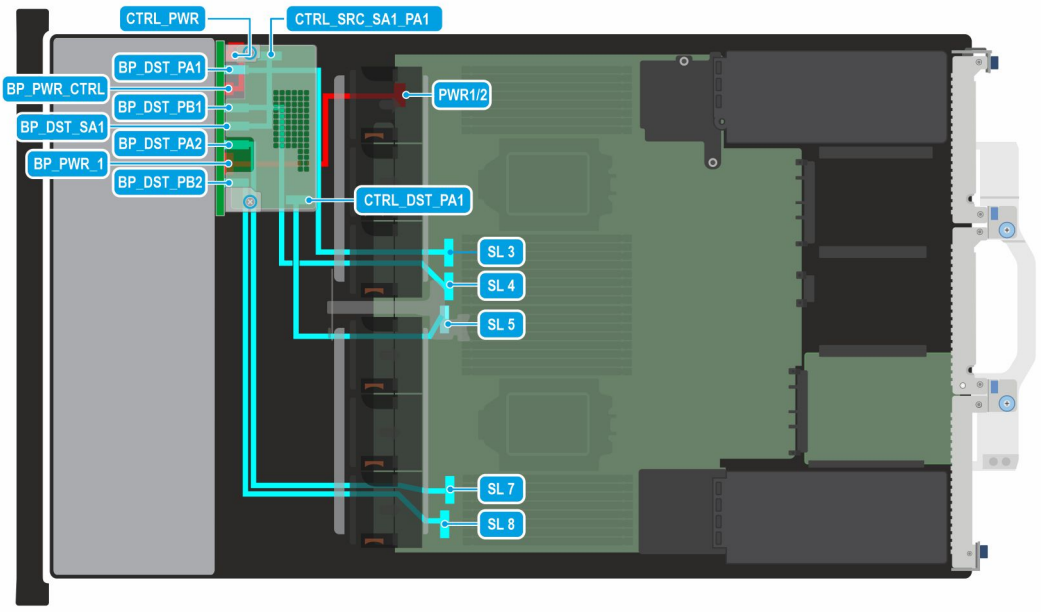


Figure 103. C04-09 : 8 x 2.5-inch Universal.

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 72. C04-09 : 8 x 2.5-inch Universal.

Order	From	To
1	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
2	PWR1/2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
4	SL3 (signal connector on system board)	BP_DST_PA1 (backplane signal connector)
5	SL4 (signal connector on system board)	BP_DST_PB1 (backplane signal connector)
6	SL5 (signal connector on system board)	CTRL_DST_PA1 (controller connector)
7	SL7 (signal connector on system board)	BP_DST_PA2 (backplane signal connector)
8	SL8 (signal connector on system board)	BP_DST_PB2 (backplane signal connector)

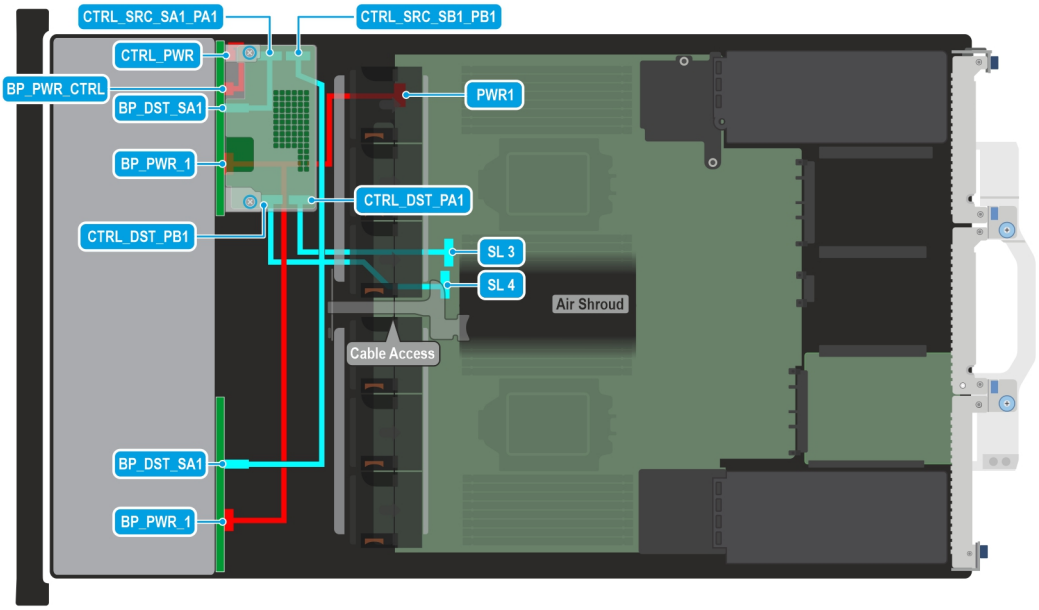


Figure 104. C05-01: 16 x 2.5-inch (SAS4/SATA)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 73. C05-01: 16 x 2.5-inch (SAS4/SATA)

Order	From	To
1	CTRL_PWR (power connector on front PERC)	BP_PWR_CTRL (backplane power connector)
2	PWR_1 (system board power connector)	BP_PWR_1 and BP_PWR_1(backplane power connector)
3	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
4	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
5	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)
6	SL4 (signal connector on system board)	CTRL_DST_PB1 (controller connector on front PERC)

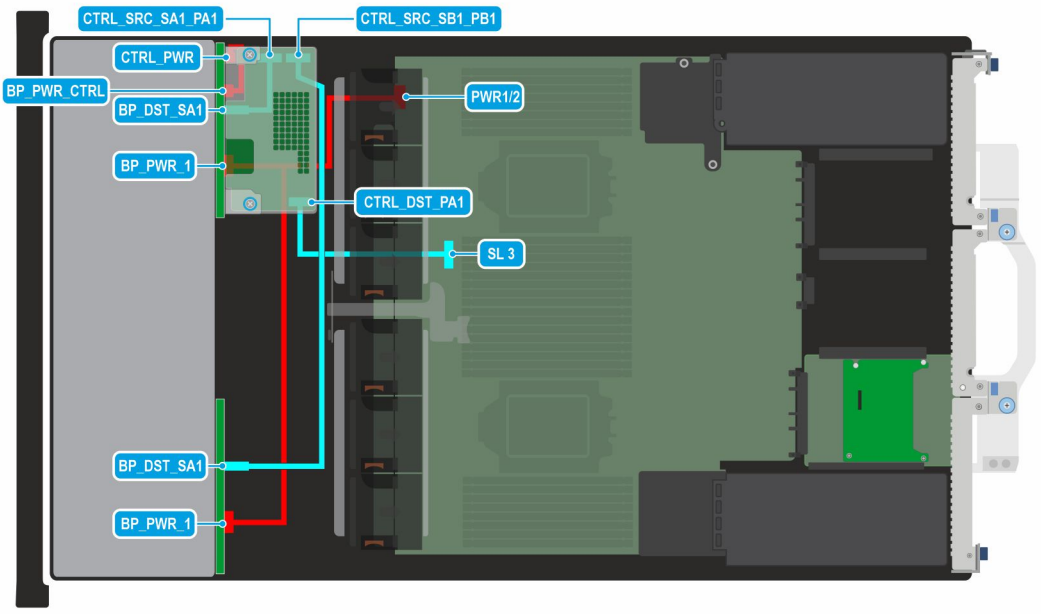


Figure 105. C05-02 : 16 x 2.5-inch (SAS4/SATA).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 74. C05-02 : 16 x 2.5-inch (SAS4/SATA).

Order	From	To
1	CTRL_PWR (power connector on front PERC)	BP_PWR_CTRL (backplane power connector)
2	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1(backplane power connector)
3	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
4	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
5	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)

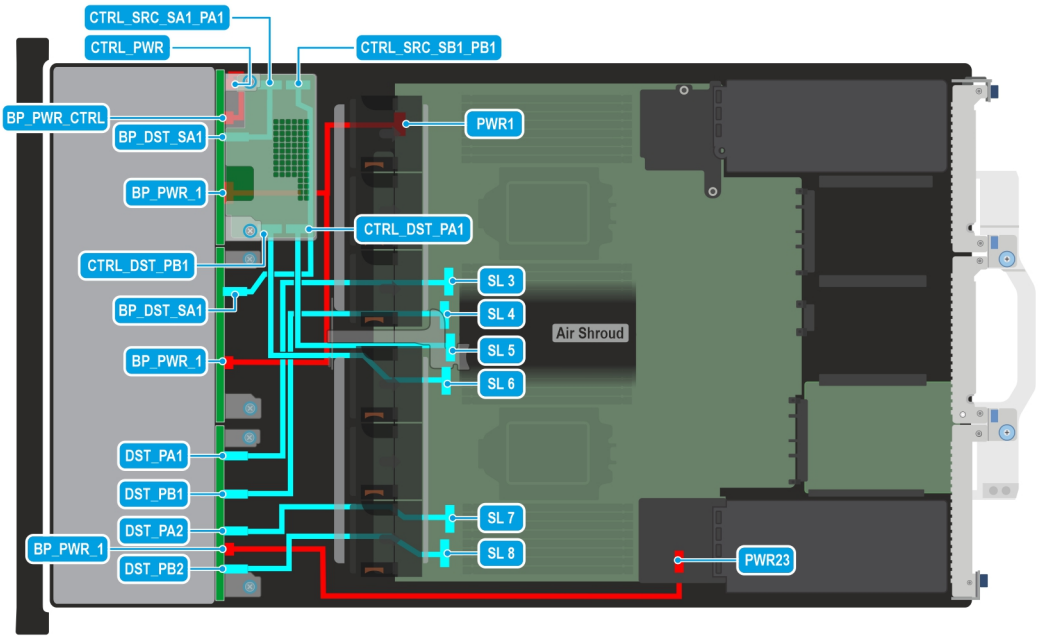


Figure 106. C06-01: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4x4 NVMe direct)

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 75. C06-01: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4x4 NVMe direct)

Order	From	To
1	CTRL_PWR (power connector on front PERC)	BP_PWR_CTRL (backplane power connector)
2	PWR_1 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
3	PWR23 (system board power connector)	BP_PWR_1 (backplane power connector)
4	SL3 (signal connector on system board)	DST_PA1 (backplane signal connector)
5	SL4 (signal connector on system board)	DST_PB1 (backplane signal connector)
6	SL7 (signal connector on system board)	DST_PA2 (backplane signal connector)
7	SL8 (signal connector on system board)	DST_PB2 (backplane signal connector)
8	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
9	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
10	SL5 (signal connector on system board)	CTRL_DST_PA1 (controller connector)
11	SL6 (signal connector on system board)	CTRL_DST_PB1 (controller connector)

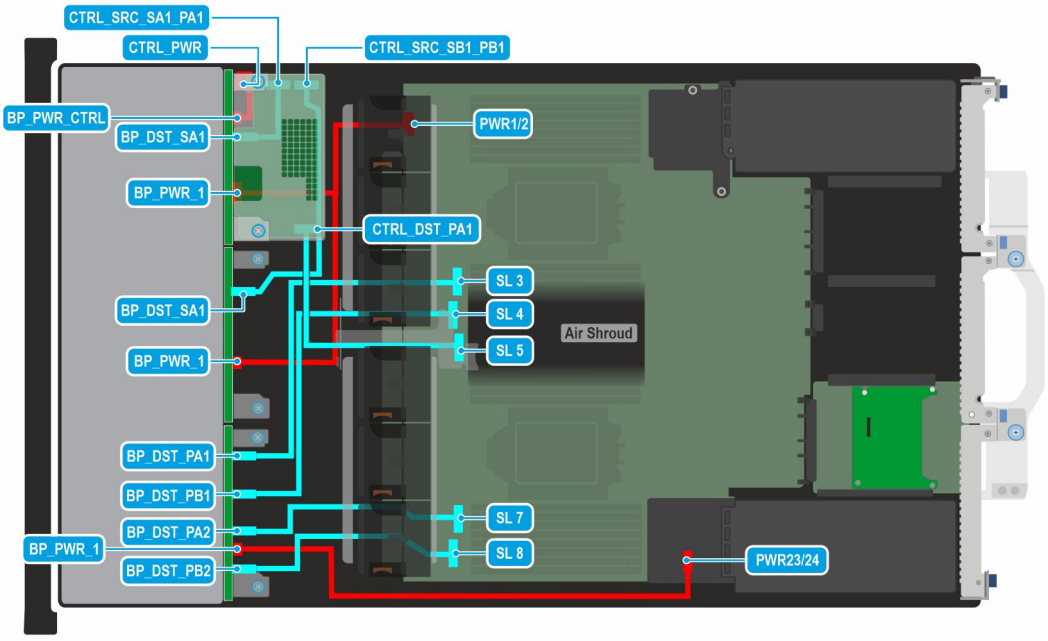


Figure 107. C06-02: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4x4 NVMe direct).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 76. C06-02: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4x4 NVMe direct).

Order	From	To
1	CTRL_PWR (power connector on front PERC)	BP_PWR_CTRL (backplane power connector)
2	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
3	PWR23/PWR24 (system board power connector)	BP_PWR_1 (backplane power connector)
4	SL3 (signal connector on system board)	BP_DST_PA1 (backplane signal connector)
5	SL4 (signal connector on system board)	BP_DST_PB1 (backplane signal connector)
6	SL7 (signal connector on system board)	BP_DST_PA2 (backplane signal connector)
7	SL8 (signal connector on system board)	BP_DST_PB2 (backplane signal connector)
8	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
9	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_SA1 (backplane signal connectors)
10	SL5 (signal connector on system board)	CTRL_DST_PA1 (controller connector)

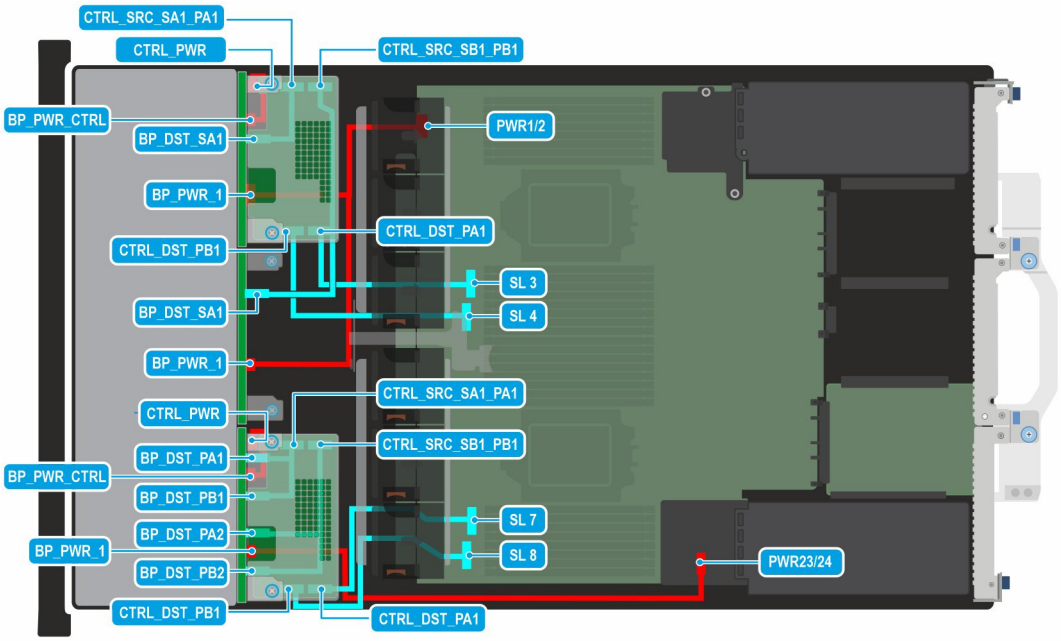


Figure 108. C06-06: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4 NVMe RAID).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 77. C06-06: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4 NVMe RAID).

Order	From	To
1	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
2	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
3	PWR23/24 (system board power connector)	BP_PWR_1 (backplane power connector)
4	BP_DST_SA1 (backplane signal connector)	CTRL_SRC_SA1_PA1 (controller connector on front PERC)
5	BP_DST_SA1 (backplane signal connector)	CTRL_SRC_SB1_PB1 (controller connector on front PERC)
6	BP_DST_PA2 and BP_DST_PB2 (backplane signal connectors)	CTRL_SRC_SB1_PB1 (controller connector on front PERC)
7	BP_DST_PA1 and BP_DST_PB1 (backplane signal connectors)	CTRL_SRC_SA1_PA1 (controller connector on front PERC)
8	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector)
9	SL4 (signal connector on system board)	CTRL_DST_PB1 (backplane signal connector)
10	SL7 (signal connector on system board)	CTRL_DST_PA1 (controller connector)
11	SL8 (signal connector on system board)	CTRL_DST_PB1 (backplane signal connector)

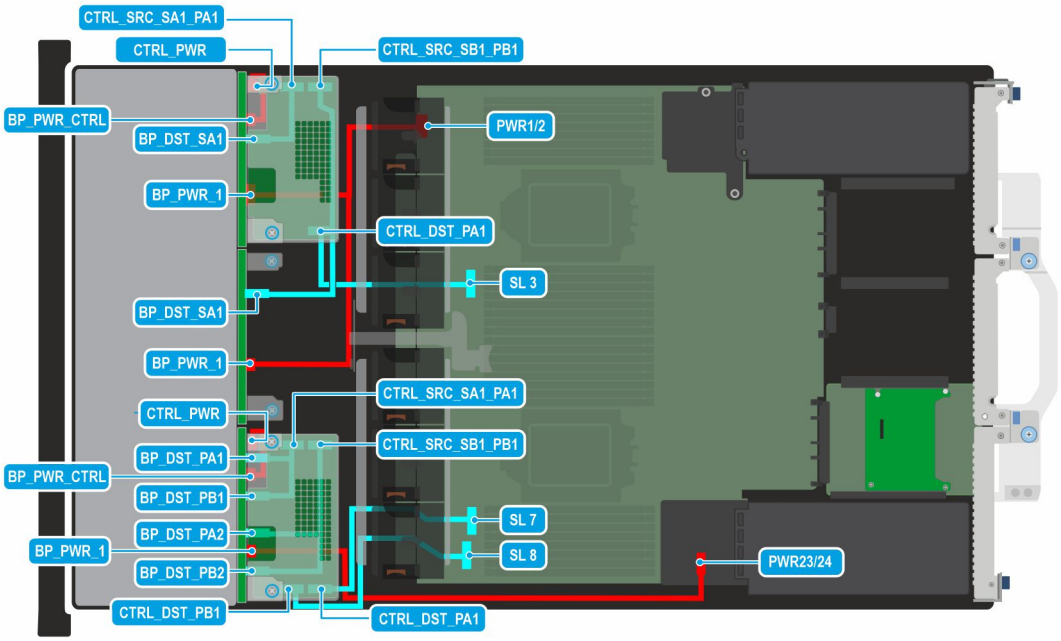


Figure 109. C06-07: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4 NVMe RAID).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 78. C06-07: 16 x 2.5-inch (SAS4/SATA) + 8 x 2.5-inch (G4 NVMe RAID).

Order	From	To
1	BP_PWR_CTRL (backplane power connector)	CTRL_PWR (power connector on front PERC)
2	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
3	PWR23/24 (system board power connector)	BP_PWR_1 (backplane power connector)
4	BP_DST_SA1 (backplane signal connector)	CTRL_SRC_SA1_PA1 (controller connector on front PERC)
5	BP_DST_SA1 (backplane signal connector)	CTRL_SRC_SB1_PB1 (controller connector on front PERC)
6	BP_DST_PA2 and BP_DST_PB2 (backplane signal connectors)	CTRL_SRC_SB1_PB1 (controller connector on front PERC)
7	BP_DST_PA1 and BP_DST_PB1 (backplane signal connectors)	CTRL_SRC_SA1_PA1 (controller connector on front PERC)
8	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector)
9	SL7 (signal connector on system board)	CTRL_DST_PA1 (controller connector)
10	SL8 (signal connector on system board)	CTRL_DST_PB1 (backplane signal connector)

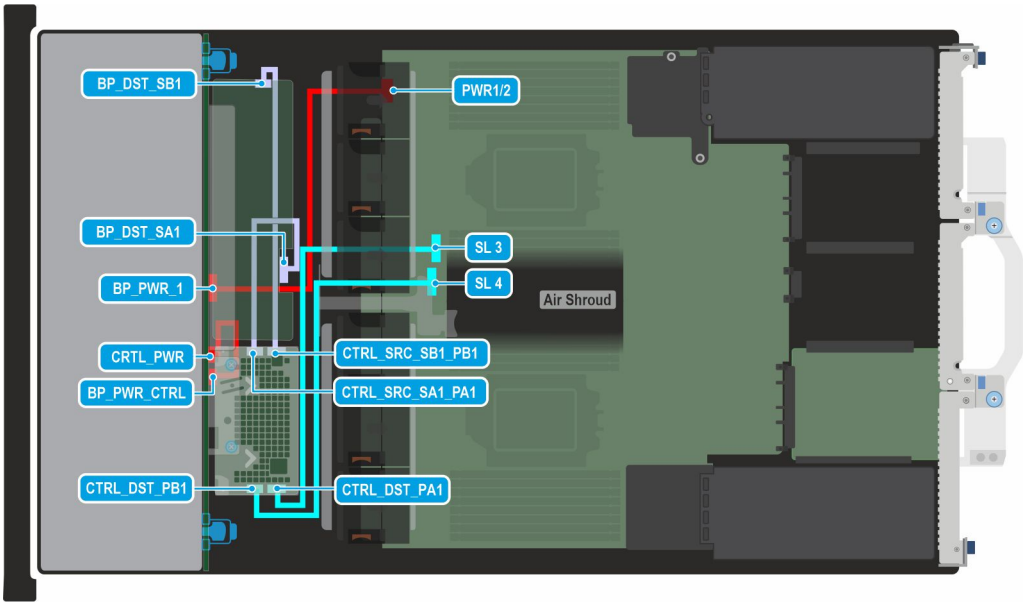


Figure 110. C07-01: 24 x 2.5-inch (SAS4/SATA).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 79. C07-01: 24 x 2.5-inch (SAS4/SATA).

Order	From	To
1	CTRL_PWR (power connector on front PERC)	BP_PWR_CTRL (backplane power connector)
2	PWR1/2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)
4	SL4 (signal connector on system board)	CTRL_DST_PB1 (controller connector on front PERC)
5	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_ SB1 (backplane signal connector)
6	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_ SA1 (backplane signal connector)

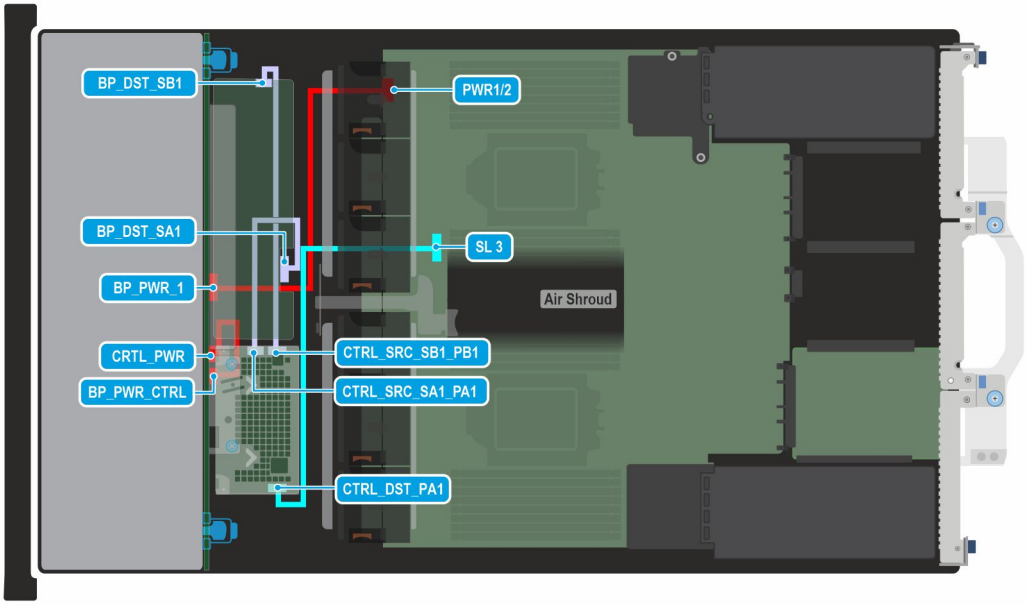


Figure 111. C07-02: 24 x 2.5-inch (SAS4/SATA).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 80. C07-02: 24 x 2.5-inch (SAS4/SATA).

Order	From	To
1	CTRL_PWR (power connector on front PERC)	BP_PWR_CTRL (backplane power connector)
2	PWR1/2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	SL3 (signal connector on system board)	CTRL_DST_PA1 (controller connector on front PERC)
4	CTRL_SRC_SB1_PB1 (controller connector on front PERC)	BP_DST_ SB1 (backplane signal connector)
5	CTRL_SRC_SA1_PA1 (controller connector on front PERC)	BP_DST_ SA1 (backplane signal connector)

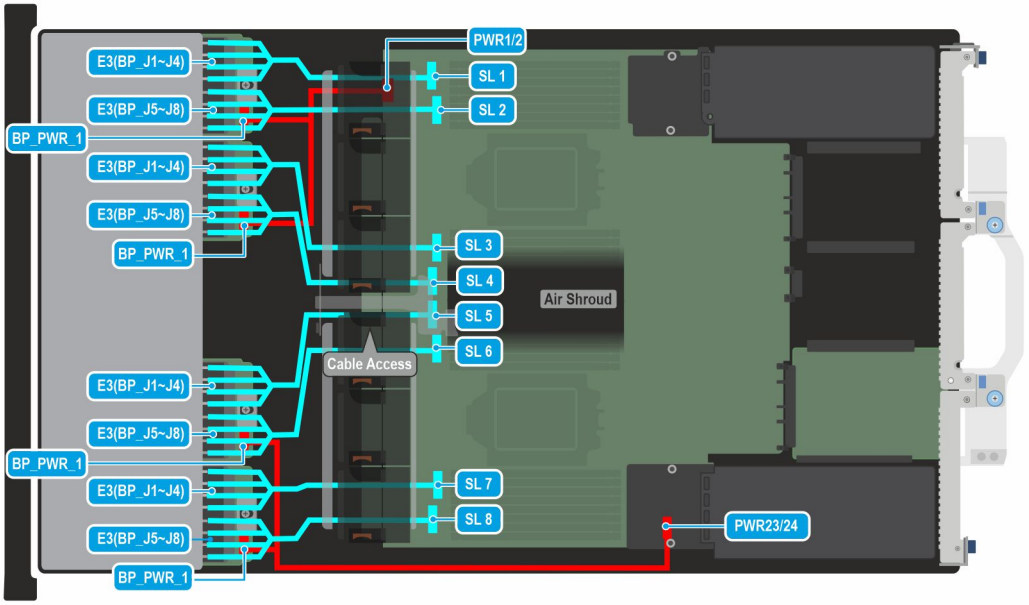


Figure 112. C08-01: 32 x E3.S (G5x2 NVMe direct).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 81. C08-01: 32 x E3.S (G5x2 NVMe direct).

Order	From	To
1	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
2	PWR23/24 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
3	SL1 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
4	SL2 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
5	SL3 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
6	SL4 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
7	SL5 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
8	SL6 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
9	SL7 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
10	SL8 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)

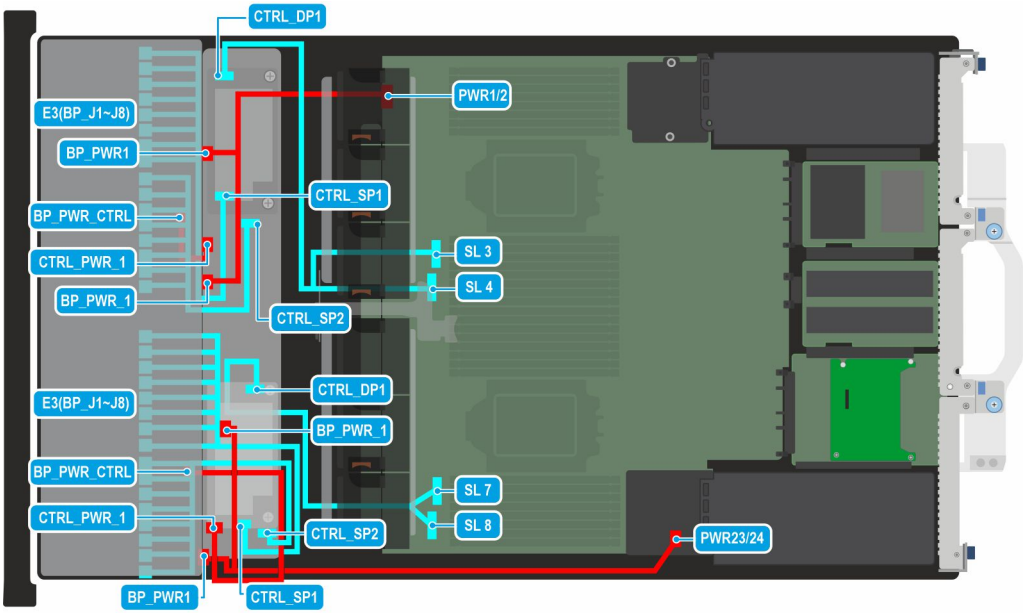


Figure 113. C08-02: 32 x E3.S (G5x2 NVMe Dual RAID).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 82. C08-02: 32 x E3.S (G5x2 NVMe Dual RAID).

Order	From	To
1	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
2	PWR23/24 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connector)
3	BP_PWR_CTRL (backplane power connector)	CTRL_PWR1 (power connector on front PERC)
4	E3(BP_J1~J8) (backplane signal connectors)	CTRL_SP1 (controller connector on front PERC)
5	E3(BP_J1~J8) (backplane signal connectors)	CTRL_SP2 (controller connector on front PERC)
6	E3(BP_J1~J8) (backplane signal connectors)	CTRL_SP1 (controller connector on front PERC)
7	E3(BP_J1~J8) (backplane signal connectors)	CTRL_SP2 (controller connector on front PERC)
8	SL3 and SL4 (signal connector on system board)	CTRL_DP1 (controller connector on front PERC)
9	SL7 and SL8 (signal connector on system board)	CTRL_DP1 (controller connector on front PERC)

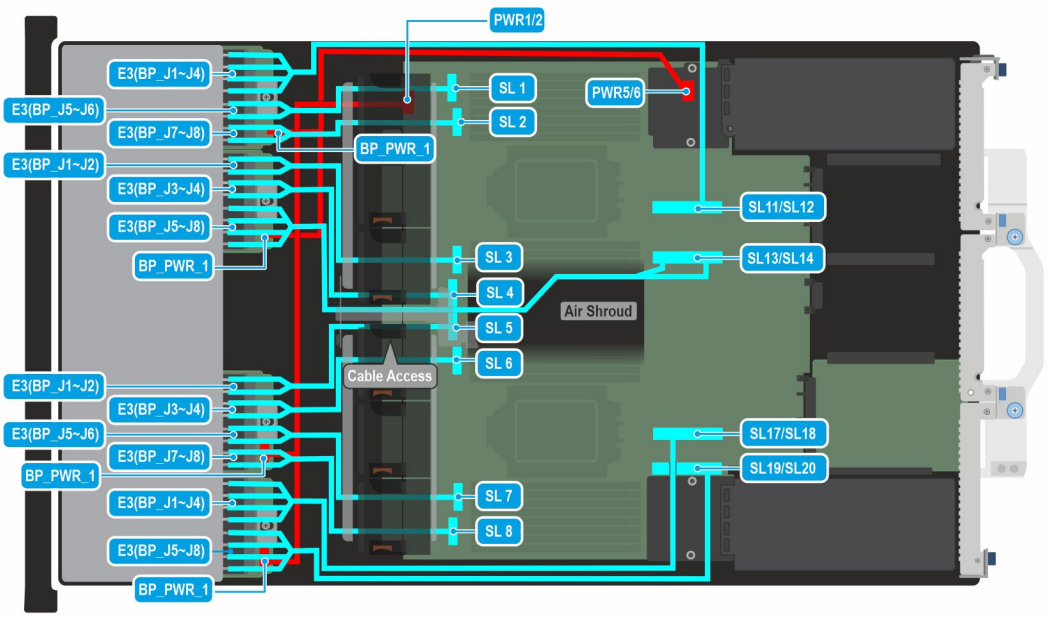


Figure 114. C08-04: 32 x E3.S (G5x4 NVMe direct).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 83. C08-04: 32 x E3.S (G5x4 NVMe direct Connect).

Order	From	To
1	PWR5/6 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
2	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
3	SL1 (signal connector on system board)	E3(BP_J5~J6) (backplane signal connectors)
4	SL2 (signal connector on system board)	E3(BP_J7~J8) (backplane signal connectors)
5	SL3 (signal connector on system board)	E3(BP_J1~J2) (backplane signal connectors)
6	SL4 (signal connector on system board)	E3(BP_J3~J4) (backplane signal connectors)
7	SL5 (signal connector on system board)	E3(BP_J1~J2) (backplane signal connectors)
8	SL6 (signal connector on system board)	E3(BP_J3~J4) (backplane signal connectors)
9	SL7 (signal connector on system board)	E3(BP_J5~J6) (backplane signal connectors)
10	SL8 (signal connector on system board)	E3(BP_J7~J8) (backplane signal connectors)
11	SL11/SL12(signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
12	SL13/SL14(signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
13	SL17/SL18(signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
14	SL19/SL20(signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)

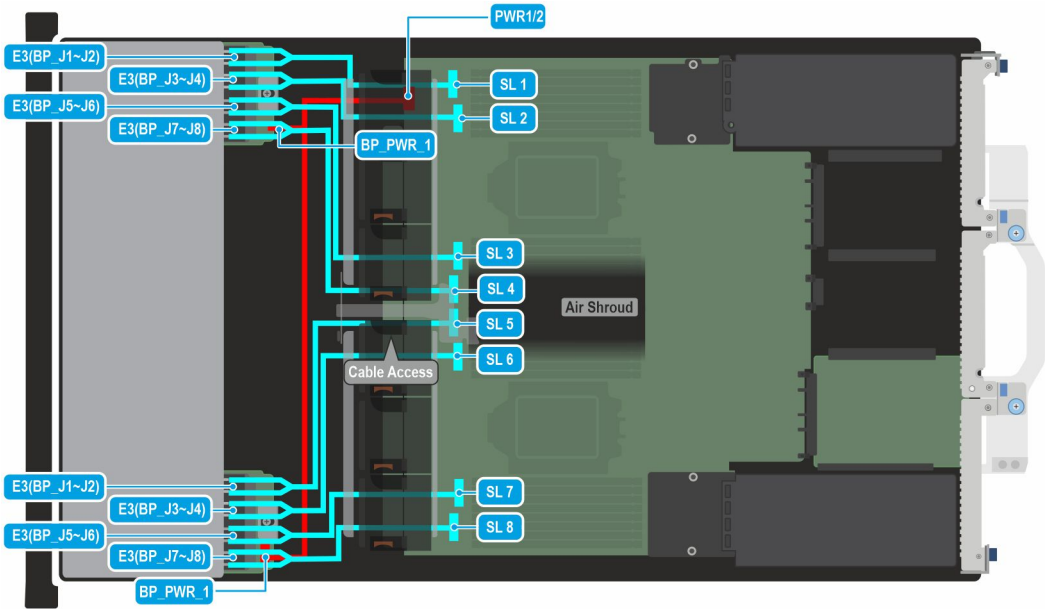


Figure 115. C09-01: 16 x E3.S (G5x4 NVMe direct).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 84. C09-01: 16 x E3.S (G5x4 NVMe direct).

Order	From	To
1	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
2	SL1 (signal connector on system board)	E3(BP_J1~J2) (backplane signal connectors)
3	SL2 (signal connector on system board)	E3(BP_J3~J4) (backplane signal connectors)
4	SL3 (signal connector on system board)	E3(BP_J5~J6) (backplane signal connectors)
5	SL4 (signal connector on system board)	E3(BP_J7~J8) (backplane signal connectors)
6	SL5 (signal connector on system board)	E3(BP_J1~J2) (backplane signal connectors)
7	SL6 (signal connector on system board)	E3(BP_J3~J4) (backplane signal connectors)
8	SL7 (signal connector on system board)	E3(BP_J5~J6) (backplane signal connectors)
9	SL8 (signal connector on system board)	E3(BP_J7~J8) (backplane signal connectors)

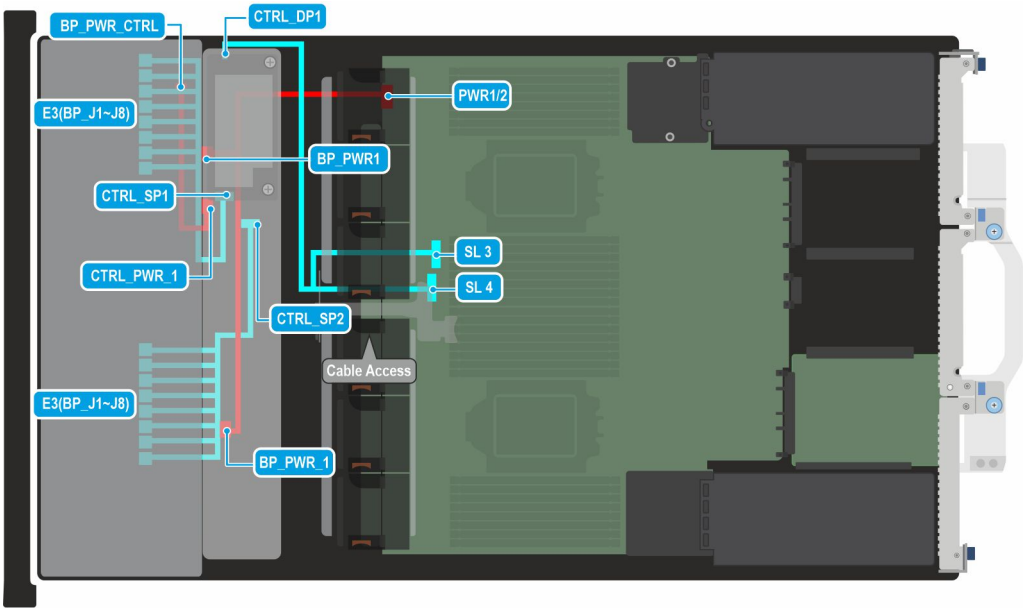


Figure 116. C09-03: 16 x E3.S (G5 NVMe Single RAID).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 85. C09-03: 16 x E3.S (G5 NVMe Single RAID).

Order	From	To
1	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
2	BP_PWR_CTRL (backplane power connector)	CTRL_PWR_1 (power connector on front PERC)
3	E3(BP_J1~J8) (backplane signal connectors)	CTRL_SP1 (controller connector on front PERC)
4	E3(BP_J1~J8) (backplane signal connectors)	CTRL_SP2 (controller connector on front PERC)
5	SL3 and SL4(signal connectors on system board)	CTRL_DP1 (controller connector on front PERC)

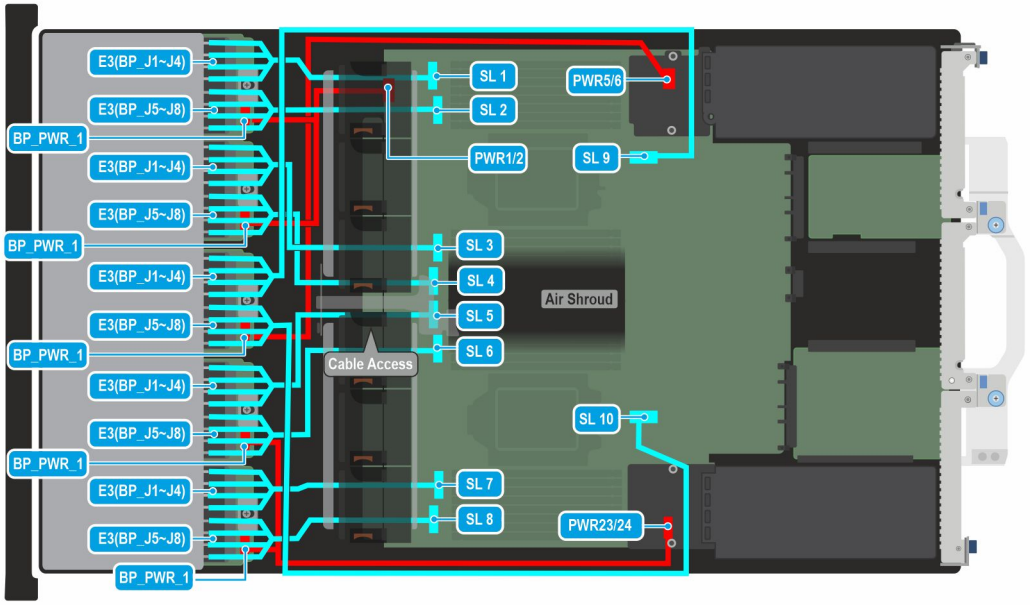


Figure 117. C10-01: 40 x E3.S (G5x2 NVMe direct).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 86. C10-01: 40 x E3.S (G5x2 NVMe direct).

Order	From	To
1	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
2	PWR23/24 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
3	SL1 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
4	SL2 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
5	SL3 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
6	SL4 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
7	SL5 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
8	SL6 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
9	SL7 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
10	SL8 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
11	PWR5/6 (system board power connector)	BP_PWR_1 (backplane power connector)
12	SL9 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
13	SL10 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)

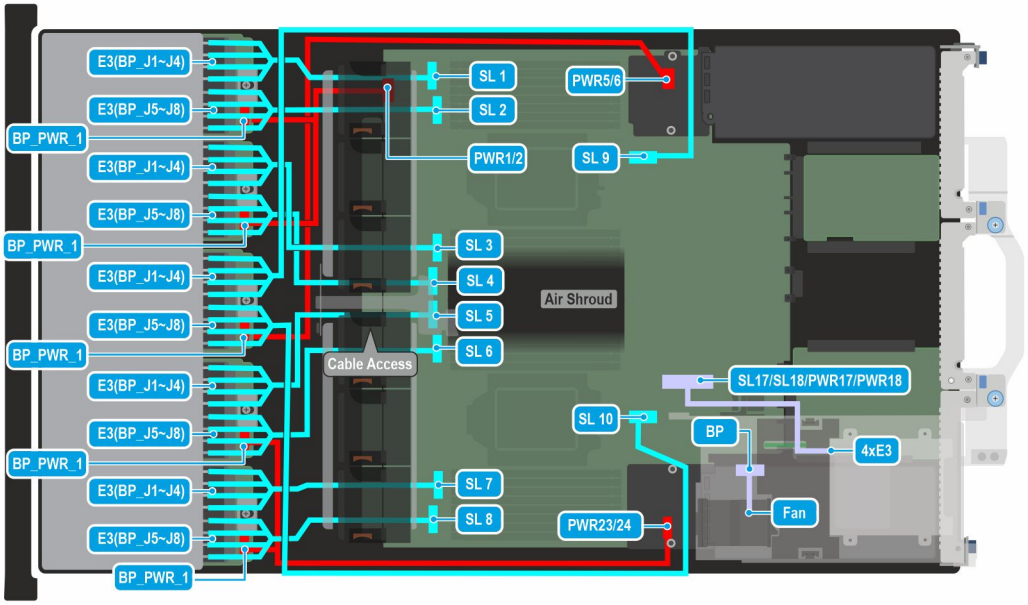


Figure 118. C10-02: 40 x E3.S (G5x2 NVMe direct) + rear 4 x E3.S (G5x4 NVMe direct).

NOTE: Follow the sequential order as shown in the table to remove the cables, to install the cables follow the reverse sequential order.

Table 87. C10-02: 40 x E3.S (G5x2 NVMe direct) + rear 4 x E3.S (G5x4 NVMe direct).

Order	From	To
1	PWR1/2 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
2	PWR23/24 (system board power connector)	BP_PWR_1 and BP_PWR_1 (backplane power connectors)
3	SL1 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
4	SL2 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
5	SL3 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
6	SL4 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
7	SL5 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
8	SL6 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
9	SL7 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
10	SL8 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
11	PWR5/6 (system board power connector)	BP_PWR_1 (backplane power connector)
12	SL9 (signal connector on system board)	E3(BP_J1~J4) (backplane signal connectors)
13	SL10 (signal connector on system board)	E3(BP_J5~J8) (backplane signal connectors)
14	SL17/SL18/PWR17/PWR18 (signal and power connector on system board)	4xE3 (connector on Rear E3 riser)
15	Fan (Fan connector on the Rear E3 riser)	BP (backplane signal connector on the Rear E3 riser)

NOTE: *Feature not available at product launch in June, 2025. Please refer to the product configurator page on Dell.com to confirm feature availability.

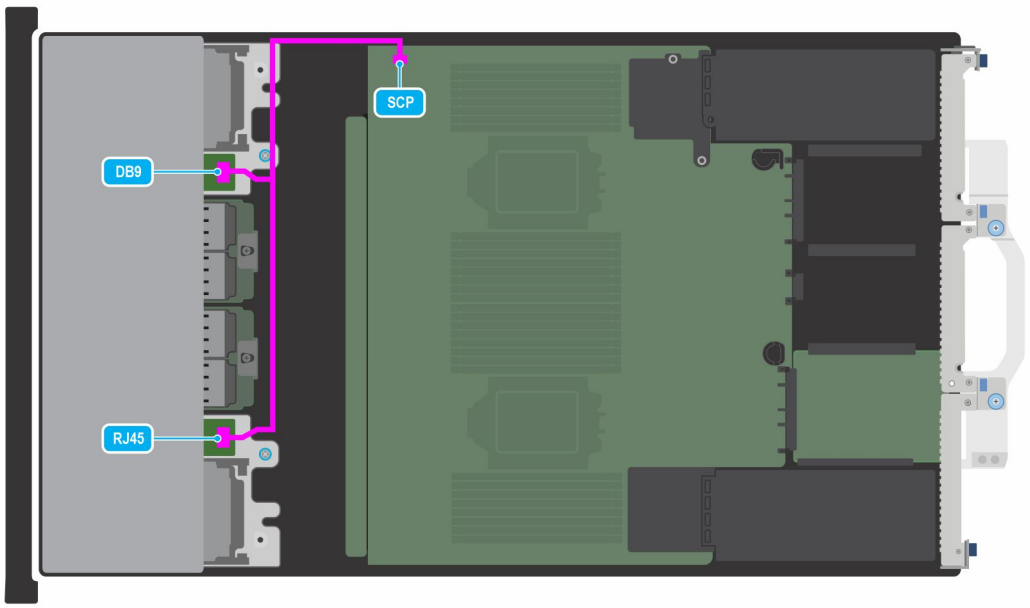


Figure 119. Front serial (DB9) and RJ45 port

Table 88. Front serial (DB9) and RJ45 port

Order	From	To
1	SCP (signal connector on system board)	DB9 (connector on riser RF2a) and RJ45 (connector on riser RF4a)

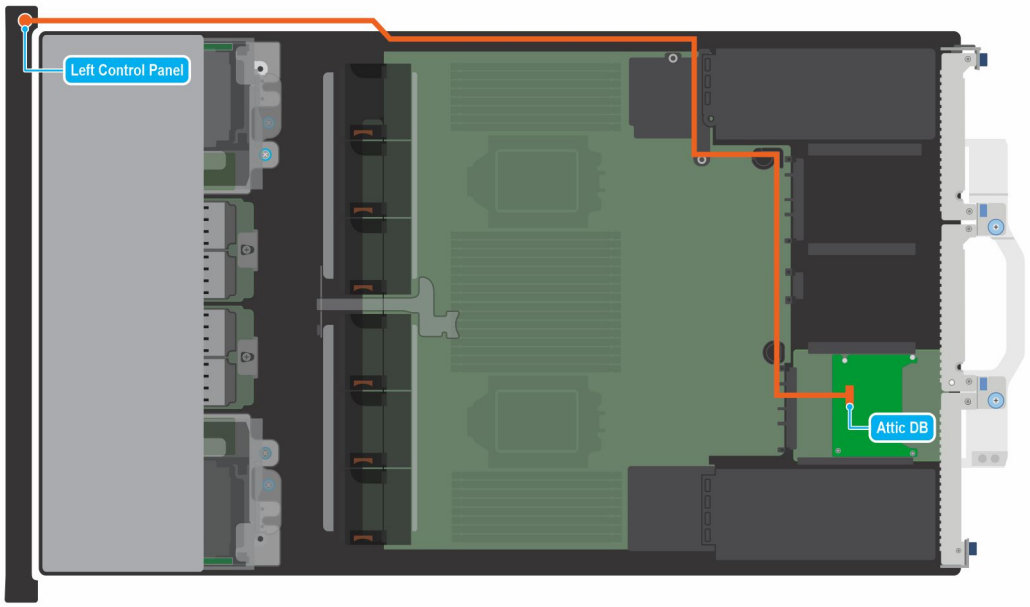


Figure 120. Left control panel (KVM)

Table 89. Left control panel (KVM)

Order	From	To
1	Left control panel (LCP)	Attic DB (connector in Attic board)

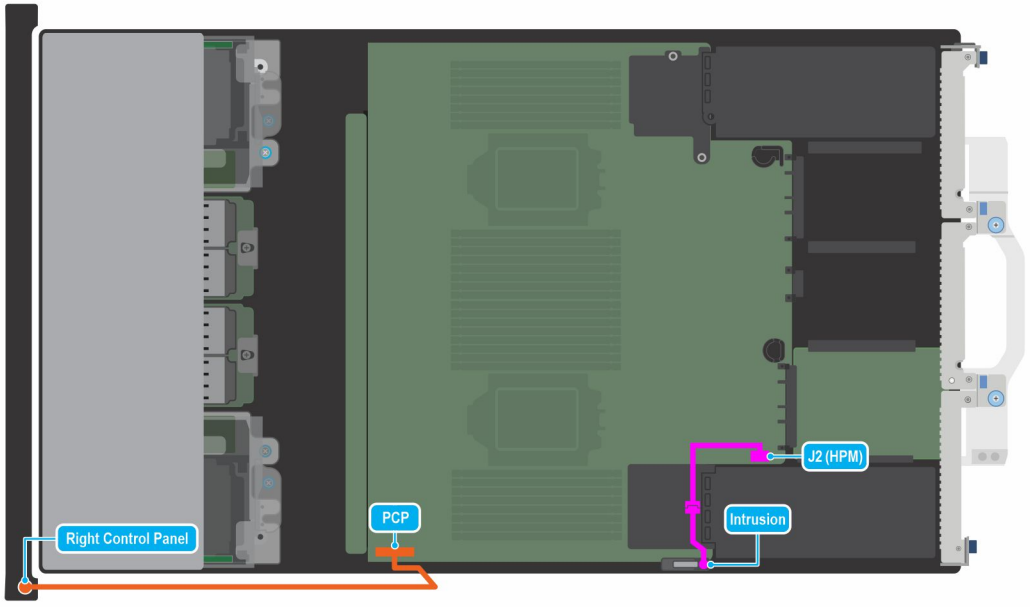


Figure 121. Right control panel and intrusion switch

Table 90. Right control panel and intrusion switch

Order	From	To
1	PCP (signal connector on system board)	Right control panel (RCP)
2	Intrusion switch	J2 (signal connector on system board)

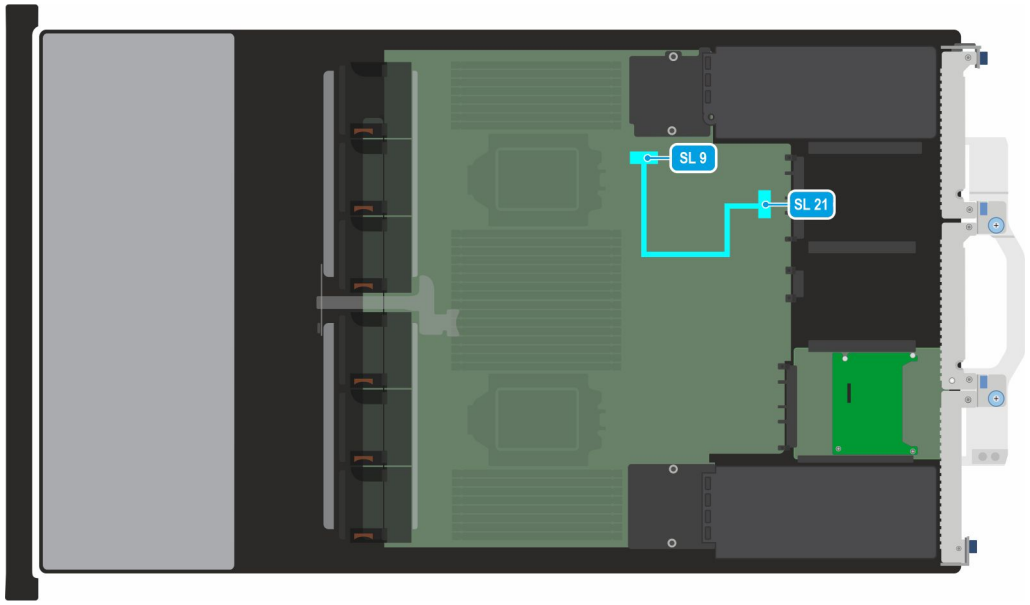


Figure 122. Rear OCP

Table 91. Rear OCP

Order	From	To
1	SL9 (signal connector on system board)	SL21 (signal connector on system board)

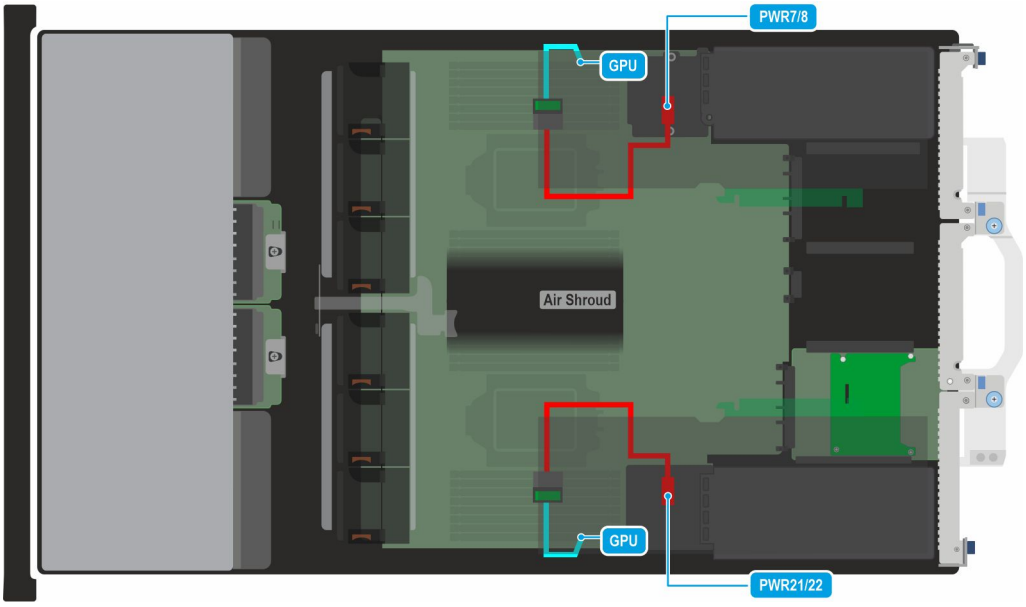


Figure 123. GPU PUCK CABLE - L40s/H100

Table 92. GPU PUCK CABLE - L40s/H100

Order	From	To	Connector type	Picture
1	PWR21/22 (system board power connector)	GPU on R1	PCIe 16-pin	12VH type 2 x 6 + 1 x 4 (12-position + 4-sideband) 
2	PWR7/8 (system board power connector)	GPU on R5		

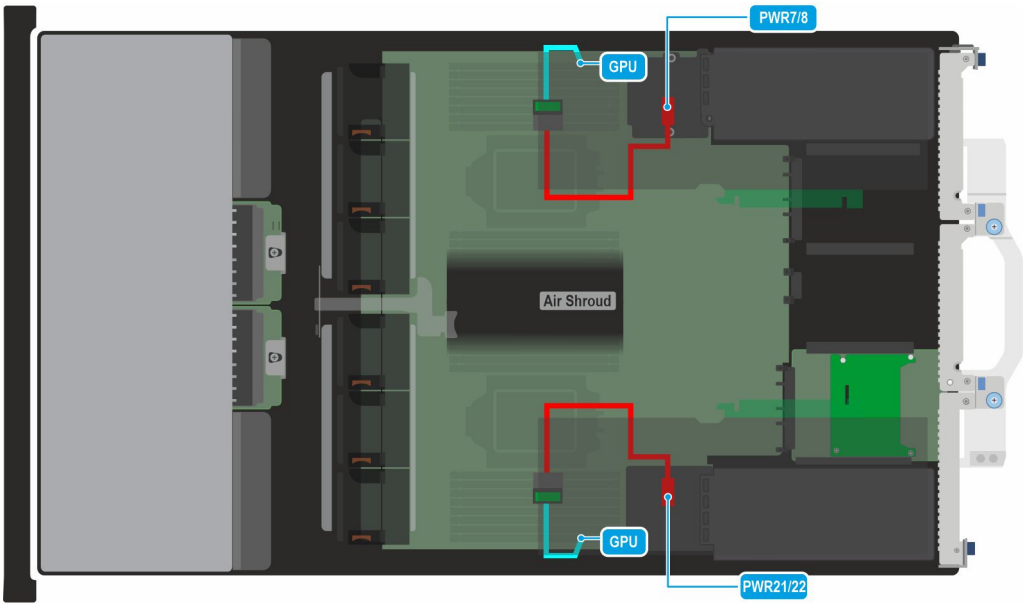
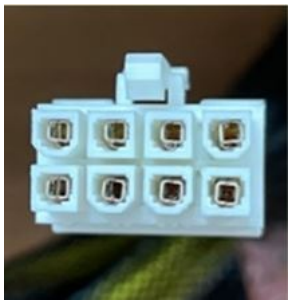


Figure 124. GPU PUCK CABLE - A16

Table 93. GPU PUCK CABLE - A16

Order	From	To	Connector type	Picture
1	PWR21/22 (system board power connector)	GPU on R1	CPU 8-pin	CPU type 2 x 4 (8-position) 
2	PWR7/8 (system board power connector)	GPU on R5		

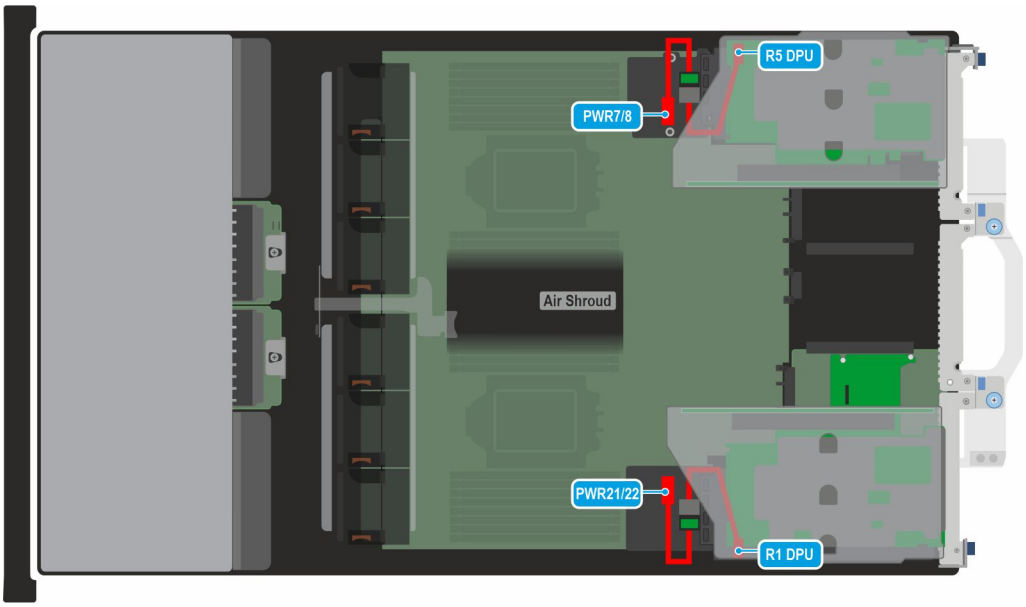


Figure 125. DPU Puck cable - R1/R5

Table 94. DPU Puck cable - R1/R5

Order	From	To
1	PWR21/22 (system board power connector)	DPU on R1
2	PWR7/8 (system board power connector)	DPU on R5

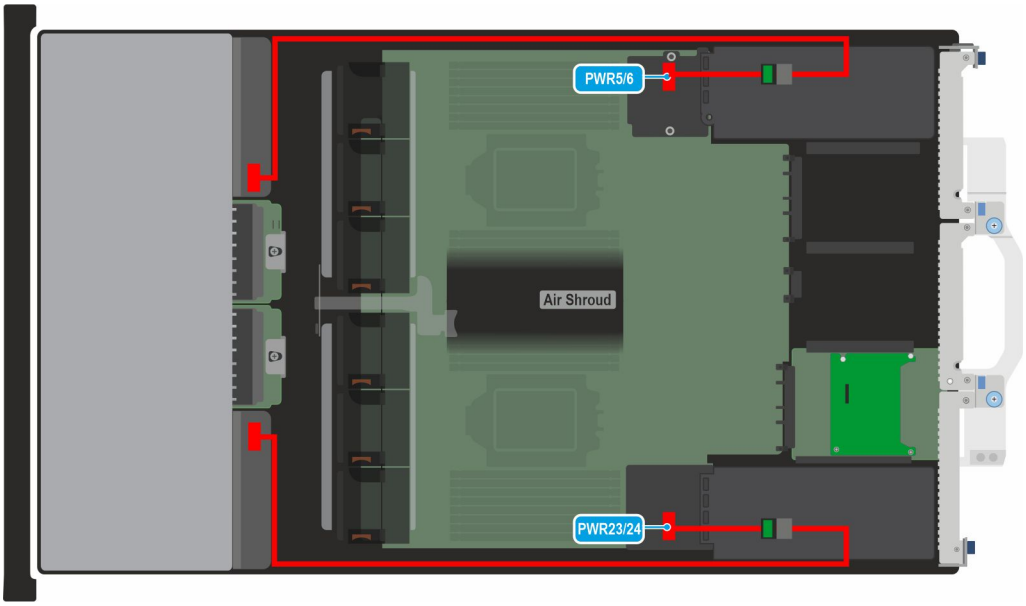


Figure 126. DPU Puck cable - RF1/ RF3

Table 95. DPU Puck cable - RF1/ RF3

Order	From	To
1	PWR5/6 (system board power connector)	DPU on front riser RF1
2	PWR23/24 (system board power connector)	DPU on front riser RF3

System memory

System memory guidelines

The PowerEdge R770 system supports DDR5 registered DIMMs (RDIMMs).

Your system memory is organized into eight channels per processor (two memory sockets per channel), 16 memory sockets per processor and 32 memory sockets per system.

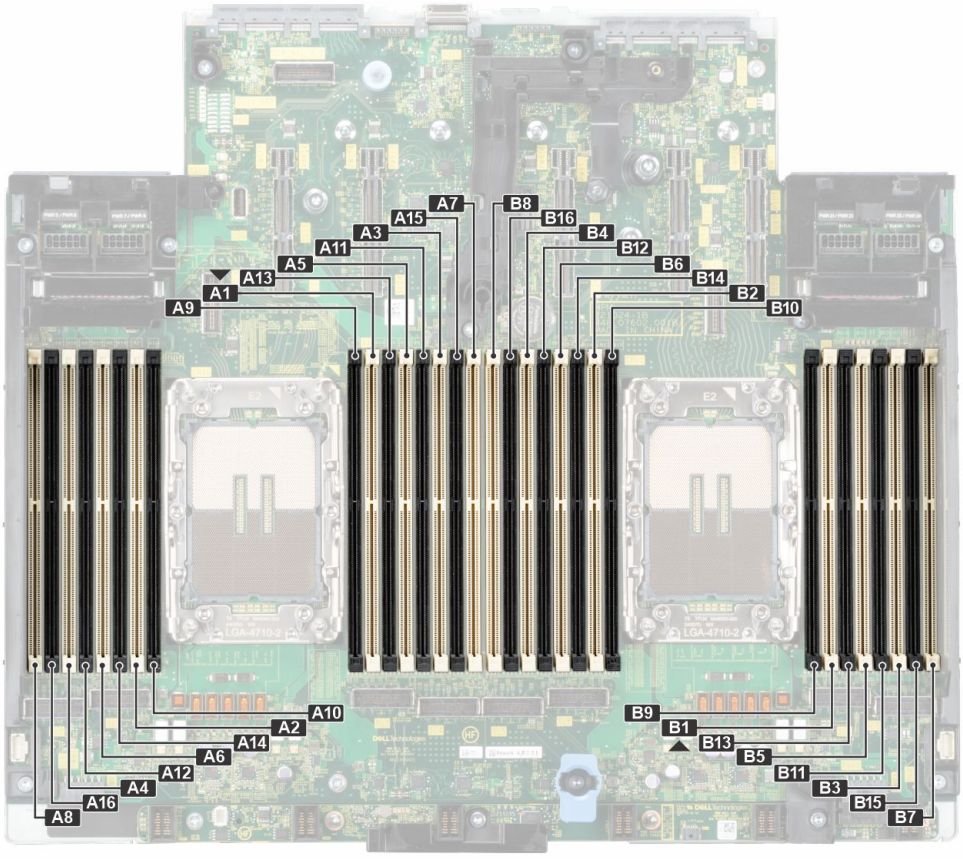


Figure 127. Memory channels

Memory channels are organized as follows:

Table 96. Memory channels

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
Processor 0	Slots A1 and A9	Slots A5 and A13	Slots A3 and A11	Slots A7 and A15	Slots A2 and A10	Slots A6 and A14	Slots A4 and A12	Slots A8 and A16
Processor 1	Slots B1 and B9	Slots B5 and B13	Slots B3 and B11	Slots B7 and B15	Slots B2 and B10	Slots B6 and B14	Slots B4 and B12	Slots B8 and B16

Table 97. Supported memory matrix

DIMM type	Rank	Capacity	DIMM rated voltage and speed	Operating Speed			
				Intel® Xeon 6 E- core processor		Intel® Xeon 6 P- core processor	
				1 DIMM per channel (DPC)	2 DIMM per channel (DPC)	1 DIMM per channel (DPC)	2 DIMM per channel (DPC)
RDIMM	1R	16 GB	DDR5 (1.1 V), 6400 MT/s	N/A	N/A	Up to 6400 MT/s	N/A
	2 R	32 GB	DDR5 (1.1 V), 6400 MT/s	Up to 6400 MT/s	N/A	Up to 6400 MT/s	Up to 5200 MT/s
		64 GB	DDR5 (1.1 V), 6400 MT/s	Up to 6400 MT/s	Up to 5200 MT/s	Up to 6400 MT/s	Up to 5200 MT/s

Table 97. Supported memory matrix (continued)

DIMM type	Rank	Capacity	DIMM rated voltage and speed	Operating Speed			
				Intel® Xeon 6 E- core processor		Intel® Xeon 6 P- core processor	
				1 DIMM per channel (DPC)	2 DIMM per channel (DPC)	1 DIMM per channel (DPC)	2 DIMM per channel (DPC)
		96 GB	DDR5 (1.1 V), 6400 MT/s	N/A	N/A	Up to 6400 MT/s	Up to 5200 MT/s
		128 GB	DDR5 (1.1 V), 6400 MT/s	N/A	N/A	Up to 6400 MT/s	Up to 5200 MT/s
	8 R	256 GB	DDR5 (1.1 V), 6400 MT/s	N/A	N/A	N/A	Up to 5200 MT/s

Table 98. Supported memory matrix

DIMM Capacity	DIMMs per CPU				
	1	4	8	12	16
6700E					
32 GB	x	N/A	x	N/A	N/A
64 GB	N/A	N/A	x	N/A	x
6500/6700P					
16 GB	x	N/A	x	N/A	N/A
32 GB	x	x	x	x	x
64 GB	N/A	x	x	N/A	x
128 GB	N/A	N/A	x	N/A	x
256 GB	N/A	N/A	N/A	N/A	x

NOTE:
- DIMMs with capacities 32 GB, and 64 GB are supported on E- core processors.
- DIMMs with capacities 16 GB, 32 GB, 64 GB, 96 GB, 128 GB, and 256 GB are supported on P- core processors.

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 6400 MT/s or lower speed depending on the following factors:

- System profile selected (for example: select memory running speed from Memory Frequency with selecting Custom in System Profile)
- Maximum supported DIMM speed of the processors
- Only DDR5- 6400 MT/s RDIMMs are supported.

NOTE: MT/s indicates DIMM speed in Mega-Transfers per second.

NOTE: Memory mirroring is supported only on P- core processors.

NOTE: Fault resilient mode (FRM) is supported only on P- core processors with 8 or 16 DIMMs per processor.

The following are the recommended guidelines for installing memory modules:

- All DIMMs must be DDR5.
- DIMM mixing configurations are not supported. All DIMM slots must be populated with the exact same DIMMs.
- Populate memory module sockets only if a processor is installed.
  - For dual-processor systems, sockets A1 to A16 and sockets B1 to B16 are available.
- In **Optimizer Mode**, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

Table 99. Memory population rules

Processor	Memory population	Memory population information
Dual processor (Start with processor0. Processor 0 and processor 1 population should match)	A{1}, B{1}, A{2}, B{2}, A{3},B{3}, A{4}, B{4}, A{5}, B{5},A{6}, B{6}, A{7}, B{7} A{8},B{8}, A{9}, B{9}, A{10},B{10}, A{11}, B{11}, A{12}, B{12}, A{13}, B{13}, A{14},B{14}, A{15}, B{15}, A{16},B{16}	2, 16 or 32 DIMMs are supported per system.

- Populate all the sockets with white release tabs first, followed by the sockets with black release tabs.
- Unbalanced or odd memory configurations result in a performance loss, and the system may not identify the memory modules being installed. Always populate memory channels identically with equal DIMMs for the best performance.
- Supported RDIMM configurations are 1, 8 or 16 DIMMs per processor, only 32 GB is allowed for 1DIMM per processor.
- Populate eight or sixteen identical memory modules per processor at a time to maximize performance.

Removing a memory module

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Remove the air shroud or remove the GPU air shroud.

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

NOTE: For proper system cooling, DIMM blanks must be installed in any memory socket that is not populated, only if processor TDP is greater than 250 W. Remove the memory module blanks only if you intend to install the memory module in these 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.

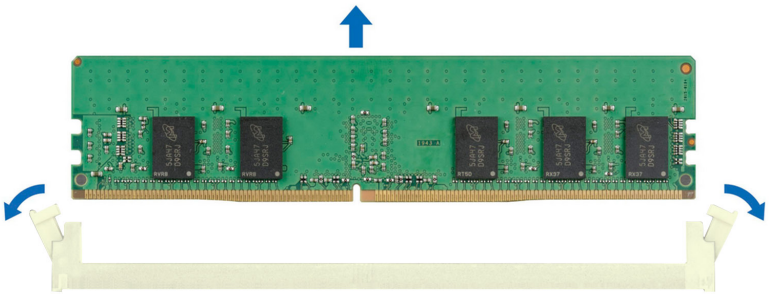


Figure 128. Removing a memory module

Next steps

Replace the memory module.

Installing a memory module

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Remove the air shroud or remove the GPU air shroud.

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.

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

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 memory module socket levers align with the levers on the other sockets that have memory modules that are installed.

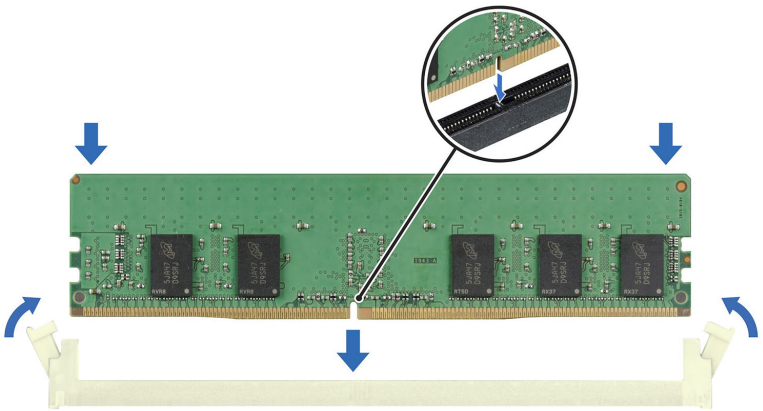


Figure 129. Installing a memory module

Next steps

1. Follow the procedure listed in After working inside your system.
2. To verify that the memory module has been installed properly, press **F2** during reboot and click **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. Shut down the system and ensure that the memory modules are firmly seated in the correct sockets.
4. Run the system memory test in system diagnostics.

Processor and heat sink

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 air shroud or remove the GPU air shroud.

> **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.

4. The system supports different to types of heatsinks and the procedure to remove them are similar.

Steps

1. 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.

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

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

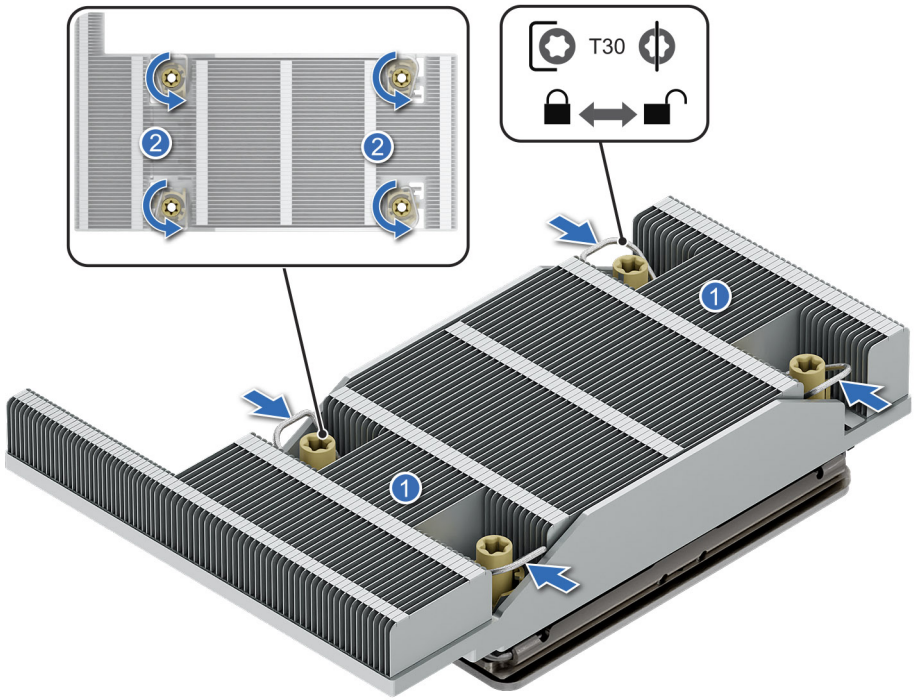


Figure 130. Removing the processor heat sink module

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

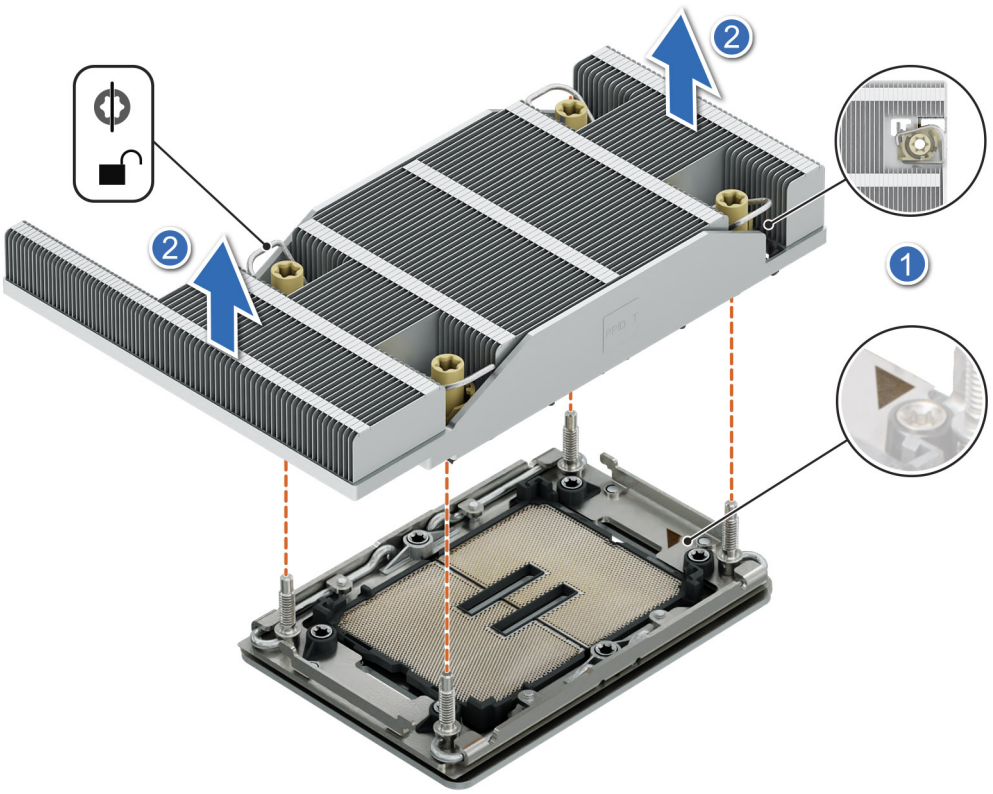


Figure 131. Removing a heat sink

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 air shroud or remove the GPU air shroud.
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, 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 edge, 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.

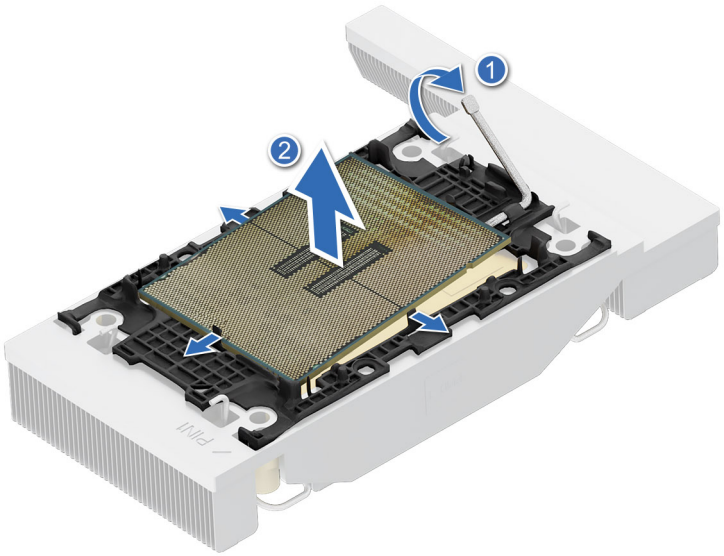


Figure 132. Removing the processor

NOTE: Ensure to return the TIM break lever on the retaining clip back to its original position.

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

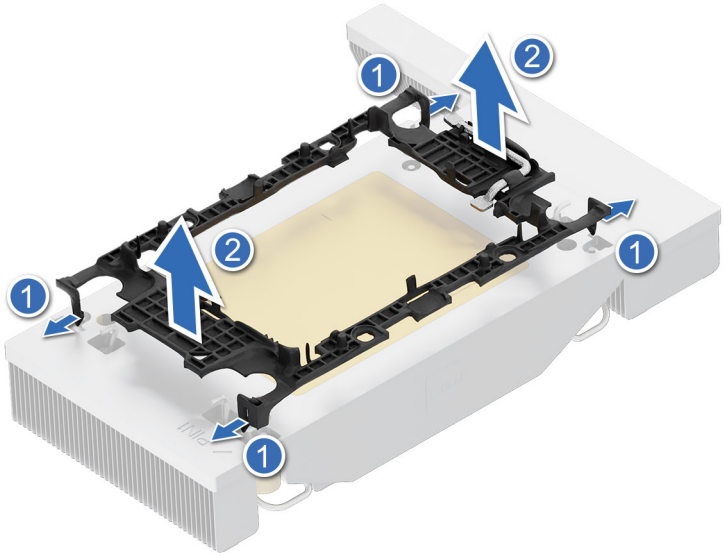


Figure 133. Removing the retaining clip

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 the Before working inside your system.
3. Remove the air shroud or remove the GPU air shroud.
4. Remove the processor heat sink module.

Steps

1. Place the processor in the processor tray.

   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.

   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.

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

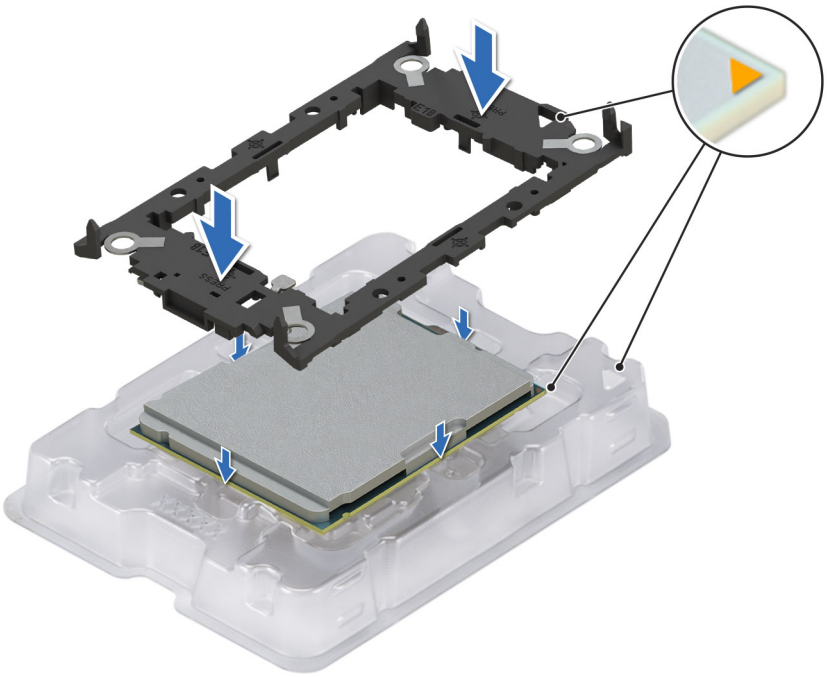


Figure 134. Installing the retaining clip

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

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

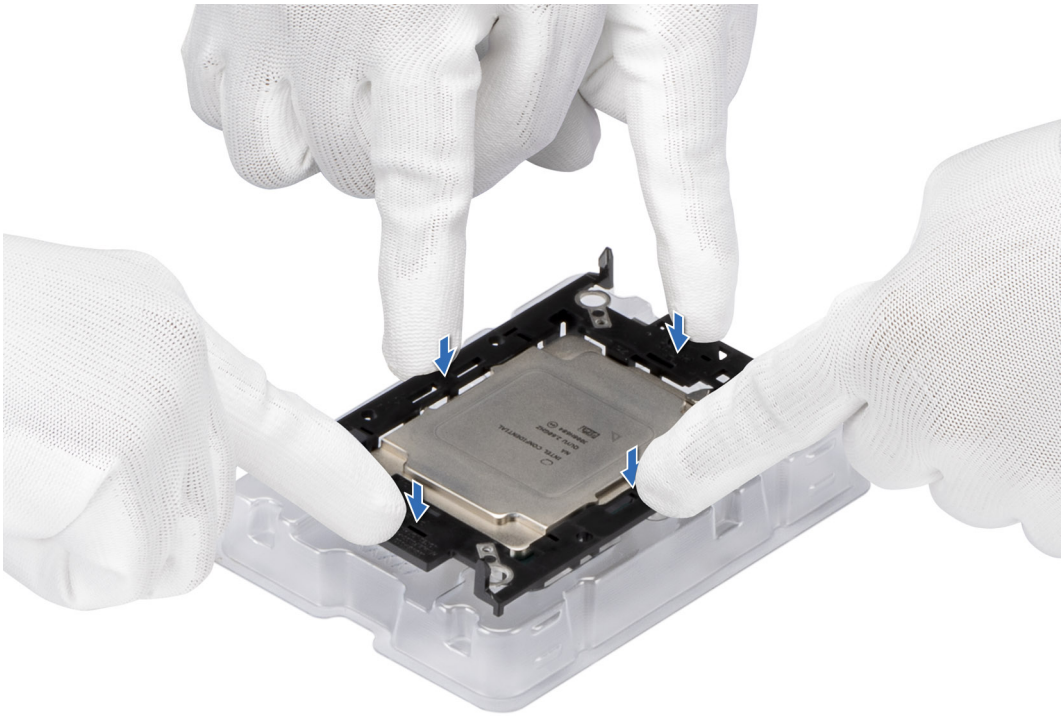


Figure 135. Press the retaining clip on the four sides

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.

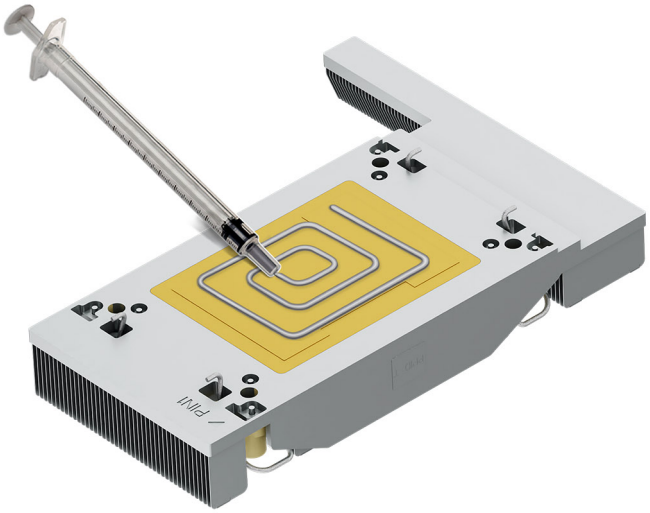


Figure 136. Applying thermal grease

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

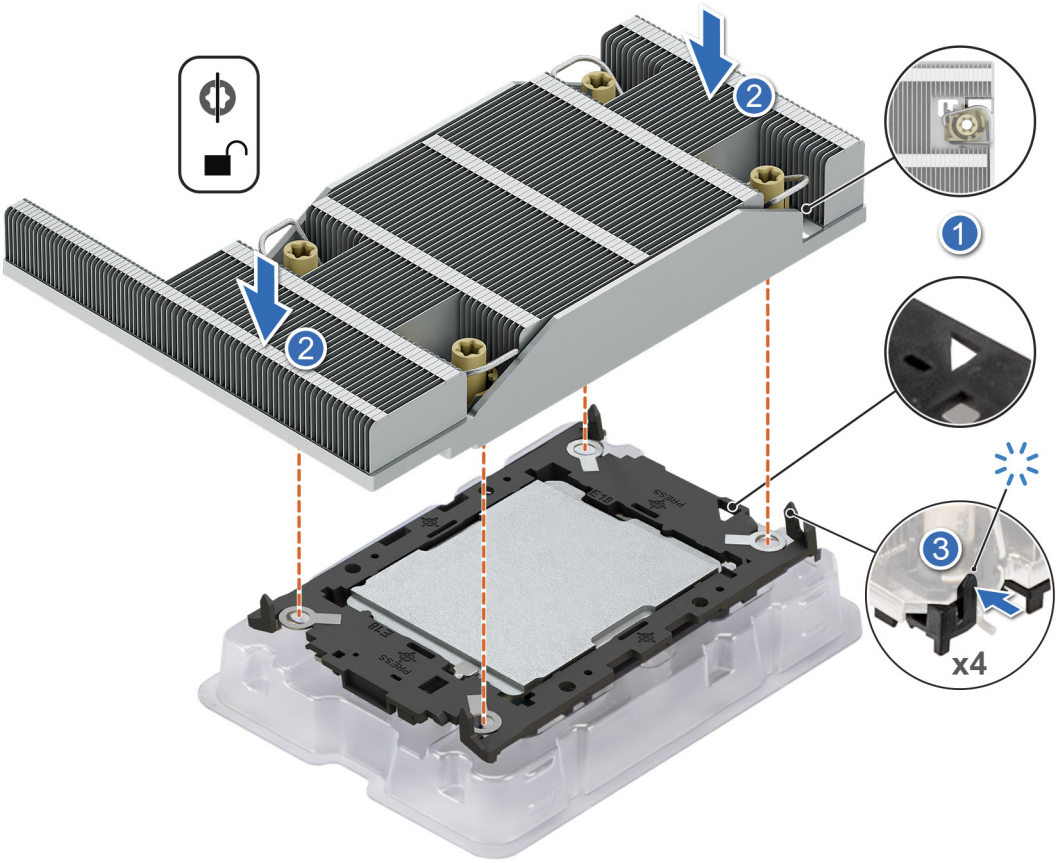


Figure 137. Installing the heat sink onto the processor

Next steps

1. Install the processor heat sink module.
2. Install the air shroud or install the GPU air shroud.
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 air shroud or remove the GPU air shroud.
4. If installed, remove the processor dust cover.
5. The system supports different to types of heatsinks and the procedure to install them are similar.

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.

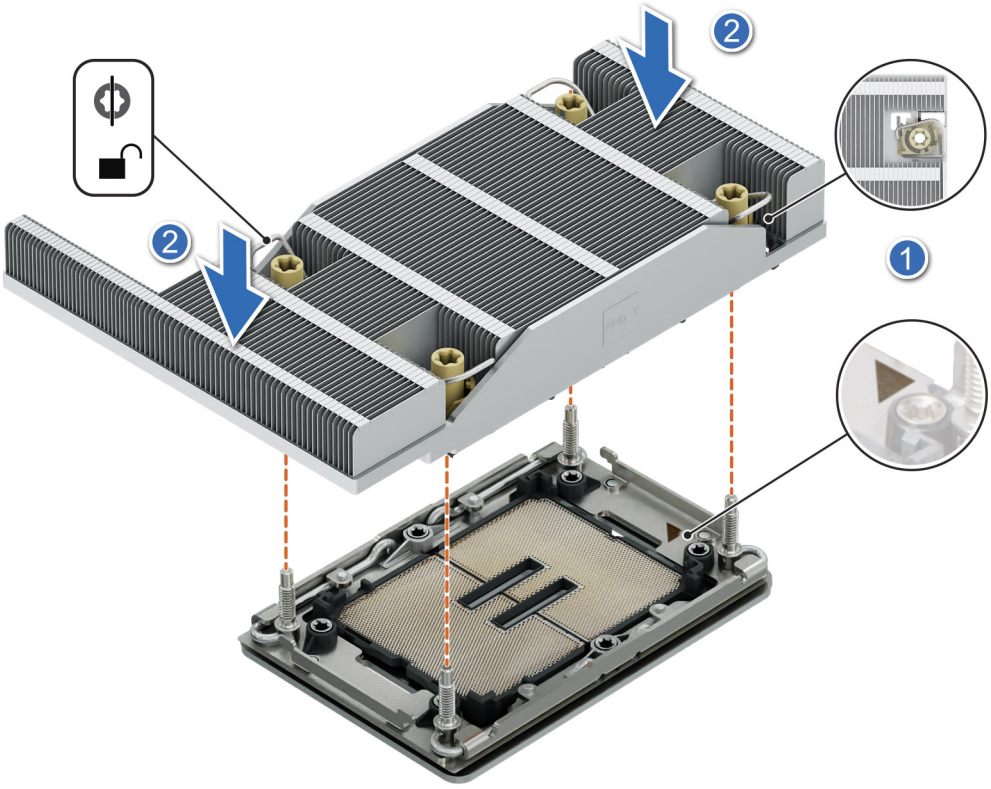


Figure 138. Installing the processor heat sink

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.

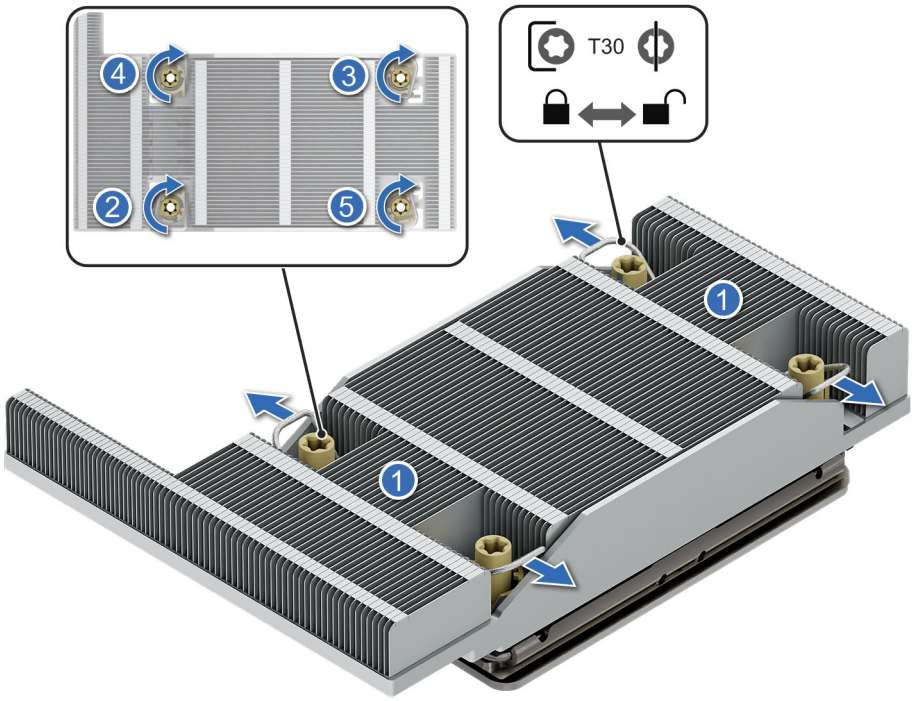


Figure 139. Set the anti-tilt wires to the locked position and tightening the nuts

Next steps

1. Install the air shroud or install the GPU air shroud.
2. Follow the procedure listed in the After working inside your system.

Removing the Direct Liquid Cooling 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 air shroud or remove the GPU air shroud.
4. Remove the expansion card riser.

WARNING: The Direct liquid cooling (DLC) module and processor are too hot to touch for some time after the system has been powered off. Allow the liquid cooling module and processor to cool down before handling them.

NOTE: Rear I/O (RIO) board is different for the system with DLC module.

Steps

1. Loosen the plunger to open the DLC bracket.
2. Tilt the DLC ring holder to loosen the DLC tubes.
3. Remove the DLC tubes from the DLC bracket..
4. Disconnect the DLC leak detection cable from the HPM .
5. Slightly lift the DLC tubes surrounding the DIMM slots.
6. 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 DLC module 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.

NOTE: Ensure that the anti-tilt wires on the DLC module are in locked position when loosening the captive nuts.

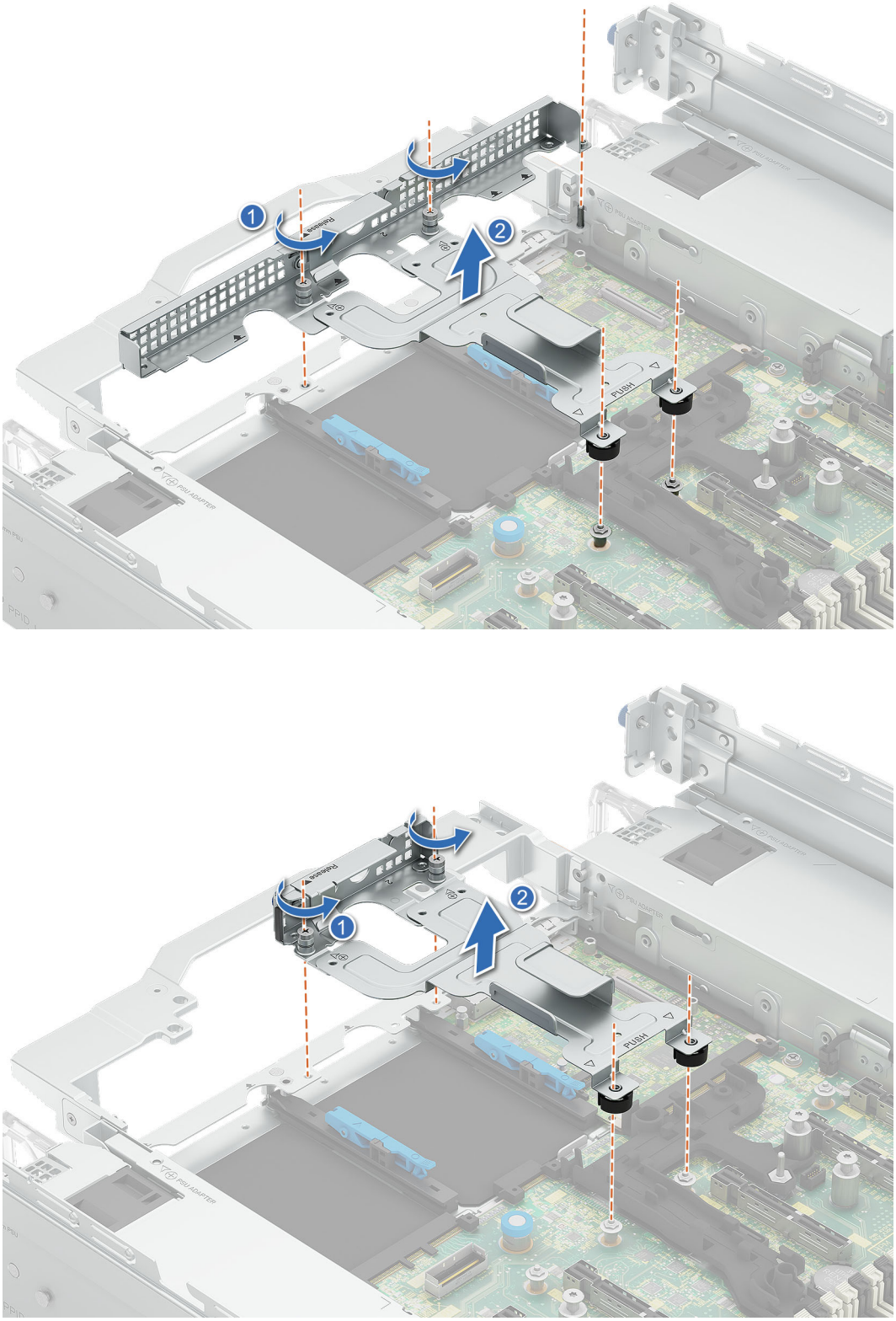


Figure 140. Removing the DLC brackets

7. Set the anti-tilt wires on the DLC module to the unlock position and lift the DLC module from the system.

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

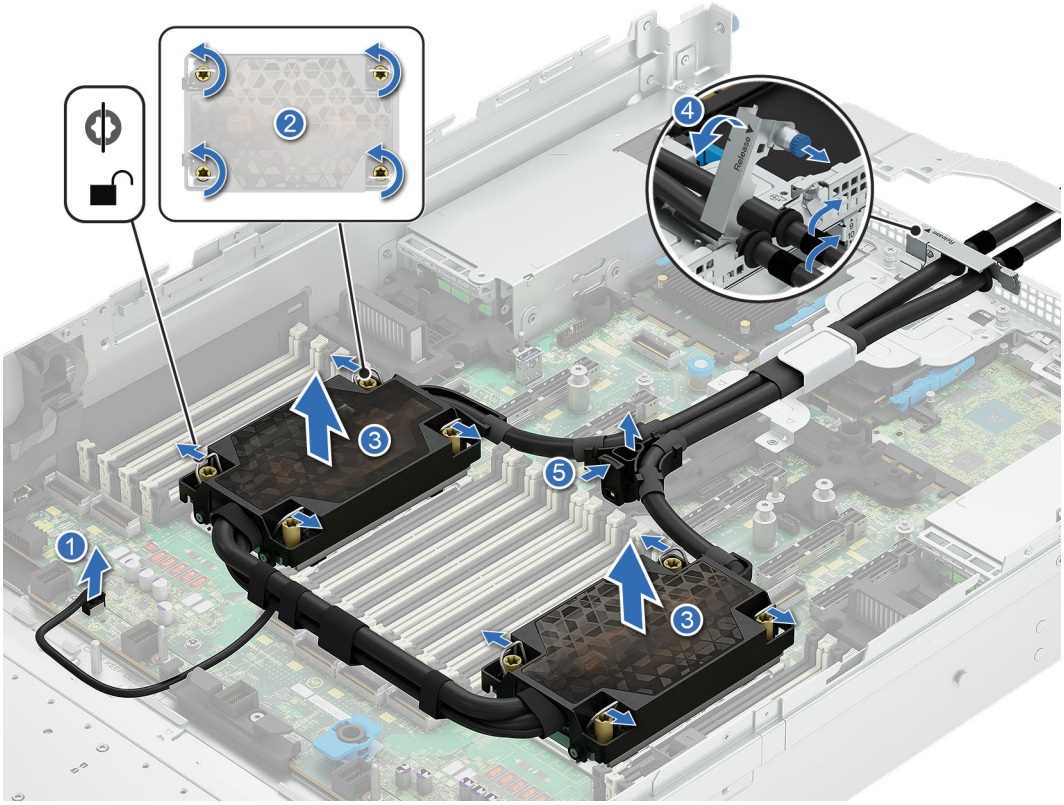


Figure 141. Removing the DLC module

Next steps

1. If you are removing a faulty liquid cooling module, replace the Direct Liquid Cooling module, else remove the processor.

Installing the Direct Liquid Cooling module

Prerequisites

Never uninstall the Direct Liquid Cooling (DLC) module from a processor unless you intend to replace the processor or system board. The DLC module 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 air shroud or remove the GPU air shroud.
4. Remove the expansion card riser.
5. If installed, remove the processor dust cover.

NOTE: Ensure anti-tilt wires on the DLC module are in the unlocked position.

Steps

1. Align the DLC module with the standoff screws on the system board.
2. Place the module on the processor slot and set all the anti-tilt wires to locked position (outward position).
3. Using the Torx T30 screwdriver, tighten the captive nuts (8 in-lbf) on the DLC module 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.

4. Install the DLC bracket on the chassis.
   a. Make sure the alignment and latches are securely attached to the pins on the HPM, and that the DLC blank pin and hole line up with the pin and hole on the chassis.
   b. Fasten the 2 thumb screws with the chassis.
5. Route the rear end of the DLC tubes through the DLC bracket.
   a. Pull the plunger and open the DLC top bracket.
   b. Install DLC tubes into the DLC base and tube grommets into the DLC bracket.
   c. Make sure the tubes and DLC bracket numbers are aligned.
   d. Close the DLC top bracket and make sure the plunger into the DLC BTM bracket.

   NOTE: Follow the number labels on the DLC tubes and ring holders (1,2).

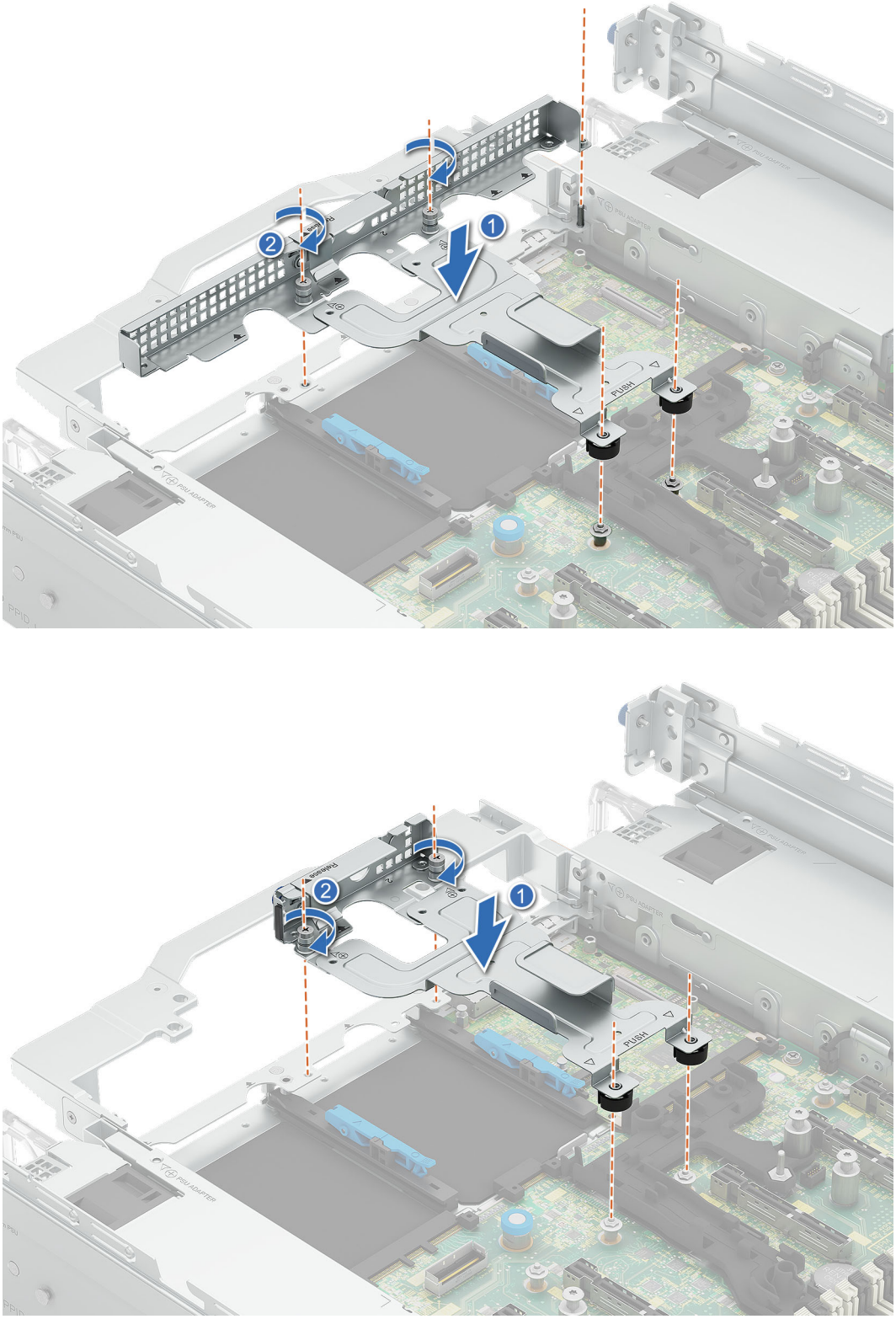


Figure 142. Installing the DLC bracket

6. Connect the DLC leak detection cable to the connector on HPM.
7. Close the DLC top bracket and make sure the plunger into the DLC bracket.

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

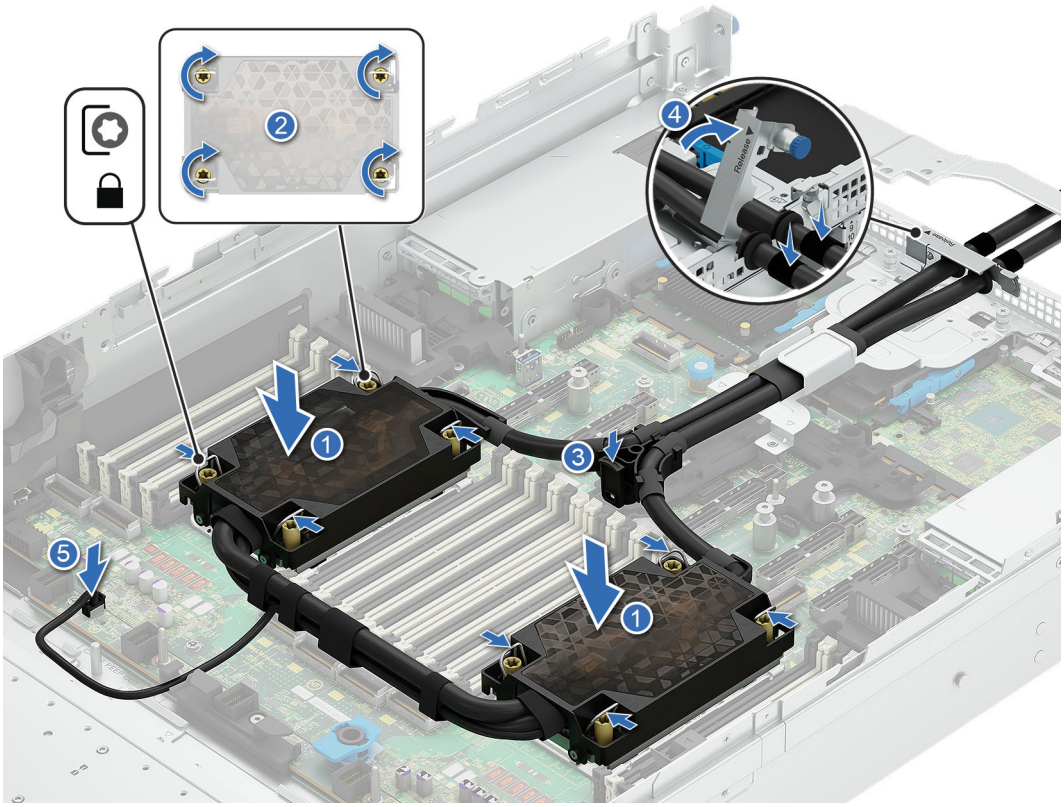


Figure 143. Installing the DLC module

Next steps

1. Install the expansion card riser.
2. Install the air shroud or install the GPU air shroud.
3. Follow the procedure listed in the After working inside your system.

Expansion cards and expansion card risers

NOTE: When an expansion card is not supported or missing, the iDRAC logs an event. This does not prevent your system from booting. However, if a F1/F2 pause occurs with an error message, see EEMI guide.

Expansion card installation guidelines

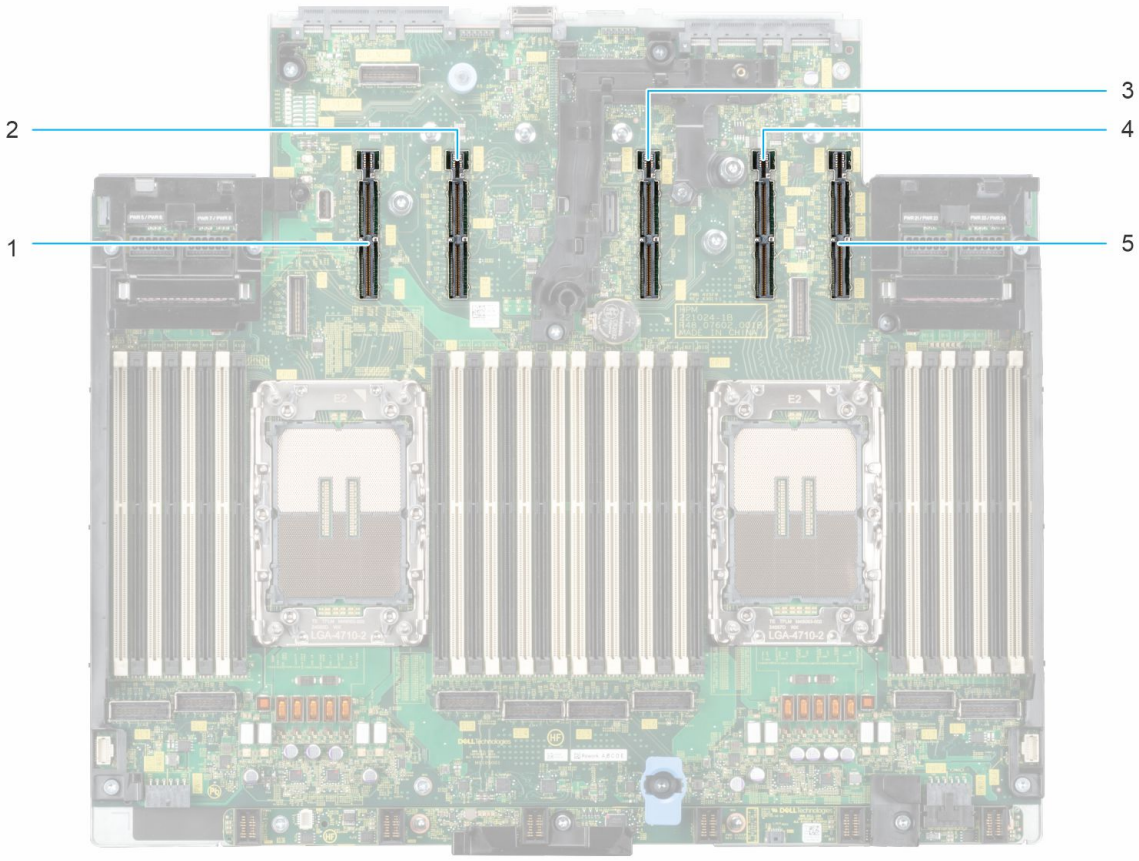


Figure 144. Expansion card riser slot connectors

1. Front riser RF2a or rear riser 5
2. Front riser RF1a or rear riser 4
3. Front riser RF4a or rear riser 3
4. Rear riser 1
5. Front riser RF3a or rear riser 2

NOTE: The system supports either front or rear risers, but not both at the same time.

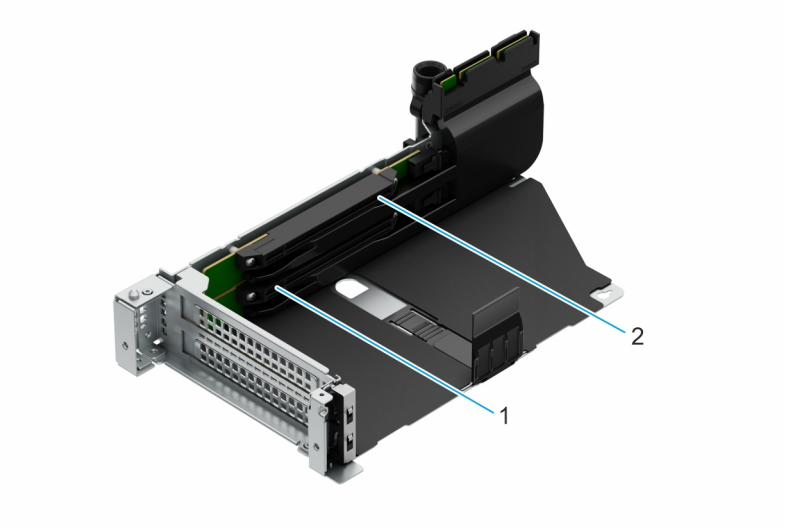


Figure 145. Riser 1a

1. Slot 1
2. Slot 2

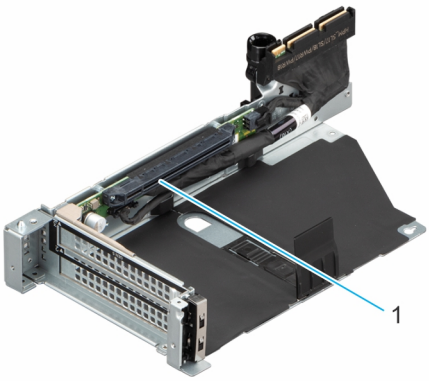


Figure 146. Riser 1b

1. Slot 2

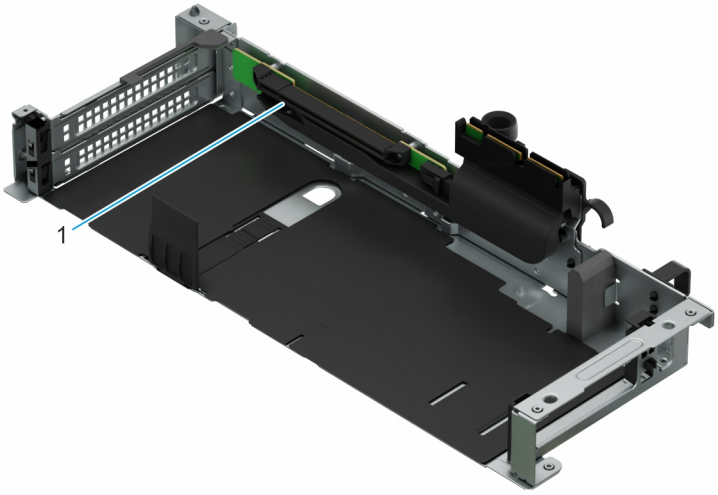


Figure 147. Riser 1b (FL)

1. Slot 2

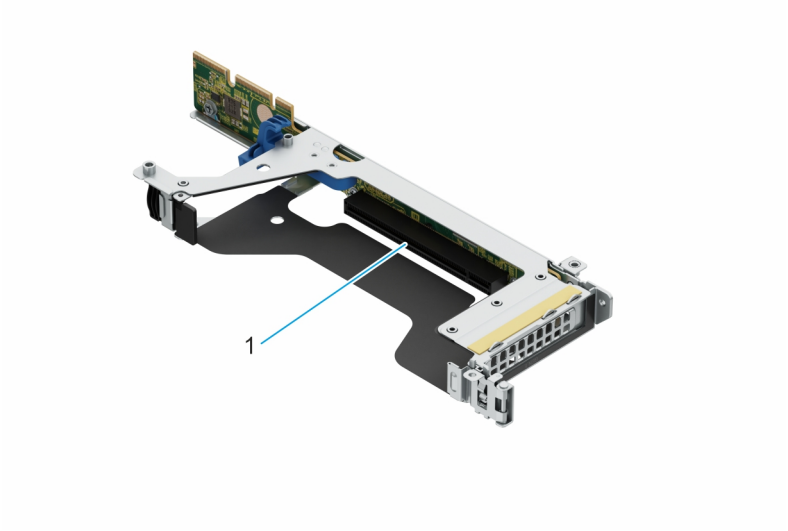


Figure 148. Riser 2a

1. Slot 3

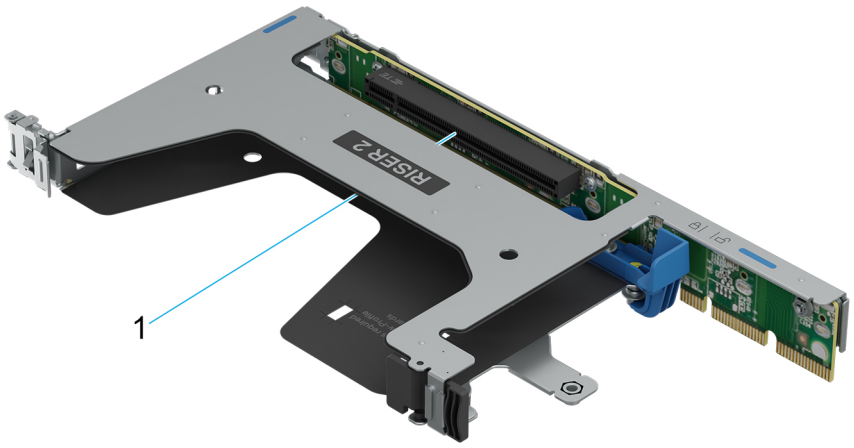


Figure 149. Riser 2b

1. Slot 3

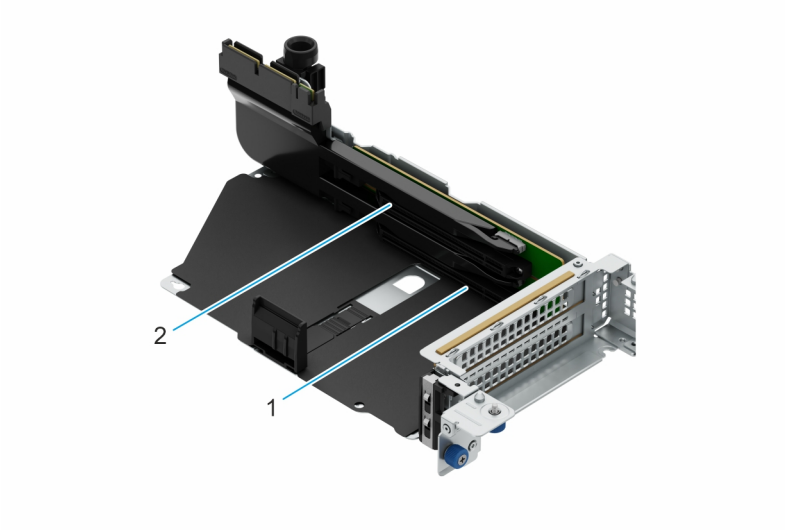


Figure 150. Riser 3a

1. Slot 4
2. Slot 5

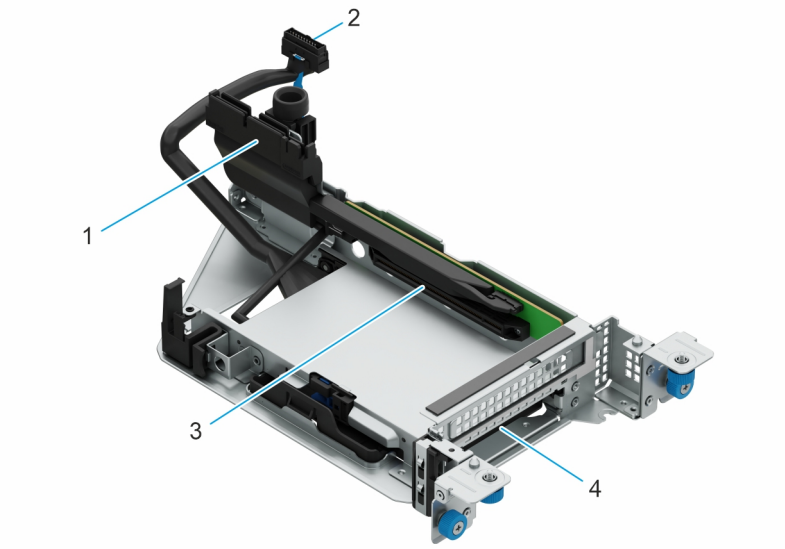


Figure 151. Riser 3c

1. Connector to HPM riser 3
2. HPM SL10 connector
3. Slot 5
4. Slot 4

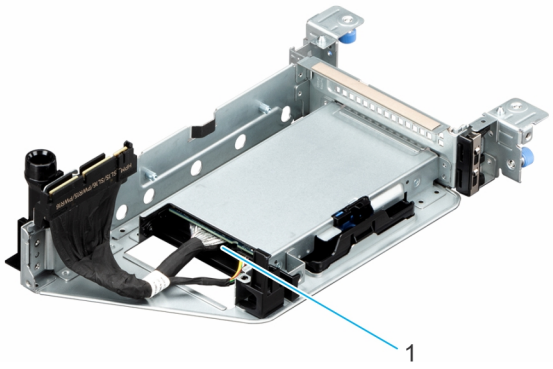


Figure 152. Riser 3e

1. Slot 4

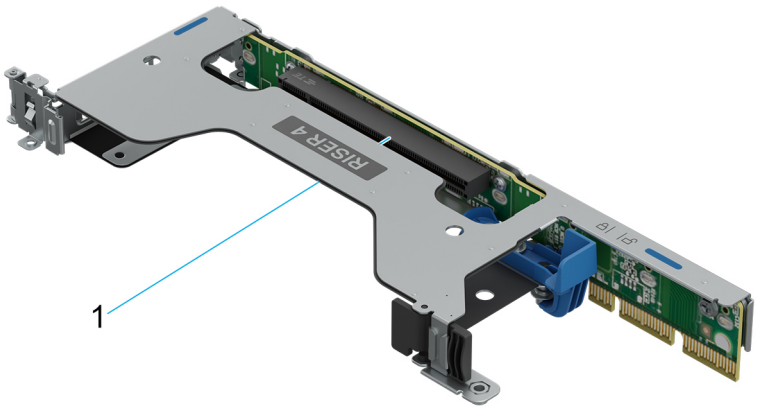


Figure 153. Riser 4a

1. Slot 9

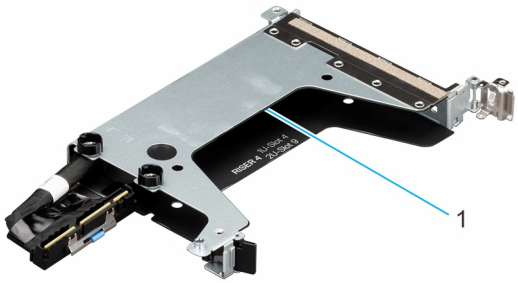


Figure 154. Riser 4b

1. Slot 9

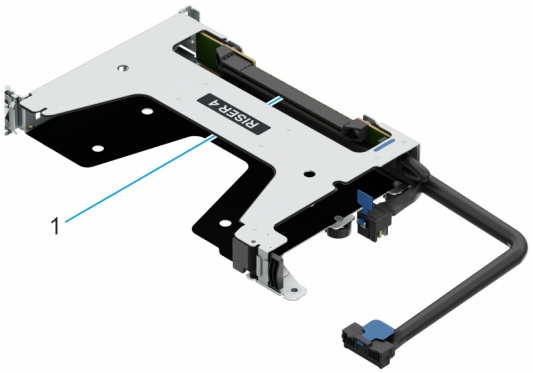


Figure 155. Riser 4c

1. Slot 9

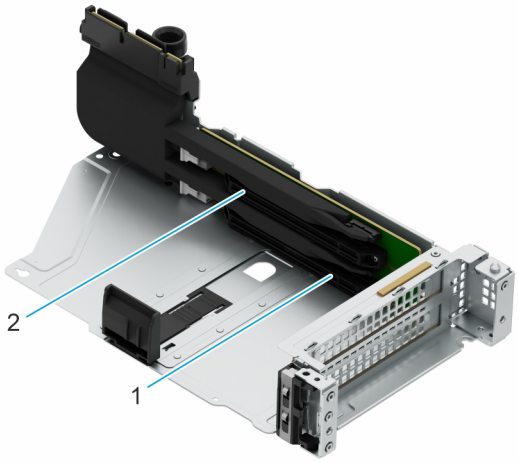


Figure 156. Riser 5a

1. Slot 7
2. Slot 8

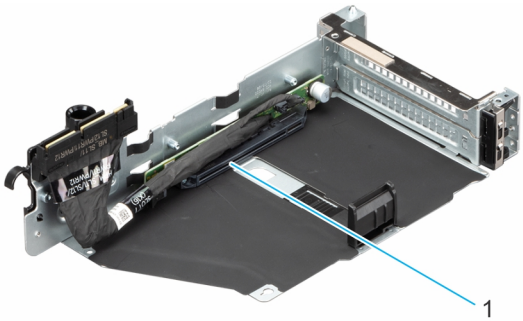


Figure 157. Riser 5b

1. Slot 7

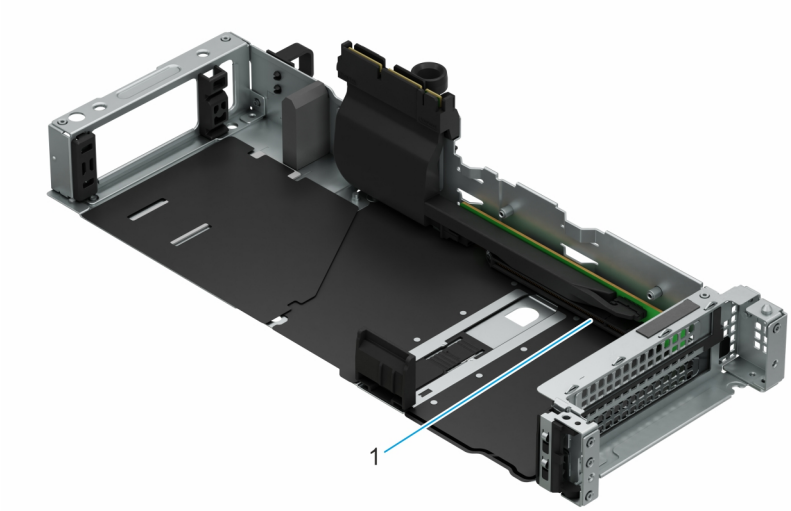


Figure 158. Riser 5b(FL)

1. Slot 7

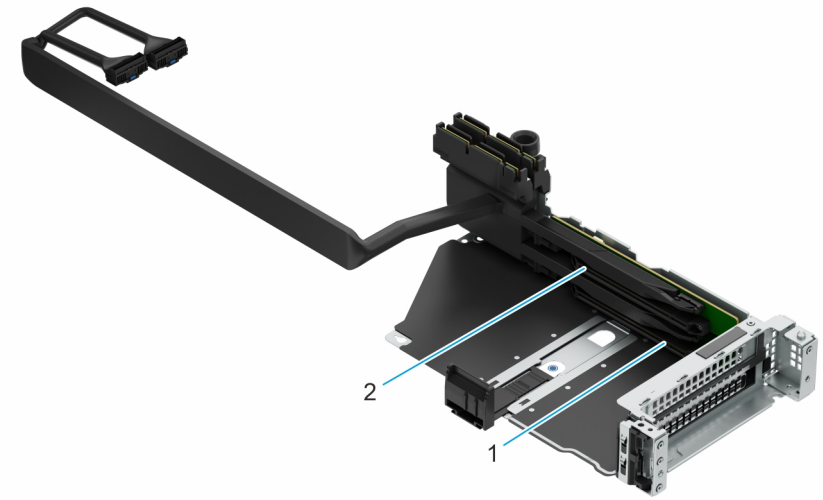


Figure 159. Riser 5c

1. Slot 7
2. Slot 8

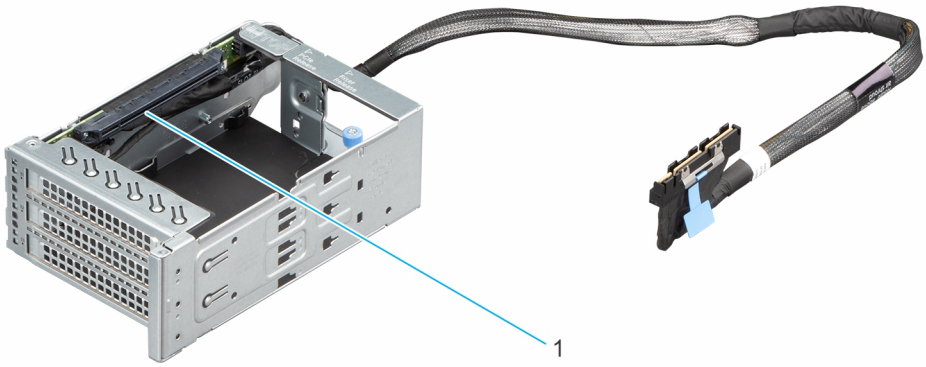


Figure 160. Riser RF1a

1. Slot 31

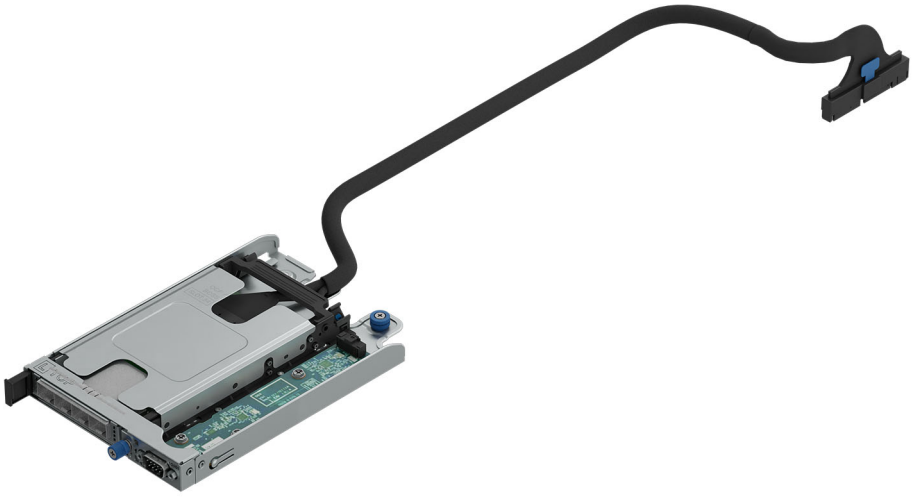


Figure 161. Riser RF2a

1. Slot 34

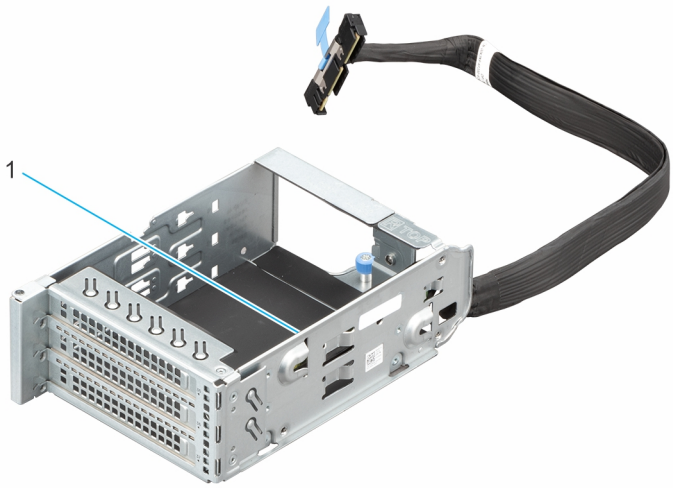


Figure 162. Riser RF3a

1. Slot 36

Figure 163. Riser RF4a

1. Slot 38

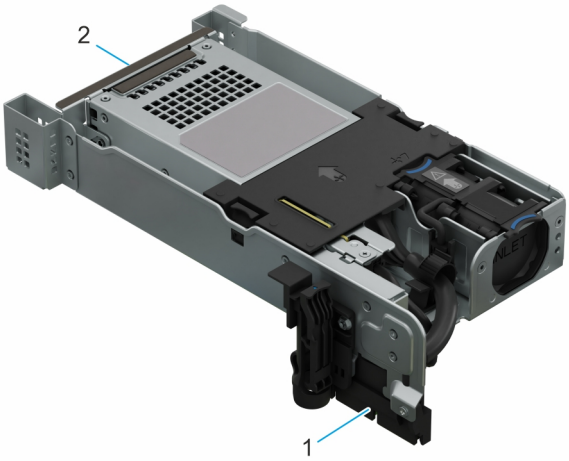


Figure 164. Riser R1 4xE3

1. Connector to HPM
2. 4 x E3 NVMe rear drive

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 100. Expansion card riser configurations

Riser Configurations (RC)	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
RC 0: 1x OCP	OCP	10	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)

Table 100. Expansion card riser configurations (continued)

Riser Configurations (RC)	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
RC 1 (front): 2 x16 FH (Gen5) + 1 x16 OCP (Gen5) + optional BOSS	RF1a	31	Full height	Processor 0	PCIe Gen5 x16 (x16 connector)
	BOSS	34	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	RF3a	36	Full height	Processor 1	PCIe Gen5 x16 (x16 connector)
	RF4a	38	OCP	Processor 1	PCIe Gen5 x16 (OCP 4C+ connector)
RC 2 (front): 2 x16 FH (Gen5) + 2 x16 OCP (Gen5) and rear optional BOSS	RF1a	31	Full height	Processor 0	PCIe Gen5 x16 (x16 connector)
	RF2a	34	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)
	RF3a	36	Full height	Processor 1	PCIe Gen5 x16 (x16 connector)
	RF4a	38	OCP	Processor 1	PCIe Gen5 x16 (OCP 4C+ connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
RC 6-1 (rear): 4 x16 FH (Gen5) + 2 x16 OCP (Gen5) + optional BOSS	R1b	2	Full height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2b	3	Full height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3e	4	OCP	Processor 1	PCIe Gen5 x16 (OCP 4C+ connector)
	R4b	9	Full height	Processor 0	PCIe Gen5 x16 (x16 connector)
	R5b	7	Full height	Processor 0	PCIe Gen5 x16 (x16 connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	OCP	10	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)
RC 6-2 : 2 x 16 FH (Gen5) + 2 x 16 OCP (Gen5) + 2 x 16 DWFL (Gen5)+ optional BOSS	R1b	2	Double Width	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2b	3	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3e	4	OCP	Processor 1	PCIe Gen5 x16 (OCP 4C+ connector)

Table 100. Expansion card riser configurations (continued)

Riser Configurations (RC)	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
	R4b	9	Full Height	Processor 0	PCIe Gen5 x16 (x16 connector)
	R5b	7	Double Width	Processor 0	PCIe Gen5 x16 (x16 connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	OCP	10	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)
RC 7 : 6 x 8FH(Gen5) + 2 x 16FH(Gen5) 1 x16 OCP(Gen5)+ optional BOSS	R1a	1	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		2	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
	R2b	3	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3a	4	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		5	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
	R4b	9	Full Height	Processor 0	PCIe Gen5 x16 (x16 connector)
	R5a	7	Full Height	Processor 0	PCIe Gen5 x8 (x16 connector)
		8	Full Height	Processor 0	PCIe Gen5 x8 (x16 connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	OCP	10	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)
RC 11-1: 3 x 16FH (Gen5) + 2 x 16 LP (Gen5)+2nd OCP x 8(Gen5)+ 1x8/ x 16 OCP (Gen5)	R1b	2	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2a	3	Low Profile	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3c	4	OCP	Processor 1	PCIe Gen5 x8 (OCP 4C+ connector)
		5	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	R5b	7	Full Height	Processor 0	PCIe Gen5 x16 (x16 connector)
	R4a	9	Low Profile	Processor 0	PCIe Gen5 x16 (x16 connector)

Table 100. Expansion card riser configurations (continued)

Riser Configurations (RC)	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
	OCP	10	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)
RC 11-2: 2x16 DWFL (Gen5)+ 2x16LP(Gen5)+1x16 FH(Gen5)+2nd OCPX8(Gen5)+1x8/ x16OCP(Gen5)	R1b	2	Double Width	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2a	3	Low Profile	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3c	4	OCP	Processor 1	PCIe Gen5 x8 (OCP 4C+ connector)
		5	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	R5b	7	Double Width	Processor 0	PCIe Gen5 x16 (x16 connector)
	R4a	9	Low Profile	Processor 0	PCIe Gen5 x16 (x16 connector)
	OCP	10	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)
RC 12: 6x16FH (Gen5) + 2nd OCP x8 (Gen5) 1 x8/x16 OCP(Gen5)	R1b	2	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2b	3	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3c	4	OCP	Processor 1	PCIe Gen5 x8 (OCP 4C+ connector)
		5	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	R5c	7	Full Height	Processor 0	PCIe Gen5 x16 (x16 connector)
		8	Full Height	Processor 0	PCIe Gen5 x16 (x16 connector)
	R4b	9	Full Height	Processor 0	PCIe Gen5 x16 (x16 connector)
	OCP	10	OCP	Processor 0	PCIe Gen5 x16 (OCP 4C+ connector)
RC 14: 4x8FH+2x16LP+1x8OCP(Gen5)	R2a	3	Low Profile	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3a	4	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		5	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)

Table 100. Expansion card riser configurations (continued)

Riser Configurations (RC)	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	R5a	7	Full Height	Processor 0	PCIe Gen5 x8 (x16 connector)
		8	Full Height	Processor 0	PCIe Gen5 x8 (x16 connector)
	R4a	9	Low Profile	Processor 0	PCIe Gen5 x16 (x16 connector)
	OCP	10	OCP	Processor 0	PCIe Gen5 x8 (OCP 4C+ connector)
RC 15: 1x16FH(G5)+1x8FH(G5)+2nd OCPx8(G5)+1x8OCP(G5)	R3c	4	OCP	Processor 1	PCIe Gen5 x8 (OCP 4C+ connector)
		5	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	BOSS	6	BOSS	Processor 0	PCIe Gen3 x4 (1C connector)
	R4c	9	Full Height	Processor 0	PCIe Gen5 x8 (x16 connector)
	OCP	10	OCP	Processor 0	PCIe Gen5 x8 (OCP 4C+ connector)

NOTE: The system supports either Front I/O configuration (system with front risers) or Rear I/O configuration (system with rear risers).

Table 101. RC 0: No Risers

Card type	Slot priority	Maximum number of cards
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
Broadcom (OCP: 200Gb)	10	1
Broadcom (OCP: 100Gb)	10	1
Mellanox (OCP: 100Gb)	10	1
Broadcom (OCP: 25Gb)	10	1
Mellanox (OCP: 25Gb)	10	1
Intel (OCP: 10Gb)	10	1
Broadcom (OCP: 10Gb)	10	1
Broadcom (OCP: 1Gb)	10	1
Intel (OCP: 1Gb)	10	1

Table 102. RC 1: RF1a+RF3a+RF4a

Card type	Slot priority	Maximum number of cards
Nvidia (DPU: 400Gb)	31,36	2
Nvidia (DPU: 200Gb)	31,36	2

Table 102. RC 1: RF1a+RF3a+RF4a (continued)

Card type	Slot priority	Maximum number of cards
Intel (DPU: 100Gb)	31,36	2
Nvidia (L4 GPU)	31,36	2
FOXCONN (BOSS)	34	1
Wistron (M.2 interposer)	34	1
Broadcom (OCP: 200Gb)	38	1
Broadcom (OCP: 100Gb)	38	1
Mellanox (OCP: 100Gb)	38	1
Broadcom (OCP: 25Gb)	38	1
Mellanox (OCP: 25Gb)	38	1
Intel (OCP: 10Gb)	38	1
Broadcom (OCP: 10Gb)	38	1
Broadcom (OCP: 1Gb)	38	1
Intel (OCP: 1Gb)	38	1
Broadcom (NIC: 200Gb)	31,36	2
Mellanox (NIC: 100Gb)	31,36	2
Broadcom (NIC: 100Gb)	31,36	2
Nvidia (NIC: 25Gb)	31,36	2
Broadcom (NIC: 25Gb)	31,36	2
Emulex (HBA: FC64)	31,36	2
Marvell (HBA: FC64)	31,36	2
Emulex (HBA: FC32)	31,36	2
Marvell (HBA: FC32)	31,36	2
Nvidia (NIC: NDR400)	31,36	2
FOXCONN (External Adapter PERC)	31,36	1

Table 103. RC 2: RF1a+RF2a+RF3a+RF4a

Card type	Slot priority	Maximum number of cards
Nvidia (DPU: 400Gb)	31,36	2
Nvidia (DPU: 200Gb)	31,36	2
Intel (DPU: 100Gb)	31,36	2
Nvidia (L4 GPU)	31,36	2
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
Broadcom (OCP: 200Gb)	38, 34	2
Broadcom (OCP: 100Gb)	38, 34	2
Mellanox (OCP: 100Gb)	38, 34	2
Broadcom (OCP: 25Gb)	38, 34	2
Mellanox (OCP: 25Gb)	38, 34	2

Table 103. RC 2: RF1a+RF2a+RF3a+RF4a (continued)

Card type	Slot priority	Maximum number of cards
Intel (OCP: 10Gb)	38, 34	2
Broadcom (OCP: 10Gb)	38, 34	2
Broadcom (OCP: 1Gb)	38, 34	2
Intel (OCP: 1Gb)	38, 34	2
Broadcom (NIC: 200Gb)	31,36	2
Mellanox (NIC: 100Gb)	31,36	2
Broadcom (NIC: 100Gb)	31,36	2
Nvidia (NIC: 25Gb)	31,36	2
Broadcom (NIC: 25Gb)	31,36	2
Emulex (HBA: FC64)	31,36	2
Marvell (HBA: FC64)	31,36	2
Emulex (HBA: FC32)	31,36	2
Marvell (HBA: FC32)	31,36	2
Nvidia (NIC: NDR400)	31,36	2
FOXCONN (External Adapter PERC)	31,36	0

Table 104. RC 6-1: R1b+R2b+R3e+R4b+R5b (HL)

Card type	Slot priority	Maximum number of cards
Nvidia (L4 GPU)NOTE 1	9,7	2
Nvidia (L4 GPU) NOTE 2	9,7,2	3
Nvidia (L4 GPU) NOTE 3	9,3,7,2	4
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
FOXCONN (Front PERC12)	INT	1
Broadcom (OCP: 200Gb)	10,4	2
Broadcom (OCP: 100Gb)	10,4	2
Mellanox (OCP: 100Gb)	10,4	2
Broadcom (OCP: 25Gb)	10,4	2
Mellanox (OCP: 25Gb)	10,4	2
Intel (OCP: 10Gb)	10,4	2
Broadcom (OCP: 10Gb)	10,4	2
Broadcom (OCP: 1Gb)	10,4	2
Intel (OCP: 1Gb)	10,4	2
Broadcom (NIC: 200Gb)	9,3,7,2	2
Mellanox (NIC: 100Gb)	9,3,7,2	4
Broadcom (NIC: 100Gb)	9,3,7,2	4
Nvidia (NIC: 25Gb)	9,3,7,2	4
Broadcom (NIC: 25Gb)	9,3,7,2	4

Table 104. RC 6-1: R1b+R2b+R3e+R4b+R5b (HL) (continued)

Card type	Slot priority	Maximum number of cards
Emulex (HBA: FC64)	9,3,7,2	4
Marvell (HBA: FC64)	9,3,7,2	4
Emulex (HBA: FC32)	9,3,7,2	4
Marvell (HBA: FC32)	9,3,7,2	4
Nvidia (NIC: NDR400)	9,3,7,2	4
FOXCONN (External Adapter PERC)	9,3,7,2	1

Table 105. RC 6-2: R1b+R2b+R3e+R4b+R5b (FL)

Card type	Slot priority	Maximum number of cards
Nvidia (DPU: 400Gb)	7,2	2
Nvidia (DPU: 200Gb)	7,2	2
Intel (DPU: 100Gb)	7,2	2
Nvidia (H200NVL GPU)	7,2	2
Nvidia (RTXP6000 GPU)	7,2	2
Nvidia (H100 GPU)	7,2	2
Nvidia (L40S GPU)	7,2	2
Nvidia (L4 GPU)NOTE 1	9,7	2
Nvidia (L4 GPU) NOTE 2	9,7,2	3
Nvidia (L4 GPU) NOTE 3	9,3,7,2	4
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
FOXCONN (Front PERC12)	INT	1
Broadcom (OCP: 200Gb)	10,4	2
Broadcom (OCP: 100Gb)	10,4	2
Mellanox (OCP: 100Gb)	10,4	2
Broadcom (OCP: 25Gb)	10,4	2
Mellanox (OCP: 25Gb)	10,4	2
Intel (OCP: 10Gb)	10,4	2
Broadcom (OCP: 10Gb)	10,4	2
Broadcom (OCP: 1Gb)	10,4	2
Intel (OCP: 1Gb)	10,4	2
Broadcom (NIC: 200Gb)	9,3,7,2	2
Mellanox (NIC: 100Gb)	9,3,7,2	4
Broadcom (NIC: 100Gb)	9,3,7,2	4
Nvidia (NIC: 25Gb)	9,3,7,2	4
Broadcom (NIC: 25Gb)	9,3,7,2	4
Emulex (HBA: FC64)	9,3,7,2	4
Marvell (HBA: FC64)	9,3,7,2	4

Table 105. RC 6-2: R1b+R2b+R3e+R4b+R5b (FL) (continued)

Card type	Slot priority	Maximum number of cards
Emulex (HBA: FC32)	9,3,7,2	4
Marvell (HBA: FC32)	9,3,7,2	4
Nvidia (NIC: NDR400)	9,3,7,2	4
FOXCONN (External Adapter PERC)	9,3,7,2	1

Table 106. RC7. R1a+R2b+R3a+R4b+R5a

Card type	Slot priority	Maximum number of cards
Nvidia (L4 GPU) NOTE 1	9	1
Nvidia (L4 GPU) NOTE 3	9,3	2
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
FOXCONN (Front PERC12 H965i)	INT	2
FOXCONN (Front PERC12 H365i)	INT	1
Broadcom (OCP: 200Gb)	10	1
Broadcom (OCP: 100Gb)	10	1
Mellanox (OCP: 100Gb)	10	1
Broadcom (OCP: 25Gb)	10	1
Mellanox (OCP: 25Gb)	10	1
Intel (OCP: 10Gb)	10	1
Broadcom (OCP: 10Gb)	10	1
Broadcom (OCP: 1Gb)	10	1
Intel (OCP: 1Gb)	10	1
Broadcom (NIC: 200Gb)	9, 3	2
Mellanox (NIC: 100Gb)	9,3	2
Broadcom (NIC: 100Gb)	9,3	2
Nvidia (NIC: 25Gb)	9,5,7,4,8,3,1,2	8
Broadcom (NIC: 25Gb)	9,5,7,4,8,3,1,2	8
Emulex (HBA: FC64)	9,5,7,4,8,3,1,2	8
Marvell (HBA: FC64)	9,5,7,4,8,3,1,2	8
Emulex (HBA: FC32)	9,5,7,4,8,3,1,2	8
Marvell (HBA: FC32)	9,5,7,4,8,3,1,2	8
Nvidia (NIC: NDR400)	9,3	2
SMART Modular Technologies (CXL)*	7,1,8,2	4
FOXCONN (External Adapter PERC)	9,3	1

NOTE: Only 96 GB DIMMs are supported for the CXL AIC cards. The system has to be populated with 32 x 96 GB DIMMS.

NOTE: *Feature not available at product launch in June, 2025. Please refer to the product configurator page on Dell.com to confirm feature availability.

Table 107. RC11-1. R1b+R2a+R3c+R4a+R5b(HL)

Card type	Slot priority	Maximum number of cards
Nvidia (L4 GPU) NOTE 3	9	1
Nvidia (L4 GPU) NOTE 3	9,3	2
Nvidia (L4 GPU)NOTE 3	7,5,2	3
Nvidia (L4 GPU) NOTE 1	7,5	2
FOXCONN(BOSS)	6	1
Wistron(BOSS)	6	1
FOXCONN (Front PERC12 H965i)	INT	2
FOXCONN (Front PERC12 H365i)	INT	1
Broadcom(OCP: 200Gb)	10	1
Broadcom(OCP: 100Gb)	10	1
Mellanox(OCP: 100Gb)	10	1
Broadcom(OCP: 25Gb)	10,4	2
Mellanox(OCP: 25Gb)	10,4	2
Intel (OCP: 10Gb)	10,4	2
Broadcom(OCP: 10Gb)	10,4	2
Broadcom(OCP: 1Gb)	10,4	2
Intel(OCP: 1Gb)	10,4	2
Broadcom(NIC: 200Gb)	9,3	2
Broadcom(NIC: 200Gb)	7,5,2	3
Mellanox(NIC: 100Gb)	7,5,2	3
Broadcom(NIC: 100Gb)	7,5,2	3
Broadcom(NIC: 100Gb)	9,3	2
Mellanox(NIC: 100Gb)	9,3	2
Nvidia (NIC: 25Gb)	7,5,2	3
Nvidia (NIC: 25Gb)	9,3	2
Broadcom (NIC: 25Gb)	7,5,2	3
Broadcom (NIC: 25Gb)	9,3	2
Emulex (HBA: FC64)	7,5,2	3
Emulex (HBA: FC64)	9,3	2
Marvell (HBA: FC64)	7,5,2	3
Marvell (HBA: FC64)	9,3	2
Emulex(HBA: FC32)	7,5,2	3
Emulex(HBA: FC32)	9,3	2
Marvell (HBA: FC32)	7,5,2	3
Marvell (HBA: FC32)	9,3	2
Nvidia(NIC: NDR400)	7,5,2	3
Nvidia(NIC: NDR400)	9,3	2

Table 107. RC11-1. R1b+R2a+R3c+R4a+R5b(HL) (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (External Adapter PERC)	7,5,2	1

Table 108. RC11-2.R1b+R2a+R3c+R4a+R5b (FL)

Card type	Slot priority	Maximum number of cards
Nvidia (DPU: 400Gb)	7,2	2
Nvidia (DPU: 200Gb)	7,2	2
Intel (DPU: 100Gb)	7,2	2
Nvidia (H200NVL GPU)	7,2	2
Nvidia (RTXP6000 GPU)	7,2	2
Nvidia (H100 GPU)	7,2	2
Nvidia (L40S GPU)	7,2	2
Nvidia (L4 GPU) NOTE 3	9	1
Nvidia (L4 GPU) NOTE 3	9,3	2
Nvidia (L4 GPU) NOTE 3	7,5,2	3
Nvidia (L4 GPU) NOTE 1	7,5	2
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
FOXCONN (Front PERC12 H965i)	INT	2
FOXCONN (Front PERC12 H365i)	INT	1
Broadcom (OCP: 200Gb)	10	1
Broadcom (OCP: 100Gb)	10	1
Mellanox (OCP: 100Gb)	10	1
Broadcom (OCP: 25Gb)	10,4	2
Mellanox (OCP: 25Gb)	10,4	2
Intel (OCP: 10Gb)	10,4	2
Broadcom (OCP: 10Gb)	10,4	2
Broadcom (OCP: 1Gb)	10,4	2
Intel (OCP: 1Gb)	10,4	2
Broadcom (NIC: 200Gb)	9,3	2
Broadcom (NIC: 200Gb)	7,5,2	3
Mellanox (NIC: 100Gb)	7,5,2	3
Broadcom (NIC: 100Gb)	7,5,2	3
Broadcom (NIC: 100Gb)	9,3	2
Mellanox (NIC: 100Gb)	9,3	2
Nvidia (NIC: 25Gb)	7,5,2	3
Nvidia (NIC: 25Gb)	9,3	2
Broadcom (NIC: 25Gb)	7,5,2	3
Broadcom (NIC: 25Gb)	9,3	2

Table 108. RC11-2.R1b+R2a+R3c+R4a+R5b (FL) (continued)

Card type	Slot priority	Maximum number of cards
Emulex (HBA: FC64)	7,5,2	3
Emulex (HBA: FC64)	9,3	2
Marvell (HBA: FC64)	7,5,2	3
Marvell (HBA: FC64)	9,3	2
Emulex (HBA: FC32)	7,5,2	3
Emulex (HBA: FC32)	9,3	2
Marvell (HBA: FC32)	7,5,2	3
Marvell (HBA: FC32)	9,3	2
Nvidia (NIC: NDR400)	5	1
Nvidia (NIC: NDR400)	3	1
FOXCONN (External Adapter PERC)	7,5,2	1

NOTE:

1. For 24 x 2.5 inch SAS/SATA drives only.
2. For 32 x EDSFF E3.S NVMe drives only.
3. For all other storage configurations.

Table 109. RC12. R1b+R2b+R3c+R4b+R5c

Card type	Slot priority	Maximum number of cards
Nvidia (L4 GPU)	9, 5, 7, 3, 8, 2	6
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
FOXCONN (Front PERC13)	INT	2
Broadcom (OCP: 200Gb)	10	1
Broadcom (OCP: 100Gb)	10	1
Mellanox (OCP: 100Gb)	10	1
Broadcom (OCP: 25Gb)	10,4	2
Mellanox (OCP: 25Gb)	10,4	2
Intel (OCP: 10Gb)	10,4	2
Broadcom (OCP: 10Gb)	10,4	2
Broadcom (OCP: 1Gb)	10,4	2
Intel (OCP: 1Gb)	10,4	2
Broadcom (NIC: 200Gb)	9, 5, 7, 3, 8, 2	6
Mellanox (NIC: 100Gb)	9, 5, 7, 3, 8, 2	6
Broadcom (NIC: 100Gb)	9, 5, 7, 3, 8, 2	6
Nvidia (NIC: 25Gb)	9,5,7,3,8,2	6
Broadcom (NIC: 25Gb)	9,5,7,3,8,2	6
Emulex (HBA: FC64)	9, 5, 7, 3, 8, 2	6
Marvell (HBA: FC64)	9, 5, 7, 3, 8, 2	6

Table 109. RC12. R1b+R2b+R3c+R4b+R5c (continued)

Card type	Slot priority	Maximum number of cards
Emulex (HBA: FC32)	9, 5, 7, 3, 8, 2	6
Marvell (HBA: FC32)	9, 5, 7, 3, 8, 2	6
Nvidia (NIC: NDR400)	9, 5, 7, 3, 8, 2	6
FOXCONN (External Adapter PERC)	9, 5, 7, 3, 8, 2	1

Table 110. RC14. R2a+R3a+R4a+R5a

Card type	Slot priority	Maximum number of cards
Nvidia (L4 GPU)	9,3	2
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1
Broadcom (OCP: 25Gb)	10	1
Mellanox (OCP: 25Gb)	10	1
Intel (OCP: 10Gb)	10	1
Broadcom (OCP: 10Gb)	10	1
Broadcom (OCP: 1Gb)	10	1
Intel (OCP: 1Gb)	10	1
Broadcom (NIC: 200Gb)	9,3	2
Broadcom (NIC: 100Gb)	9,3	2
Mellanox (NIC: 100Gb)	9,3	2
Nvidia (NIC: 25Gb)	7,4,8,5	4
Nvidia (NIC: 25Gb)	9,3	2
Broadcom (NIC: 25Gb)	7,4,8,5	4
Broadcom (NIC: 25Gb)	9,3	2
Emulex (HBA: FC64)	7, 4, 8, 5	4
Emulex (HBA: FC64)	9,3	2
Marvell (HBA: FC64)	7, 4, 8, 5	4
Marvell (HBA: FC64)	9,3	2
Emulex (HBA: FC32)	7, 4, 8, 5	4
Emulex (HBA: FC32)	9,3	2
Marvell (HBA: FC32)	7, 4, 8, 5	4
Marvell (HBA: FC32)	9,3	2
Nvidia (NIC: NDR400)	9,3	2
FOXCONN (External Adapter PERC)	9,3	1

Table 111. RC15. R3c+R4c

Card type	Slot priority	Maximum number of cards
Nvidia (L4 GPU)	5	1
FOXCONN (BOSS)	6	1
Wistron (M.2 interposer)	6	1

Table 111. RC15. R3c+R4c (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (OCP: 25Gb)	10,4	2
Mellanox (OCP: 25Gb)	10,4	2
Intel (OCP: 10Gb)	10,4	2
Broadcom (OCP: 10Gb)	10,4	2
Broadcom (OCP: 1Gb)	10,4	2
Intel (OCP: 1Gb)	10,4	2
Broadcom (NIC: 200Gb)	5	1
Mellanox (NIC: 100Gb)	5	1
Broadcom (NIC: 100Gb)	5	1
Nvidia (NIC: 25Gb)	9,5	2
Broadcom (NIC: 25Gb)	9,5	2
Emulex (HBA: FC64)	9,5	2
Marvell (HBA: FC64)	9,5	2
Emulex (HBA: FC32)	9,5	2
Marvell (HBA: FC32)	9,5	2
Nvidia (NIC: NDR400)	5	1
FOXCONN (External Adapter PERC)	5	1

Removing the front expansion card risers

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. Disconnect the cables, observe the cable routing.

   NOTE: See cable routing section for more information.

7. Disconnect the cables from the system board.

Steps

1. For front riser 1:
   a. Loosen the captive screws on the riser.
   b. Press and lift the cable holder on the cooling fan cage assembly.
   c. Disconnect the riser cable from the system board.
   d. Slide the riser 1 out of the system.

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

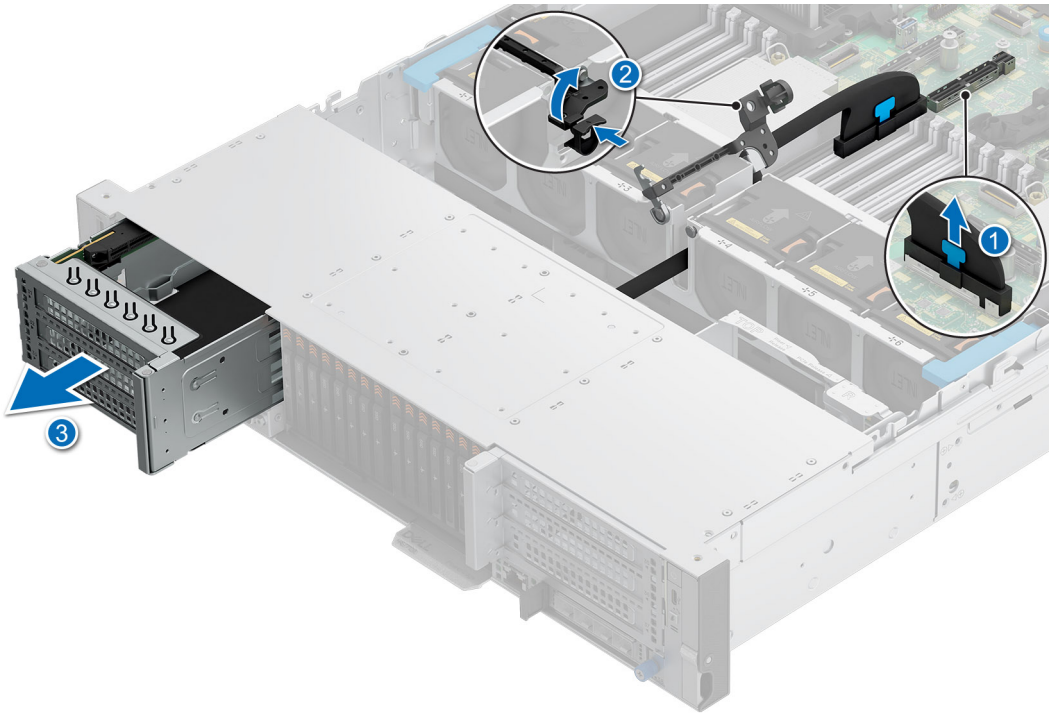


Figure 165. Removing the front expansion card riser 1

2. For front riser 3:
   a. Loosen the captive screws on the riser.
   b. Disconnect the cable from the system board.
   c. Slide the riser 3 out of the system.

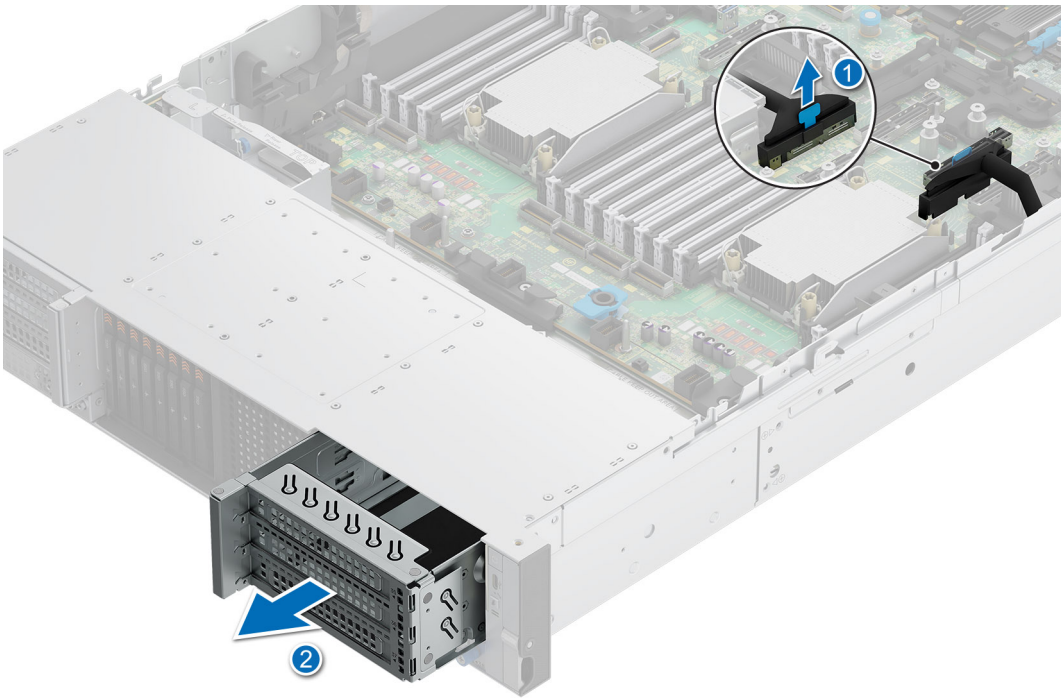


Figure 166. Removing the front expansion card riser 3

3. For front riser 2:
   a. Loosen the captive screws on the riser.
   b. Disconnect the cable from the system board.

c. Slide the riser 2 out of the system.

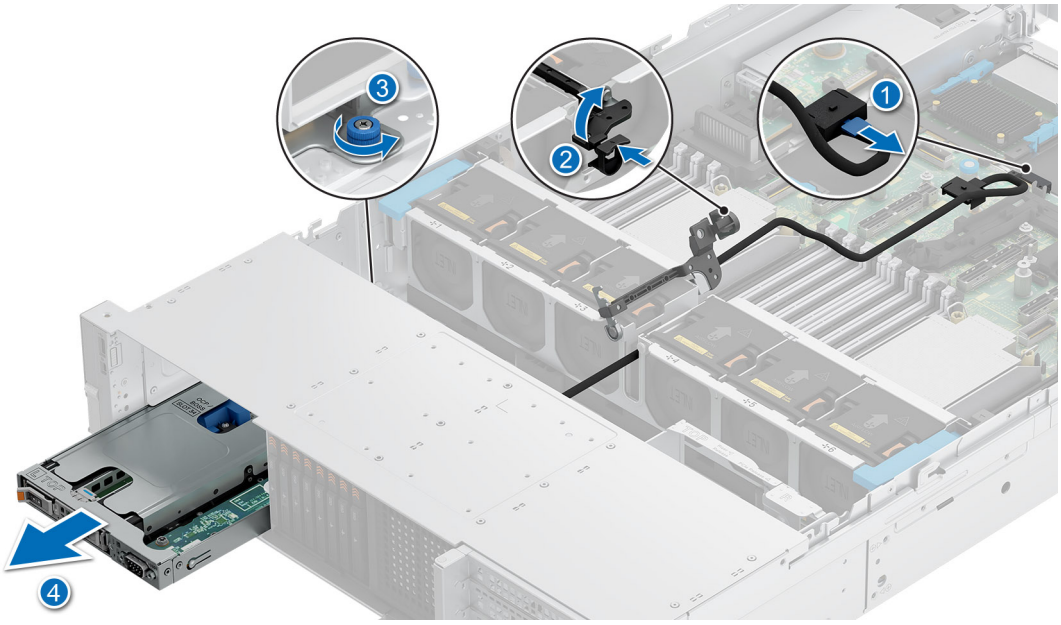


Figure 167. Removing the front expansion card riser RF2a (BOSS optional)

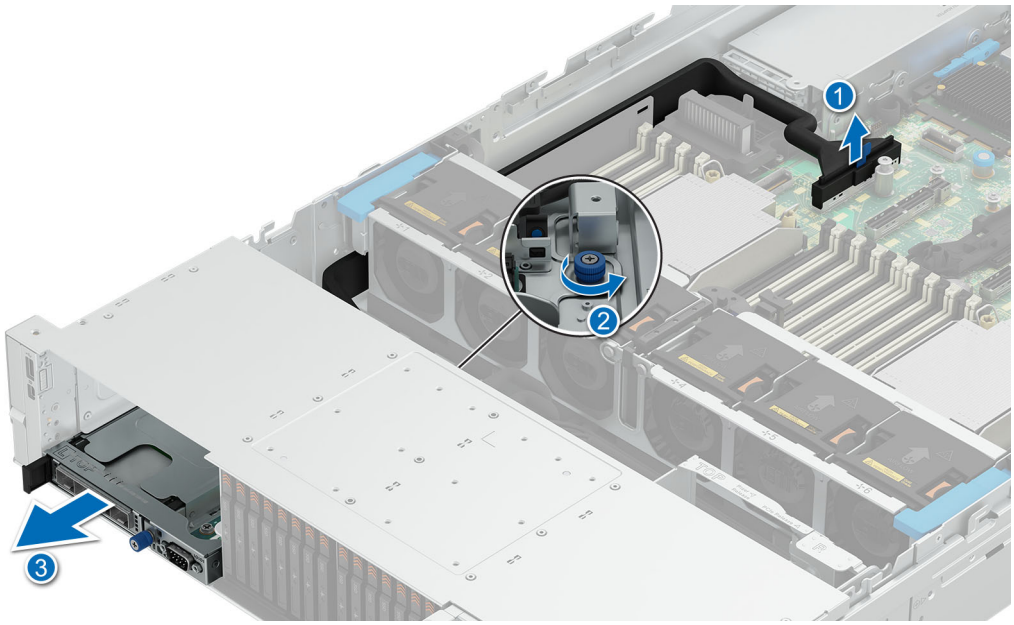


Figure 168. Removing the front expansion card riser RF2a (OCP)

4. For front riser 4:
   a. Loosen the captive screws on the riser.
   b. Disconnect the cable from the system board.
   c. Slide the riser 4 out of the system.

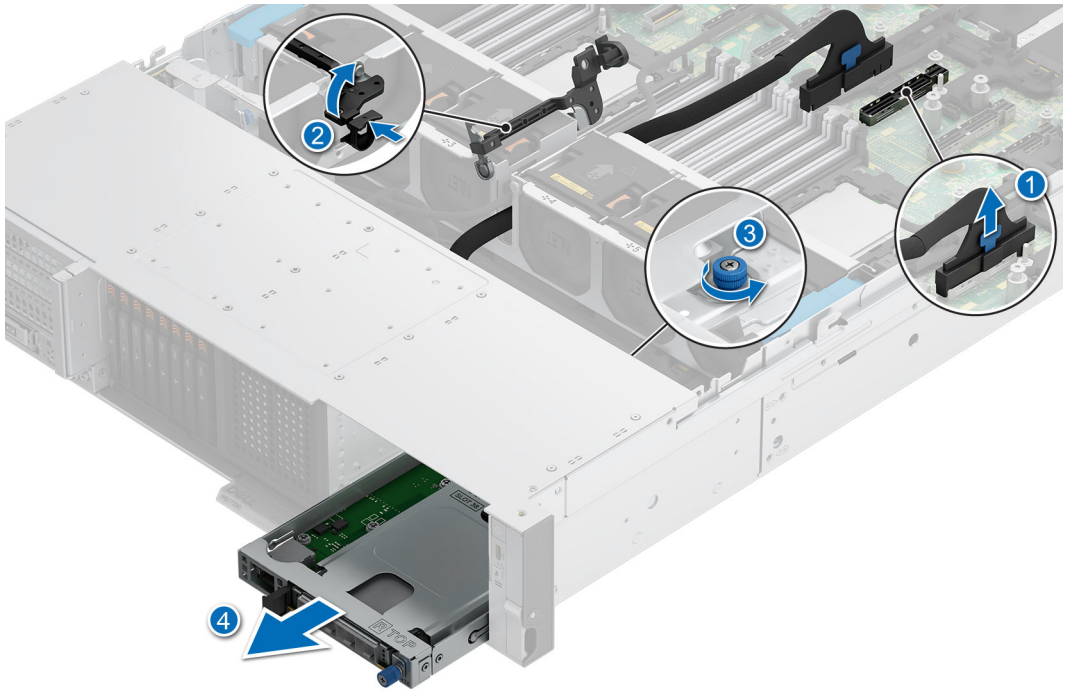


Figure 169. Removing the front expansion card riser 4

Next steps

1. Replace the front expansion card riser.

Installing the front expansion card risers

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. If removed, install the expansion cards into the expansion card risers.
7. Route and connect the cables, taking care not to damage them.

NOTE: See cable routing section for more information.

NOTE: Install front riser 2 and riser 4 before installing riser 1 and riser 3.

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.

Steps

1. For front riser 2:
   a. Align and slide the riser 2 into the system bay.
   b. Tighten the captive screw.
   c. Route and connect the cable to the system board.

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

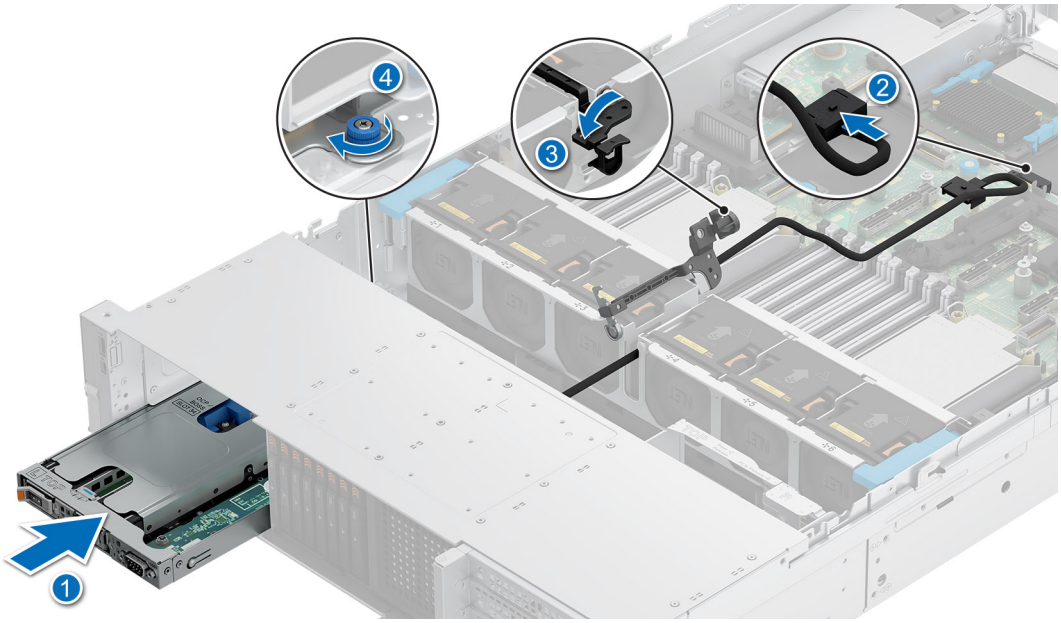


Figure 170. Installing the front expansion card riser RF2a (BOSS optional)

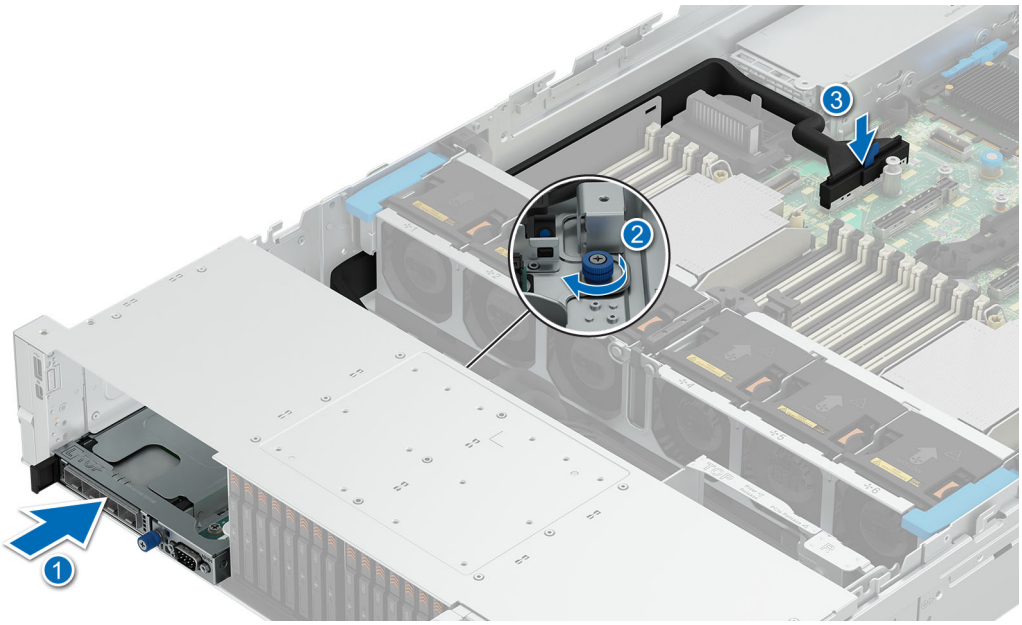


Figure 171. Installing the front expansion card riser RF2a (OCP)

2. For front riser 4:
   a. Align and slide the riser 4 into the system bay.
   b. Tighten the captive screw.
   c. Route and connect the cable to the system board.

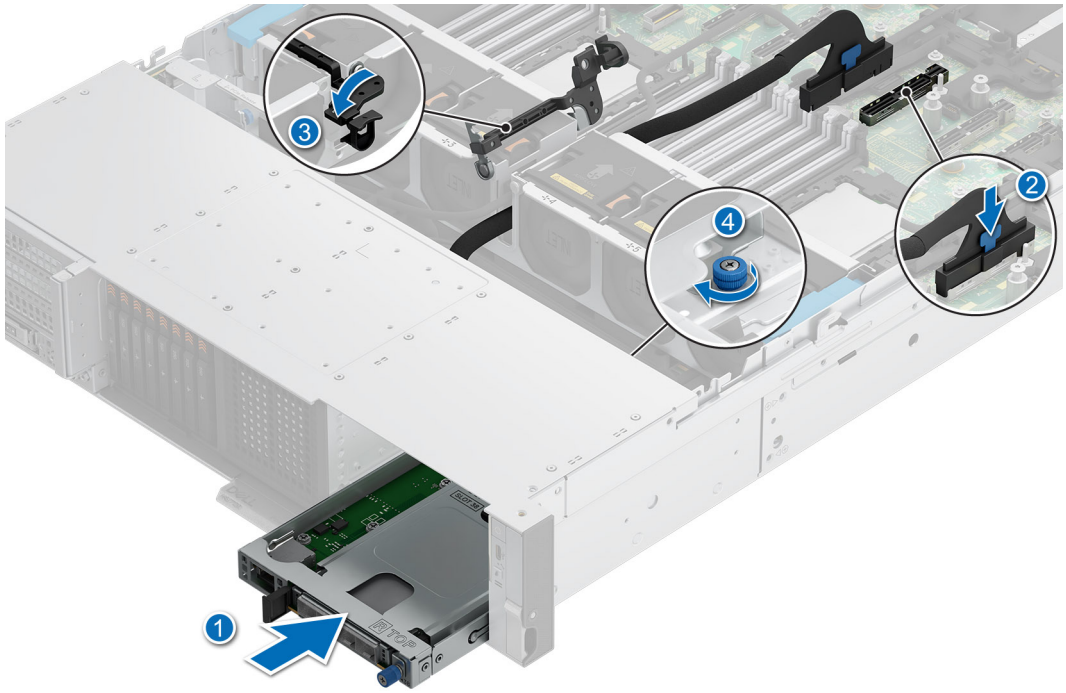


Figure 172. Installing the front expansion card riser 4

3. For front riser 3:
   a. Align and slide the riser 3 into the system bay.
   b. Tighten the captive screw.
   c. Route and connect the cable to the system board.

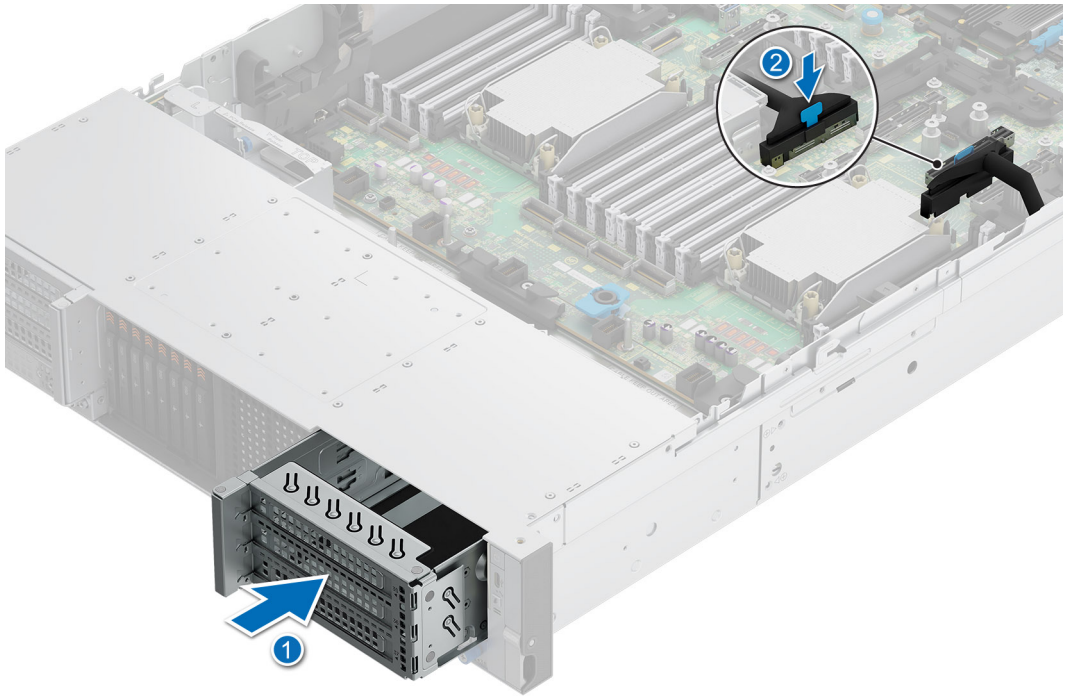


Figure 173. Installing the front expansion card riser 3

4. For front riser 1:
   a. Align and slide the riser 1 into the system bay.
   b. Tighten the captive screw.
   c. Route the cable through the cooling fan cage and close the cable holder.

d. Connect the cable to the system board.

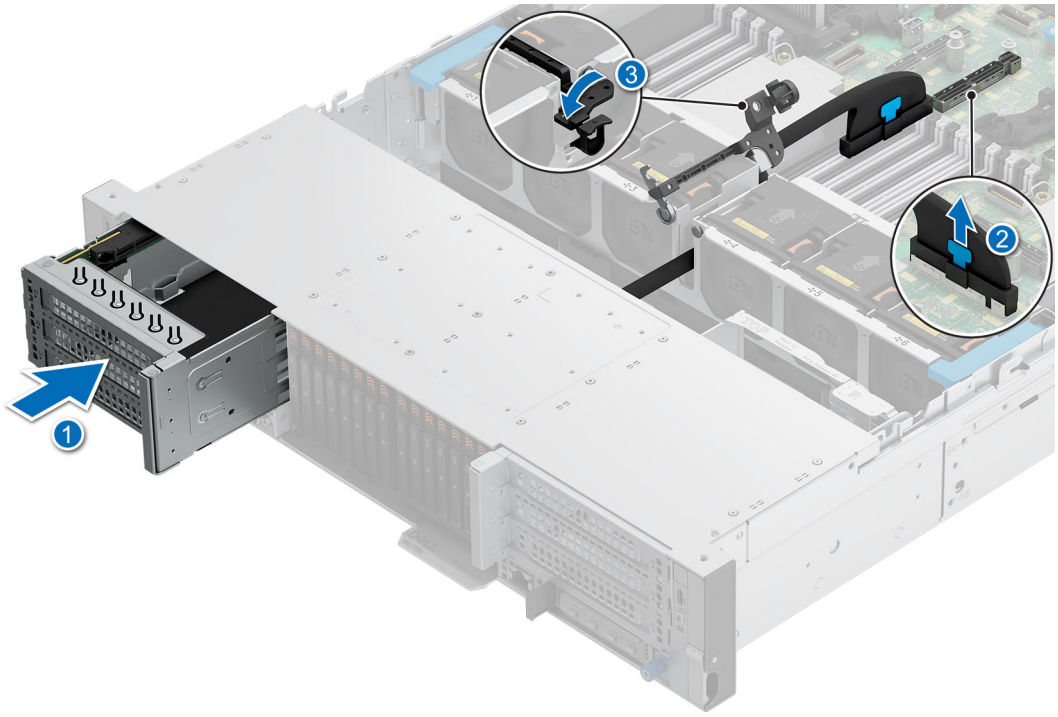


Figure 174. Installing the front expansion card riser 1

Next steps

1. Route and connect the cables, taking care not to damage them.

   NOTE: See cable routing section for more information.

2. Install the cooling fan cage assembly.
3. If removed, install the air shroud.
4. If removed, install the drive backplane cover.
5. Follow the procedure listed in the After working inside your system.

Removing an expansion card from the front expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. If applicable, disconnect the cables from the expansion card.
7. Remove the front expansion card riser.
8. There are two front risers (RF1a and RF3a), and the process for removing the expansion card from each is similar.

Steps

1. For Full Height (FH) card:
   a. Pull the plunger and tilt the expansion card retention latch lock to open.
   b. Hold the expansion card by the edges and pull the card from the riser.

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

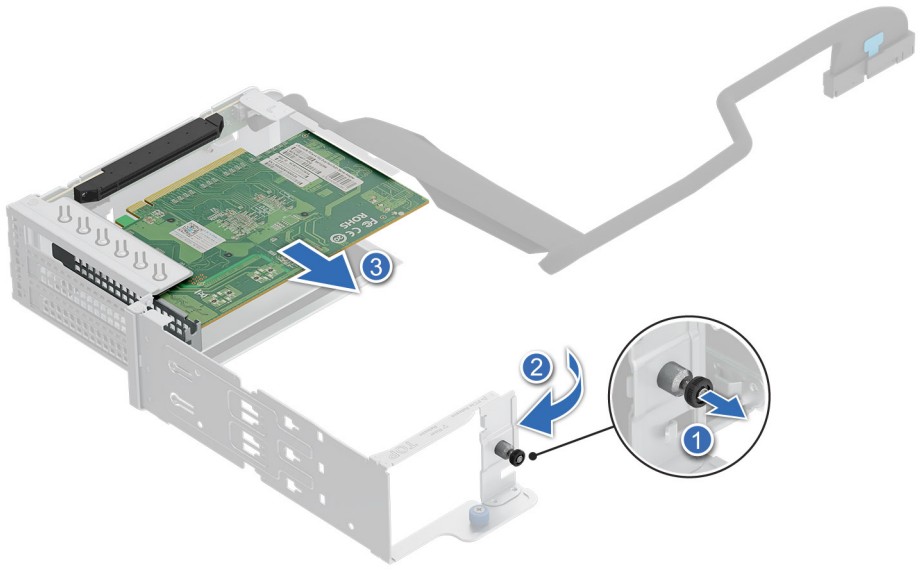


Figure 175. Removing FH expansion card from the front expansion card riser

2. For Low profile (LP) card:
   a. Pull the plunger and tilt the expansion card retention latch lock to open.
   b. Hold the expansion card by the edges and pull the card from the riser.
   c. Slide and remove the card holder.

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

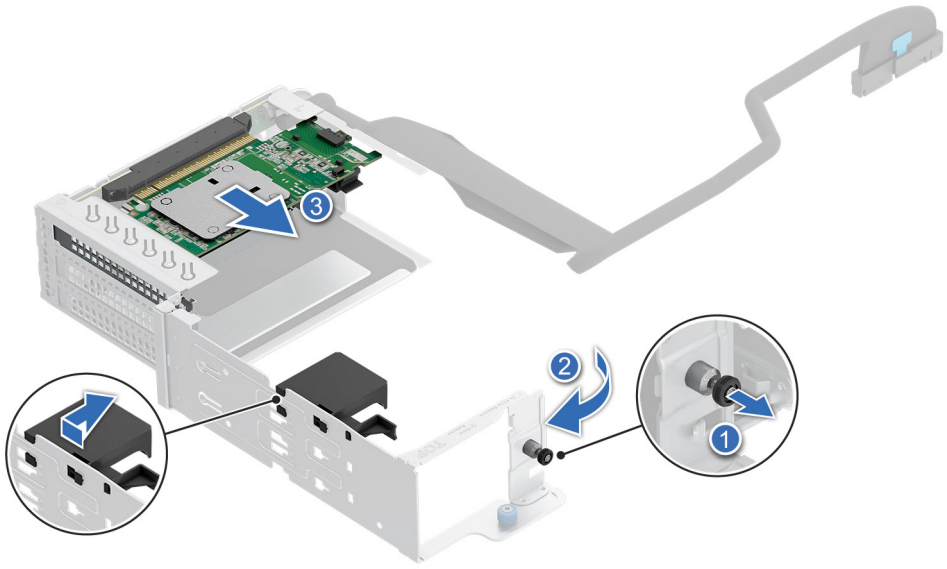


Figure 176. Removing LP expansion card from the front expansion card riser

3. If the expansion card is not going to be replaced, install a filler bracket and close the card retention latch.

   NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

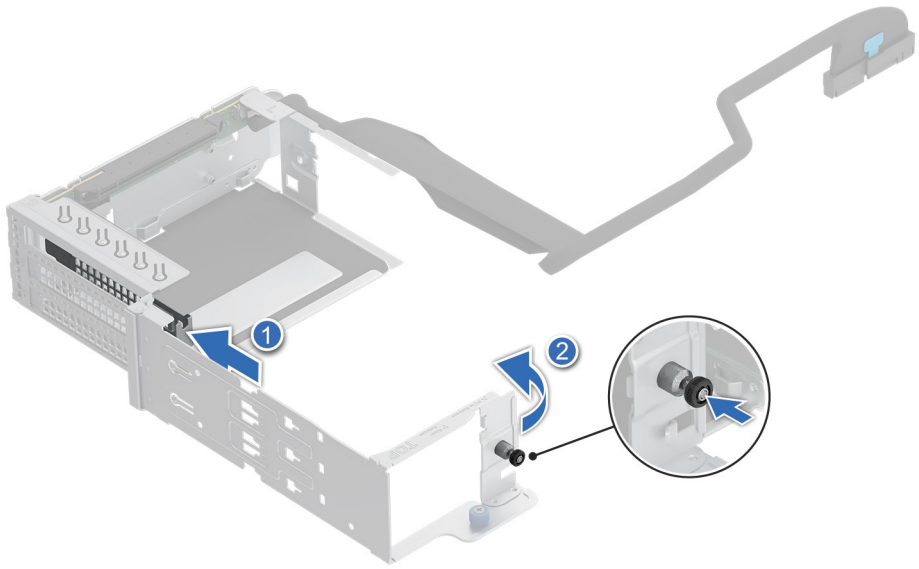


Figure 177. Installing the filler bracket

NOTE: If applicable, DPUs are connected to the Riser RF1a, RF1, or RF3a. See the cable routing Cable routing section for more information.

NOTE: The procedure for installing or removing the DPU is similar to that of other expansion cards.

Next steps

1. If applicable, install an expansion card into the expansion card riser.

Installing an expansion card into the front expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. If applicable, disconnect the cables from the expansion card.
7. Remove the front expansion card riser.
8. There are two front risers (RF1a and RF3a), and the process for installing the expansion card from each is similar.
9. If installing a new expansion card, unpack it and prepare the card for installation.

NOTE: For instructions, see the documentation accompanying the card.

10. If applicable, DPUs are connected to the Riser RF1a, RF1, or RF3a. See the cable routing Cable routing section for more information.

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.

Steps

1. Tilt the expansion card retention latch lock to open.
2. If installed, remove the filler bracket.

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

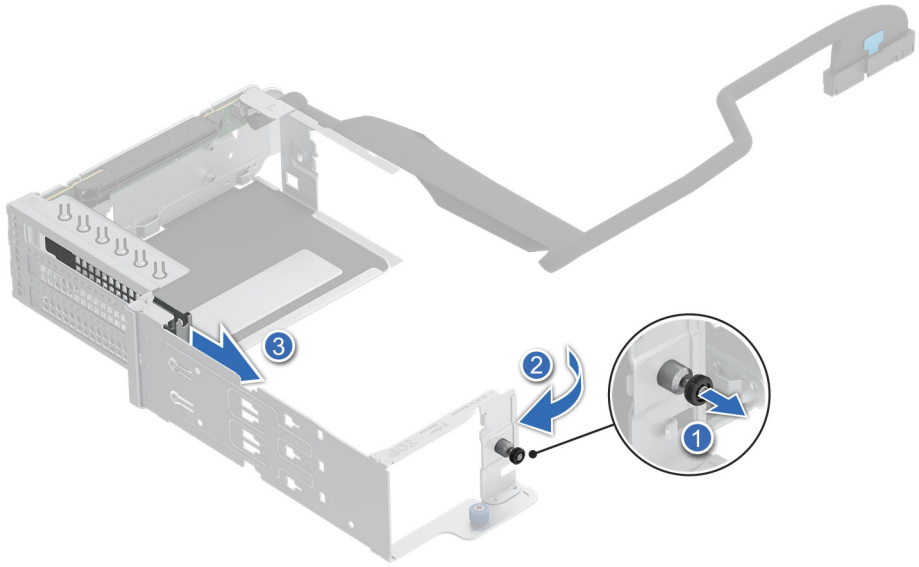


Figure 178. Removing the filler bracket

3. For Low profile (LP) card:
   a. Hold the card by edges, and align the card with the connector on the riser.
   b. Insert the card firmly into the expansion card connector until seated.
   c. Align and slide the card holder guides into the slots on the riser card retention latch until seated.
   d. Close the expansion card retention latch until the plunger locks in place.

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

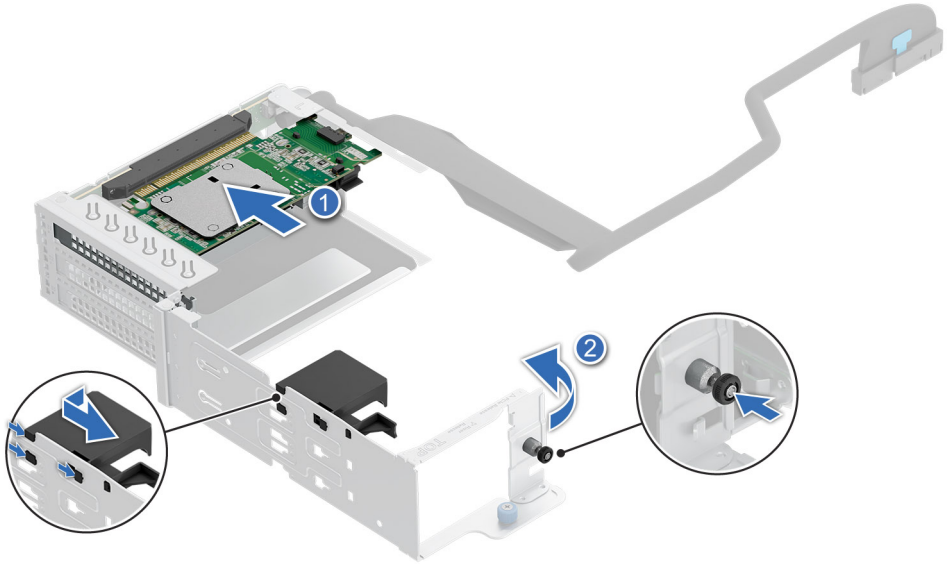


Figure 179. Installing a LP expansion card into the front expansion card riser

4. For Full Height (FH) card:
   a. Hold the card by edges, and align the card with the connector on the riser.
   b. Insert the card firmly into the expansion card connector until seated.
   c. Close the expansion card retention latch until the plunger locks in place.

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

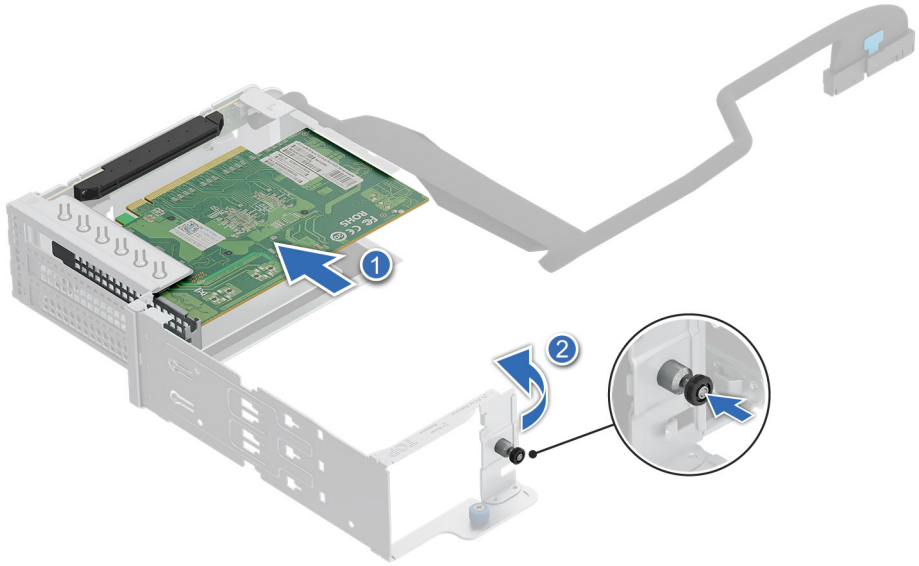


Figure 180. Installing a FH expansion card into the front expansion card riser

NOTE: The procedure for installing or removing the DPU is similar to that of other expansion cards.

Next steps

1. If applicable, connect the cables to the expansion card.
2. Install the expansion card risers.
3. If removed, install the cooling fan cage assembly.
4. If removed, install the air shroud.
5. Install the drive backplane cover.
6. Follow the procedure listed in the After working inside your system.
7. Install any device drivers required for the card as described in the documentation for the card.

Removing the rear expansion card risers

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 air shroud or remove the GPU air shroud.
4. If applicable, disconnect the cables from the expansion card or system board.

Steps

1. For rear riser 1, riser 3, and riser 5:
   a. Loosen the captive screws on the riser and system.
   b. Press the blue release tab on the riser and holding the edges lift the expansion card riser from the connector on the system board.

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

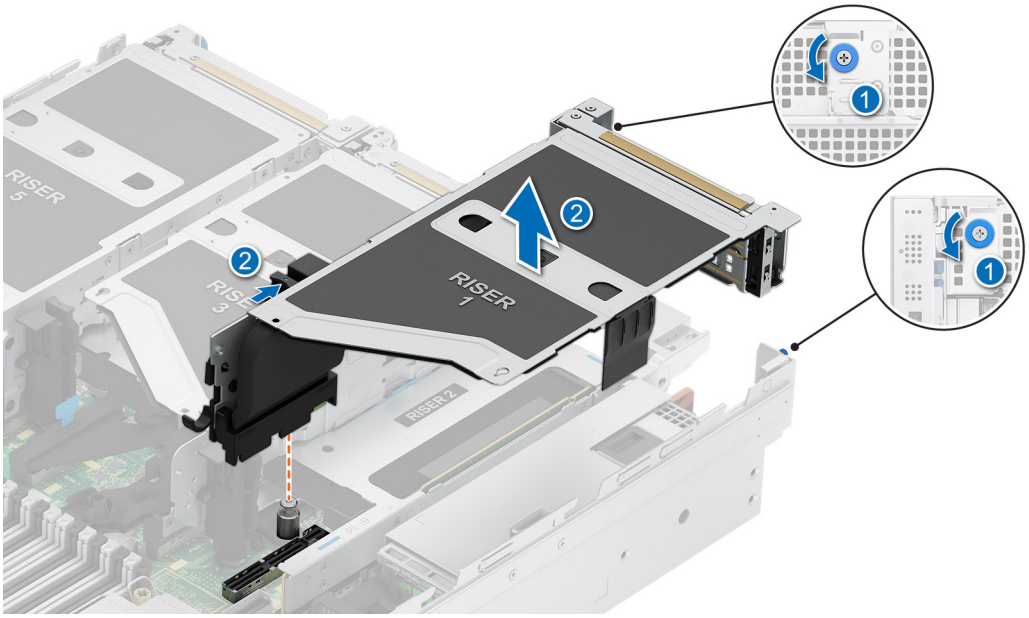


Figure 181. Removing the rear expansion card riser 1

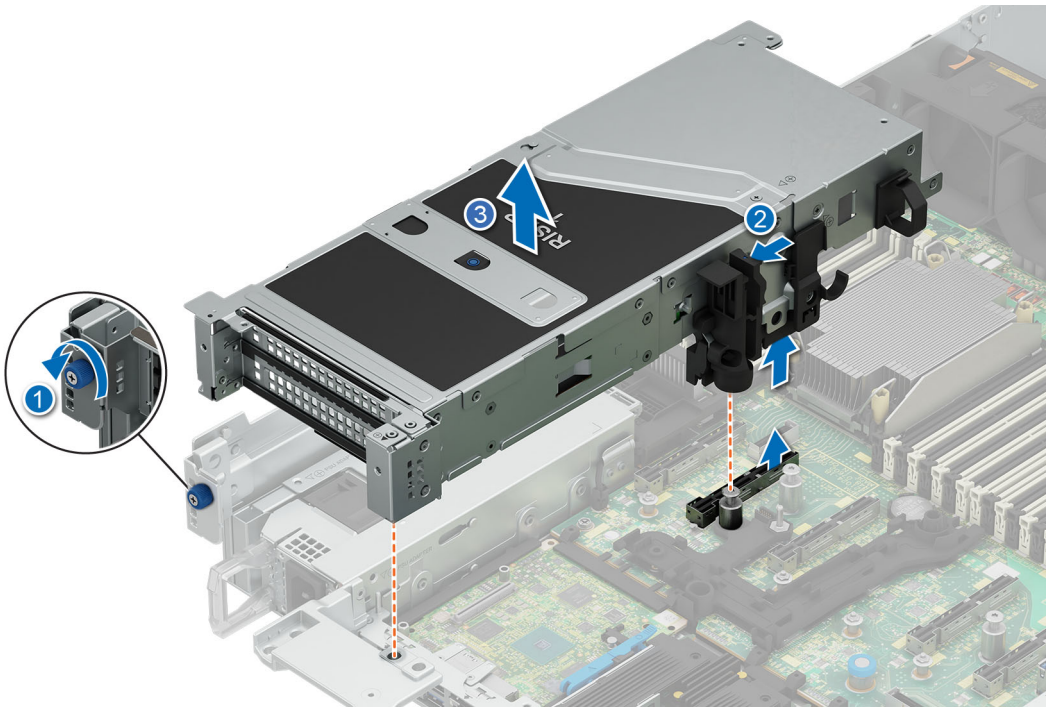


Figure 182. Removing the rear expansion card riser 1 (R1b FL)

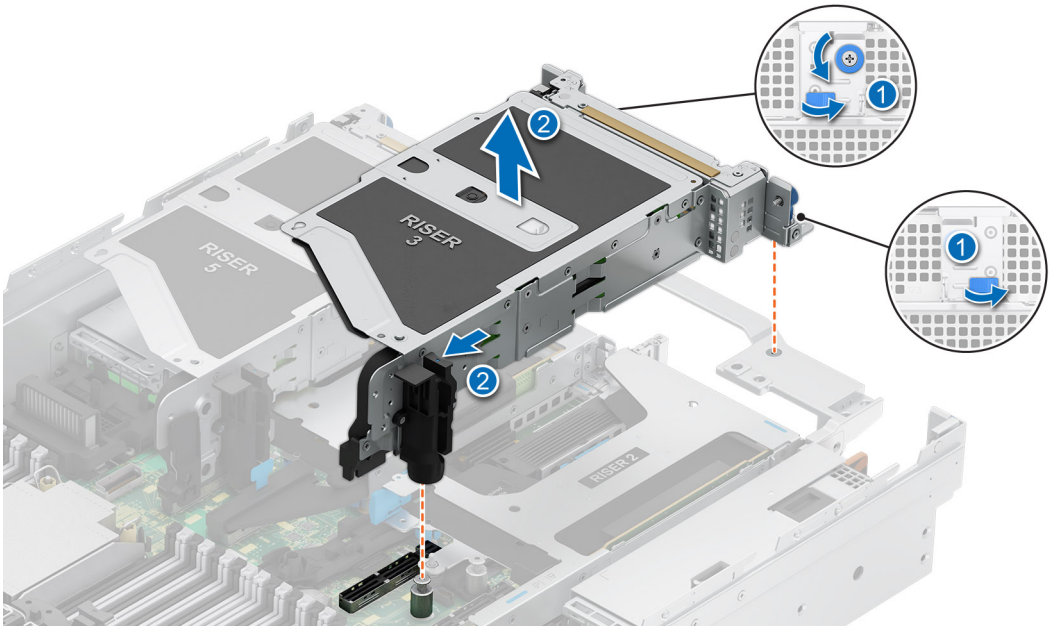


Figure 183. Removing the rear expansion card riser 3

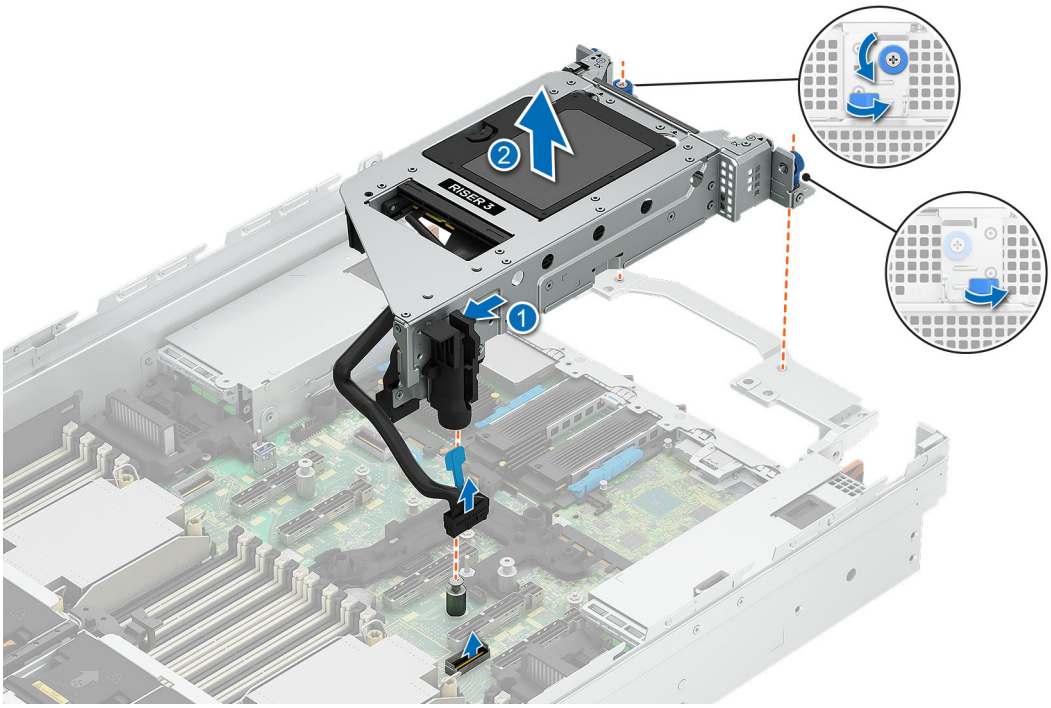


Figure 184. Removing the rear expansion card riser 3c

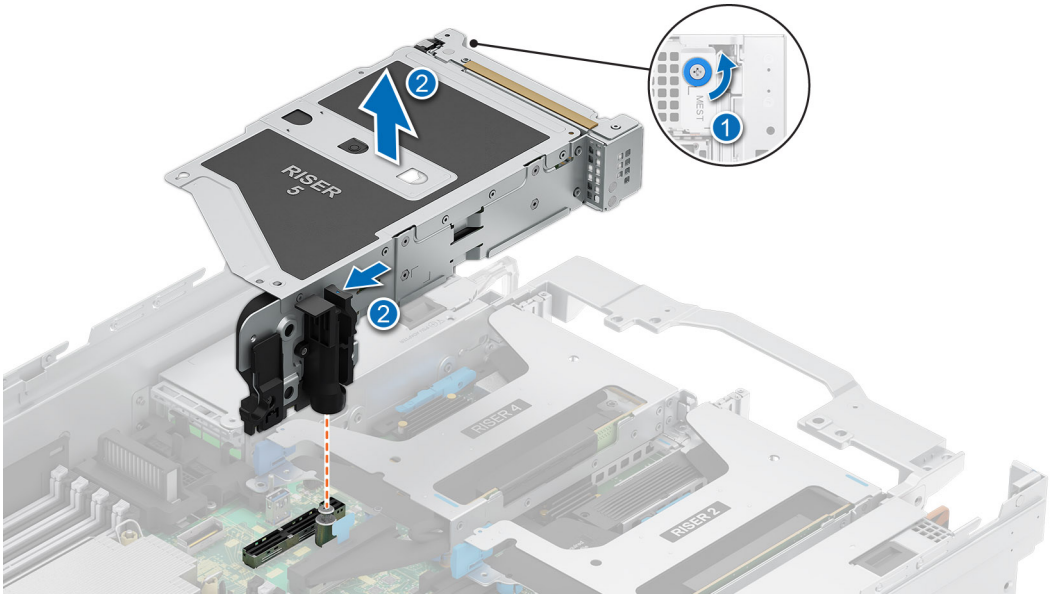


Figure 185. Removing the rear expansion card riser 5

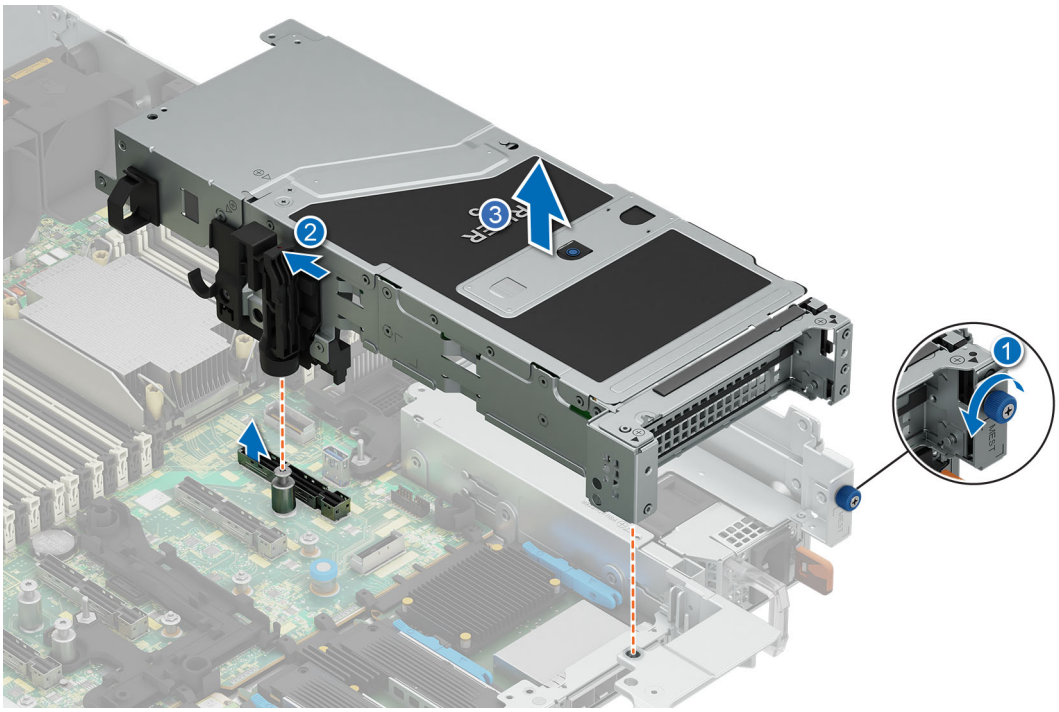


Figure 186. Removing the rear expansion card riser 5 (R5b FL)

2. For rear riser 2:
   a. Slide the knob to unlock position.
   b. Holding the edges lift the expansion card riser from the riser connector on the system board.

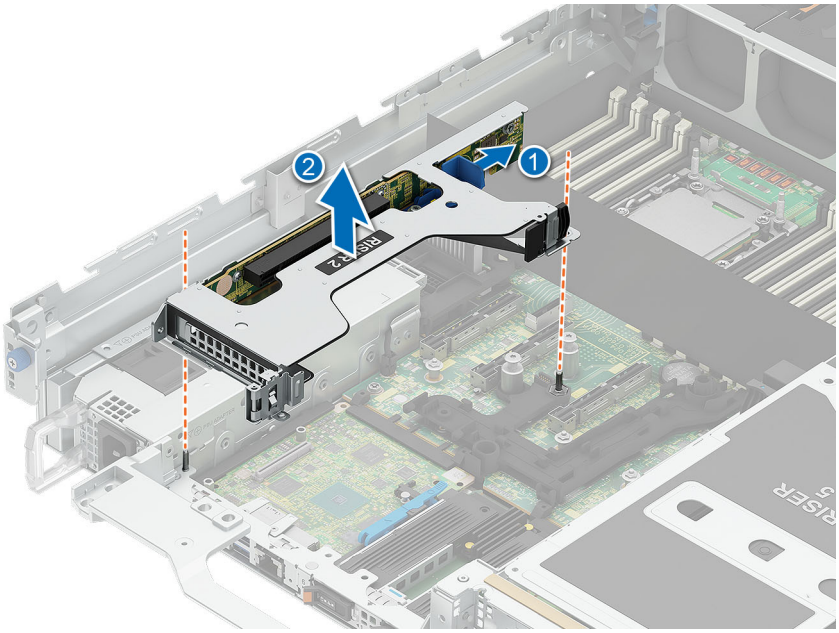


Figure 187. Removing the rear expansion card riser 2

3. For rear riser 4:
   a. Pull and disconnect the riser cable from the system board.
   b. Holding the edges lift the expansion card riser from the riser connector on the system board.

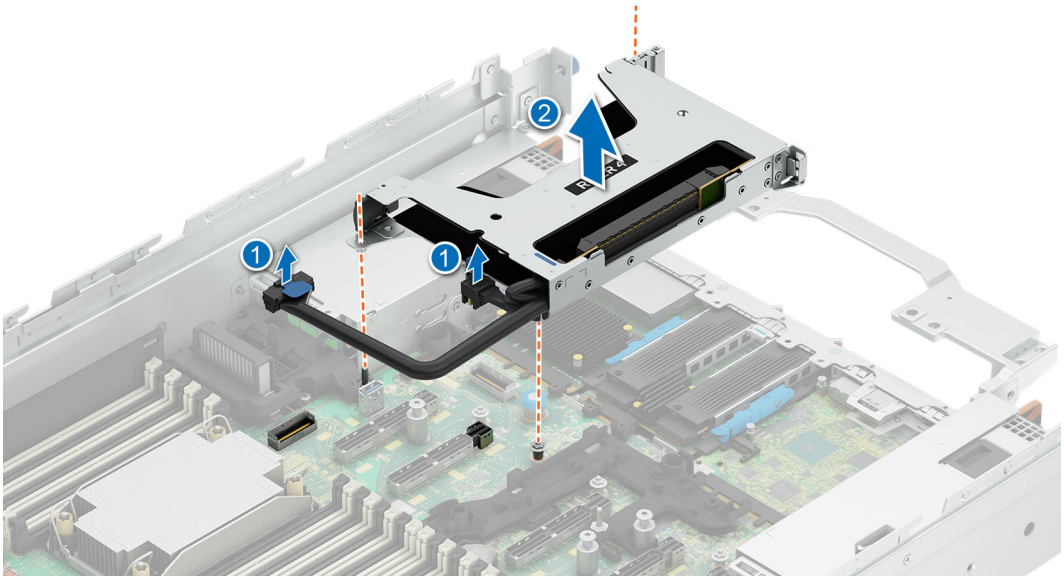


Figure 188. Removing the rear expansion card riser 4

Next steps

1. Replace the rear expansion card risers.

Installing the rear expansion card risers

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 air shroud or remove the GPU air shroud.
4. If removed, install the expansion cards into the rear expansion card risers.

NOTE: Install riser 2 and riser 4 before installing riser 1, riser 3, and riser 5.

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.

Steps

1. For rear riser 4:
   a. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board.
   b. Lower the expansion card riser into place and press the touch points until the expansion card riser is fully seated on the system board.
   c. Connect the riser cable connector to the system board.

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

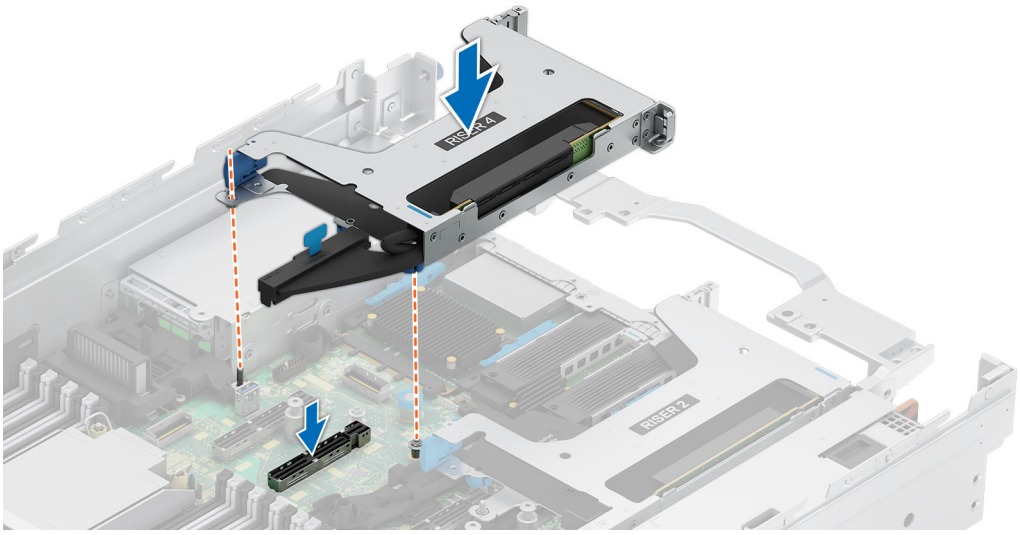


Figure 189. Installing the rear expansion card riser 4

2. For rear riser 2:
   a. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board.
   b. Lower the expansion card riser into place and press the touch points until the expansion card riser connector is fully seated on the system board connector.
   c. Slide the knob into lock position.

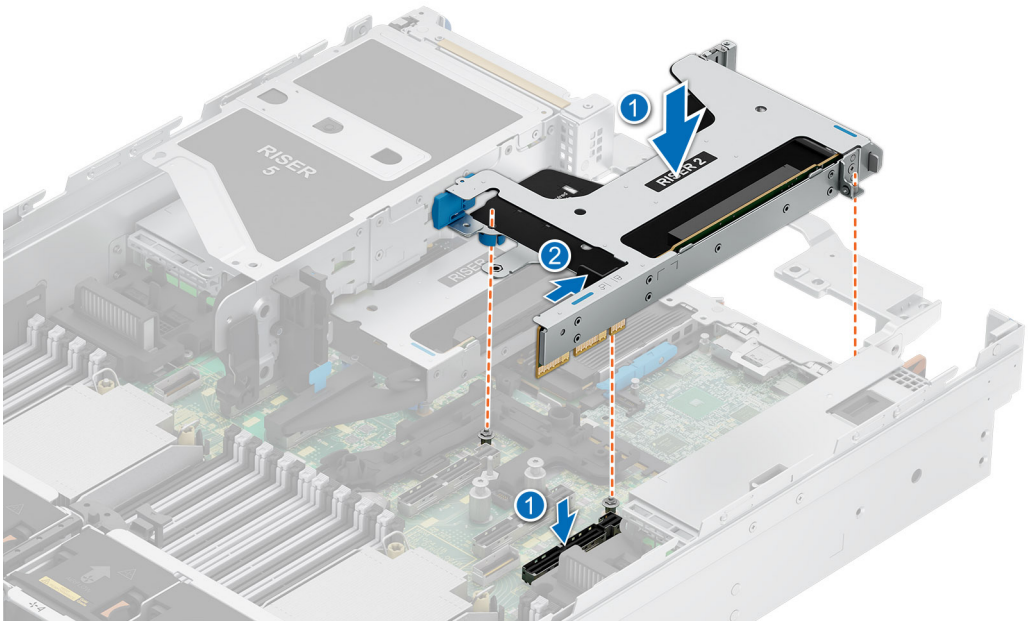


Figure 190. Installing the rear expansion card riser 2

3. For rear riser 1, riser 3, and riser 5:
   a. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board.
   b. Lower the expansion card riser into place and press the touch points until the expansion card riser connector is fully seated on the system board connector.
   c. Tighten the captive screws on the risers and system if any.

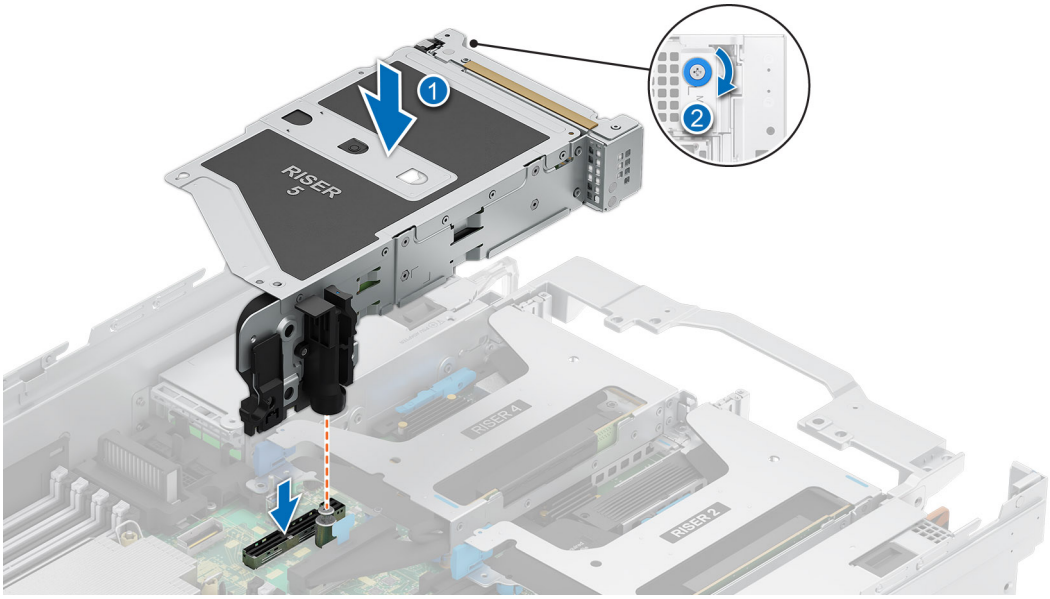


Figure 191. Installing the rear expansion card riser 5

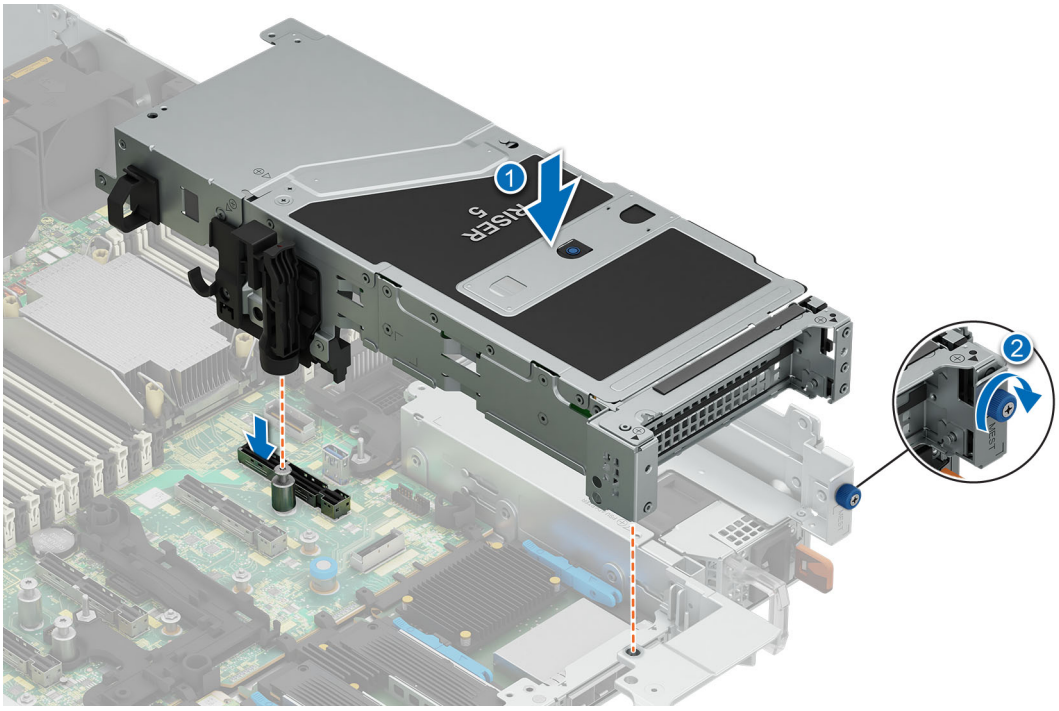


Figure 192. Installing the rear expansion card riser 5 (R5b FL)

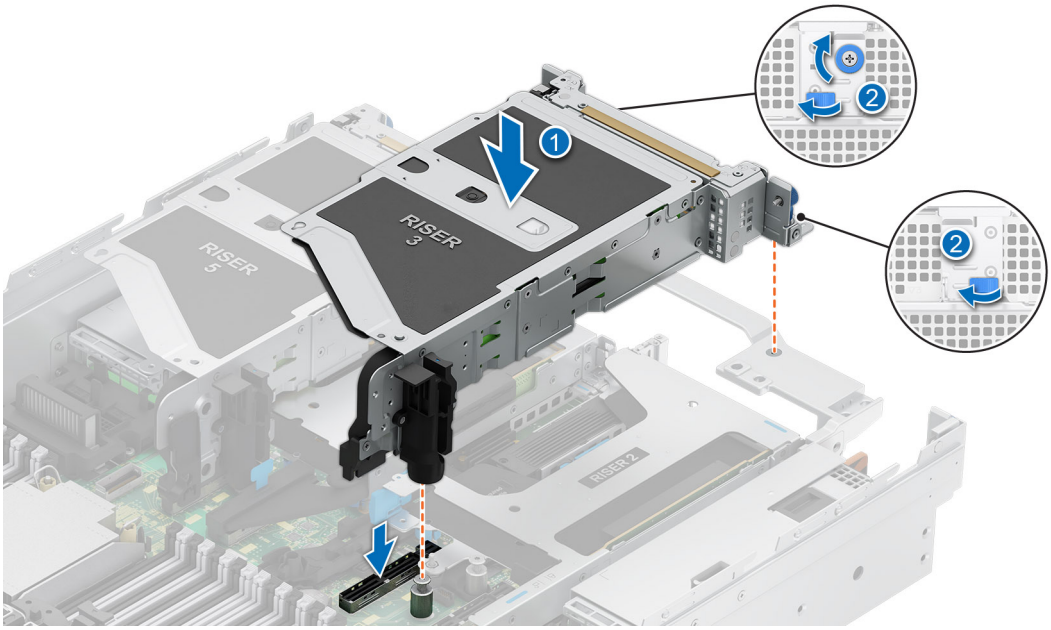


Figure 193. Installing the rear expansion card riser 3

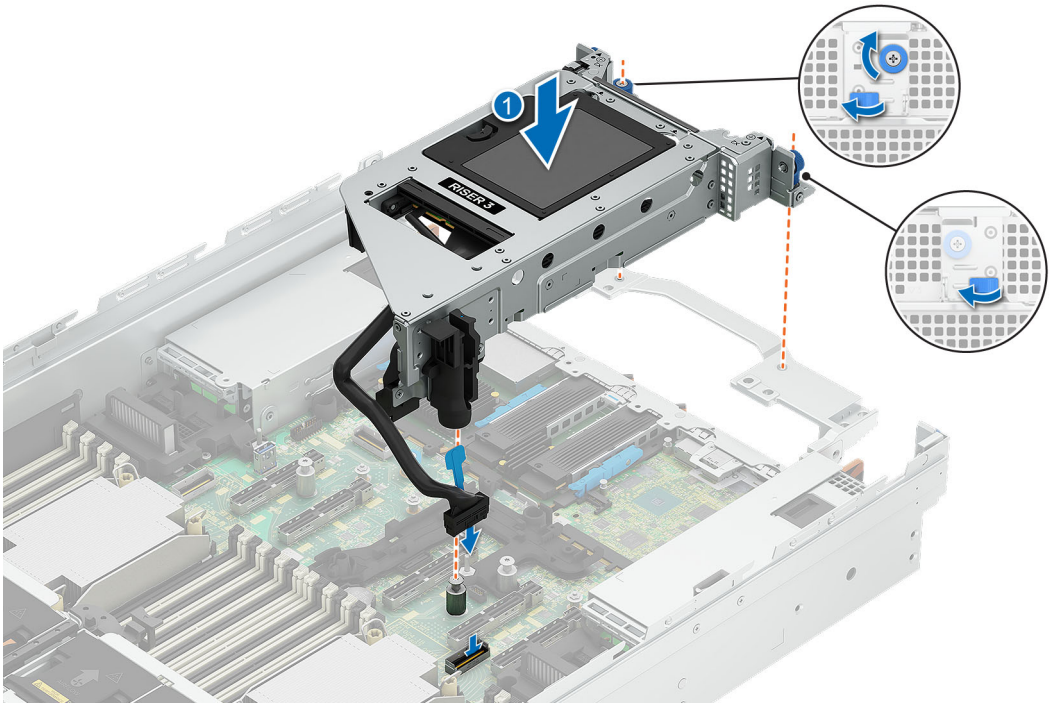


Figure 194. Installing the rear expansion card riser 3c

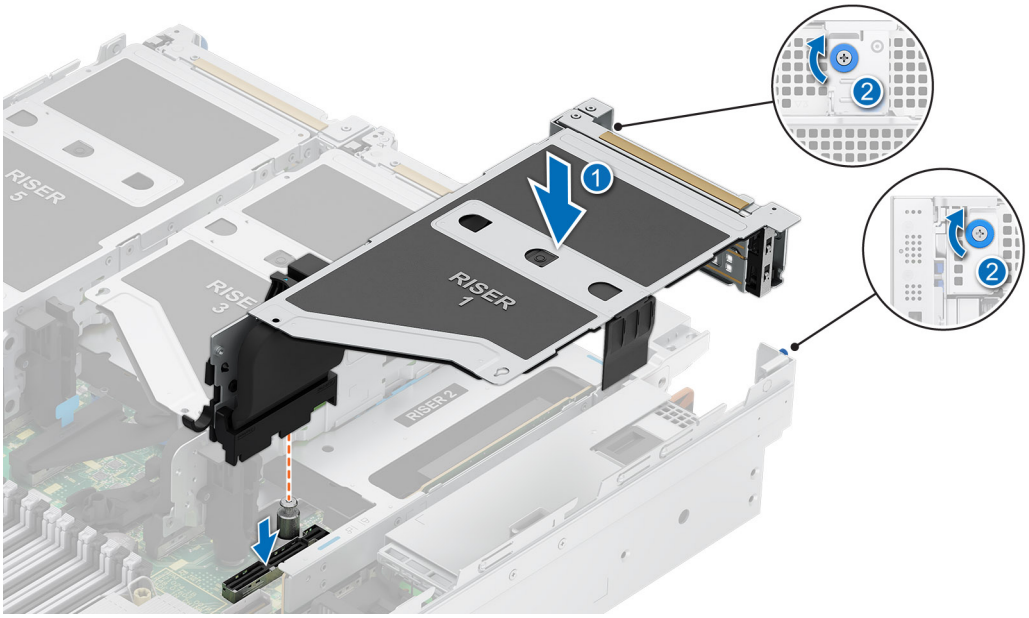


Figure 195. Installing the expansion card riser 1

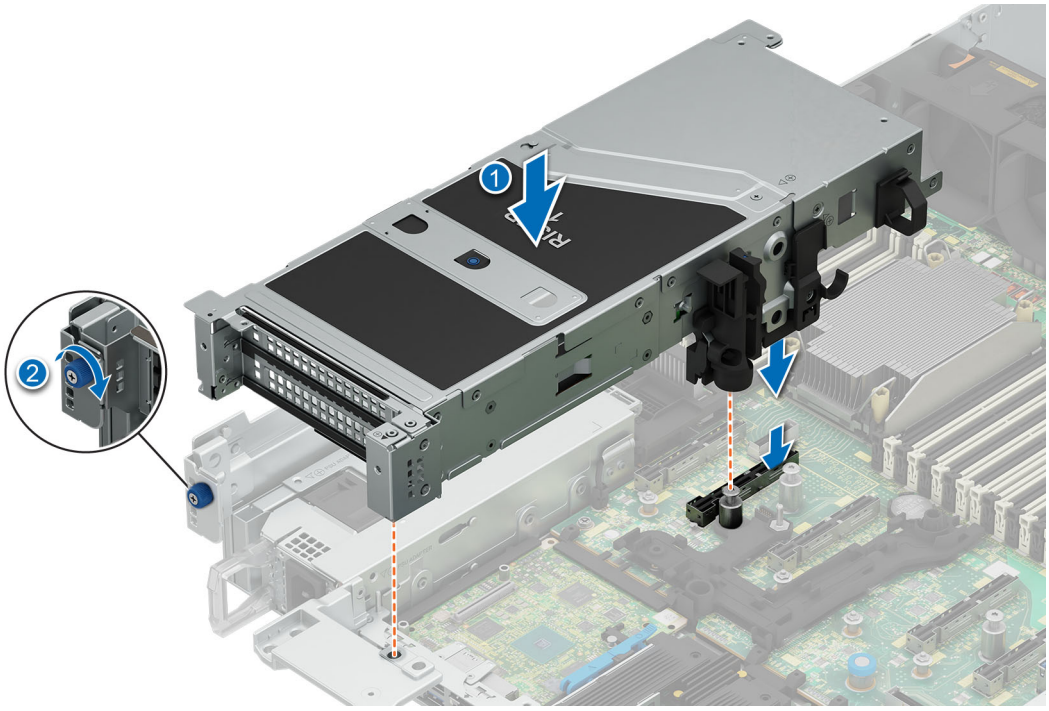


Figure 196. Installing the expansion card riser 1 (R1b FL)

Next steps

1. If required, reconnect the cables to the expansion card or system board.
2. Install the air shroud or install the GPU air shroud.
3. Follow the procedure listed in After working inside your system.

Removing an expansion card from the rear expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. If applicable, disconnect the cables from the expansion card.
5. Remove the rear expansion card riser.

Steps

1. From riser 1 or riser 5 card:
   a. Tilt the expansion card retention latch lock to open.
   b. Pull the card holder before removing the card from the riser.
   c. Hold the expansion card by the edges and pull the card from the riser.

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

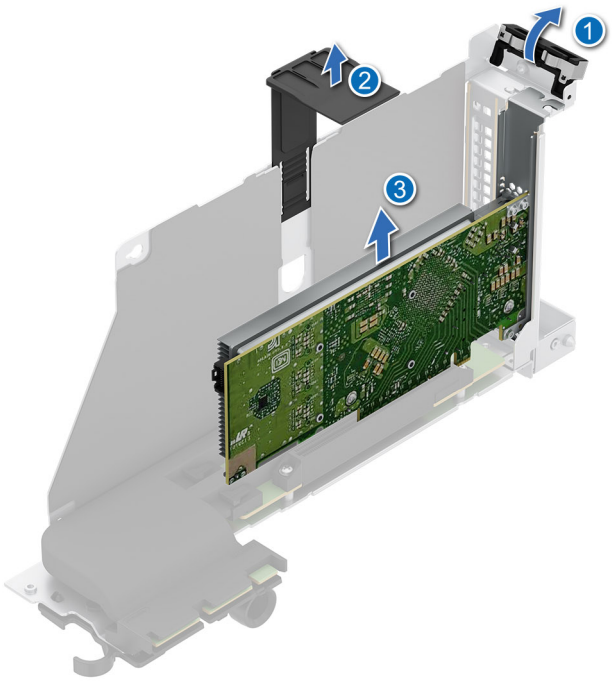


Figure 197. Removing expansion card from the rear expansion card riser

d. If the expansion card is not going to be replaced on riser, install a filler bracket and close the card holder on both ends of the riser.

NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The filler bracket also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

Figure 198. Installing the filler bracket

2. OCP NIC card from riser 3e:

a. Press and remove the cover latch from the riser.

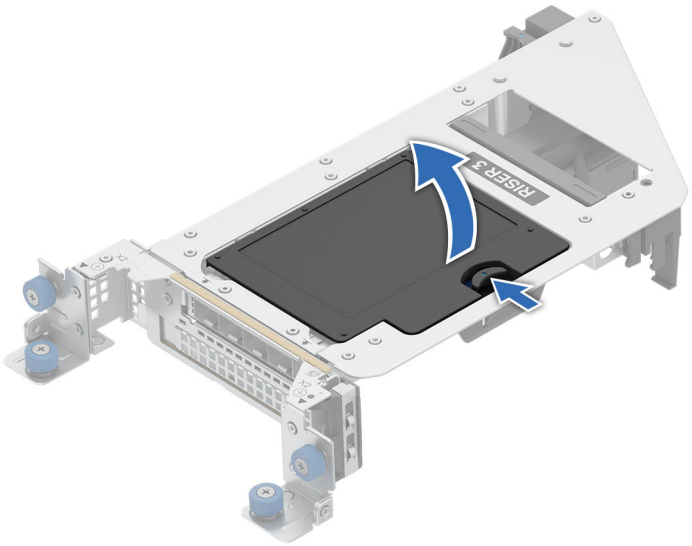


Figure 199. Removing an OCP NIC cover from the riser 3e

b. Open the blue latch to disengage the OCP NIC card.
c. Push and slide out the OCP NIC card from the rear end of the riser.

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

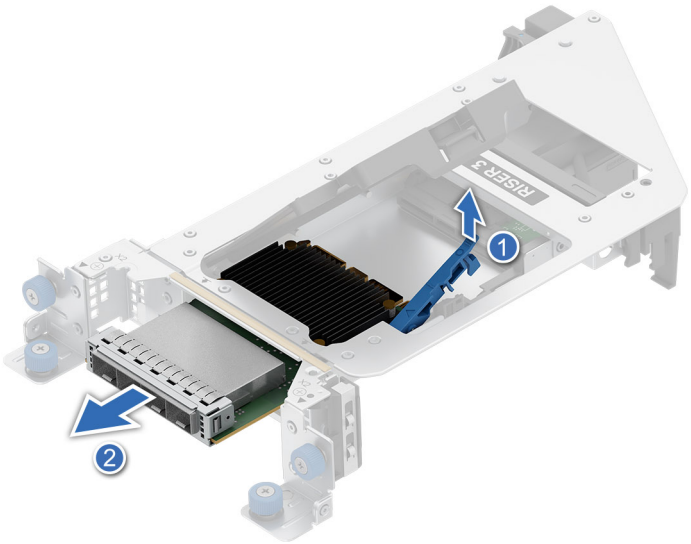


Figure 200. Removing an OCP NIC card from the riser 3e

3. Low profile (LP) card from riser 2:
   a. Push the circled tab and lift the LP card holder out from the expansion card riser.

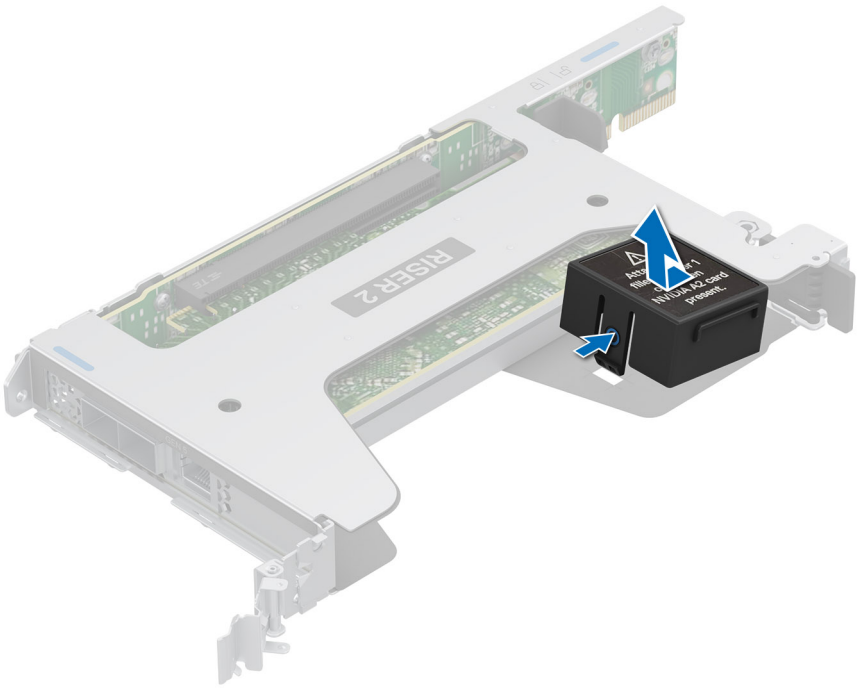


Figure 201. Removing LP card holder from the riser 2

b. Tilt the card holder on both ends of the riser.
c. Hold the expansion card by the edges and pull the card from the riser.

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

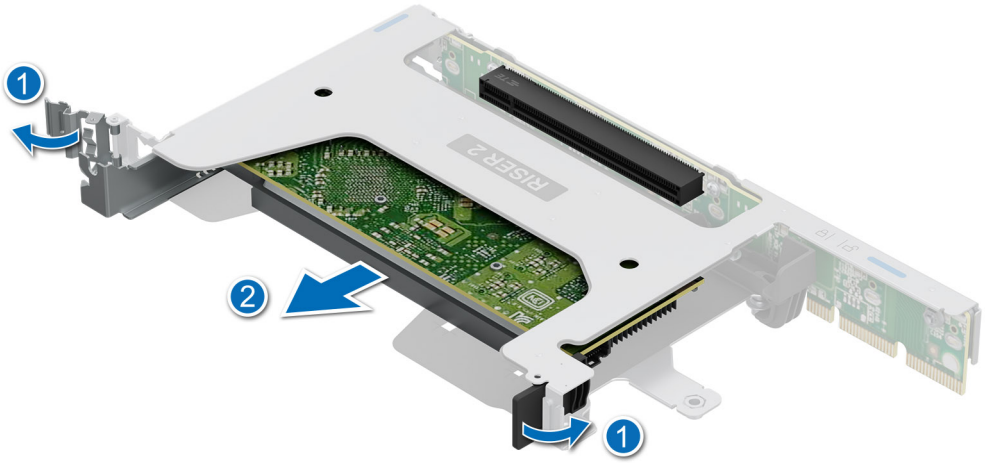


Figure 202. Removing LP expansion card from the riser 2

d. If the expansion card is not going to be replaced on riser, install a filler bracket and close the card holder on both ends of the riser.

NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The filler bracket also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

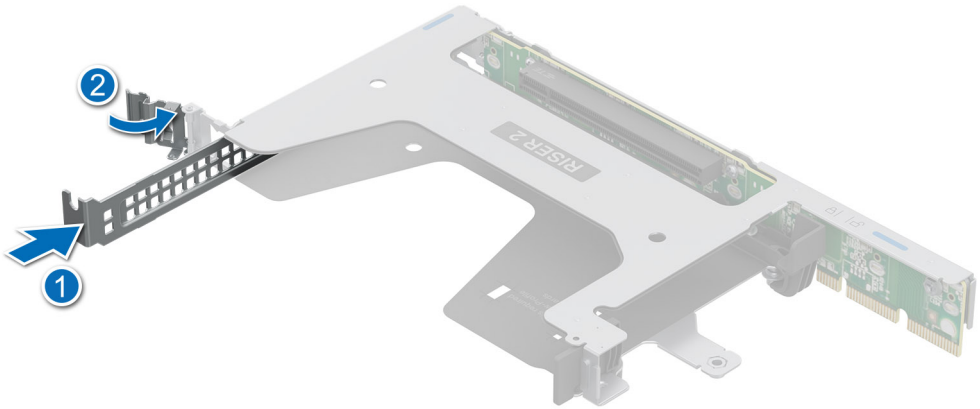


Figure 203. Installing the filler bracket

4. Low profile (LP) card from riser 4:
   a. Lift the latches and slide out the LP profile card holder from the riser.

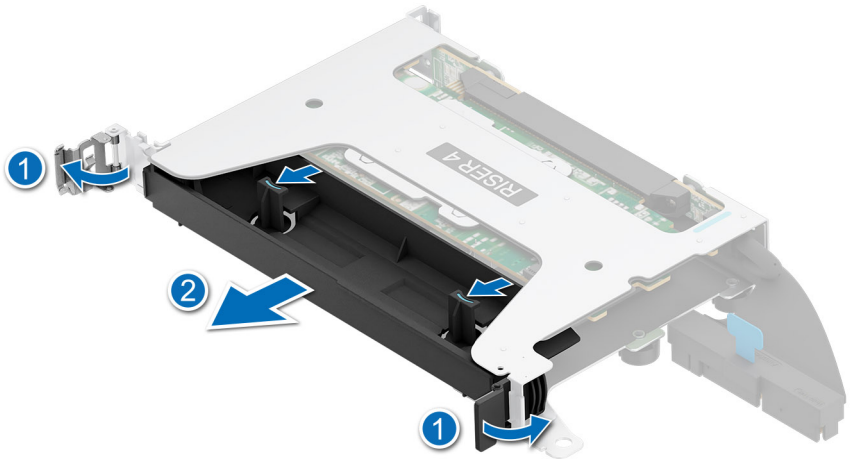


Figure 204. Removing LP card holder from the riser 4

   b. Tilt the card holder on both ends of the riser.
   c. Hold the expansion card by the edges and pull the card from the riser.

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

Figure 205. Removing LP expansion card from the riser 4

d. If the expansion card is not going to be replaced on riser, install a filler bracket or PCIe blank and close the card holder on both ends of the riser.

NOTE: A PCIe blank must be put in riser 4b to balance the airflow for rear OCP NIC card.

NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The filler bracket also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

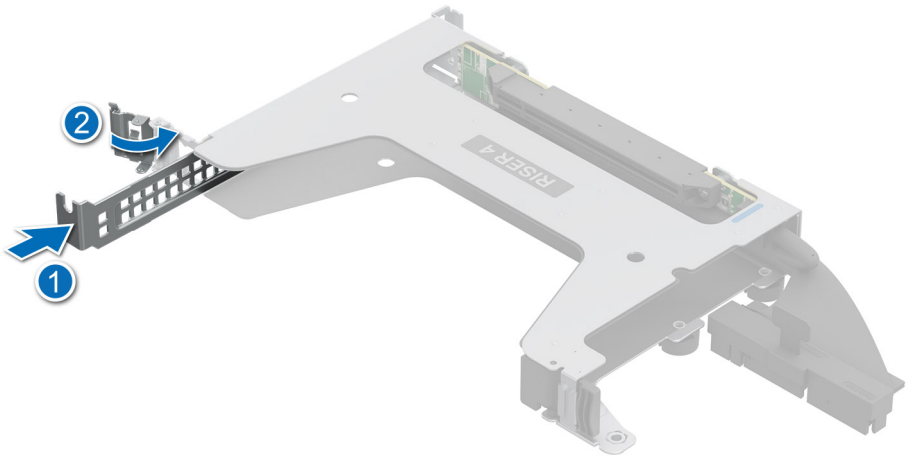


Figure 206. Installing the filler bracket

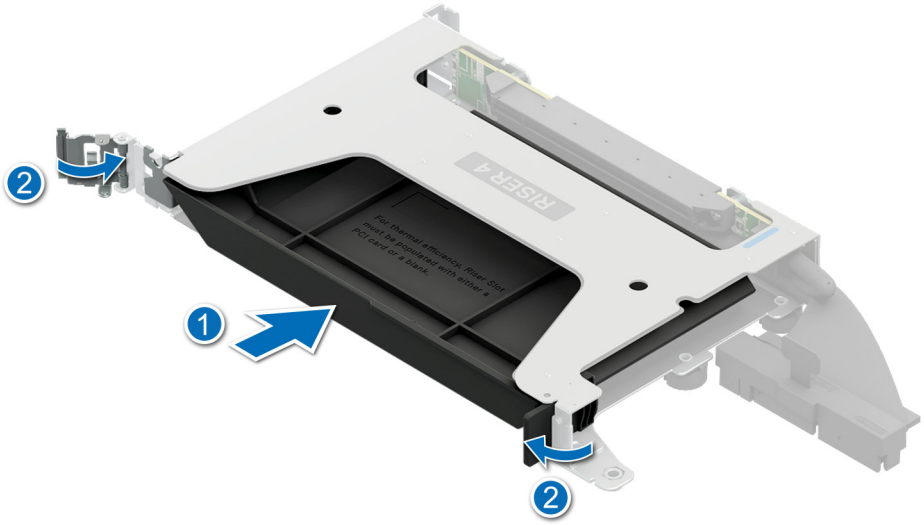


Figure 207. Installing the PCIe blank

Next steps

1. If applicable, install an expansion card into the rear expansion card riser.

Installing an expansion card into the rear expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. Remove the rear expansion card riser.
5. If installing a new expansion card, unpack it and prepare the card for installation.

NOTE: For instructions, see the documentation accompanying the card.

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.

Steps

1. Low profile (LP) card into riser 4:
   a. Tilt the card holder on both ends and slide out the filler bracket or PCIe blank from the riser.

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

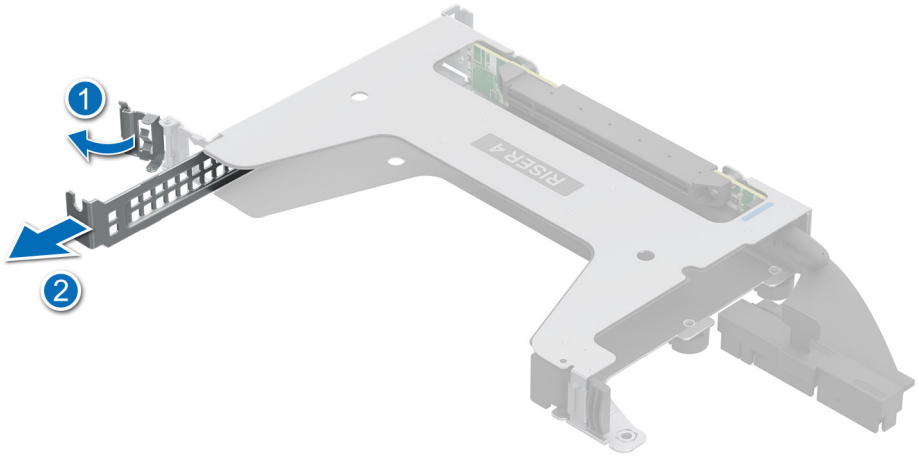


Figure 208. Removing the filler bracket

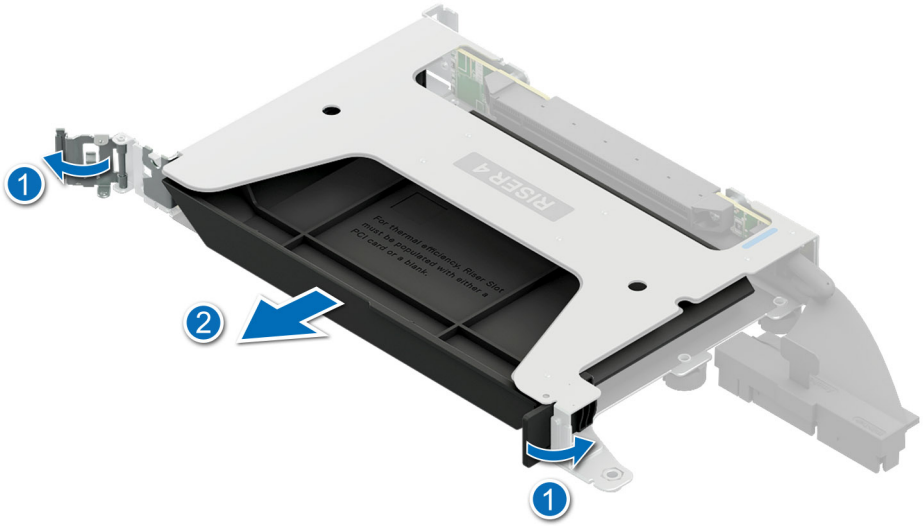


Figure 209. Removing the PCIe blank

b. Hold the card by edges, and align the card with the connector on the riser.
c. Insert the card firmly into the expansion card connector until seated.

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

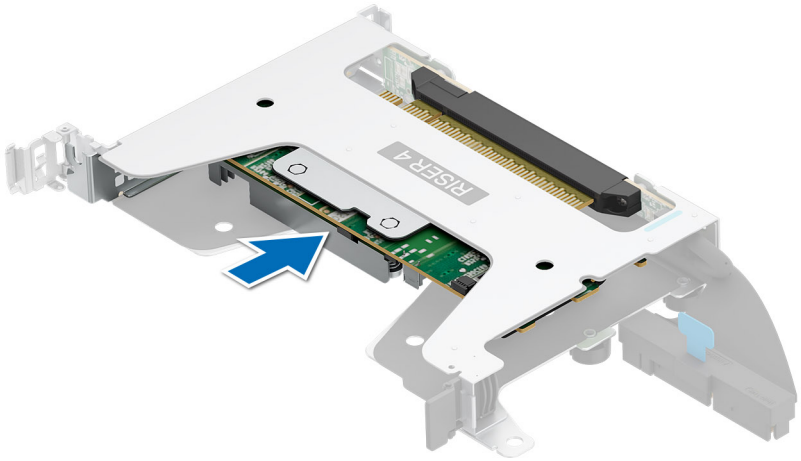


Figure 210. Installing an LP expansion card into the riser 4

d. Align and slide the card holder guides into the slots on the riser until seated.
e. Close the card holder on both ends of the riser.

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

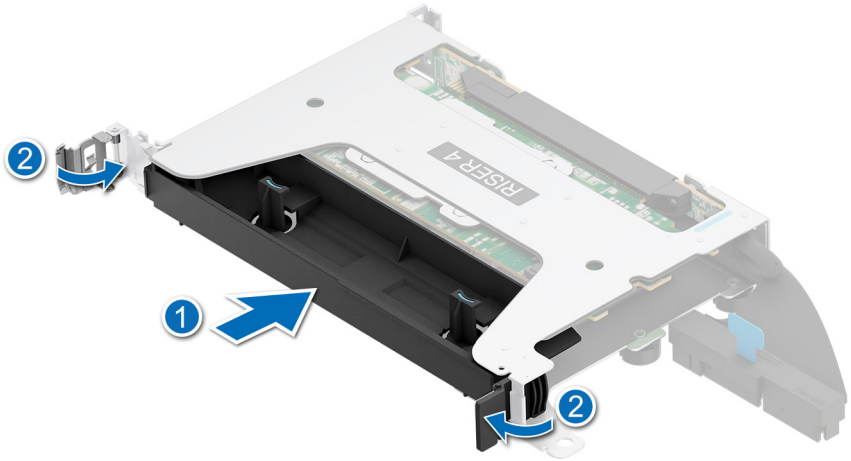


Figure 211. Installing LP expansion card into the riser 4

2. Low profile (LP) card into riser 2:
   a. Tilt the card holder on both ends and slide out the filler bracket from the riser.

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

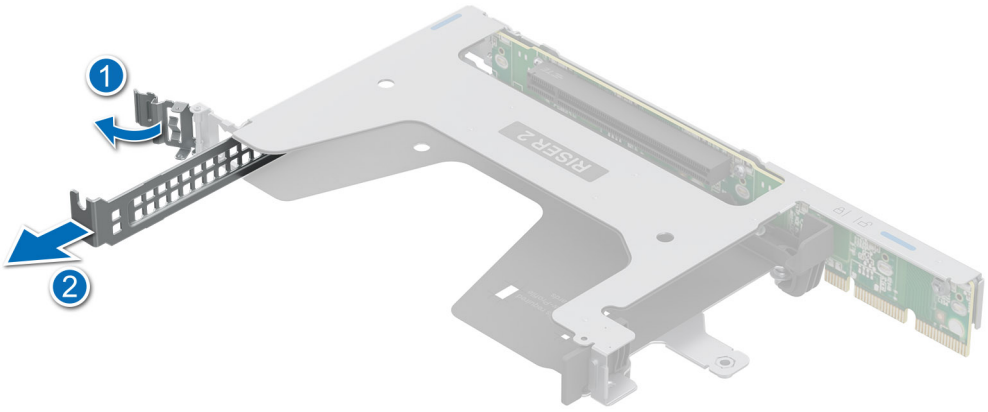


Figure 212. Removing the filler bracket

b. Hold the card by edges, and align the card with the connector on the riser.
c. Insert the card firmly into the expansion card connector until seated.
d. Close the card holder on both ends of the riser.

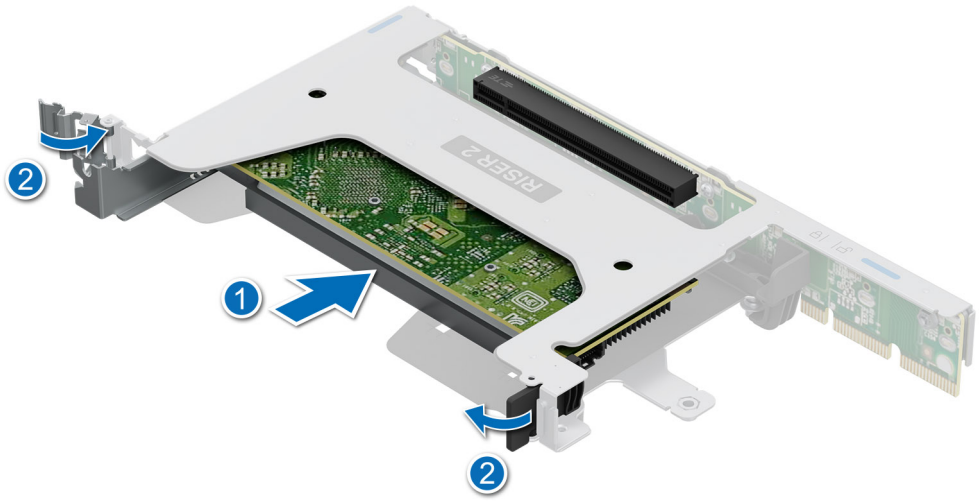


Figure 213. Installing LP expansion card into the riser 2

e. Align and press LP card holder into the slot on the riser until seated.

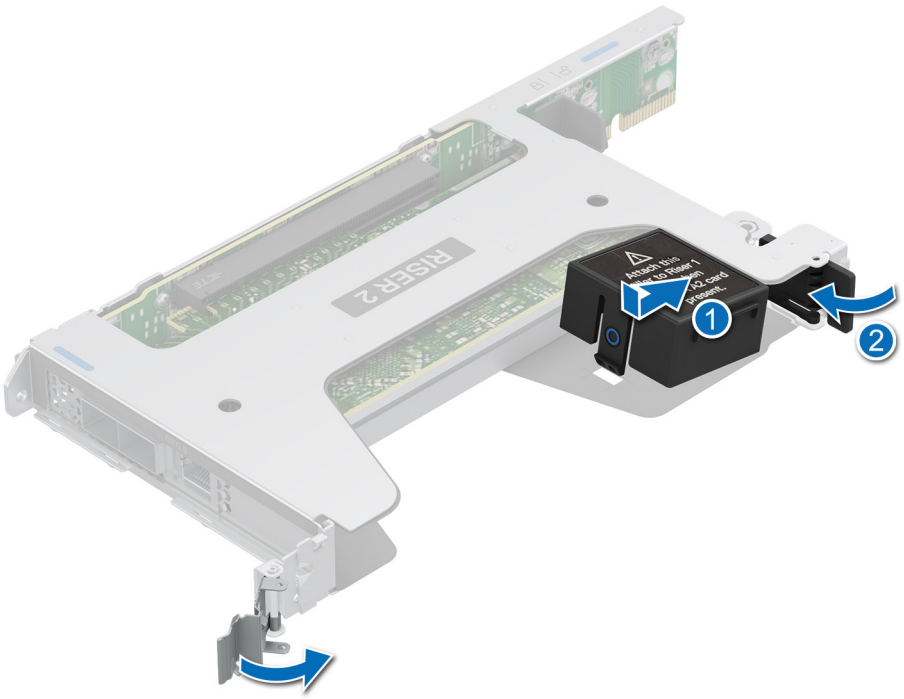


Figure 214. Installing LP card holder from the riser 2

3. Into riser 1 or riser 5:
   a. Tilt the card holder and slide out the filler bracket from the riser.

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

Figure 215. Removing the filler bracket

   b. Tilt the expansion card retention latch lock to open.

c. Hold the card by edges, and align the card with the connector on the riser.
d. Insert the card firmly into the expansion card connector until seated.
e. Tilt the expansion card retention latch to close.
f. Push the card holder to hold the card in the riser.

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

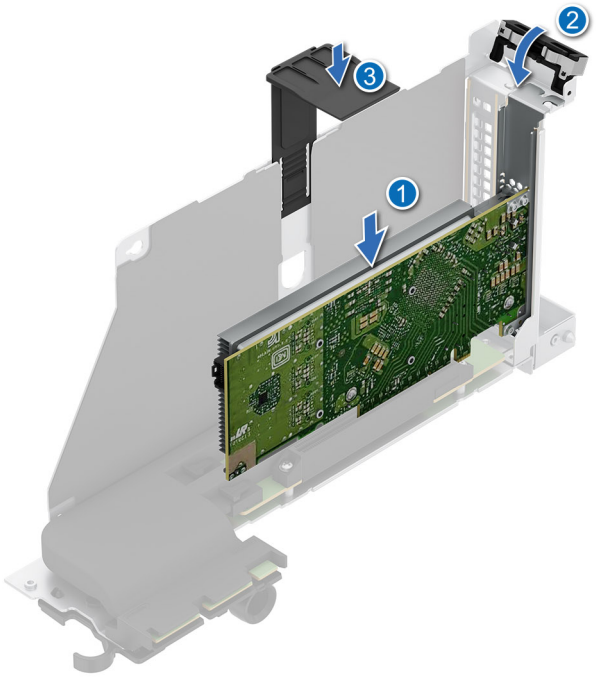


Figure 216. Installing an expansion card into the riser

4. OCP NIC card into riser 3e:
   a. Open the blue latch on the riser.
   b. Slide the OCP NIC card into the riser slot.
   c. Push until the OCP NIC card is connected to the connector on the riser.
   d. Close the blue latch to lock the OCP NIC card to the riser.

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

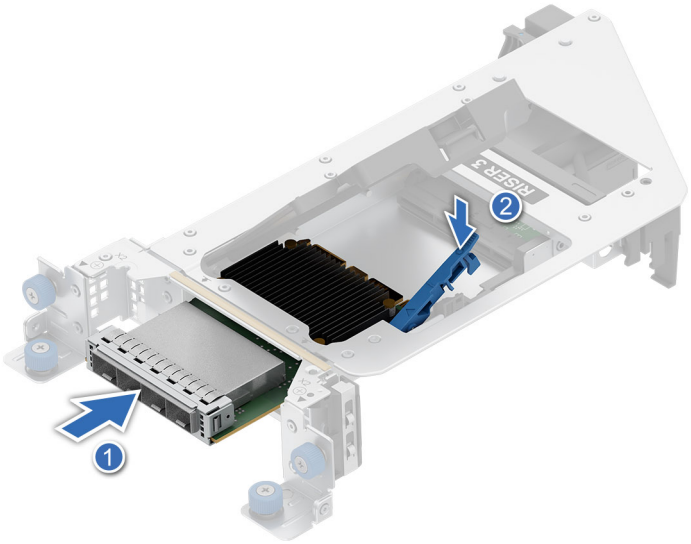


Figure 217. Installing an OCP NIC card into the riser 3e

e. Align and insert the cover latch into the riser.

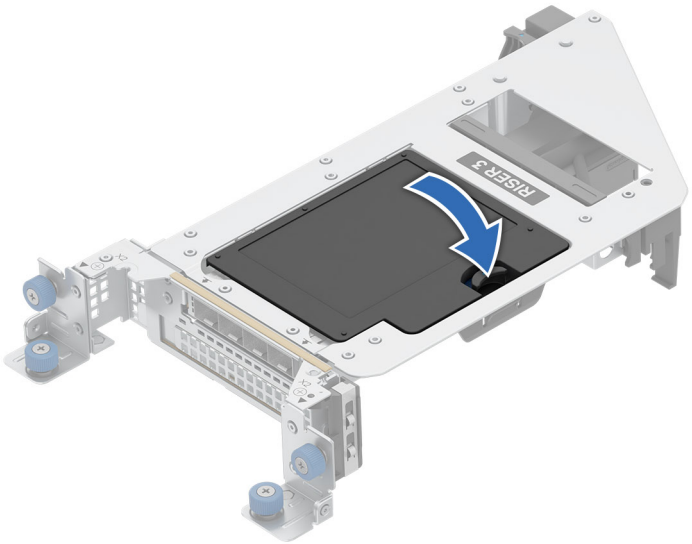


Figure 218. Installing an OCP NIC cover into the riser 3e

Next steps

1. If applicable, connect the cables to the expansion card.
2. Install the rear expansion card risers.
3. If removed, install the air shroud or install the GPU air shroud.
4. Follow the procedure listed in the After working inside your system.
5. Install any device drivers required for the card as described in the documentation for the card.

Removing the rear expansion card riser blanks

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.

NOTE: Rear riser blanks are available only on the system with front riser configuration.

Steps

1. Loosen the captive screws on the riser blanks and on the system chassis.
2. Holding the edges lift the expansion card riser blanks out of the system.

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

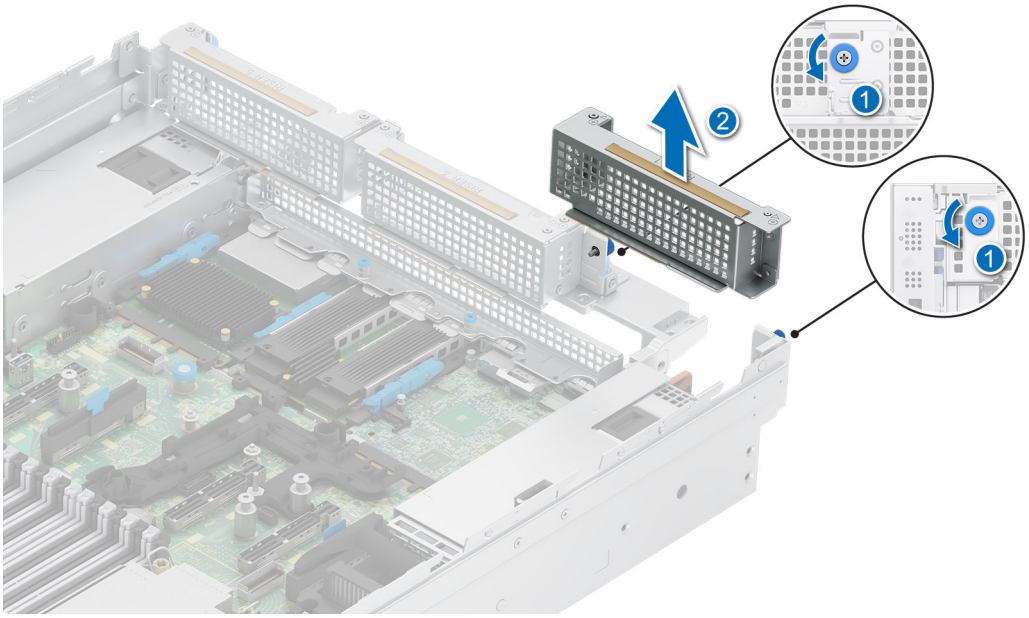


Figure 219. Removing the rear expansion card riser 1 blank

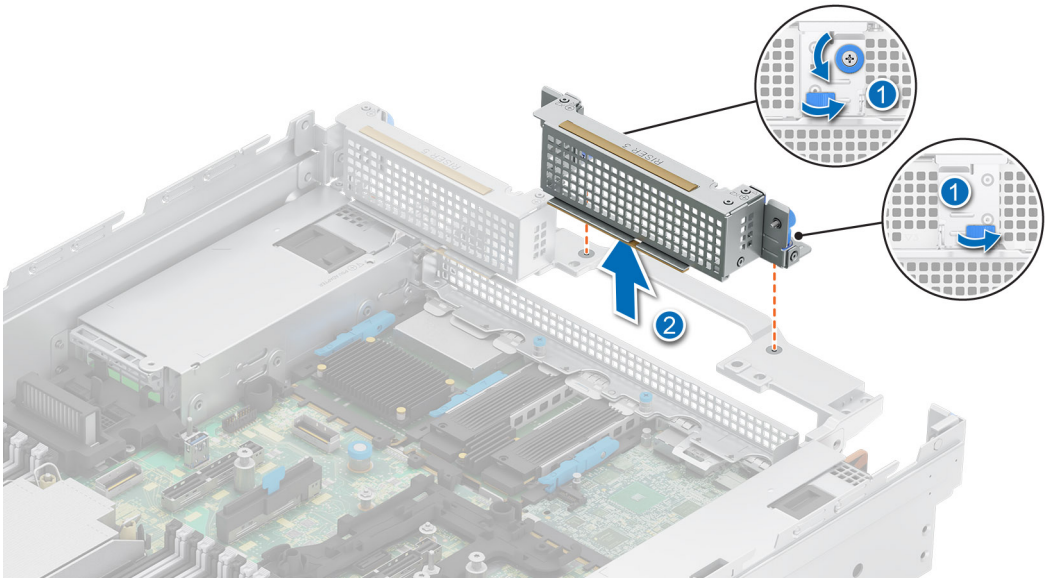


Figure 220. Removing the rear expansion card riser 3 blank

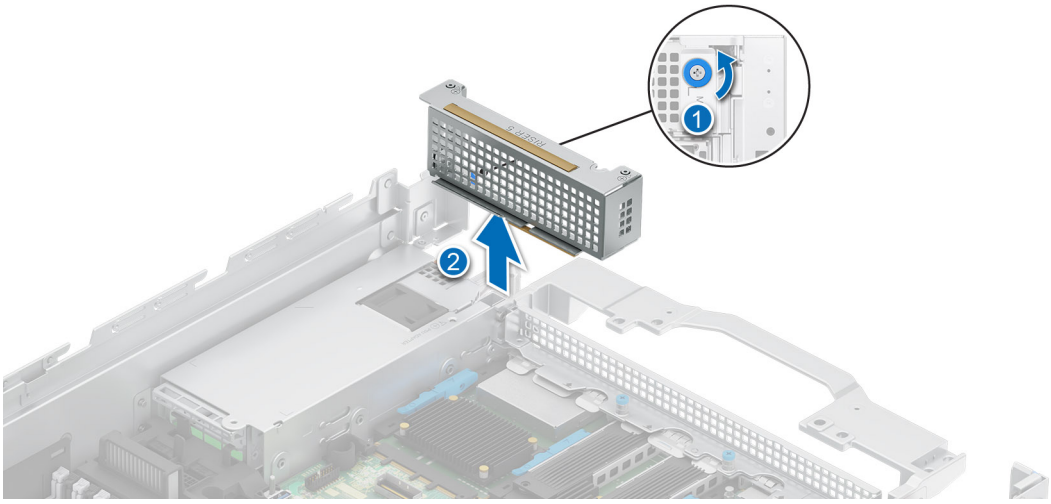


Figure 221. Removing the rear expansion card riser 5 blank

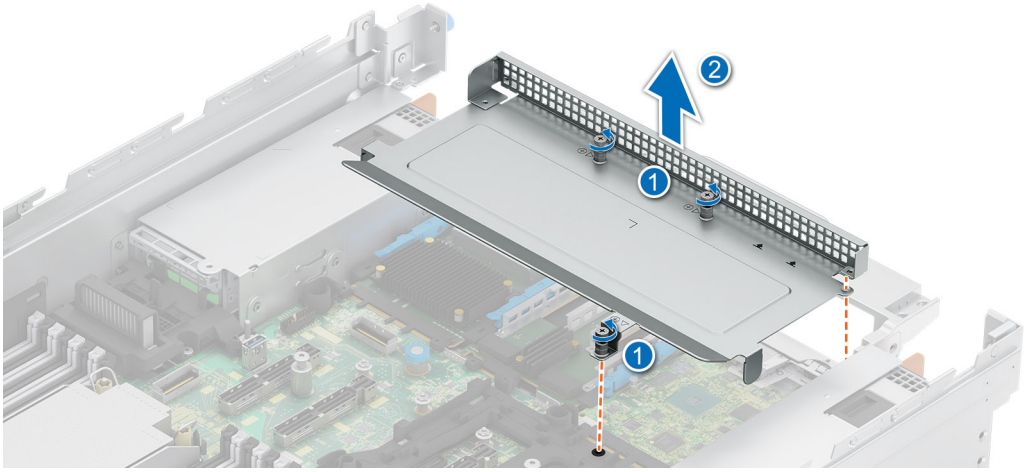


Figure 222. Removing the expansion card riser 4 and riser 2 blank

Next steps

1. Replace the rear expansion card riser blanks.

Installing the rear expansion card riser blanks

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

NOTE: Rear riser blanks are available on system with front riser configuration.

Steps

1. Holding the edges align the holes on the expansion card riser blanks with the guides on the system.
2. Lower the expansion card riser blanks into place.
3. Tighten the captive screws on the risers and system.

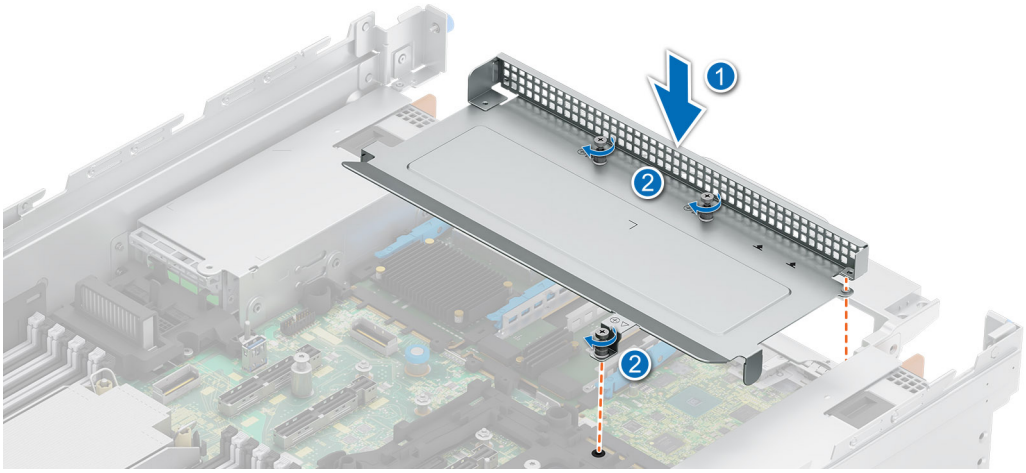


Figure 223. Installing the rear expansion card riser 4 and riser 2 blank

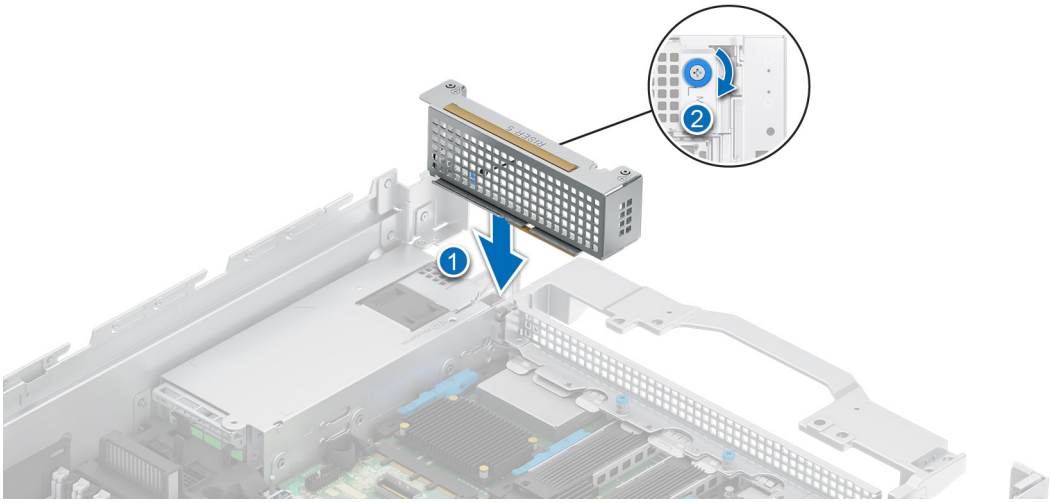


Figure 224. Installing the rear expansion card riser 5 blank

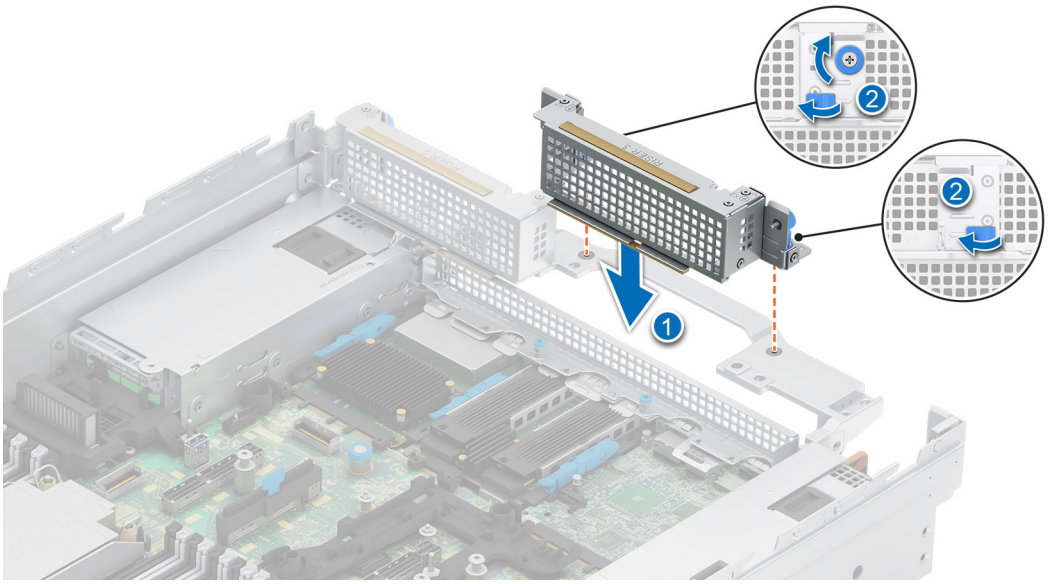


Figure 225. Installing the rear expansion card riser 3 blank

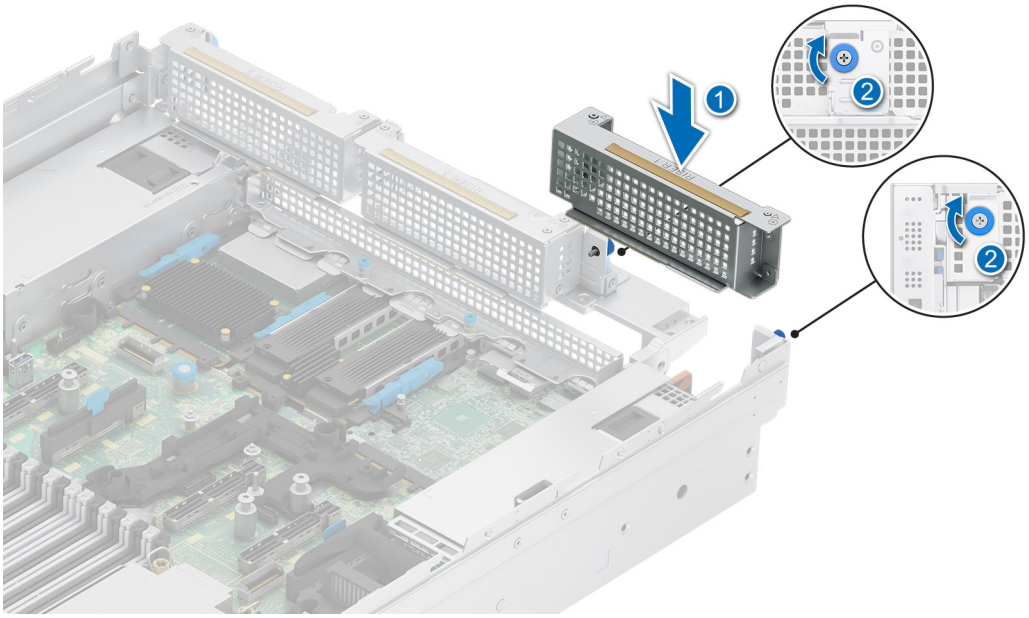


Figure 226. Installing the rear expansion card riser 1 blank

Next steps

1. Follow the procedure listed in After working inside your system.

M.2 SSD module

NOTE: For information about Thermal pad and BOSS-N1 card carrier replacement, go to PowerEdge Manuals > **Rack Servers** > PowerEdge R770 > **Select This Product** > **Documentation** > **Manuals and Documents** > **BOSS-N1 DC-MHS M.2 NVMe SSD Card Installation and BOSS-N1 DC-MHS carrier Replacement Tech Sheet**.

NOTE: For information about M.2 Interposer board replacement and M.2 NVMe SSD module installation, go to PowerEdge Manuals > **Rack Servers** > PowerEdge R770 > **Select This Product** > **Documentation** > **Manuals and Documents** > **M.2 Interposer board - Replacement and M.2 NVMe SSD module - Installation Tech Sheet**.

Removing the M.2 NVMe SSD module from the BOSS-N1 DC-MHS card carrier

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Pull and lift the BOSS-N1 DC-MHS card carrier retention latch lock to open.
2. Slide the BOSS-N1 DC-MHS card carrier out.

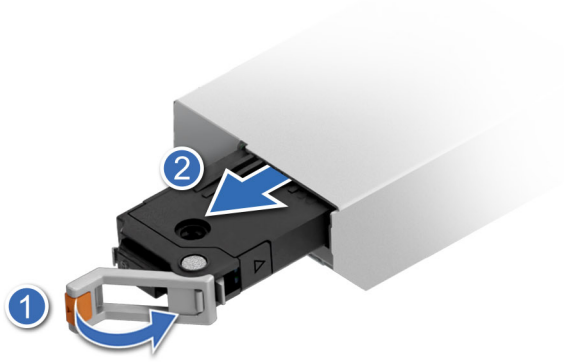


Figure 227. Removing the BOSS-N1 DC-MHS card carrier

3. Using the Phillips 1 screwdriver, loosen the captive screws securing the top cover of the BOSS-N1 DC-MHS card carrier.

   NOTE: Follow the sequence to loosen the captive screws. First, loosen the screw at the connector end, and then the screw at the front handle end.

Figure 228. Loosen the top cover captive screws

4. Tilt the top cover from the side and lift the top cover out of the BOSS-N1 DC-MHS card carrier.

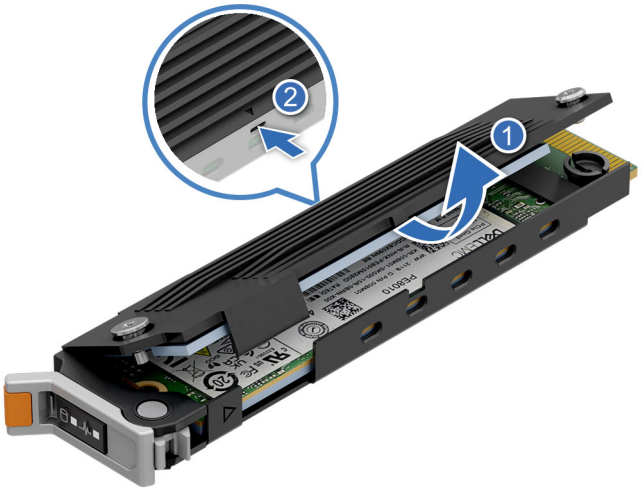


Figure 229. Removing the top cover

5. Lift the M.2 NVMe SSD module and then slowly pull the card outward to disconnect from the connector.

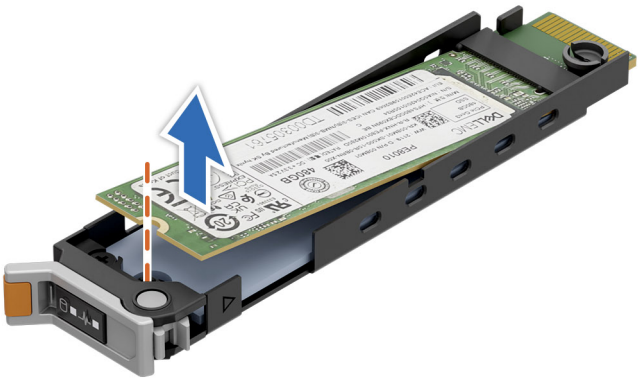


Figure 230. Removing the M.2 NVMe SSD module

Next steps

1. Replace the M.2 NVMe SSD module in the BOSS-N1 DC-MHS card carrier.

Installing the M.2 NVMe SSD module in the BOSS-N1 DC-MHS card carrier

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Remove the thermal pads on the top cover and bottom cover of the BOSS-N1 DC-MHS card carrier, when replacing the M.2 NVMe SSD module.

   NOTE: The removed thermal pad cannot be reused for installingInstalling the new thermal pads inside the BOSS-N1 DC-MHS card carriers the M.2 NVMe SSD module. You must use the new thermal pads for installing the M.2 NVMe SSD module.

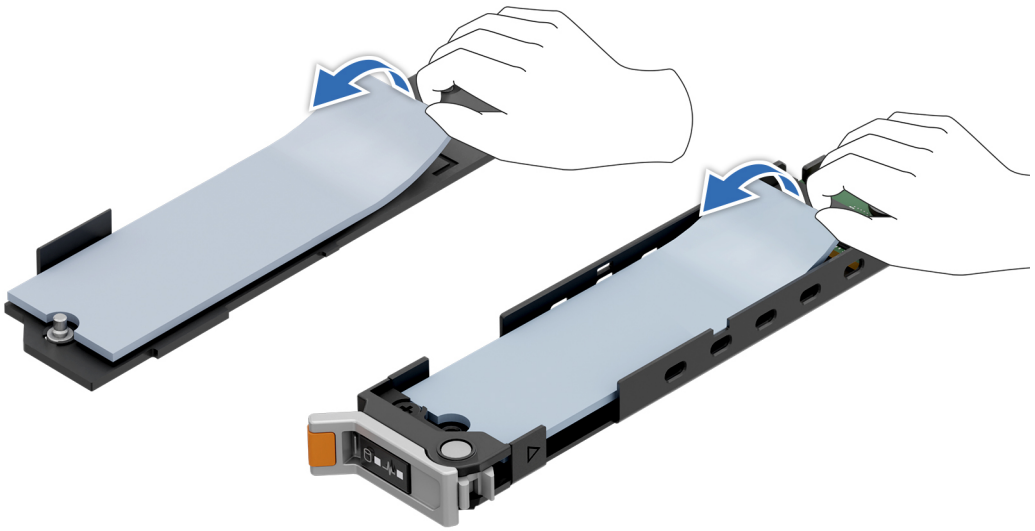


Figure 231. Removing the old thermal pads on the top and bottom of the BOSS-N1 DC-MHS card carriers

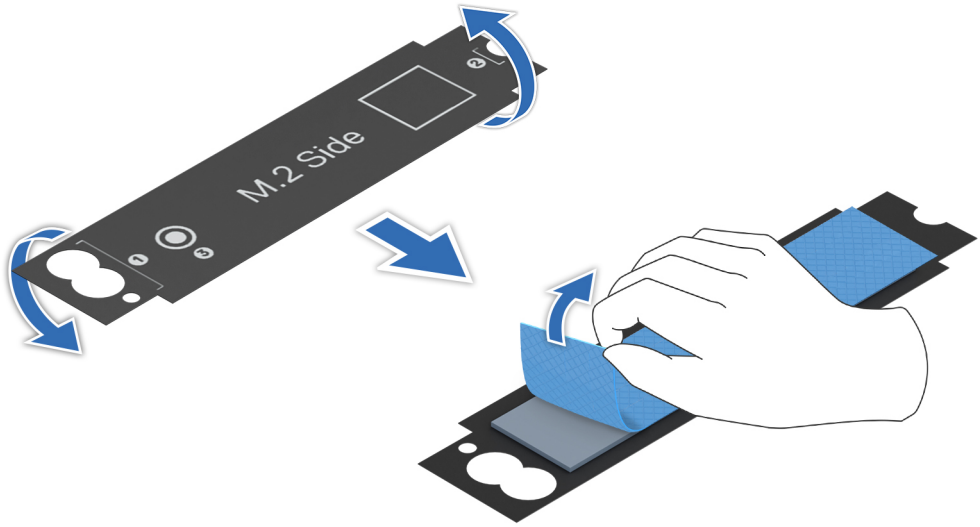


Figure 232. Flip the new thermal pads and removing the blue film

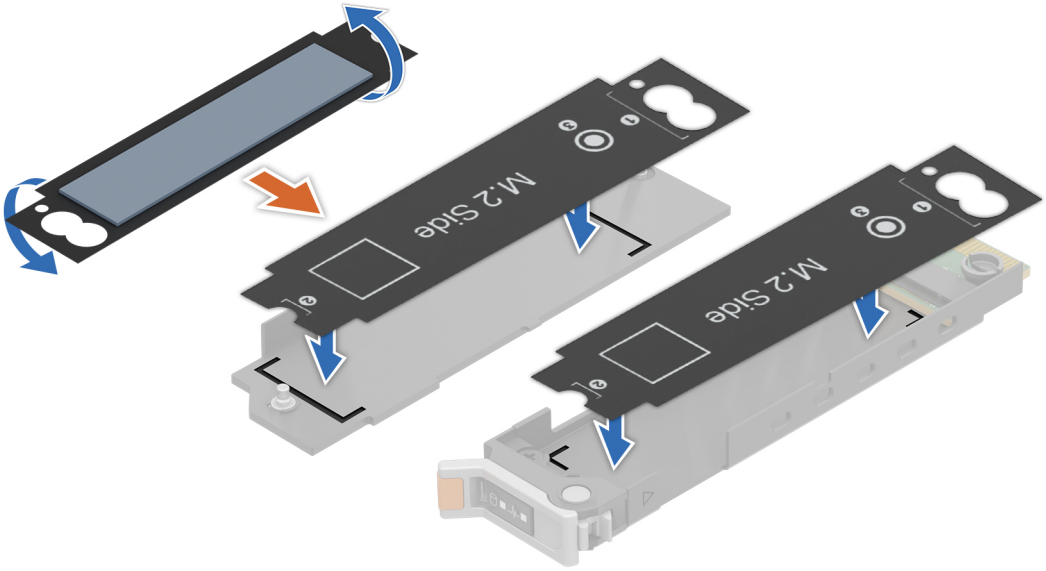


Figure 233. Installing the new thermal pads on the top and bottom of the BOSS-N1 DC-MHS card carriers

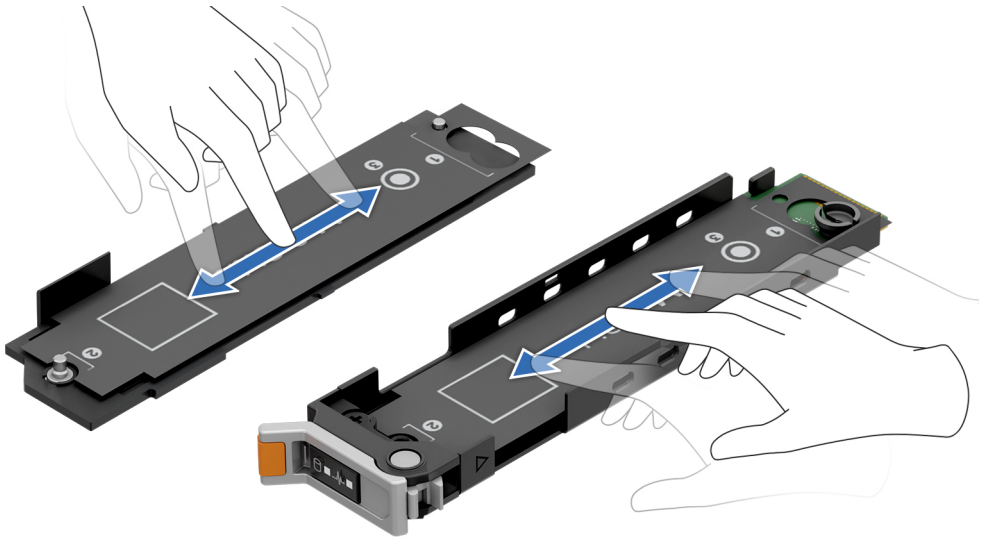


Figure 234. Pasting the new thermal pads

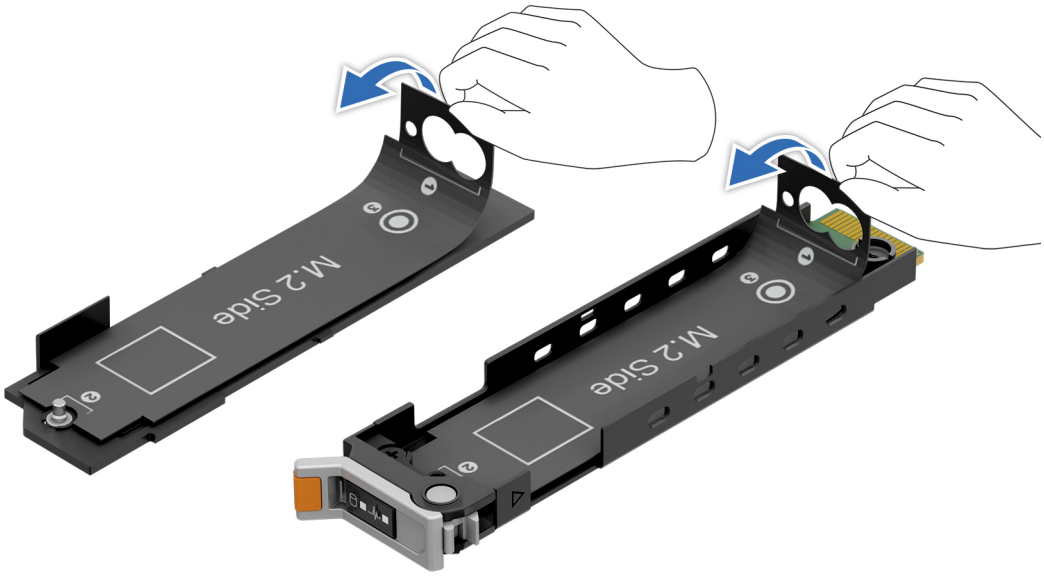
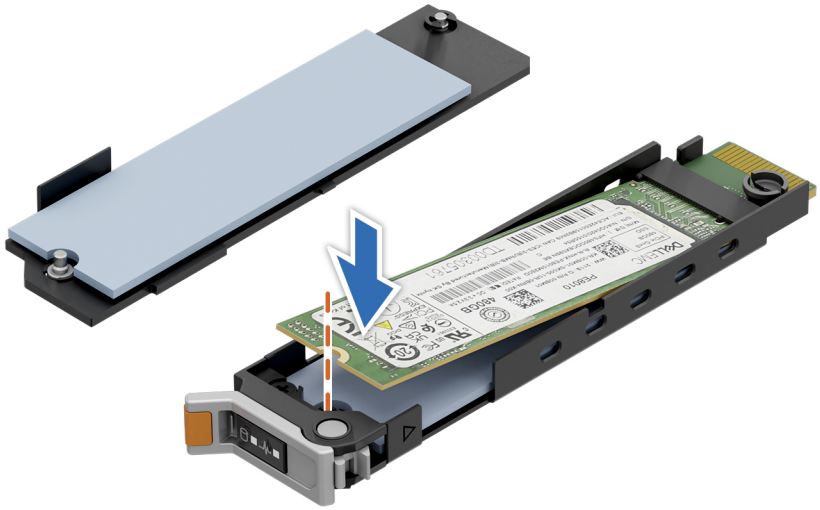


Figure 235. Removing the black mylars

2. Align the M.2 NVMe SSD module at an angle with the BOSS-N1 DC-MHS card carrier connector.
3. Insert the M.2 NVMe SSD module until it is firmly seated in the BOSS-N1 DC-MHS card carrier connector.

NOTE: Press the M.2 NVMe SSD card until it adheres to the thermal pad.

Figure 236. Installing the M.2 NVMe SSD



module

4. Align at an angle, place the top cover hook into the slot on the bottom cover of the BOSS-N1 DC-MHS card carrier.
5. Press the opposite side of the top cover until firmly seated.

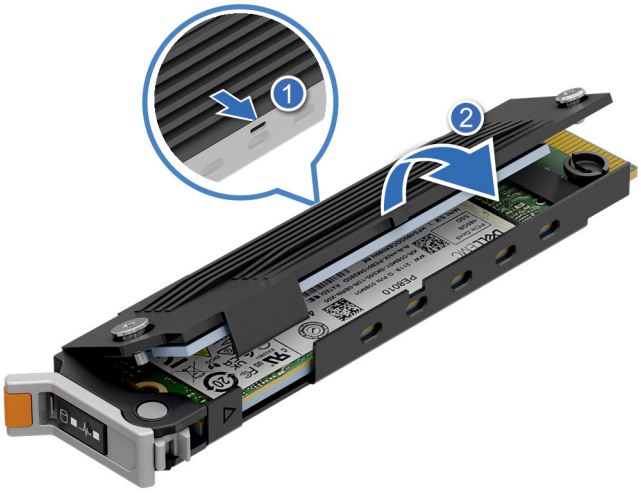


Figure 237. Installing the top cover

6. Using the Phillips 1 screwdriver, tighten the captive screws on the BOSS-N1 DC-MHS card carrier top cover.

NOTE: Follow the sequence to tighten the captive screws. First, tighten the screw available at the front handle end, and then the screw at the connector end.

Figure 238. Tighten the top cover captive screws

7. Slide the BOSS-N1 DC-MHS card carrier into the BOSS-N1 module slot.
8. Close the BOSS-N1 DC-MHS card carrier release latch to lock the carrier in place.

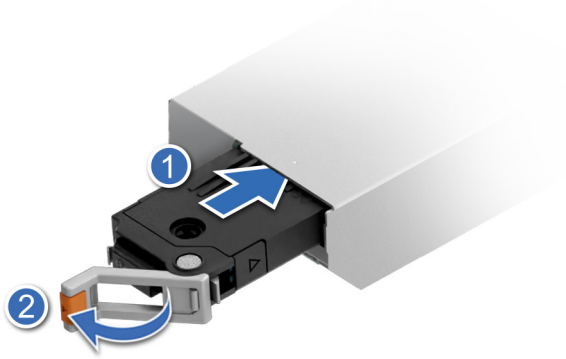


Figure 239. Installing the BOSS-N1 DC-MHS card carrier

Removing the M.2 NVMe SSD module from the M.2 Interposer board

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 M.2 Interposer board .

Steps

1. Using the Phillips 1 screwdriver, loosen the captive screws securing the top cover of the M.2 Interposer board. Tilt the top cover from the side and lift the top cover out of the M.2 Interposer board.

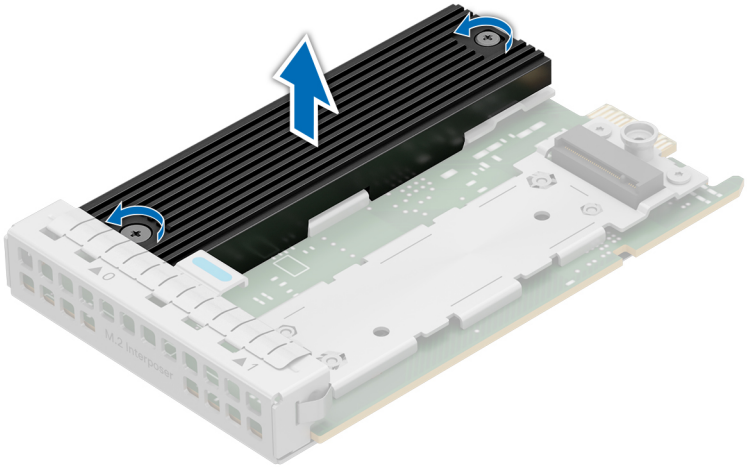


Figure 240. Loosen the top cover captive screws

2. Lift the M.2 NVMe SSD module to disconnect from the M.2 Interposer board.

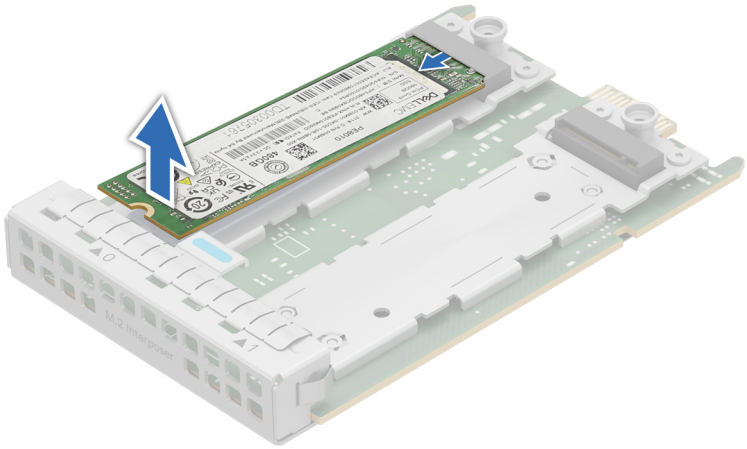


Figure 241. Removing the M.2 NVMe SSD from the board

Next steps

1. Replace the M.2 NVMe SSD module in the M.2 Interposer board.

Installing the M.2 NVMe SSD module in the M.2 Interposer board

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 M.2 Interposer board .

Steps

1. Remove the thermal pads on the top cover and bottom cover of the the M.2 Interposer board, when replacing the M.2 NVMe SSD module in the M.2 Interposer board.

   NOTE: The thermal pad that has been removed cannot be reused for installing the M.2 NVMe SSD module. You must use new thermal pads for the installation.

   NOTE: The procedure to install the M.2 NVMe SSD module on slot0 and slot1 is same.

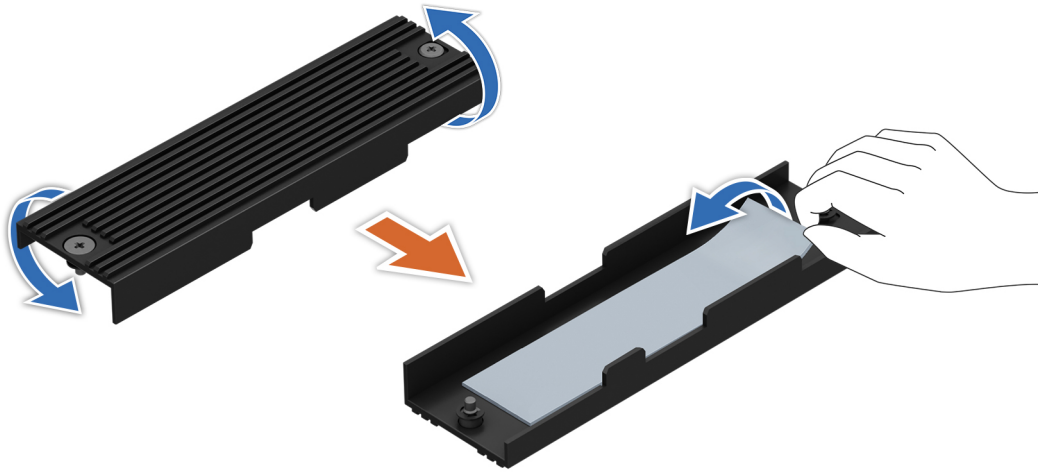


Figure 242. Removing the thermal pad from the top cover

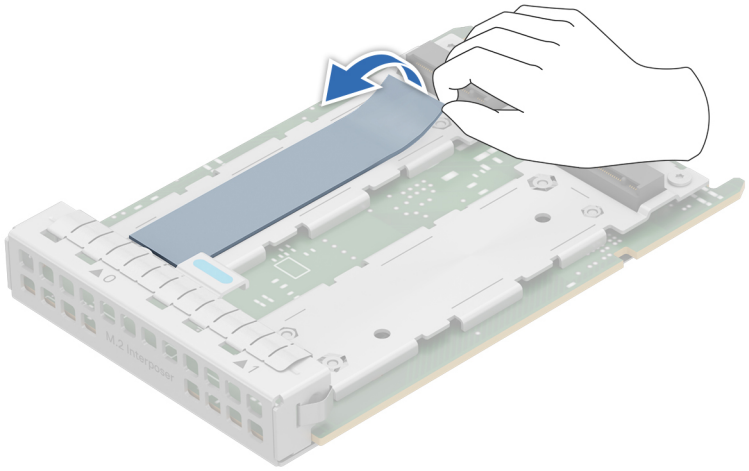


Figure 243. Removing the thermal pad from the board from the slot0

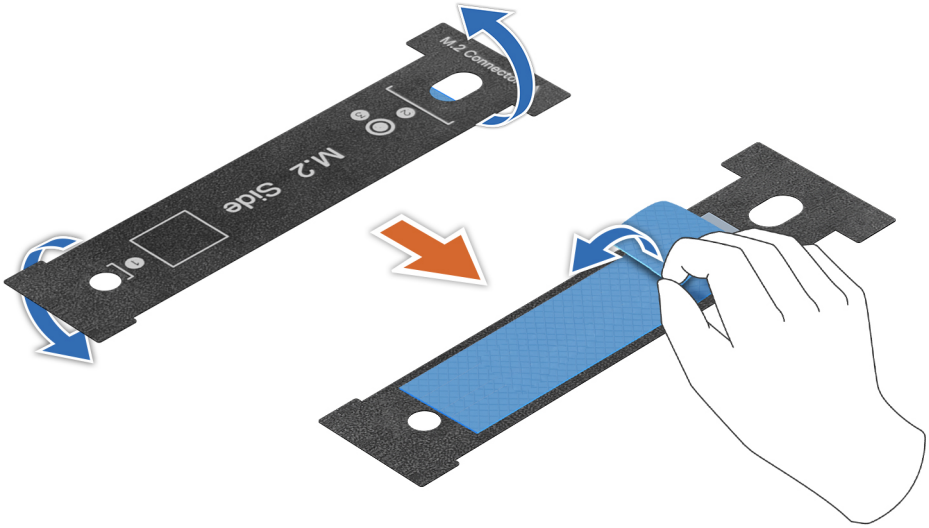


Figure 244. Removing the blue film from the new thermal pad

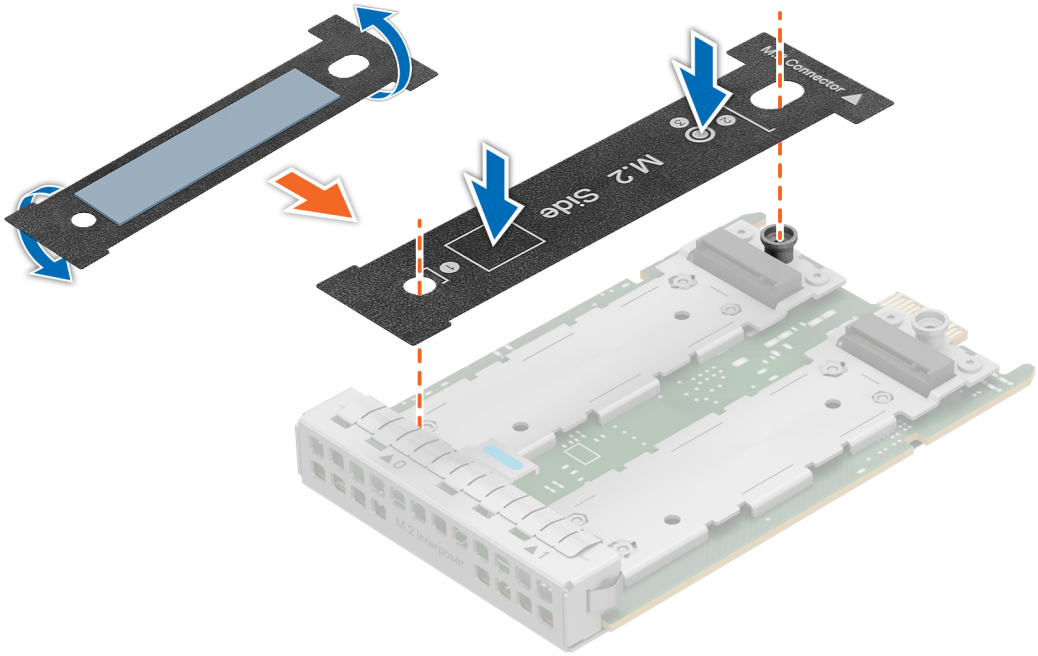


Figure 245. Fliping and installing the new thermal pad on the board

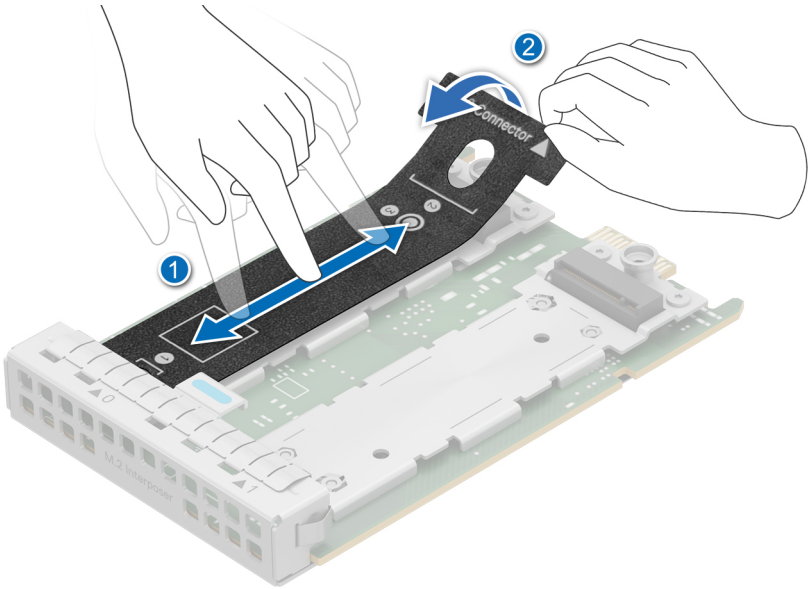


Figure 246. Pasting the new thermal pad on the board and removing the black mylar

2. Align the M.2 NVMe SSD module at an angle with the M.2 Interposer board.
3. Insert the M.2 NVMe SSD module until it is firmly seated in the M.2 Interposer board.

NOTE: Press the M.2 NVMe SSD module until it adheres to the thermal pad.

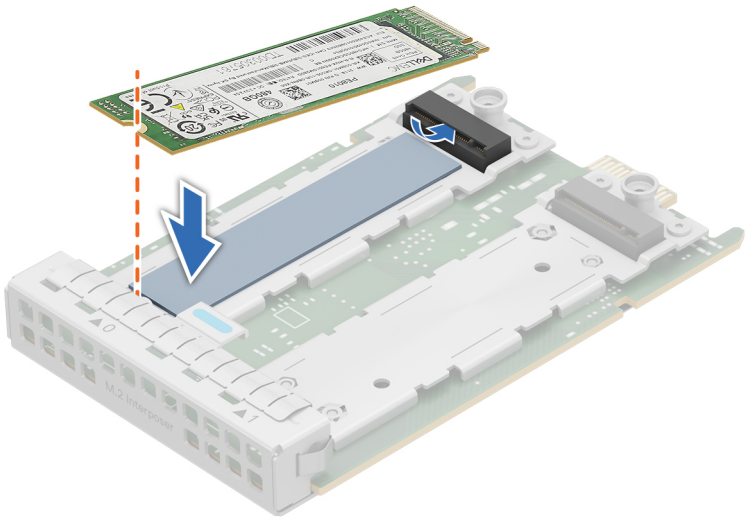


Figure 247. Installing the new M.2 NVMe SSD module

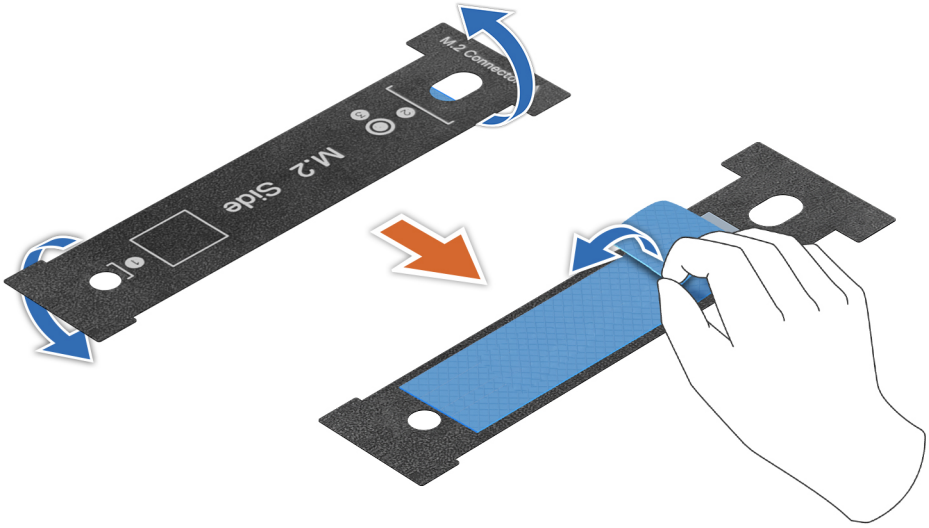


Figure 248. Removing the blue film from another thermal pad

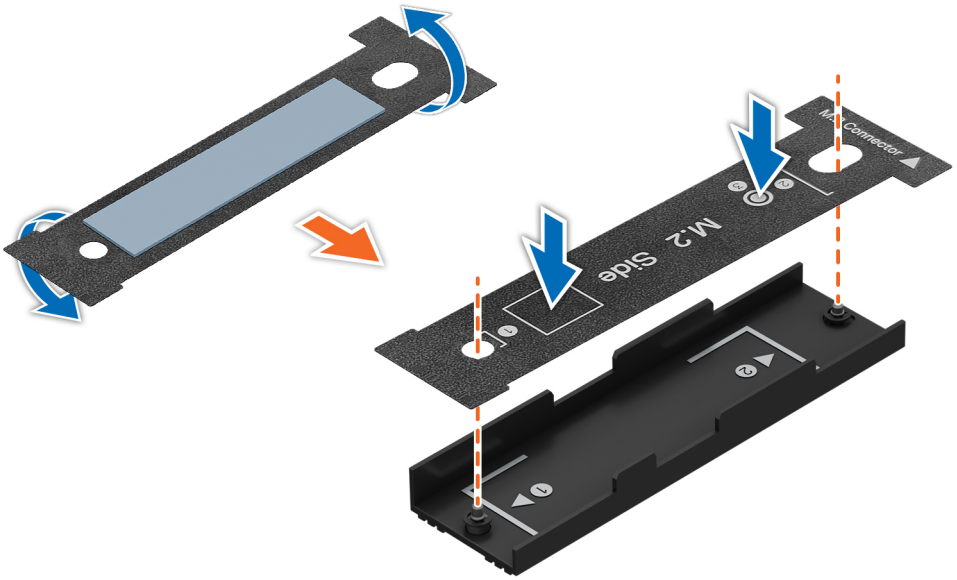


Figure 249. Installing the new thermal pad inside the top cover

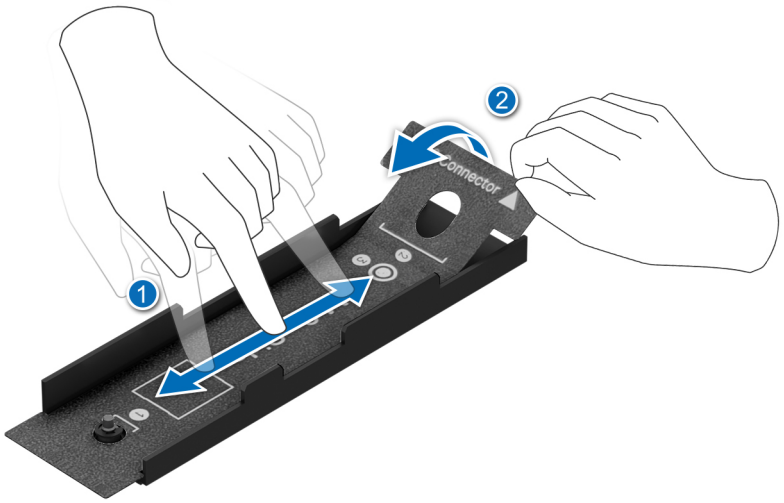


Figure 250. Pasting the new thermal pad inside the top cover and removing the black mylar from the thermal pad

4. Flip the top cover and install it on the M.2 Interposer board. Using the Phillips 1 screwdriver, tighten the captive screws on tthe M.2 Interposer board top cover.

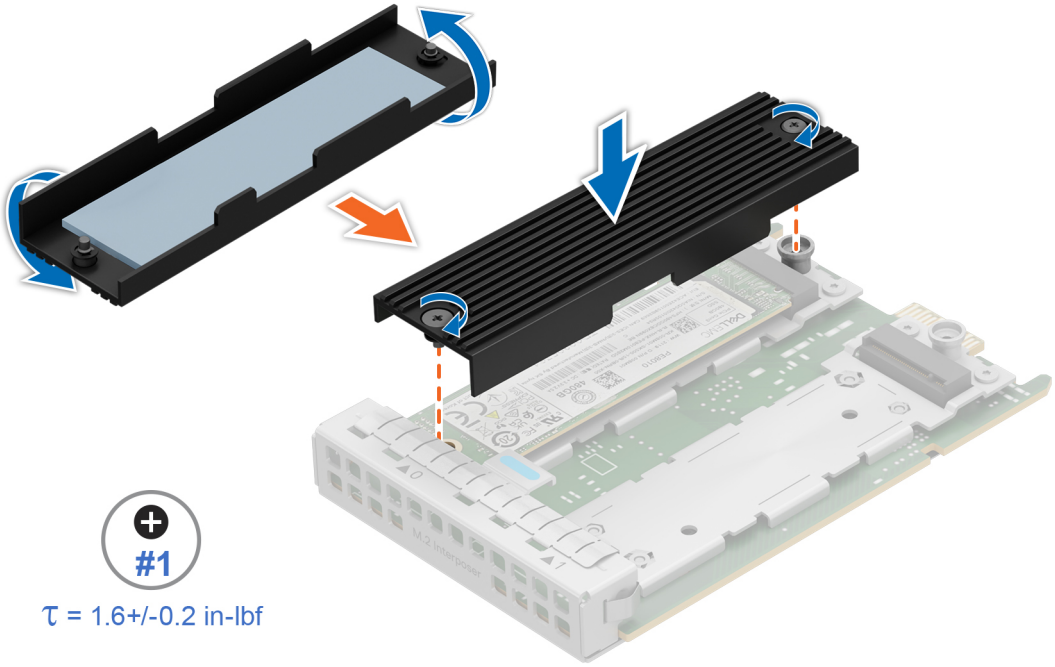


Figure 251. Installing the top cover

Optional BOSS-N1 DC-MHS module

This is a service technician replaceable part only.

Removing the BOSS-N1 card carrier blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

Steps

Press and pull the BOSS-N1 card carrier blank out from the BOSS-N1 controller.

Figure 252. Removing the BOSS-N1 card carrier blank

Next steps

1. Replace the BOSS-N1 card carrier blank or install BOSS-N1 card carrier.

Installing the BOSS-N1 card carrier blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

Steps

Align the blank with the BOSS-N1 controller bay and push it into the bay until it clicks into place.

Figure 253. Installing the BOSS-N1 card carrier blank

Removing the rear BOSS-N1 DC-MHS controller

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 rear expansion card riser or remove the rear expansion card riser blanks.
4. Remove the M.2 NVMe SSD module.

Steps

1. Open the blue latch to disengage the BOSS-N1 DC-MHS controller.
2. Push the BOSS-N1 DC-MHS controller towards the rear end of the system to disconnect from the connector on the system board.
3. Slide the BOSS-N1 DC-MHS controller out of the slot on the system.

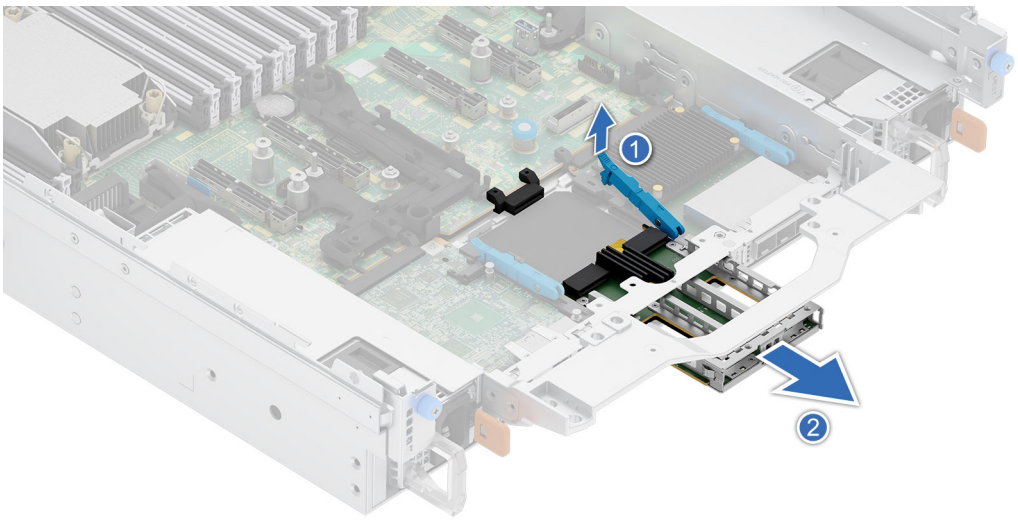


Figure 254. Removing the rear BOSS-N1 DC-MHS controller

4. If you do not plan to replace the BOSS-N1 DC-MHS controller card, install a filler bracket.

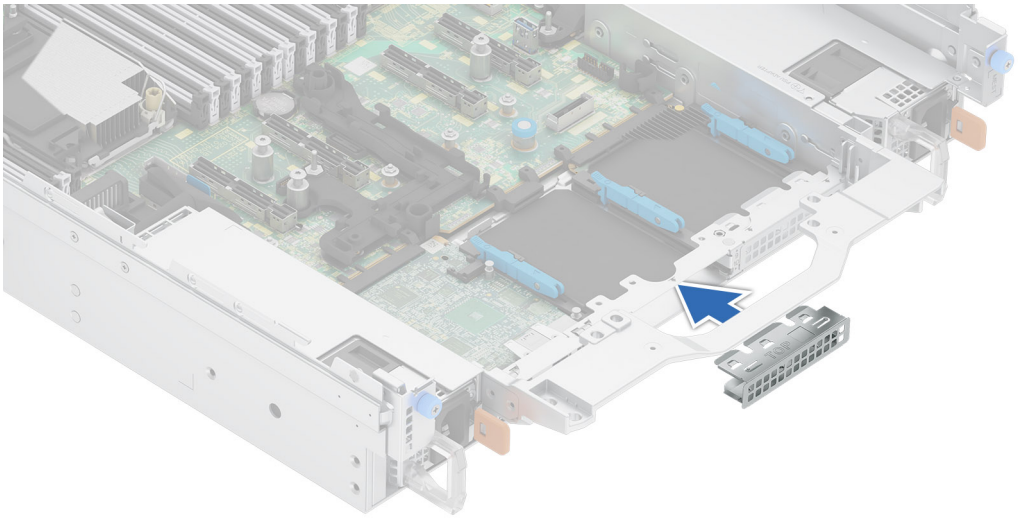


Figure 255. Installation of filler bracket

Next steps

1. Replace the BOSS-N1 DC-MHS controller.

Installing the rear BOSS-N1 DC-MHS controller

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 rear expansion card riser or remove the rear expansion card riser blanks.
4. Remove the M.2 NVMe SSD module.

Steps

1. If installed, remove the filler bracket.

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

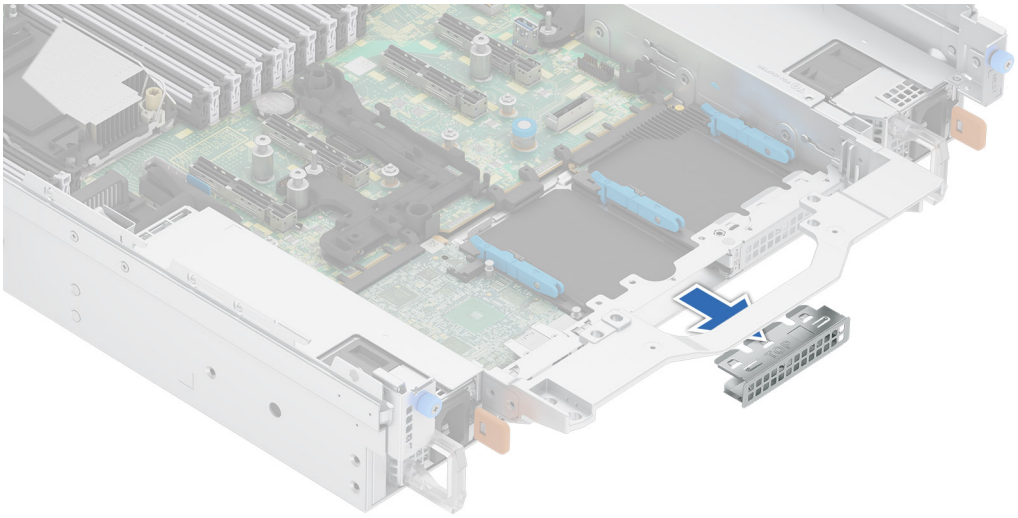


Figure 256. Removal of filler bracket

2. Open the blue latch on the system board.
3. Slide the BOSS-N1 DC-MHS controller into the slot in the system.
4. Push until the BOSS-N1 DC-MHS controller is connected to the connector on the system board.
5. Close the blue latch to lock the BOSS-N1 DC-MHS controller to the system.

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

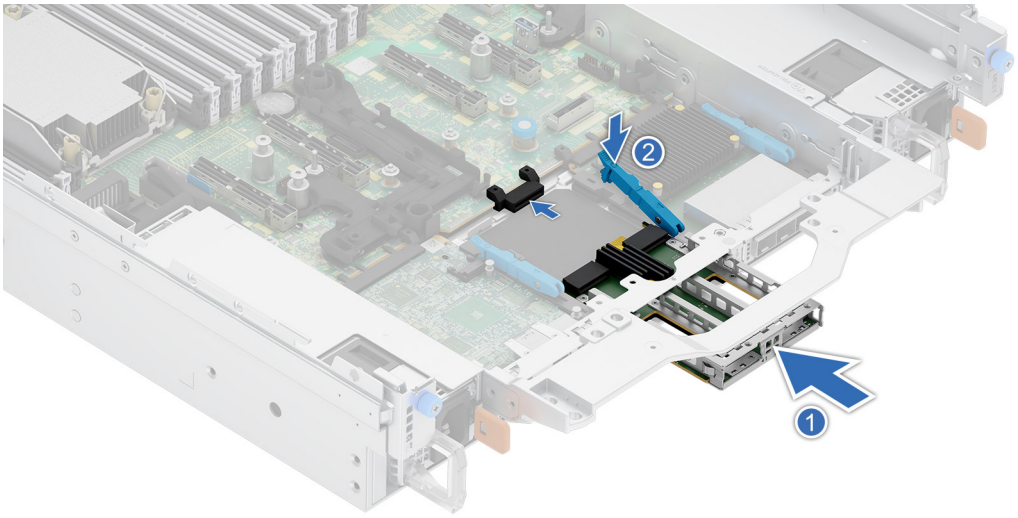


Figure 257. Installing the BOSS-N1 DC-MHS controller

Next steps

1. Install the M.2 NVMe SSD module.
2. Install the rear expansion card riser or install the rear expansion card riser blanks.
3. Follow the procedure listed in the After working inside your system.

Removing the front BOSS-N1 DC-MHS controller

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. If required, remove the M.2 NVMe SSD module.
7. Remove the front expansion card riser.

NOTE: Front riser 1 must be removed, before removing riser 2 to access the front BOSS-N1 DC-MHS module.

8. Disconnect the cables from the system board, observe the cable routing.

NOTE: See cable routing section for more information.

Steps

1. Lift the plunger and slide the BOSS-N1 DC-MHS controller tray out of the riser 2.

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

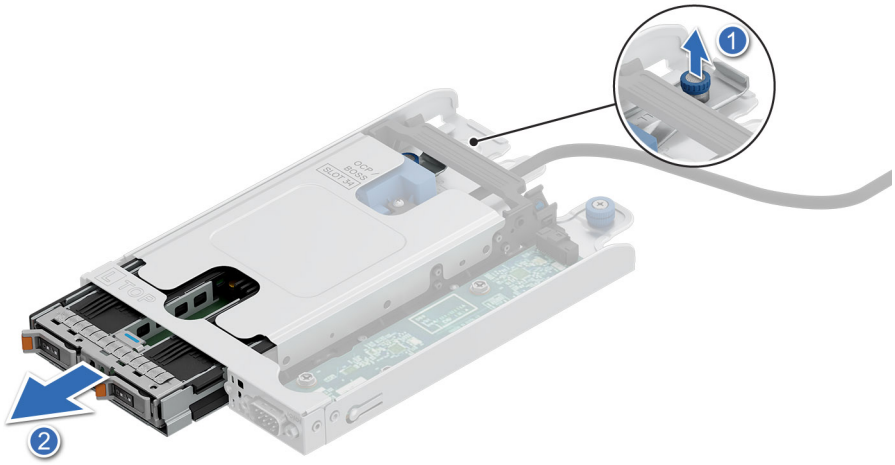


Figure 258. Removing a BOSS-N1 DC-MHS controller tray from the riser

2. Press both ends of the cable holder and tilt the BOSS-N1 DC-MHS controller cable holder.
3. Pull the BOSS-N1 DC-MHS controller cable out of the riser.

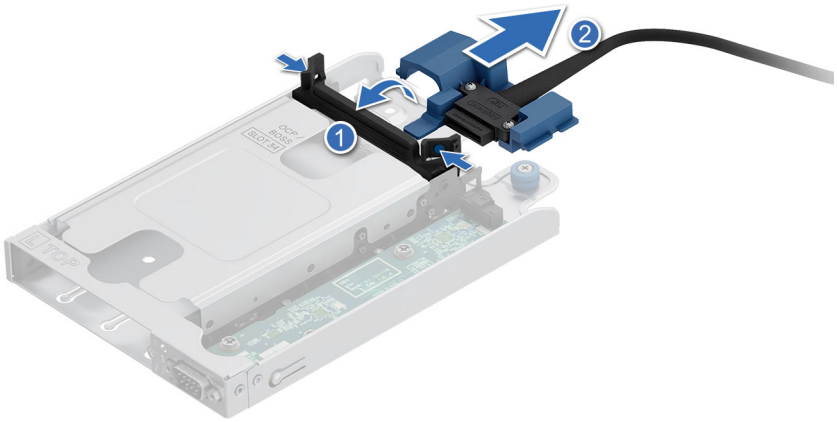


Figure 259. Removing an BOSS-N1 DC-MHS cable

4. Push the clips outward and slide out the BOSS-N1 DC-MHS controller from the tray.

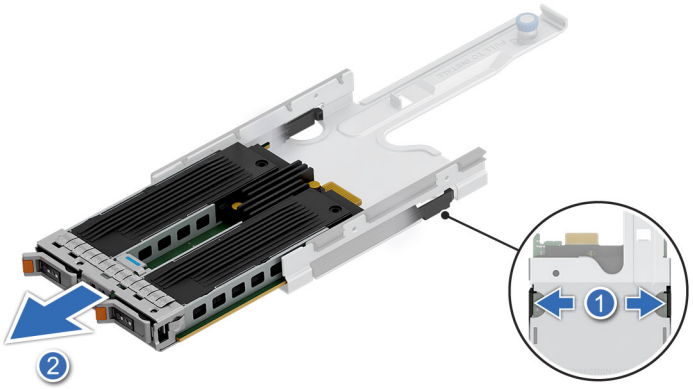


Figure 260. Removing an BOSS-N1 DC-MHS controller from tray

5. If you do not plan to replace the BOSS-N1 DC-MHS controller card, install a filler bracket.

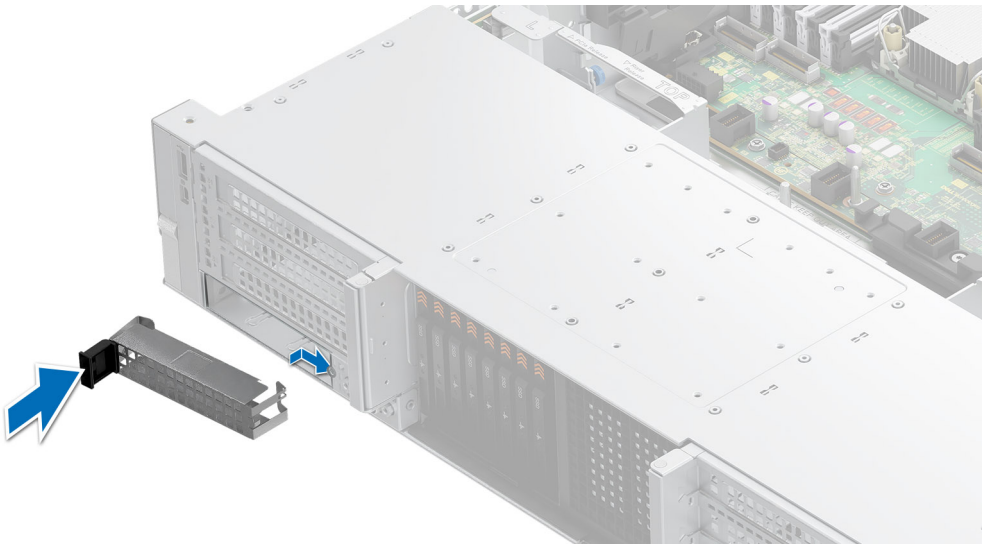


Figure 261. Installing an BOSS-N1 DC-MHS controller filler bracket

Next steps

1. Replace the front BOSS-N1 DC-MHS controller .

Installing the front BOSS-N1 DC-MHS controller

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. If required, remove the M.2 NVMe SSD module.
7. Remove the front expansion card riser.

NOTE: Front riser 1 must be removed, before removing riser 2 to access the front BOSS-N1 DC-MHS module.

8. Route and connect the cables, taking care not to damage them.

NOTE: See cable routing section for more information.

NOTE: Install front riser 2 before installing riser 1.

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.

Steps

1. If installed, remove the filler bracket.

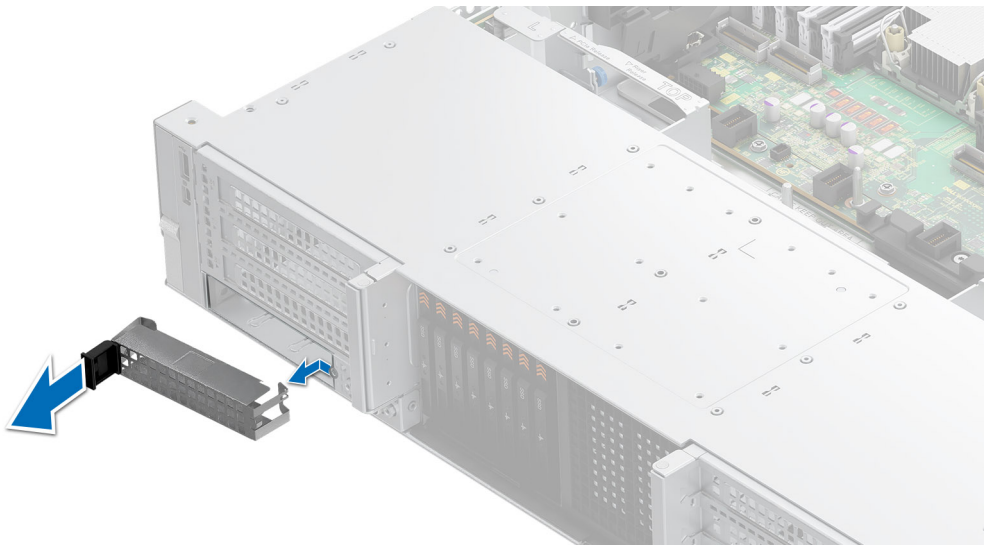


Figure 262. Removing an BOSS-N1 DC-MHS controller filler bracket

2. Align and slide the BOSS-N1 DC-MHS controller into the tray until seated.

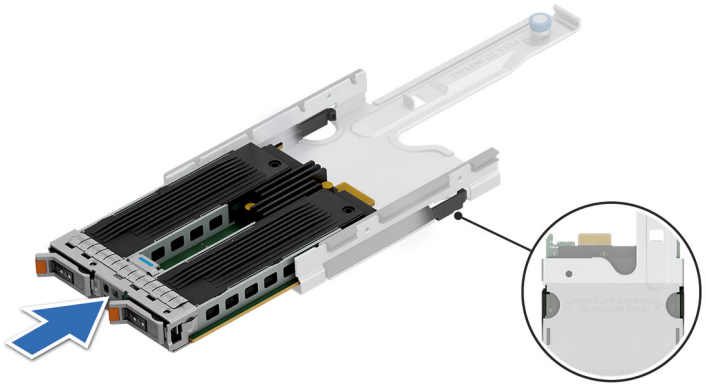


Figure 263. Installing an BOSS-N1 DC-MHS controller into tray

3. Place the BOSS-N1 DC-MHS controller cable to unlock position line on the riser and slide the cable to lock position line.
4. Tilt the cable holder to secure the BOSS-N1 DC-MHS controller cable into the riser.

NOTE: Ensure that the BOSS-N1 DC-MHS controller is properly connected to the cable connector.

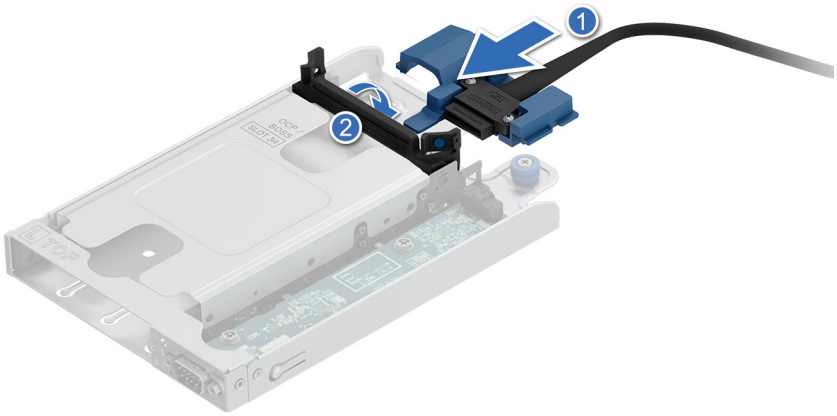


Figure 264. Installing an BOSS-N1 DC-MHS cable

5. Align and slide the BOSS-N1 DC-MHS controller tray into the riser until the plunger press the stop point.
6. Pull up the plunger and slide to secure the plunger into the hole on the riser.

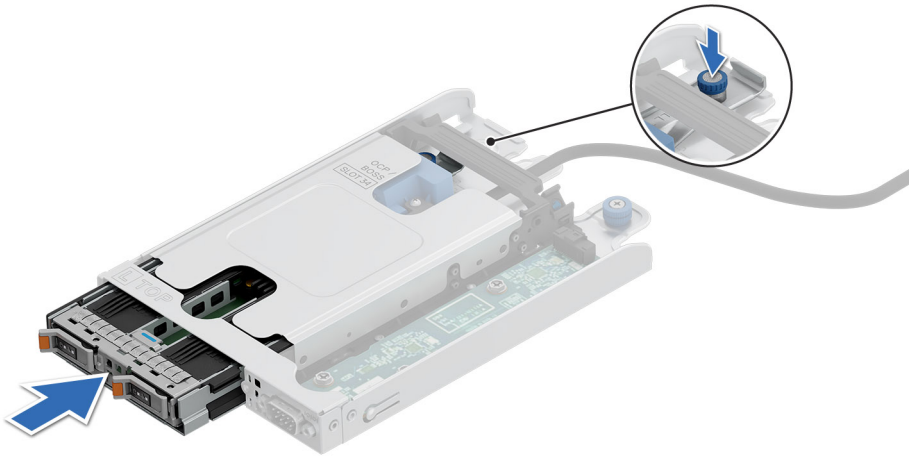


Figure 265. Installing the BOSS-N1 DC-MHS controller tray into riser

Next steps

1. Route and connect the cables, taking care not to damage them.

   NOTE: See cable routing section for more information.

2. If removed, install the M.2 NVMe SSD module
3. Install the front expansion card risers.
4. Install the cooling fan cage assembly.
5. If removed, install the air shroud.
6. If removed, install the drive backplane cover.
7. Follow the procedure listed in the After working inside your system.

BOSS-N1 DC-MHS - Replacement instructions

To replace the BOSS-N1 DC-MHS, follow the steps as shown below:

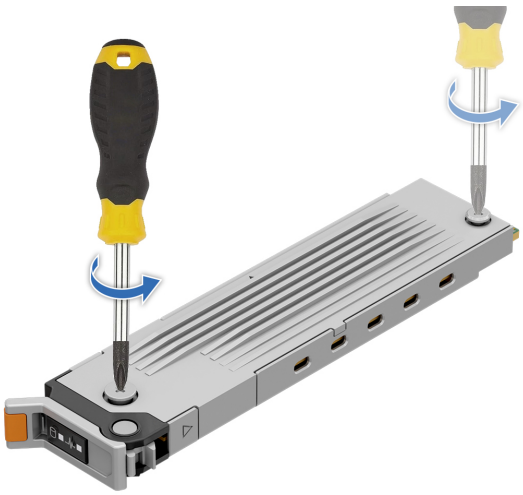


Figure 266. Loosen the top cover captive screw

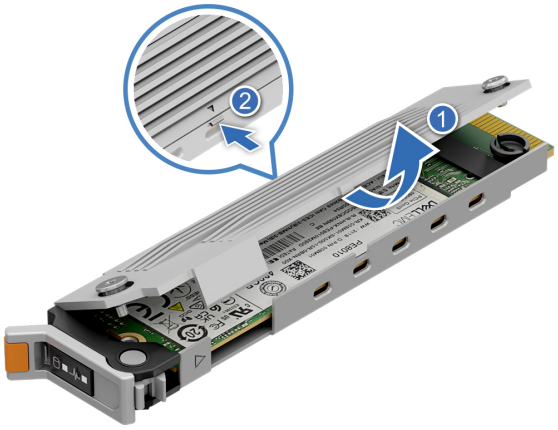


Figure 267. Removing the top cover

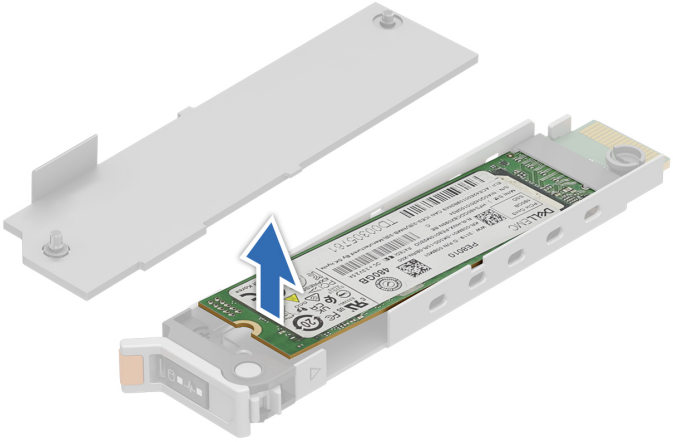


Figure 268. Removing the SSD module

Figure 269. Unboxing the new BOSS carrier

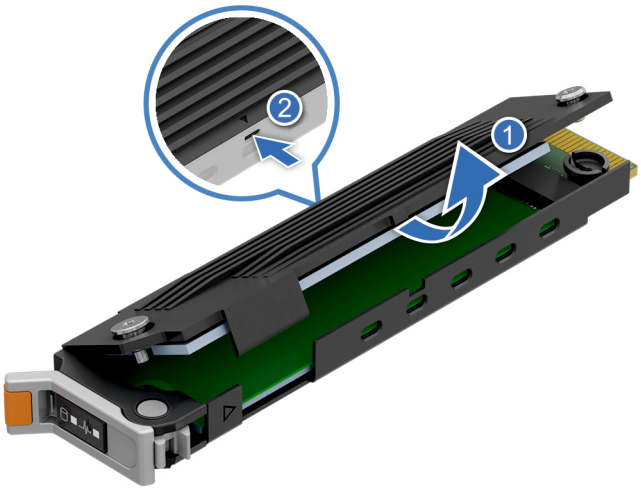


Figure 270. Removing the top cover

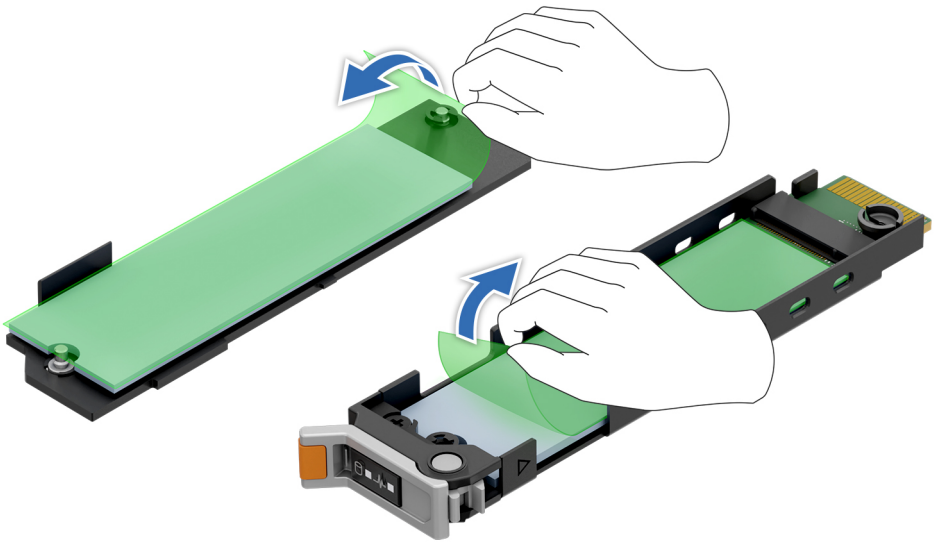


Figure 271. Removing the green films from the top cover and bottom cover

Figure 272. Installing the SSD module in the carrier

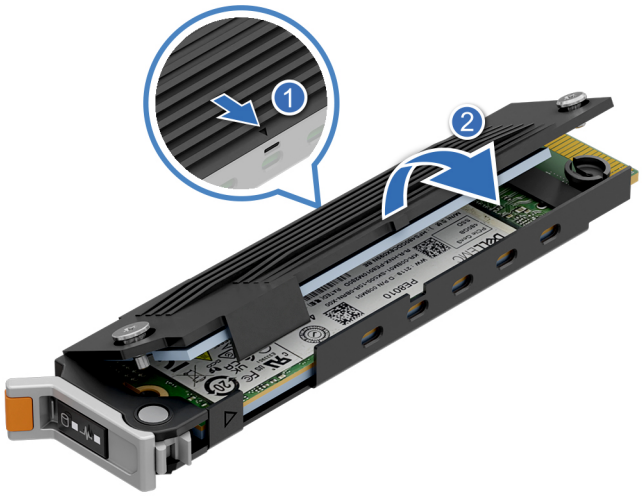


Figure 273. Installing the top cover

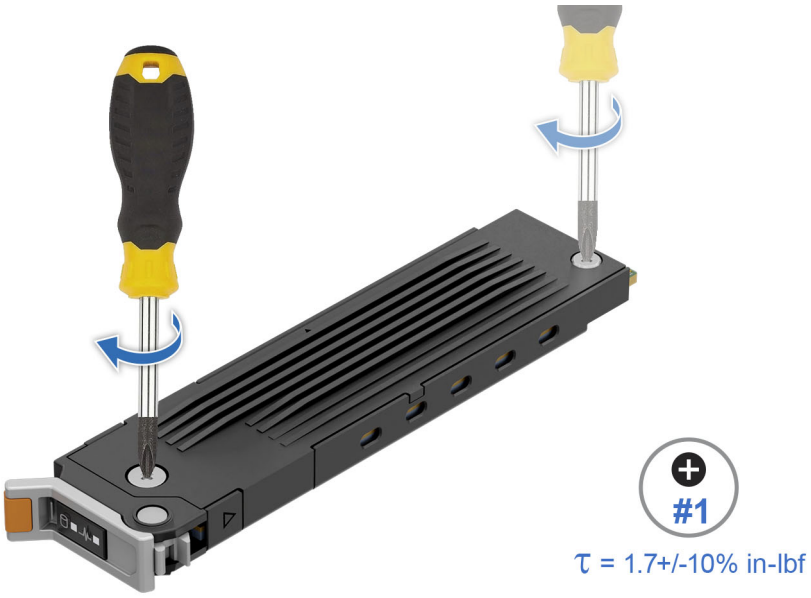


Figure 274. Tightening the top cover

Optional M.2 Interposer board

This is a service technician replaceable part only.

NOTE: For information about M.2 Interposer board with Thermal pad replacement and M.2 NVMe SSD module installation, go to PowerEdge Manuals > **Rack Servers** > PowerEdge R770 > **Select This Product** > **Documentation** > **Manuals and Documents** > **M.2 Interposer board - Replacement and M.2 NVMe SSD module - Installation Tech Sheet**.

Removing the M.2 Interposer board

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 rear expansion card riser or remove the rear expansion card riser blanks.

Steps

1. Open the blue latch to disengage the M.2 Interposer board.
2. Press and hold the push point on the card to push the M.2 Interposer board towards the rear of the system, disconnecting it from the connector on the HPM board.
3. Slide the M.2 Interposer board out of the slot on the system.

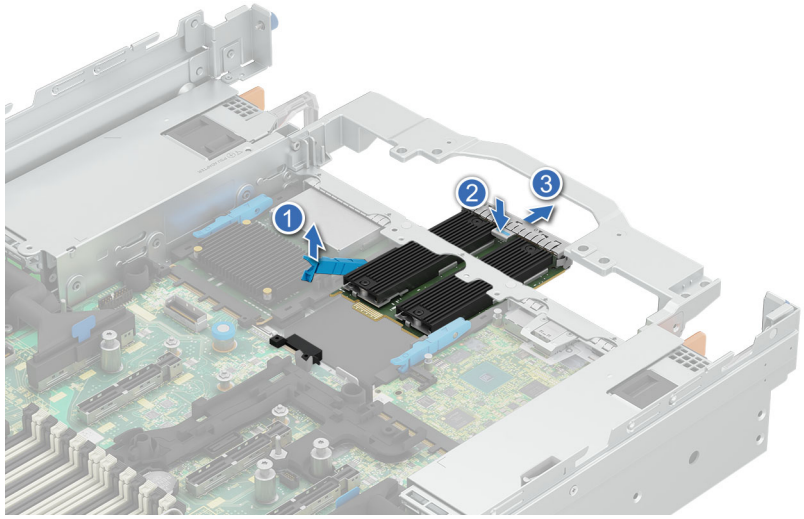


Figure 275. Removing the M.2 Interposer board

4. If you do not plan to replace the M.2 Interposer board, install a filler bracket.

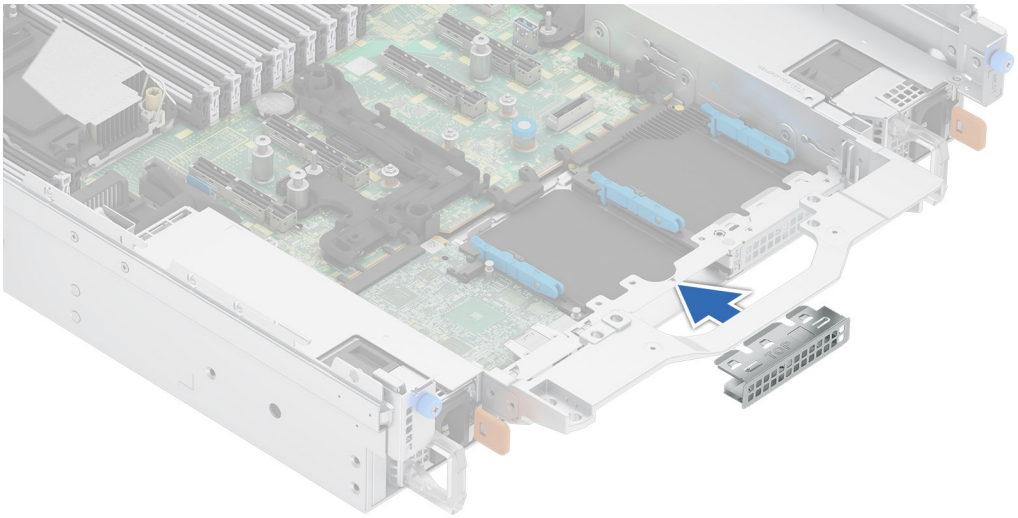


Figure 276. Installation of filler bracket

Next steps

1. Remove the M.2 NVMe SSD module from the M.2 Interposer board.

   NOTE: If a new M.2 Interposer board is being installed, the M.2 NVMe SSD modules must be removed from the existing M.2 Interposer board.

2. Replace the the M.2 Interposer board

.

Installing the M.2 Interposer board

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 rear expansion card riser or remove the rear expansion card riser blanks.

Steps

1. If installed, remove the filler bracket.

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

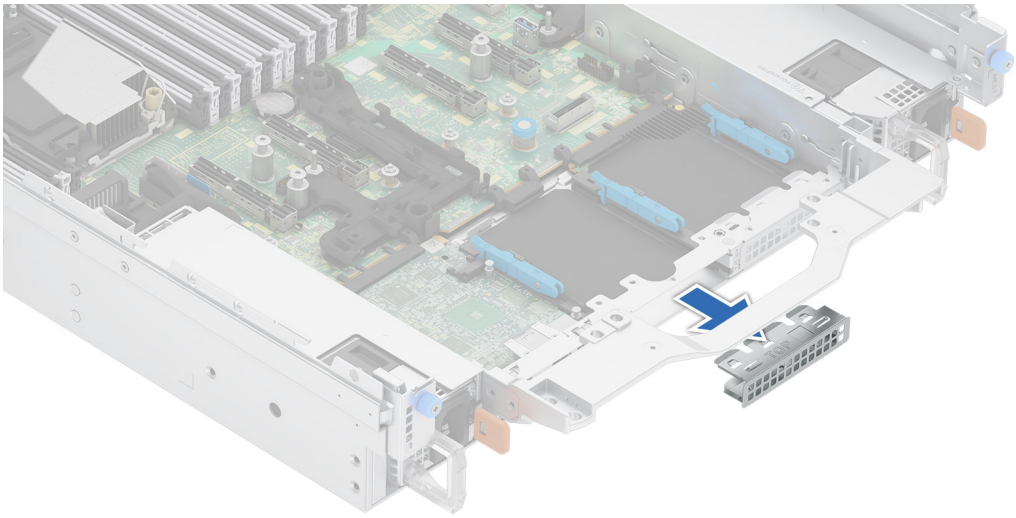


Figure 277. Removal of filler bracket

2. Remove the thermal pads from the top cover and from the bottom of the M.2 Interposer board, when replacing the M.2 Interposer board.

   CAUTION: If you are not using the slot 1, peel off the protective film and the thermal pad on the slot 1.

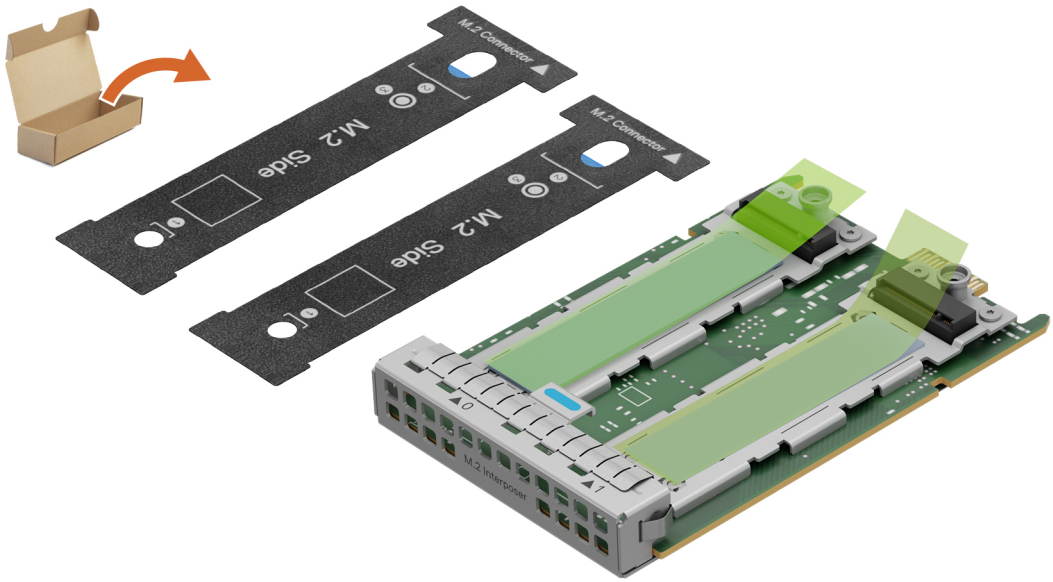


Figure 278. Kit contents

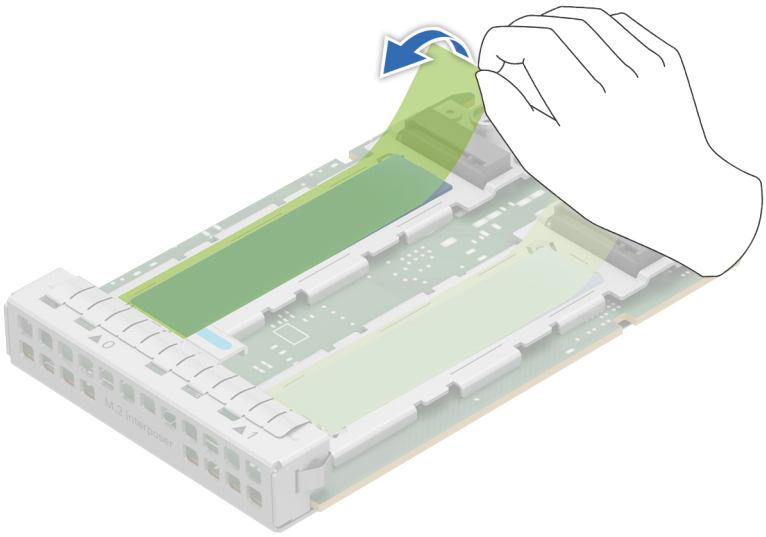


Figure 279. Removing the protective film from the thermal pad

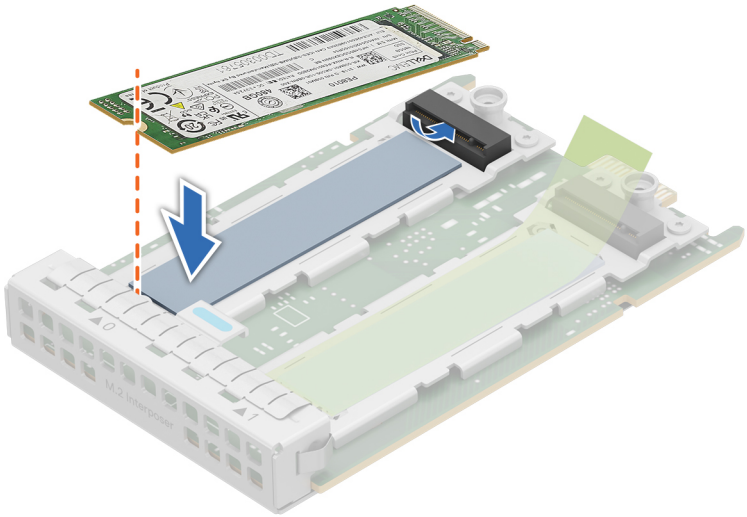


Figure 280. Installing the SSD

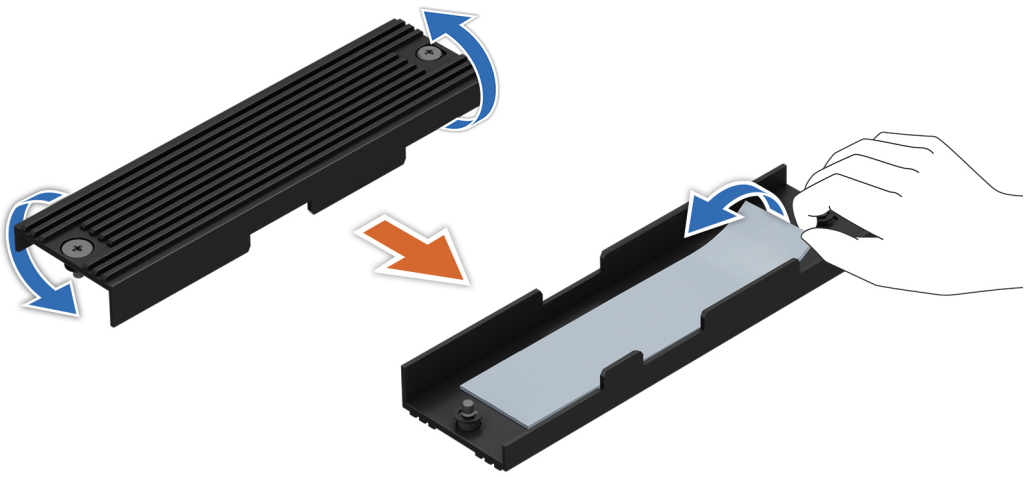


Figure 281. Fliping the top cover and removing the thermal pad from the top cover

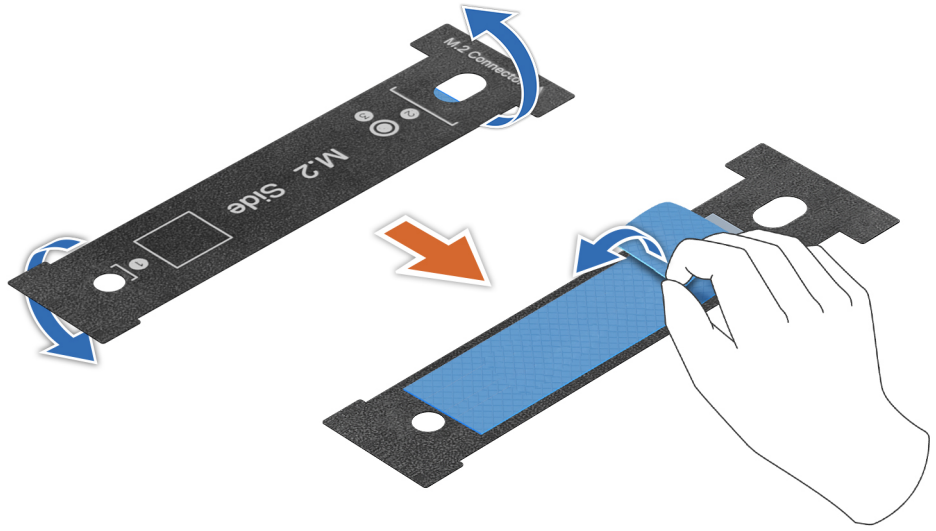


Figure 282. Removing the blue film from the new thermal pad

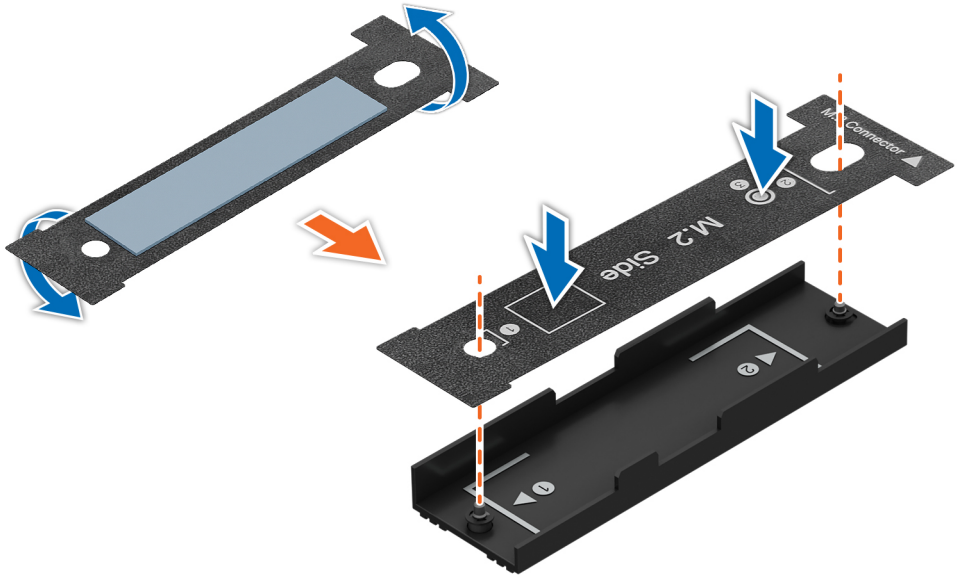


Figure 283. Installing the new thermal pad inside the top cover

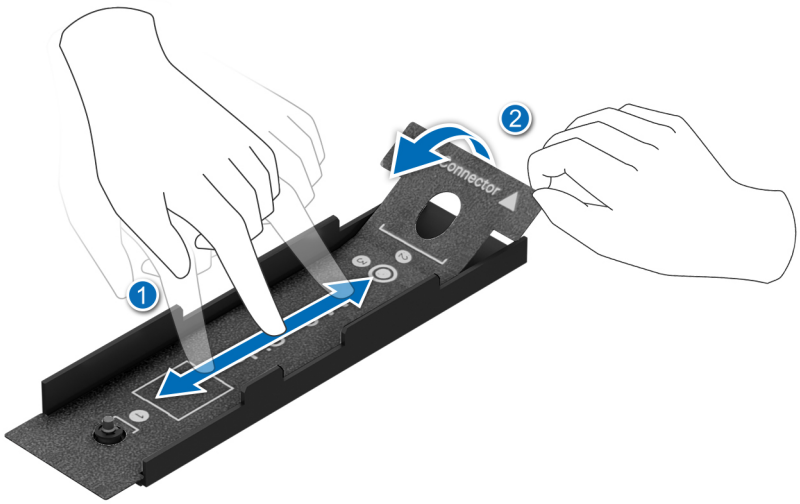


Figure 284. Pasting the new thermal pad inside the top cover and removing the black mylar

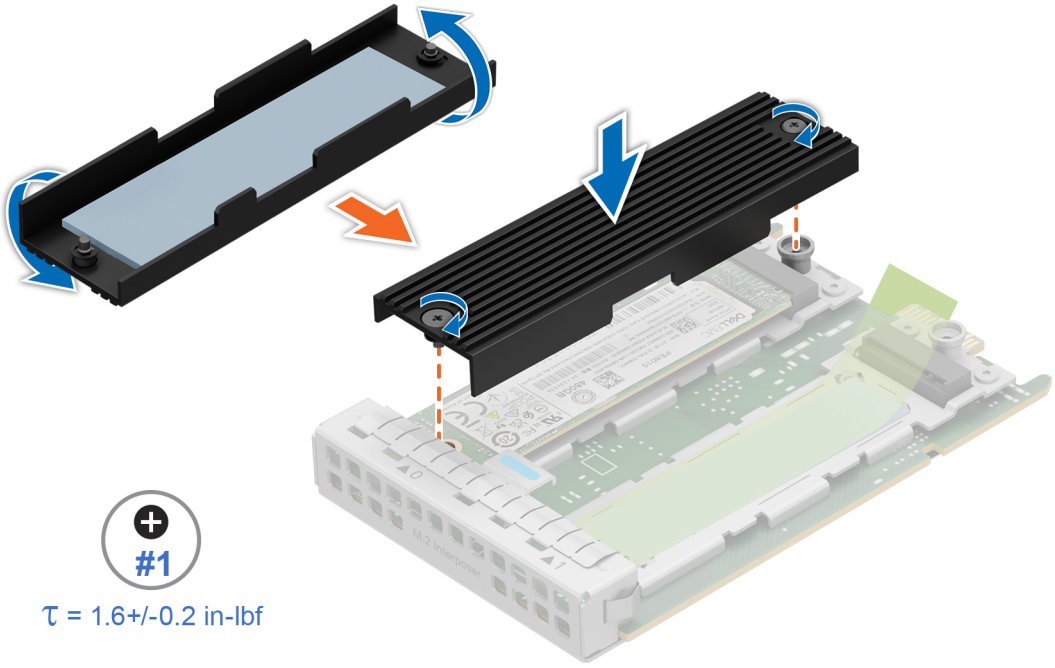


Figure 285. Installing the top cover on the M.2 Interposer board

3. Open the blue latch on the system board.
4. Slide the M.2 Interposer board into the slot in the system.
5. Push until the M.2 Interposer board is connected to the connector on the system board.
6. Close the blue latch to lock the M.2 Interposer board to the system.

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

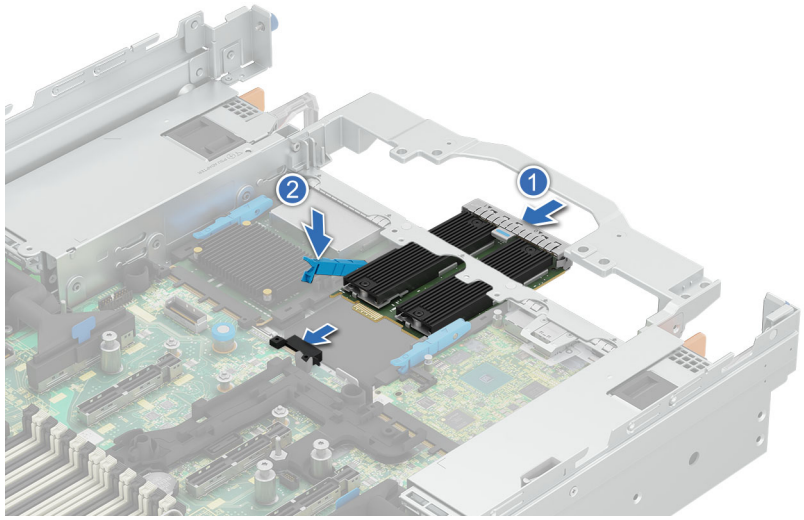


Figure 286. Installing the M.2 Interposer board

Next steps

1. Install the rear expansion card riser or install the rear expansion card riser blanks.
2. Follow the procedure listed in the After working inside your system.

Optional OCP NIC card

Removing the front OCP NIC card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. Remove the front expansion card riser.

NOTE: Front riser 3 must be removed, before removing riser 4 to access the front OCP NIC card.

7. Disconnect the cables from the system board, observe the cable routing.

NOTE: See cable routing section for more information.

Steps

1. Loosen the captive screw on the riser.

NOTE: The captive screw is available on the OCP tray or on the OCP NIC card itself, depending on the OCP NIC card used.

2. Slide the OCP NIC tray out of the riser.

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

Figure 287. Removing an OCP NIC card tray from the riser

3. Press both ends of the cable holder and tilt the OCP NIC cable holder.
4. Pull the OCP NIC cable out of the riser.

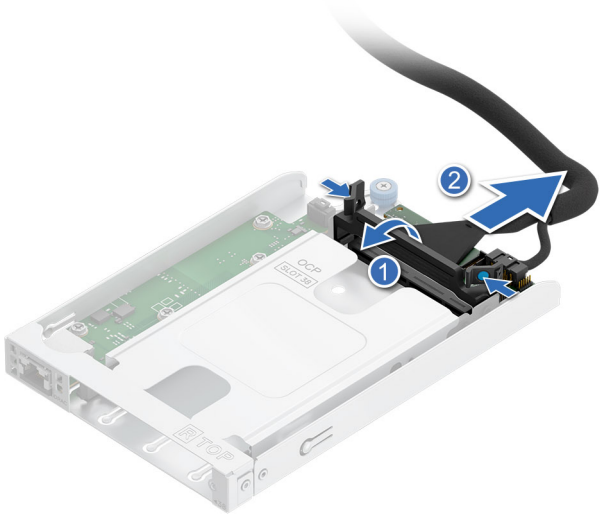


Figure 288. Removing an OCP NIC cable

5. Push the clips outward and slide out the OCP NIC card from the OCP tray.

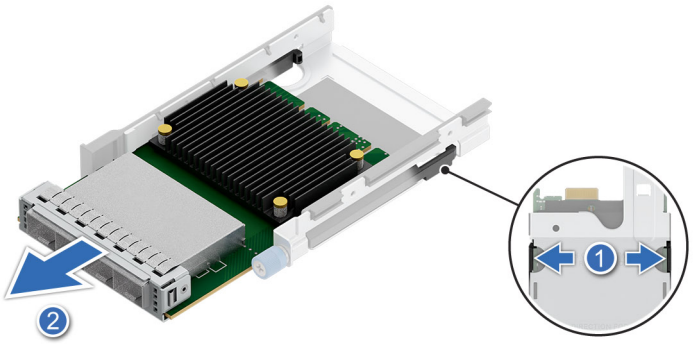


Figure 289. Removing an OCP NIC card from OCP tray

6. If the OCP NIC card is not going to be replaced, install a filler.

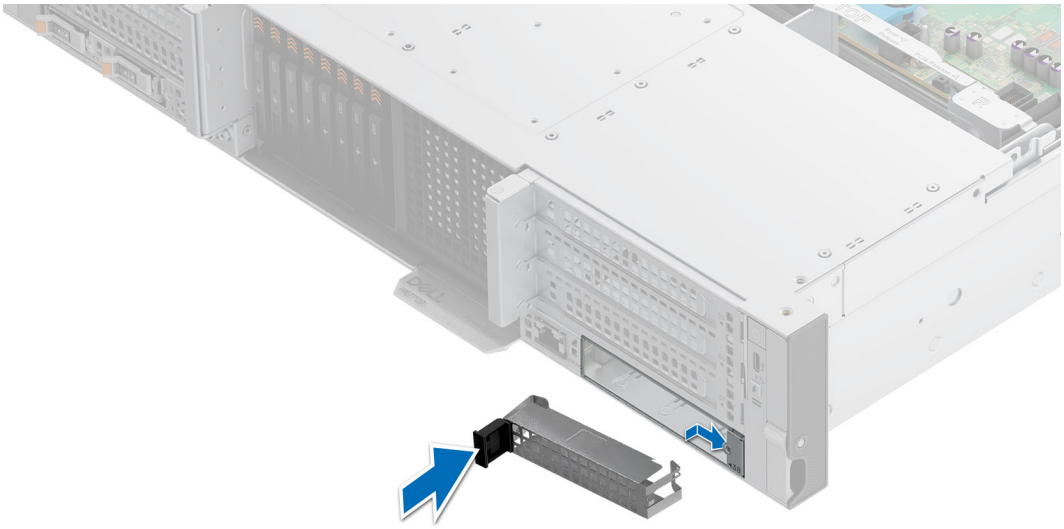


Figure 290. Installing an OCP NIC card filler bracket

Next steps

1. Replace the front OCP NIC card.

Installing the front OCP NIC card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud.
4. If required, remove the cooling fan cage assembly.
5. Remove the drive backplane cover.
6. Remove the front expansion card riser.

NOTE: Front riser 3 must be removed, before removing riser 4 to access the front OCP NIC card.

7. Route and connect the cables, taking care not to damage them.

NOTE: See cable routing section for more information.

NOTE: Install front riser 4 before installing riser 3.

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.

Steps

1. If installed, remove the filler bracket.

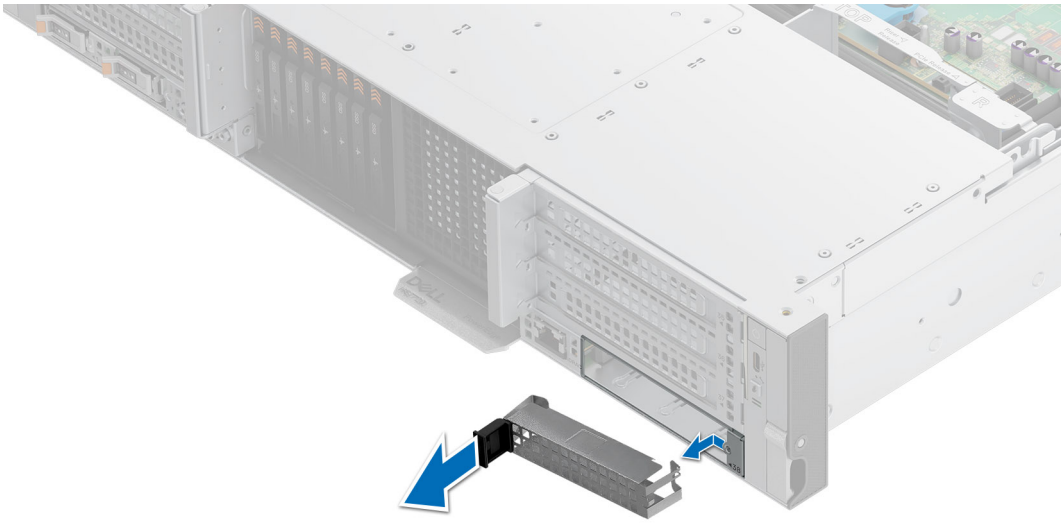


Figure 291. Removing an OCP NIC card filler bracket

2. Align and slide OCP NIC card into the OCP tray until seated.

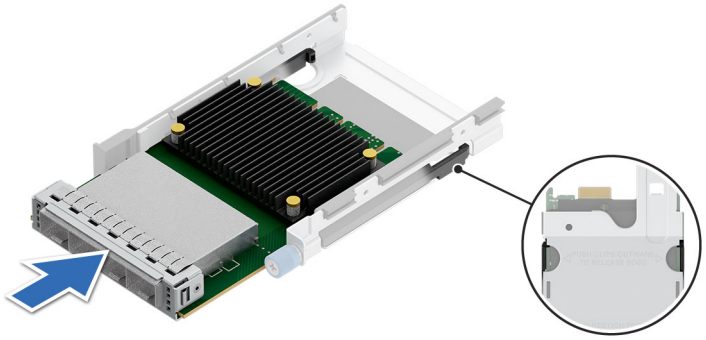


Figure 292. Installing an OCP NIC card into OCP tray

3. Place the OCP NIC card cable to unlock position line on the riser and slide the cable to lock position line.
4. Tilt the cable holder to secure the OCP NIC card cable into the riser.

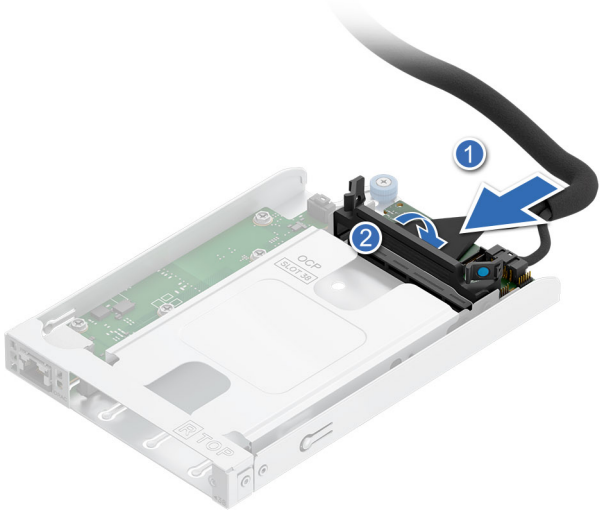


Figure 293. Installing an OCP NIC cable

5. Align and slide the OCP NIC card tray into the riser.

   NOTE: Ensure that the OCP NIC card is properly connected to the cable connector.

6. Tighten the captive screw to secure the OCP NIC card tray into the riser.

   NOTE: The captive screw is available on the OCP tray or in the OCP NIC card itself, depending on the OCP NIC card used.

Figure 294. Installing the OCP NIC tray into riser

Next steps

1. Route and connect the cables, taking care not to damage them.

   NOTE: See cable routing section for more information.

2. Install the front expansion card risers.
3. Install the cooling fan cage assembly.
4. If removed, install the air shroud.
5. If removed, install the drive backplane cover.
6. Follow the procedure listed in the After working inside your system.

Removing the rear OCP NIC card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. Remove the rear expansion card riser or remove the rear expansion card riser blanks
5. If the OCP NIC card of PCIe width x16 is used, disconnect an additional OCP NIC cable from the SL9 to SL21 connector on the system board.

Steps

1. Open the blue latch to disengage the OCP NIC card.
2. Push the OCP NIC card towards the rear end of the system to disconnect from the connector on the system board.
3. Slide the OCP NIC card out of the slot on the system.

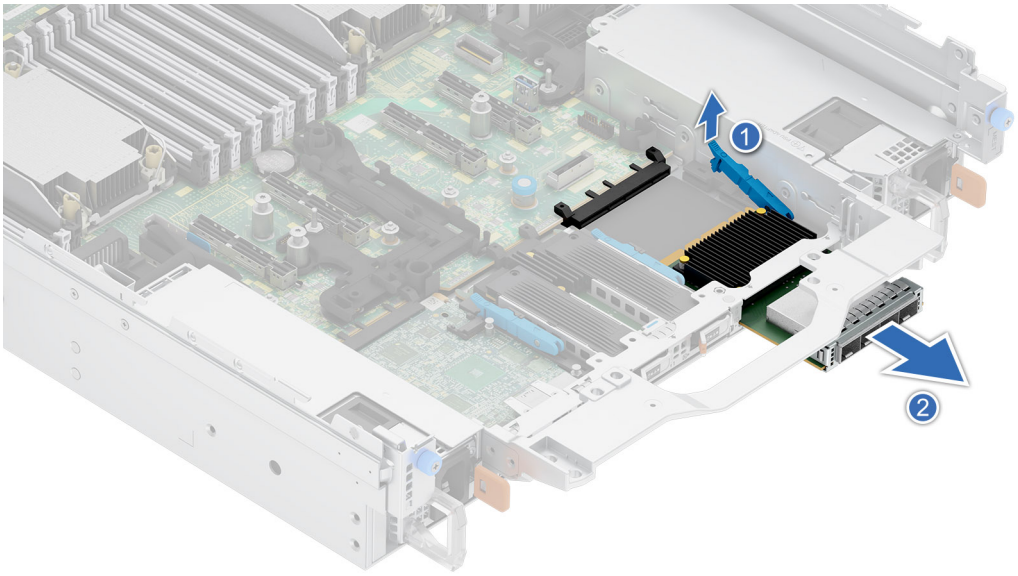


Figure 295. Removing the rear OCP NIC card

4. If the OCP NIC card is not going to be replaced, install a filler bracket .

   NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

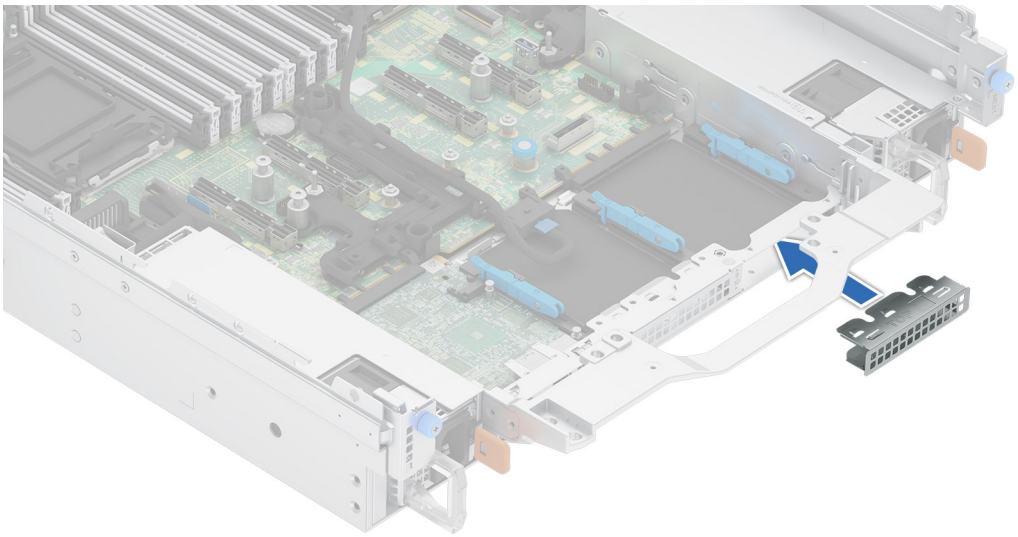


Figure 296. Installation of filler bracket

Next steps

1. Replace the rear OCP NIC card.

Installing the rear OCP NIC card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.

4. Remove the rear expansion card riser or remove the rear expansion card riser blanks
5. If the OCP NIC card of PCIe width x16 is used, disconnect an additional OCP NIC cable from the SL9 to SL21 connector on the system board.

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.

Steps

1. If installed, remove the filler bracket.

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

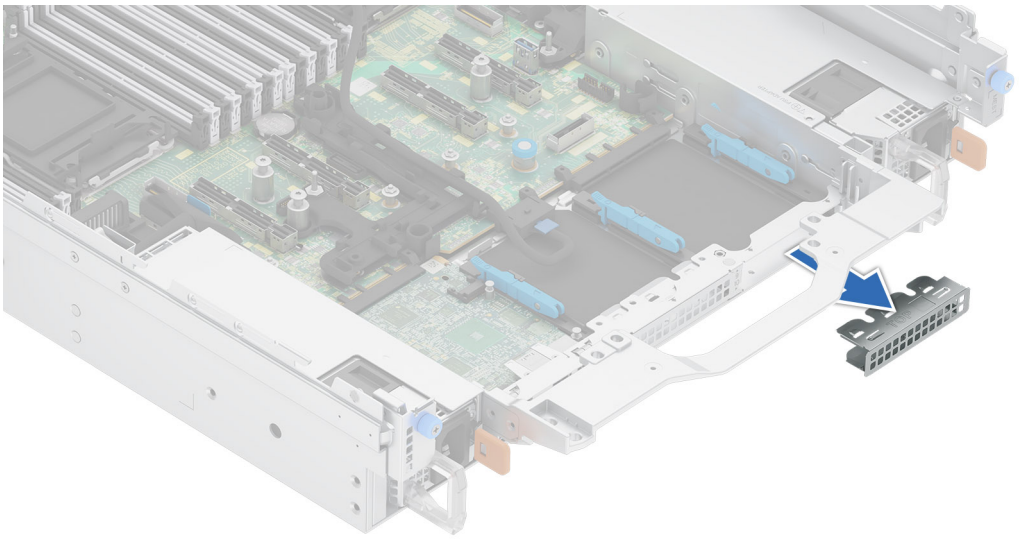


Figure 297. Removal of filler bracket

2. Open the blue latch on the system board.
3. Slide the OCP NIC card into the slot in the system.
4. Push until the OCP NIC card is connected to the connector on the system board.
5. Close the blue latch to lock the OCP NIC card to the system.

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

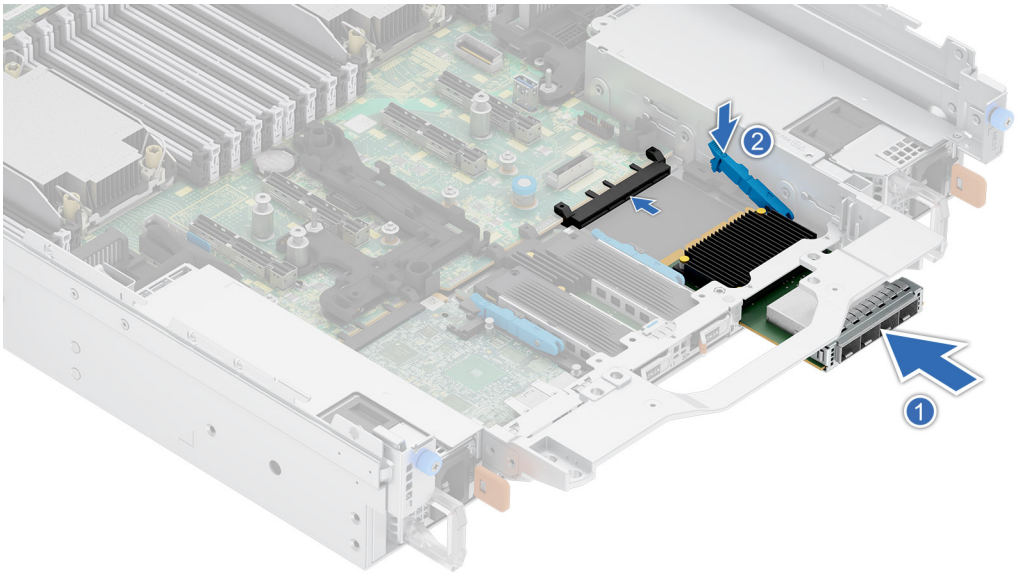


Figure 298. Installing the rear OCP NIC card

Next steps

1. If the OCP NIC card of PCIe width x16 is used, connect an additional OCP NIC cable to the SL9 to SL21 connector on the system board.
2. Install the rear expansion card riser or install the rear expansion card riser blanks
3. If removed, install the air shroud or install the GPU air shroud.
4. Follow the procedure listed in After working inside your system.

Datacenter-Secure Control Module (DC-SCM)

Removing the DC-SCM board

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. Remove the rear expansion card riser or remove the rear expansion card riser blanks.

Steps

1. Open the blue latch to disengage the DC-SCM board.
2. Push the DC-SCM board towards the rear end of the system to disconnect from the connector on the system board.
3. Slide the DC-SCM board out of the slot on the system.

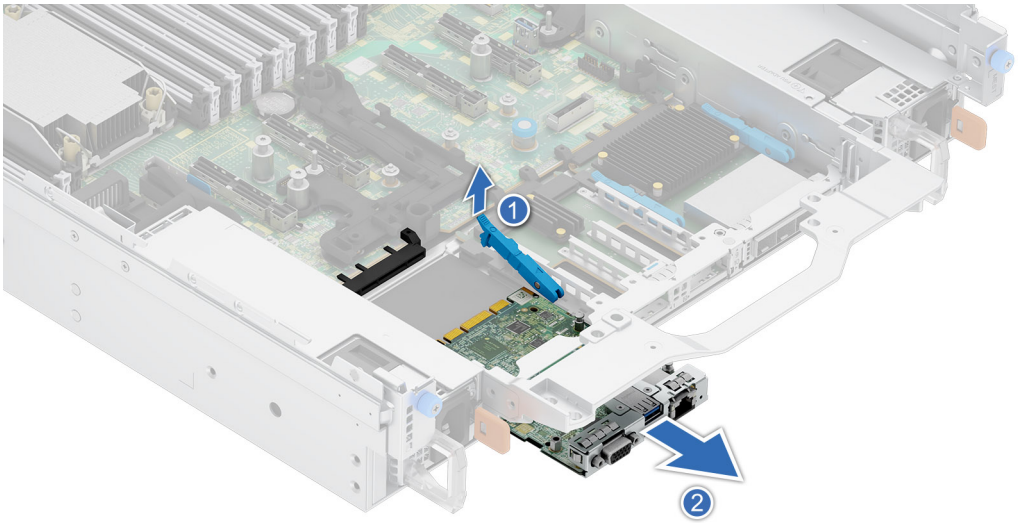


Figure 299. Removing the DC-SCM board

Next steps

1. Remove the Attic board.

   NOTE: Disconnect the Atticcable, see Figure 10cable routing section.

   NOTE: If a new DC-SCM board is being installed, the Attic board must be removed from the existing DC-SCM board.

2. Replace the DC-SCM board.

Installing the DC-SCM board

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. Remove the rear expansion card riser or remove the rear expansion card riser blanks.
5. Install the Attic board.

   NOTE: Connect the Attic cable, see Figure 10.cable routing section.

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.

Steps

1. Open the blue latch on the system board.
2. Slide the DC-SCM board into the slot in the system.
3. Push until the DC-SCM board is connected to the connector on the system board.
4. Close the blue latch to lock the DC-SCM board to the system.

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

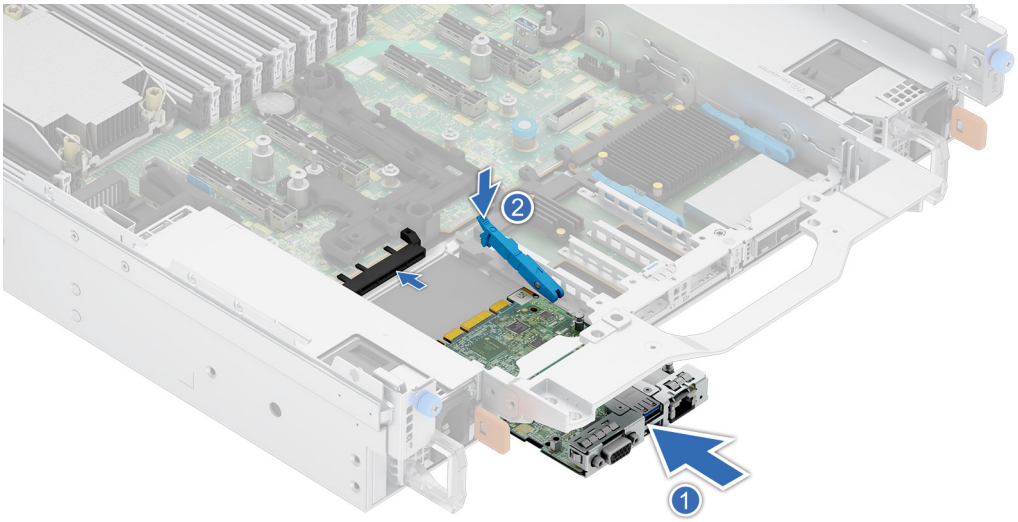


Figure 300. Installing the DC-SCM board

Next steps

1. Install the rear expansion card riser or install the rear expansion card riser blanks.
2. If removed, install the air shroud or install the GPU air shroud.
3. Power on the system.
4. Ensure that you perform the following steps:
   a. Use the Easy Restore feature to restore the BIOS, iDRAC, and Service Tag. See the Restoring the system 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. Install BIOS and iDRAC version updates, Diagnostics, and OS Driver Pack and OS Collector.
   d. Re-enable the Trusted Platform Module (TPM). See the Upgrading the Trusted Platform Module section.
5. Follow the procedure listed in After working inside your system.

Restoring the system using Easy Restore

The Easy Restore feature restores the server service tag and BIOS configuration data after replacing the Datacenter-Secure Control Module (DC-SCM). System configuration data is automatically maintained in a backup flash device within the system. If the BIOS detects a new DC-SCM during server boot, the system prompts the user to restore the backup system configuration data.

About this task

For more information about the Easy Restore feature, see iDRAC User's Guide at iDRAC Manuals.

When the DC-SCM is booted for the first time, it presents a screen with settings it can restore, below is a list of options/steps available:

Steps

1. To restore the system configuration data, press **Y**
2. To skip restore for this boot, press **N**
3. Enter BIOS setup to manually restore Service Tag, press **F2**

Figure 301. Easy Restore

Manually update the Service Tag

After replacing a HPM 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 HPM board replacement.

5. Click **OK**.

Attic board

This is a service technician replaceable part only.

Removing the Attic board

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. Remove the rear expansion card riser or remove the rear expansion card riser blanks.
5. Remove the DC-SCM board.

NOTE: Disconnect the Attic cable, see cable routing section.

Steps

1. Using the Phillips 1 screwdriver, loosen the captive screws securing the attic board to the DC-SCM board.
2. Tilt and lift the Attic board from the DC-SCM guides.

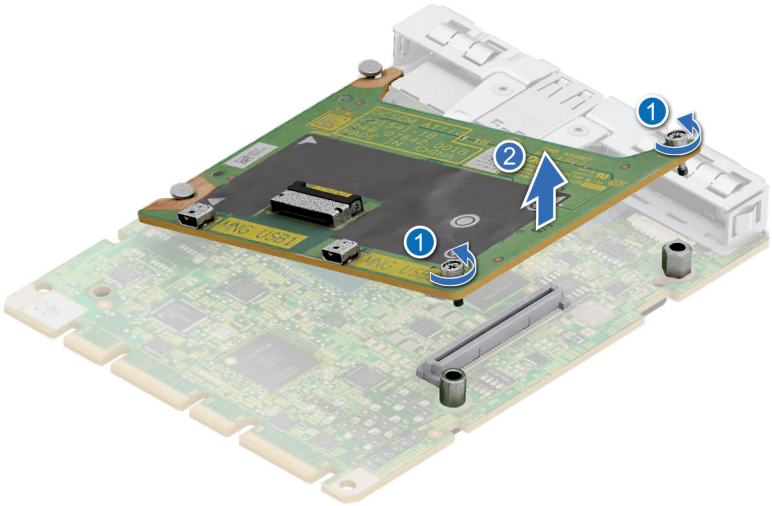


Figure 302. Removing the Attic board

Next steps

1. Replace the Attic board.

Installing the Attic board

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. Remove the rear expansion card riser or remove the rear expansion card riser blanks.
5. Remove the DC-SCM board.

NOTE: Disconnect the Attic cable, see cable routing section.

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.

Steps

1. Align the Attic board at an angle with the guides on the DC-SCM board.
2. Press until the Attic board is connected to the connector on the DC-SCM board.
3. Using a Phillips 1 screwdriver, tighten the captive screws.

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

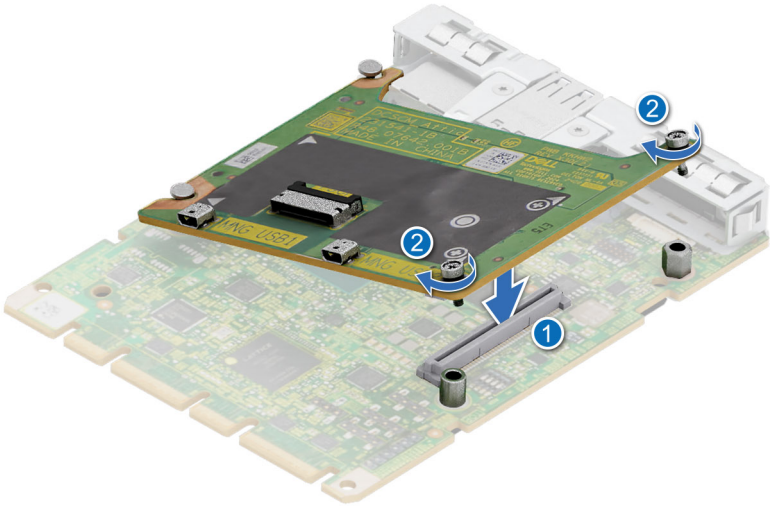


Figure 303. Installing the Attic board

Next steps

1. Install the DC-SCM board.

NOTE: Connect the Attic cable, see cable routing section.

2. Install the rear expansion card riser or install the rear expansion card riser blanks.
3. If removed, install the air shroud or install the GPU air shroud.
4. Follow the procedure listed in After working inside your system.

Optional internal USB port

This is a service technician replaceable part only.

Replacing the optional internal USB device

Prerequisites

CAUTION: To avoid interference with other components in the server, the maximum permissible length of the USB device is 31.32 mm.

1. Follow the safety guidelines listed in Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If required, remove the air shroud or remove the GPU air shroud.
4. If installed, Remove the rear expansion card riser.

Steps

1. Locate the USB device on the system board.

   To locate the USB port, see the System board connectors.

2. Lift the internal USB device to disconnect from the connector on the system board.

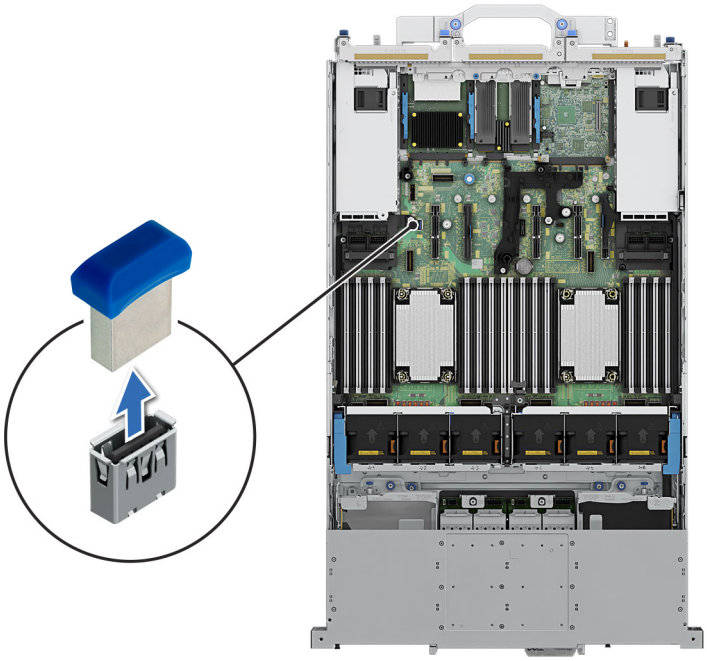


Figure 304. Removing the internal USB device

3. Insert the replacement USB device into the connector on the system board.

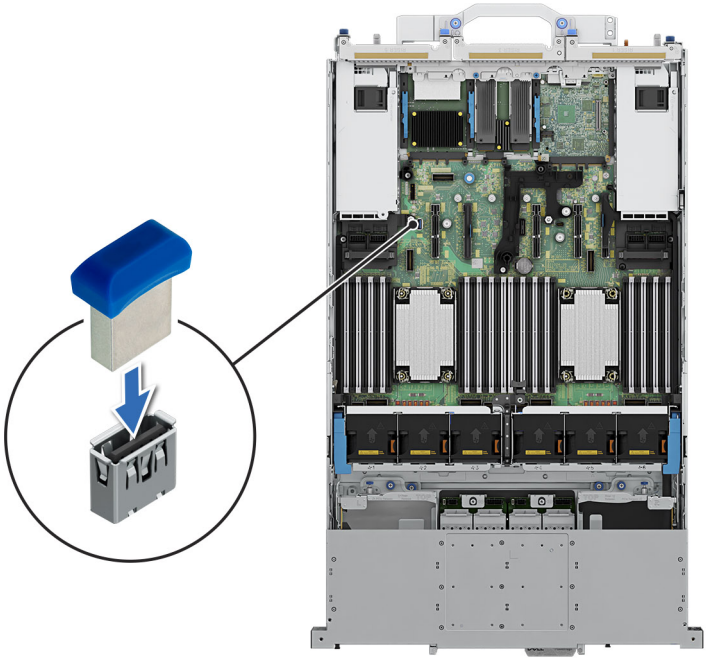


Figure 305. Installing the internal USB device

Next steps

1. If removed, Install the rear expansion card risers.
2. If removed, install the air shroud or install the GPU air shroud.
3. Follow the procedure listed in After working inside your system.
4. While booting, press F2 to enter **System Setup** and verify that the system detects the USB memory key.

System battery

This is a service technician replaceable part only.

Replacing the system battery

Prerequisites

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If applicable, disconnect the power or data cables from the expansion cards.
4. Remove the rear expansion card riser.

Steps

1. Press and hold the battery socket retention latch, for the battery to pop out.

   NOTE: If the battery does not pop out, then lift it out of the socket.

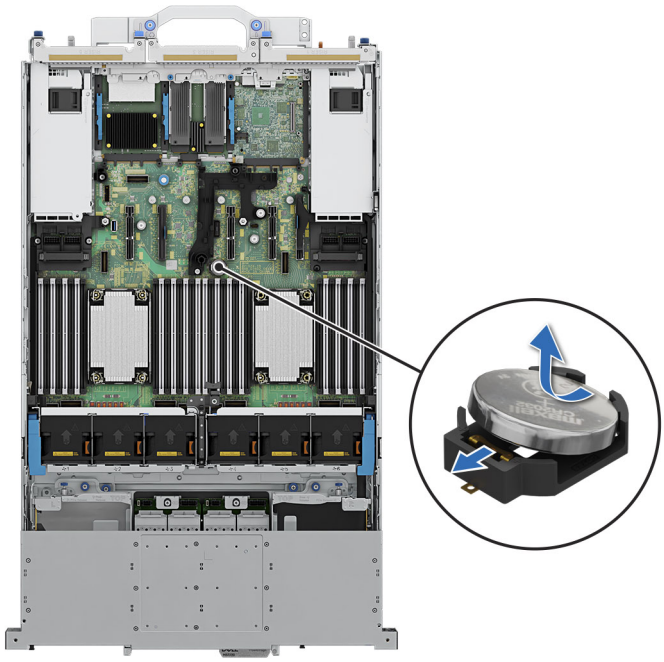


Figure 306. Removing the system battery

2. To install a new system battery, hold the battery with the positive side facing up at an angle and slide it under the battery holder socket latch.
3. Press the battery into the connector until it snaps into place.

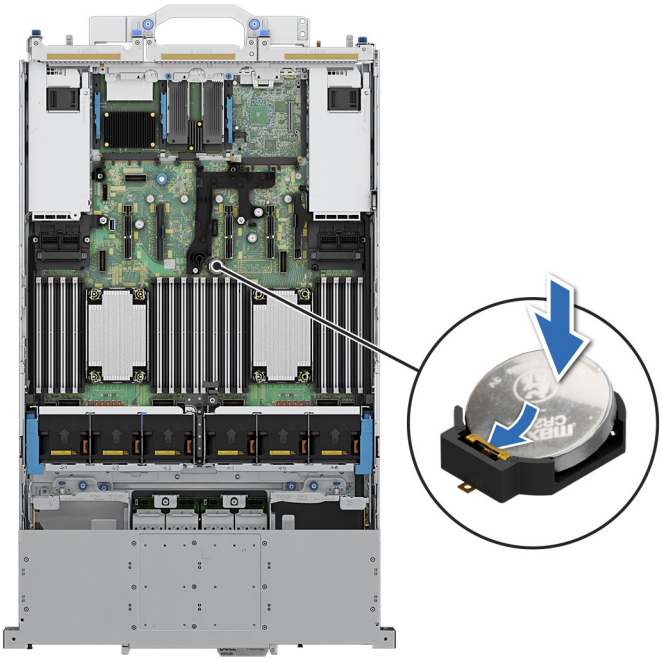


Figure 307. Installing the system battery

Next steps

1. Install the rear expansion card risers.
2. If applicable, connect the cables to one or more expansion cards.
3. Follow the procedure listed in After working inside your system.
4. 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, check the time and date at least an hour after installing the battery.
   e. Enter the System Setup and if the time and date are still incorrect, see Getting help section.

Intrusion switch

This is a service technician replaceable part only.

Removing the intrusion switch 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 rear expansion card riser or remove the rear expansion card riser blanks .

NOTE: Ensure that you note the routing of the cable as you remove it from the HPM board. Route the cable properly when you replace it to prevent the cable from being pinched or crimped. The cable routing instructions in Figure 11. here Cable routing.

Steps

1. Using a Phillips 1 screwdriver, loosen the screws on the intrusion switch module.
2. Disconnect the intrusion switch cable from the dongle cable .

NOTE: The intrusion switch cable is connected to the dongle cable, which in turn is connected to the HPM board.

3. Disconnect the dongle cable from the J2 slot connector on the HPM board.

   NOTE: Detach the dongle cable from the intrusion switch and keep it safe to be used when replacing with the new intrusion switch.

4. Lift the intrusion switch module along with dongle cable out of the system.

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

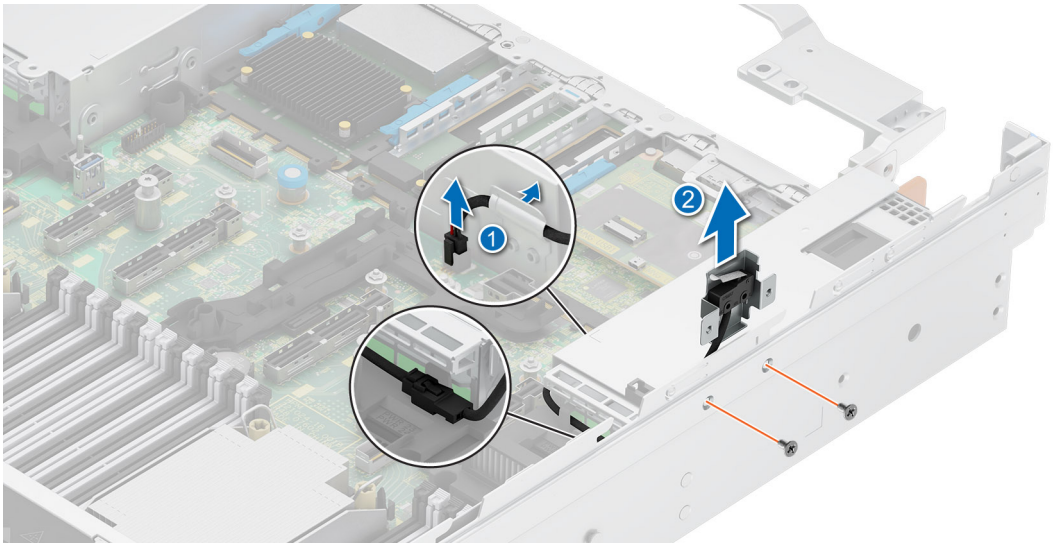


Figure 308. Removing the intrusion switch module

Next steps

1. Replace the intrusion switch module.

Installing the intrusion switch module

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Remove the rear expansion card riser or remove the rear expansion card riser blanks.

Steps

1. Align and place the intrusion switch module into the system.
2. Using a Phillips 1 screwdriver, tighten the screws to secure the intrusion switch module to the system chassis.
3. Connect the dongle cable and the intrusion switch cable.
4. Arrange the dongle cable on the holder and route the dongle cable to pass through the clips.

   NOTE: Route the cable properly when you replace it on the HPM board to prevent the cable from being pinched or crimped. See the cable routing instructions in Figure 11. here Cable routing.

5. Reconnect the dongle cable in the J2 connector on the HPM. board.

   NOTE: The intrusion switch cable is connected to the dongle cable, which in turn is connected to the HPM board.

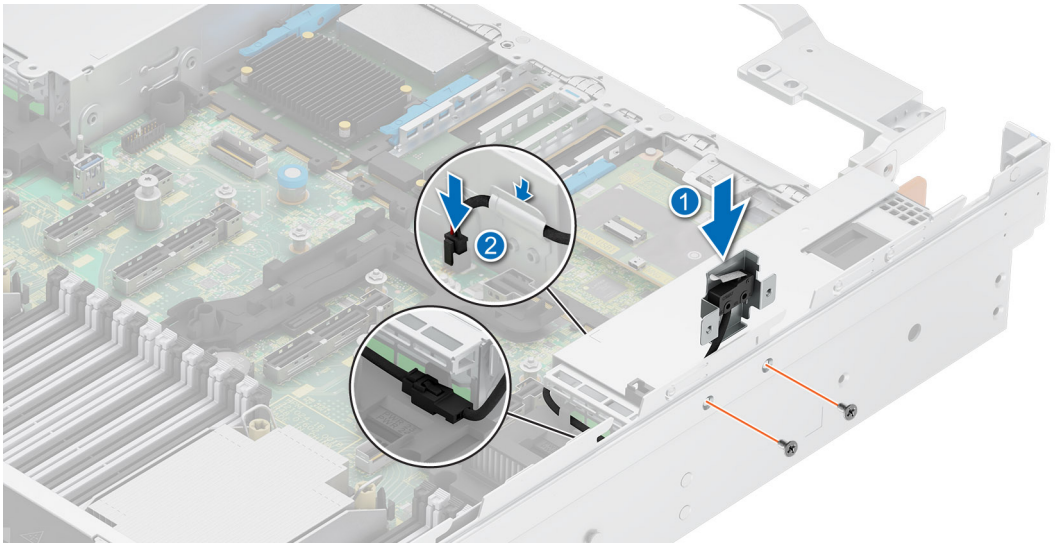


Figure 309. Installing the intrusion switch module

Next steps

1. Install the rear expansion card riser or install the rear expansion card riser blanks
2. Follow the procedure listed in After working inside your system.

Power supply unit

Removing a power supply unit blank

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Pull the PSU blank out of the system.

CAUTION: For proper system cooling, the PSU blank must be installed in the second PSU bay in a non-redundant configuration. Remove the PSU blank only if you are installing a second PSU.

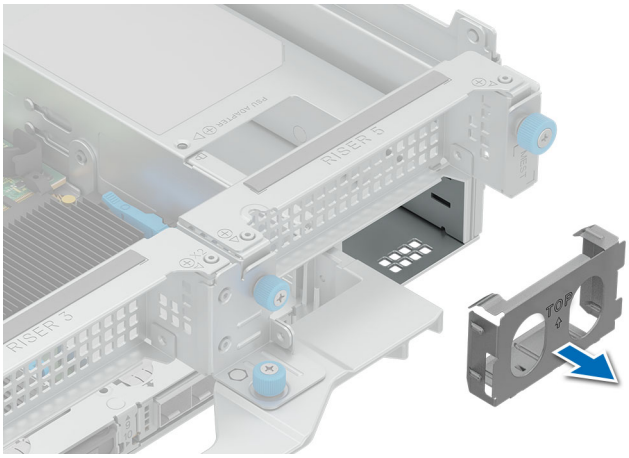


Figure 310. Removing a power supply unit blank

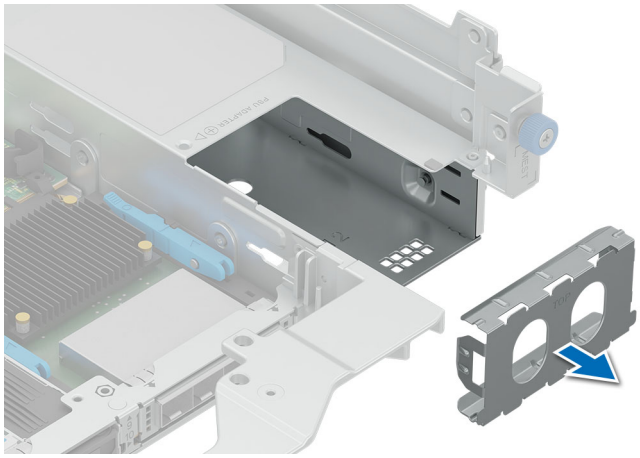


Figure 311. Removing a 73.5 mm power supply unit blank

Next steps

1. Replace the PSU blank or install the PSU.

Installing a power supply unit blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

   NOTE: Install the power supply unit (PSU) blank only in the second PSU bay.

2. If required, remove the PSU.

Steps

Align the PSU blank with the PSU bay and push it into the PSU bay until it clicks into place.

NOTE: Ensure that the "Top" mark on the PSU blank is on the upper side.

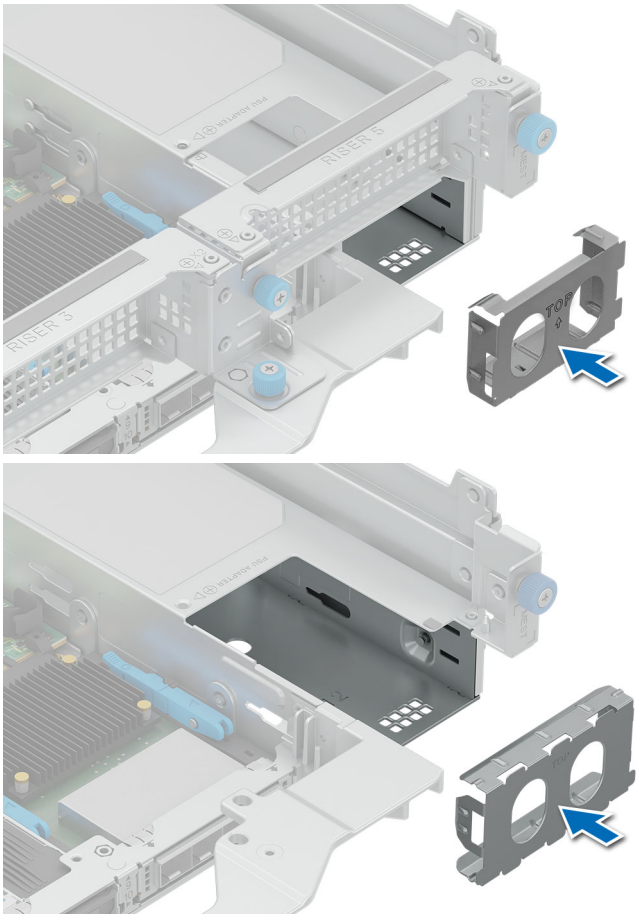


Figure 312. Installing a power supply unit blank

Removing a power supply unit

Prerequisites

CAUTION: The system requires one power supply unit (PSU) for normal operation.

1. Follow the safety guidelines listed in the Safety instructions.
2. Disconnect the power cable from the power outlet and from the PSU that you intend to remove.
3. Remove the cable from the strap on the PSU handle.
4. Unlatch and lift or remove the optional cable management accessory if it interferes with the PSU removal.

NOTE: For information about the cable management when the PSU is removed or installed while the system is in a rack, see the system's cable management arm documentation at PowerEdge Manuals.

Steps

Press the release latch and holding the PSU handle, slide the PSU out of the bay.

Figure 313. Removing a power supply unit

Next steps

1. Replace the PSU or install the PSU blank.

Installing a power supply unit

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. For systems that support redundant PSU, ensure that both the PSUs are of the same type and have the same maximum output power.

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

3. If required, Remove the PSU blank.

Steps

1. Align and insert the bay guard into the slot on the system. Using a phillips 1 screwdriver, tighten the screw.

   NOTE: Installing a 73.5 mm power supply unit requires installation of a bay guard.

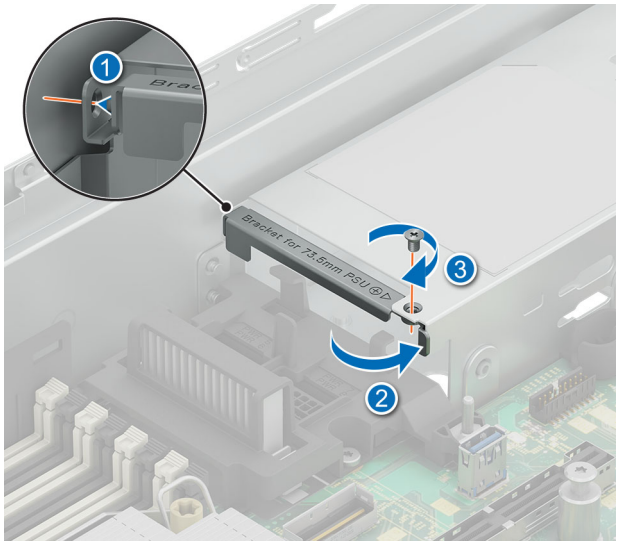


Figure 314. Installation of bay guard for 73.5 mm PSU

2. Slide the PSU into the PSU bay until the release latch snaps into place.

Figure 315. Installing a power supply unit

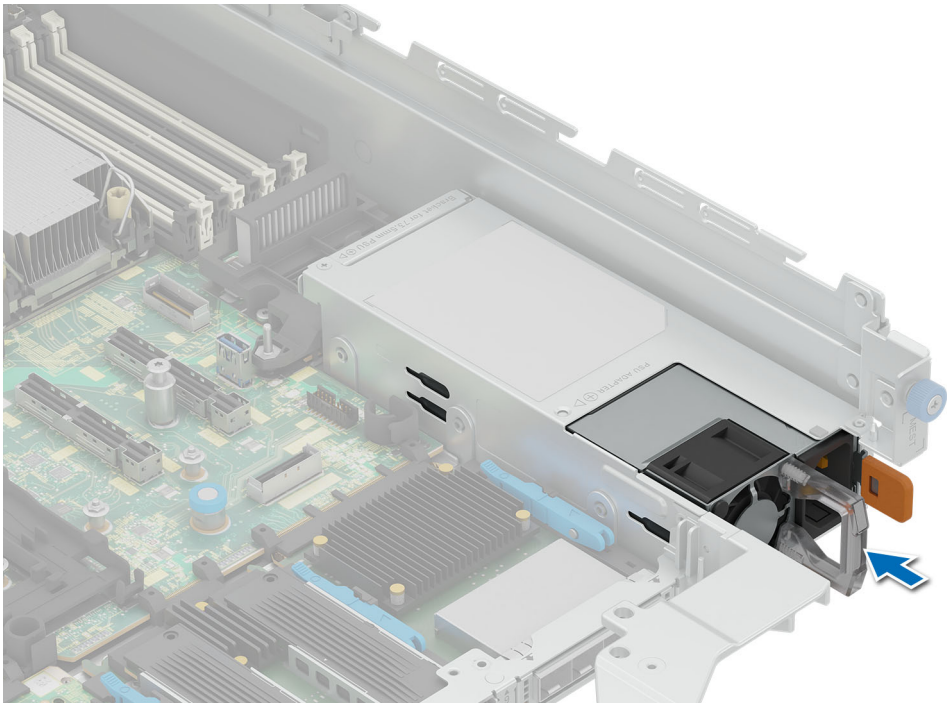


Figure 316. Installing a 73.5 mm power supply unit

Next steps

1. If you have unlatched or removed the cable management accessory, reinstall or relatch it. For information about the cable management when the PSU is removed or installed while the system is in the rack, see the system's cable management accessory documentation at PowerEdge Manuals.
2. Connect the power cable to the PSU, and plug the cable into a power outlet.

CAUTION: When connecting the power cable to the PSU, secure the cable to the PSU with the strap.

NOTE: When installing hot swapping, or hot adding a new PSU, wait for 15 seconds for the system to recognize the PSU and determine its status. The PSU status indicator turns green to indicate that the PSU is functioning properly.

Removing a power supply unit filler

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 PSU or remove the PSU blank.

Steps

1. Place a flat screwdriver in the gap between the latch and the PSU cage.
2. Rotate flat screwdriver in an anti clockwise direction to disengage the latch and simultaneously slide out the right PSU filler from the PSU cage.

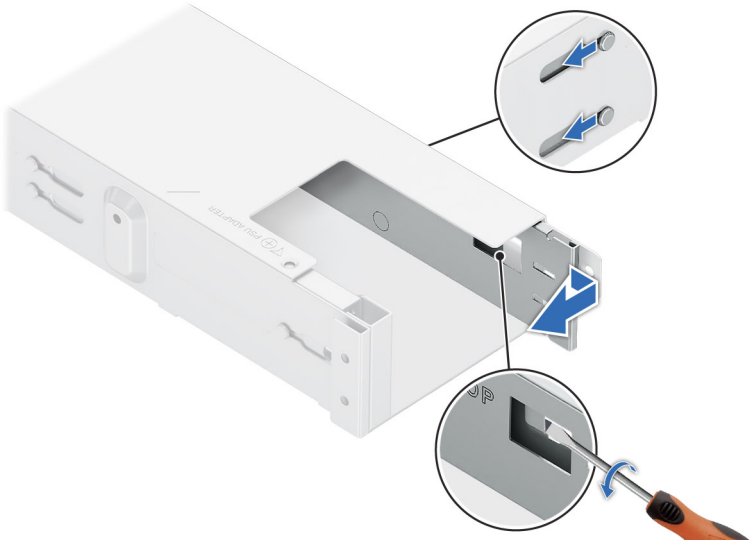


Figure 317. Removing the right PSU filler

3. Using a Phillips 1 screwdriver, loosen the screw on the PSU cage.
4. Slide out the left PSU filler from the PSU cage.

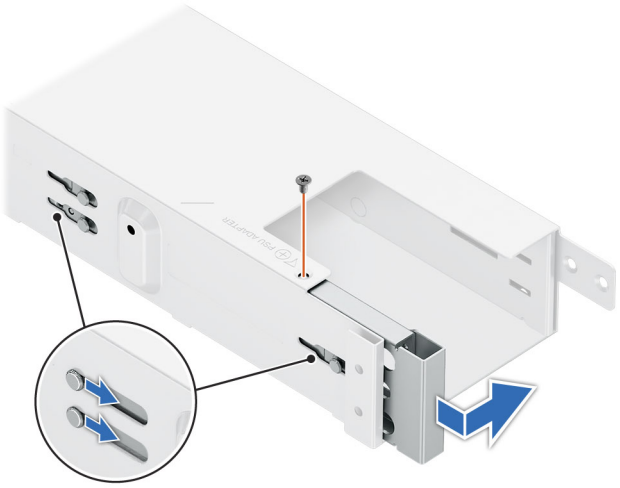


Figure 318. Removing the left PSU filler

Next steps

1. Replace the PSU filler.

Installing a power supply unit filler

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 PSU or remove the PSU blank.

Steps

1. Align the guides on the filler with the slots on the PSU cage and slide until the filler secured in the PSU cage.

2. Using a phillips 1 screwdriver, tighten the screw.

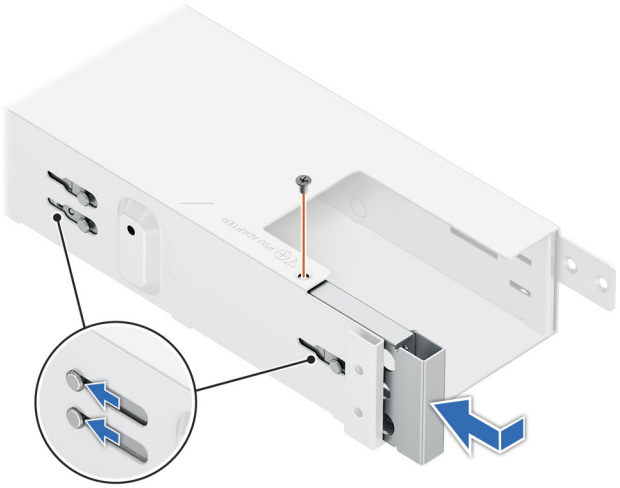


Figure 319. Installing the left PSU filler

3. Align the guides on the filler with the slots on the PSU cage and slide the filler, until the latch is locked with the PSU cage.

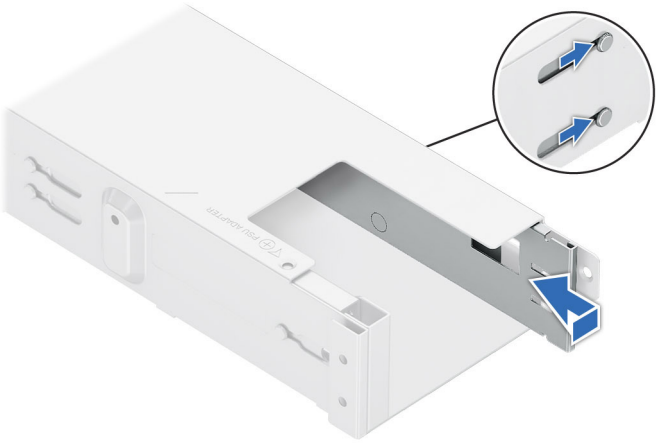


Figure 320. Installing the right PSU filler

Next steps

1. Install the PSUor install the PSU blank.
2. Follow the procedure listed in After working inside your system.

Trusted Platform Module

TPM is soldered down to the DC-SCM.

If the Trusted Platform Module (TPM) is identified as the root cause of the problem, a full DC-SCM replacement is necessary.

For more information on TPM see Trusted Platform Module (TPM) Summary.

Initializing TPM 2.0 for users

Steps

1. Initialize the TPM.

a. While booting your system, press F2 to enter System Setup.
b. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
c. From the **TPM Security** option, select **On**.
d. Save the settings.
e. Restart your system.

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

HPM board

This is a service technician replaceable part only.

NOTE: System board is know as Host Processor Module (HPM) board.

Removing the HPM 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 HPM board, you must supply the recovery key when you restart your system or program before you can access the encrypted data on your drives.

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the following components:
   a. Air shroud
   b. Cooling fan cage assembly
   c. Side wall bracket
   d. Memory modules
   e. Rear expansion card risers or rear expansion card riser blanks
   f. Processor and heat sink module
   g. Rear OCP (if installed)
   h. Rear BOSS-N1 DC-MHS
   i. DC-SCM
   j. GPU air shroud (if installed)
   k. Internal USB memory key (if installed)
   l. Power supply units (PSU)
   m. Disconnect all the cables from the HPM board and make note of all the cable connections.

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

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

Steps

1. Using the HPM board holder and plunger, slide the HPM board towards the front of the system.
2. At a tilted angle, lift the HPM board out of the chassis.

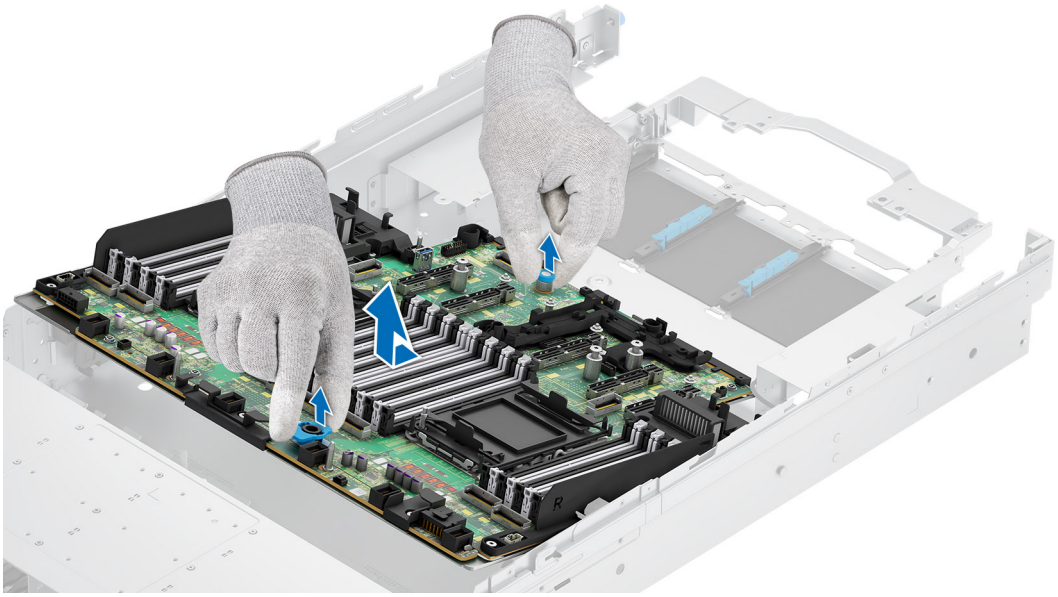


Figure 321. Removing the HPM board

Next steps

1. Install the HPM board.

Installing the HPM board

Prerequisites

NOTE: Before replacing the HPM board, replace the old iDRAC MAC address label on the Express Service Tag with the iDRAC MAC address label of the replacement HPM board.

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If you are replacing the HPM board, remove all the components that are listed in the removing the HPM board section.

Steps

1. Unpack the new HPM 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 HPM board into the chassis.

2. Holding the HPM board holder and plunger, lower the HPM board at a tilted angle into the system.
3. Slide the HPM board towards the rear of the chassis until the plunger is firmly seated into the chassis slot hole.

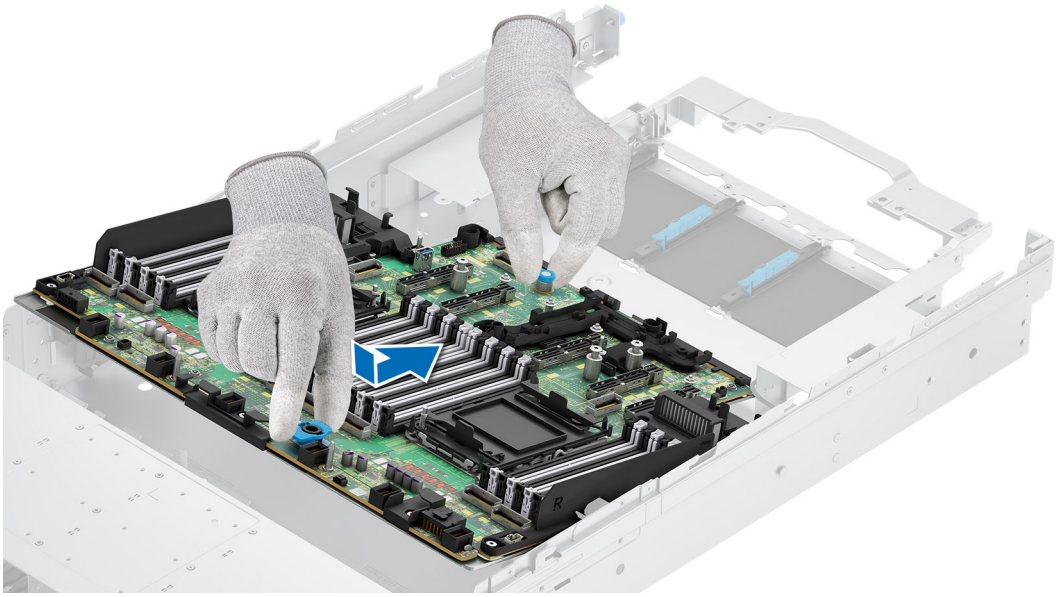


Figure 322. Installing the HPM board

Next steps

1. Replace the following components:
   a. Internal USB memory key (if removed)
   b. Rear OCP card (if removed)
   c. Rear BOSS-N1 DC-MHS
   d. DC-SCM
   e. Processor and heat sink module
   f. Memory modules
   g. GPU air shroud (if removed)
   h. Rear expansion card risers or rear expansion card riser blanks
   i. Side wall bracket
   j. Cooling fan cage assembly
   k. Air shroud
   l. Power supply units (PSU)
2. Reconnect all cables to the HPM board.

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

3. Follow the procedure listed in After working inside your system.

Control panel

This is a service technician replaceable part only.

Removing the right control panel

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 drive backplane cover.
4. If installed, remove the air shroud or remove the GPU air shroud.

5. Remove the cooling fan cage assembly.
6. Remove the side wall bracket.

Steps

1. Using the Phillips 1 screwdriver, remove the screws that secure the right control panel and cable cover to the system.
2. Remove the cable cover away from the system.
3. Disconnect the right control panel cable from the connector on the system board.
4. Holding the right control panel cable assembly, slide the right control panel out of the system.

NOTE: Observe the routing of the cable assembly as you remove the right control panel from the system.

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

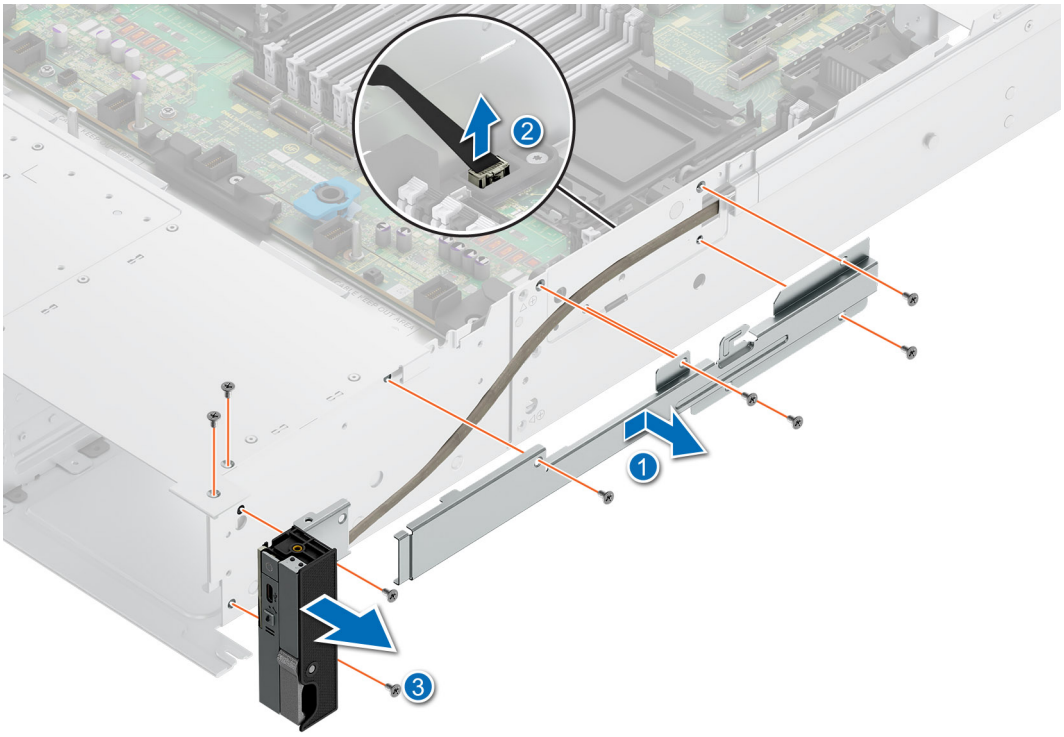


Figure 323. Removing the right control panel

Next steps

1. Replace the right control panel.

Installing the right control panel

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 drive backplane cover.
4. If installed, remove the air shroud or remove the GPU air shroud.
5. Remove the cooling fan cage assembly.
6. Remove the side wall bracket.

Steps

1. Align and slide the right control panel into the slot on the system.

2. Route the right control panel cable through the side wall of the system.
3. Align and slide the right control panel cable cover in the slot on the system.

   NOTE: Route the cable properly to prevent the cable from being pinched or crimped.

4. Connect the right control panel cable to the connector on the system board.
5. Using the Phillips 1 screwdriver, tighten the screws that secure the right control panel and the cable cover to the system.

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

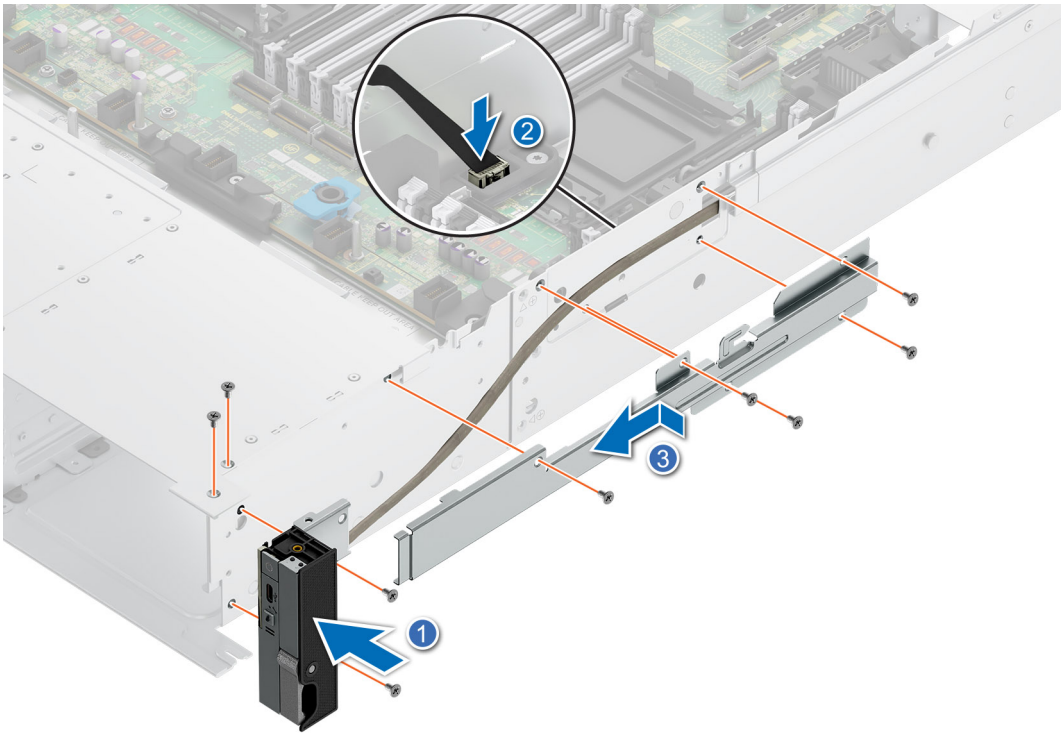


Figure 324. Installing the right control panel

Next steps

1. Install the side wall bracket.
2. Install the cooling fan cage assembly.
3. Install the drive backplane cover.
4. Install the air shroud or install the GPU air shroud.
5. Follow the procedure listed in After working inside your system.

Removing the KVM left control panel

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 drive backplane cover.
4. If installed, remove the air shroud or remove the GPU air shroud.
5. Remove the cooling fan cage assembly.

Steps

1. Using the Phillips 1 screwdriver, remove the screws that secure the left control panel and the cable cover to the system.
2. Remove the cable cover away from the system.

3. Disconnect the control panel cable from the connector on the Attic board.
4. Holding the cable, slide the left control panel out of the system.

NOTE: Observe the routing of the cable as you remove the left control panel from the system.

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

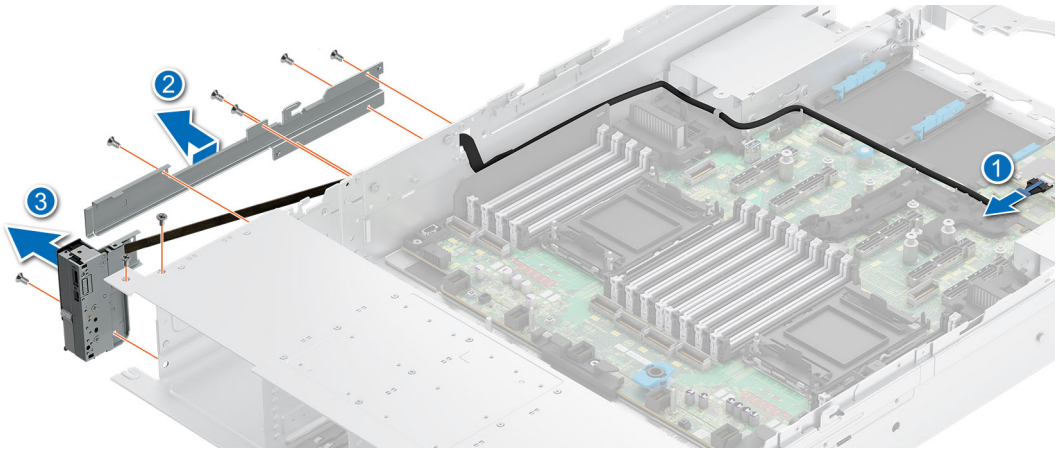


Figure 325. Removing the KVM left control panel

Next steps

1. Replace the KVM left control panel.

Installing the KVM left control panel

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 drive backplane cover.
4. If installed, remove the air shroud or remove the GPU air shroud.
5. Remove the cooling fan cage assembly.

Steps

1. Align and slide the left control panel in the slot on the system.
2. Route the left control panel cable through the side wall of the system.
3. Align and slide the left control panel cable cover in the slot on the system.

NOTE: Route the cable properly through the chassis side holder and the clips to prevent the cable from being pinched or crimped.

4. Connect the left control panel cable to the connector on the Attic board .
5. Using the Phillips 1 screwdriver, tighten the screws to secure the left control panel and the cable cover to the system.

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

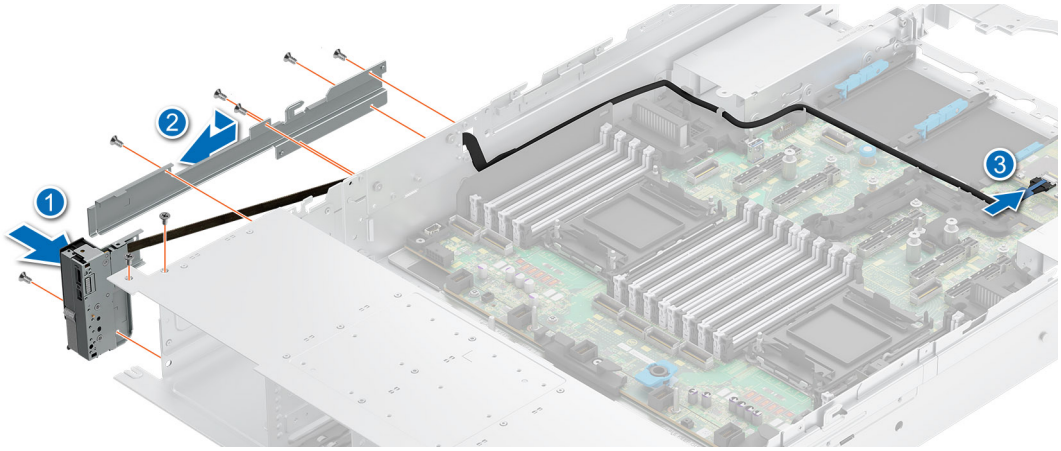


Figure 326. Installing the KVM left control panel

Next steps

1. Install the cooling fan cage assembly.
2. Install the drive backplane cover.
3. Install the air shroud or install the GPU air shroud.
4. Follow the procedure listed in After working inside your system.

9

Upgrade Kits

The table lists the available After Point Of Sale [APOS] kits.

Table 112. Upgrade kits

Kits	Related links to service instructions
Memory	See Installing a memory module
SSD	See Installing a drive
Processor	See Installing a processor
Power supplies	See Installing a power supply unit
Cables	See Cable routing

Topics:

- Processor upgrade guidelines

Processor upgrade guidelines

Procedure to clear NVRAM and switch between Intel® Xeon® E-Core processor and Intel® Xeon® P-core processor

1. Before the processor upgrade, ensure that the system has been upgraded to the latest BIOS, iDRAC, and FPGA version. See Processor specifications for more details.
2. Power off the system and follow the below steps to clear the NVRAM
   a. Remove the power cords from all the power supply units.
   b. Remove the system cover, air shrouds, and all the rear risers(if applicable).
   c. Replace the Intel® Xeon® E-Core processor with the Intel® Xeon® P-core processor. For processor remove and installation, see Processor and heat sink.
   d. Toggle the DIP switch 1 to 'ON' state as shown below. For the DIP switch location on the HPM board see, System board connectors and DIP Switches .

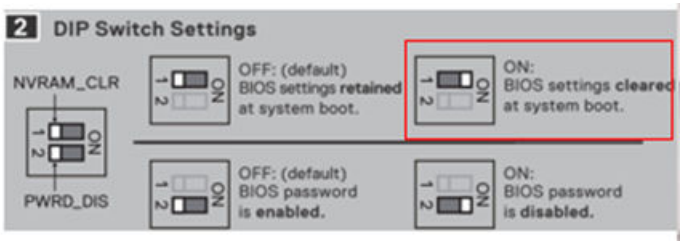


Figure 327. Image showing the 'ON' state

   e. Replace the system cover, the air shrouds, and all the rear risers(if applicable).
   f. Connect the power cords to the power supply units, and power on the system.
   g. When the system displays the **UEFI0033** message on the BIOS post screen as below, power off the system and disconnect the power cords from the all the power supply units.

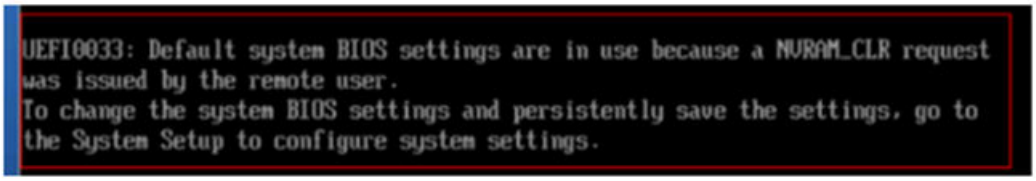


Figure 328. BIOS POST screen

h. Remove the system cover, air shrouds, and all the rear risers(if applicable).
i. Toggle the DIP switch 1 to “Off” state as shown below. For the DIP switch location on the HPM board see System board connectors and DIP Switches .

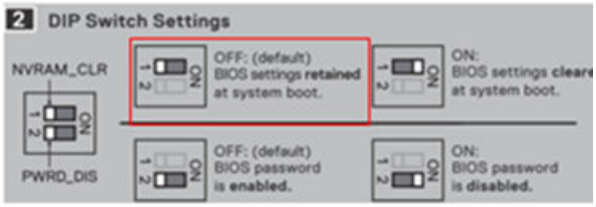


Figure 329. Image showing the 'OFF' state

j. Replace the system cover, the air shrouds, and all the rear risers(if applicable).
k. Connect the power cords to all the power supply units, power on the system and boot normally.

NOTE: The process is the same when replacing an Intel® Xeon® P-Core processor with an Intel® Xeon® E-core processor.

10

System diagnostics and indicator codes

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

Topics:

Power button LED

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

Figure 330. Power button LED

Table 113. Power button LED

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

System health and system ID indicator codes

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

Figure 331. System health and system ID indicator

Table 114. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system ID button to switch to system health mode.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log for specific error messages. EEMI guide

iDRAC Direct LED indicator codes

The iDRAC Direct LED indicator lights up to indicate that the port is connected and is being used as a part of the iDRAC subsystem.

You can configure iDRAC Direct by using a USB to micro USB (type C) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 feet (0.91 meters). Performance could be affected by cable quality. The following table describes iDRAC Direct activity when the iDRAC Direct port is active:

Table 115. iDRAC Direct LED indicator codes

iDRAC Direct LED indicator code	Condition
Solid green for two seconds	Indicates that the laptop or tablet is connected.
Blinking green (on for two seconds and off for two seconds)	Indicates that the laptop or tablet that is connected is recognized.
LED Indicator off	Indicates that the laptop or tablet is unplugged.

NIC indicator codes

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

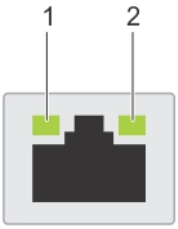


Figure 332. NIC indicator codes

1. Link LED indicator
2. Activity LED indicator

Table 116. NIC indicator codes

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

Power supply unit indicator codes

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

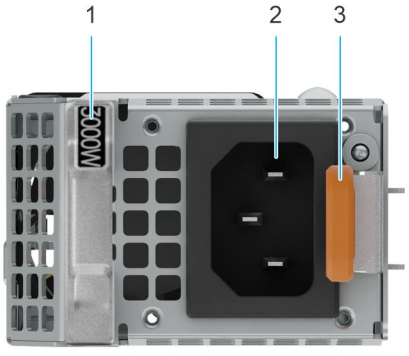


Figure 333. AC PSU status indicator

1. AC PSU handle
2. Socket
3. Release latch

Table 117. AC and DC PSU status indicator codes

Power indicator codes	Condition
Green	Indicates that a valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates an issue with the PSU.
Not powered on	Indicates that the power is not connected to the PSU.
Blinking green	Indicates that the firmware of the PSU is being updated. **CAUTION: Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs will not function.**
Blinking greens and powers off	When hot-plugging a PSU, it blinks green five times at a rate of 4 Hz and powers off. This indicates a PSU mismatch due to efficiency, feature set, health status, or supported voltage. **CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to power on the system.** **CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power.** **CAUTION: When correcting a PSU mismatch, replace the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and an unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must power off the system.** **CAUTION: AC PSUs support both 240 V and 120 V input voltages with the exception of Titanium PSUs, which support only 240 V. When two identical PSUs receive different input voltages, they can output different wattages, and trigger a mismatch.**

EDSFF E3.S drive led codes

The LEDs on the drive carrier indicate the state of each drive. The LEDs on the EDSFF E3.S drive have two LEDs: an activity LED (green) and a locate/fault LED (blue/amber). The activity LED blinks whenever the drive is accessed.

Figure 334. EDSFF E3.S drive indicators

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

EDSFF E3.S drive led codes

E3.S hard drives have Green LED and Blue/Amber LED.

- Green LED shows : Drive power status , Activity
- Blue/Amber LED shows: Drive Fault, Locate

EDSFF indicator behavior

Table 118. EDSFF indicator behavior

Pattern Name	Description	Blue Element	Amber Element
Locate	This device is being identified.	ON (1 sec ON 1 sec OFF)	OFF
Fault	The device is in a fault condition.	OFF	ON (2 sec ON 1 sec OFF)
N/A	This device does not have fault or locate device.	OFF	OFF

NOTE: Locate behavior overrides Fault state.

Green LED

The green LED is driven and controlled by the device. The two functions for this LED are defined as follows:

- Power: This function indicates that the device has power and has no issues with its power regulation. Once the green LED is ON, it shall either remain ON or blink at the activity frequency unless the device determines power is no longer within its operating range.
- Activity: This function indicates if the device is being used.

Table 119. LED and device state per function for Green LED

Function/Device state	LED state
Power ON/Device is powered, no activity occurring.	ON
Activity/Device is powered, host initiated I/O activity occurring.	4 Hz nominal blink rate
Power OFF/Device is not powered.	OFF

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.

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

Run the Embedded System Diagnostics from Boot Manager

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

Steps

1. When system boots, press **F11**.
2. Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.

System diagnostic controls

Table 120. 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 an overview of the system performance.
Event log	Displays a time-stamped log of test results. This displays if at least one event description is recorded.

11

HPM board connectors and DIP Switches

This topic provides some basic and specific information about DIP switches. DIP switches on the HPM board help to disable the system and reset the passwords. To set the switches correctly, you must know the location on the HPM board. .

Topics:

System board connectors and DIP Switches

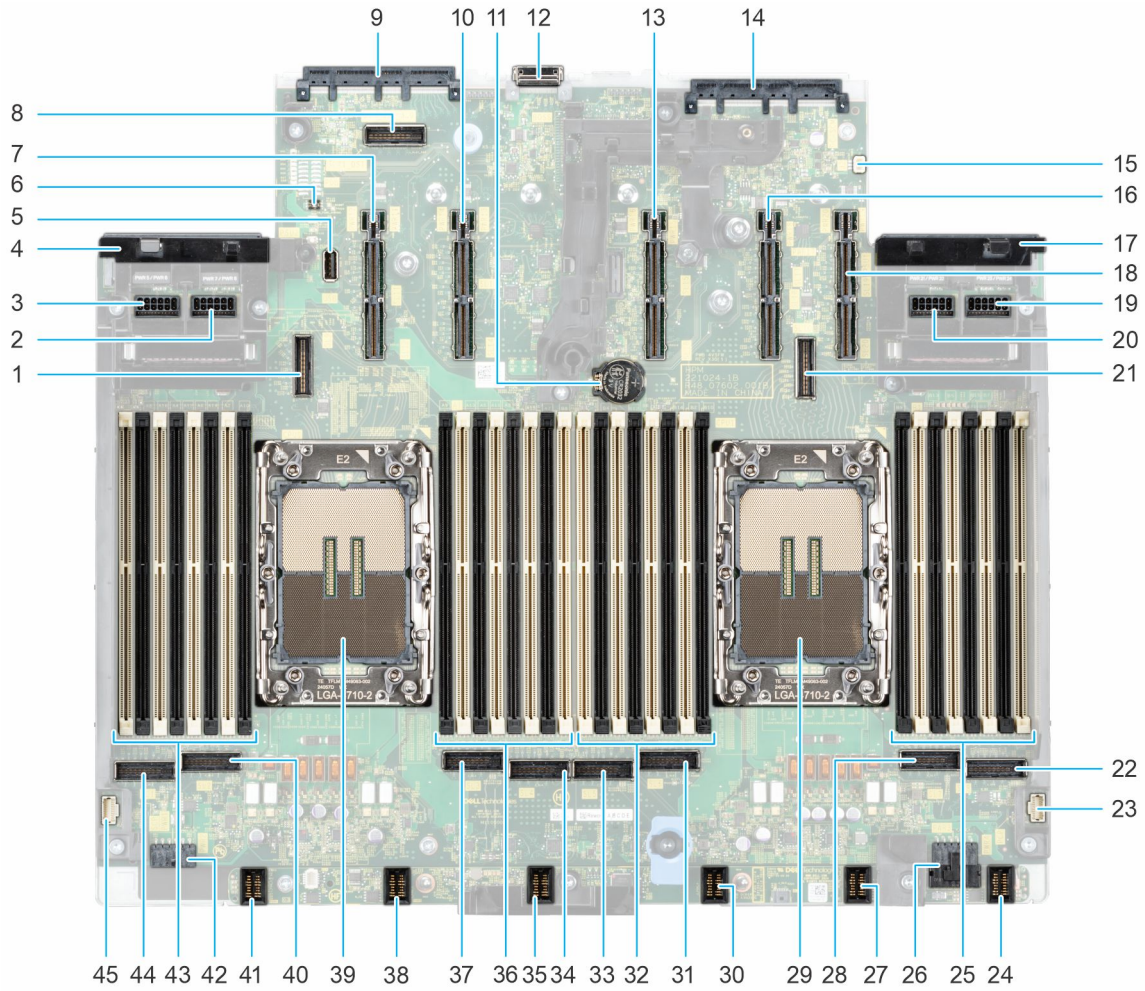


Figure 335. System board connectors

Table 121. System board jumpers and connectors

Item	Connector
1.	PCIe Connector 9 (SL9_CPU0_PA5)
2.	Power Connector 7/ 8 (PWR7/PWR8)

Table 121. System board jumpers and connectors (continued)

Item	Connector
3.	Power Connector 5/ 6 (PWR5/PWR6)
4	PSU Connector 2
5.	Internal USB
6.	DIP Switch for NVRAM/PWRD
7.	Riser Connector 5 - Requires CPU 0 (SL11/SL12/PWR11/PWR12)
8.	PCIe Connector 21 (SL21_CPU0_PA5)
9.	OCP NIC 3.0 Connector
10.	Riser Connector 4 - Requires CPU 0 (SL13/SL14/PWR13/PWR14)
11.	Coin Cell Battery
12.	BOSS Connector
13.	Riser Connector 3 - Requires CPU 1 (SL15/SL16/PWR15/PWR16)
14.	DC-SCM Connector
15.	Intrusion Switch Connector
16.	Riser Connector 1 - Requires CPU 1 (SL17/SL18/PWR17/PWR18)
17.	PSU Connector 1
18.	Riser Connector 2 - Requires CPU 1 (SL19/SL20/PWR19/PWR20)
19.	Power Connector 23/ 24 (PWR23/PWR24)
20.	Power Connector 21/ 22 (PWR21/PWR22)
21.	PCIe Connector 10 (SL10_CPU1_PA6)
22.	PCIe Connector 8 (SL8_CPU1_PA4)
23.	Primary Control Panel Connector
24.	FAN 6
25.	DIMMs for Processor 1
26.	Power Connector 3/ 4 (PWR3/PWR4)
27.	FAN 5
28.	PCIe Connector 7 (SL7_CPU1_PB4)
29.	Processor 1
30.	FAN 4
31.	PCIe Connector 6 (SL6_CPU1_PB3)
32.	DIMMs for Processor 1
33.	PCIe Connector 5 (SL5_CPU1_PA3)
34.	PCIe Connector 4 (SL4_CPU0_PA2)
35.	FAN 3
36.	DIMMs for Processor 0
37.	PCIe Connector 3 (SL3_CPU0_PB2)
38.	FAN 2
39.	Processor 0

Table 121. System board jumpers and connectors (continued)

Item	Connector
40.	PCIe Connector 2 (SL2_CPU0_PB1)
41.	FAN 1
42.	Power Connector 1/ 2 (PWR1/PWR2)
43.	DIMMs for CPU 0
44.	PCIe Connector 1 (SL1_CPU0_PA1)
45.	Secondary Control Panel Connector

DIP switch settings

To reset the password, see the *Disable a forgotten password*.

Table 122. DIP Switch settings

Jumper	Setting	Description
NVRAM_CLR		OFF (default): The BIOS settings are retained at system boot.
		ON: The BIOS settings cleared at system boot.
PWRD_DIS		OFF (default): The BIOS password is enabled.
		ON: The BIOS password is disabled.

The BIOS interface is designed for advanced users.

CAUTION: Be cautious when changing BIOS settings. Any changes in the setting may 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 DIP switch enables or disables password features and clears any passwords 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 DIP switch (PWRD_DIS) on the system board from **OFF** position to **ON** position.

   NOTE: Use a plastic scribe to change the DIP switch settings.

4. Replace the system cover.

   NOTE: The existing passwords are not disabled (erased) until the system boots with the DIP switch in the **ON** position. However, before you assign a new system and/or setup password, you must move the DIP switch back to **OFF** position.

   NOTE: If you assign a new system and/or setup password with the DIP switch in the **ON** position, the system disables the new passwords 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 DIP switch (PWRD_DIS) on the system board from **ON** position to **OFF** position.
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.

12

Getting Help

Topics:

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.

Contact Dell Technologies

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

Steps

1. Go to Dell Support.
2. Select your country or region from the drop-down menu on the lower right corner of the page.
3. For customized support, enter the system Service Tag in the **Enter a product identifier, model, service request , or Keyword** field and click **Search**.
4. For general support, select your category, segment, or product.
5. For contact details of Dell Global Technical Support, click Contact Technical Support:

Accessing system information by using MyDell

You can use the MyDell label located on the Express service tag in the front of the PowerEdge system, to access information about PowerEdge R770 system.

Prerequisites

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

The MyDell 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 support and sales teams.

Steps

Go to product-specific page in PowerEdge Manuals or scan the model-specific QR code on your system using your smartphone or tablet.

QR code for PowerEdge R770 system resources

Figure 336. QR code for PowerEdge R770 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.

13

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 123. Additional documentation resources for your system

Task	Document	Location
Setting up your system	For more information about installing and securing the system into a rack, see the Rail Installation Guide included with your rail solution. For information about setting up your system, see the *Quick Start Guide*	PowerEdge manuals
Configuring your system	For information about the iDRAC features, configuring and logging in to iDRAC, and managing your system remotely, see the Integrated Dell Remote Access Controller User's Guide. For information about understanding Remote Access Controller Admin (RACADM) subcommands and supported RACADM interfaces, see the RACADM CLI Guide for iDRAC . For information about Redfish and its protocol, supported schema, and Redfish Eventing implemented in iDRAC, see the Redfish API Guide. For information about iDRAC property database group and object descriptions, see the Attribute Registry Guide.	PowerEdge manuals
	For information about earlier versions of the iDRAC documents. To identify the version of iDRAC available on your system, on the iDRAC web interface, click **?** > **About**.	iDRAC Manuals
	For information about installing the operating system, see the operating system documentation.	Operating System Manuals

Table 123. Additional documentation resources for your system (continued)

Task	Document	Location
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	Drivers
Managing your system	For information about installing and using Dell Secure Connect Gateway, see the Dell Secure Connect Gateway Enterprise User's Guide.	serviceability tools
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.	Storage Controller Manuals
Understanding event and error messages	For information about the event and error messages generated by the system firmware and agents that monitor system components, see the EEMI guide.	EEMI guide
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	PowerEdge manuals