Dell PowerEdge R7615

Installation and Service Manual

Regulatory Model: E96S
Regulatory Type: E96S001
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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.

Contents

1

About this document

This document provides an overview about the system, information about installing and replacing components, diagnostic tools, and guidelines to be followed while installing certain components.

2

System overview

The PowerEdge R7615 system is a 2U server that supports:

- One AMD EPYC 4th Generation 9004 series processor with up to 128 cores
- 12 DDR5 DIMM slots with up to 3 TB memory and speeds up to 4800 MT/s
- Optional Direct Liquid Cooling (DLC) for required CPUs and/or configurations
- Two redundant AC or DC power supply units
- Up to 12 x 3.5-inch, 8 x 3.5-inch, or 24 x 2.5-inch, 16 x 2.5-inch, 8 x 2.5-inch, or 2 x 2.5-inch (rear), 4 x 2.5-inch (rear) SAS, SATA, or NVMe (HDD/SSD) drives.
- Up to 32 x EDSFF E3.S, 16 x EDSFF E3.S, 8 x EDSFF E3.S, or 4 x EDSFF E3.S (rear) NVMe Gen5 drives.
- PCI Express® (PCIe) 5.0 enabled expansion slots
- Network interface technologies to cover Network Interface Card (NIC)

NOTE: For more information about how to hot swap NVMe PCIe SSD U.2 device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at Dell Support page **> Browse all Products** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **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:

Front view of the system

Figure 1. Front view of 24 x 2.5-inch drive system

Table 1. Features available on the front of the 24 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.

Table 1. Features available on the front of the 24 x 2.5-inch drive system (continued)

Item	Ports, panels, and slots	Icon	Description
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

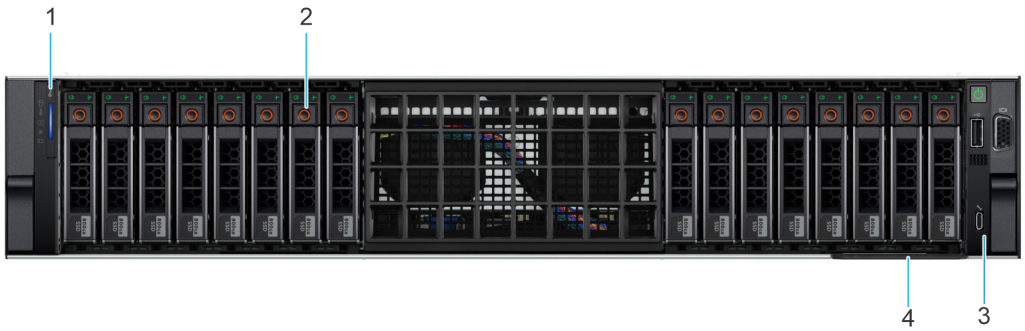

Figure 2. Front view of 16 x 2.5-inch drive system

Table 2. Features available on the front of the 16 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

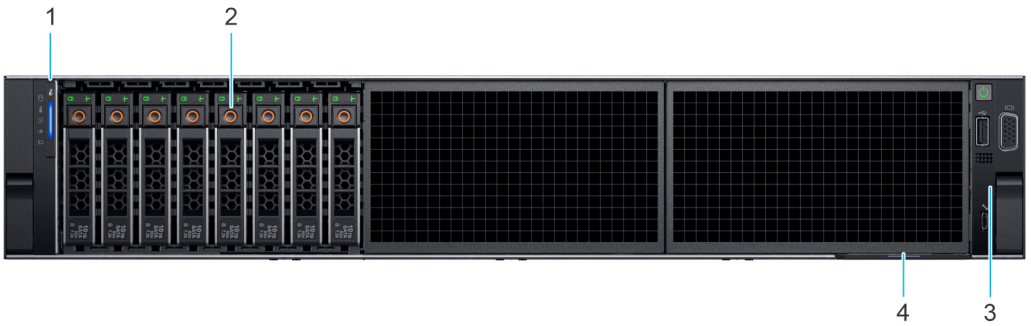

Figure 3. Front view of 8 x 2.5-inch drive system

Table 3. Features available on the front of the 8 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

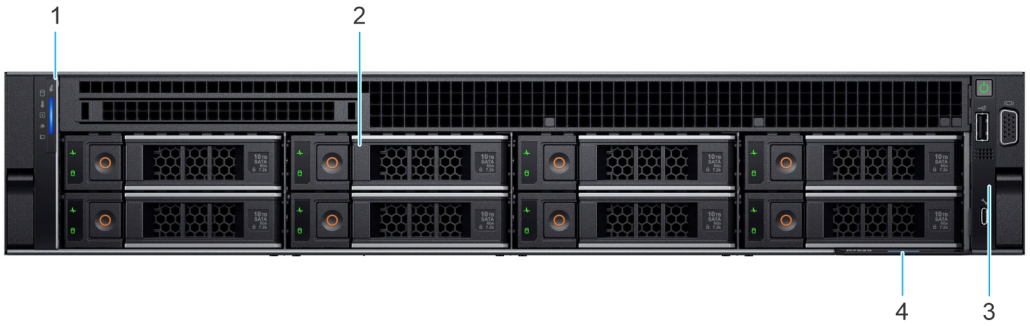

Figure 4. Front view of 8 x 3.5-inch drive system

Table 4. Features available on the 8 x 3.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

Figure 5. Front view of 12 x 3.5-inch drive system

Table 5. Features available on the front of the 12 x 3.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

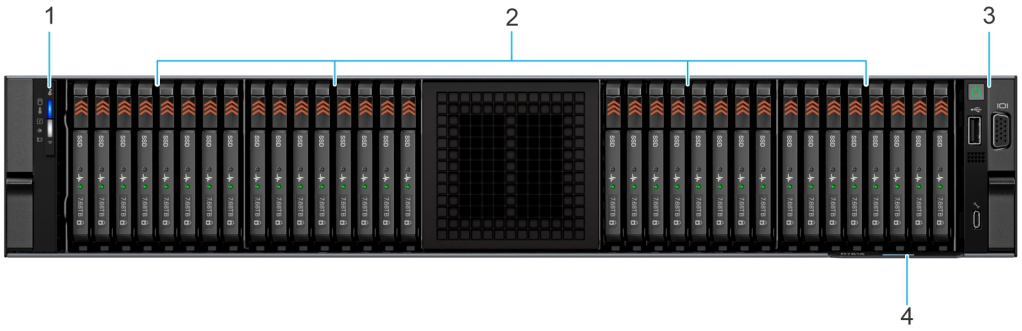

Figure 6. Front view of 32 x EDSFF E3.S

Table 6. Features available on the front of 32 x EDSFF E3.S

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.
2	E3.S Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

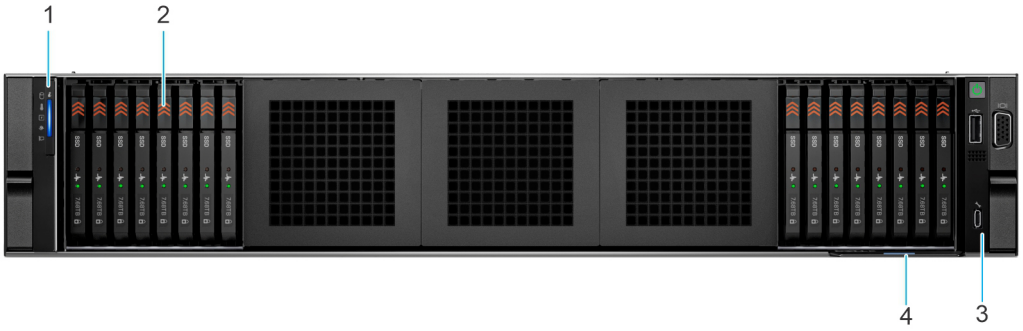

Figure 7. Front view of 16 x EDSFF E3.S

Table 7. Features available on the front of 16 x EDSFF E3.S

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.
2	E3.S Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

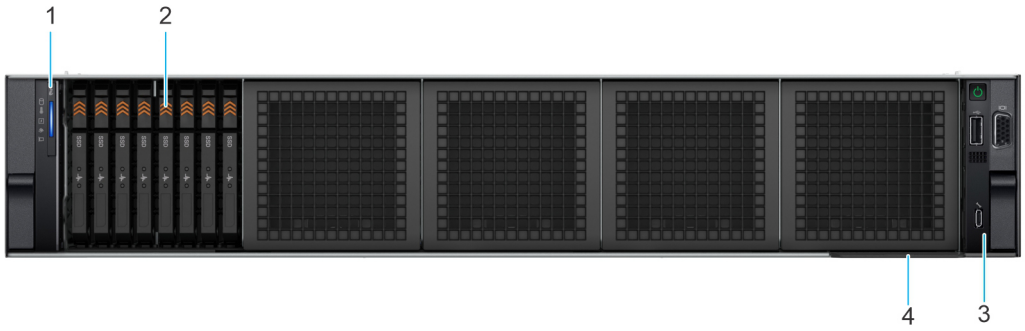

Figure 8. Front view of 8 x EDSFF E3.S

Table 8. Features available on the front of 8 x EDSFF E3.S

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, and the status LED indicator.
2	E3.S Drive	N/A	Enables you to install drives that are supported on your system.
3	Right control panel	N/A	Contains the power button with integrated power LED, 1 x VGA port, 1 x 2.0 USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED.
4	Information 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. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

NOTE: For more information about ports, panels, and slots, see the Technical specifications section.

Rear view of the system

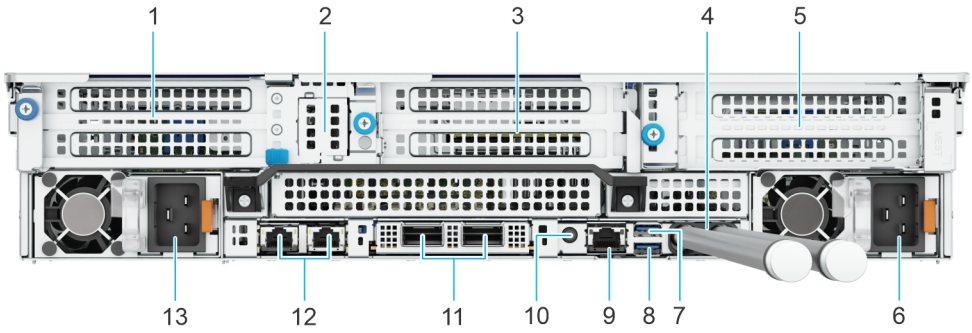

Figure 9. Rear view of system Direct Liquid Cooling (DLC) configuration

Table 9. Rear view of the system with Direct Liquid Cooling (DLC) configuration

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1 and slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
2	BOSS module	N/A	BOSS-N1 module.
3	PCIe expansion card riser 3 (slot 4 and slot 5)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
4	Coolant tubes	N/A	Cold coolant flows into the system from one tube and hot coolant leaves the system from another tube.
5	PCIe expansion card riser 4 (slot 7 and slot 8)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
6	Power supply unit (PSU2)	2	PSU2 is the secondary PSU of the system.
7	USB 2.0 port		The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
8	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.
9	Dedicated iDRAC9 Ethernet port		Enables you to remotely access iDRAC. For more information, see the Integrated *Dell Remote Access Controller User's Guide* at PowerEdge Manuals.
10	System Identification (ID) button		The System Identification (ID) button is available on the front and back of the system. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the step through mode. When pressed, the system ID LED in the back panel blinks until either the front or rear button is pressed again. Press the button to toggle between on or off mode. **NOTE:** If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the BIOS progress mode. **NOTE:** To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the **System ID** button for more than 15 seconds.
11	OCP NIC card	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. The

Table 9. Rear view of the system with Direct Liquid Cooling (DLC) configuration (continued)

Item	Ports, panels, or slots	Icon	Description
			NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board. Dell DPU card to be installed in the riser. **NOTE:** The system allows either LOM card or MIC card to be installed in the system.
12	NIC ports		The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
13	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

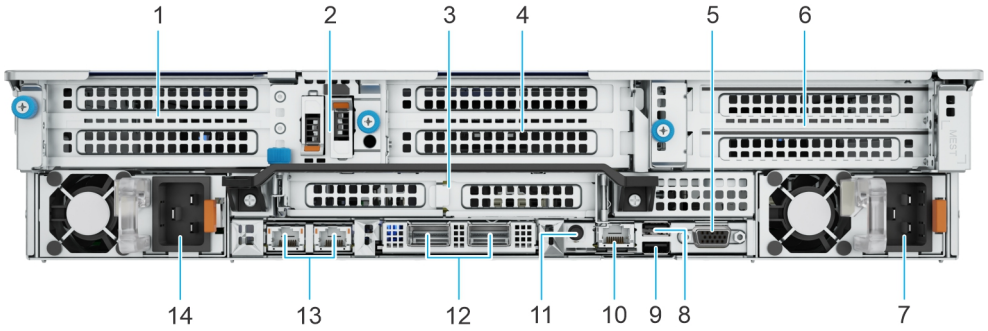

Figure 10. Rear view of the system

Table 10. Rear view of the system

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1 and slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
2	BOSS module	N/A	BOSS-N1 module.
3	PCIe expansion card riser 2 (slot 3 and slot 6)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
4	PCIe expansion card riser 3 (slot 5)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
5	VGA port	N/A	Enables you to connect a display device to the system.
6	PCIe expansion card riser 4 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
7	Power supply unit (PSU2)	2	PSU2 is the secondary PSU of the system.
8	USB 2.0 port		The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
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	Dedicated iDRAC9 Ethernet port		Enables you to remotely access iDRAC. For more information, see the Integrated *Dell Remote Access Controller User's Guide* at PowerEdge Manuals.
11	System Identification (ID) button		The System Identification (ID) button is available on the front and back of the system. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID

Table 10. Rear view of the system (continued)

Item	Ports, panels, or slots	Icon	Description
			button to reset iDRAC and to access BIOS using the step through mode. When pressed, the system ID LED in the back panel blinks until either the front or rear button is pressed again. Press the button to toggle between on or off mode. **NOTE:** If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the BIOS progress mode. **NOTE:** To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the **System ID** button for more than 15 seconds.
12	OCP NIC card	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. The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board. Dell DPU card to be installed in the riser. **NOTE:** The system allows either LOM card or MIC card to be installed in the system.
13	NIC ports		The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
14	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

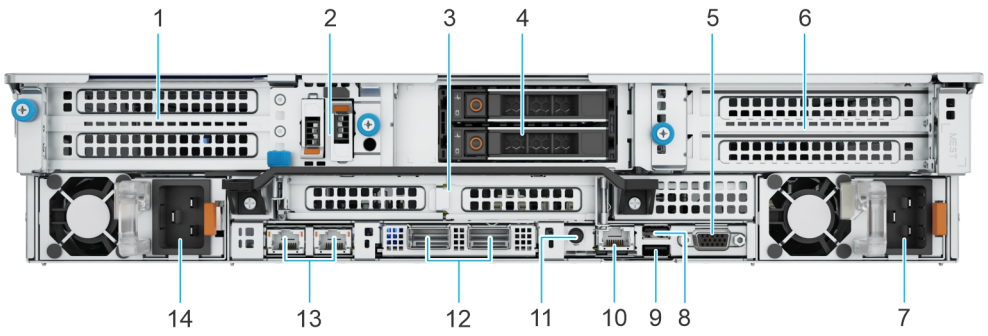

Figure 11. Rear view of the system with 2 x 2.5-inch rear drive module

Table 11. Rear view of the system with 2 x 2.5-inch rear drive module

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1 and slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
2	BOSS module	N/A	BOSS-N1 module.
3	PCIe expansion card riser 2 (slot 3 and slot 6)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
4	Drives	N/A	Enables you to install drives that are supported on your system.
5	VGA port	N/A	Enables you to connect a display device to the system.
6	PCIe expansion card riser 4 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
7	Power supply unit (PSU2)	2	PSU2 is the secondary PSU of the system.

Table 11. Rear view of the system with 2 x 2.5-inch rear drive module (continued)

Item	Ports, panels, or slots	Icon	Description
8	USB 2.0 port		The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
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	Dedicated iDRAC9 Ethernet port		Enables you to remotely access iDRAC. For more information, see the Integrated *Dell Remote Access Controller User's Guide* at PowerEdge Manuals.
11	System Identification (ID) button		The System Identification (ID) button is available on the front and back of the system. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the step through mode. When pressed, the system ID LED in the back panel blinks until either the front or rear button is pressed again. Press the button to toggle between on or off mode. **NOTE:** If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the BIOS progress mode. **NOTE:** To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the **System ID** button for more than 15 seconds.
12	OCP NIC card	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. The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board. Dell DPU card to be installed in the riser. **NOTE:** The system allows either LOM card or MIC card to be installed in the system.
13	NIC ports		The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
14	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

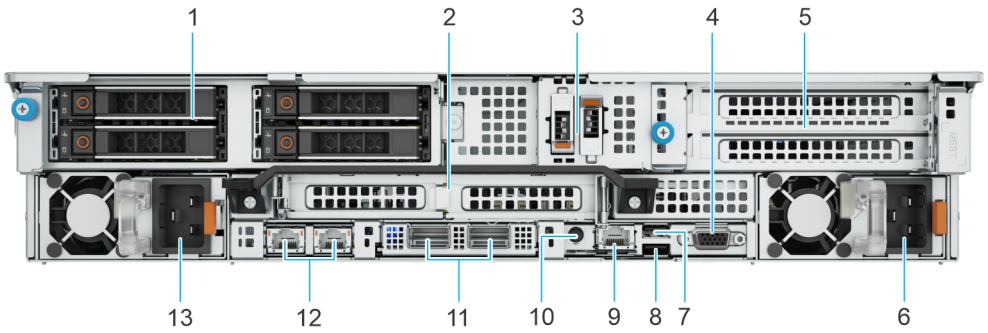

Figure 12. Rear view of the system with 4 x 2.5-inch rear drive module

Table 12. Rear view of the system with 4 x 2.5-inch rear drive module

Item	Ports, panels, or slots	Icon	Description
1	Drives	N/A	Enables you to install drives that are supported on your system.
2	PCIe expansion card riser 2	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.

Table 12. Rear view of the system with 4 x 2.5-inch rear drive module (continued)

Item	Ports, panels, or slots	Icon	Description
3	BOSS module	N/A	BOSS-N1 module.
4	VGA port	N/A	Enables you to connect a display device to the system.
5	PCIe expansion card riser 4	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
5	Coolant tubes	N/A	Cold coolant flows into the system from one tube and hot coolant leaves the system from another tube.
6	Power supply unit (PSU2)		PSU2 is the secondary PSU of the system.
7	USB 2.0 port		The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
8	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.
9	Dedicated iDRAC9 Ethernet port		Enables you to remotely access iDRAC. For more information, see the Integrated *Dell Remote Access Controller User's Guide* at PowerEdge Manuals.
10	System Identification (ID) button		The System Identification (ID) button is available on the front and back of the system. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the step through mode. When pressed, the system ID LED in the back panel blinks until either the front or rear button is pressed again. Press the button to toggle between on or off mode. **NOTE:** If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the BIOS progress mode. **NOTE:** To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the **System ID** button for more than 15 seconds.
11	OCP NIC card	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. The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board. Dell DPU card to be installed in the riser. **NOTE:** The system allows either LOM card or MIC card to be installed in the system.
12	NIC ports		The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
13	Power supply unit (PSU1)		PSU1 is the primary PSU of the system.

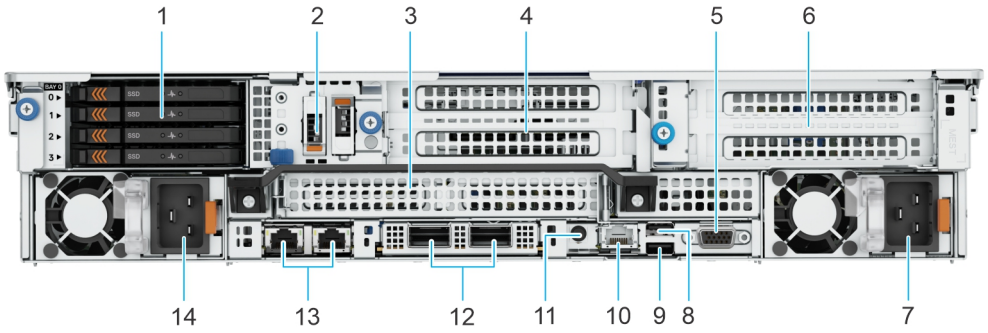

Figure 13. Rear view of the system with 4 x EDSFF E3.S rear drive module

Table 13. Rear view of the system with 4 x E3.s rear drive module

Item	Ports, panels, or slots	Icon	Description
1	E3.S Drives	N/A	Enables you to install drives that are supported on your system.
2	BOSS module	N/A	BOSS-N1 module.
3	PCIe expansion card riser 2 (slot 3 and slot 6)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
4	PCIe expansion card riser 3 (slot 5)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
5	VGA port	N/A	Enables you to connect a display device to the system.
6	PCIe expansion card riser 4 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information , see the Expansion card installation guidelines section.
7	Power supply unit (PSU2)	⚡2	PSU2 is the secondary PSU of the system.
8	USB 2.0 port	⇄	The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
9	USB 3.0 port	SS⇄	The USB port is 9-pin and 3.0-compliant. This port enables you to connect USB devices to the system.
10	Dedicated iDRAC9 Ethernet port	🔧	Enables you to remotely access iDRAC. For more information, see the Integrated *Dell Remote Access Controller User's Guide* at PowerEdge Manuals.
11	System Identification (ID) button	ⓘ	The System Identification (ID) button is available on the front and back of the system. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the step through mode. When pressed, the system ID LED in the back panel blinks until either the front or rear button is pressed again. Press the button to toggle between on or off mode. **NOTE:** If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the BIOS progress mode. **NOTE:** To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the **System ID** button for more than 15 seconds.
12	OCP NIC card	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. The NIC ports that are integrated on the LOM card provide network

Table 13. Rear view of the system with 4 x E3.s rear drive module (continued)

Item	Ports, panels, or slots	Icon	Description
			connectivity which is connected to the system board. Dell DPU card to be installed in the riser. **NOTE:** The system allows either LOM card or MIC card to be installed in the system.
13	NIC ports		The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
14	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

NOTE: For more information about ports, panels, and slots, see the Technical specifications section.

Inside the system

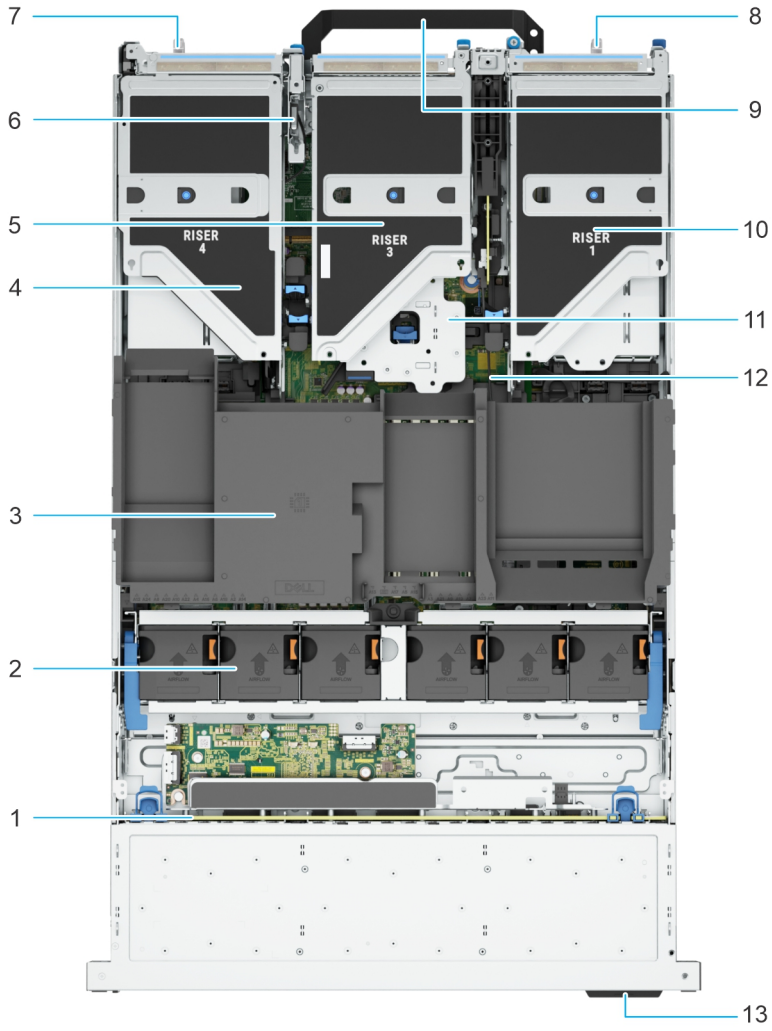

Figure 14. Inside the system

1. Drive backplane
2. Cooling fan cage assembly
3. Air shroud top cover
4. Riser 4

5. Riser 3
6. Intrusion switch
7. Power Supply Unit (PSU 1)
8. Power Supply Unit (PSU 2)
9. Handle
10. Riser 1
11. Riser 2
12. System board
13. Information tag

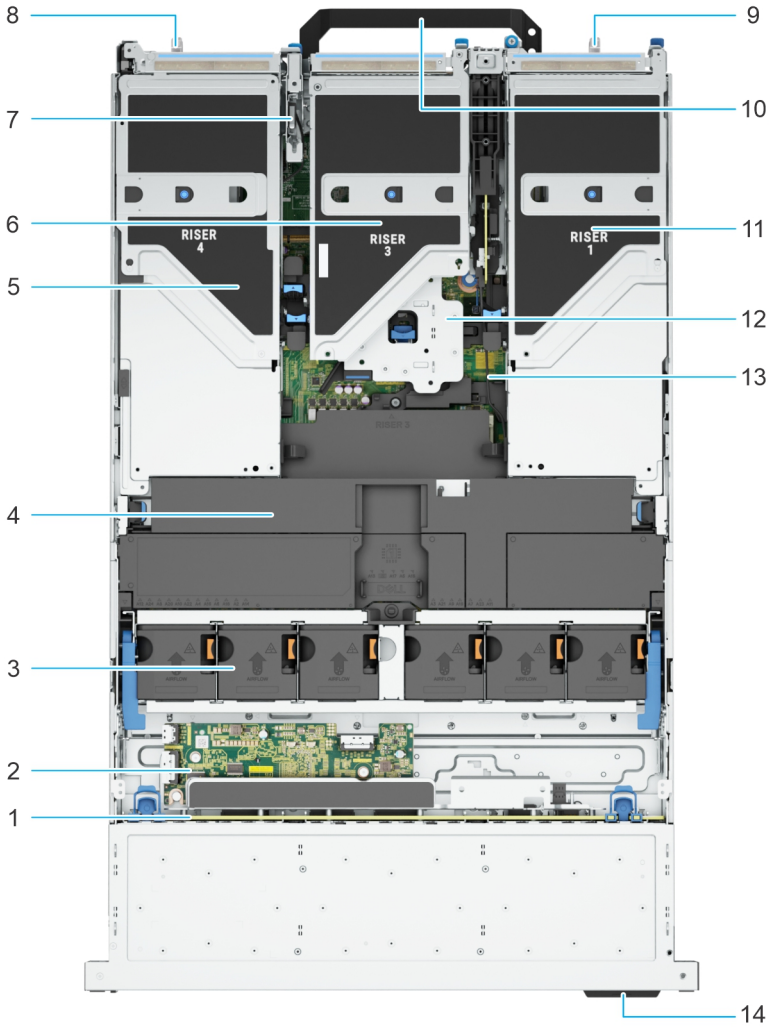

Figure 15. Inside the system with full length risers and GPU shroud

1. Drive backplane
2. Expansion card board
3. Cooling fan cage assembly
4. GPU air shroud top cover
5. Riser 4
6. Riser 3
7. Intrusion switch
8. Power Supply Unit (PSU 1)
9. Power Supply Unit (PSU 2)
10. Handle
11. Riser 1
12. Riser 2

13. System board
14. Information tag

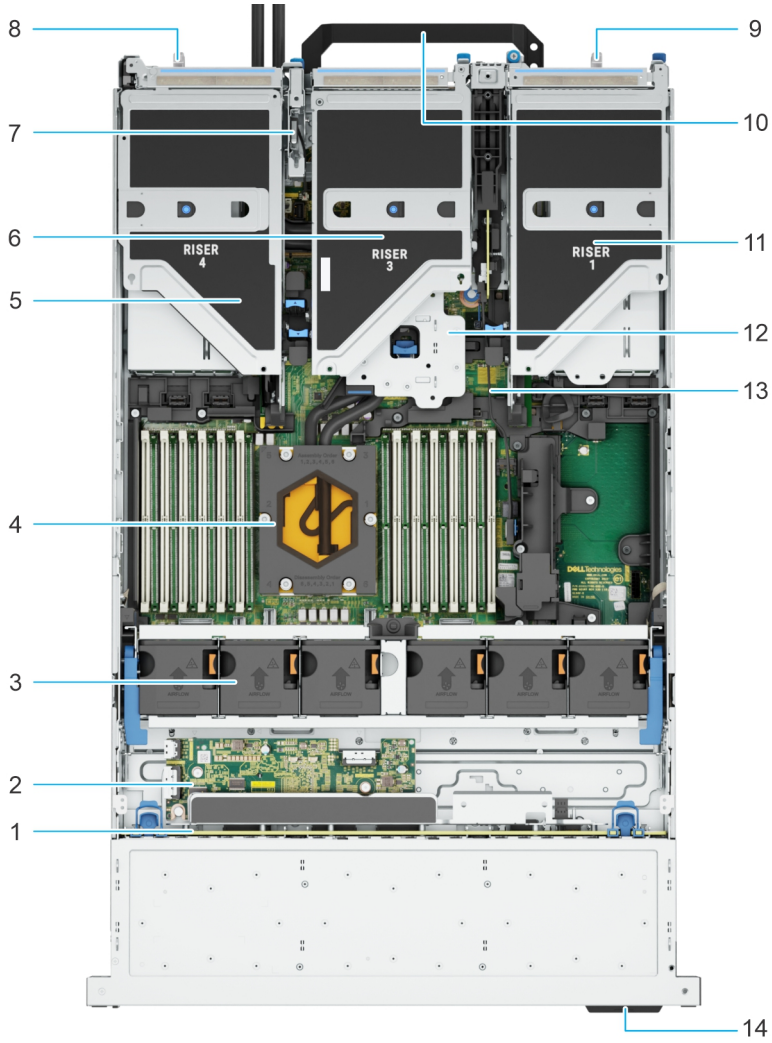

Figure 16. Inside the system with processor liquid cooling module

1. Drive backplane
2. Expansion card board
3. Cooling fan cage assembly
4. Liquid cooling module
5. Riser 4
6. Riser 3
7. Intrusion switch
8. Power Supply Unit (PSU 1)
9. Power Supply Unit (PSU 2)
10. Handle
11. Riser 1
12. Riser 2
13. System board
14. Information tag

NOTE: To show the liquid cooling configuration system, the air shroud is not shown in the image.

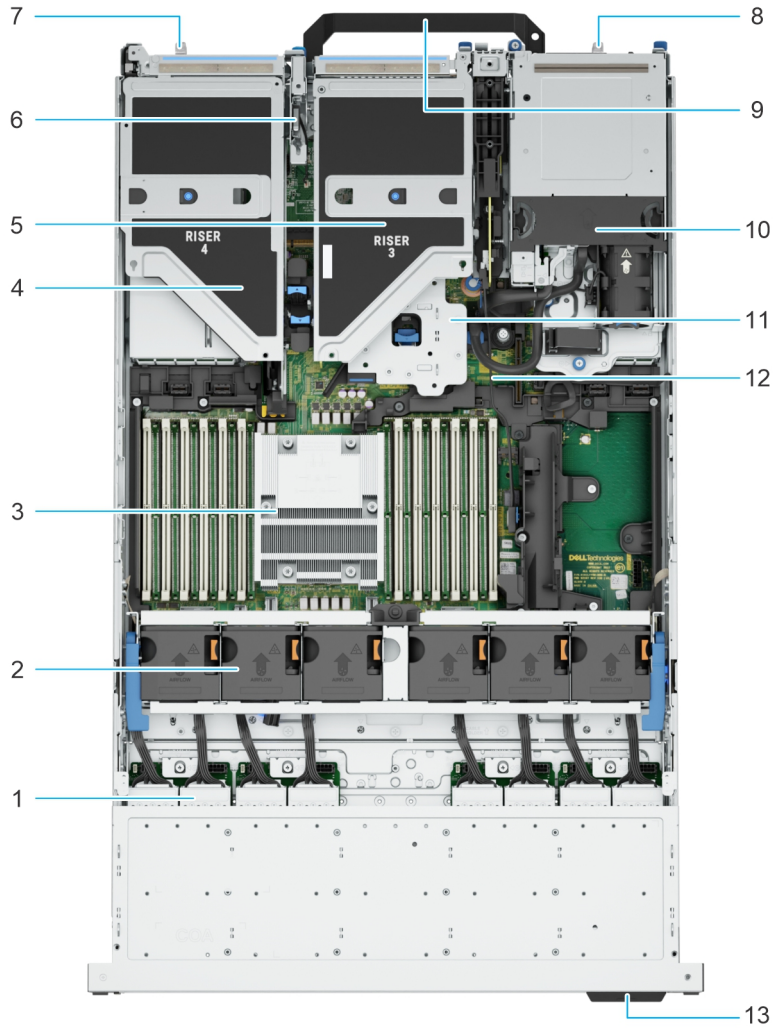

Figure 17. Inside the system with rear EDSFF E3.S module

1. Drive backplane
2. Cooling fan cage assembly
3. CPU
4. Riser 4
5. Riser 3
6. Intrusion switch
7. Power Supply Unit (PSU 1)
8. Power Supply Unit (PSU 2)
9. Handle
10. Rear EDSFF E3.S module
11. Riser 2
12. System board
13. Information tag

Locating the Express Service Code and Service Tag

The unique Express Service Code and Service Tag is used to identify the system. The information tag is located on the front of the system that includes system information such as Service Tag, Express Service Code, Manufacture date, NIC, MAC address, QR code, and so on. If you have opted for the secure default access to iDRAC, the Information tag also contains the iDRAC secure default password. If you have opted for iDRAC Quick Sync 2, the Information tag also contains the OpenManage Mobile (OMM) label, where administrators can configure, monitor, and troubleshoot the PowerEdge servers.

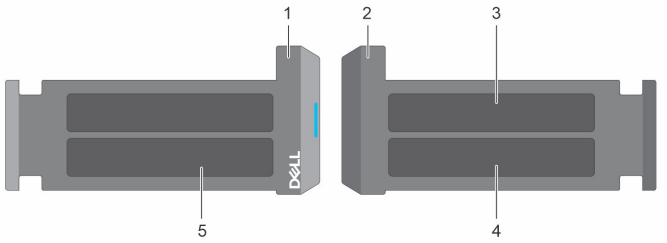

Figure 18. Locating the Express Service Code and Service tag

1. Information tag (front view)
2. Information tag (back view)
3. OpenManage Mobile (OMM) label
4. iDRAC MAC address and iDRAC secure password label
5. Service Tag, Express Service Code, QR code

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

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

System information label

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

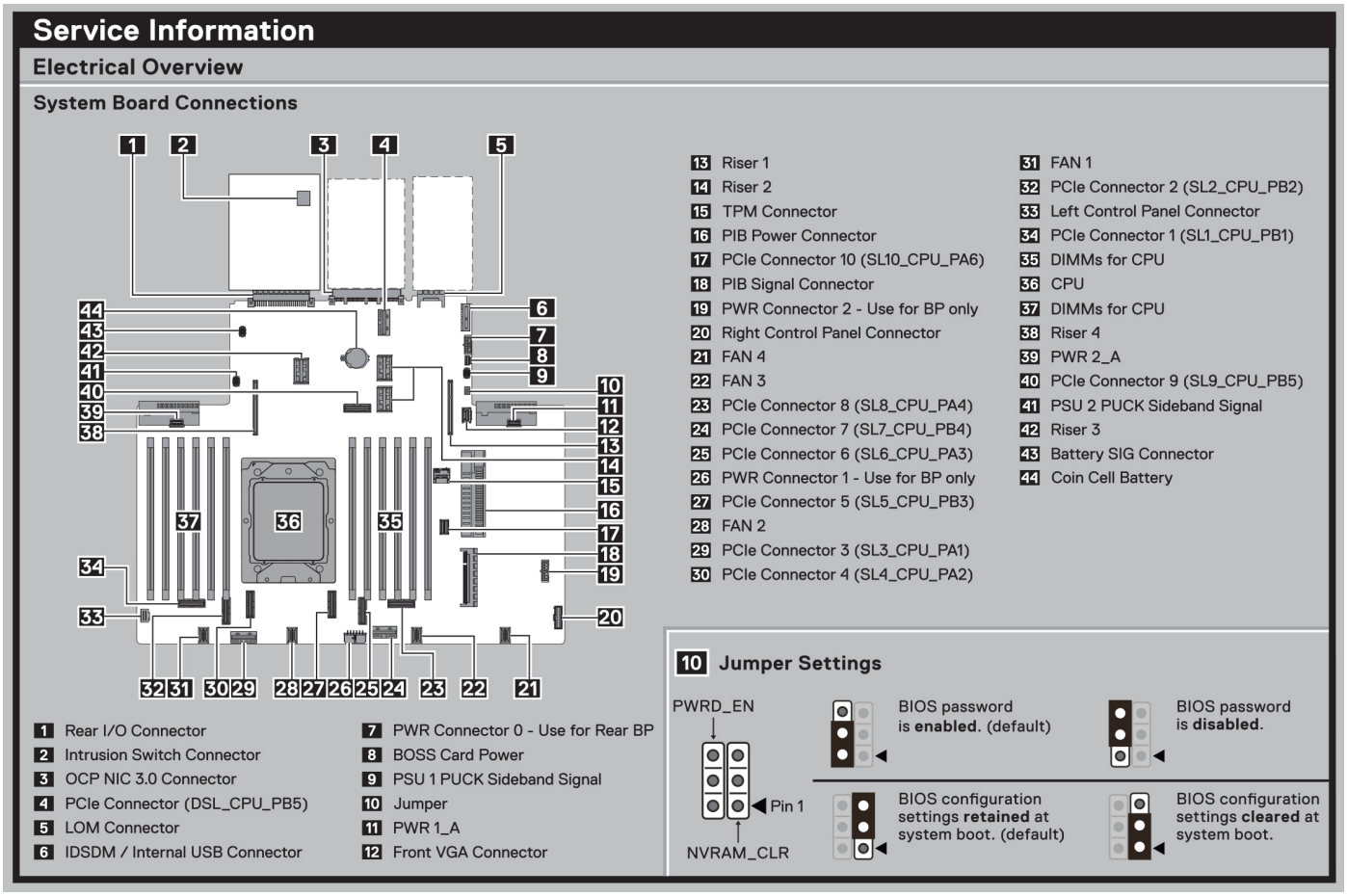

Figure 19. Service information

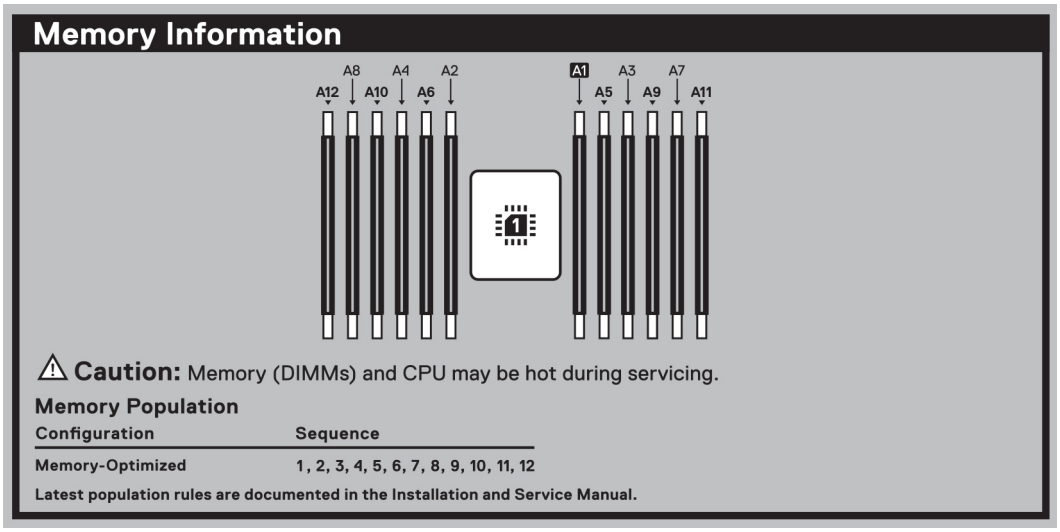

Figure 20. Memory information

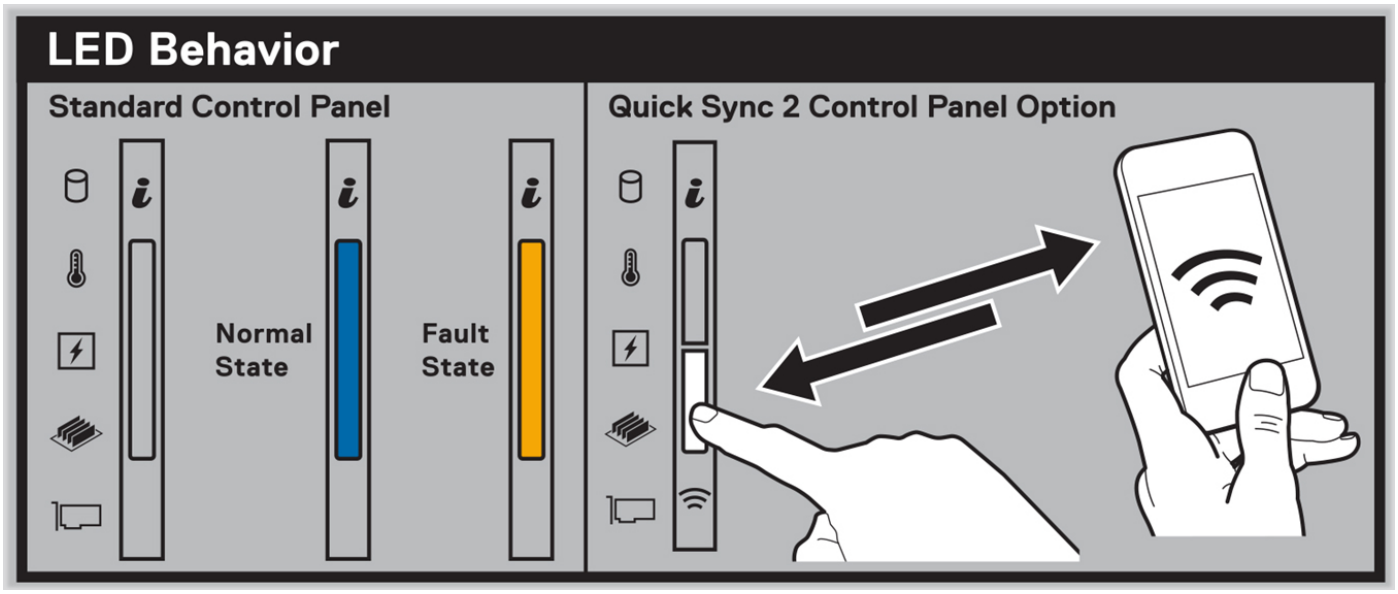

Figure 21. LED behavior

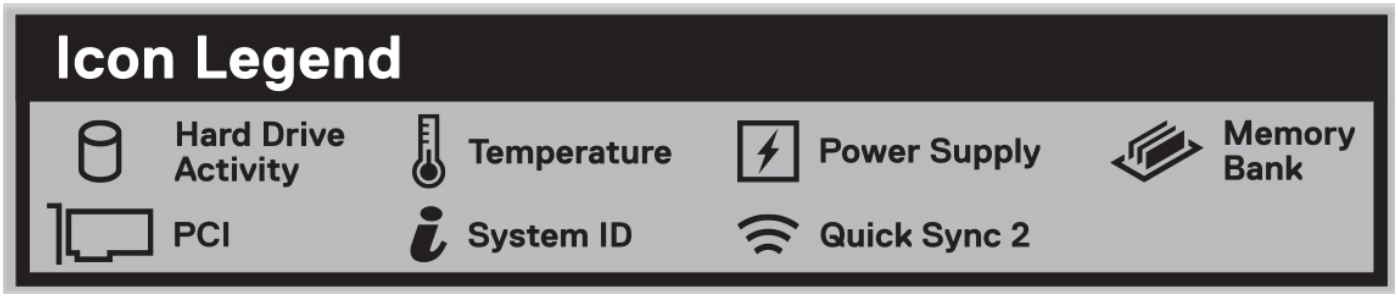

Figure 22. Icon legend

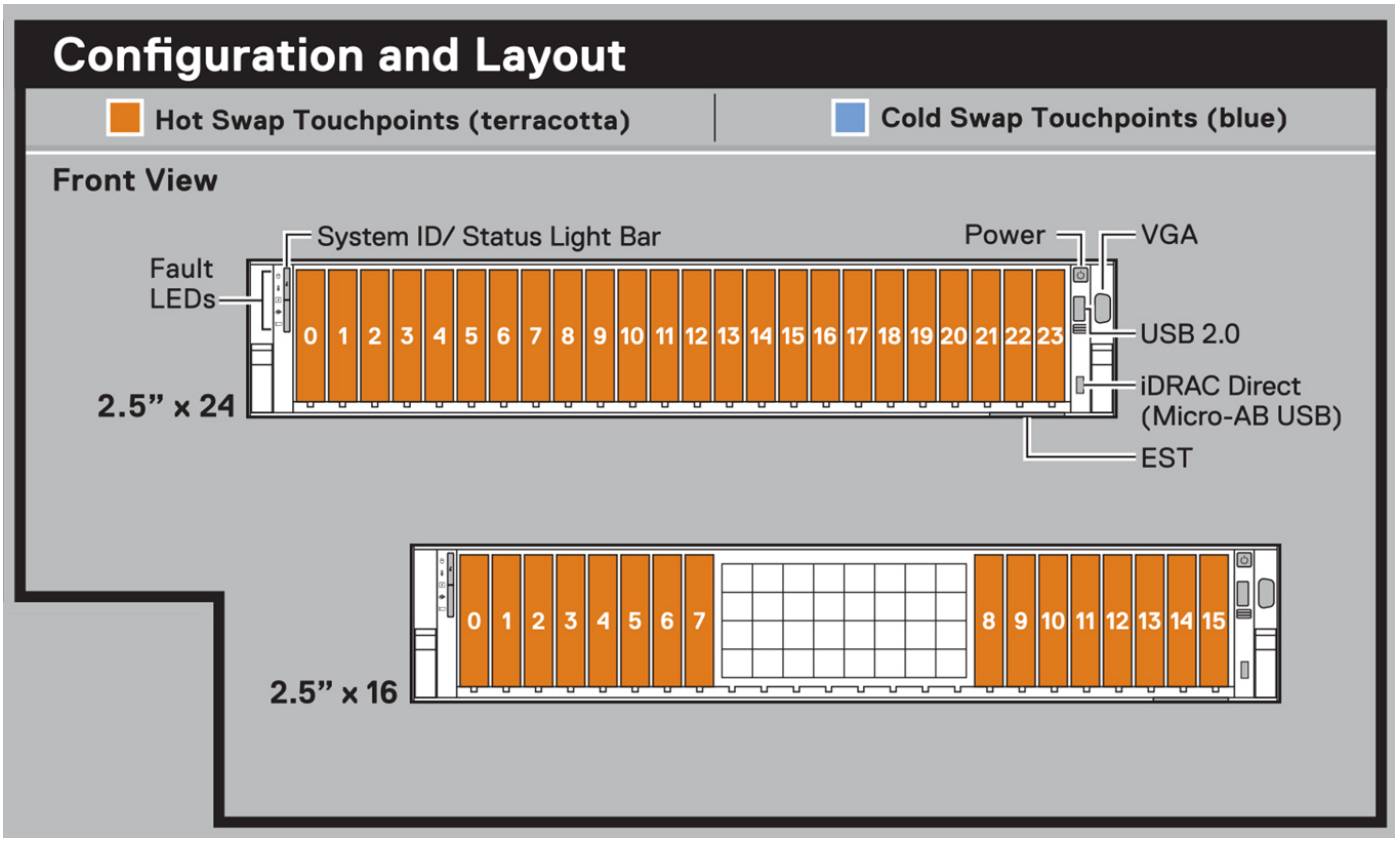

Figure 23. Configuration and layout for 2.5-inch drive system

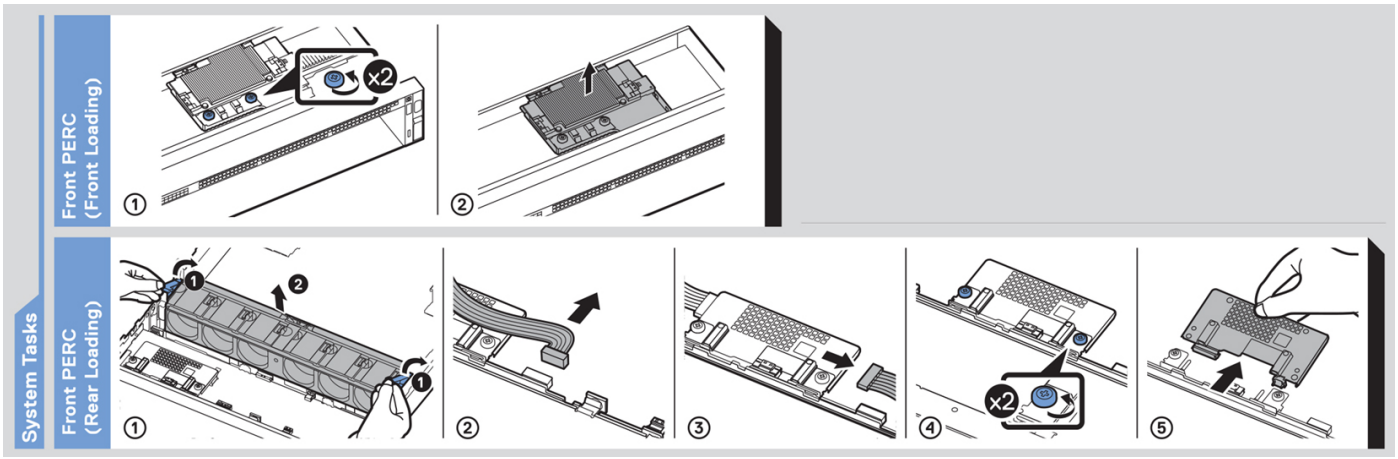

Figure 24. System tasks

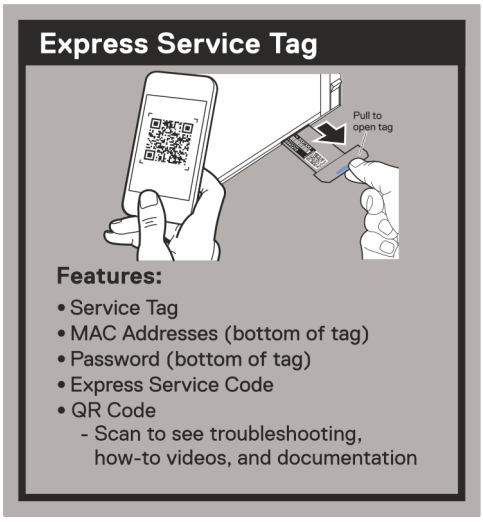

Figure 25. Express service tag

Rail sizing and rack compatibility matrix

For specific information about the rail solutions compatible with your system, see the Dell Technologies Enterprise Systems Rail Sizing and Rack Compatibility 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 supported for various types of rack mounting flanges.

3

Technical specifications

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

Topics:

Chassis dimensions

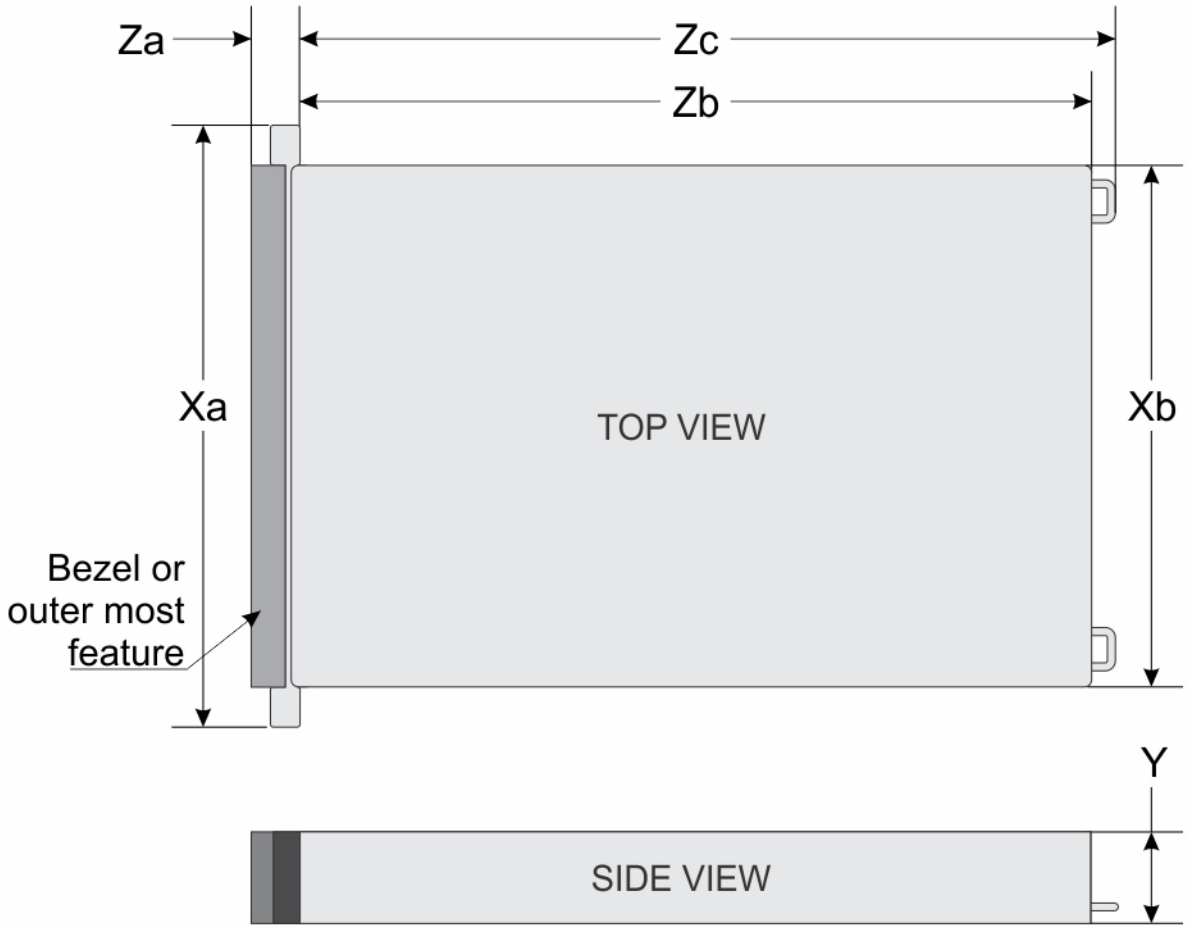

Figure 26. Chassis dimensions

Table 14. PowerEdge R7615 chassis dimensions

Xa	Xb	Y	Za	Zb	Zc
482.0 mm (18.97 inches)	434.0 mm (17.08 inches)	86.8 mm (3.41 inches)	35.84 mm (1.96 inches) With bezel 22.0 mm (0.86 inches) Without bezel	700.7 mm (27.58 inches) Ear to rear wall	736.29 mm (28.98 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 15. PowerEdge R7615 system weight

System configuration	Maximum weight (with all drives/SSDs)
A server with fully populated drives	34.5 kg (76.05 pound)
A server without drives and PSU installed	25.7 kg (56.65 pound)

PSU specifications

The PowerEdge R7615 system supports up to two AC or DC power supply units (PSUs).

Table 16. 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	
700 W mixed mode	Titanium	2625	50/60	700 W	N/A	N/A	N/A	N/A	N/A	4.1
		2625	N/A	N/A	N/A	N/A	700 W	N/A	N/A	3.4
800 W mixed mode	Platinum	3000	50/60	800 W	800 W	N/A	N/A	N/A	N/A	9.2—4.7
		3000	N/A	N/A	N/A	N/A	800 W	N/A	N/A	3.8
1100 W mixed mode	Titanium	4100	50/60	1100 W	1050 W	N/A	N/A	N/A	N/A	12—6.3
		4100	N/A	N/A	N/A	N/A	1100 W	N/A	N/A	5.2
1400 W mixed mode	Platinum	5250	50/60	1400 W	1050 W	N/A	N/A	N/A	N/A	12—8
		5250	N/A	N/A	N/A	N/A	1400 W	N/A	N/A	6.6
	Titanium	5250	50/60	1400 W	1050 W	N/A	N/A	N/A	N/A	12—8
		5250	N/A	N/A	N/A	N/A	1400 W	N/A	N/A	6.5
	Titanium	5250	50/60	1400 W	1050 W	1400 W	N/A	N/A	N/A	5.8
		5250	N/A	N/A	N/A	N/A	1400 W	N/A	N/A	5.17
1800 W mixed mode	Titanium	6750	50/60	1800	N/A	N/A	N/A	N/A	N/A	10
		6750	N/A	N/A	N/A	N/A	1800 W	N/A	N/A	8.2
2400 W mixed mode	Platinum	9000	50/60	2400 W	1400 W	N/A	N/A	N/A	N/A	16—13.5
		9000	N/A	N/A	N/A	N/A	2400 W	N/A	N/A	11.2
1100 W -48 V DC	N/A	4265	N/A	N/A	N/A	N/A	N/A	1100 W	N/A	27
2800 W	Titanium	10500	50/60	2800 W	N/A	N/A	N/A	N/A	N/A	15.6

Table 16. 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	
mixed mode	N/A	10500	N/A	N/A	N/A	N/A	2800 W	N/A	N/A	13.6

NOTE: If a system with AC 1400 W or 1100 W PSUs operates at low line 100-120 V AC, and then the power rating per PSU is degraded to 1050 W.

NOTE: If a system with AC 2400 W PSUs operates at low line 100-120 V AC, and then the power rating per PSU is degraded to 1400 W.

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.

NOTE:

- HLAC stands for High-Line AC, with a range of 200 - 240 V AC.
- HVDC stands for High-Voltage DC, with 336 V DC.

Figure 27. PSU power cords

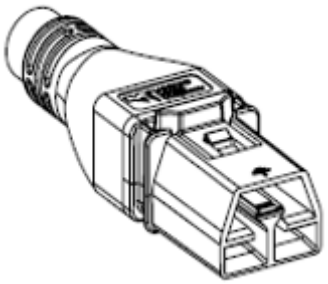

Figure 28. APP 2006G1 power cable

Table 17. PSU power cords

Form factor	Output	Power cable
Redundant 60 mm	700 W mixed mode HLAC	C13
	800 W mixed mode	C13
	1100 W mixed mode	C13
	1400 W mixed mode	C13

Table 17. PSU power cords (continued)

Form factor	Output	Power cable
	1400 W mixed mode 277 Vac and HVDC	APP 2006G1
	1800 W mixed mode HLAC	C15
Redundant 86 mm	2400 W mixed mode	C19

NOTE: C13 power cord combined with C14 to C15 jumper power cord can be used to adapt 1800 W PSU.

Processor specifications

Table 18. PowerEdge R7615 processor specifications

Supported processor	Number of processor supported
4th Generation AMD EPYC 9004 Series processor	One

Supported operating systems

The PowerEdge R7615 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

For more information, go to Operating System Manuals.

Cooling fan specifications

Cooling options

The PowerEdge R7615 requires various cooling components that based on CPU TDP, storage modules, rear drives, GPU, and persistent memory to maintain optimum thermal performance.

The PowerEdge R7615 offers two types of cooling options:

- Air cooling
- Processor liquid cooling (optional)

Cooling fan specifications

The PowerEdgeR7615system system supports up to six high-performance silver grade (HPR SLVR) or high-performance gold (HPR Gold) cooling fans.

Table 19. Cooling fan specifications

Fan type	Abbreviation	Label color	Label image
High performance Silver (HPR) fans	HPR SLVR	Silver	
High performance Gold (HPR Gold) fans	HPR Gold	Gold Grade	

System battery specifications

The PowerEdge R7615 system uses one CR 2032 3.0-V lithium coin cell battery.

Expansion card riser specifications

The PowerEdge R7615 system supports up to eight PCI express (PCIe) slots (six full lengths and two low profiles) on the system board.

Table 20. Expansion card slots supported on the system board

PCIe slot	With Regular shroud	With GPGPU shroud	R1U	R1T	R2A	R2T	R3A	R3B	R4A	R4P	R4Q	R4S
Slot 1	Full height - Half length	Full height - Full length	x8 (Gen5)	-	-	x16	-	-	-	-	-	-
Slot 2	Full height - Half length	Full height - Full length	x8 (Gen5)	x16 (Gen5) (Double width GPU)	-	x16	-	-	-	-	-	-
Slot 3	Low profile - Half length	Low profile - Half length	-	-	x8	-	-	-	-	-	-	-
Slot 4	Full height -	Full height -	-	-	-	-	-	x8	-	-	-	-

Table 20. Expansion card slots supported on the system board (continued)

PCIe slot	With Regular shroud	With GPGPU shroud	R1U	R1T	R2A	R2T	R3A	R3B	R4A	R4P	R4Q	R4S
	Half length	Half length										
Slot 5	Full height - Half length	Full height - Full length	-	-	-	-	x16	x8	-	-	-	-
Slot 6	Low profile - Half length	Low profile - Half length	-	-	x8	-	-	-	-	-	-	-
Slot 7	Full height - Half length	Full height - Full length	-	-	-	-	-	-	x16	x16 (Gen5) (Double width GPU)	x8 (Gen5)	x16 (Gen5)
Slot 8	Full height - Half length	Full height - Half length	-	-	-	-	-	-	-	-	x8 (Gen5)	x16 (Gen5)

Memory specifications

The PowerEdge R7615 system supports the following memory specifications for optimized operation.

Table 21. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Single processor	
			Minimum system capacity	Maximum system capacity
DDR5 RDIMM	Single rank	16 GB	16 GB	196 GB
	Dual rank	32 GB	32 GB	384 GB
	Dual rank	64 GB	64 GB	768 GB
	Dual rank	96 GB	96 GB	1152 GB
	Quad rank	128 GB	128 GB	1536 GB
	Octa rank	256 GB	256 GB	3072 GB

Table 22. Memory module sockets

Memory module sockets	Speed
12 (288-pin)	5600 MT/s

NOTE: Memory DIMM slots are not hot pluggable.

NOTE: Memory DIMMs used must be of the same type and capacity. Mixing of different capacity DIMMs are not supported.

NOTE: The speed of 5600 MT/s will be clocked down to match the system CPU max DDR frequency (1 DPC) at 4800 MT/s. For more information, refer R7615 Technical Guide at PowerEdge Manuals.

Storage controller specifications

The PowerEdge R7615 system supports the following controller card:

Table 23. Storage controller cards

Supported storage controller card
Software RAID • S160
Internal controllers • PERC H965i • PERC H755 • PERC H755N • PERC H355
Internal Boot • Boot Optimized Storage Subsystem (BOSS-N1): HWRAID 2 x M.2 SSDs
External controllers • HBA355e • PERC H965e • HBA465e
SAS Host Bus Adapters • HBA355i • HBA465i

GPU specifications

The PowerEdge R7615 system supports up to three 300 W double-width GPUs or six 75 W single-width GPUs.

NOTE: Systems that are configured with GPUs will have higher fan acoustics.

Drives

The PowerEdge R7615 system supports:

- 8 x 3.5-inch hot-swappable SAS or SATA drives
- 12 x 3.5-inch hot-swappable SAS or SATA drive
- 8 x 2.5-inch hot-swappable NVMe drives
- 16 x 2.5-inch hot-swappable SAS, SATA, or NVMe drives
- 24 x 2.5-inch hot-swappable SAS or SATA drives
- 32 x EDSFF E3.S hot-swappable NVMe Gen5 drives
- 16 x EDSFF E3.S hot-swappable NVMe Gen5 drives
- 8 x EDSFF E3.S hot-swappable NVMe Gen5 drives
- 2 x 2.5-inch rear hot-swappable SAS, SATA, or NVMe drives
- 4 x 2.5-inch rear hot-swappable SAS, SATA, or NVMe drives
- 4 x EDSFF E3.S rear hot-swappable NVMe Gen5 drives
- Zero drive

NOTE: For more information about how to hot swap NVMe PCIe SSD U.2 device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at Dell Support page >**Browse all Products** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Documentation** > **Manuals and Documents**.

Ports and connectors specifications

USB ports specifications

Table 24. PowerEdge R7615 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	USB 2.0-compliant port	One	Internal USB 3.0-compliant port	One
iDRAC Direct port (Micro-AB USB 2.0-compliant port)	One	USB 3.0-compliant port	One		

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

NIC port specifications

The PowerEdge R7615 system supports up to two 10/100/1000 Mbps Network Interface Controller (NIC) ports embedded on the LAN on Motherboard (LOM) and integrated on the Open Compute Project (OCP) cards.

Table 25. NIC port specification for the system

Feature	Specifications
(Optional) LOM card (optional)	1 Gb x 2
(Optional) OCP card (OCP 3.0) (optional)	1GbE x 4, 10 GbE x 2, 10 GbE x 4, 25 GbE x 2, 25 GbE x 4
Management Interface Card (MIC) to support Dell Data Processing Unit (DPU) card (optional)	25 GbE x 2 or 100 GbE x 2

NOTE: The system allows either LOM card or an OCP card or both to be installed in the system.

NOTE: On the system board, the supported OCP PCIe width is x8; when x16 PCIe width is installed, it is downgraded to x8.

NOTE: The system allows either LOM card or MIC card to be installed in the system.

Serial connector specifications

The PowerEdge R7615 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 installed similar to an expansion card filler bracket.

VGA ports specifications

The PowerEdge R7615 system supports DB-15 VGA port on the front panel and on the rear I/O board (optional for processor liquid cooling).

Video specifications

The PowerEdge R7615 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 26. 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
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

Table 27. Continuous Operation Specifications for ASHRAE A2

Temperature	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 28. Continuous Operation Specifications for ASHRAE A3

Temperature	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 29. Continuous Operation Specifications for ASHRAE A4

Temperature	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

Table 29. Continuous Operation Specifications for ASHRAE A4 (continued)

Temperature	Specifications
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 30. Common Environmental Specifications for ASHRAE A2, A3 and A4

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

Table 31. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.21 G_{rms} at 5 Hz to 500 Hz for 10 minutes (all operation orientations)
Storage	1.88 G_{rms} at 10 Hz to 500 Hz for 15 minutes (all six sides tested)

Table 32. 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 may need to rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 33. Particulate contamination specifications

Particulate contamination	Specifications
Air filtration	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit **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. **NOTE:** Air entering the data center must have MERV11 or MERV13 filtration.
Conductive dust	Air must be free of conductive dust, zinc whiskers, or other conductive particles **NOTE:** This condition applies to data center and non-data center environments.
Corrosive dust	• 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.
Walk-Up Edge Data Center or Cabinet (sealed, closed loop environment)	Filtration is not required for cabinets that are anticipated to be opened 6 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.

Table 34. Gaseous contamination specifications

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

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 35. 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 35. 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 36. 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 37. Air cooling: Thermal restriction matrix (non-GPU)

Configuration			No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage			No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
CPU cTDP Max		CPU TDP															
CPU TDP/ cTDP	240 W	210 W	HPR Sliver Fan + 2U STD HSK			HPR Sliver Fan + 2U	HPR Sliver Fan + 2U STD HSK		HPR Sliver Fan + 2U	HPR Gold Fan	HPR Sliver Fan [75%]	HPR Sliver Fan [70%]	HPR Gold Fan [70%] + 2U EXT HSK		HPR Sliver Fan	HPR Gold Fan + 2U STD HSK	HPR Gold Fan + 2U STD HSK
		200 W															

Table 37. Air cooling: Thermal restriction matrix (non-GPU) (continued)

Configuration			No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage			No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
CPU cTDP Max		CPU TDP															
									STD HSK	+ 2U STD HSK	+ 2U STD HSK	+ 2U EXT HSK			+ 2U STD HSK		
	300 W	260 W	HPR Sliver Fan + 2U EXT HSK			EXT HSK	HPR Gold Fan + 2U EXT HSK		HPR Sliver Fan + 2U EXT HSK	HPR Gold Fan + 2U EXT HSK	HPR Sliver Fan [75%] + 2U EXT HSK	HPR Gold Fan [70%] + 2U EXT HSK *			HPR Sliver Fan + 2U EXT HSK	HPR Gold Fan + 2U STD HSK	HPR Gold Fan + 2U EXT HSK
		290 W															
		280 W															
	400 W	360 W				HPR Gold Fan + 2U EXT HSK			HPR Gold Fan + 2U EXT HSK	HPR Gold Fan + 2U STD HSK	HPR Gold Fan [75%] + 2U EXT HSK	Not supported			HPR Gold Fan + 2U EXT HSK	HPR Gold Fan + 2U STD HSK	HPR Gold Fan + 2U EXT HSK
		320 W															
Memory	16 GB RDIMM		HPR Sliver Fan								HPR Sliver Fan [75%]	HPR GOLD Fan [70%]			HPR Silver Fan	HPR Gold Fan	HPR Gold Fan
	32 GB RDIMM		HPR Sliver Fan														
	64 GB RDIMM		HPR Sliver Fan														
	96 GB RDIMM		HPR GOLD Fan								HPR GOLD Fan [75%]	HPR GOLD Fan [70%]			HPR Gold Fan	HPR Gold Fan	HPR Gold Fan
	128 GB RDIMM		HPR GOLD Fan								HPR GOLD Fan [75%]	HPR GOLD Fan [70%]			HPR Gold Fan	HPR Gold Fan	HPR Gold Fan

Table 37. Air cooling: Thermal restriction matrix (non-GPU) (continued)

Configuration		No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
CPU cTDP Max	CPU TDP															
	256 GB RDIMM	HPR GOLD Fan								Supports 30°C ambient temperature	Supports 30°C ambient temperature			HPR Gold Fan	HPR Gold Fan	HPR Gold Fan

NOTE: The standard supported operating temperature is 35°C.

*__Note:__ Supported ambient temperature is 30°C.

NOTE: Three fan modules are required for a single processor, and six fan modules are required for a dual processor system.

Table 38. Air cooling: Thermal restriction matrix (GPU Configuration)

Configuration			No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/ SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage			No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
CPU cTDP Max		Model															
CPU TDP / cTDP	240 W	9334 9224 9254 9124	Not Supported	HPR Gold Fan + 1U EXT HSK					HPR Gold Fan	HPR Gold	HPR Gold Fan [75%]	Not Supported			HPR Gold Fan	Not Supported	HPR Gold Fan

Table 38. Air cooling: Thermal restriction matrix (GPU Configuration) (continued)

Configuration			No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/ SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage																	
CPU cTDP Max		Model	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
	300 W	9634 9534 9454 / 9454P 9354 / 9354P							+ 1U EXT HSK	Fan + 1U EXT HSK	+ 1U EXT HSK				+ 1U EXT HSK		+ 1U EXT HSK
	400 W	9654 / 9654P		HPR Gold Fan + 1U EXT HSK	Not Supported	Not Supported			Not Supported						+ 1U EXT HSK		Not Supported
		9554 / 9554P 9474F 9374F		HPR Gold Fan + 1U EXT HSK *											HPR Gold Fan + 1U EXT HSK *		
		9274F 9174F		HPR Gold Fan + 1U EXT HSK											HPR Gold Fan		

Table 38. Air cooling: Thermal restriction matrix (GPU Configuration) (continued)

Configuration			No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/ SAS	24 x 2.5-inch SAS		16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage			No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
CPU cTDP Max		Model															
															+ 1U EXT HSK		
		9684X		HPR Gold Fan + 1U EXT HSK *											HPR Gold Fan + 1U EXT HSK *		
		9384X		HPR Gold Fan + 1U EXT HSK											HPR Gold Fan + 1U EXT HSK		
		9184X															
Memory	16 GB RDIMM			HPR Gold Fan			HPR Gold Fan		HPR Gold Fan	HPR Gold Fan					HPR Go		HPR Gol
	32 GB RDIMM																

Table 38. Air cooling: Thermal restriction matrix (GPU Configuration) (continued)

Configuration		No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/ SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2x Rear 2.5-inch w/ 2x Rear-Fan	4x Rear 2.5 w/ 3x Rear-Fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
CPU cTDP Max	Model															
	64 GB RDIMM															
	96 GB RDIMM															
	128 GB RDIMM															
	256 GB RDIMM									HPR Gold Fan *						
GPU	A2		HPR Gold Fan		HPR Gold Fan			HPR Gold Fan		HPR Gold Fan				HPR Gold Fan		
	A16 64GB															
	A30 24GB															
	A40 48GB															
	A100 80GB															
	MI210 64GB															
	H100															
	L4															
	L40															

*__Note:__ Supported ambient temperature is 30°C.

__NOTE:__ “High-Performance Gold Fan” to be supported on all GPU configs.

__NOTE:__ GPU is not supported on 12 x 3.5-inch configs and system configs with rear module installed.

Table 39. Air cooling: Thermal Guidance (non-GPU)

Configuration				No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/ SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage				No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch w/ 2 x Rear fan	4 x Rear 2.5-inch w/ 3 x Rear fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch w/ 2 x Rear fan	4 x Rear 2.5-inch w/ 3 x Rear fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
cTDP		Model	Core Count															
Shroud Type				Regular		Regular				Regular						Regular		
CPU TDP/ cTDP	240W	9334	32	35°C		35°C	35°C			35°C			35°C			35°C		
	240W	9224	24															
	240W	9254	24															
	240W	9124	16															
	300W	9634	84															
	300W	9534	48															
	300W	9454/ 9454P	64											30°C				
	300W	9354/ 9354P	32															
	400W	9654/ 9654P	96											Not Support				

Table 39. Air cooling: Thermal Guidance (non-GPU) (continued)

Configuration				No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/ SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage				No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch w/ 2 x Rear fan	4 x Rear 2.5-inch w/ 3 x Rear fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch w/ 2 x Rear fan	4 x Rear 2.5-inch w/ 3 x Rear fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
cTDP		Model	Core Count															
Shroud Type				Regular		Regular				Regular						Regular		
	400W	9554 / 9554P	64															
	400W	9474F	48															
	400W	9374F	32															
	400W	9274F	24															
	400W	9174F	16															
	400W	9754	128															
	400W	9734	112															
	400W	9684X	96															
	400W	9384X	32															
	400W	9184X	16															
Memory	16 GB RDIMM			35°C		35°C	35°C			35°C			35°C			35°C		
	32 GB RDIMM																	

Table 39. Air cooling: Thermal Guidance (non-GPU) (continued)

Configuration				No BP	8 x 2.5-inch U.2	16 x 2.5-inch U.2/ SAS	24 x 2.5-inch SAS			16 x 2.5-inch SAS + 8 x 2.5-inch U.2	24 x 2.5-inch NVMe	8 x 3.5-inch	12 x 3.5-inch			16 x E3 8 x E3	32 x E3	
Rear storage				No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch w/ 2 x Rear fan	4 x Rear 2.5-inch w/ 3 x Rear fan	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch w/ 2 x Rear fan	4 x Rear 2.5-inch w/ 3 x Rear fan	No Rear Drives	No Rear Drives	4x Rear 2.5 w/ 3x Rear-Fan
cTDP	Model	Core Count																
Shroud Type				Regular		Regular				Regular						Regular		
	64 GB RDIMM																	
	96 GB RDIMM																	
	128 GB RDIMM																	
	256 GB RDIMM									30°C			30°C					

Table 40. Air cooling: Thermal Guidance (GPU configuration)

Configuration				No BP		8 x 2.5-inch U.2		16 x 2.5-inch U.2		24 x 2.5-inch		8 x 3.5-inch		12 x 3.5-inch		16 x E3 8 x E3		32 x E3	
GPU				DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/L40)	SW A2/L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4
Max Qty				x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6
Shroud Type				GPU		GPU		GPU		GPU		GPU		GPU		GPU		GPU	
cTDP		Model	Core Count																
CPUTD	240W	9334	32	Not Supported	35°C	35°C		35°C	35°C	35°C		35°C		Not Supported		35°C		Not Supp	35°C

Table 40. Air cooling: Thermal Guidance (GPU configuration) (continued)

Configuration			No BP		8 x 2.5-inch U.2		16 x 2.5-inch U.2		24 x 2.5-inch		8 x 3.5-inch		12 x 3.5-inch		16 x E3 8 x E3		32 x E3	
GPU			DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4	DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4	DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4	DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4	DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4	DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4	DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4	DW (A100/A40/A30/A16/MI210/H100/L40)	SW A2/L4
Max Qty			x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6
Shroud Type			GPU		GPU		GPU		GPU		GPU		GPU		GPU		GPU	
cTDP		Model	Core Count															
P/cTDP	240W	9224	24														orted	
	240W	9254	24															
	240W	9124	16															
	300W	9634	84															
	300W	9534	48															
	300W	9454/9454P	64															
	300W	9354/9354P	32															

Table 40. Air cooling: Thermal Guidance (GPU configuration) (continued)

Configuration			No BP		8 x 2.5-inch U.2		16 x 2.5-inch U.2		24 x 2.5-inch		8 x 3.5-inch		12 x 3.5-inch		16 x E3 8 x E3		32 x E3	
GPU			DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/L40)	SW A2/L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4
Max Qty			x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6
Shroud Type			GPU		GPU		GPU		GPU		GPU		GPU		GPU		GPU	
cTDP		Model	Core Count															
	400W	9654/9654P	96															
	400W	9554/9554P	64		30°C	30°C									30°C			
	400W	9474F	48															
	400W	9374F	32															
	400W	9274F	24		35°C	35°C									35°C			
	400W	9174F	16															
	400W	9684X	96		30°C	30°C									30°C			

	400W	9654/9654P	96															
	400W	9554/9554P	64		30°C	30°C									30°C			
	400W	9474F	48															
	400W	9374F	32															
	400W	9274F	24		35°C	35°C									35°C			
	400W	9174F	16															
	400W	9684X	96		30°C	30°C									30°C			

Table 40. Air cooling: Thermal Guidance (GPU configuration) (continued)

Configuration			No BP		8 x 2.5-inch U.2		16 x 2.5-inch U.2		24 x 2.5-inch		8 x 3.5-inch		12 x 3.5-inch		16 x E3 8 x E3		32 x E3	
GPU			DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/L40)	SW A2/L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4	DW (A100/ A40/ A30/ A16/ MI210/ H100/ L40)	SW A2/ L4
Max Qty			x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6	x3	x6
Shroud Type			GPU		GPU		GPU		GPU		GPU		GPU		GPU		GPU	
cTDP	Model	Core Count																
400W	9384X	32		35°C	35°C										35°C			
400W	9184X	16																

NOTE: GPU is not supported on 12 x 3.5-inch configs and system configs with rear module installed.

Table 41. Liquid cooling: Thermal restriction matrix (GPU Configuration)

Configuration		No BP	8 x 2.5-inch U.2	16 x 2.5-inch	24 x 2.5-inch	16 x E3 8 x E3
GPU		SW A2/L4	SW A2/L4	SW A2/L4	SW A2/L4	SW A2/L4
Max Qty		x6	x6	x6	x6	x6
Shroud Type		GPU	GPU	GPU	GPU	GPU
CPU	All CPU TDP	35°C				
Memory	16 GB RDIMM	35°C				
	32 GB RDIMM					
	64 GB RDIMM					
	96 GB RDIMM					
	128 GB RDIMM					
	256 GB RDIMM					

NOTE: The standard supported operating temperature is 35°C.

NOTE: "High-Performance GOLD Fan" to be supported on all GPU configs.

NOTE: GPU is not supported on 12 x 3.5-inch, 8 x 3.5-inch, 32 x E3.S configs and system configs with rear module installed.

Table 42. Label reference

Label	Description
HPR (Silver)	High performance (silver grade)
HPR (Gold)	High performance (gold grade)
HSK	Heat sink
LP	Low profile
FH	Full height

Thermal air restrictions

ASHRAE A3 environment for air cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- Non-Dell qualified peripheral cards and peripheral cards greater than 25 W are not supported.
- GPU and FPGA are not supported.
- 128 GB, and higher capacity RDIMMs are not supported.
- PCIe SSD is not supported.
- Front storage is not supported in 12 x 3.5-inch SAS configuration.
- Rear drives are not supported.
- Processor TDP greater than or equal to 240 W are not supported.
- OCP card is supported with 85°C active optic cable.
- BOSS N1 is supported.

ASHRAE A4 environment for air cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- Non-Dell qualified peripheral cards and peripheral cards greater than 25 W are not supported.
- GPU and FPGA are not supported.
- 128 GB, and higher capacity RDIMMs are not supported.
- PCIe SSD is not supported.
- Front storage is not supported in 12 x 3.5-inch SAS configuration.
- Rear drives are not supported.
- Processor TDP greater than or equal to 200 W are not supported.
- OCP card is not supported.
- BOSS N1 is not supported.

ASHRAE A3 environment for liquid cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- Non-Dell qualified peripheral cards and peripheral cards greater than 25 W are not supported.
- GPU and FPGA are not supported.
- Intel Persistent memory 300 series, NVDIMM, 128 GB, or greater capacity DIMMs are not supported.
- PCIeSSD is not supported.
- Rear drives are not supported.

- HPR SLVR fans are required in 2.5-inch configurations systems.
- OCP card is supported with 85°C active optic cable.
- BOSS N1 is supported.

ASHRAE A4 environment for liquid cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- Non-Dell qualified peripheral cards and peripheral cards greater than 25 W are not supported.
- GPU and FPGA are not supported.
- Intel Persistent memory 300 series, NVDIMM, 128 GB, or greater capacity DIMMs are not supported.
- PCIeSSD is not supported.
- Front storage is not supported in 12 x 3.5-inch SAS configuration.
- Rear drives are not supported.
- HPR SLVR fans are required in 2.5-inch configurations systems.
- OCP card is supported with 85°C active optic cable and cards tier ≤4.
- BOSS N1 is not supported.

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

Table 43. 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 43. Interfaces to set up iDRAC IP address (continued)

Interface	Documentation links
	NOTE: To determine the most recent iDRAC release for your platform and for the latest documentation version, see KB article KB78115.
OpenManage Deployment Toolkit	*Dell OpenManage Deployment Toolkit User's Guide* available on the OpenManage manualspage. > Open Manage Deployment Toolkit.
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 the latest documentation version, see KB article KB78115.
Lifecycle Controller	*Dell Lifecycle Controller User's Guide* at iDRAC Manuals or for system specific *Dell Lifecycle 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 Integrated Dell Remote Access Controller 9 Versions and Release Notes.
Server LCD panel	Refer LCD panel section.
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 the latest documentation version, see KB article KB78115.

NOTE: To access iDRAC, ensure that you connect the Ethernet cable to the iDRAC dedicated network port or use the iDRAC Direct port by using the micro USB (type AB) cable. You can also access iDRAC through the shared LOM mode, if you have opted for a system that has the shared LOM mode enabled.

Options to log in to iDRAC

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

You can log in to iDRAC as:

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

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

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

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

NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article KB78115.

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

You can also access iDRAC using automation tool - Redfish API. For more information, see the Integrated Dell Remote Access Controller User's Guide Redfish API Guide.

Resources to install operating system

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

Table 44. Resources to install the operating system

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

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 drivers and firmware from the FTP site. For more information about username and password, contact your TAM (Tech Account Manager).

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 45. 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** .

Table 45. Options to download and install OS drivers (continued)

Option	Documentation
	NOTE: To determine the most recent iDRAC release for your platform and for 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.

NOTE: When the message, *"Please wait while the system is initializing"* is displayed during boot-up, the system is primarily in the AMD reference code stage. The duration of this stage may vary depending on system configurations, such as memory population, among other factors. This stage may take a while to complete.

Options to manage the pre-operating system applications

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

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

Topics:

System Setup

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

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

- Graphical User interface — To access go to iDRAC Dashboard, click **Configuration**, and click **BIOS Settings**.
- Text browser — The browser is enabled by using 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 **System Setup Main Menu** screen details are described as follows:

Table 46. System Setup Main Menu

Option	Description
System BIOS	Enables you to configure the BIOS settings.
iDRAC Settings	Enables you to configure the iDRAC settings. The iDRAC settings utility is an interface to set up and configure the iDRAC parameters by using UEFI (Unified Extensible Firmware Interface). You can enable or disable various iDRAC parameters by using the iDRAC settings utility. For more information about this utility, see *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.

System BIOS

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

Table 47. System BIOS details

Option	Description
System Information	Provides information about the system such as the system model name, BIOS version, and Service Tag.
Memory Settings	Specifies information and options related to the installed memory.
Processor Settings	Specifies information and options related to the processor such as speed and cache size.
SATA Settings	Specifies options to enable or disable the integrated SATA controller and ports.
NVMe Settings	Specifies options to change the NVMe settings. If the system contains the NVMe drives that you want to configure in a RAID array, you must set both this field and the **Embedded SATA** field on the **SATA Settings** menu to **RAID** mode. You might also need to change the **Boot Mode** setting to **UEFI**. Otherwise, you should set this field to **Non-RAID** mode.
Boot Settings	Specifies options to specify the Boot mode (BIOS or UEFI). Enables you to modify UEFI and BIOS boot settings.
Network Settings	Specifies options to manage the UEFI network settings and boot protocols. Legacy network settings are managed from the **Device Settings** menu. **NOTE:** Network Settings are not supported in BIOS boot mode.
Integrated Devices	Specifies options to manage integrated device controllers and ports, specifies related features, and options.
Serial Communication	Specifies options to manage the serial ports, its related features, and options.
System Profile Settings	Specifies options to change the processor power management settings, memory frequency.
System Security	Specifies options to configure the system security settings, such as system password, setup password, Trusted Platform Module (TPM) security, and UEFI secure boot. It also manages the power button on the system
Redundant OS Control	Sets the redundant OS information for redundant OS control.
Miscellaneous Settings	Specifies options to change the system date and time.

System Information

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

Table 48. System Information details

Option	Description
System Model Name	Specifies the system model name.
System BIOS Version	Specifies the BIOS version installed on the system.
System Service Tag	Specifies the system Service Tag.
System Manufacturer	Specifies the name of the system manufacturer.
System Manufacturer Contact Information	Specifies the contact information of the system manufacturer.

Table 48. System Information details (continued)

Option	Description
System CPLD Version	Specifies the current version of the system complex programmable logic device (CPLD) firmware.
UEFI Compliance Version	Specifies the UEFI compliance level of the system firmware.
AGESA Version	Specifies the AGESA reference code version.
SMU Version	Specifies the SMU firmware version.
MPIO Version	Specifies the MPIO firmware version.

Memory Settings

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

Table 49. Memory Settings details

Option	Description
System Memory Size	Specifies the memory size in the system.
System Memory Type	Specifies the type of memory installed in the system.
System Memory Speed	Specifies the system memory speed.
Video Memory	Specifies the amount of video memory.
System Memory Testing	Specifies whether the system memory tests are run during system boot. The two options available are **Enabled** and **Disabled**. This option is set to **Disabled** by default.
DRAM Refresh Delay	By enabling the **CPU memory controller** to delay running the **REFRESH** commands, you can improve the performance for some workloads. By minimizing the delay time, it is ensured that the memory controller runs the **REFRESH** command at regular intervals. For Intel-based servers, this setting only affects systems configured with DIMMs which use 8 Gb density DRAMs. This option is set to **Minimum** by default.
DIMM Self Healing(Post Package Repair) on Uncorrectable Memory Error	Enables or disables Post Package Repair (PPR) on Uncorrectable Memory Error. This option is set to **Enabled** by default.
Correctable Error Logging	Enables or disables correctable error logging. This option is set to **Disabled** by default.

Processor Settings

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

NOTE: In the BIOS setup, a warning prompt has been added to prevent users from setting the processor thread count to less than eight. The prompt reads:*Please ensure that the thread count will not be less than 8. Verify Logical Processor, Number of CCDs per Processor, and Number of Cores per CCD settings.* This prompt is only applicable for 4th Generation AMD EPYC processors and after.

Table 50. Processor Settings details

Option	Description
Logical Processor	Each processor core supports up to two logical processors. If this option is set to **Enabled**, the BIOS displays all the logical processors. If this option is set to **Disabled**, the BIOS displays only one logical processor per core. This option is set to **Enabled** by default.

Table 50. Processor Settings details (continued)

Option	Description
Virtualization Technology	Enables or disables the virtualization technology for the processor. This option is set to **Enabled** by default.
IOMMU Support	Enable or Disable IOMMU support. It is required to create IVRS ACPI table. This option is set to **Enabled** by default.
Kernel DMA Protection	When this option is set to Enabled, using IOMMU, BIOS, and the Operating System will enable direct memory access protection for DMA capable peripheral devices. Enable **IOMMU Support** to use this option. This option is set to **Disabled** by default. When set to Enabled by using Virtualization Technology, BIOS and Operating System will enable direct memory access protection for DMA capable peripheral devices. Enable Virtualization Technology to use this option.
L1 Stream HW Prefetcher	Enables or disables the L1 stream hardware prefetcher. This option is set to **Enabled** by default.
L2 Stream HW Prefetcher	Enables or disables the L2 stream hardware prefetcher. This option is set to **Enabled** by default.
L1 Stride Prefetcher	Enables or disables the L1 stride prefetcher. This option is set to **Enabled** by default, as it optimizes overall workload. **NOTE:** This option is only available for 4th Generation AMD EPYC processors.
L1 Region Prefetcher	Enables or disables the L1 region prefetcher. This option is set to **Enabled** by default, as it optimizes overall workload. **NOTE:** This option is only available for 4th Generation AMD EPYC processors.
L2 Up Down Prefetcher	Enables or disables the L2 up down prefetcher. This option is set to **Enabled** by default, as it optimizes overall workload. **NOTE:** This option is only available for 4th Generation AMD EPYC processors.
MADT Core Enumeration	Specifies the MADT Core Enumeration. This option is set to **Linear** by default.
NUMA Nodes Per Socket	Specifies the number of NUMA nodes per socket. This option is set to **1** by default.
L3 cache as NUMA Domain	Enables or disables the as NUMA Domain. This option is set to **Disabled** by default.
Secure Memory Encryption	Enables or disables the AMD secure encryption features such as **SME** and **Secure Encrypted Virtualization (SEV)**. It also determines if other secure encryption features such as **TSME** and **SEV-SNP** can be enabled. This option is set to **Disabled** by default. **NOTE:** This option is only available for 4th Generation AMD EPYC processors.
Minimum SEV non-ES ASID	Determines the number of Secure Encrypted Virtualization ES and non-ES available Address Space IDs. This option is set to **1** by default.
Secured Nested Paging	Enables or disables **SEV-SNP**, a set of additional security protections. This option is set to **Disabled** by default.
SNP Memory Coverage	This option selects the operating mode of the Nested Paging (SNP) Memory and the reverse Map Table(RMP). The RMP

Table 50. Processor Settings details (continued)

Option	Description
	is used to ensure a one-to-one mapping between system physical addresses and guest physical addresses.
Transparent Secure Memory Encryption	Enables or disables the **TSME**. **TSME** is always-on memory encryption that does not require OS or hypervisor support. This option is set to **Disabled** by default. • If the OS supports **SME**, do not enable this field. • If the hypervisor supports **SEV**, do not enable this field. Enabling **TSME** affects the system memory performance.
ACPI CST C2 Latency	Enter in 18 - 1000 microseconds (decimal value). Larger C2 latency values will reduce the number of C2 transitions and reduce C2 residency. Fewer transitions can help when performance is sensitive to the latency of C2 entry and exit. Higher residency can improve performance by allowing higher frequency boost and reduce idle core power. With Linux kernel 6.0 or later, the C2 transition cost is significantly reduced. The best value will be dependent on kernel version, use case, and workload.
Configurable TDP	Allows the reconfiguration of the processor Thermal Design Power (TDP) levels based on the power and thermal delivery capabilities of the system. TDP refers to the maximum amount of power the cooling system is required to dissipate. This option is set to **Maximum** by default. **NOTE:** This option is only available on certain SKUs of the processors, and the number of alternative levels varies as well.
x2APIC Mode	Enables or disables x2APIC mode. This option is set to **Enabled** by default. **NOTE:** For two CPU 64 cores configuration, x2APIC mode is not switchable if 256 threads are enabled (BIOS settings: All CCD, cores, and logical processors enabled).
Number of CCDs per Processor	Controls the number of enabled CCDs in each processor. This option is set to **All** by default.
Number of Cores per CCD	Specifies the number of cores per CCD. This option is set to **All** by default.
Processor Core Speed	Specifies the maximum core frequency of the processor.
Processor n	**NOTE:** Depending on the number of CPUs, there might be up to n processors listed. The following settings are displayed for each processor that is installed in the system:

Table 51. Processor n details

Option	Description
Family-Model-Stepping	Specifies the family, model, and stepping of the processor as defined by AMD.
Brand	Specifies the brand name.
Level 2 Cache	Specifies the total L2 cache.
Level 3 Cache	Specifies the total L3 cache.

Table 51. Processor n details (continued)

Option	Description
Number of Cores	Specifies the number of cores per processor.
Microcode	Specifies the processor microcode version.

SATA Settings

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

Table 52. SATA Settings details

Option	Description
Embedded SATA	Enables the embedded SATA option to be set to **Off**, **AHCI mode** , or **RAID modes**. This option is set to **AHCI Mode** by default. **NOTE:** 1. You might also need to change the Boot Mode setting to UEFI. Otherwise, you should set the field to Non-RAID mode. 2. No ESXi and Ubuntu OS support under RAID mode.
Security Freeze Lock	Sends **Security Freeze Lock** command to the embedded SATA drives during POST. This option is applicable only for AHCI Mode. This option is set to **Enabled** by default.
Write Cache	Enables or disables the command for the embedded SATA drives during POST. This option is set to **Disabled** by default.

NVMe Settings

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

Table 53. NVMe Settings details

Option	Description
NVMe Mode	This option sets the NVMe drive mode. If the system contains NVMe drives that you want to configure in a RAID array, you must set both this field and the Embedded SATA field on the SATA settings menu to RAID Mode. You may also need to change the Boot Mode setting to UEFI. The option is set to **Non-RAID** mode by default.
BIOS NVMe Driver	Dell Qualified NVMe drives always use the UEFINVMe driver built into the Dell EROS. When this option is set to 'All Drives', the BIOS driver will also be used with any NVMe drives in the system that has not been qualified by Dell. The option is set to **Dell Qualified Drives** by default. **NOTE:** When this option is set to 'All Drives' and non-Dell qualified NVMe drives are present, you have a configuration that has not been validated which may lead to unexpected behavior.

Boot Settings

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

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

- Faster boot time.

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

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

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

Table 54. Boot Settings details

Option	Description
Boot Mode	Enables you to set the boot mode of the system. If the operating system supports UEFI, you can set this option to UEFI. Setting this field to BIOS allows compatibility with non-UEFI operating systems. This option is set to **UEFI** by default. **CAUTION: Switching the boot mode may prevent the system from booting if the operating system is not installed in the same boot mode.** **NOTE:** Setting this field to UEFI disables the **BIOS Boot Settings** menu.
Boot Sequence Retry	Enables or disables the **Boot Sequence Retry** feature. If this option is set to **Enabled** and the system fails to boot, the system re-attempts the boot sequence after 30 seconds. This option is set to **Enabled** by default.
Hard Disk Failover	Enables or disables the Hard-disk failover. This option is set to **Disabled** by default.
Generic USB Boot	Enables or disables the generic USB boot placeholder. This option is set to **Disabled** by default.
Hard-disk Drive Placeholder	Enables or disables the Hard-disk drive placeholder. This option is set to **Disabled** by default.
Clean all SysPrep variables and order	When set to **None**, BIOS will do nothing. When set to **Yes**, BIOS will delete variables of SysPrep #### and SysPrepOrder this option is a onetime option, will reset to none when deleting variables. This setting is only available in **UEFI Boot Mode**. This option is set to **None** by default.
UEFI Boot Settings	Specifies the UEFI boot sequence. Enables or disables UEFI Boot options. **NOTE:** This option controls the UEFI boot order. The first option in the list will be attempted first. **Table 55. UEFI Boot Settings** **Option** / **Description** **UEFI Boot Sequence** — Enables you to change the boot device order. **Boot Option Enable/Disable** — Enables you to select the enabled or disabled boot devices

Choosing system boot mode

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

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

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

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

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

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

NOTE: For the latest information about supported operating systems, go to OS support.

Changing boot order

About this task

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

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

Steps

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

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

Network Settings

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

NOTE: For information about Linux network performance settings, see the *Linux Network Tuning Guide for AMD EPYC Processor Based Servers* at AMD.com.

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

Table 56. Network Settings details

Option	Description
UEFI PXE Settings	Enables you to control the configuration of the UEFI PXE device.
Number of PXE Devices	Enables you to choose the number of PXE Devices from 1 to 4, 8, 12, 16.
PXE Device n (n = 1 to 16)	Enables or disables the device. When enabled, a UEFI PXE boot option is created for the device.
PXE Device n Settings(n = 1 to 16)	Enables you to control the configuration of the PXE device.
UEFI HTTP Settings	Enables you to control the configuration of the UEFI HTTP device.
HTTP Device n (n = 1 to 4)	Enables or disables the device. When enabled, a UEFI HTTP boot option is created for the device.
HTTP Device n Settings (n = 1 to 4)	Enables you to control the configuration of the HTTP device.
UEFI ISCSI Settings	Enables you to control the configuration of the ISCSI device.
UEFI NVMe-oF Settings	Enables you to control the configuration of the NVMe-oF device.

Table 57. PXE Device n Settings details

Option	Description
Interface	Specifies NIC interface used for the PXE device.

Table 57. PXE Device n Settings details (continued)

Option	Description
Protocol	Specifies Protocol used for PXE device. This option is set to **IPv4** or **IPv6**. This option is set to **IPv4** by default.
VLAN	Enables VLAN for PXE device. This option is set to **Enable** or **Disable**. This option is set to **Disable** by default.
VLAN ID	Shows the VLAN ID for the PXE device
VLAN Priority	Shows the VLAN Priority for the PXE device.

Table 58. HTTP Device n Settings details

Option	Description
Interface	Specifies NIC interface used for the HTTP device.
Protocol	Specifies Protocol used for HTTP device. This option is set to **IPv4** or **IPv6**. This option is set to **IPv4** by default. The following options will be available when Protocol is set as IPv6: **Auto Configuration**: IPv6 Auto Configuration Enable/Disabled for this HTTP Device. **IPv6 Address**: IPv6 Unicast address for this HTTP Device. **Prefix Length**: IPv6 Prefix Length (0-128) for this HTTP Device.
VLAN	Enables VLAN for HTTP device. This option is set to **Enable** or **Disable**. This option is set to **Disable** by default.
VLAN ID	Shows the VLAN ID for the HTTP device
VLAN Priority	Shows the VLAN Priority for the HTTP device.
DHCP	Enables or disables DHCP for this HTTP device. This option is set to **Enable** by default.
IP Address	Specifies IP address for the HTTP device.
Subnet Mask	Specifies subnet mask for the HTTP device.
Gateway	Specifies gateway for the HTTP device.
DNS info via DHCP	Enables or disables DNS Information from DHCP. This option is set to **Enable** by default.
Primary DNS	Specifies the primary DNS server IP address for the HTTP Device.
Secondary DNS	Specifies the secondary DNS server IP address for the HTTP Device.
URI (will obtain from DHCP server if not specified)	The URI will be obtained from the DHCP server if not specified.
TLS Authentication Configuration	View and/or modify this device's boot TLS authentication configuration.

Table 59. UEFI ISCSI Settings screen details

Option	Description
ISCSI Initiator Name	Specifies the name of the ISCSI initiator in IQN format.
ISCSI Device1	Enables or disables the ISCSI device. When disabled, a UEFI boot option is created for the ISCSI device automatically. This is set to **Disabled** by default.
ISCSI Device1 Settings	Enables you to control the configuration of the ISCSI device.

Table 60. ISCSI Device1 Settings screen details

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

Table 61. UEFI NVMe-oF Settings screen details

Option	Description
NVMe-oF	Enables or disables the NVMe-oF device. When disabled, a UEFI boot option is created for the NVMe-oF device automatically. This is set to **Disabled** by default.
NVMe-oF Host NQN	Specifies Host NQN of the NVMe-oF device.
NVMe-oF Host Id	Specifies Host Id of the NVMe-oF device.
Host Security Key Path	Specifies Host Security Key Path of the NVMe-oF device.
NVMe-oF SubSystem Settings	Enables you to control the configuration of the NVMe-oF device.

Table 62. NVMe-oF SubSystem Settings screen details

Option	Description
NVMe-oF SubSystem1	Controls the parameters of NVMe-oF subsystem1 connection. This is set to **Disabled** by default.
NVMe-oF SubSystem2	Controls the parameters of NVMe-oF subsystem2 connection. This is set to **Disabled** by default.
NVMe-oF SubSystem3	Controls the parameters of NVMe-oF subsystem3 connection. This is set to **Disabled** by default.
NVMe-oF SubSystem4	Controls the parameters of NVMe-oF subsystem4 connection. This is set to **Disabled** by default.

Integrated Devices

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

Table 63. Integrated Devices details

Option	Description
User Accessible USB Ports	Configures the user accessible USB ports. Selecting **Only Back Ports On** disables the front USB ports; selecting **All Ports Off** disables all front and back USB ports; selecting **All Ports Off (Dynamic)** disables all front and back USB ports during POST. This option is set to **All Ports On** by default. When user accessible USB ports is set to **All Ports Off (Dynamic)** the **Enable Front Ports Only** option is enabled.

Table 63. Integrated Devices details (continued)

Option	Description
	• **Enable Front Ports Only**: Enables or disables the front USB ports during the OS runtime. The USB keyboard and mouse still function in certain USB ports during the boot process, depending on the selection. After the boot process is complete, the USB ports will be enabled or disabled as per the setting.
Internal USB Port	Enables or disables the **Internal USB Port**. This option is set to **On** or **Off**. This option is set to **On** by default.
iDRAC Direct USB Port	The iDRAC Direct USB port is managed by iDRAC exclusively with no host visibility. This option is set to **ON** or **OFF**. When set to **OFF**, iDRAC does not detect any USB devices installed in this managed port. This option is set to **On** by default. Enables or disables the integrated RAID controller. When set to **Disabled**, the device is not visible to the operating system(OS). Enables or disables the integrated RAID controller. When set to **Disabled**, the device is not visible to the operating system(OS).
Integrated RAID Controller	Enables or disables the integrated RAID controller. When set to **Disabled**, the device is not visible to the operating system(OS).
Embedded NIC1 and NIC2	Enables or disables the **Embedded NIC1 and NIC2** options. If set to **Disabled (OS)**, the NIC may still be available for shared network access by the embedded management controller. Configure the **Embedded NIC1 and NIC2** option by using the NIC management utilities of the system.
Embedded Video Controller	Enables or disables the use of Embedded Video Controller as the primary display. When set to **Enabled**, the Embedded Video Controller will be the primary display even if add-in graphic cards are installed. When set to **Disabled**, an add-in graphics card will be used as the primary display. BIOS will output displays to both the primary add-in video and the embedded video during POST and pre-boot environment. The embedded video will then be disabled right before the operating system boots. This option is set to **Enabled** by default. **NOTE:** When there are multiple add-in graphic cards installed in the system, the first card discovered during PCI enumeration is selected as the primary video. You might have to re-arrange the cards in the slots in order to control which card is the primary video.
Current State of Embedded Video Controller	Displays the current state of the embedded video controller. The **Current State of Embedded Video Controller** option is a read-only field. If the Embedded Video Controller is the only display capability in the system (that is, no add-in graphics card is installed), then the Embedded Video Controller is automatically used as the primary display even if the **Embedded Video Controller** setting is set to **Disabled**.
SR-IOV Global Enable	Enables or disables the BIOS configuration of Single Root I/O Virtualization (SR-IOV) devices. This option is set to **Disabled** by default.
OS Watchdog Timer	If your system stops responding, this watchdog timer aids in the recovery of your operating system. When this option is set to **Enabled**, the operating system initializes the timer. When this option is set to **Disabled** (the default), the timer does not have any effect on the system.
Memory Mapped I/O Limit	Controls where MMIO is mapped. The **1 TB** option is designed for specific OS which cannot support MMIO over 1 TB. This option is set to **8 TB** by default. The default option is the maximum address that the system supports and recommended in most cases.
Slot Disablement	Enables or disables the available PCIe slots on your system. The slot disablement feature controls the configuration of the PCIe cards installed in the specified slot. Slots must be disabled only when the installed peripheral card prevents booting into the operating system or causes delays in system startup. If the slot is disabled, both the Option ROM and UEFI drivers are disabled. Only slots that are present on the system will be available for control. **Slot n**:

Table 63. Integrated Devices details (continued)

Option	Description
	Enables or disables or only the boot driver is disabled for the PCIe slot n. This option is set to **Enabled** by default.
Slot Bifurcation	**Slot Discovery Bifurcation Settings** allows **Platform Default Bifurcation** and **Manual bifurcation Control**. The default is set to **Platform Default Bifurcation**. The slot bifurcation field is accessible when set to **Manual bifurcation Control** and is grayed out when set to **Platform Default Bifurcation**. **NOTE:** This option is only available for 4th Generation AMD EPYC processors.

Serial Communication

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

Table 64. Serial Communication details

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

System Profile Settings

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

Table 65. System Profile Settings details

Option	Description
System Profile	Sets the system profile. If you set the System Profile option to a mode other than **Custom**, the BIOS automatically sets the rest of the options. You can only change the rest of the options if the mode is set to **Custom**. This option is set to **Performance Per Watt (OS)** by default. Other options include **Performance** and **Custom**. **NOTE:** All the parameters on the system profile setting screen are available only when the **System Profile** option is set to **Custom**.
CPU Power Management	Sets the CPU power management. This option is set to **OS DBPM** by default. Other option includes **Maximum Performance**.
Memory Frequency	Sets the speed of the system memory. You can select **Maximum Performance** or a specific speed. This option is set to **Maximum Performance** by default.
Turbo Boost	Enables or disables the processor to operate in the turbo boost mode. This option is set to **Enabled** by default.
C-States	Enables or disables the processor to operate in all available power states. C States allow the processor to enter lower power states when idle. When set to **Enabled** (OS controlled) or when set to **Autonomous** (if hardware controlled is supported), the processor can operate in all available Power States to save power, but may increase memory latency and frequency jitter. This option is set to **Enabled** by default.
Write Data CRC	When set to **Enabled**, DDR4 data bus issues are detected and corrected during 'write' operations. Two extra cycles are required for CRC bit generation which impacts the performance. Read-only unless System Profile is set to **Custom**. This option is set to **Disabled** by default.
Memory Patrol Scrub	Sets the memory patrol scrub mode. This option is set to **Standard** by default.
Memory Refresh Rate	Sets the memory refresh rate to either 1x or 2x. This option is set to **1x** by default.
Workload Profile	Allows optimization of performance based on the workload type. The **Workload Profile** setting is not a **state**.Setting a Workload Profile is a one-time action that in turns modifies various BIOS settings to be optimized for the requested workload type. This option is set to **Not Configured** by default.
PCI ASPM L1 Link Power Management	Enables or disables the PCI ASPM L1 Link Power Management. This option is set to **Enabled** by default.
Periodic Directory Rinse (PDR) Tuning	Controls PDR settings that may impact performance by workload and/or processor. **NOTE:** The new option (PDR) will be editable only when the **System Profile** setting on the same page is set to **Custom** (default is **"Performance Per Watt"**). If the **System Profile** is not set to **Custom**, the PDR option will be grayed out and automatically set to **Auto**.
Determinism Slider	Set the system determinism by **Power Determinism** or **Performance Determinism**. This option is set to **Perfomance Determinism** by default.
Power Profile Select	**High performance Mode(default):** Favors core performance. All DF P-States are available in this mode and the default DF P-State and DLWM algorithms are active. **Efficiency Mode:** Configures the system for power efficiency. Limits boost frequency available to cores and restricts DF P-States available in the system. **Maximum IO Performance Mode:** Sets up Date Fabric to maximize IO sub-system performance.
PCIE Speed PMM Control	Reduce link speed when devices are idle. This option is set to **Auto** by default.
EQ Bypass To Highest Rate	Controls the ability to advertise Equalization Bypass to Highest Rate Support in TSxs sent prior to LinkUp=1r. This option is set to **Disabled** by default.

Table 65. System Profile Settings details (continued)

Option	Description
DF PState Frequency Optimizer	**Disabled:** Disabled the DP P-state CCLK effective frequency optimizer. **Enabled:** Enables the DP P-state CCLK effective frequency optimizer. This option is set to **Enabled** by default.
DF PState Latency Optimizer	**Disabled:** Disables the DP P-state latency optimizer. **Enabled:** Enables the DF P-state latency optimizer. This option is set to **Enabled** by default.
DF CState	This field enables(0xF)/disables(0x0) DF Cstate. This option is set to **Enabled** by default.
Host System Management Port(HSMP)Support	This value controls Host System Management Port(HSMP) interface to provide OS-level software with access to system management functions via a set of mail box registers. This option is set to **Enabled** by default.
Boost FMax	Boost Fmax. This option is set to **0 - Auto** by default.
Algorithm Performance Boost Disable (ApbDis)	Enables or disables the Algorithm Performance Boost Disable (ApbDis). This option is set to **Disabled** by default.

System Security

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

Table 66. System Security details

Option	Description
CPU AES-NI	Improves the speed of applications by performing encryption and decryption by using the Advanced Encryption Standard Instruction Set (AES-NI). This option is set to **Enabled** by default.
Strong Password Status	If enabled, you must set up a password that has at least one character in lowercase, uppercase, digit, and a special character. Also you have the option to set the minimum number of characters in both the new passwords. If disabled, you can set a password that has any character in it but the password must not have more than 32 characters. Changes that are made by enabling or disabling this feature become immediately effective.
Strong Password Minimum Length (8 to 32)	Controls the minimum number of characters that are used when setting a system or setup password. You can specify 8-32 characters.
System Password	Sets thesystem password. This option is set to **Enabled** by default and is read-only if the password jumper is not installed in the system.
Setup Password	Sets the setup password. This option is read-only if the password jumper is not installed in the system.
Password Status	Locks the system password. This option is set to **Unlocked** by default.
TPM Firmware	Indicates the firmware version of a Trusted Platform Module(TPM).
TPM Heirachy	Allows enabling, disabling, or clearing the storage and endorsement hierarchies. When set to Enabled, the storage and endorsement hierarchies can be used. When set to Disabled, the storage and endorsement hierarchies cannot be used. When set to Clear, the storage and endorsement hierarchies are cleared of any values and then reset to Enabled.
TPM Advanced Settings	**TPM PPI Bypass Provision** When set to Enabled, allows the Operating System to bypass Physical Presence Interface(PPI) prompts when issuing PPI Advanced Configuration and Power Interface (ACPI) provisioning operations. **TPM PPI Bypass Clear** When set to Enabled, allows the Operating System to bypass Physical Presence Interface(PPI) prompts when issuing PPI Advanced Configuration and Power Interface (ACPI) clear operations. **TPM2 Algorithm Selection** Allows the user to change the cryptographic algorithms

Table 66. System Security details (continued)

Option	Description
	used in the Trusted Platform Module (TPM). The available options are dependant on the TPM firmware.
AMD DRTM	Enable/Disable AMD Dynamic Root of Trust Measurement (DRTM) To enable AMD DRTM, below configurations must be enabled: 1. TPM2.0 must be enabled and the hash algorithm must be set to SHA256. 2. Transparent SME (TSME) must be enabled.
Power Button	Enables or disables the power button on the front of the system. This option is set to **Enabled** by default.
AC Power Recovery	Sets how the system behaves after AC power is restored to the system. This option is set to **Last** by default.
AC Power Recovery Delay	Sets the time delay for the system to power on after AC power is restored to the system. This option is set to **Immediate** by default.
User Defined Delay (120s to 600 s)	Controls the duration for which the power-on process is delayed after the AC power supply is restored. The value is only effective if the AC Power Recovery Delay is set to **User Defined**. The valid range is between **120s and 600s**.
UEFI Variable Access	Provides varying degrees of securing UEFI variables. When set to **Standard** (the default), UEFI variables are accessible in the operating system per the UEFI specification. When set to **Controlled**, selected UEFI variables are protected in the environment and new UEFI boot entries are forced to be at the end of the current boot order.
SMM Security Mitigation	This option **enables** or **disables** additional UEFI SMM Security Mitigation protections. This option is available only in **UEFI boot mode**. The operating system can use this feature to help protect the **secure environment** created by **virtualization based security**. Enabling this feature provides additional UEFI SMM Security Mitigation protections. However, this feature may cause **compatibility** issue or loss of functionality with some legacy tools or applications.
Secure Boot	Enables Secure Boot, where the BIOS authenticates each pre-boot image by using the certificates in the Secure Boot Policy. Secure Boot is set to **Disabled** by default.
Secure Boot Policy	When the Secure Boot policy is set to **Standard**, the BIOS uses the system manufacturer's key and certificates to authenticate pre-boot images. When the Secure Boot policy is set to **Custom**, the BIOS uses the user-defined key and certificates. The secure Boot policy is set to **Standard** by default.
Secure Boot Mode	Configures how the BIOS uses the Secure Boot Policy Objects (PK, KEK, db, dbx). If the current mode is set to **Deployed Mode**, the available options are **User Mode** and **Deployed Mode**. **If the current mode is set to User Mode, the available options are User Mode, Audit Mode, and Deployed Mode.**

Table 67. Secure Boot Mode

Options	Descriptions
User Mode	In **User Mode**, PK must be installed, and BIOS performs signature verification on programmatic attempts to update policy objects. The BIOS allows unauthenticated programmatic transitions between modes.
Deployed Mode	**Deployed Mode** is the most secure mode. In **Deployed Mode**, PK must be installed and the BIOS performs signature verification on programmatic attempts to update policy objects. **Deployed Mode** restricts the programmatic mode transitions.

Table 66. System Security details (continued)

Option	Description
	Table 67. Secure Boot Mode (continued) **Options** / **Descriptions** **Audit Mode** — In **Audit mode**, PK is not present. The BIOS does not authenticate programmatic updates to the policy objects, and transitions between modes. The BIOS performs a signature verification on pre-boot images and logs the results in the image Execution Information Table, but executes the images whether they pass or fail verification. **Audit Mode** is useful for programmatic determination of a working set of policy objects.
Secure Boot Policy Summary	Specifies the list of certificates and hashes that secure boot uses to authenticate images.
Secure Boot Custom Policy Settings	Configures the Secure Boot Custom Policy. To enable this option, set the Secure Boot Policy to **Custom** option.

Creating a system and setup password

Prerequisites

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

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

Steps

1. To enter System Setup, press F2 immediately after turning on or rebooting your system.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security**.
3. On the **System Security** screen, verify that **Password Status** is set to **Unlocked**.
4. In the **System Password** field, type your system password, and press Enter or Tab.

   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.

   A message prompts you to reenter the system password.
5. Reenter the system password, and click **OK**.
6. In the **Setup Password** field, type your setup password and press Enter or Tab.
   A message prompts you to reenter the setup password.
7. Reenter the setup password, and click **OK**.
8. Press Esc to return to the System BIOS screen. Press Esc again.

   A message prompts you to save the changes.

   NOTE: Password protection does not take effect until the system reboots.

Using your system password to secure your system

About this task

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

Steps

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

Next steps

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

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

Deleting or changing system and setup password

Prerequisites

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

Steps

1. To enter System Setup, press F2 immediately after turning on or restarting your system.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security**.
3. On the **System Security** screen, ensure that **Password Status** is set to **Unlocked**.
4. In the **System Password** field, alter or delete the existing system password, and then press Enter or Tab.
5. In the **Setup Password** field, alter or delete the existing setup password, and then press Enter or Tab.

   If you change the system and setup password, a message prompts you to reenter the new password. If you delete the system and setup password, a message prompts you to confirm the deletion.
6. Press Esc to return to the **System BIOS** screen. Press Esc again, and a message prompts you to save the changes.
7. Select **Setup Password**, change, or delete the existing setup password and press Enter or Tab.

   NOTE: If you change the system password or setup password, a message prompts you to reenter the new password. If you delete the system password or setup password, a message prompts you to confirm the deletion.

Operating with setup password enabled

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

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

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

```
Password Invalid. Number of unsuccessful password attempts: <x> Maximum number of
password attempts exceeded.System halted.
```

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

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

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

Redundant OS Control

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

Table 68. Redundant OS Control details

Option	Description
Redundant OS Location	Enables you to select a backup disk from the following device: • **None** • **BOSS PCIe Cards (Internal M.2 Drives)**
Redundant OS State	**NOTE:** This option is disabled if **Redundant OS Location** is set to **None**. When set to **Visible**, the backup disk is visible to the boot list and OS. When set to **Hidden**, the backup disk is disabled and is not visible to the boot list and OS. This option is set to **Visible** by default. **NOTE:** BIOS disables the device in hardware, so it is not accessed by the OS.
Redundant OS Boot	**NOTE:** This option is disabled if **Redundant OS Location** is set to **None** or if **Redundant OS State** is set to **Hidden**. When set to **Enabled**, BIOS boots to the device specified in **Redundant OS Location**. When set to **Disabled**, BIOS preserves the current boot list settings. This option is set to **Enabled** by default.

Miscellaneous Settings

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

Table 69. Miscellaneous Settings details

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

iDRAC Settings utility

The iDRAC settings utility 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 utility.

NOTE: Accessing some of the features on the iDRAC settings utility 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.

Dell Lifecycle Controller

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

Embedded system management

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

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

For more information about setting up the Dell Lifecycle Controller, configuring hardware and firmware, and deploying the operating system, see the Dell Lifecycle Controller documentation at iDRAC Manuals.

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 70. 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 boot menu, where you can select a one-time boot device to boot from.
Launch System Setup	Enables you to access System Setup.
Launch Lifecycle Controller	Exits the Boot Manager and invokes the Dell Lifecycle Controller program.
System Utilities	Enables you to launch System Utilities menu such as Launch Diagnostics, BIOS update File Explorer, Reboot System.

PXE boot

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

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

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 listed below are the minimum configuration to POST:

- One processor in processor socket 1
- One memory modules (DIMM) in slot A1
- One power supply unit
- System board + LOM + RIO card

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, BOSS), and processor is obtained from the CPLD and backplane memory maps are analyzed. This information forms a unique configuration, which is compared with one of the qualified configurations that are stored in a table maintained by iDRAC.

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

Table 71. 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_SL7 and CTRL_DST_PA1
Config Missing	iDRAC found a configuration element missing within the closest match detected.	Missing or damaged cable, device, or part	Config Missing: Float card front PERC/HBAadapter 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

Table 71. Configuration validation error (continued)

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

Error messages

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

Table 72. Error message HWC8010

Error code	HWC8010
Message	The System Configuration Check operation resulted in the following issue involving the indicated component type
Arguments	Riser, floating card (fPERClike BOSS), backplane, processor, cable, or other components
Detailed Description	The issue identified in the message is observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: 1. Disconnect the input power. 2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.
Category	System Health (HWC = Hardware Config)
Severity	Critical
Trap/EventID	2329

Table 73. Error message HWC8011

Error code	HWC8011
Message	The System Configuration Check operation resulted in multiple issues involving the indicated component type
Arguments	Riser, floating card (fPERClike BOSS), backplane, processor, cable, or other components
Detailed Description	Multiple issues are observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: 1. Disconnect the input power. 2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.
Category	System Health (HWC = Hardware Config)
Severity	Critical

7

Installing and removing system components

Topics:

Safety instructions

NOTE: To avoid injury, do not lift the system on your own. Get others to assist you.

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.

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

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

NOTE: While replacing the hot swappable PSU, after next server boot; the new PSU automatically updates to the same firmware and configuration of the replaced one. For more information about the Part replacement configuration, see the *Lifecycle Controller User's Guide* at iDRAC Manuals

NOTE: While replacing faulty storage controller/FC/NIC card with the same type of card, after you power on the system; the new card automatically updates to the same firmware and configuration of the faulty one. For more information about the Part replacement configuration, see the *Lifecycle Controller User's Guide* at iDRAC Manuals

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

NOTE: For detailed information on cabling the cards, see the system-specific owner's manual at Installation and Service Manual available at PowerEdge Manuals

Before working inside your system

Prerequisites

Follow the safety guidelines listed in 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.

After working inside your system

Prerequisites

Follow the safety guidelines listed in Safety instructions.

Steps

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

Recommended tools

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

- Key to the bezel lock. The key is required only if your system includes a bezel.
- Phillips 1 screwdriver
- Phillips 2 screwdriver
- Torx T8 screwdriver
- Torx T6 screwdriver
- Torx T20 screwdriver
- 5 mm hexadecimal nut screwdriver
- Plastic scribe
- 1/4-inch flat blade screwdriver
- Wrist grounding strap that is connected to the ground
- ESD mat
- Needle-nose pliers

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

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

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

NOTE: For information about DC PSU cabling instructions, go to PowerEdge Manuals > **Rack Servers** > PowerEdge R7615 > **Select This Product** > **Documentation** > **Manuals and Documents** > *Cabling instructions for – 48 – 60 V DC power supply*.

Optional front bezel

Removing the front bezel

Prerequisites

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

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

Steps

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

   Unlock the bezel .
2. Press the release button, and remove the left end of the bezel.
3. Slide the tabs on the right end of the bezel out of the slots on the chassis and remove the bezel.

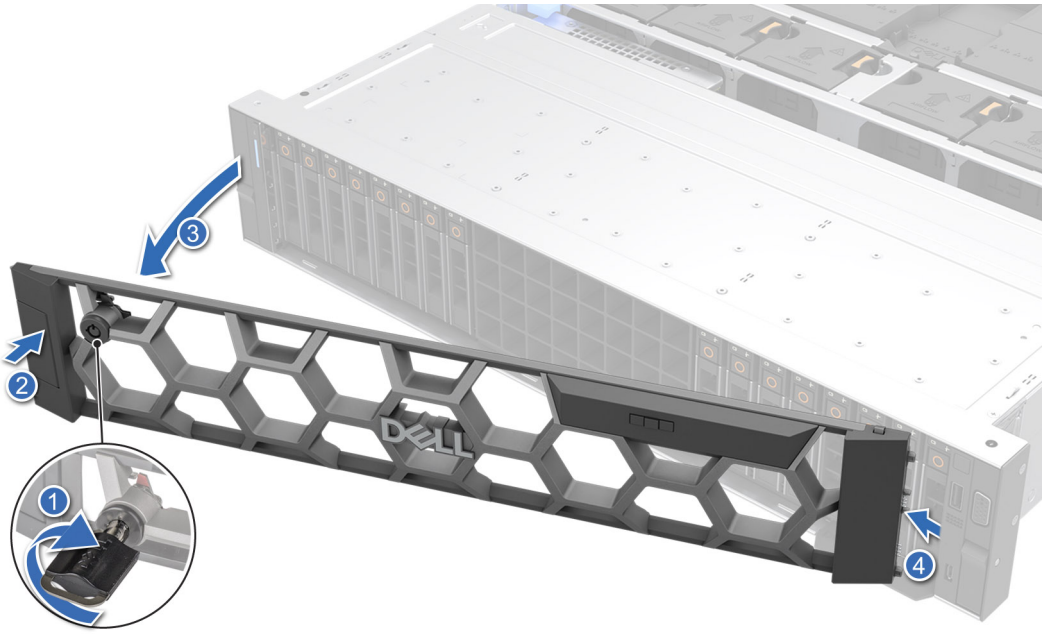

Figure 29. Removing the front bezel

Installing the front bezel

Prerequisites

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

   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 chassis.
2. Press the bezel until the release button clicks in place.
3. Lock the bezel.

Figure 30. Installing the front bezel

System cover

Removing the system cover

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Power off the system, including any attached peripherals.
4. Disconnect the system from the electrical outlet and peripherals.

Steps

1. Use a 1/4 inch flat head or a Phillips #2 screwdriver to turn the lock counterclockwise to the unlock position.
2. Open the release latch until the system cover slides back.
3. Lift the cover from the system.

Figure 31. 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 the Before working inside your system.
3. Ensure that all internal cables are connected and placed out of the way, 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 chassis.
2. Close the system cover release latch.
3. Using a 1/4 inch flat head or Phillips #2 screwdriver, turn the lock clockwise to the lock position.

Figure 32. Installing the system cover

Next steps

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 the Before working inside your system.

NOTE: Route the cables properly to prevent the cables from being pinched or crimped.

Steps

1. Press and push the blue touch points to disengage the drive backplane cover.
2. Remove the cover from the chassis.

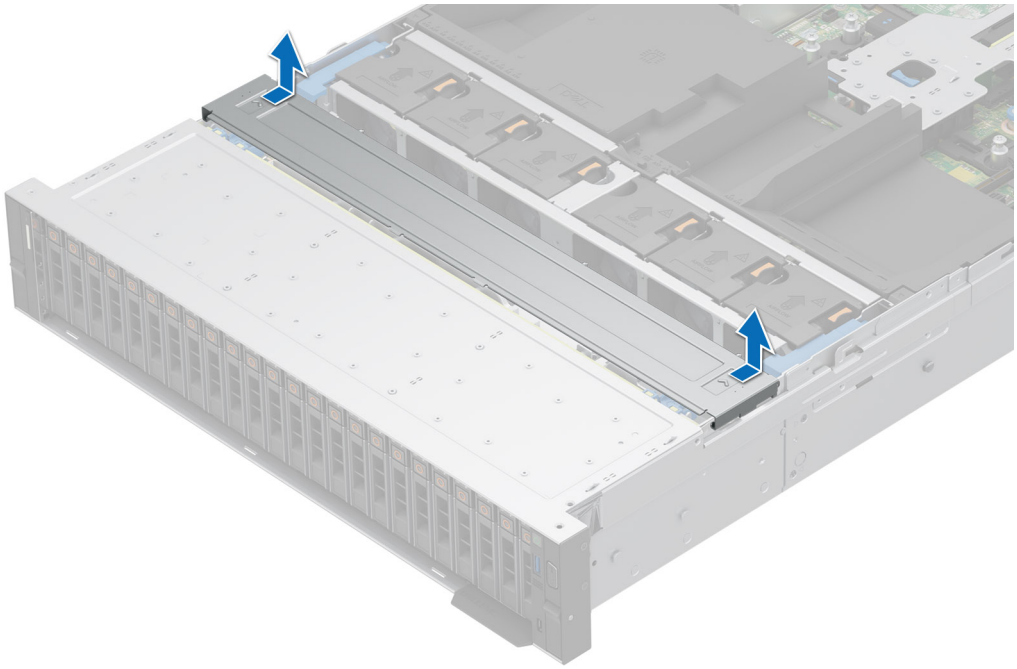

Figure 33. Removing the drive backplane cover

Next steps

1. Install the drive backplane.

Installing the drive backplane cover

Prerequisites

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

Steps

1. Align the tabs on the drive backplane cover with the guide slots on the system.
2. Slide the cover until it is securely seated.

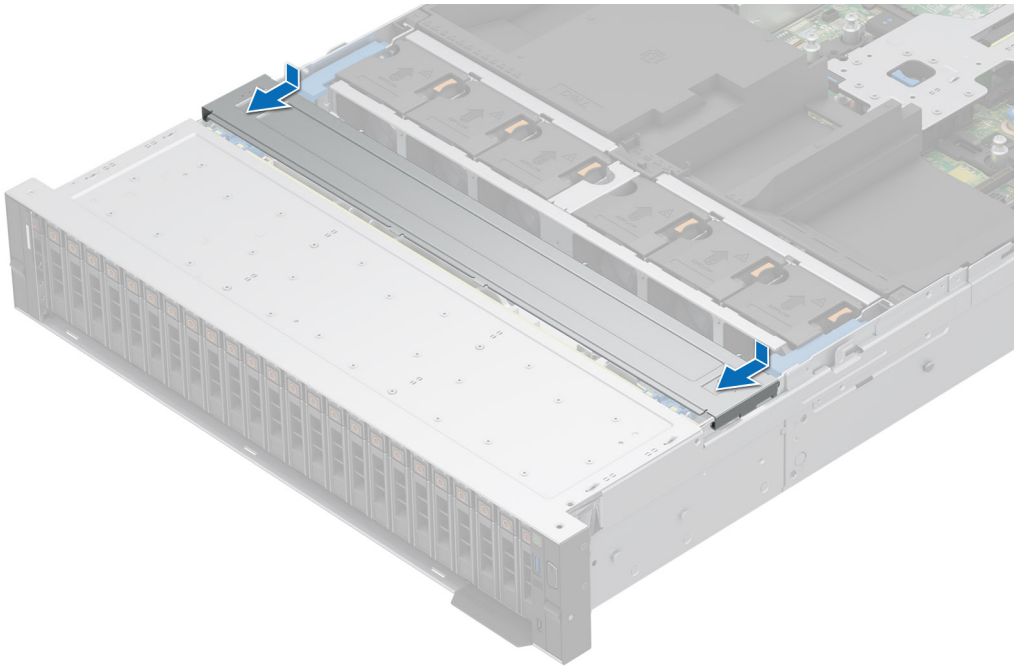

Figure 34. Installing the drive backplane cover

Next steps

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

Air shroud

Removing the air shroud

Prerequisites

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

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.

Steps

Hold the air shroud at both the ends, and lift it from the system.

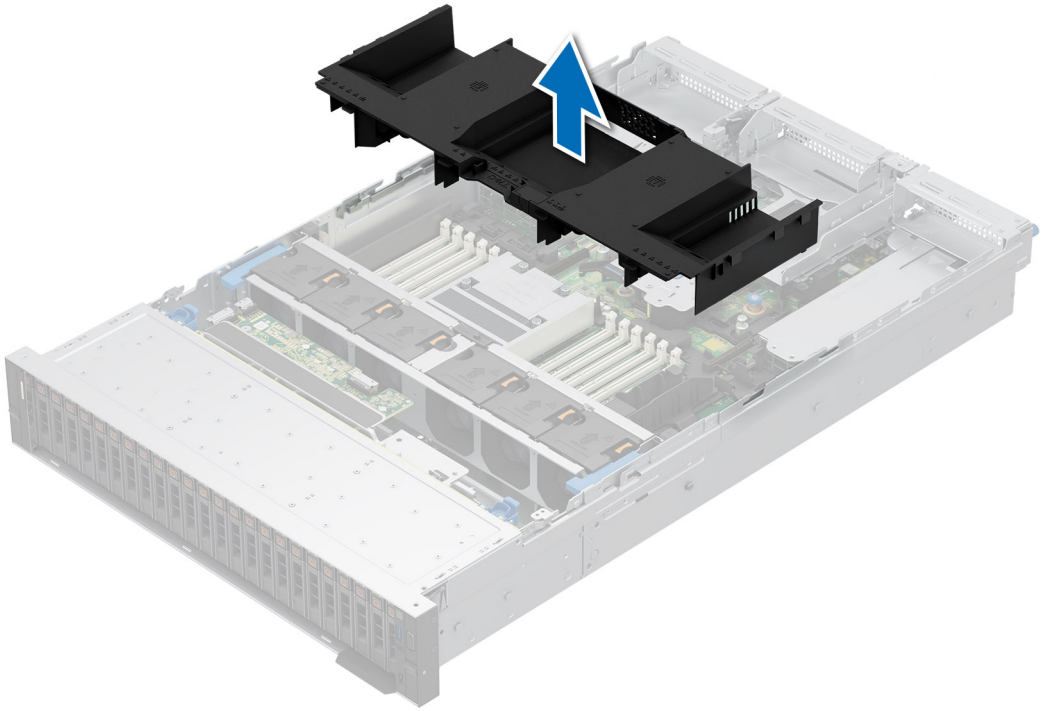

Figure 35. Removing the air shroud

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 the Before working inside your system.

Steps

1. Align the tabs on the air shroud with the slots on the chassis.

   NOTE: Route the cables properly to prevent the cables from being pinched or crimped.

2. Lower the air shroud into the system until it is firmly seated.

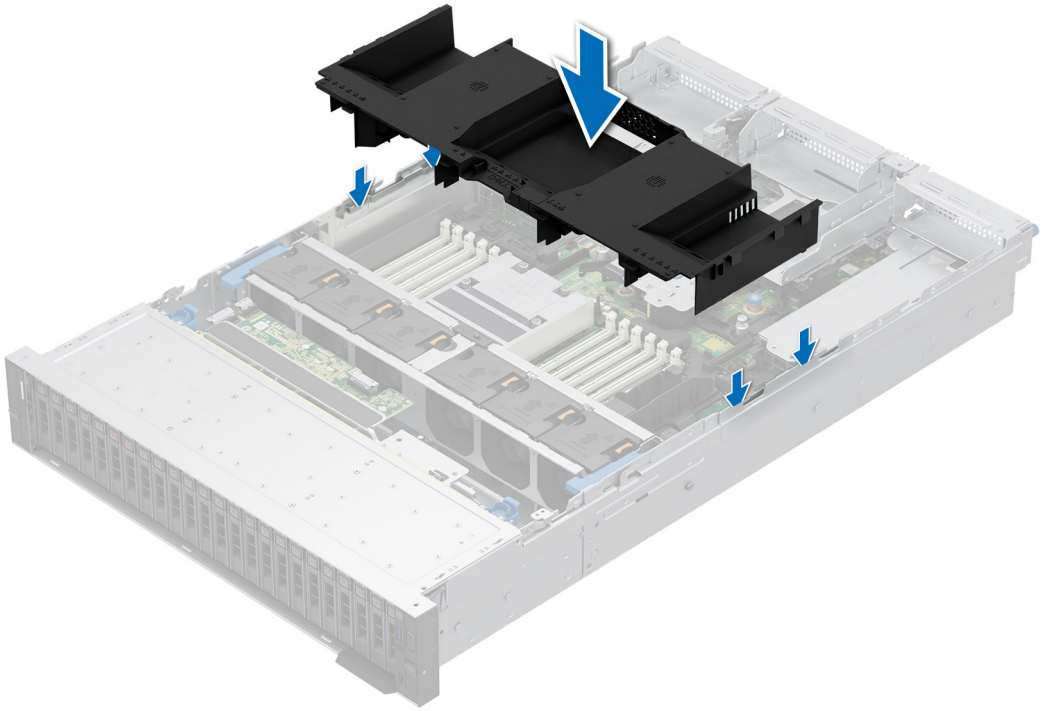

Figure 36. Installing the air shroud

Next steps

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

Removing the GPU air shroud top cover

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

Press the tabs on either sides of the top cover, and lift the top cover out of the GPU air shroud.

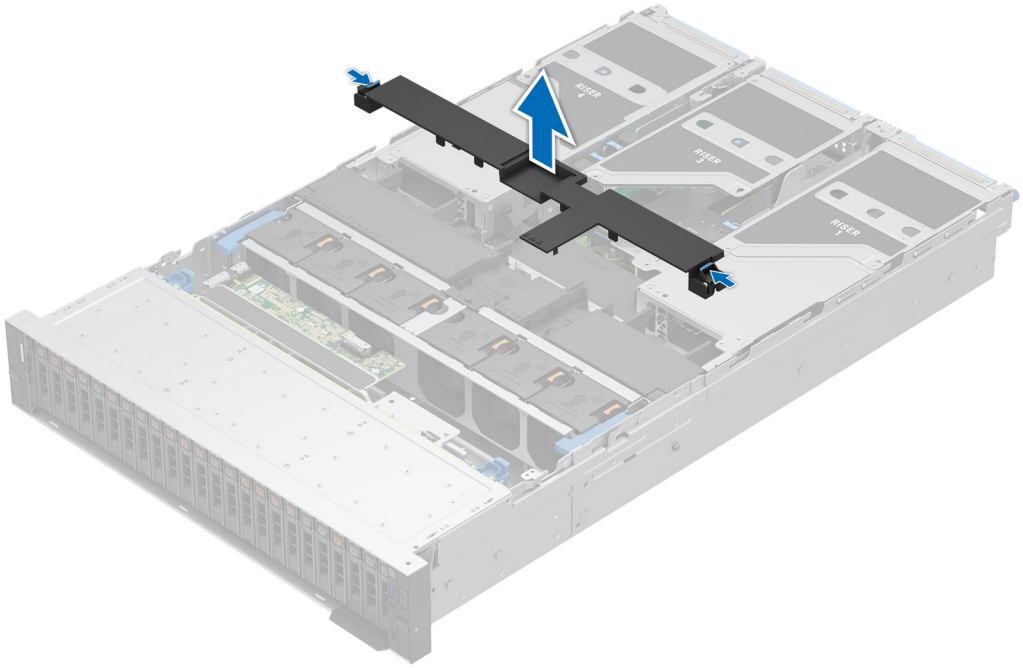

Figure 37. Removing the GPU air shroud top cover

Next steps

1. Replace the GPU air shroud top cover.

Installing the GPU air shroud top 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 tabs on the top cover with the slots on the GPU air shroud.
2. Press the top cover into the GPU air shroud until it is firmly seated.

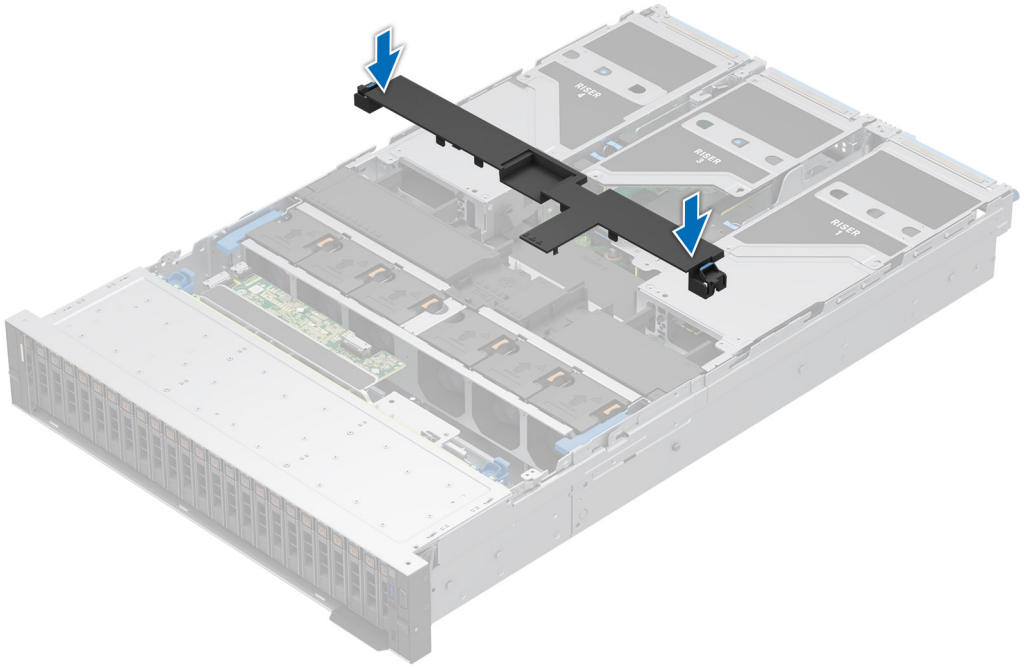

Figure 38. Installing the GPU air shroud top cover

Next steps

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

Removing the GPU air shroud filler

Prerequisites

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

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.

3. Remove the GPU air shroud top cover.

NOTE: The GPU air shroud filler must be removed to avoid interference with full length double-width GPU card installation.

Steps

Hold and lift the filler from the GPU air shroud.

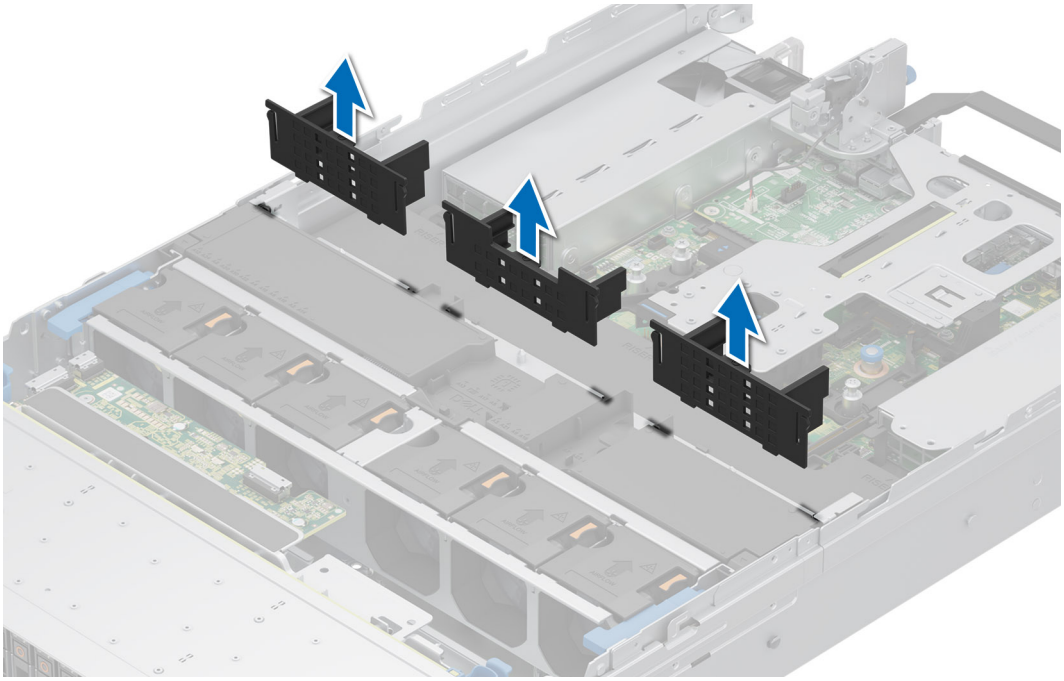

Figure 39. Removing the GPU air shroud filler

Next steps

1. Replace the GPU air shroud filler.

Installing the GPU air shroud 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 GPU air shroud top cover.
4. If required, remove the full length expansion card risers.

NOTE: The GPU air shroud filler must be installed, if single-width GPU card or empty riser is used.

Steps

Align and install the filler into the slots on the GPU air shroud.

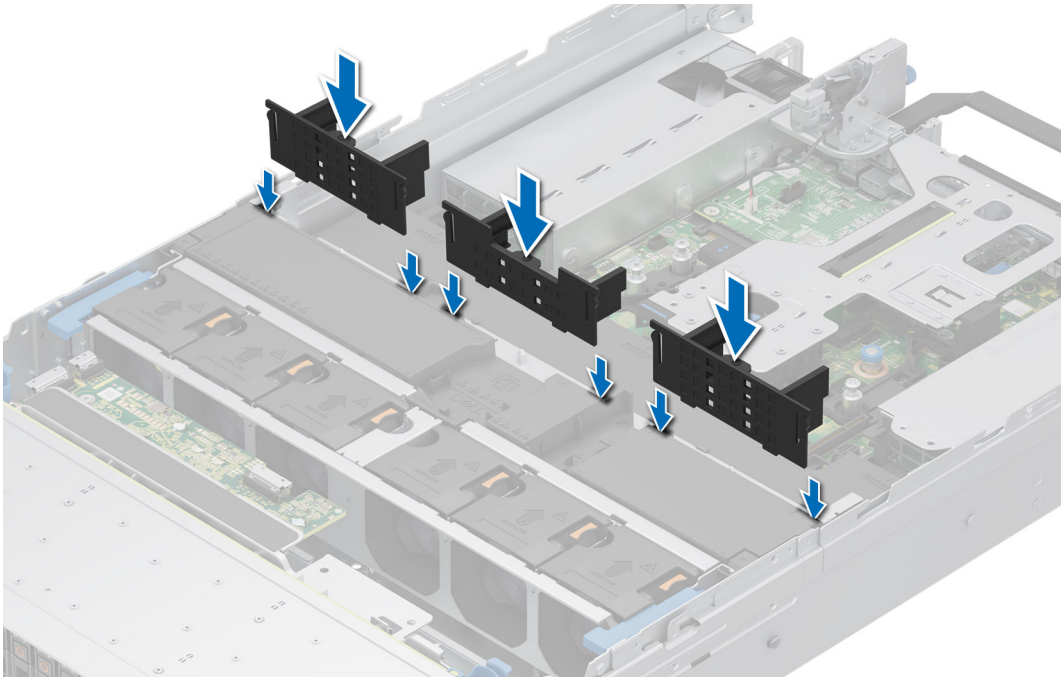

Figure 40. Installing the GPU air shroud filler

Next steps

1. Install the GPU air shroud top cover.
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.
3. Remove the GPU air shroud top cover.
4. Remove the full length expansion card risers.

Steps

Hold the edges of the GPU air shroud, and lift the air shroud out of the system.

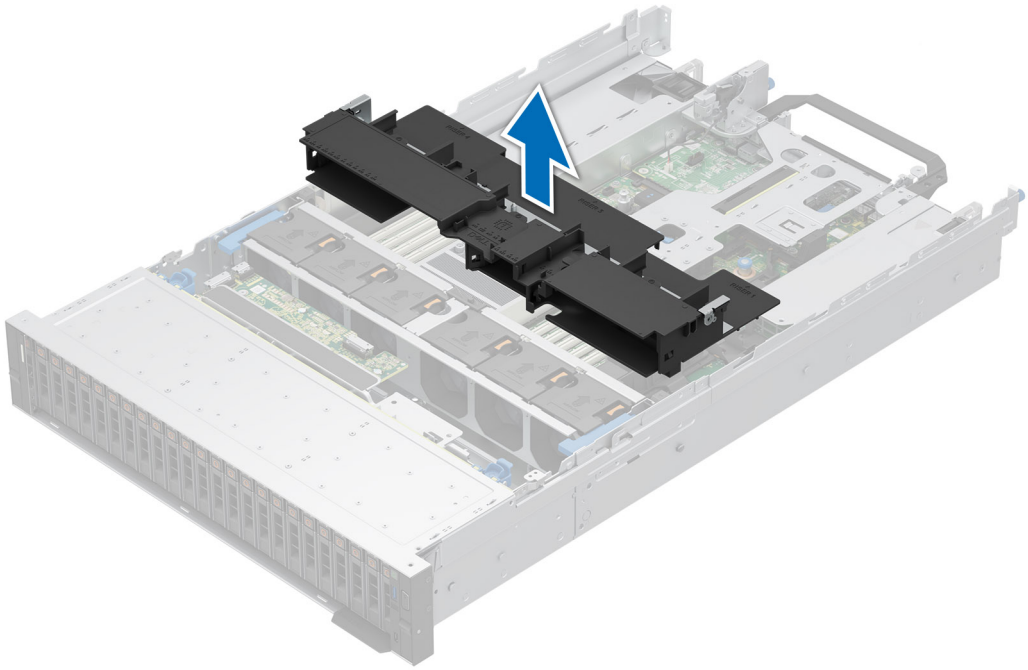

Figure 41. Removing the GPU air shroud

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.
3. Remove the GPU air shroud top cover.
4. Remove the full length expansion card risers.

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.

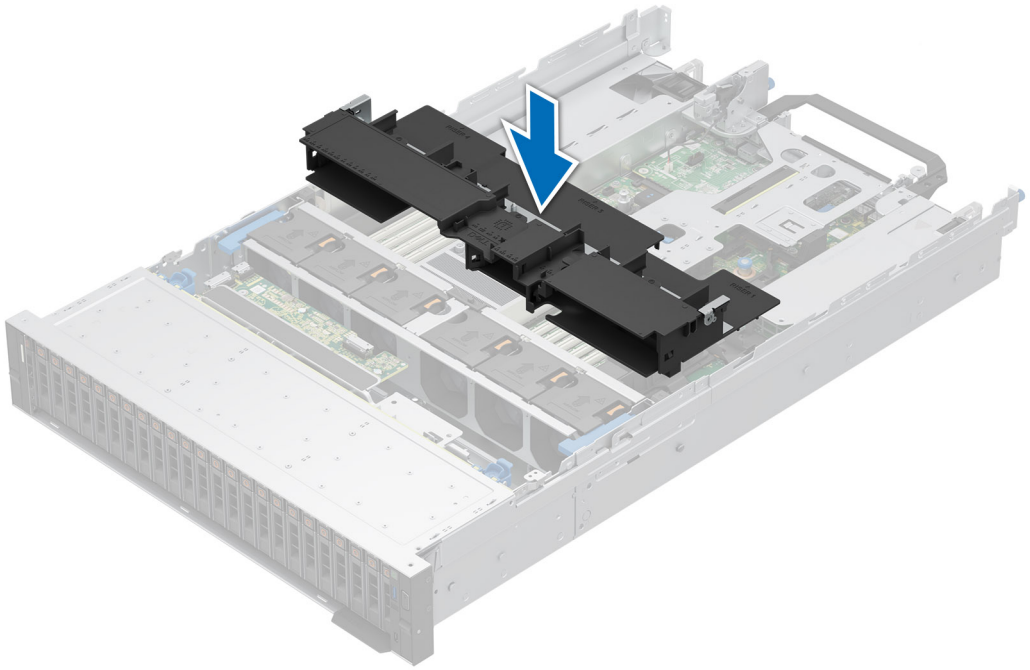

Figure 42. Installing the GPU air shroud

Next steps

1. Install the full length expansion risers.
2. Install the GPU air shroud top cover.
3. Follow the procedure listed in After working inside your system.

Removing the 2 x 2.5-inch rear drive module 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

Press the edges and lift the air shroud out of the rear drive module.

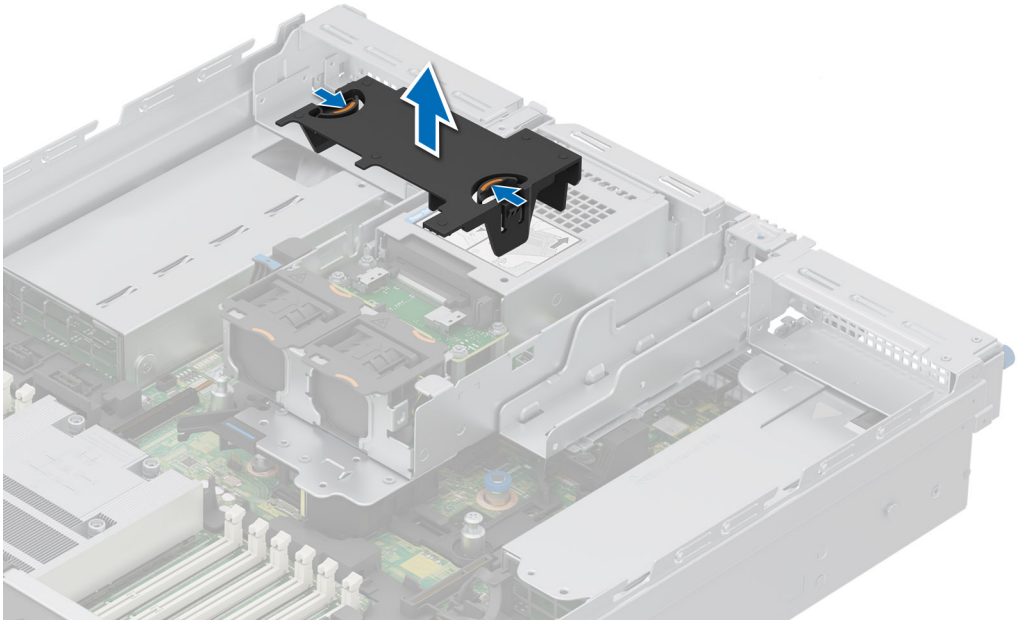

Figure 43. Removing the 2 x 2.5-inch rear drive module air shroud

Next steps

1. Replace the 2 x 2.5-inch rear drive module air shroud.

Installing the 2 x 2.5-inch rear drive module 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 air shroud with the slots on the rear drive module.
2. Lower the air shroud into the rear drive module until it is firmly seated.

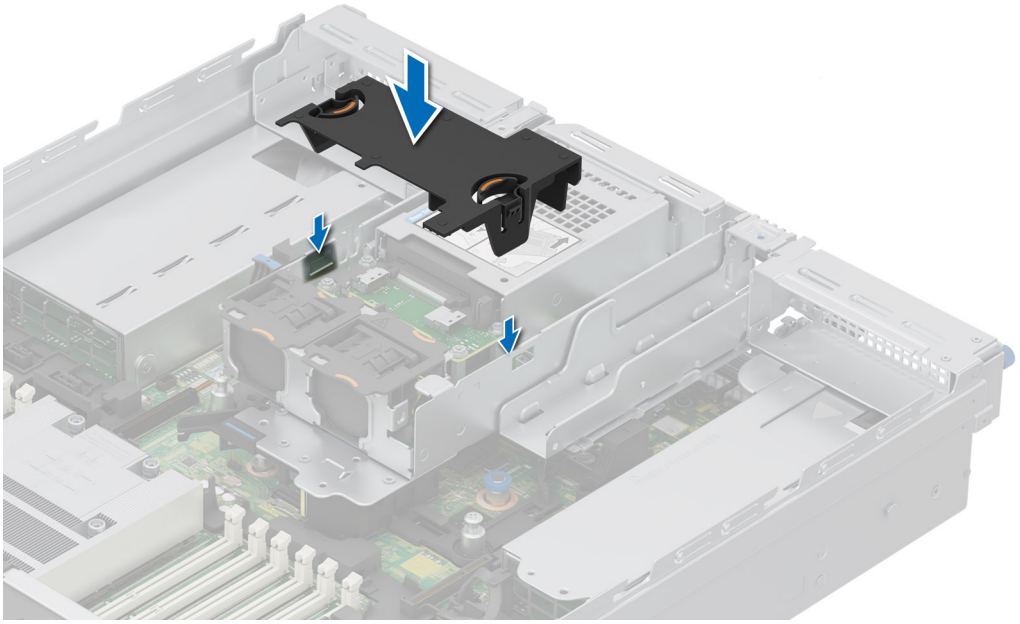

Figure 44. Installing the 2 x 2.5-inch rear drive module air shroud

Next steps

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

Removing the 4 x 2.5-inch rear drive module 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

Press the edges and lift the air shroud out of the rear drive module.

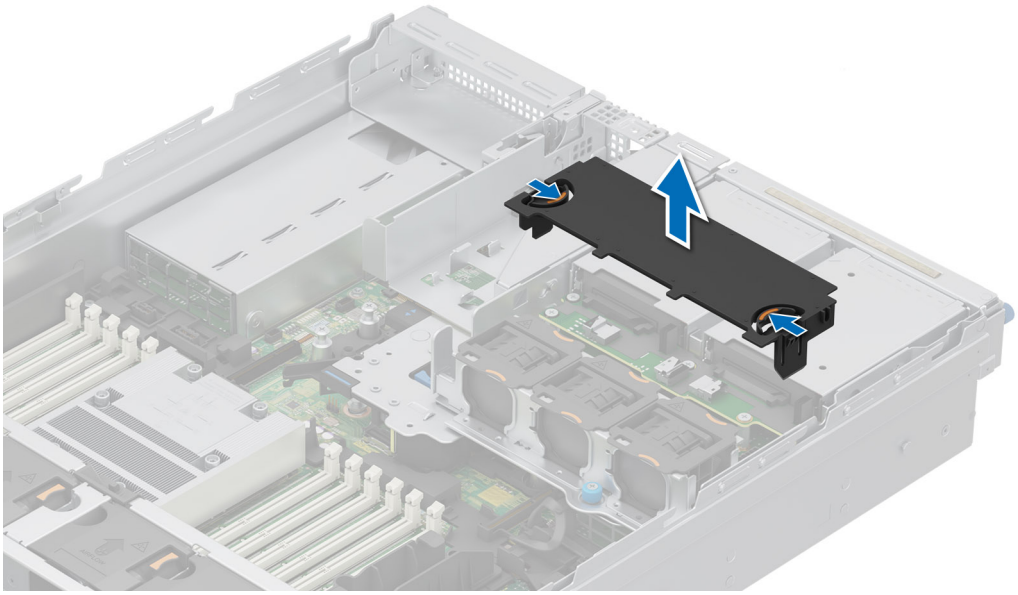

Figure 45. Removing the 4 x 2.5-inch rear drive module air shroud

Next steps

1. Replace the 4 x 2.5-inch rear drive module air shroud.

Installing the 4 x 2.5-inch rear drive module 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 air shroud with the slots on the rear drive module.
2. Lower the air shroud into the rear drive module until it is firmly seated.

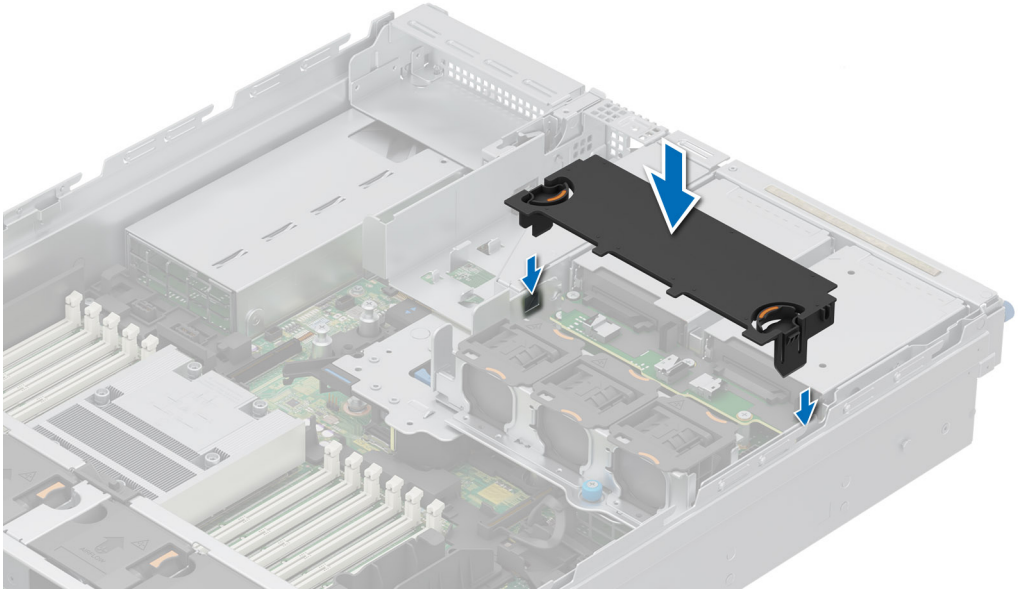

Figure 46. Installing the 4 x 2.5-inch rear drive module air shroud

Next steps

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

Removing the 4 x EDSFF E3.S rear drive module 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

Press the edges and lift the air shroud out of the rear drive module.

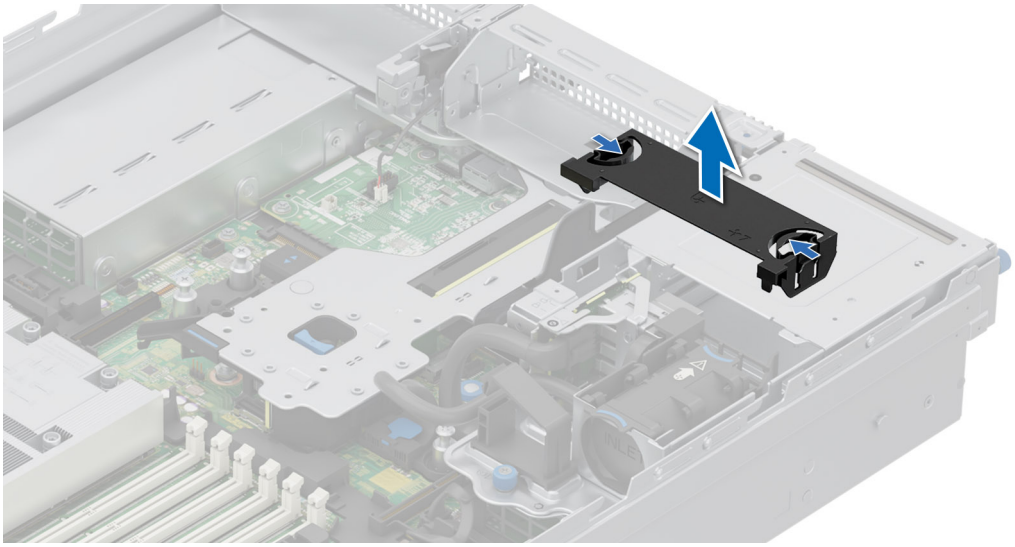

Figure 47. Removing the EDSFF E3.S rear drive module air shroud

Next steps

1. Replace the 4 x EDSFF E3.S rear drive module air shroud.

Installing the 4 x EDSFF E3.S rear drive module 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 air shroud with the slots on the rear drive module.
2. Lower the air shroud into the rear drive module until it is firmly seated.

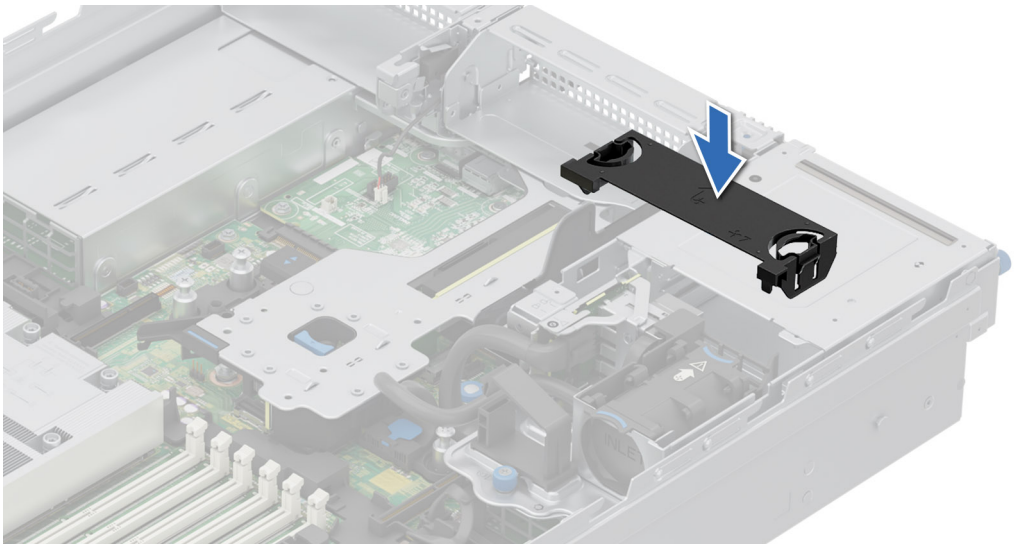

Figure 48. Installing the 4 x EDSFF E3.S rear drive module air shroud

Next steps

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

Cooling fan

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 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.

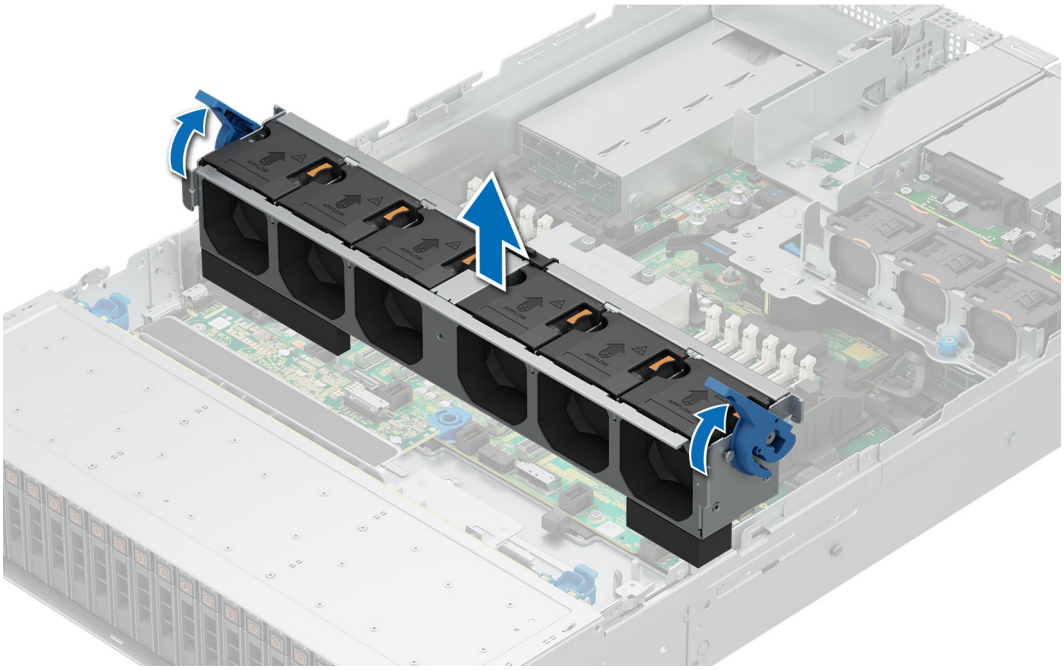

Figure 49. Removing the cooling fan cage assembly

Next steps

1. Replace the cooling fan assembly.

Installing the cooling fan cage assembly

Prerequisites

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

CAUTION: Ensure that the cables inside the system are correctly installed and retained by the cable retention bracket before installing the cooling fan cage assembly. Incorrectly installed cables may get damaged.

2. Follow the procedure listed in Before working inside your system.
3. 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.

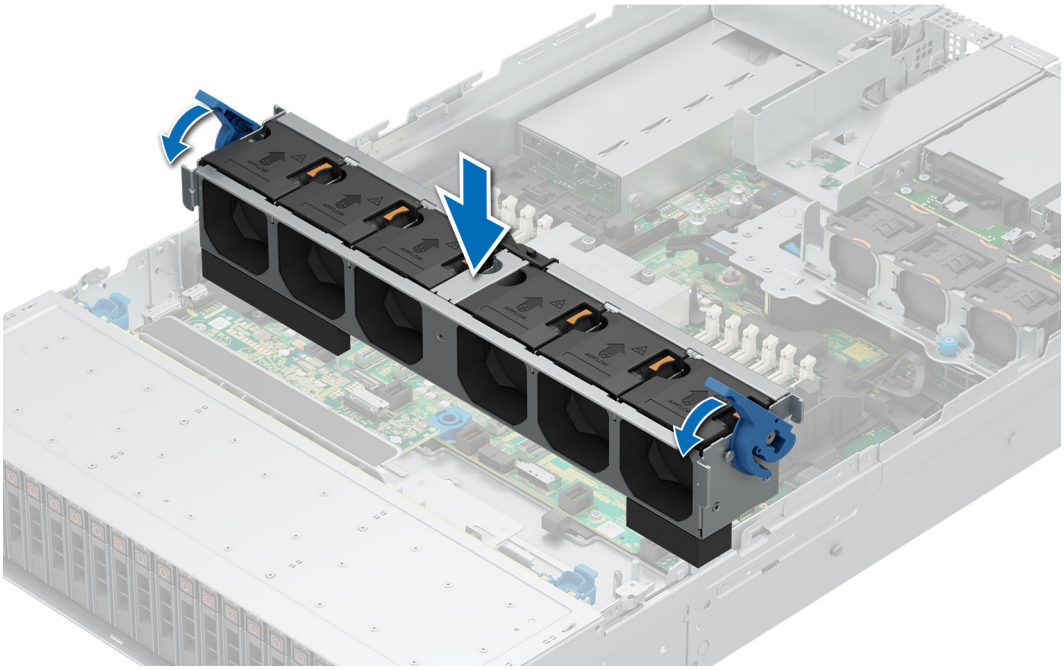

Figure 50. Installing the cooling fan cage assembly

Next steps

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

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 to remove standard (STD), high-performance silver grade (HPR SLVR), or high-performance gold grade (HPR GOLD) fan is same.

Steps

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

WARNING: Ensure not to tilt or rotate the cooling fan while removing from the system.

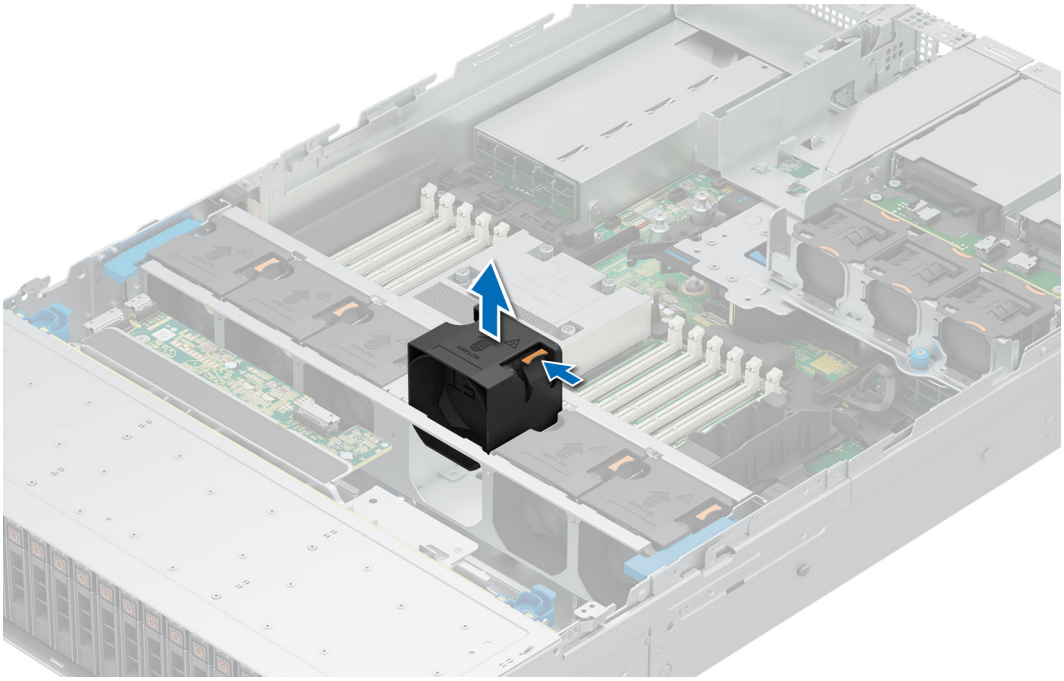

Figure 51. Removing a cooling fan

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 standard (STD), high-performance silver grade (HPR SLVR), or high-performance gold grade (HPR GOLD) fan is same.

Steps

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

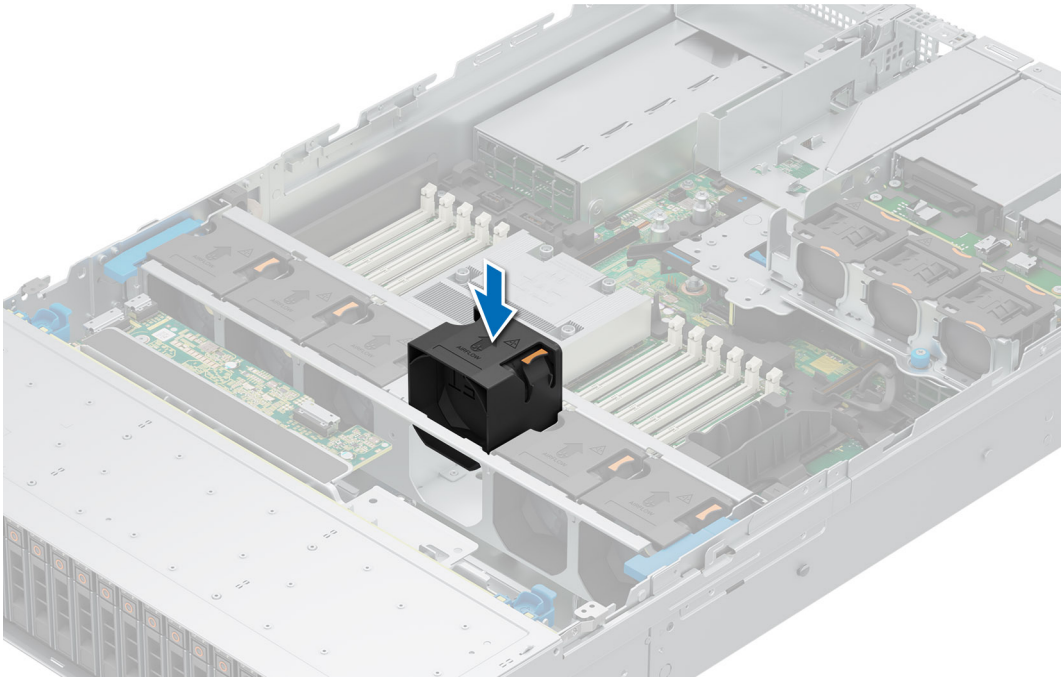

Figure 52. Installing a cooling fan

Next steps

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

Removing a 2 x 2.5-inch rear drive module cooling fan

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 2 x 2.5-inch rear drive module air shroud.

Steps

Press the orange release tab and lift the rear drive module cooling fan to disconnect from the connector on the rear drive module.

WARNING: Ensure not to tilt or rotate the cooling fan while removing from the rear drive module.

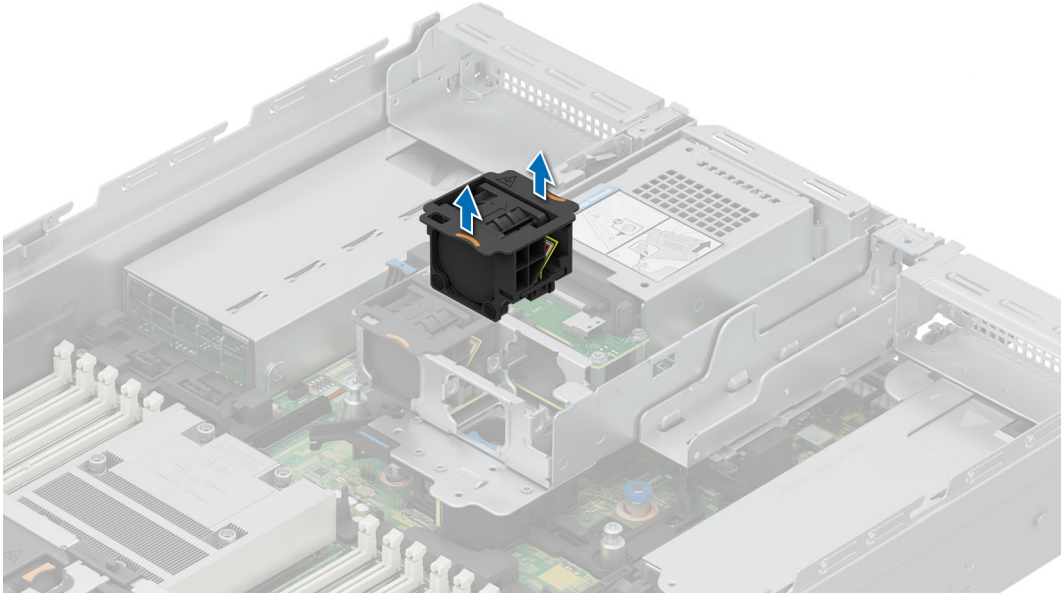

Figure 53. Removing a 2 x 2.5-inch rear drive module cooling fan

Next steps

1. Replace 2 x 2.5-inch rear drive module cooling fan.

Installing a 2 x 2.5-inch rear drive module cooling fan

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 2 x 2.5-inch rear drive module air shroud.

Steps

Align and lower the rear drive module cooling fan into the rear drive module until the fan clicks into place.

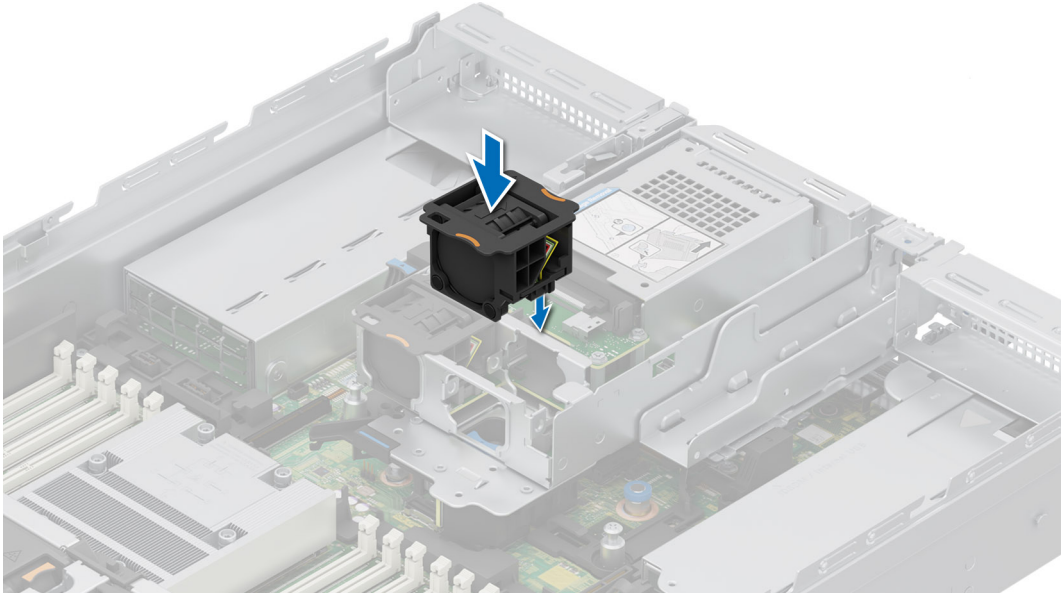

Figure 54. Installing a 2 x 2.5-inch rear drive module cooling fan

Next steps

1. Install the 2 x 2.5-inch rear drive module air shroud.
2. Follow the procedure listed in After working inside your system.

Removing a 4 x 2.5-inch rear drive module cooling fan

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 4 x 2.5-inch rear drive module air shroud.

Steps

Press the orange release tab and lift the rear drive module cooling fan to disconnect from the connector on the rear drive module.

WARNING: Ensure not to tilt or rotate the cooling fan while removing from the rear drive module.

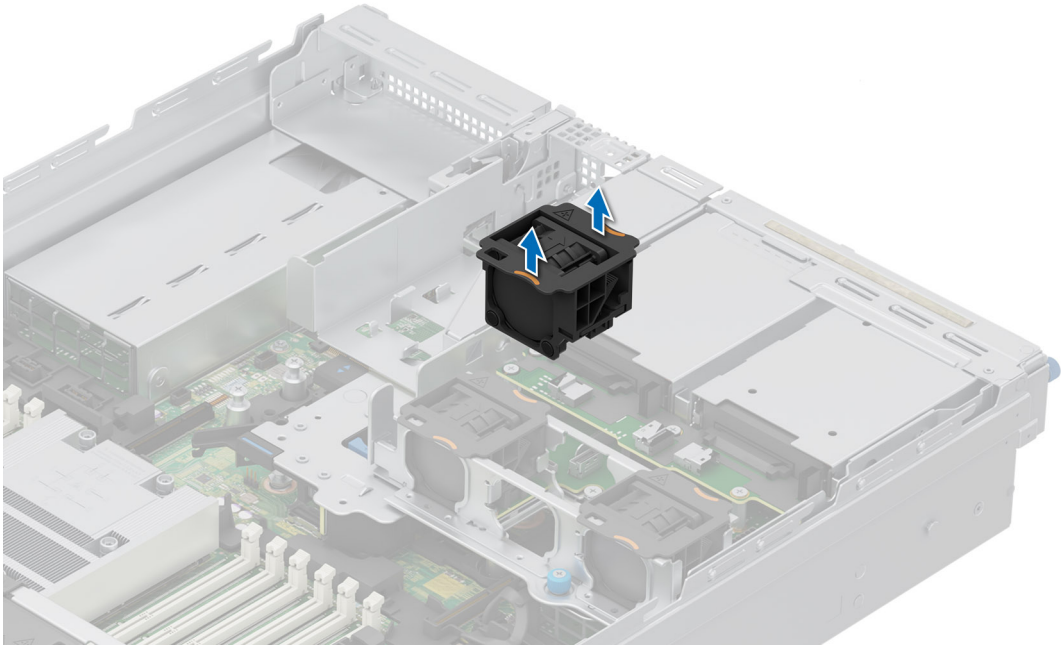

Figure 55. Removing a 4 x 2.5-inch rear drive module cooling fan

Next steps

1. Replace 4 x 2.5-inch rear drive module cooling fan.

Installing a 4 x 2.5-inch rear drive module cooling fan

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 4 x 2.5-inch rear drive module air shroud.

Steps

Align and lower the rear drive module cooling fan into the rear drive module until the fan clicks into place.

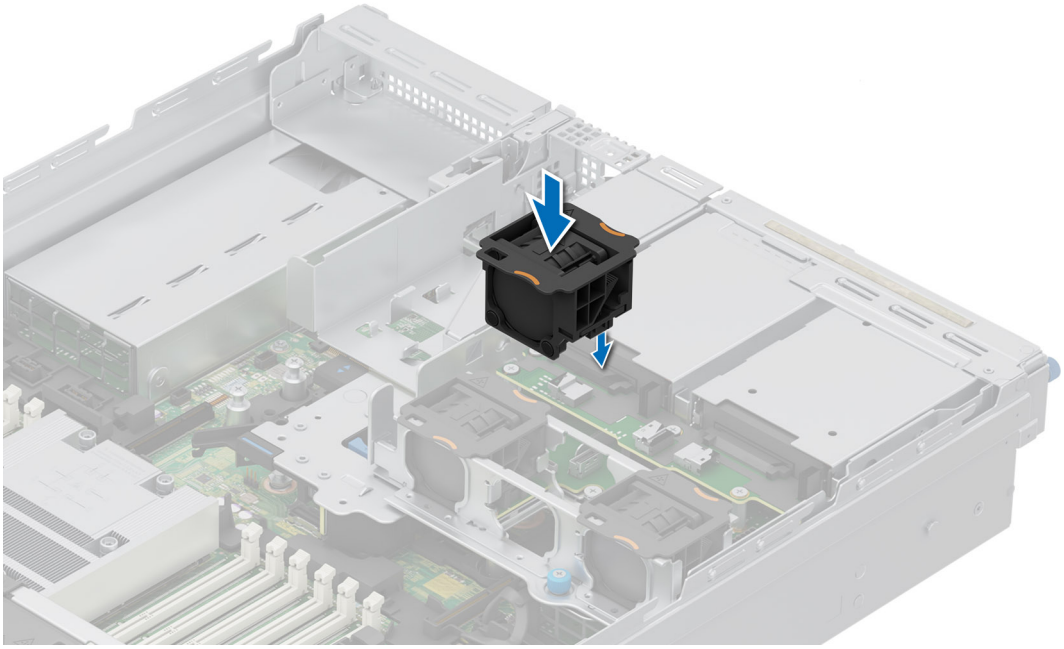

Figure 56. Installing a 4 x 2.5-inch rear drive module cooling fan

Next steps

1. Install the 4 x 2.5-inch rear drive module air shroud.
2. Follow the procedure listed in After working inside your system.

Removing a 4 x EDSFF E3.S rear drive module cooling fan

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 4 x EDSFF E3.S rear drive module air shroud.

Steps

1. Disconnect the fan power cable.
2. Press the release tab and lift the rear drive module cooling fan to disconnect from the connector on the rear drive module.

WARNING: Ensure not to tilt or rotate the cooling fan while removing from the rear drive module.

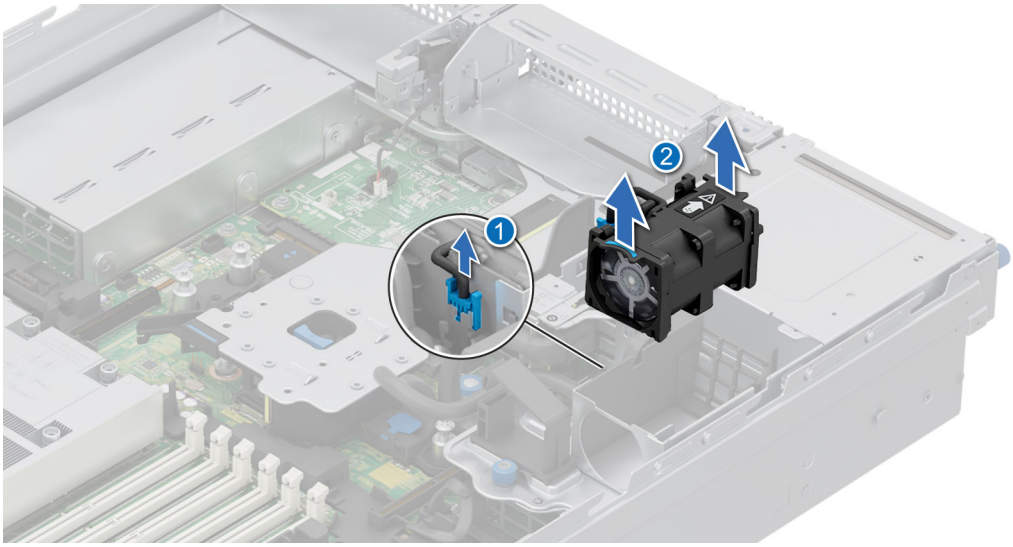

Figure 57. Removing a 4 x EDSFF E3.S rear drive module cooling fan

Next steps

1. Replace 4 x EDSFF E3.S rear drive module cooling fan.

Installing a 4 x EDSFF E3.S rear drive module cooling fan

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 4 x EDSFF E3.S rear drive module air shroud.

Steps

1. Align and lower the rear drive module cooling fan into the rear drive module until the fan clicks into place.

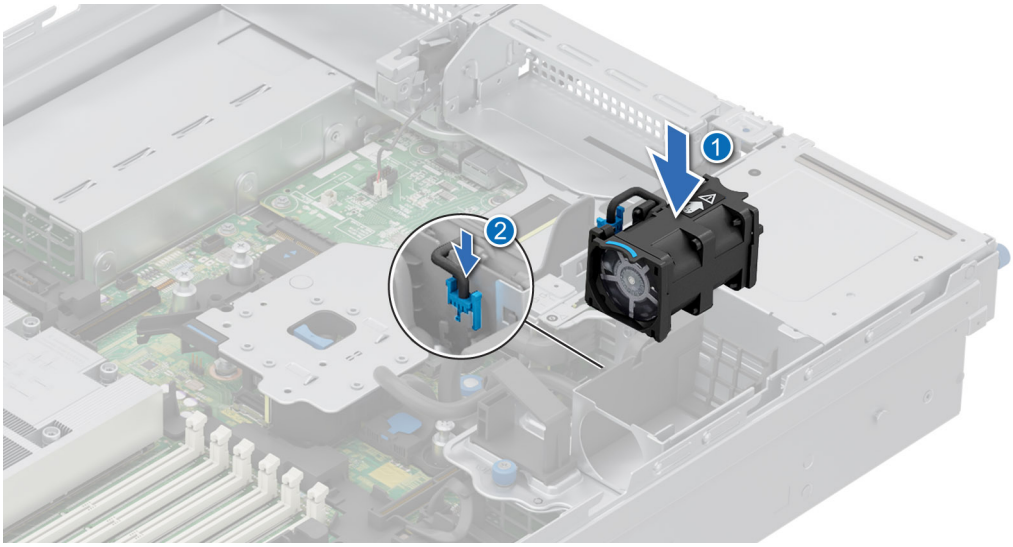

Figure 58. Installing a 4 x EDSFF E3.S rear drive module cooling fan

2. Connect the power cable.

Next steps

1. Install the 4 x EDSFF E3.S rear drive module air shroud.
2. Follow the procedure listed in After working inside your system.

Drives

Removing a drive blank

Prerequisites

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

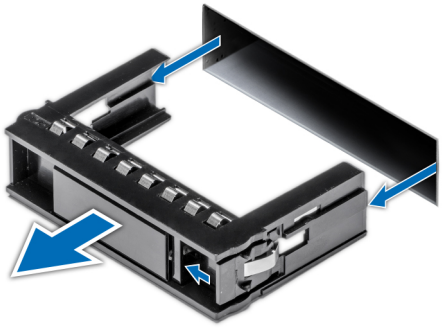

Figure 59. Removing a drive blank

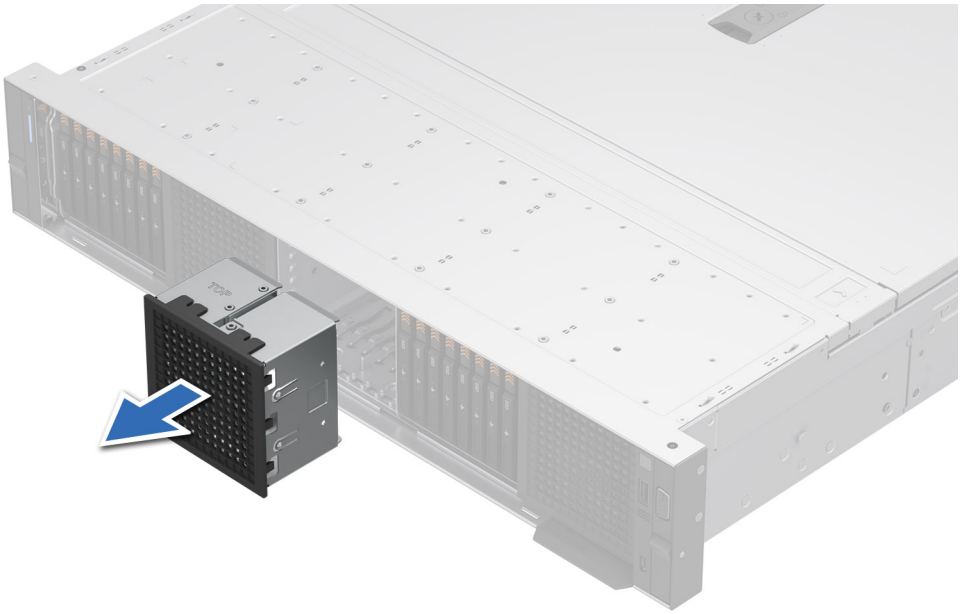

Figure 60. Removing an E3.S drive cage blank

Next steps

1. Replace the drive blank.

Installing a drive blank

Prerequisites

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

Steps

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

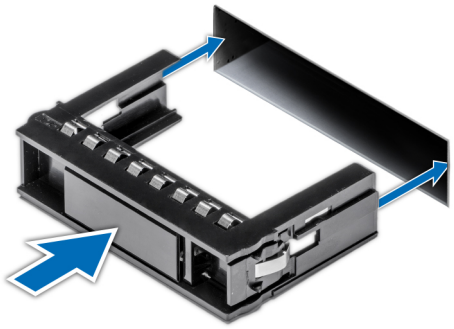

Figure 61. Installing a drive blank

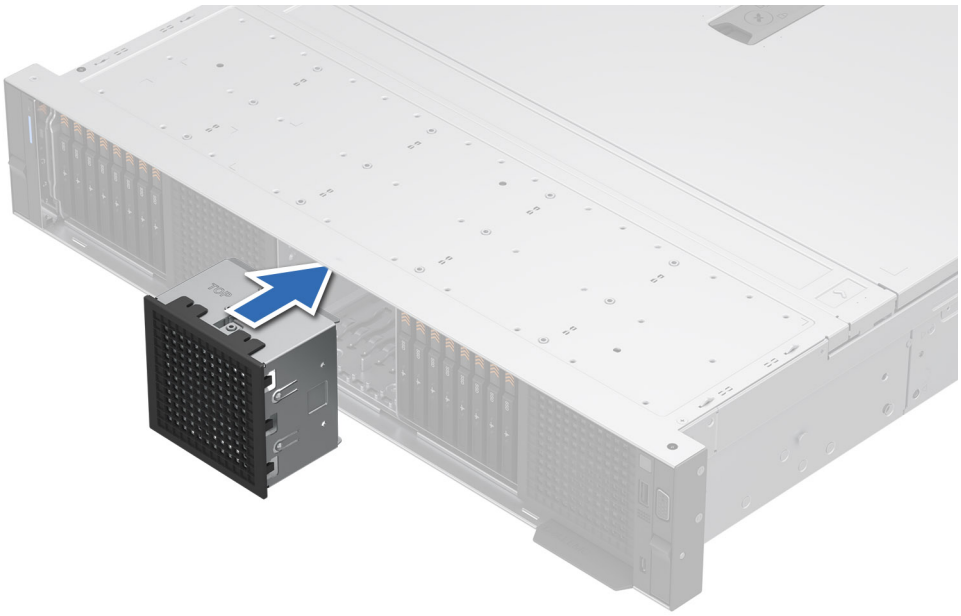

Figure 62. Installing an E3.S drive cage blank

Next steps

1. If removed, install the front bezel.

Removing a drive carrier

Prerequisites

1. Follow the safety guidelines listed in the 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 drive carrier release handle, slide the drive carrier out of the drive slot.

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

Figure 63. Removing a drive carrier

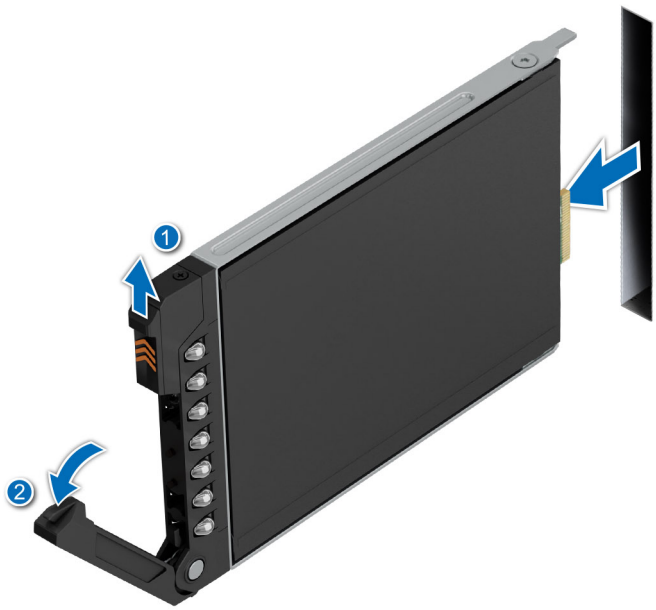

Figure 64. Removing an E3.S drive carrier

Next steps

1. Replace the drive or a drive blank.

Installing the drive carrier

Prerequisites

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

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

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

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 drives 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 65. Installing a drive carrier

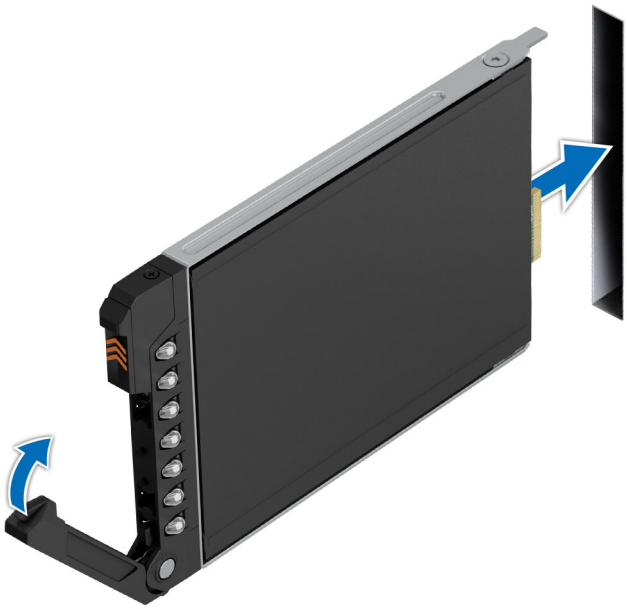

Figure 66. Installing an E3.S drive

Next steps

install the front bezel.

Removing the 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 drive carrier has a Torx screw, use Torx 6 (for 2.5-inch drive) or Torx 8 (for 3.5-inch drive) screwdriver to remove the drive.

2. Lift the drive out of the drive carrier.

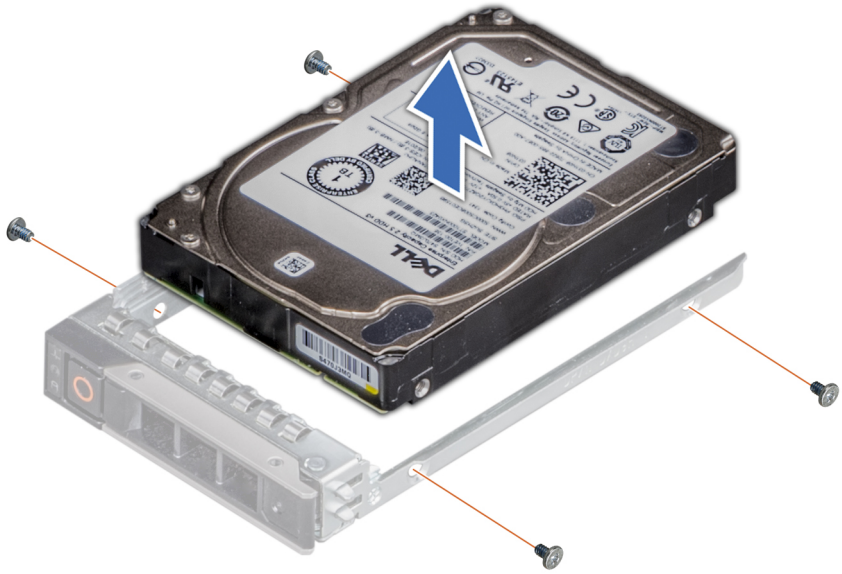

Figure 67. Removing the drive from the drive carrier

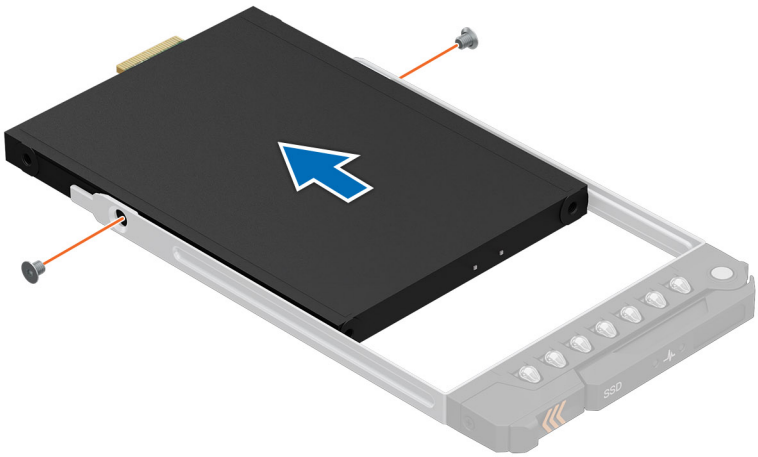

Figure 68. Removing the E3.S drive from the drive carrier

Next steps

Install the drive into the drive carrier.

Installing the drive into the drive carrier

Prerequisites

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

Steps

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

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

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

Figure 69. Installing a drive into the drive carrier

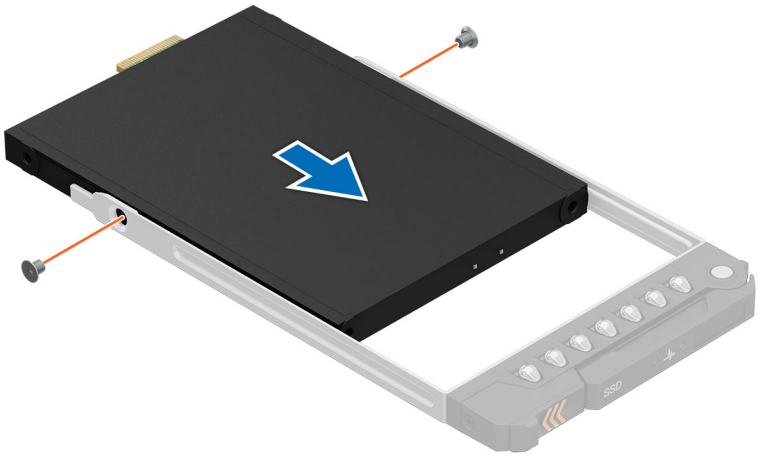

Figure 70. Installing the E3.S drive into the drive carrier

Next steps

1. Install the drive carrier.

Rear drive module

Removing the 2 x 2.5-inch rear drive module

Prerequisites

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.
4. Remove the drives.
5. Disconnect the cables from the rear drive module.

NOTE: Refer Cable routing topic for more information.

Steps

1. Using a Phillips #2 screwdriver, loosen the captive screws that secure the rear drive module to the system.
2. Press the blue release tab and holding the edges lift the rear drive module away from the system.

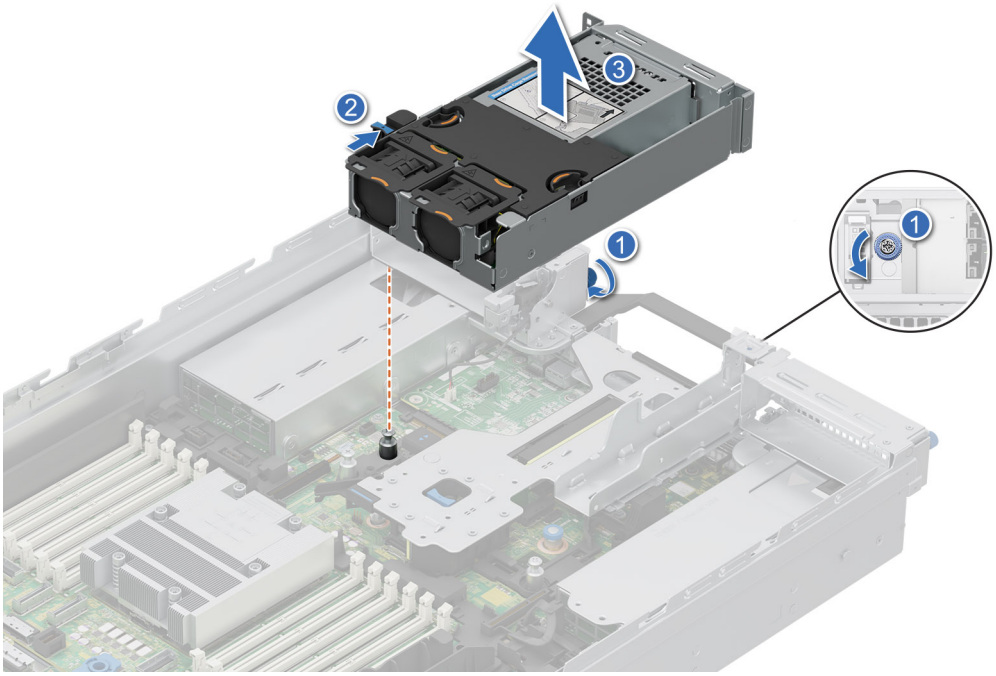

Figure 71. Removing the 2x 2.5-inch rear drive module

Next steps

1. Replace the 2 x 2.5-inch rear drive module.

Installing the 2 x 2.5-inch rear drive module

Prerequisites

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.

4. Remove the drives.
5. Disconnect the cables from the rear drive module.

NOTE: Refer Cable routing topic for more information.

Steps

1. Align the slot on the rear drive module with the guide on the system.
2. Lower and press the rear drive module on top of the riser until firmly seated.
3. Using a Phillips #2 screwdriver, tighten the captive screws that secure the rear drive module into the system.

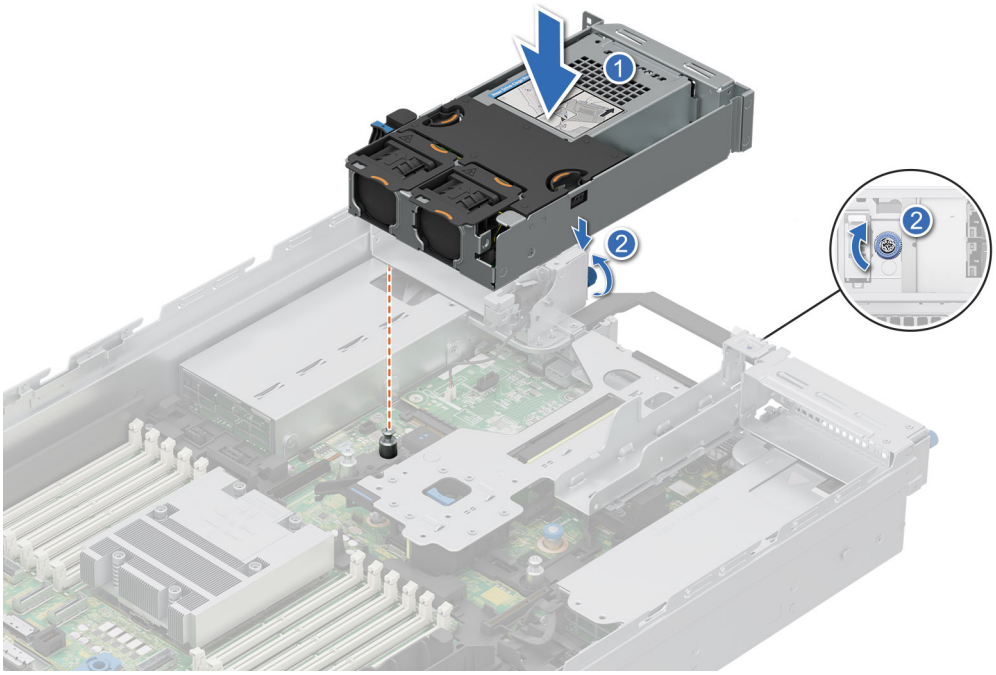

Figure 72. Installing the 2 x 2.5-inch rear drive module

Next steps

1. Connect and route all the cables to the rear drive module.
2. Install the drives.
3. If removed, install the air shroud.
4. Follow the procedure listed in After working inside your system.

Removing the 4 x 2.5-inch rear drive module

Prerequisites

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.
4. Remove the drives.
5. **NOTE:** If BOSS-N1 module is installed, ensure to disconnect the BOSS-N1 power cable and Signal cable before removing the 4 x 2.5-inch rear drive module.

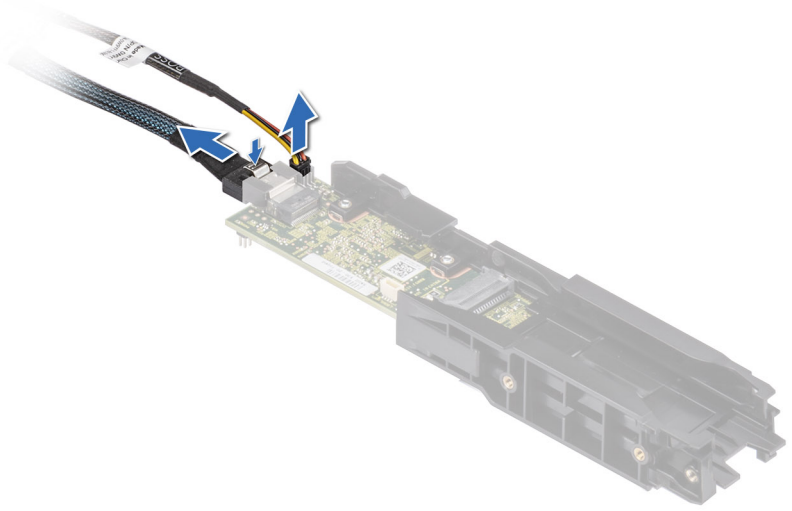

Figure 73. Removing the BOSS-N1 module

6. Disconnect the cables from the rear drive module.

NOTE: Refer Cable Routing topic for more information.

Steps

1. Using a Phillips #2 screwdriver, loosen the captive screws that secure the rear drive module to the system.
2. Lift the rear drive module from the system.

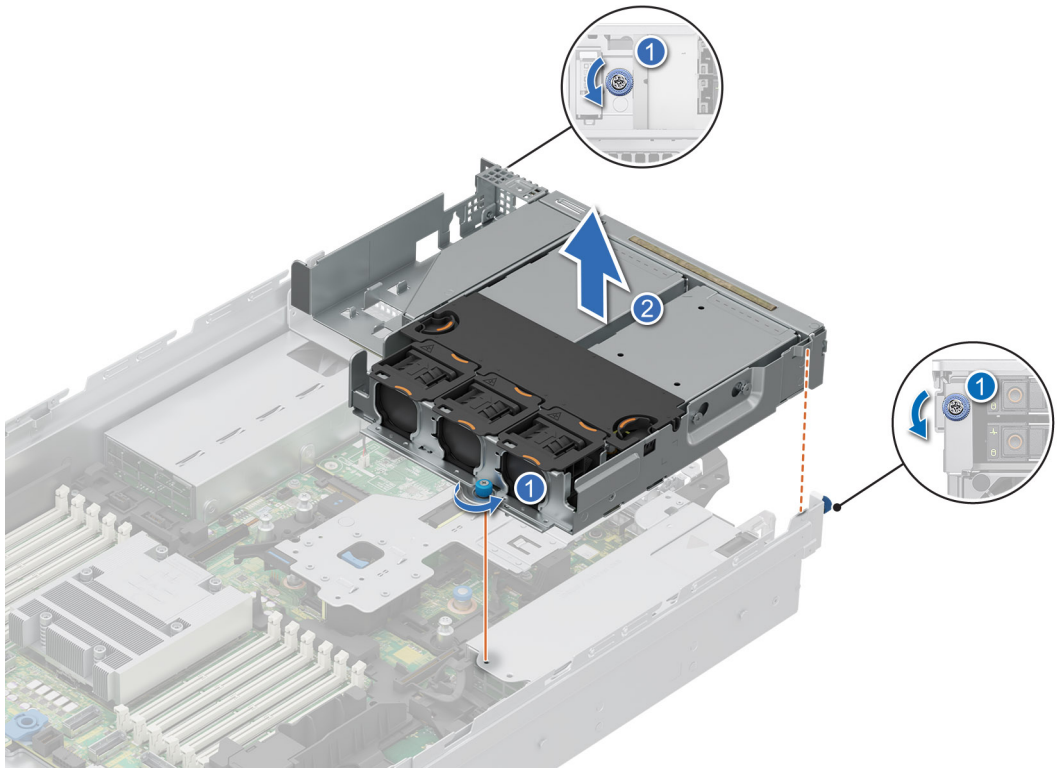

Figure 74. Removing the 4 x 2.5-inch rear drive module

Next steps

1. Replace the 4 x 2.5-inch rear drive module.

Installing the 4 x 2.5-inch rear drive module

Prerequisites

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.
4. Remove the drives.
5. If installed, remove the BOSS-N1 module.
6. Disconnect the cables from the rear drive module.

NOTE: Refer Cable Routing topic for more information.

Steps

1. Align and lower the rear drive module with the guide on the system.
2. Using a Phillips #2 screwdriver, tighten the captive screws that secure the rear drive module into the system.

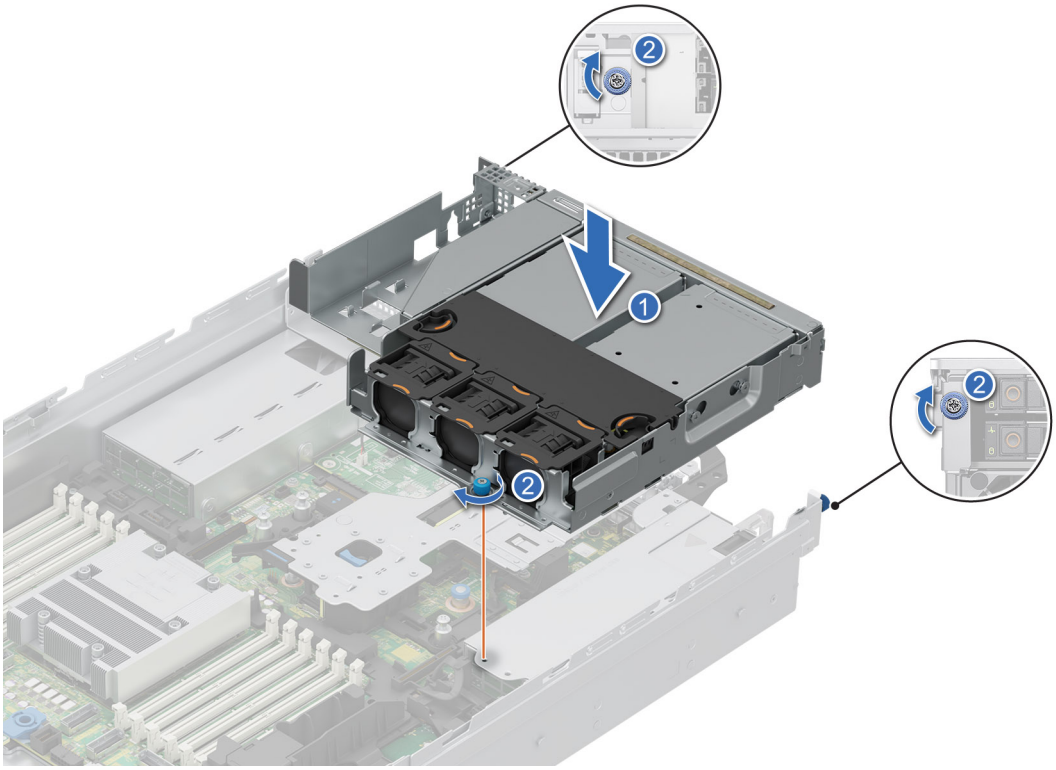

Figure 75. Installing the 4 x 2.5-inch rear drive module

Next steps

1. Connect and route all the cables to the rear drive module.
2. Install the drives.
3. If removed, install the BOSS-N1 module.
4. If removed, install the air shroud.
5. Follow the procedure listed in After working inside your system.

Removing the 4 x EDSFF E3.S rear drive module

Prerequisites

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 rear EDSFF E3.S air shroud.
4. Remove the EDSFF E3.S rear drives.
5. Remove the rear EDSFF E3.S module cooling fan.
6. Disconnect the cables from the rear drive module.

NOTE: Refer Cable routing topic for more information.

Steps

1. Using a Phillips #2 screwdriver, loosen the captive screws that secure the rear drive module to the system.
2. Holding the edges, lift the rear drive module away from the system.

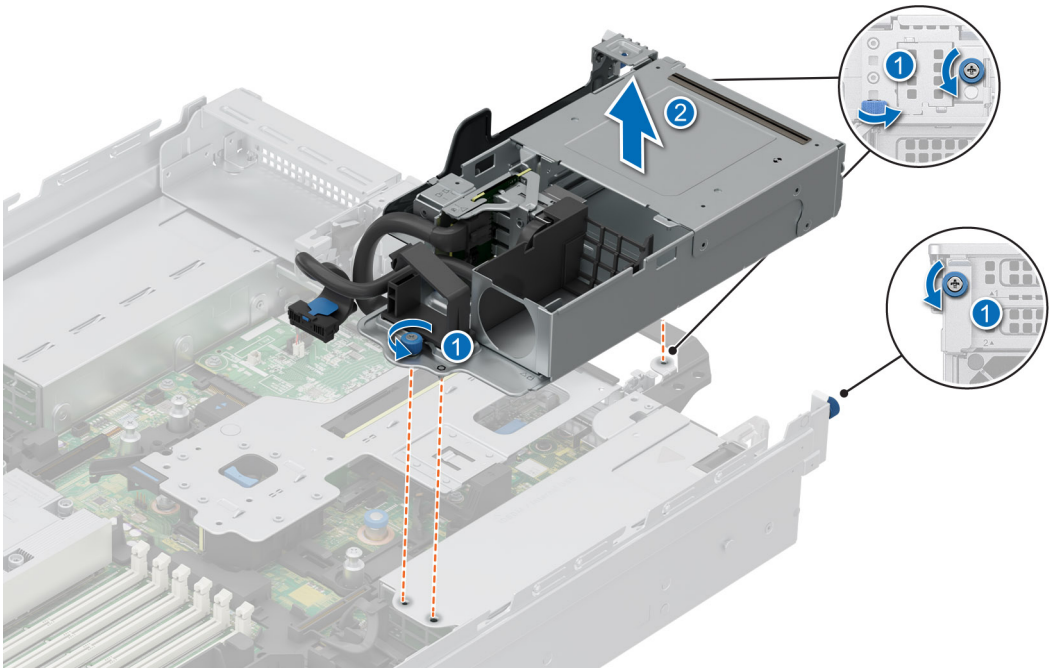

Figure 76. Removing the 4 x EDSFF E3.S rear drive module

Next steps

1. Replace the EDSFF E3.S rear drive module.

Installing the 4 x EDSFF E3.S rear drive module

Prerequisites

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 rear EDSFF E3.S air shroud.
4. Remove the EDSFF E3.S drives.
5. Remove the rear EDSFF E3.S module cooling fan.
6. Disconnect the cables from the rear drive module.

NOTE: Refer Cable routing topic for more information.

Steps

1. Align the slot on the rear drive module with the guide on the system.
2. Lower and press the rear drive module on top of the riser until firmly seated.
3. Using a Phillips #2 screwdriver, tighten the captive screws that secure the rear drive module into the system.

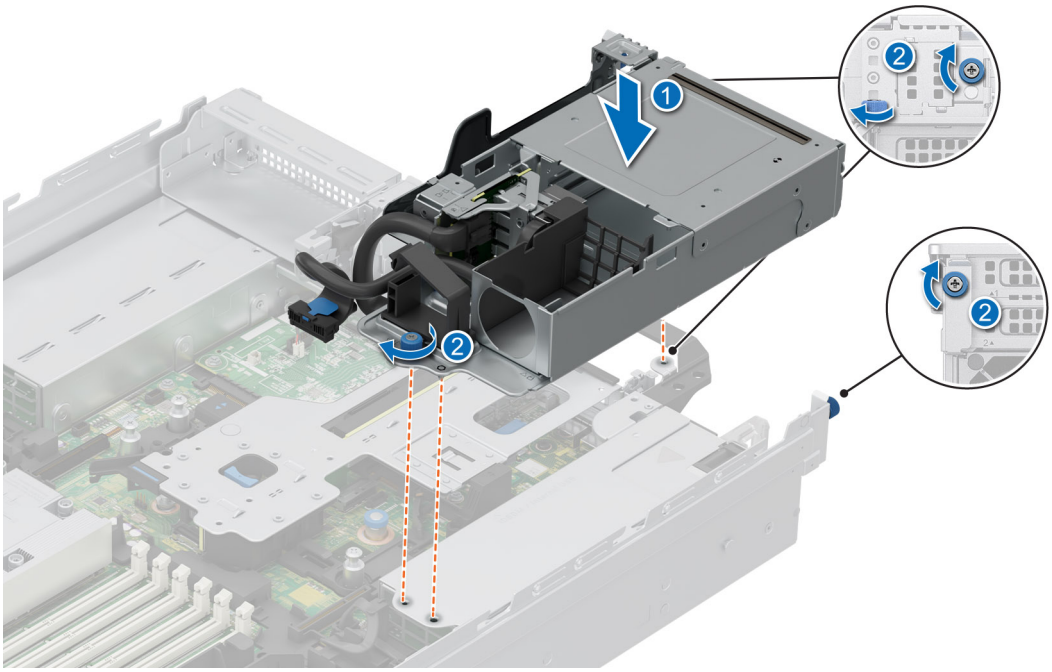

Figure 77. Installing the 4 x EDSFF E3.S rear drive module

Next steps

1. Connect and route all the cables to the rear drive module.
2. Install the rear EDSFF E3.S module cooling fan.
3. Install the rear EDSFF E3.S drives.
4. If removed, install the rear EDSFF E3.S air shroud.
5. Follow the procedure listed in After working inside your system.

Drive backplane

Drive backplane

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

Table 74. Supported backplane options

System	Supported hard drives options
PowerEdge R7615	2.5-inch (x 8) NVMe backplane
	2.5-inch (x 8) SAS, or SATA backplane
	3.5-inch (x 12) SAS or SATA backplane
	2.5-inch (x 24) SAS, SATA, or NVMe backplane

Table 74. Supported backplane options (continued)

System	Supported hard drives options
	E3.S (x32) NVMe Gen5 backplane
	E3.S (x16) NVMe Gen5 backplane
	E3.S (x8) NVMe Gen5 backplane

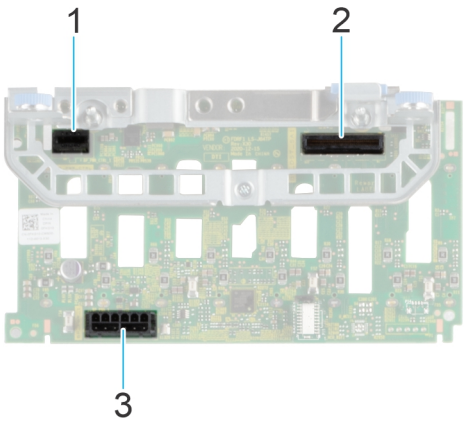

Figure 78. 8 x 2.5-inch NVMe drive backplane

1. BP_PWR_CTRL
2. BP_DST_SA1 (PERC to backplane)
3. BP_PWR_1 (backplane power and signal cable to system board)

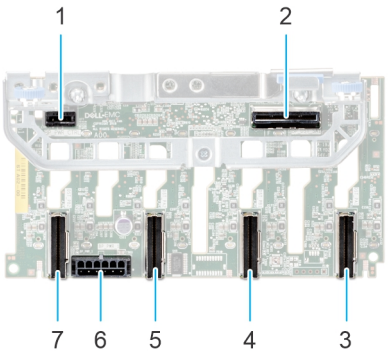

Figure 79. 8 x 2.5-inch drive backplane

1. BP_PWR_CTRL
2. BP_DST_SA1 (PERC to backplane)
3. BP_DST_PA1 (PCIe/NVMe connector)
4. BP_ DST_PB1 (PCIe/NVMe connector)
5. BP_ DST_PA2 (PCIe/NVMe connector)
6. BP_PWR_1 (backplane power and signal cable to system board)
7. BP_DST_PB2 (PCIe/NVMe connector)

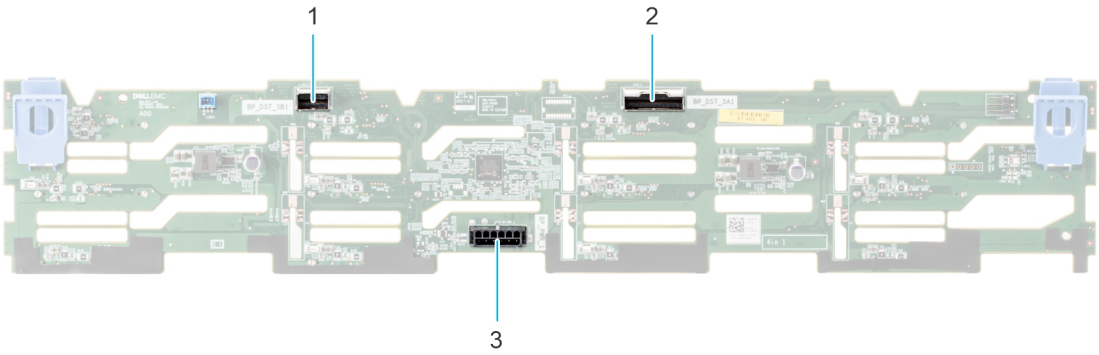

Figure 80. 12 x 3.5-inch drive backplane

1. BP_DST_SB1
2. BP_DST_SA1
3. BP_PWR_1 (backplane power and signal cable to system board)

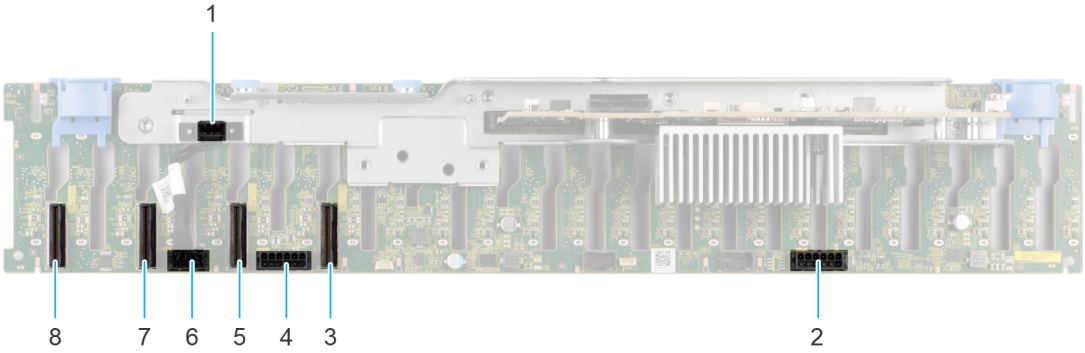

Figure 81. 24 x 2.5-inch drive backplane (front view)

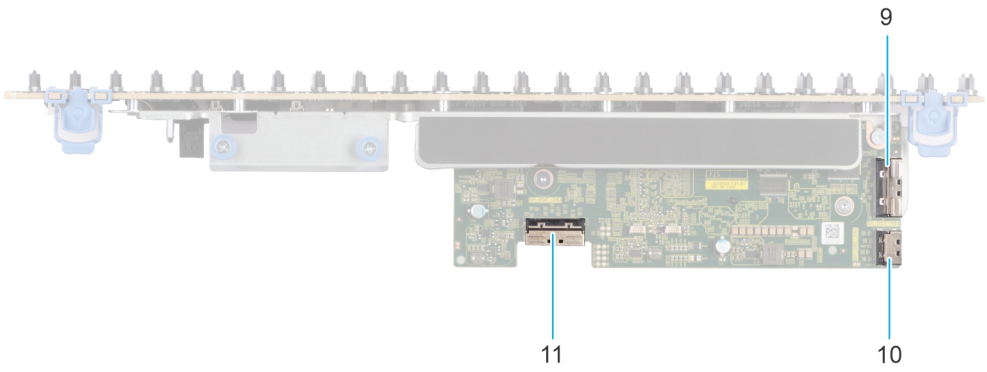

Figure 82. 24 x 2.5-inch drive backplane (top view)

1. BP_CTRL
2. BP_PWR_1 (backplane power and signal cable to system board)
3. BP_DST_PA1 (PCIe/NVMe connector)
4. BP_PWR_2 (backplane power and signal cable to system board)
5. BP_ DST_PB1 (PCIe/NVMe connector)
6. BP_PWR_CTRL
7. BP_ DST_PA2 (PCIe/NVMe connector)
8. BP_ DST_PB2 (PCIe/NVMe connector)
9. BP_DST_SB1
10. BP_SRC_SA2
11. BP_DST_SA1

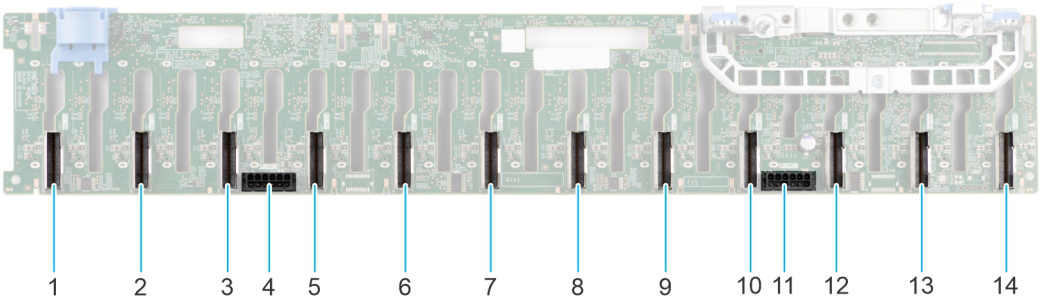

Figure 83. 24 x 2.5-inch NVMe passive backplane

1. BP_DST_PB6 (PCIe/NVMe connector)
2. BP_DST_PA6 (PCIe/NVMe connector)
3. BP_DST_PB5 (PCIe/NVMe connector)
4. BP_PWR_2
5. BP_DST_PA5 (PCIe/NVMe connector)
6. BP_DST_PB4 (PCIe/NVMe connector)
7. BP_DST_PA4 (PCIe/NVMe connector)
8. BP_DST_PB3 (PCIe/NVMe connector)
9. BP_DST_PA3 (PCIe/NVMe connector)
10. BP_DST_PB2 (PCIe/NVMe connector)
11. BP_PWR_1
12. BP_DST_PA2 (PCIe/NVMe connector)
13. BP_DST_PB1 (PCIe/NVMe connector)
14. BP_DST_PA1 (PCIe/NVMe connector)

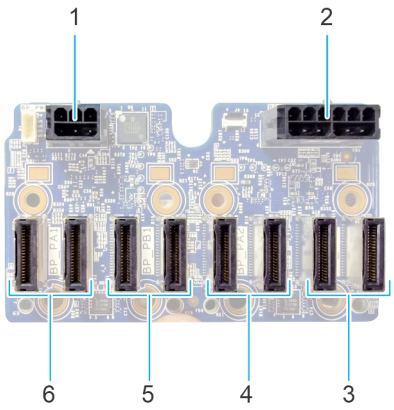

Figure 84. EDSFF E3.S NVMe drive backplane

1. BP_PWR_CTRL
2. BP_PWR_1 (backplane power cable to system board)
3. BP_PB2 (PCIe/NVMe connector)
4. BP_ PA2 (PCIe/NVMe connector)
5. BP_ PB1 (PCIe/NVMe connector)
6. BP_PA1 (PCIe/NVMe connector)

Removing the drive backplane

Prerequisites

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

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

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the 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 drives.
7. Observe and disconnect the drive backplane cables from the connector on the system board and backplane.

NOTE: Refer Cable routing topic for more information.

Steps

1. Press the release tab to disengage the drive backplane from the hooks on the system.
2. Lift and pull the drive backplane out of the system.

NOTE: To avoid damaging the backplane, ensure that you move the control panel cables from the cable routing clips before removing the backplane.

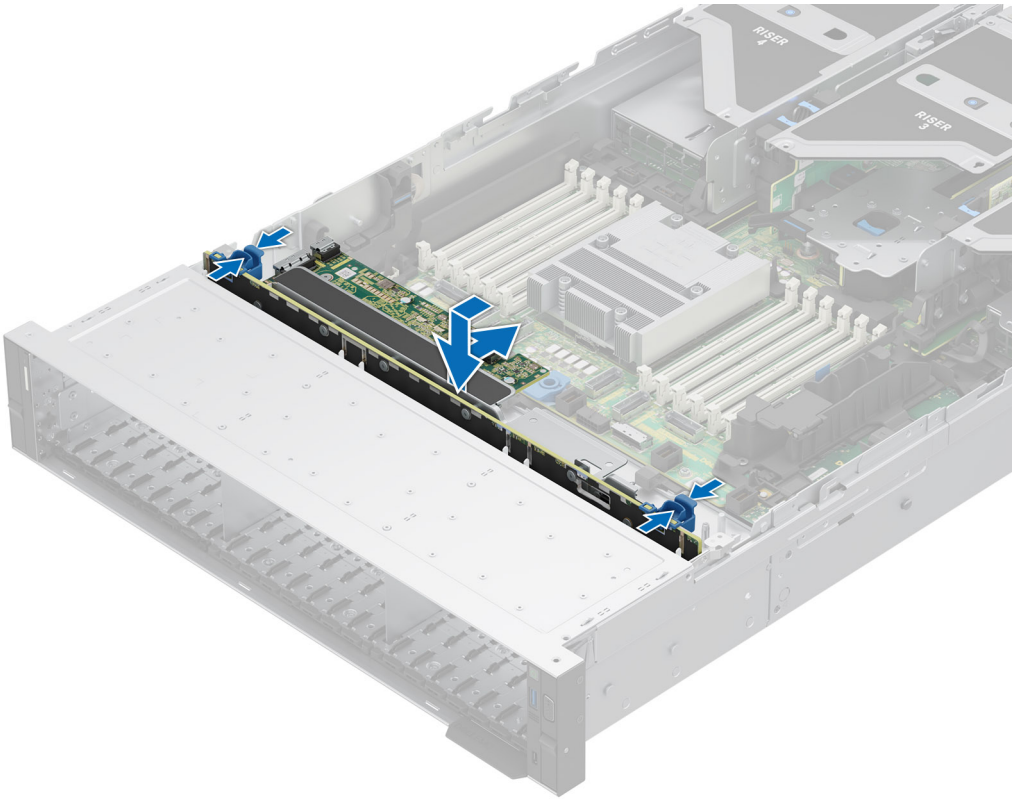

Figure 85. Removing the drive backplane

Next steps

1. Replace the drive backplane.

Installing the drive backplane

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 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 drives.

7. Observe and disconnect the drive backplane cables from the connector on the system board and backplane.

NOTE: Refer Cable routing topic for more information.

NOTE: To avoid damaging the backplane, ensure to move the control panel cables from the cable routing clips before removing the backplane.

NOTE: Route the cable properly when you replace it to prevent the cable from being pinched or crimped.

Steps

1. Align the slots on the drive backplane with the guides on the system.
2. Slide the drive backplane into the guides and lower the backplane until the blue release tab clicks into place.

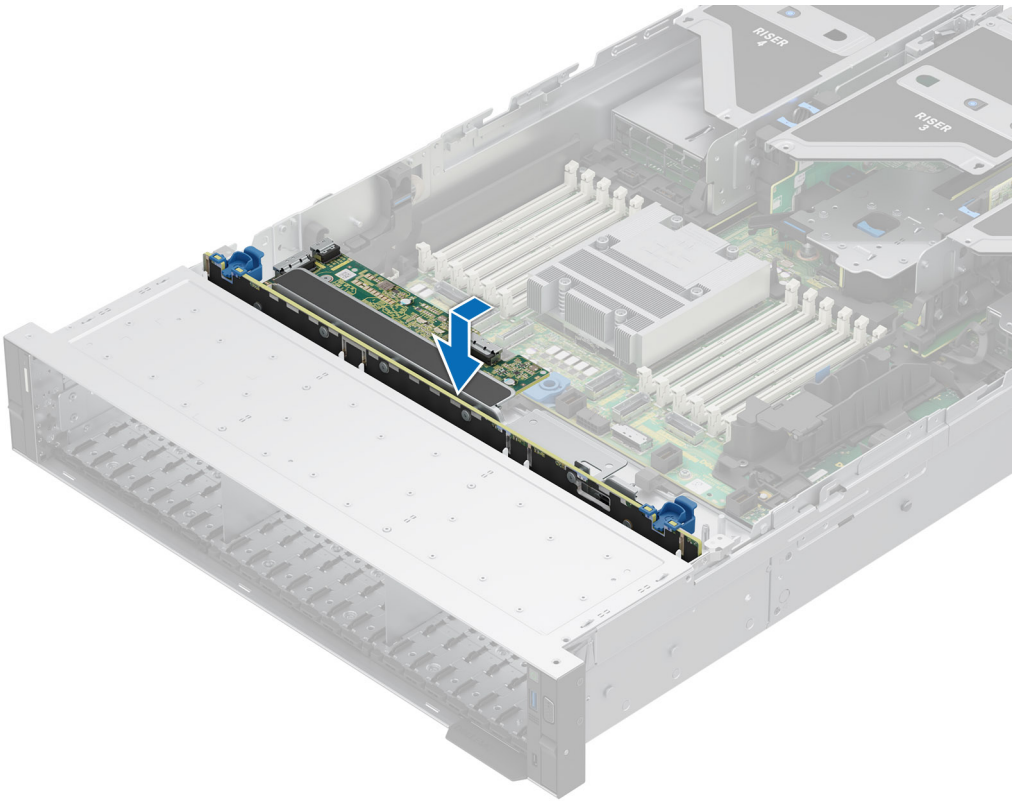

Figure 86. Installing the drive backplane

Next steps

1. Connect the drive backplane cables to the connectors on the system board and backplane.
2. Install the drives.
3. Install the cooling fan cage assembly.
4. If removed, install the air shroud or remove the GPU air shroud
5. Install the drive backplane cover.
6. Follow the procedure listed in After working inside your system.

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 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 EDSFF E3.S PERC module.
7. Remove the EDSFF E3.S drives.
8. Disconnect the cables, observe the cable routing.

NOTE: See the Cable routing topic for more information.

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.

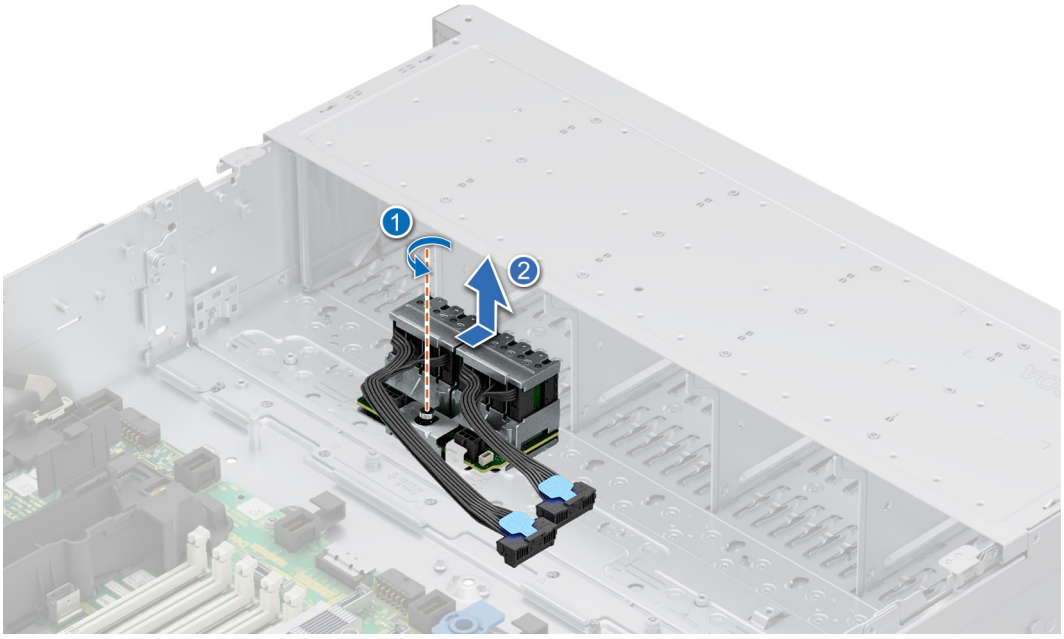

Figure 87. Removing the EDSFF E3.S backplane module

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 backplane cover.
4. remove the air shroud or remove the GPU air shroud.
5. Remove the cooling fan cage assembly.
6. Remove the EDSFF E3.S PERC module.
7. Remove the EDSFF E3.S drives.
8. Disconnect the cables, observe the cable routing.

NOTE: See the Cable routing topic for more information.

Steps

1. Align the guides on the EDSFF E3.S backplane module with the slots on the system.
2. Slide the EDSFF E3.S backplane module towards the rear of the system, until it is firmly secured.
3. Using a Phillips #2 screwdriver, tighten the captive screw on the EDSFF E3.S backplane module.

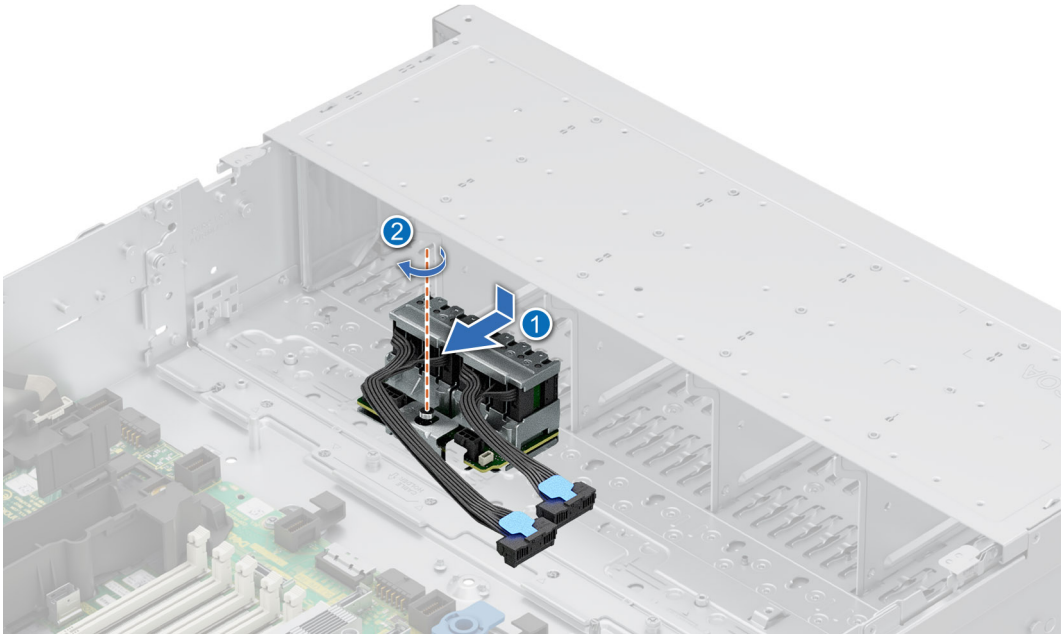

Figure 88. Installing the EDSFF E3.S backplane module

Next steps

1. Connect all the cables, observe the cable routing.

   NOTE: See the Cable routing topic for more information.

2. Install the EDSFF E3.S PERC module.
3. Install the cooling fan cage assembly.
4. If removed, install the air shroud or remove the GPU air shroud
5. Install the drive backplane cover.
6. Install the EDSFF E3.S drives.
7. Follow the procedure listed in After working inside your system.

Side wall brackets

Removing the side wall bracket

There are two side wall brackets 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 installed, remove the air shroud.
4. 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 blue 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.

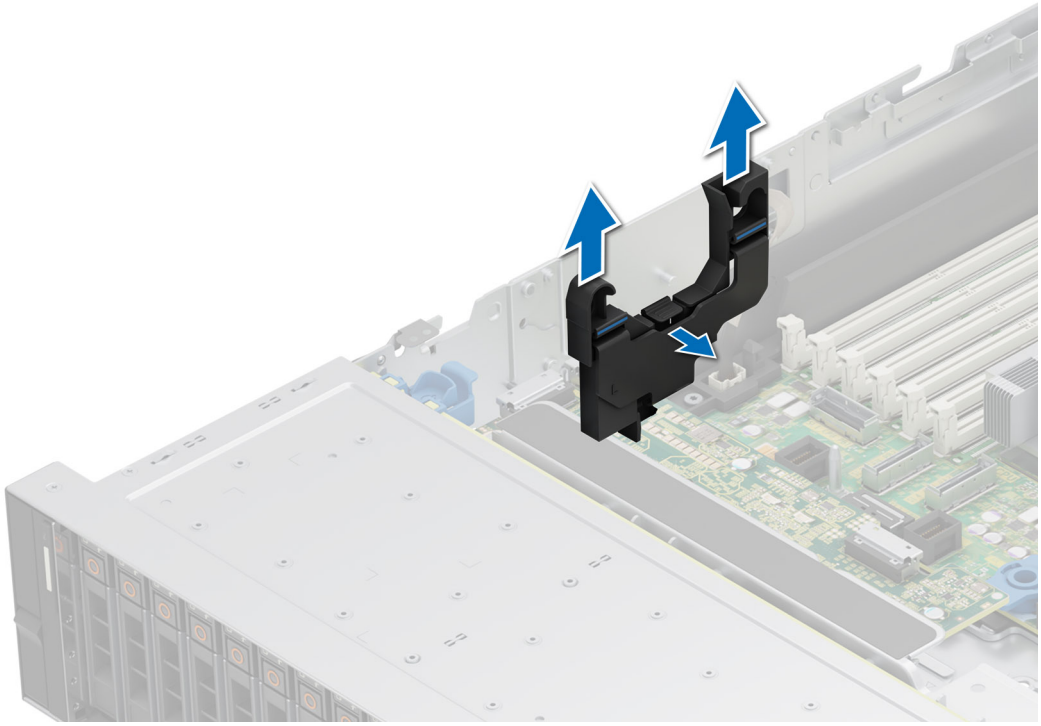

Figure 89. Removing the side wall bracket

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 installed, remove the air shroud.
4. 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.

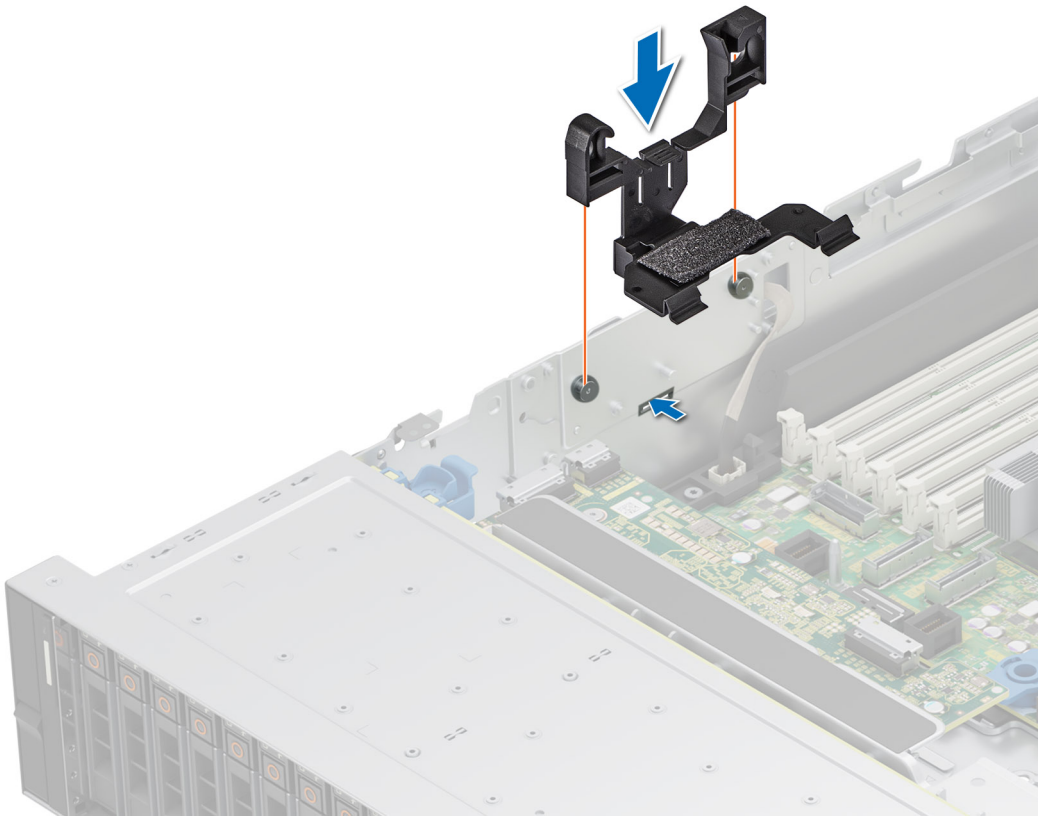

Figure 90. Installing the side wall bracket

Next steps

1. Replace the cooling fan cage assembly.
2. If removed, install the air shroud.
3. Follow the procedure listed in the After working inside your system.

Cable routing

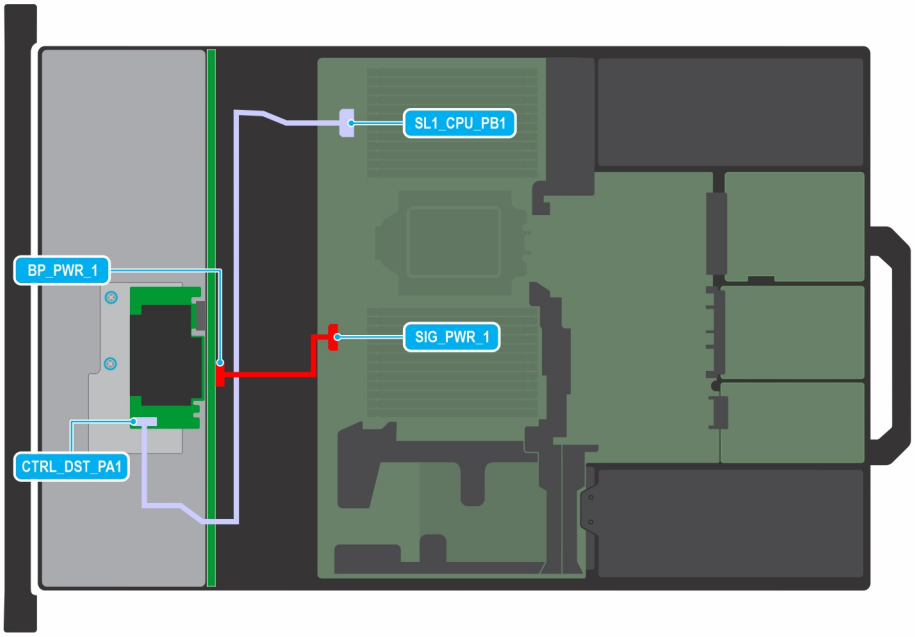

Figure 91. 8 x 3.5 inch SAS/SATA fPERC10.15

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. 8 x 3.5 inch SAS/SATA fPERC

Order	From	To
1	SL1_CPU1_PA1 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
2	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

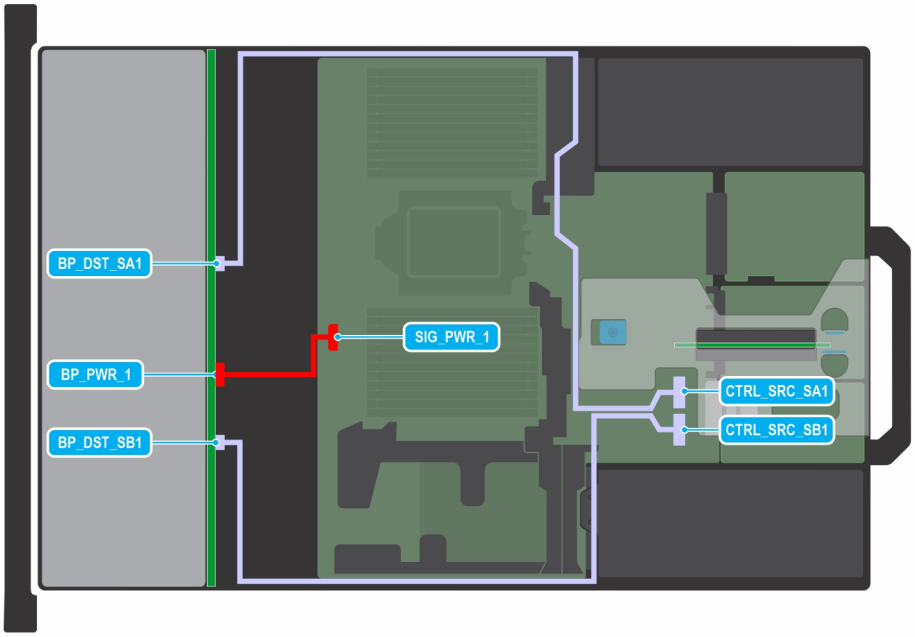

Figure 92. 12 x 3.5 SAS/SATA with APERC 11 in Riser 2

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. 12 x 3.5 SAS/SATA with APERC 11 in Riser 2

Order	From	To
1	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
2	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)

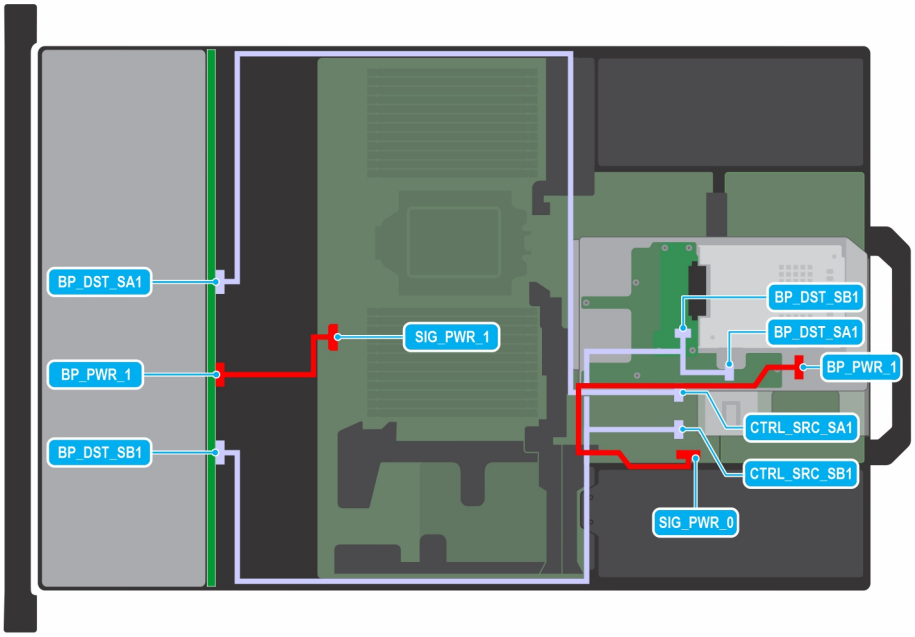

Figure 93. 12 x 3.5 inch SAS/SATA with APERC11 in Riser 2 and Rear 2 x 2.5 inch SAS/SATA

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

Table 77. 12 x 3.5 inch SAS/SATA with APERC11 in Riser 2 and Rear 2 x 2.5 inch SAS/SATA

Order	From	To
1	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane expander signal connector)
2	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SA1 and BP_DST_SB1 (backplane expander signal connector)
4	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

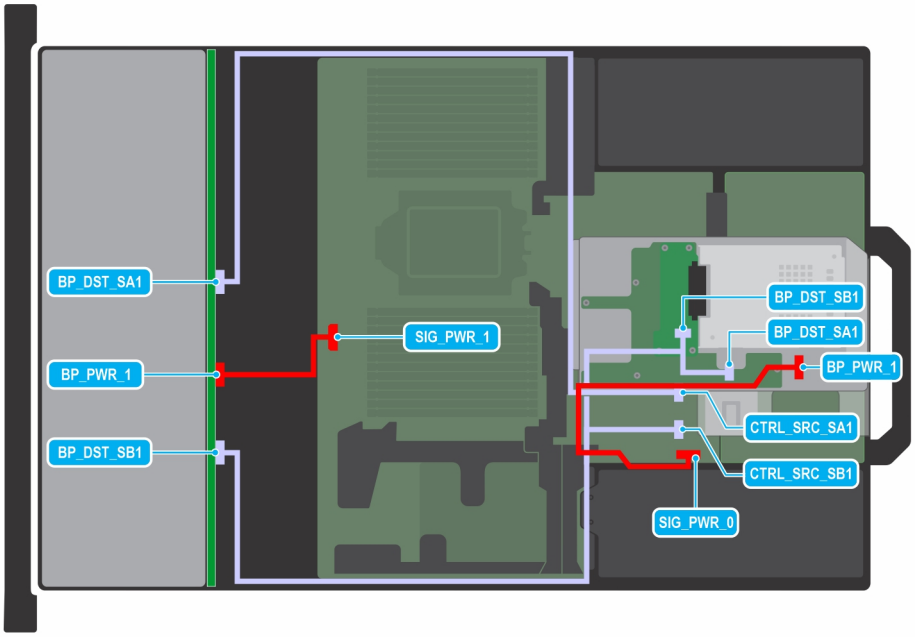

Figure 94. 12 x 3.5 inch SAS/SATA with APERC12 in Riser 2 and Rear 2 x 2.5 inch SAS/SATA

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

Table 78. 12 x 3.5 inch SAS/SATA with APERC12 in Riser 2 and Rear 2 x 2.5 inch SAS/SATA

Order	From	To
1	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane expander signal connector)
2	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SA1 and BP_DST_SB1 (backplane expander signal connector)
4	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

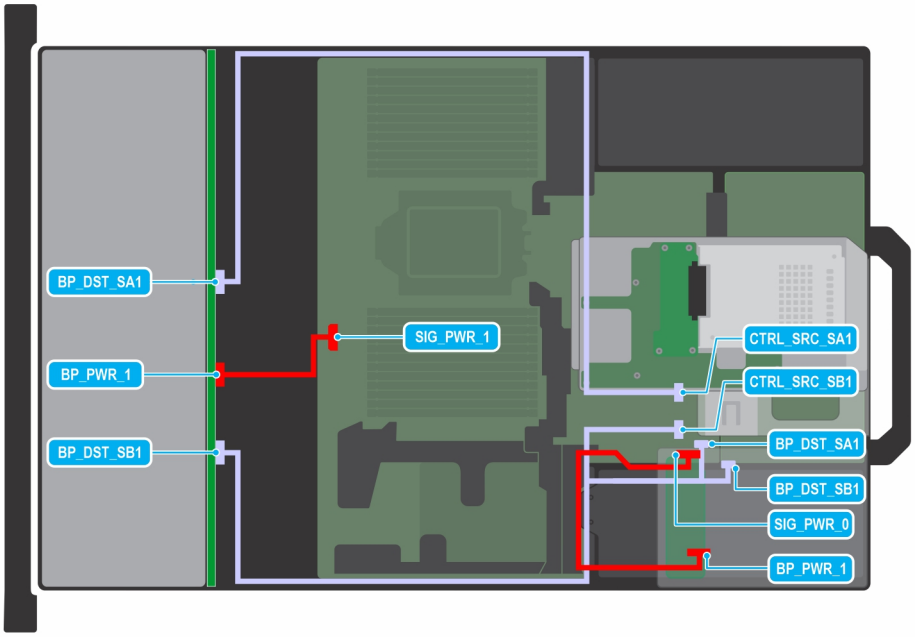

Figure 95. 12 x 3.5 inch SAS/SATA with APERC11 in Riser 2 and Rear 4 x 2.5 inch SAS/SATA

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. 12 x 3.5 inch SAS/SATA with APERC11 in Riser 2 and Rear 4 x 2.5 inch SAS/SATA

Order	From	To
1	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
2	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane expander signal connector)
3	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SA1 and BP_DST_SB1 (backplane expander signal connector)
4	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

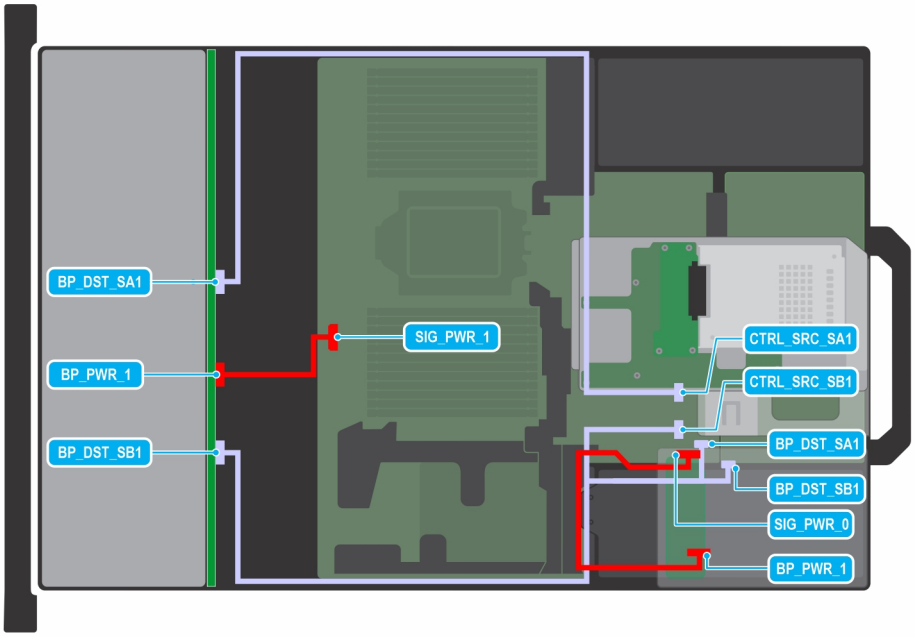

Figure 96. 12 x 3.5 inch SAS/SATA with APERC12 in Riser 2 and Rear 4 x 2.5 inch SAS/SATA

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. 12 x 3.5 inch SAS/SATA with APERC12 in Riser 2 and Rear 4 x 2.5 inch SAS/SATA

Order	From	To
1	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
2	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane expander signal connector)
3	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SA1 and BP_DST_SB1 (backplane expander signal connector)
4	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

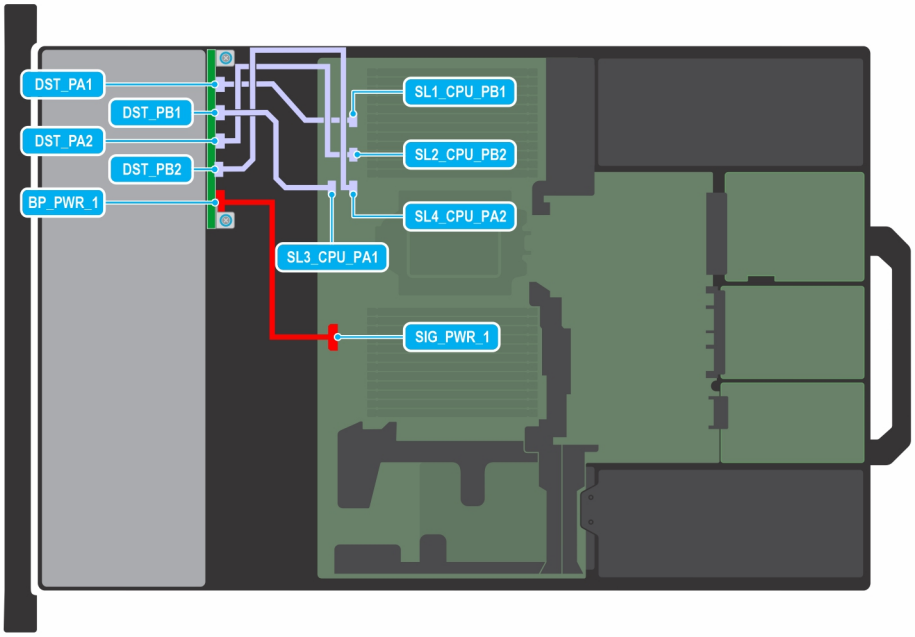

Figure 97. 8 x 2.5 inch x4 PCIe U.2 NVMe SSD

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. 8 x 2.5 inch x4 PCIe U.2 NVMe SSD

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SL4_CPU1_PB1 (signal connector on system board)	DST_PB2 (backplane signal connector)
3	SL2_CPU1_PB4 (signal connector on system board)	DST_PA2 (backplane signal connector)
4	SL1_CPU1_PA4 (signal connector on system board)	DST_PA1 (backplane signal connector)
5	SL3_CPU1_PA1 (signal connector on system board)	DST_PB1 (backplane signal connector)

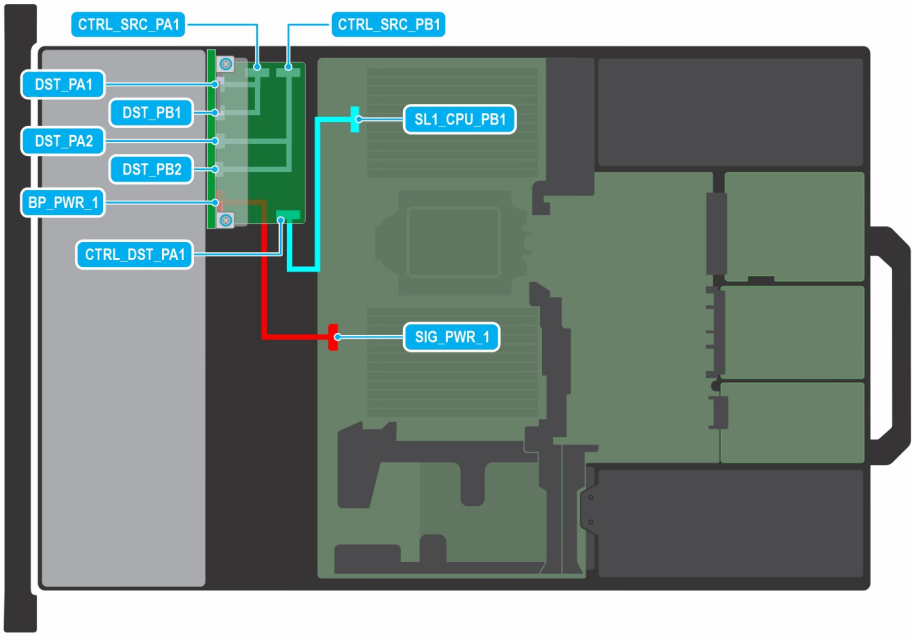

Figure 98. 8 x 2.5 inch x4 PCIe U.2 NVMe SSD with FPERC11

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. 8 x 2.5 inch x4 PCIe U.2 NVMe SSD with FPERC11

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
3	CTRL_SRC_PB1 (fPERC controller connector)	DST_PA2 and DST_PB2 (backplane signal connector)
4	CTRL_SRC_PA1 (fPERC controller connector)	DST_PA1 and DST_PB1 (backplane signal connector)

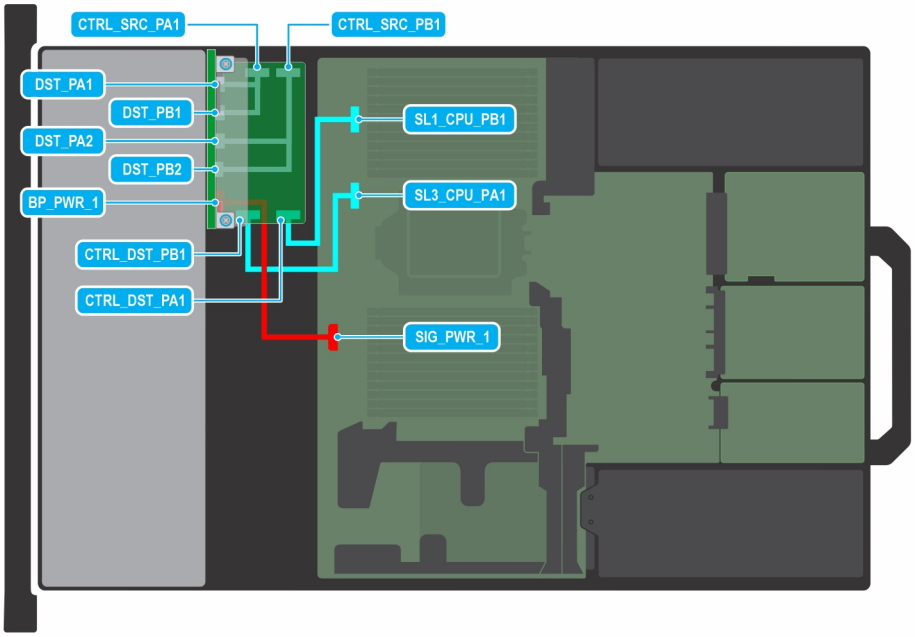

Figure 99. 8 x 2.5 inch x4 PCIe U.2 NVMe SSD with FPERC12

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. 8 x 2.5 inch x4 PCIe U.2 NVMe SSD with FPERC12

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
3	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB1 (fPERC input connector)
4	CTRL_SRC_PB1 (fPERC controller connector)	DST_PA2 and DST_PB2 (backplane signal connector)
5	CTRL_SRC_PA1 (fPERC controller connector)	DST_PA1 and DST_PB1 (backplane signal connector)

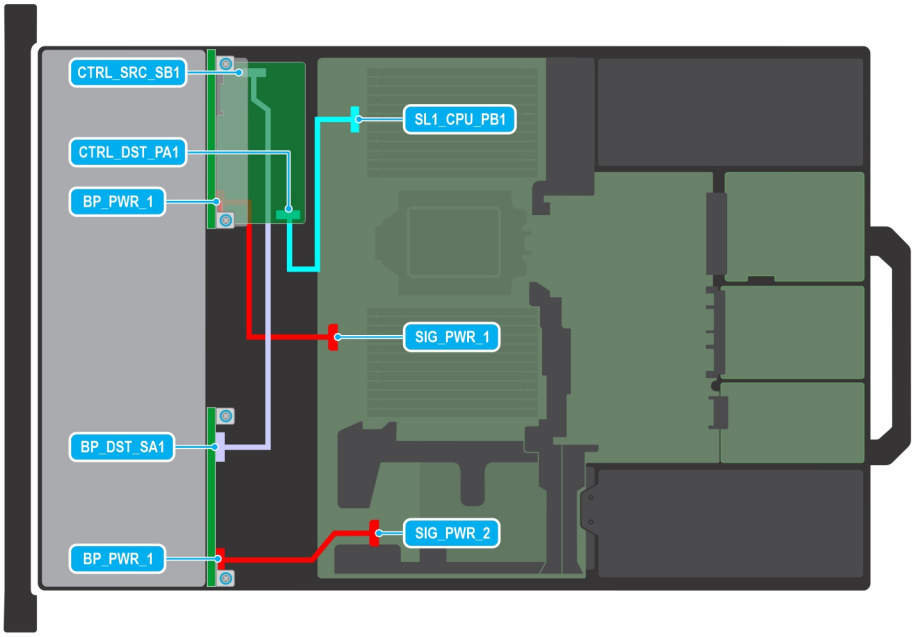

Figure 100. 8 x 2.5 inch Universal SAS3 Low Profile with FPERC11

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. 8 x 2.5 inch Universal SAS3 Low Profile with FPERC11

Order	From	To
1	SIG_PWR_2 (system board power connector)	BP_PWR_1(backplane power connector)
2	SIG_PWR_1(system board power connector)	BP_PWR_1(backplane power connector)
3	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
4	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)

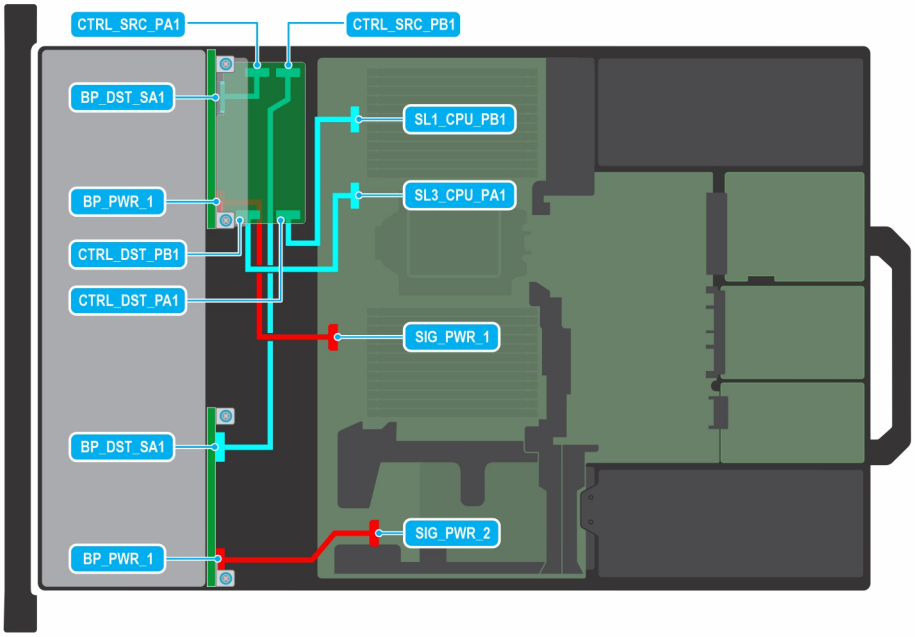

Figure 101. 16 x 2.5 inch SAS/SATA Low Profile with FPERC11

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. 16 x 2.5 inch SAS/SATA Low Profile with FPERC11

Order	From	To
1	SIG_PWR_2 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_SRC_PB1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
4	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB1 (fPERC input connector)
5	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
6	CTRL_SRC_PA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)

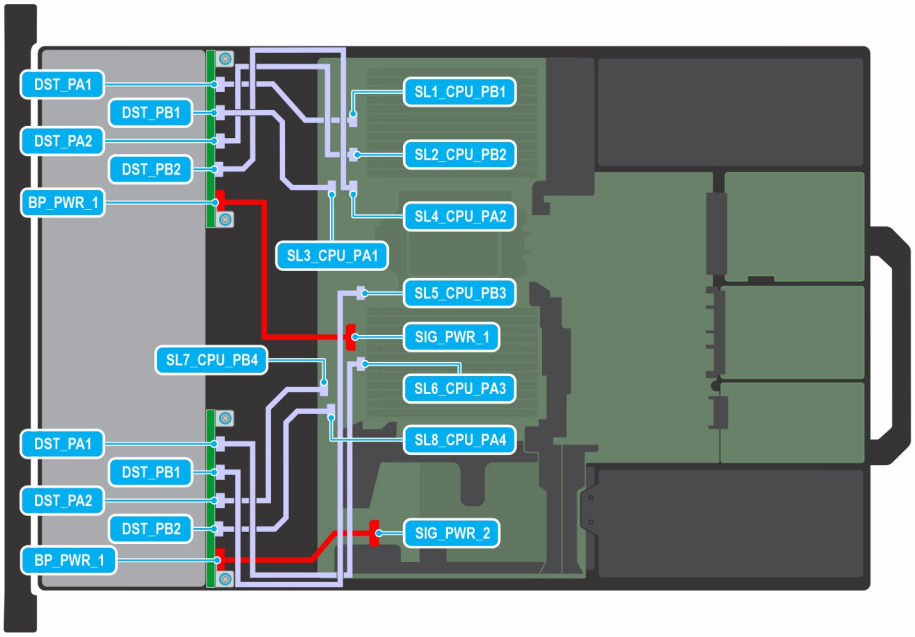

Figure 102. 16 x 2.5 inch SAS/SATA Low Profile with FPERC12

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. 16 x 2.5 inch SAS/SATA Low Profile with FPERC12

Order	From	To
1	SIG_PWR_2 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
3	SL5_CPU1_PB2 (signal connector on system board)	DST_PB1 (backplane signal connector)
4	SL6_CPU1_PA4 (signal connector on system board)	DST_PA1 (backplane signal connector)
5	SL8_CPU1_PA4 (signal connector on system board)	DST_PB2 (backplane signal connector)
6	SL7_CPU1_PA4 (signal connector on system board)	DST_PA2 (backplane signal connector)
7	SL4_CPU_1_PB1 (signal connector on system board)	DST_PB2 (backplane signal connector)
8	SL2_CPU1_PB4 (signal connector on system board)	DST_PA2 (backplane signal connector)
9	SL1_CPU1_PA4 (signal connector on system board)	DST_PA1 (backplane signal connector)
10	SL3_CPU1_PA1 (signal connector on system board)	DST_PB1 (backplane signal connector)

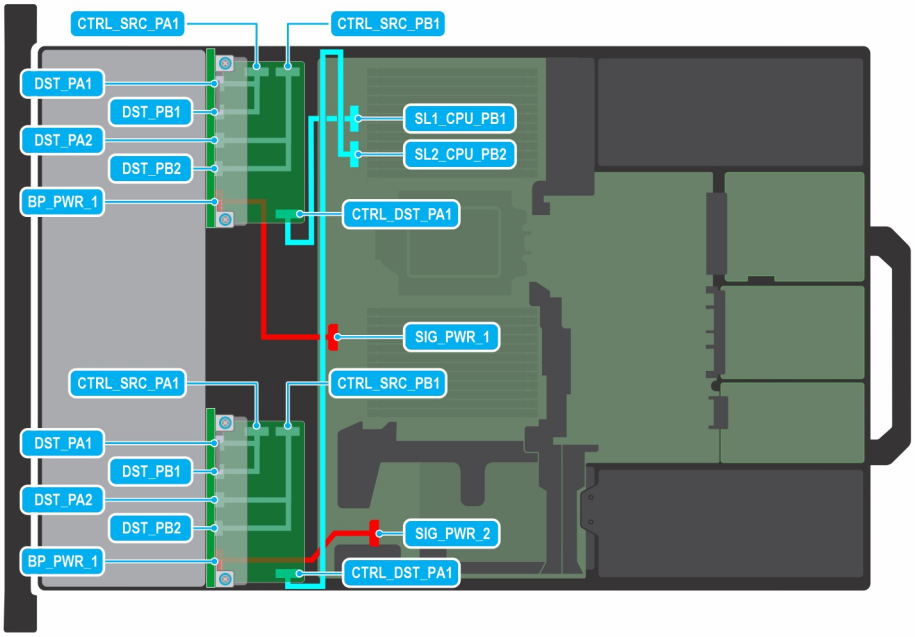

Figure 103. 16 x U.2 Gen4 Low Profile

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. 16 x U.2 Gen4 Low Profile

Order	From	To
1	SIG_PWR_2 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_1(system board power connector)	BP_PWR_1 (backplane power connector)
3	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
4	SL2_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
5	CTRL_SRC_PB1 (fPERC controller connector)	DST_PA2 and DST_PB2 (backplane signal connector)
6	CTRL_SRC_PB1 (fPERC controller connector)	DST_PA2 and DST_PB2 (backplane signal connector)
7	CTRL_SRC_PA1 (fPERC controller connector)	DST_PA1 and DST_PB1 (backplane signal connector)
8	CTRL_SRC_PA1 (fPERC controller connector)	DST_PA1 and DST_PB1 (backplane signal connector)

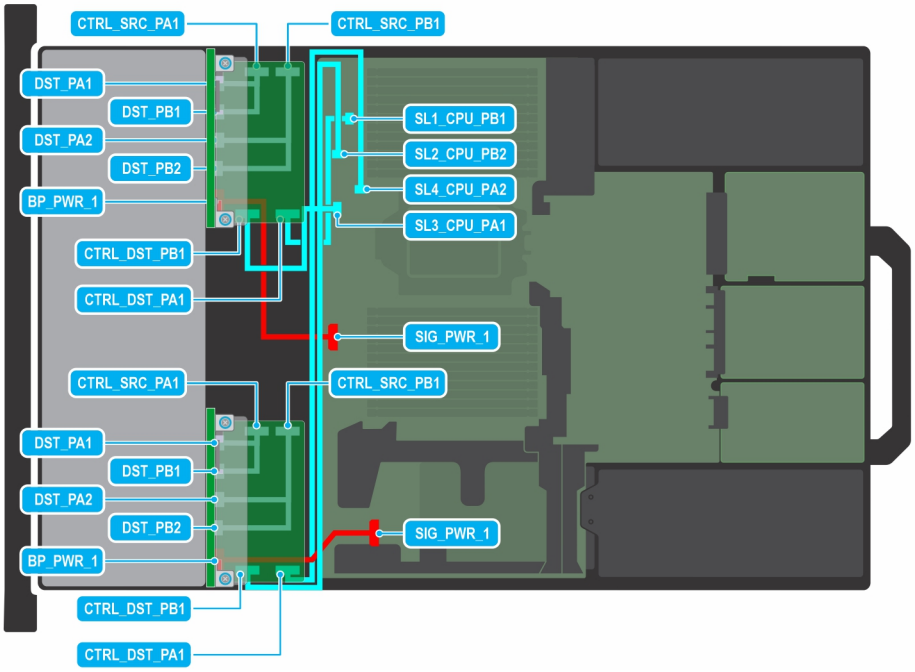

Figure 104. 16 x 2.5 inch U.2 Gen4 Low Profile with 2 x FPERC11

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

Table 88. 16 x 2.5 inch U.2 Gen4 Low Profile with 2 x FPERC11

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
3	CTRL_DST_PA1 (fPERC input connector)	SL4_CPU1_PB2 (signal connector on system board)
4	CTRL_DST_PB1 (fPERC input connector)	SL2_CPU1_PB2 (signal connector on system board)
5	CTRL_SRC_PB1 (fPERC controller connector)	DST_PA2 and DST_PB2 (backplane signal connector)
6	CTRL_SRC_PA1 (fPERC controller connector)	DST_PA1 and DST_PB1 (backplane signal connector)
7	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
8	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB1 (fPERC input connector)
9	CTRL_SRC_PB1 (fPERC controller connector)	DST_PA2 and DST_PB2 (backplane signal connector)
10	CTRL_SRC_PA1 (fPERC controller connector)	DST_PA1 and DST_PB1 (backplane signal connector)

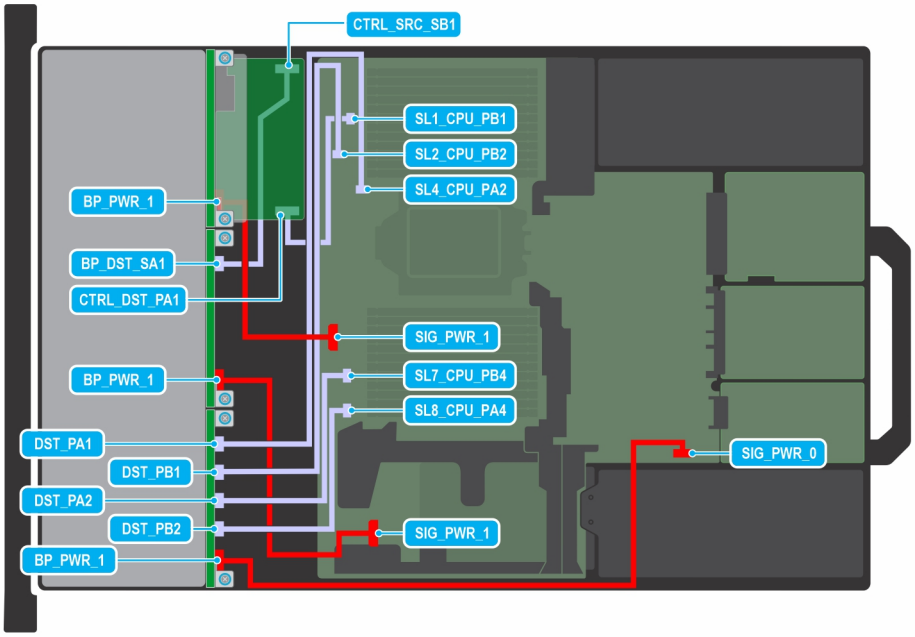

Figure 105. 16 x 2.5 inch SAS/SATA with FPERC11 + 8 x U.2 Gen4

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

Table 89. 16 x 2.5 inch SAS/SATA with FPERC11 + 8 x U.2 Gen4

Order	From	To
1	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
3	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
4	SL8_CPU1_PA4 (signal connector on system board)	DST_PB2 (backplane signal connector)
5	SL7_CPU1_PB4 (signal connector on system board)	DST_PA2 (backplane signal connector)
6	SL2_CPU1_PB2 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	SL4_CPU1_PB2 (signal connector on system board)	DST_PA1 (backplane signal connector)
8	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
9	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_PA1 (backplane signal connector)

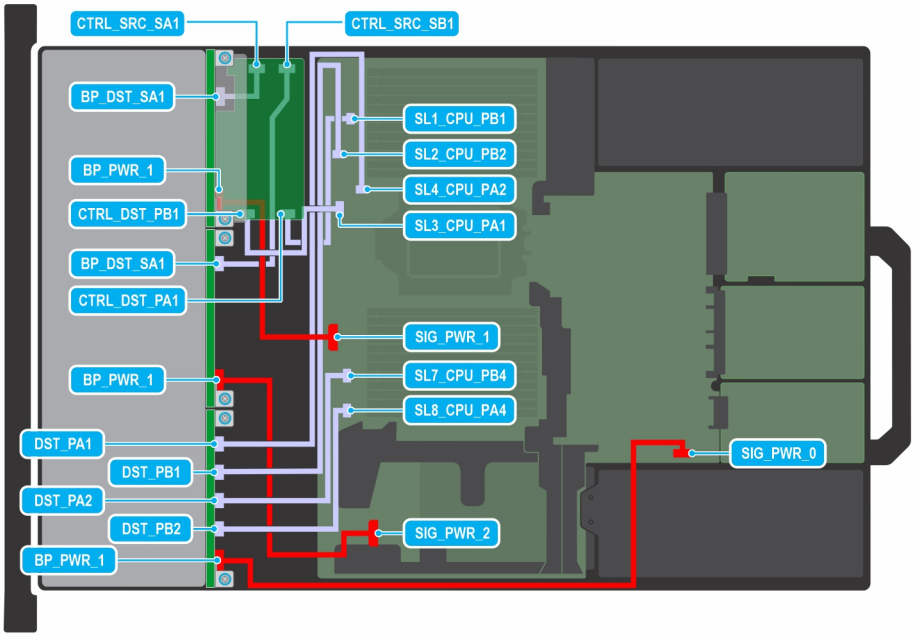

Figure 106. 16 x 2.5 inch SAS/SATA with FPERC12 + 8 x U.2 Gen4

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

Table 90. 16 x 2.5 inch SAS/SATA with FPERC12 + 8 x U.2 Gen4

Order	From	To
1	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_2 (system board power connector)	BP_PWR_1 (backplane power connector)
3	SL8_CPU1_PA4 (signal connector on system board)	DST_PB2 (backplane signal connector)
4	SL7_CPU1_PB4 (signal connector on system board)	DST_PA2 (backplane signal connector)
5	SL4_CPU1_PB2 (signal connector on system board)	DST_PA1 (backplane signal connector)
6	SL2 _CPU1_PB2 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB1 (fPERC input connector)
8	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
9	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
10	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
11	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)

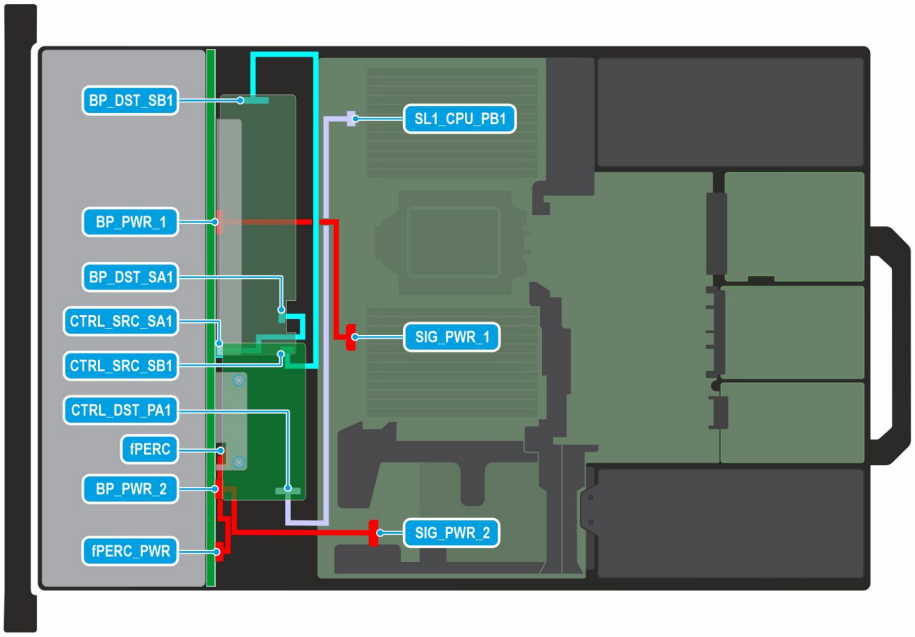

Figure 107. 24 x 2.5 inch SAS/SATA with FPERC11

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

Table 91. 24 x 2.5 inch SAS/SATA with FPERC11

Order	From	To
1	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
2	SL1_CPU1_PA4 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
3	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
4	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
5	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
6	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)

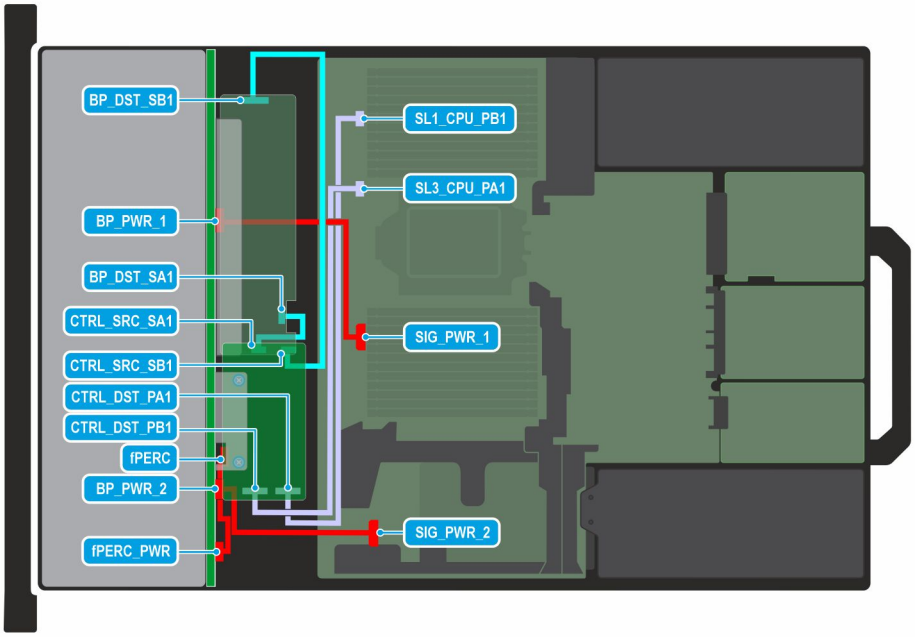

Figure 108. 24 x 2.5 inch SAS/SATA with FPERC12

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

Table 92. 24 x 2.5 inch SAS/SATA with FPERC12

Order	From	To
1	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
2	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
3	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB1 (fPERC input connector)
4	BP_DST_SB1 (backplane signal connector)	CTRL_SRC_SB1 (fPERC controller connector)
5	BP_DST_SA1 (backplane signal connector)	CTRL_SRC_SA1 (fPERC controller connector)
6	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
7	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

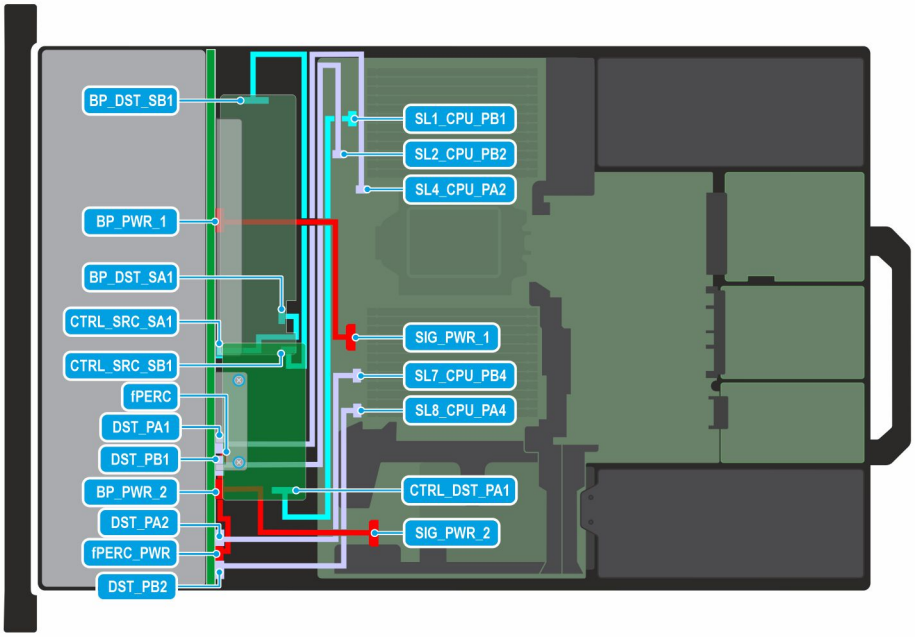

Figure 109. 24 x 2.5 inch SAS/SATA with 8 Universal drives with FPERC11

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

Table 93. 24 x 2.5 inch SAS/SATA with 8 Universal drives with FPERC11

Order	From	To
1	SL7_CPU1_PB4 (signal connector on system board)	DST_PA2 (backplane signal connector)
2	SL8_CPU1_PA4 (signal connector on system board)	DST_PB2 (backplane signal connector)
3	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
4	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
5	SL2_CPU1_PB2 (signal connector on system board)	DST_PA1 (backplane signal connector)
6	SL4_CPU1_PB2 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
8	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
9	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
10	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

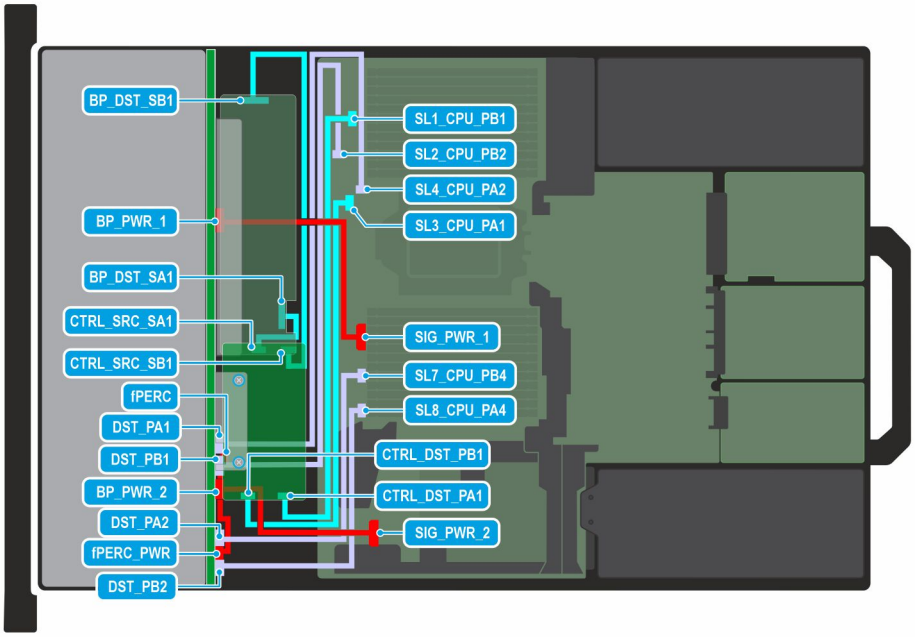

Figure 110. 24 x 2.5 inch SAS/SATA with 8 x Universal drives with FPERC12

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

Table 94. 24 x 2.5 inch SAS/SATA with 8 x Universal drives with FPERC12

Order	From	To
1	SL7_CPU1_PB4 (signal connector on system board)	DST_PA2 (backplane signal connector)
2	SL8_CPU1_PA4 (signal connector on system board)	DST_PB2 (backplane signal connector)
3	CTRL_DST_PB1 (fPERC input connector)	SL3_CPU1_PB2 (signal connector on system board)
4	CTRL_DST_PA1 (fPERC input connector)	SL1_CPU1_PB2 (signal connector on system board)
5	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
6	SL2_CPU1_PB2 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	SL4_CPU1_PB2 (signal connector on system board)	DST_PA1(backplane signal connector)
8	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA2 (backplane signal connector)
9	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
10	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
11	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

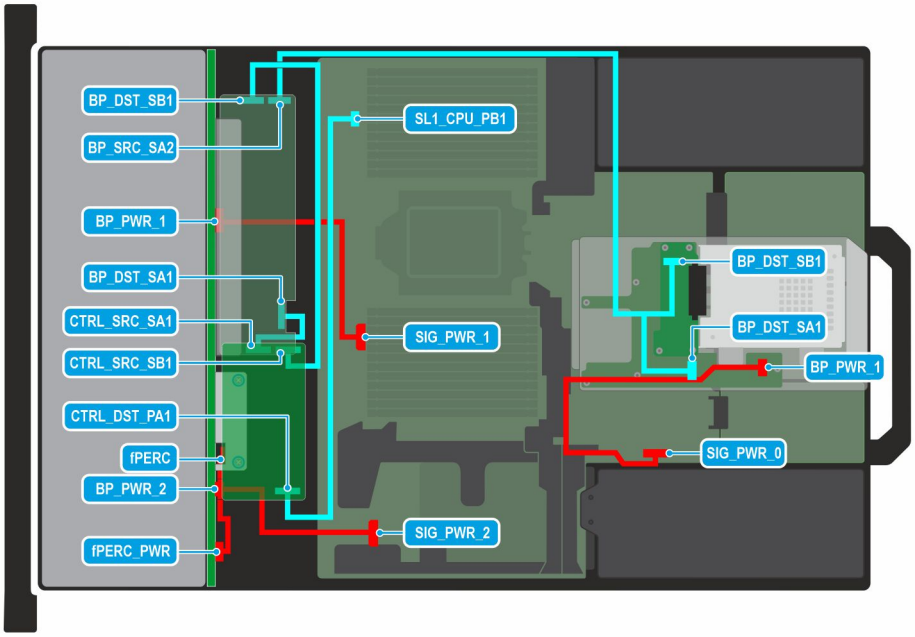

Figure 111. 24 x 2.5 inch SAS/SATA drives with 2 x 2.5 inch SAS/SATA drives with FPERC11

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

Table 95. 24 x 2.5 inch SAS/SATA drives with 2 x 2.5 inch SAS/SATA drives with FPERC11

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG _PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
3	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
4	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
5	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
6	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
7	BP_DST_SA1 and BP_DST_SB1 (backplane signal connector)	BP_SRC_SA2 (backplane controller connector)
8	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)

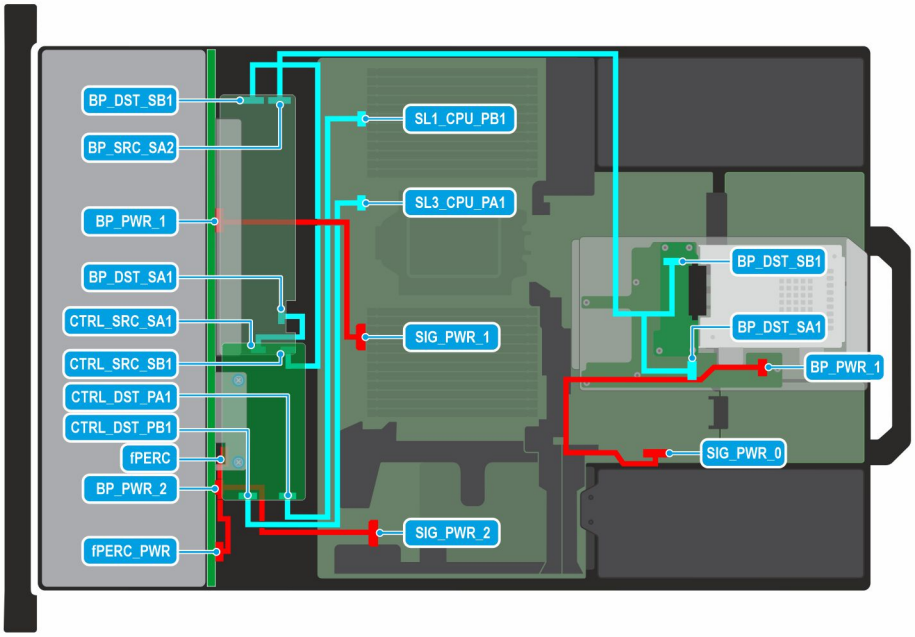

Figure 112. 24 x 2.5 inch SAS/SATA drives with 2 x 2.5 inch SAS/SATA drives with FPERC12

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

Table 96. 24 x 2.5 inch SAS/SATA drives with 2 x 2.5 inch SAS/SATA drives with FPERC12

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG _PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
3	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
4	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
5	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB1 (fPERC input connector)
6	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
7	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
8	BP_DST_SA1 and BP_DST_SB1 (backplane signal connector)	BP_SRC_SA2 (backplane controller connector)
9	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)

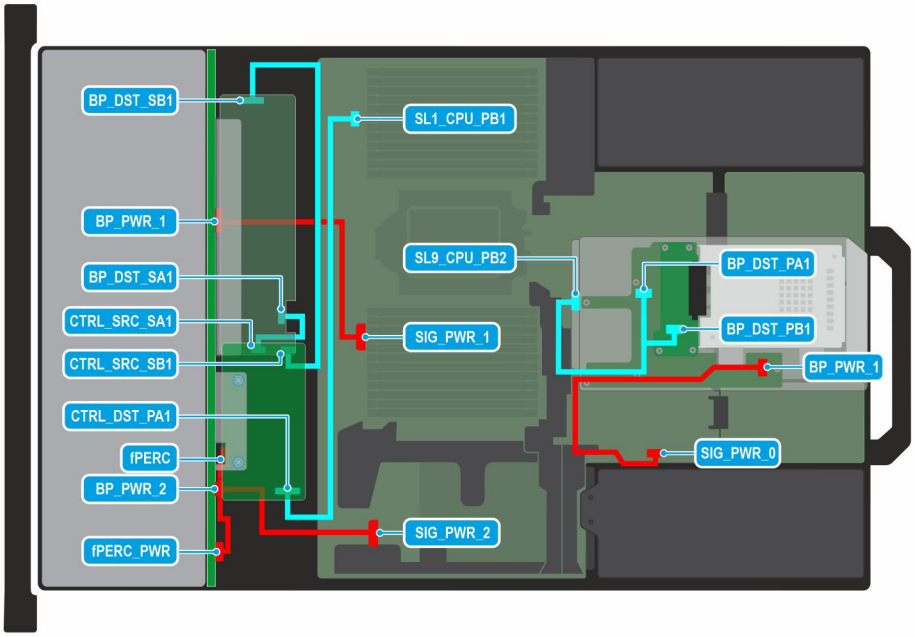

Figure 113. 24 x 2.5 inch SAS/SATA drives with 2 x Universal drives with FPERC11

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

Table 97. 24 x 2.5 inch SAS/SATA drives with 2 x Universal drives with FPERC11

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
3	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
4	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
5	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
6	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
7	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
8	SL9_CPU1_PB2 (signal connector on system board)	BP_DST_PA1 and BP_DST_PB1 (backplane signal connector)

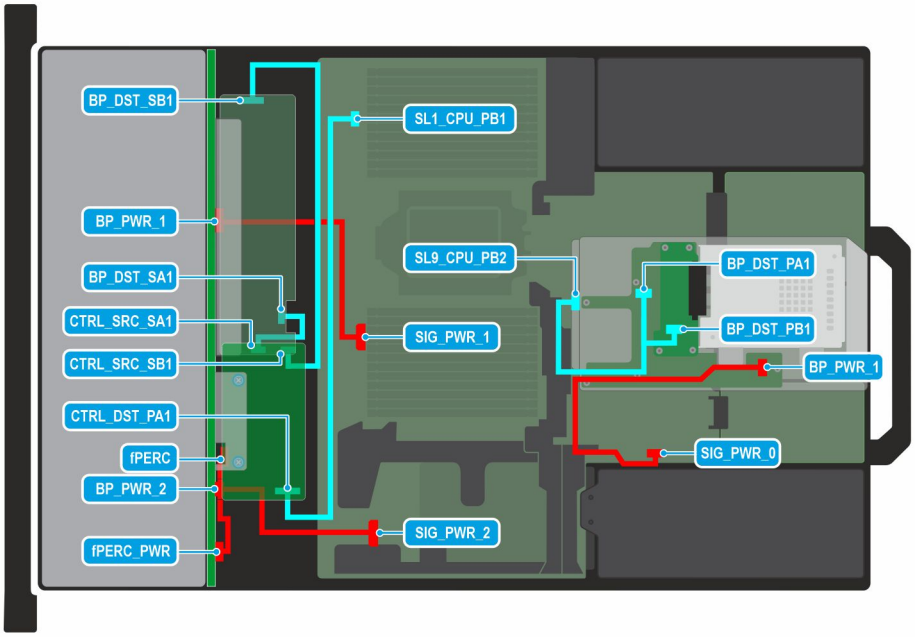

Figure 114. 24 x 2.5 inch SAS/SATA drives with 2 x Universal drives with FPERC12

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

Table 98. 24 x 2.5 inch SAS/SATA drives with 2 x Universal drives with FPERC12

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
3	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
4	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
5	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
6	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)
7	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
8	SL9_CPU1_PB2 (signal connector on system board)	BP_DST_PA1 and BP_DST_PB1 (backplane signal connector)

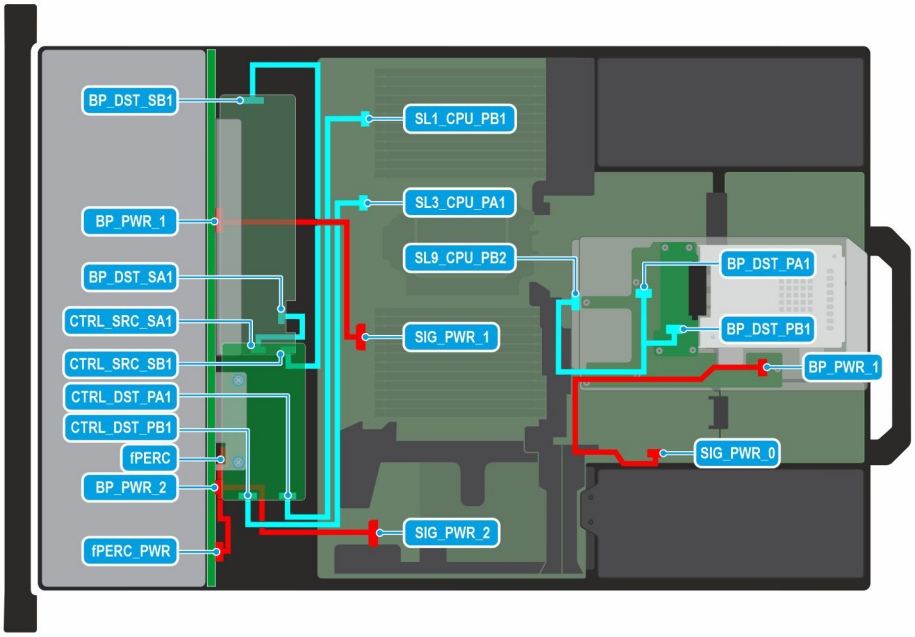

Figure 115. 24 x 2.5 inch SAS/SATA drives with 4 x 2.5 inch drives with FPERC11.

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

Table 99. 24 x 2.5 inch SAS/SATA drives with 4 x 2.5 inch drives with FPERC11

Order	From	To
1	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
2	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
3	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB1 (fPERC input connector)
4	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
5	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
6	SL9_CPU1_PB2 (signal connector on system board)	BP_DST_PA1 and BP_DST_PB1 (backplane signal connector)
7	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
8	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
9	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)

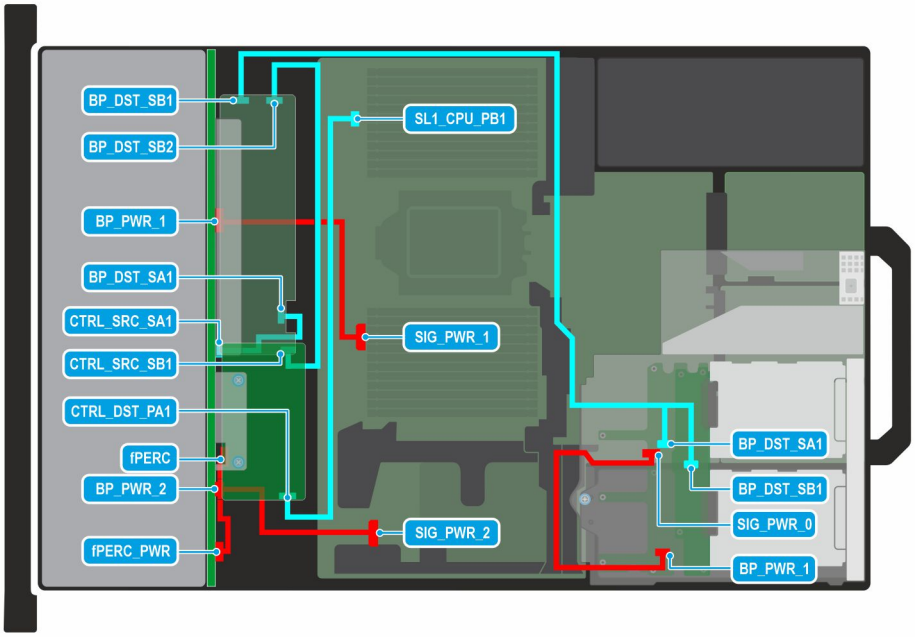

Figure 116. 24 x 2.5 inch SAS/SATA drives with 4 x 2.5 inch drives with FPERC12.

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

Table 100. 24 x 2.5 inch SAS/SATA drives with 4 x 2.5 inch drives with FPERC12

Order	From	To
1	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
2	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
3	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane signal connector)
4	BP_SRC_SA2 (fPERC backplane connector)	BP_DST_SA1 and BP_DST_SB1 (backplane signal connector)
5	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane signal connector)
6	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)
7	fPERC_PWR (fPERC power connector on backplane)	fPERC (Power connector on fPERC)
8	SIG_PWR_0 (system board power connector)	BP_PWR_1 (backplane power connector)

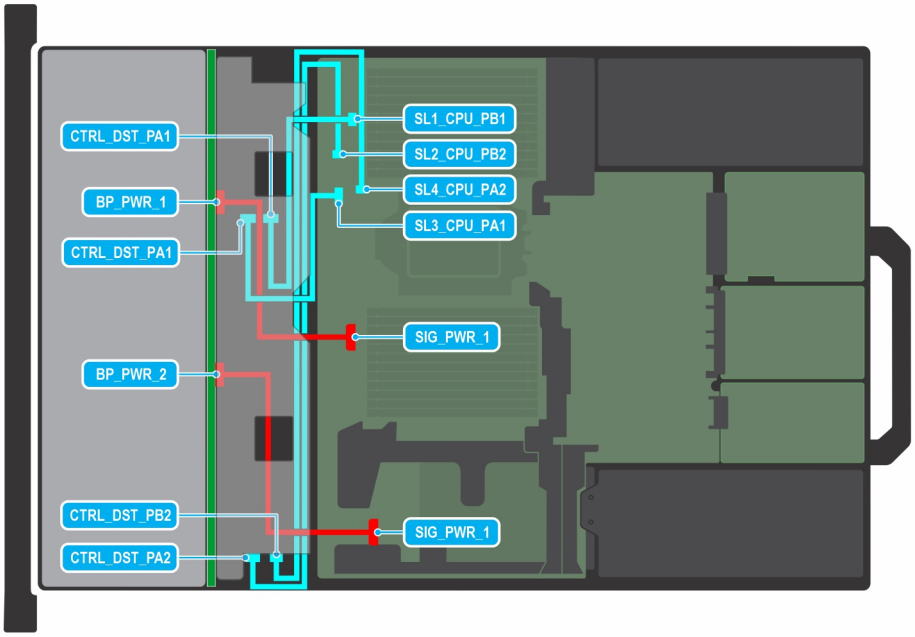

Figure 117. 24 x 2.5 inch U.2 drives Gen5 Single Width

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

Table 101. 24 x 2.5 inch U.2 drives Gen5 Single Width

Order	From	To
1	SL4_CPU1_PB2 (signal connector on system board)	CTRL_DST_PB2 (fPERC input connector)
2	SL2_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA2 (fPERC input connector)
3	SIG_PWR_1 (system board power connector)	BP_PWR_2 (backplane power connector)
4	SL3_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
5	SL1_CPU1_PB2 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
6	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)

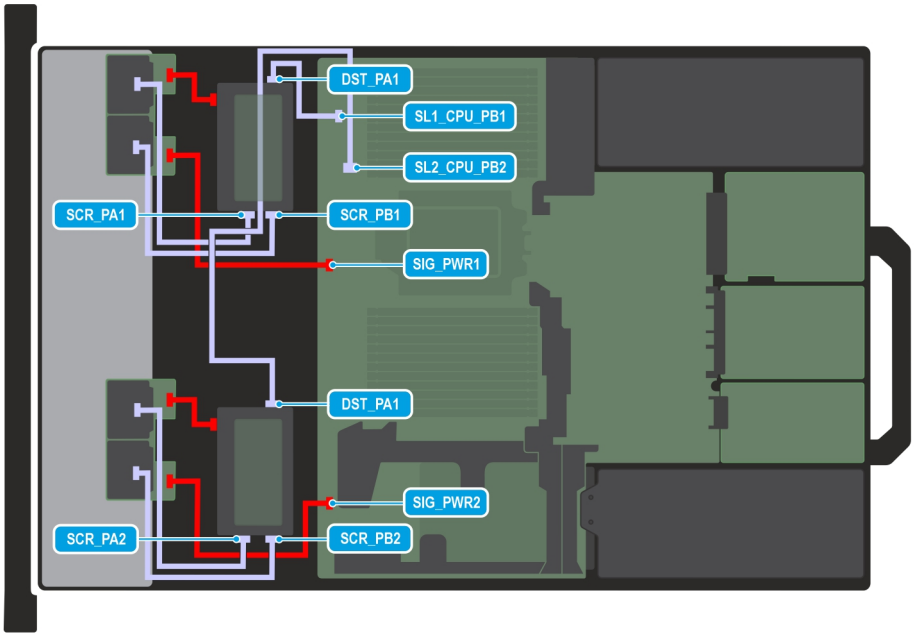

Figure 118. 16 x EDSFF E3.S G5x2 with dual RAID fPERC 11N

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

Table 102. 16 x EDSFF E3.S G5x2 with dual RAID fPERC 11N

Order	From	To
1	MB_PWR1 (system board power connector)	E3_BP_1 (backplane power connector)
2	MB_PWR2 (system board power connector)	E3_BP_2 (backplane power connector)
3	fPERC 11N	E3 BP_PWR_1 (slot 1/4) (backplane power connector)
4	SL1_CPU_PB1 (signal connector on system board)	DST_PA1 (fPERC 11N)
5	SL1_CPU_PB2 (signal connector on system board)	DST_PA2 (fPERC 11N)
6	BP_DST (slot 1) (backplane signal connector)	CTRL_SCR_PA1 (fPERC controller connector)
7	BP_DST (slot 1) (backplane signal connector)	CTRL_SCR_PB1 (fPERC controller connector)
8	BP_DST (slot 4) (backplane signal connector)	CTRL_SCR_PA2 (fPERC controller connector)
9	BP_DST (slot 4) (backplane signal connector)	CTRL_SCR_PB2 (fPERC controller connector)

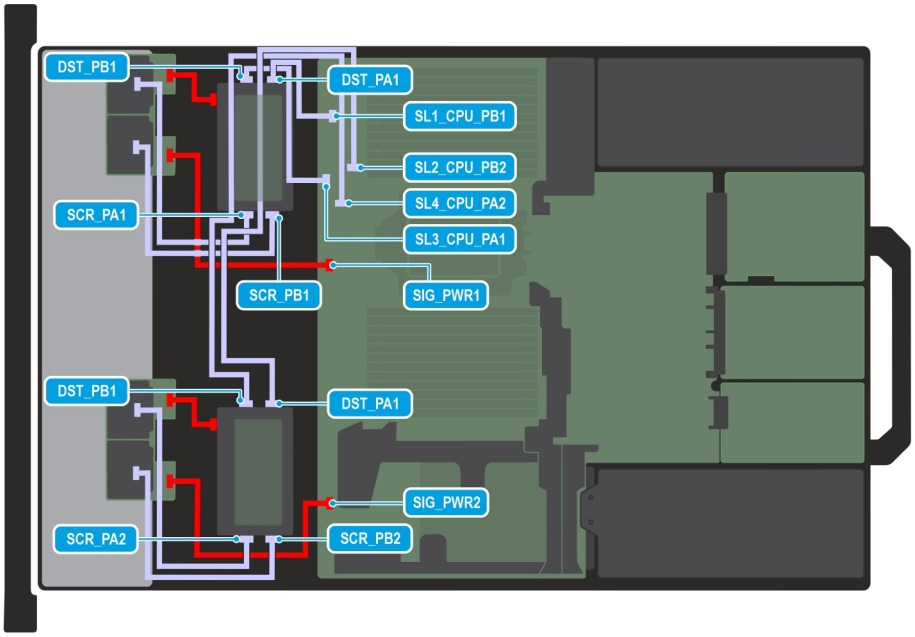

Figure 119. 16 x EDSFF E3.S G5x2 with dual RAID fPERC 12

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

Table 103. 16 x EDSFF E3.S G5x2 with dual RAID fPERC 12

Order	From	To
1	MB_PWR1 (system board power connector)	E3_BP_1 (backplane power connector)
2	MB_PWR2 (system board power connector)	E3_BP_2 (backplane power connector)
3	fPERC 12	E3 BP_PWR_1 (slot 1/4) (backplane power connector)
4	SL1_CPU_PB1 (signal connector on system board)	DST_PA1 (fPERC 11N)
5	SL2_CPU_PB2 (signal connector on system board)	DST_PA1 (fPERC 11N)
6	SL3_CPU_PA1 (signal connector on system board)	DST_PB1 (fPERC 11N)
7	SL4_CPU_PA2 (signal connector on system board)	DST_PB1 (fPERC 11N)
8	BP_DST (slot 1) (backplane signal connector)	CTRL_SCR_PA1 (fPERC controller connector)
9	BP_DST (slot 1) (backplane signal connector)	CTRL_SCR_PB1 (fPERC controller connector)
10	BP_DST (slot 4) (backplane signal connector)	CTRL_SCR_PA2 (fPERC controller connector)
11	BP_DST (slot 4) (backplane signal connector)	CTRL_SCR_PB2 (fPERC controller connector)

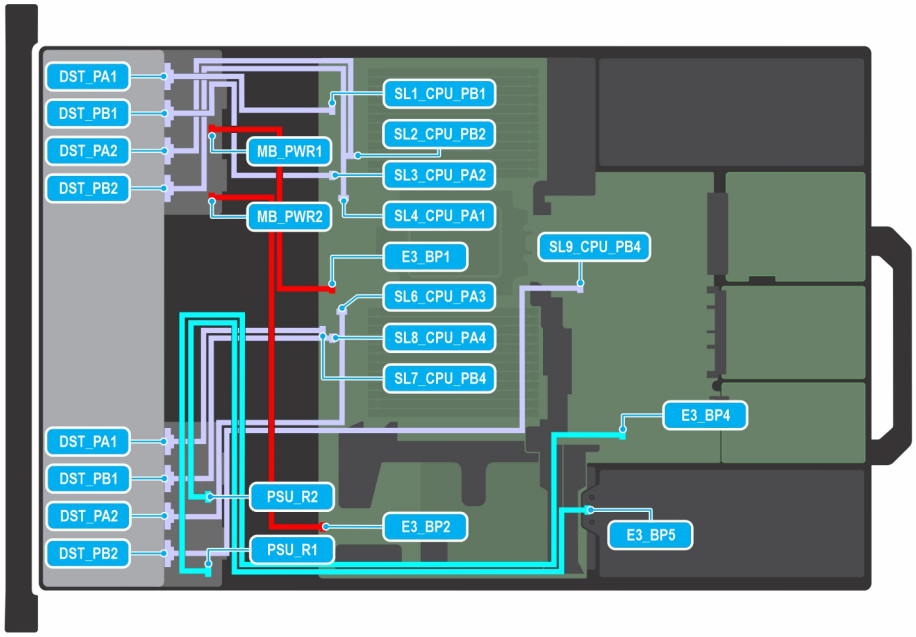

Figure 120. 32 x EDSFF E3.S G5x2

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

Table 104. 32 x EDSFF E3.S G5x2

Order	From	To
1	MB_PWR1 (system board power connector)	E3_BP_1 (backplane power connector)
2	MB_PWR2 (system board power connector)	E3_BP_2 (backplane power connector)
3	PSU_R1 (system board power connector)	E3_BP_4 (backplane power connector)
4	PSU_R2 (system board power connector)	E3_BP_5 (backplane power connector)
5	SL1_CPU_PB1 (signal connector on system board)	DST_PA1 (backplane signal connector)
6	SL3_CPU_PA2 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	SL2_CPU_PB1 (signal connector on system board)	DST_PA2 (backplane signal connector)
8	SL4_CPU_PA1 (signal connector on system board)	DST_PB2 (backplane signal connector)
9	SL7_CPU_PB4 (signal connector on system board)	DST_PA1 (backplane signal connector)
10	SL8_CPU_PA4 (signal connector on system board)	DST_PB1 (backplane signal connector)
11	SL9_CPU_PB4 (signal connector on system board)	DST_PB2 (backplane signal connector)
12	SL6_CPU_PA3 (signal connector on system board)	DST_PA2 (backplane signal connector)

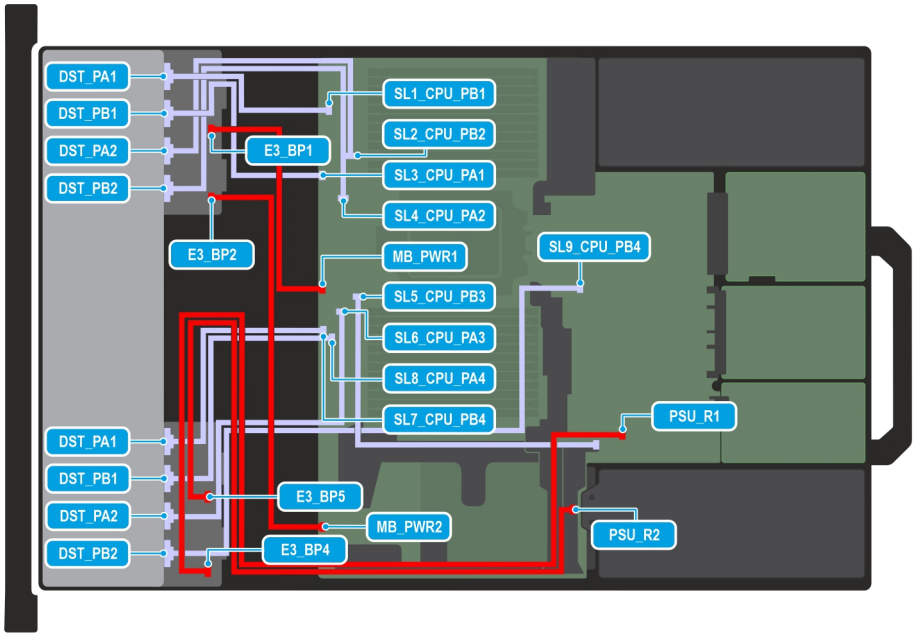

Figure 121. 32 x EDSFF E3.S G5x2 w/ Rear 4 x EDSFF E3.S G5x2 (R1)

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

Table 105. 32 x EDSFF E3.S G5x2 w/ Rear 4 x EDSFF E3.S G5x2 (R1)

Order	From	To
1	MB_PWR1 (system board power connector)	E3_BP_1 (backplane power connector)
2	MB_PWR2 (system board power connector)	E3_BP_2 (backplane power connector)
3	PSU_R1 (system board power connector)	E3_BP_4 (backplane power connector)
4	PSU_R2 (system board power connector)	E3_BP_5 (backplane power connector)
5	SL1_CPU_PB1 (signal connector on system board)	DST_PA1 (backplane signal connector)
6	SL3_CPU_PA2 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	SL2_CPU_PB1 (signal connector on system board)	DST_PA2 (backplane signal connector)
8	SL4_CPU_PA1 (signal connector on system board)	DST_PB2 (backplane signal connector)
9	SL7_CPU_PB4 (signal connector on system board)	DST_PA1 (backplane signal connector)
10	SL8_CPU_PA4 (signal connector on system board)	DST_PB1 (backplane signal connector)
11	SL9_CPU_PB4 (signal connector on system board)	DST_PB2 (backplane signal connector)
12	SL6_CPU_PA3 (signal connector on system board)	DST_PA2 (backplane signal connector)

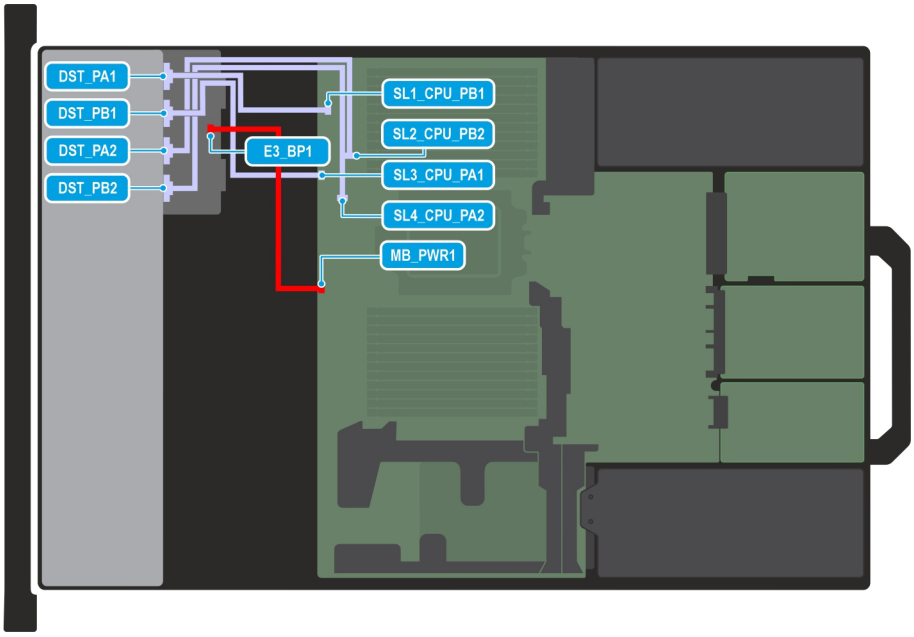

Figure 122. 8 x EDSFF E3.S G5x4

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

Table 106. 8 x EDSFF E3.S G5x4

Order	From	To
1	MB_PWR1 (system board power connector)	E3_BP_1 (backplane power connector)
5	SL1_CPU_PB1 (signal connector on system board)	DST_PA1 (backplane signal connector)
6	SL3_CPU_PA1 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	SL2_CPU_PB2 (signal connector on system board)	DST_PA2 (backplane signal connector)
8	SL4_CPU_PA2 (signal connector on system board)	DST_PB2 (backplane signal connector)

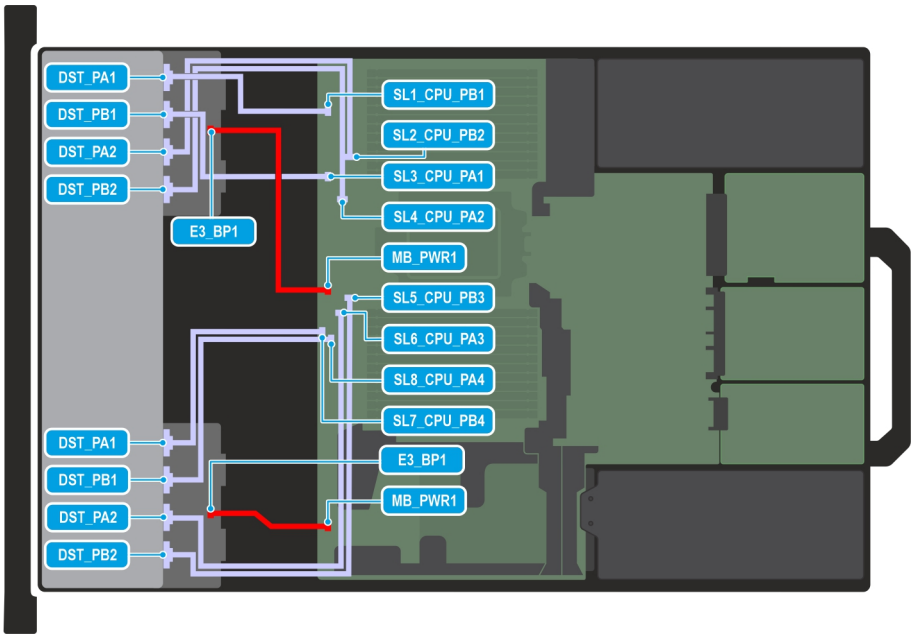

Figure 123. 16 x EDSFF E3.S G5x4

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

Table 107. 16 x EDSFF E3.S G5x4

Order	From	To
1	MB_PWR1 (system board power connector)	E3_BP_1 (backplane power connector)
2	MB_PWR2 (system board power connector)	E3_BP_1 (backplane power connector)
5	SL1_CPU_PB1 (signal connector on system board)	DST_PA1 (backplane signal connector)
6	SL3_CPU_PA1 (signal connector on system board)	DST_PB1 (backplane signal connector)
7	SL2_CPU_PB2 (signal connector on system board)	DST_PA2 (backplane signal connector)
8	SL4_CPU_PA2 (signal connector on system board)	DST_PB2 (backplane signal connector)
9	SL5_CPU_PB3 (signal connector on system board)	DST_PB2 (backplane signal connector)
10	SL6_CPU_PA3 (signal connector on system board)	DST_PA2 (backplane signal connector)
11	SL7_CPU_PB4 (signal connector on system board)	DST_PA1 (backplane signal connector)
12	SL8_CPU_PA4 (signal connector on system board)	DST_PB1 (backplane signal connector)

Figure 124. Dell Data Processing Unit (DPU) (Pesando 25 Gb/100 Gb, Mellanox: 25 Gb)

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

Table 108. Dell (DPU) (Pesando 25 Gb/100 Gb, Mellanox: 25 Gb)

Order	From	To
1	J_REAR_SERIAL1 (UART connector on rear I/O card)	MIC_UART (UART connector on MIC card)
2	SN2 (Connector on MIC card)	R4N2-DPU (Connector on DPU card in riser 1)

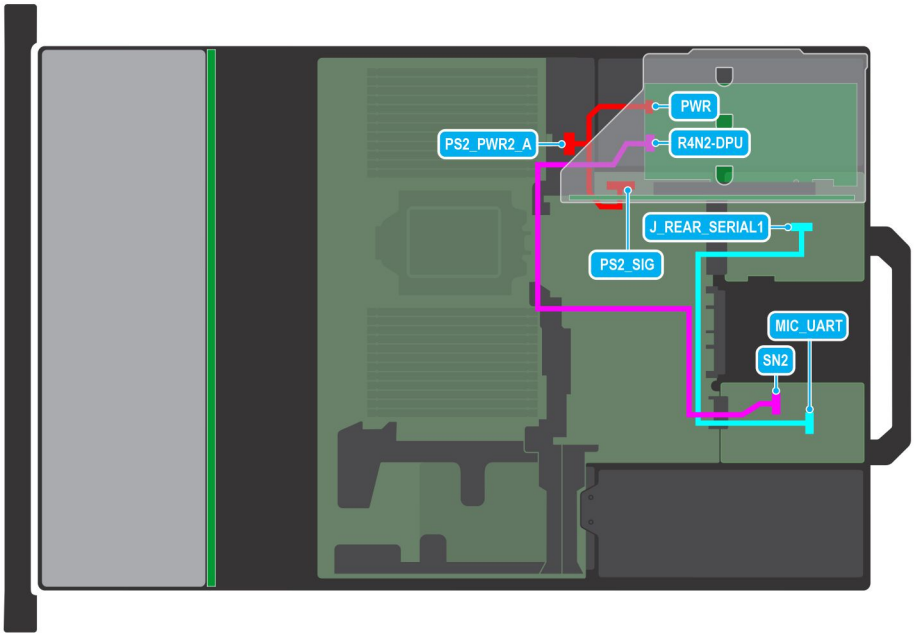

Figure 125. Dell Data Processing Unit (DPU) (Mellanox: 100 Gb)

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

Table 109. Dell (DPU) (Mellanox: 100 Gb)

Order	From	To
1	J_REAR_SERIAL1 (UART connector on rear I/O card)	MIC_UART (UART connector on MIC card)
2	SN2 (Connector on MIC card)	R4N2-DPU (Connector on DPU card in riser 1)
3	PWR (system board power connector) and PS2_SIG (power signal connector)	PS2_PWR2_A (Aux power connector on DPU card in riser 1)

PERC module

This is a service technician replaceable part only.

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. Remove the cooling fan cage assembly.
4. Remove the drive backplane cover.
5. If required, remove the air shroud or remove the GPU air shroud..
6. If required, remove the drive backplane cover.
7. Disconnect all the cables, observe the cable routing.

NOTE: Refer Cable routing topic for more information.

Steps

1. Using a Phillips #2 screwdriver, loosen the captive screws on the rear mounting front PERC module.
2. Slide the rear mounting front PERC module to disengage from the connector on the drive backplane.

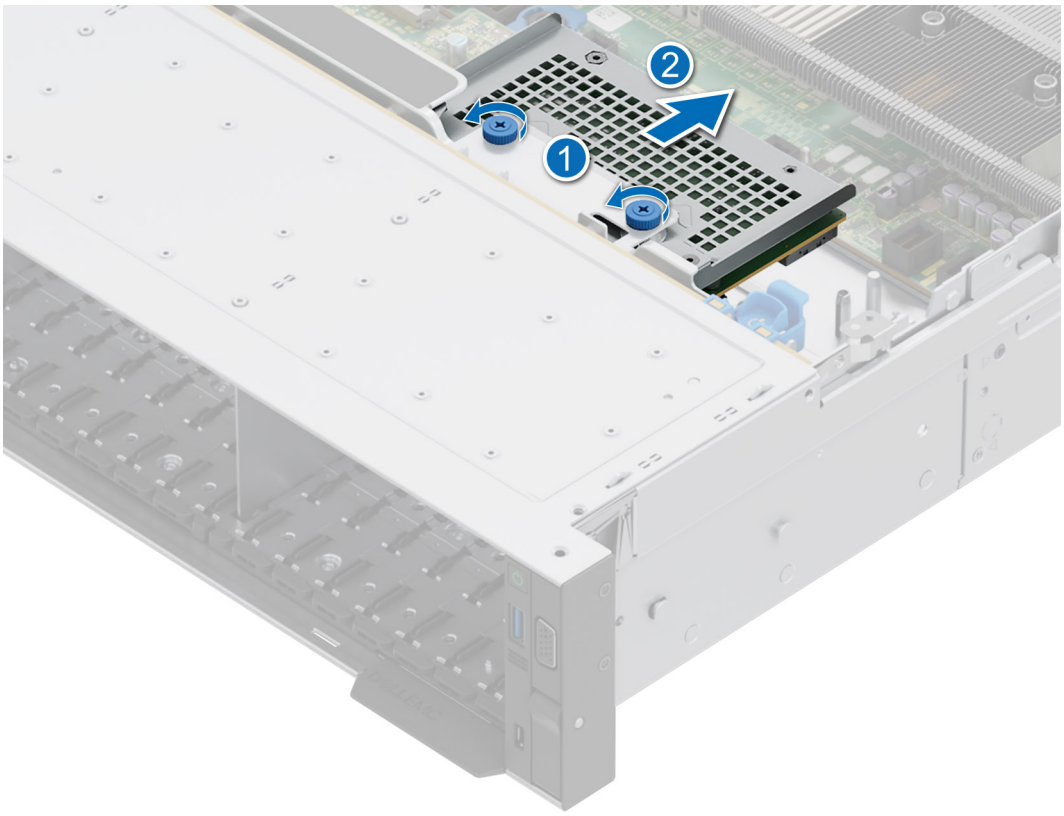

Figure 126. Removing the rear mounting front PERC module

Next steps

1. 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. Remove the cooling fan cage assembly.
4. Remove the drive backplane cover.
5. If required, remove the air shroud or remove the GPU air shroud.
6. Route the cable properly to prevent the cable from being pinched or crimped.

NOTE: Refer Cable routing topic for more information.

Steps

1. Align the connectors and guide slots on the rear mounting front PERC module with the connectors and guide pins on the drive backplane.
2. Slide the rear mounting front PERC module until the module is connected to the drive backplane.
3. Using a Phillips #2 screwdriver, tighten the captive screws on the rear mounting front PERC module.

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

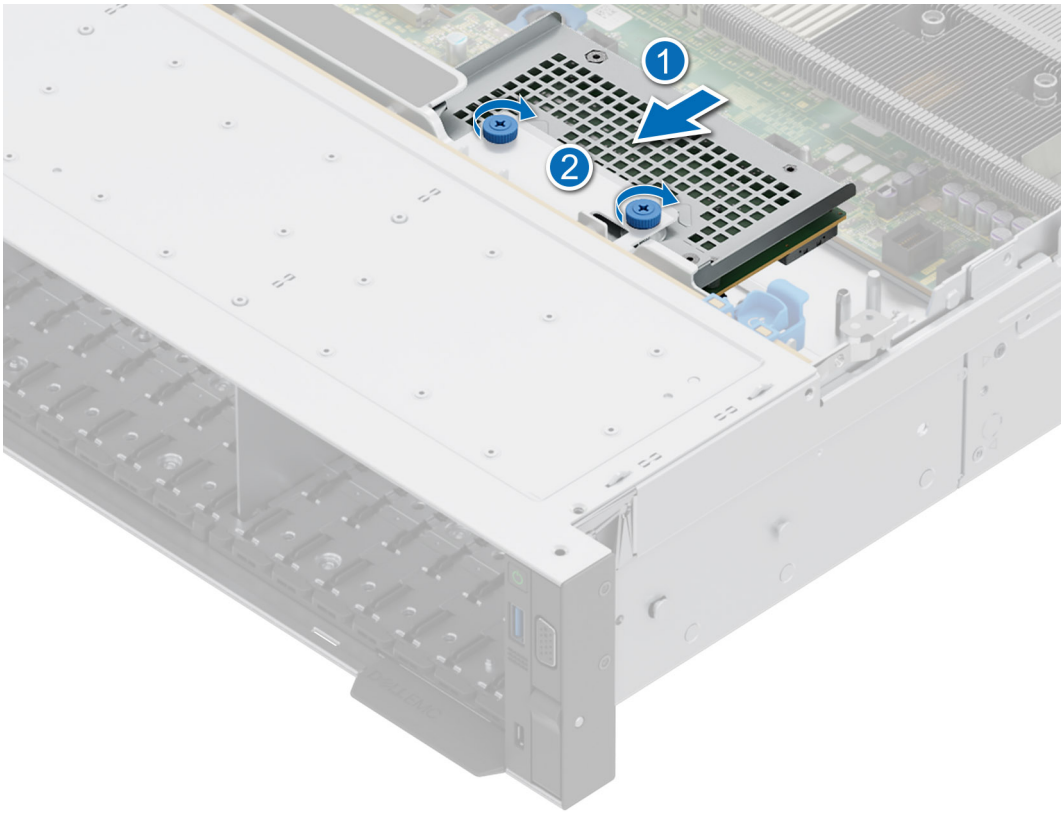

Figure 127. Installing the rear mounting front PERC module

Next steps

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

Removing the front 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. Remove the cooling fan cage assembly.
4. Remove the drive backplane cover.
5. If required, remove the air shroud or remove the GPU air shroud..
6. If required, remove the drive backplane cover.
7. Disconnect all the cables, observe the cable routing.

NOTE: Refer Cable routing topic for more information.

Steps

1. Using a Phillips #2 screwdriver, loosen the captive screws on the front mounting front PERC module.
2. Slide the front mounting front PERC module to disengage from the connector on the drive backplane.

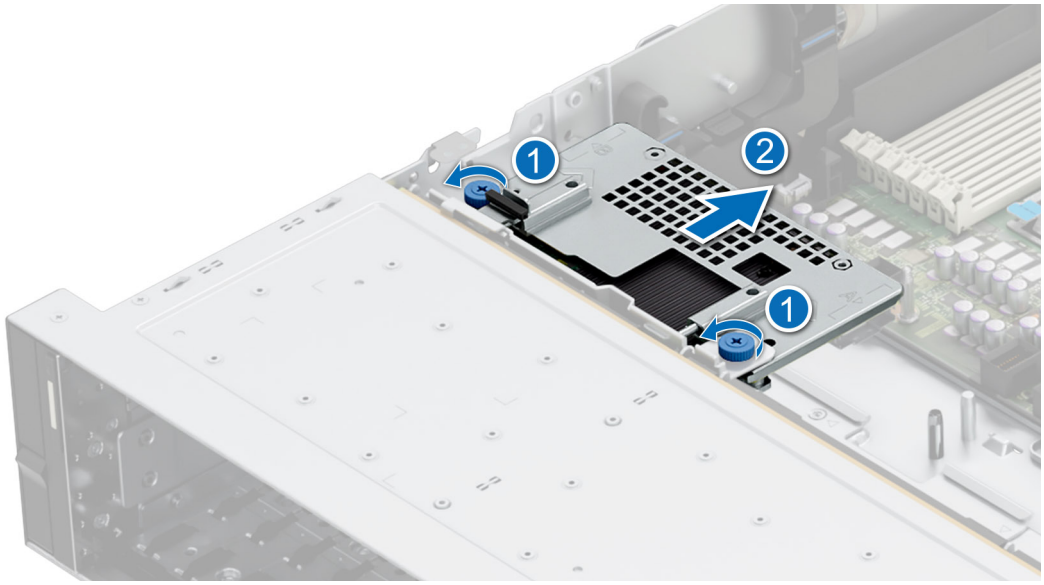

Figure 128. Removing the front mounting front PERC module

Next steps

1. Replace the front mounting front PERC module.

Installing the front 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. Remove the cooling fan cage assembly.
4. Remove the drive backplane cover.
5. If required, remove the air shroud or remove the GPU air shroud.
6. If required, remove the drive backplane cover.
7. Route the cable properly to prevent the cable from being pinched or crimped.

NOTE: Refer Cable routing topic for more information.

Steps

1. Align the connectors and guide slots on the front mounting front PERC module with the connectors and guide pins on the drive backplane.
2. Slide the front mounting front PERC module until the module is connected to the drive backplane.
3. Using a Phillips #2 screwdriver, tighten the captive screws on the front mounting front PERC module.

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

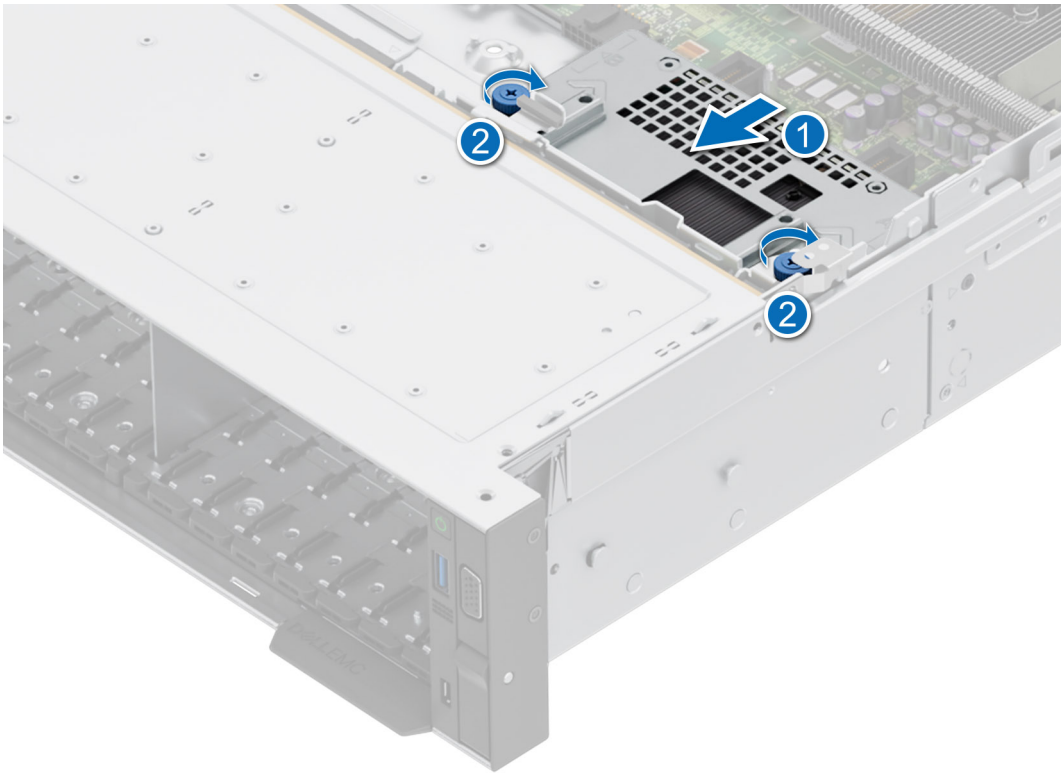

Figure 129. Installing the front mounting front PERC module

Next steps

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

Removing the adapter 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. If required, remove the air shroud or remove the GPU air shroud.
4. If required, remove the drive backplane cover.
5. Remove the cooling fan cage assembly.
6. Remove the expansion card riser.
7. Disconnect all the cables from the Adapter PERC card, observe the cable routing.

NOTE: Refer Cable routing topic for more information.

NOTE: Adapter PERC module must be installed only in expansion card riser 1 or riser 2.

Steps

1. Tilt the expansion card retention latch lock to open.
2. Pull the card holder before removing the card from the riser.
3. Hold the Adapter PERC module by the edges. and pull the module from the expansion card connector on the riser.

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

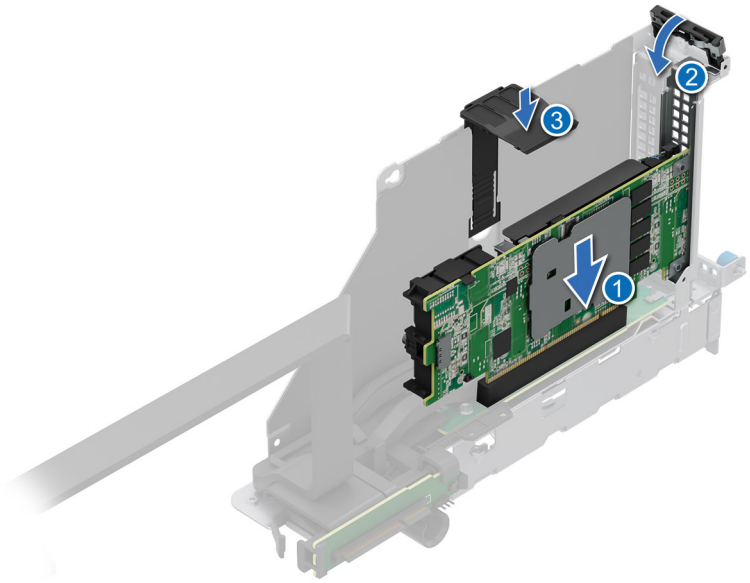

Figure 130. Removing the Adapter PERC module

4. If the Adapter PERC module is not going to be replaced, install a filler bracket and close the card retention latch.

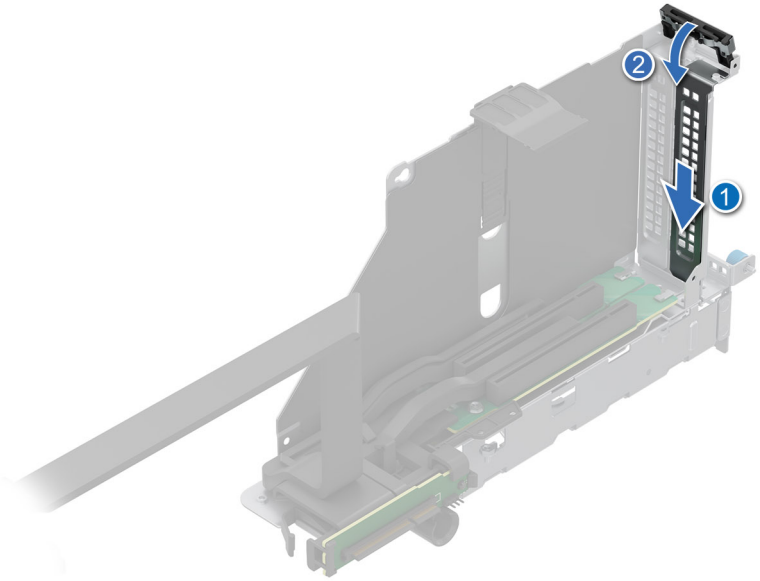

Figure 131. Installing the filler bracket

Next steps

1. Replace the Adapter PERC module.

Installing the adapter 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. If required, remove the air shroud or remove the GPU air shroud.
4. If required, remove the drive backplane cover.
5. Remove the cooling fan cage assembly.
6. Remove the expansion card riser.
7. Disconnect all the cables from the adapter PERC card, observe the cable routing.

   NOTE: Refer Cable routing topic for more information.

8. If a new APERC module has to be installed, unpack it and prepare the module for installation.

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

   NOTE: APERC module must be installed only in expansion card riser 1 or riser 2.

Steps

1. Pull and lift up 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.

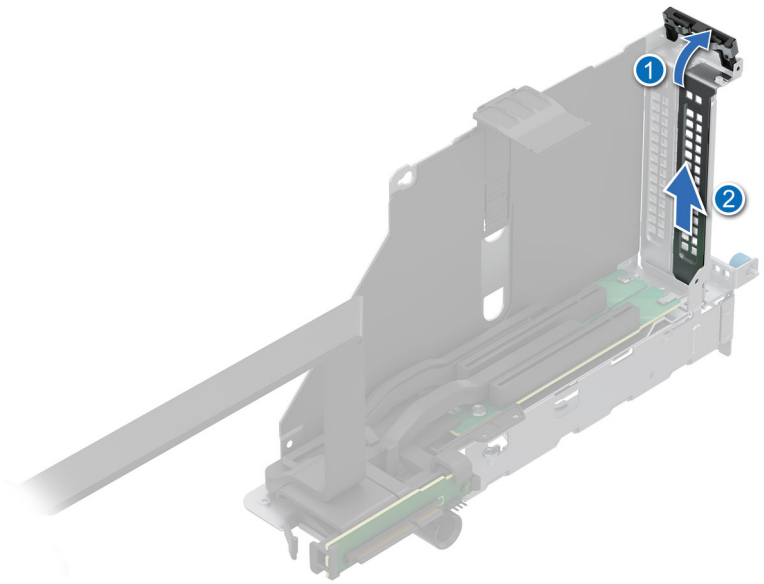

Figure 132. Removing the filler bracket

3. Hold the Adapter PERC module by the edges, and align the module edge connector with the expansion card connector on the riser.
4. Insert the module into the expansion card connector until firmly seated.

5. Close the expansion card retention latch.
6. Push the card holder to hold the module in the riser.

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

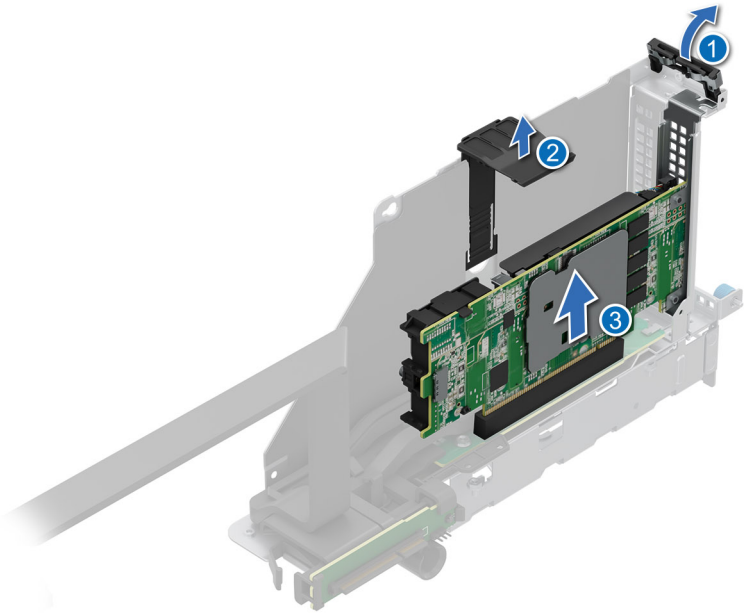

Figure 133. Installing the Adapter PERC module

Next steps

1. Connect the cables to the Adapter PERC module and route the cables properly.

   NOTE: Refer Cable routing topic for more information.

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

Removing the EDSFF E3.S 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. If required, remove the air shroud or remove the GPU air shroud.
4. If required, remove the drive backplane cover.
5. Remove the cooling fan cage assembly.
6. Disconnect all the cables from the PERC card, observe the cable routing.

   NOTE: Refer Cable routing topic for more information.

Steps

1. Press the release tabs on both the sides of the PERC tray, and lift the PERC tray out of the system.
2. Disconnect the PERC power cable from the EDSFF E3.S backplane module.

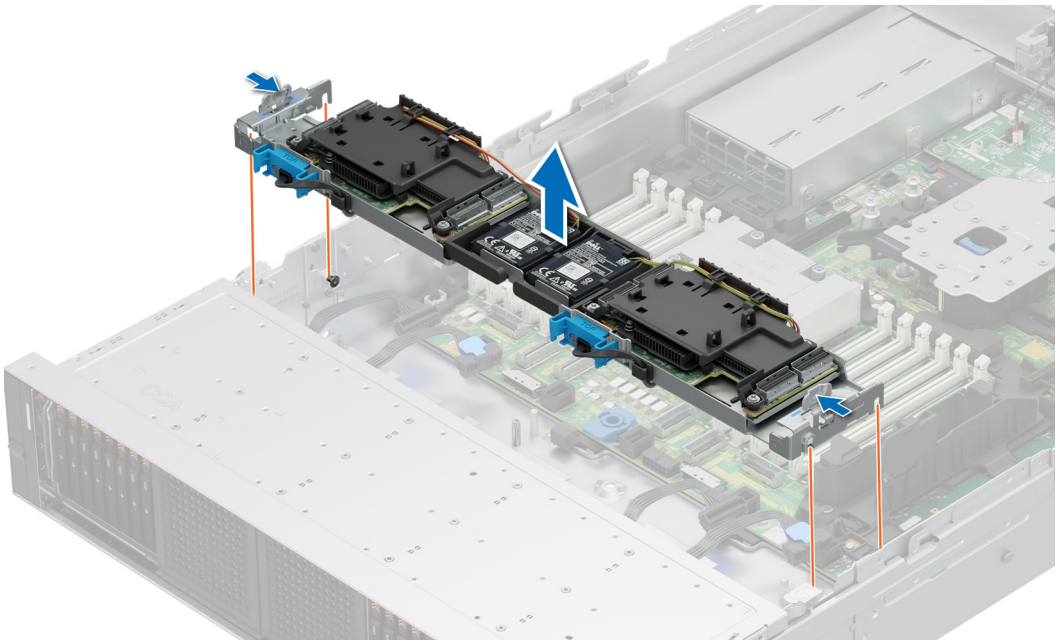

Figure 134. Removing the PERC tray

3. Press the blue tabs and remove the PERC power cable from the PERC card.
4. Disconnect the battery power cable from the PERC card.
5. Tilt and lift the battery holder assembly from the front PERC tray.

NOTE: Remove the battery cable from the front PERC shroud cable holder.

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

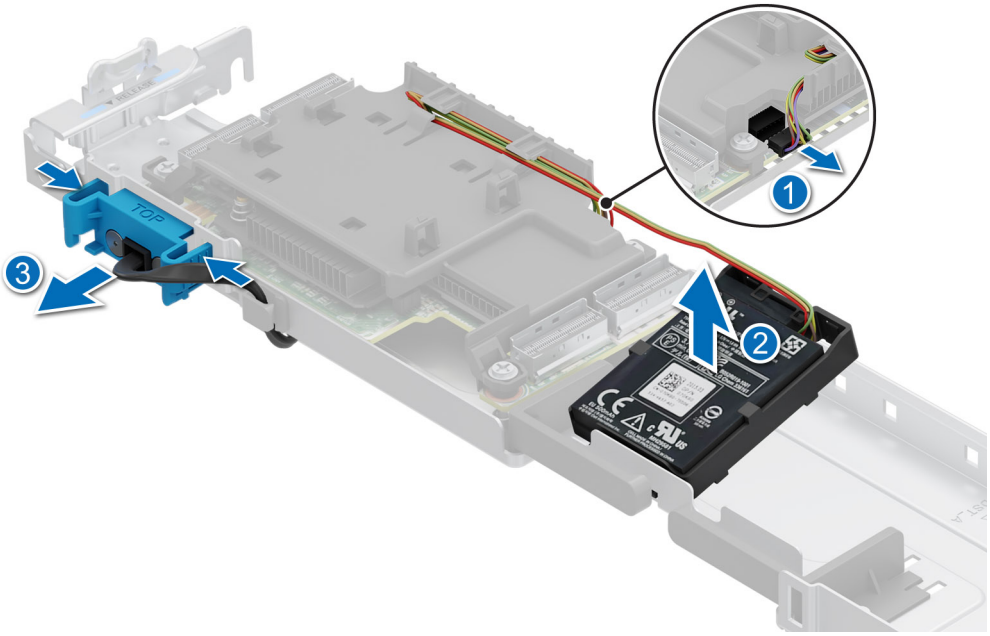

Figure 135. Removing the battery holder assembly from the PERC shroud

6. Press and remove the battery from the battery holder.

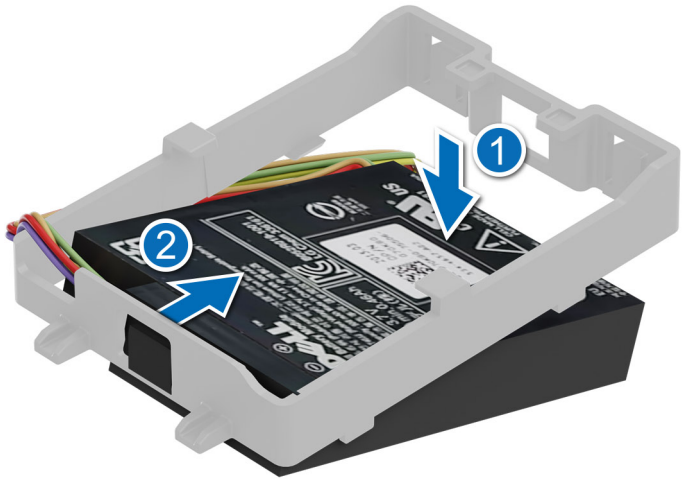

Figure 136. Removing the battery from the battery holder

7. Using a Phillips #2 screwdriver, remove the four screws on the front PERC shroud.
8. Remove the PERC shroud from the PERC.card.
9. Remove the PERC card from the PERC tray.

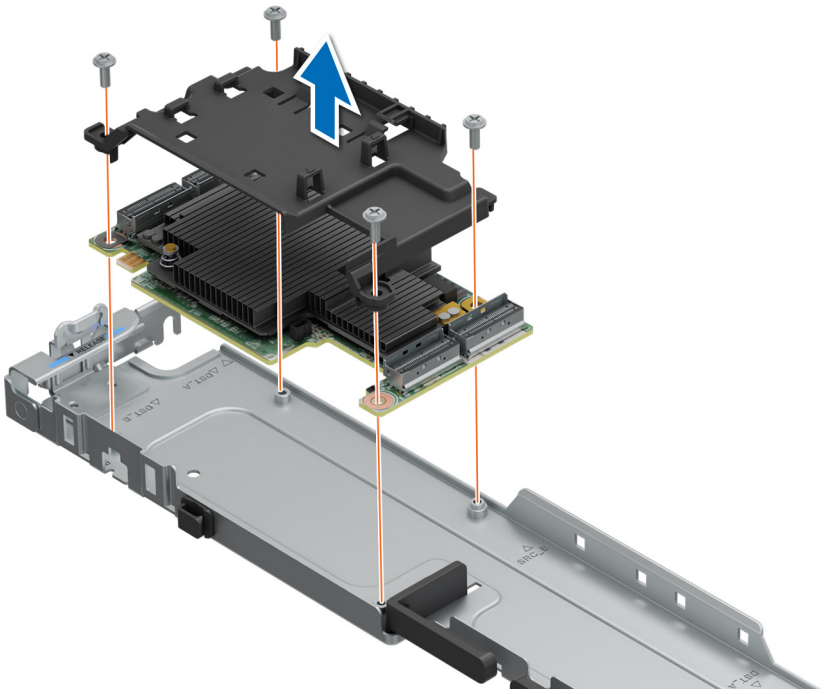

Figure 137. Removing the PERC card from PERC tray

NOTE: The procedure to remove the other PERC card is similar.

Next steps

1. Replace the EDSFF E3.S PERC module.

Installing the EDSFF E3.S 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. If required, remove the air shroud or remove the GPU air shroud.
4. If required, remove the drive backplane cover.
5. Remove the cooling fan cage assembly.
6. Disconnect all the cables from the PERC card, observe the cable routing.

NOTE: Refer Cable Routing topic for more information.

Steps

1. Align and install the PERC card to the guides on the front PERC tray.
2. Align and Install the PERC shroud on the PERC card.
3. Using a Phillips #2 screwdriver, tighten the four screws to secure the PERC shroud to the PERC tray.

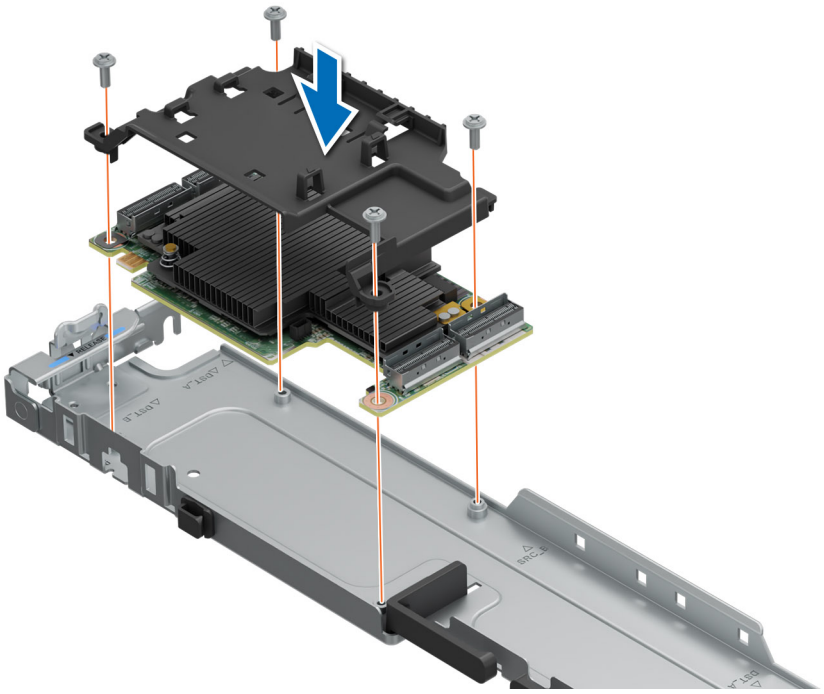

Figure 138. Installing the PERC card into PERC tray

4. Insert the battery tab into the battery holder and ensure the battery that it is firmly seated.

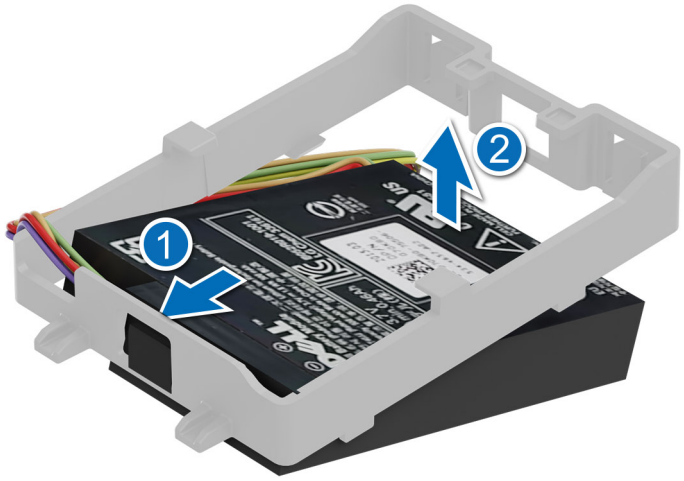

Figure 139. Installing the battery into the battery holder

5. Align and connect the PERC power cable to the PERC card.
6. **NOTE:** Route the PERC cable into the PERC tray cable holder.

   Tilt the battery holder assembly to align the tabs with the PERC tray.
7. Press the battery holder assembly on to the PERC tray.
8. Connect the battery power cable to the front PERC card.

   NOTE: Route the battery cable into the front PERC shroud cable holder.

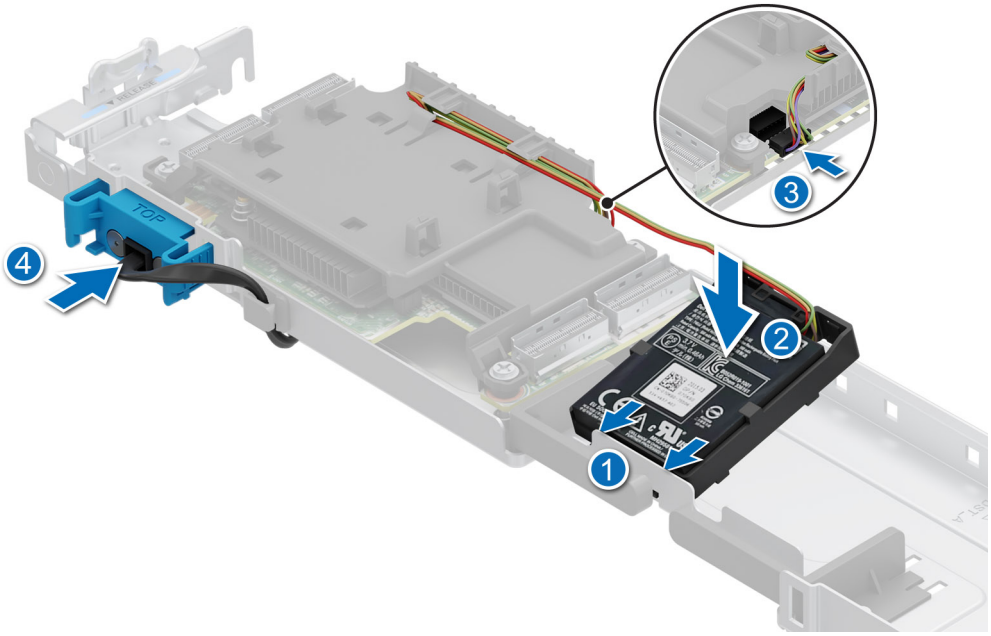

Figure 140. Installing the battery holder assembly into the PERC shroud

NOTE: The procedure to install the other PERC card is similar.

9. Align the guide slots on the PERC tray with the guide pins on the system.

   NOTE: Connect all the cables to the PERC card before lowering the tray. See cable routing section for more information.

10. Lower the PERC tray, until it is firmly seated and secured.

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

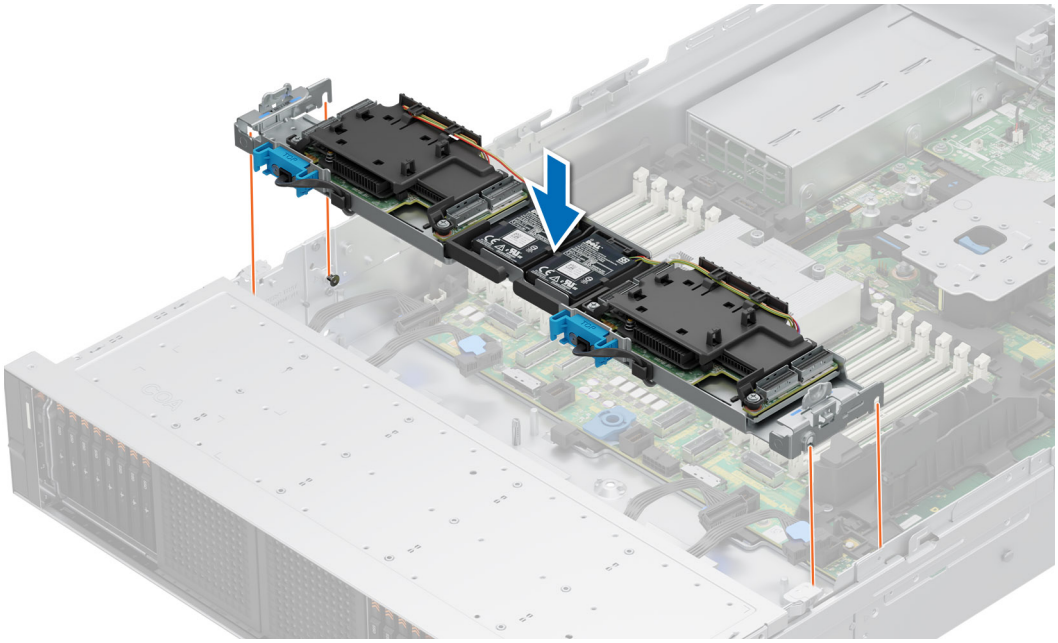

Figure 141. Installing the PERC tray

Next steps

1. Connect the cables and route the cables properly.

   NOTE: Refer Cable Routing topic for more information.

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

System memory

System memory guidelines

The PowerEdge R7615 system supports DDR5 registered DIMMs (RDIMMs).

Your system memory is organized into twelve channels per processor (one memory sockets per channel), 12 memory sockets per processor.

Memory channels are organized as follows:

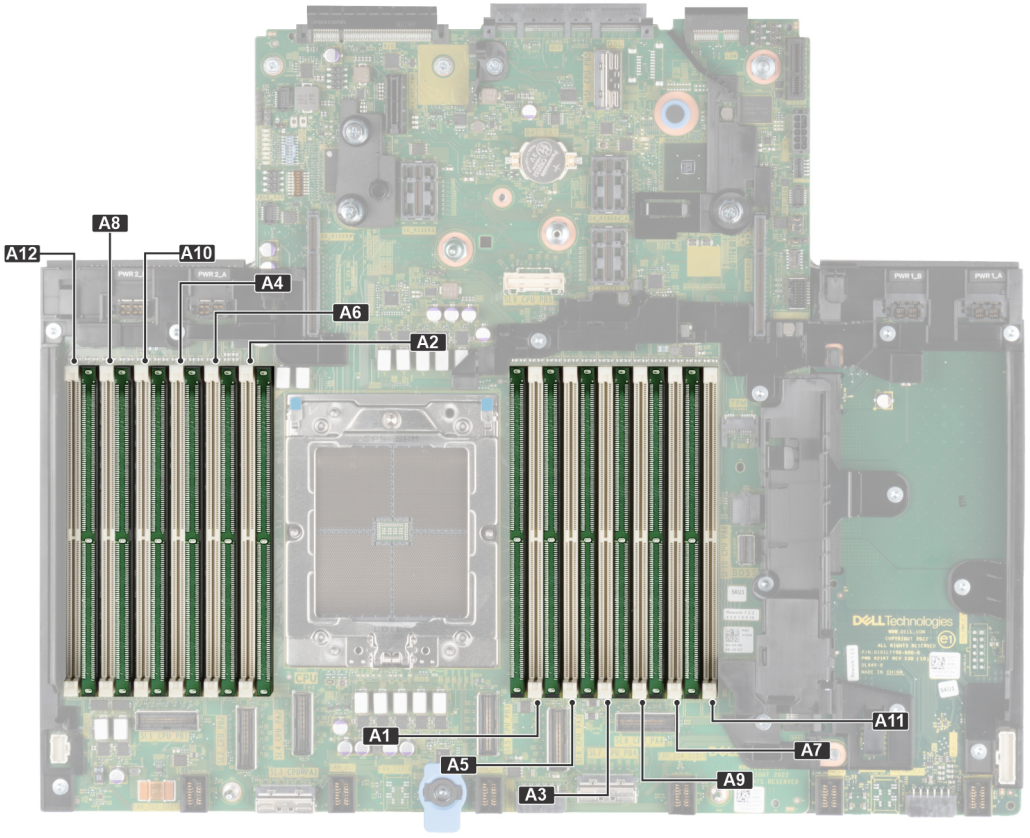

Figure 142. Memory channels

Table 110. Memory channels

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H	Channel I	Channel J	Channel K	Channel L
Processor 1	Slots A1	Slots A5	Slots A3	Slots A9	Slots A7	Slots A11	Slots A2	Slots A6	Slots A4	Slots A10	Slots A8	Slots A12

Table 111. Supported memory matrix

DIMM type	Rank	Capacity	Operating Speed
			1 DIMM per channel (DPC)
DDR5 RDIMM	1 R	16 GB	4800 MT/s
	2 R	32 GB, 64 GB	4800 MT/s
	2 R	96 GB	4800 MT/s
	4 R	128 GB	4800 MT/s
	8 R	256 GB	4800 MT/s

NOTE: DDR4 memory is not supported.

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

NOTE: The speed of 5600 MT/s will be clocked down to match the system CPU max DDR frequency (1 DPC) at 4800 MT/s .

General memory module installation guidelines

To ensure optimal performance of your system, observe the following general guidelines when configuring your system memory. If your system's memory configurations fail to observe these guidelines, your system might not boot, stop responding during memory configuration, or operate with reduced memory. This section provides information on the memory population rules for single or dual processor system.

The memory bus operate at speeds up to 5600 MT/s depending on the following factors:

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

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

NOTE: The speed of 5600 MT/s RDIMM will be clocked down to match the system CPU MAX DDR frequency (1 DPC) at 4800MT/s.

The following are the recommended guidelines for installing memory modules:

- All DIMMs must be DDR5.
- Mixing different DIMM capacities is not supported.
- Mixing module types within a memory channel is not supported. All DIMMs populated must be RDIMM.
- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory module(s).
- Mixing different widths (x4 & x8) is not supported.
- Populate memory module sockets only if a processor is installed.
  - For single-processor systems, sockets A1 to A12 are available.
  - In Optimizer Mode, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

Table 112. Memory population rules

Processor	Memory population	Memory population information
Single processor	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}, A{9}, A{10}, A{11}, A{12}	Odd amount of DIMMs per processor allowed.

- Populate all the sockets with white release tabs first, followed by the black release tabs.
- Persistent memory will not be supported on Genoa based platforms.
- For best performance, populate all memory channels equally using identical DIMMs.
- Unbalanced or odd memory configuration results in a performance loss and system may not identify the memory modules being installed, so always populate memory channels identically with equal DIMMs for best performance.
- Minimum recommended configuration is to populate four equal memory modules per processor.

Removing a memory module

Prerequisites

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

NOTE: The memory modules are hot to touch for some time after the system has been powered down. Allow the memory modules to cool before handling them. Handle the memory modules by the card edges and avoid touching the components or metallic contacts on the memory module.

Steps

1. Locate the appropriate memory module socket.

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

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

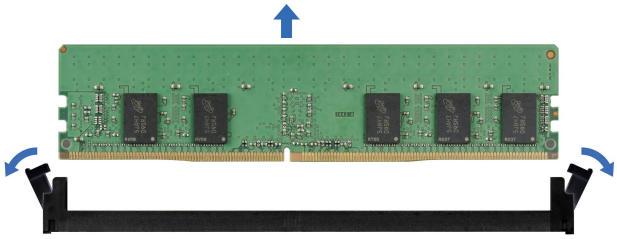

Figure 143. Removing a memory module

Next steps

1. Replace the memory module. Install a memory module blank, if the memory module is removed permanently.

NOTE: The procedure to install a memory module blank is similar to the procedure to install a memory module.

NOTE: To ensure proper system cooling, memory module blanks must be installed in any memory socket that is not occupied. The memory module blanks compatible with the R7615 are DDR5 gray color blanks. Remove the memory module blanks only if you intend to install memory modules in those sockets.

Installing a memory module

Prerequisites

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

Steps

1. Locate the appropriate memory module socket.

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

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

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

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

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

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

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

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

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

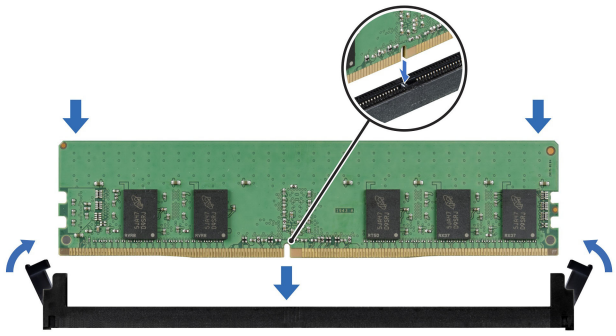

Figure 144. Installing a memory module

Next steps

1. Install the air shroud.
2. Follow the procedure listed in After working inside your system.
3. To ensure that the memory module has been installed properly, press F2 during reboot to enter the **System Setup**, and check the **System Memory** setting. The **System Memory Size** indicates the installed memory.
4. 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.
5. Run the system memory test in the system diagnostics.

Processor and heat sink

Removing a heat sink

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 installed, remove the air shroud.

WARNING: The heat sink and processor are too 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.

NOTE: The procedure to uninstall standard and L-type heat sink is similar.

Steps

1. Using a Torx #T20 screwdriver, fully loosen the captive screw all the way before moving to the next screw (on one-screw-at-a-time basis).

   NOTE: Follow the screw sequence defined on the heat sink label. Disassembly order: 6, 5, 4, 3, 2, 1

   NOTE: The captive screw numbers are marked on the heat sink.

2. Lift the heat sink from the system.

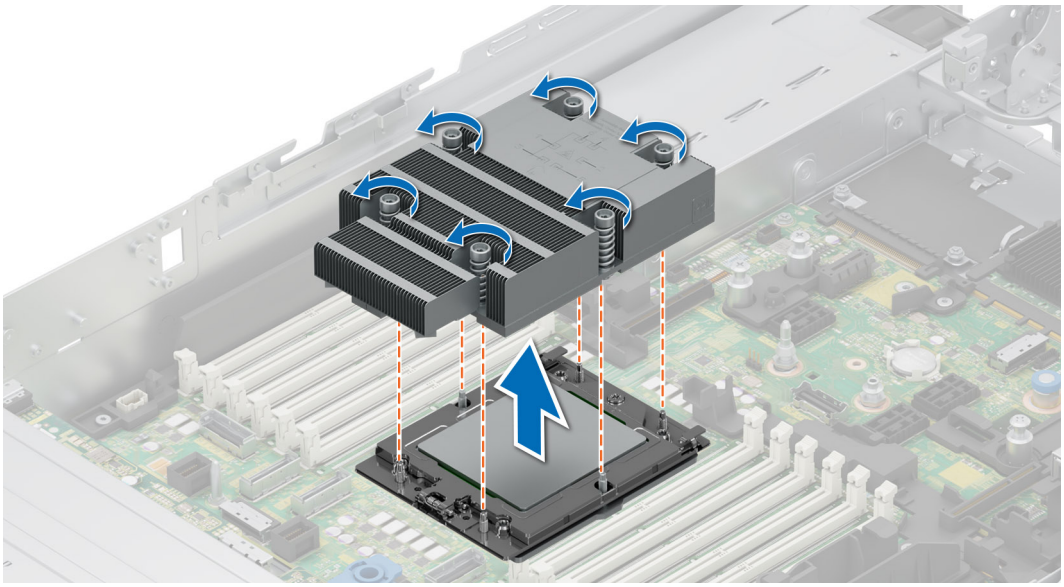

Figure 145. Removing a heat sink

Next steps

1. If you are uninstalling a faulty heat sink, replace the heat sink, else remove the processor.

Removing the liquid cooling heat sink modules

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 installed, remove the air shroud.

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

Steps

1. Using a Phillips #1 screw driver, loosen the captive screw on the liquid cooling ring holder.
2. Lift up the liquid cooling ring holder to loosen the liquid cooling tubes.
3. Disconnect the liquid cooling detection cable from the Rio card connector.

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

4. Remove the liquid cooling tubes end point from the rear exit of the I/O function panel.
5. Slightly lift up the liquid cooling tubes surrounding the DIMM slots.
6. Using a Torx #T20 screwdriver, loosen the captive screws in the order that is mentioned on the liquid cooling heat sink modules:
   a. Partially loosen the captive screws 1 and 2 (approximately 3 turns).

b. Partially loosen the captive screws 3 and 4 (approximately 3 turns).
c. Loosen the captive screws 1 and 2 completely.
d. Loosen the captive screws 3 and 4 completely.

NOTE: The captive screw numbers are marked on the liquid cooling heat sink modules.

7. Lift the heat sink from the system.

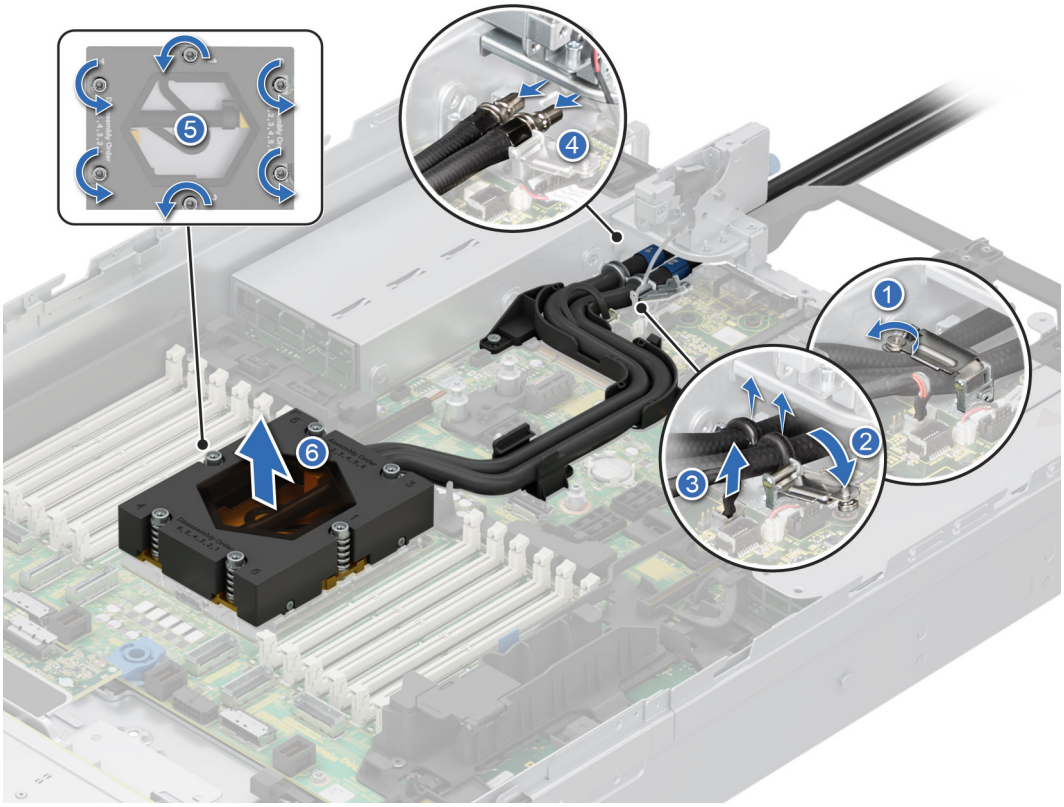

Figure 146. Removing the liquid cooling heat sink modules

Next steps

1. If you are uninstalling a faulty heat sink, replace the liquid cooling heat sink modules, else remove the processor.

Removing the processor

Prerequisites

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

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 heat sink.

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

Steps

1. Using a Torx #T20 screwdriver, loosen the middle screw to release the retention frame. Hold and lift the retention frame upwards and rotate it slightly pass the vertical position(105 degrees).

NOTE: The spring loading will keep the retention frame at its "open" position.

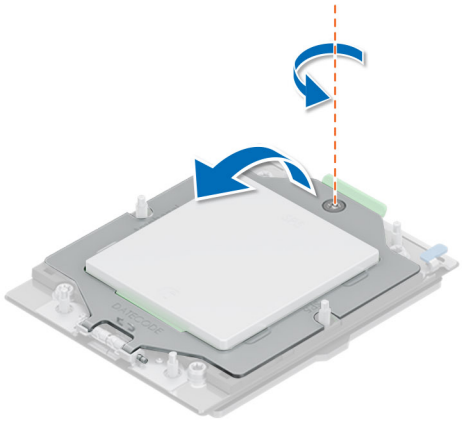

Figure 147. Removing screws on the retention frame

2. Release the processor socket rail frame by holding both blue tabs to lift the blue latches.

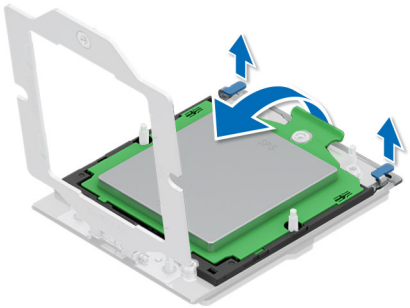

Figure 148. Lifting the rail frame

3. Holding the handle on the carrier frame, slide the tray out of the rail frame.

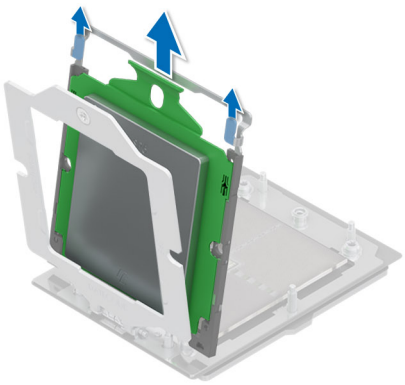

Figure 149. Removing the carrier frame

Next steps

1. Replace the processor.

Installing the processor

Prerequisites

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

Steps

1. Holding the handle of the carrier frame, slide the tray into the processor socket rail frame until firmly seated.

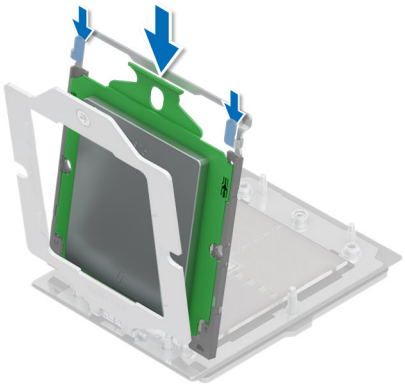

Figure 150. Placing the carrier frame into the rail frame

2. Holding both of blue tabs to push the rail frame down until the blue latches lock into place.

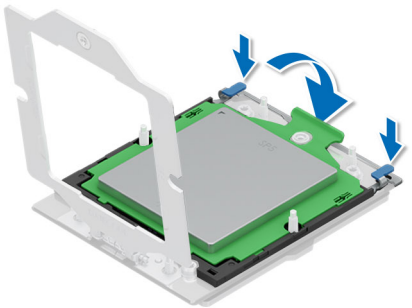

Figure 151. Closing the rail frame

3. Secure the retention frame by holding down the retention frame with one hand while using the other hand to operate the screw driver to engage and tighten screw.

   NOTE: Press the retention frame while tightening the screws to avoid tilting of the processor cover out of the processor socket.

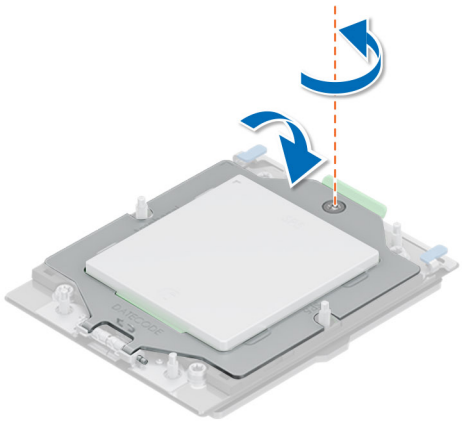

Figure 152. Securing the retention frame

Next steps

1. Install the heat sink.
2. Follow the procedure listed in After working inside your system.

Installing the heat sink

Prerequisites

Never uninstall the heat sink from a processor unless you intend to replace the processor or system board. 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. If installed, remove the air shroud.
4. If installed, remove the processor dust cover.

NOTE: The procedure to install standard and L-type heat sink is similar.

Steps

1. If you are using an existing heat sink, remove the thermal grease on the heat sink by using a clean lint-free cloth.

   NOTE: For a new heat sink, the thermal paste is pre-applied to the heat sink. Remove the protective cover, and install the heat sink.

2. Use the thermal grease syringe included with your processor kit to apply the grease in a thin spiral on the top of the processor.

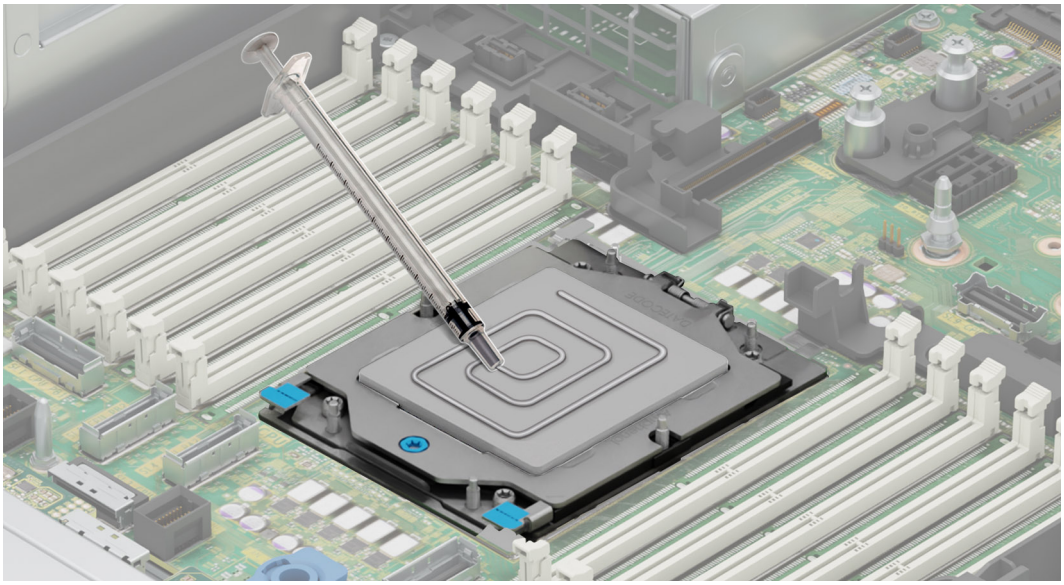

Figure 153. Applying thermal grease

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

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

NOTE: Refer to the airflow direction on heat sink label as visual hint of heat sink install orientation.

3. Align the screws on the heat sink with the standoff screws on the system board.

   NOTE: The A1 extrusion on the L-type heat sink should face towards the system side.

4. Using a Torx #T20 screwdriver, fully tighten the captive screw all the way down before moving to the next screw (on one-screw-at-a-time basis).

   NOTE: Follow the screw sequence defined on heat sink label. Assembly order: 1, 2, 3, 4, 5, 6

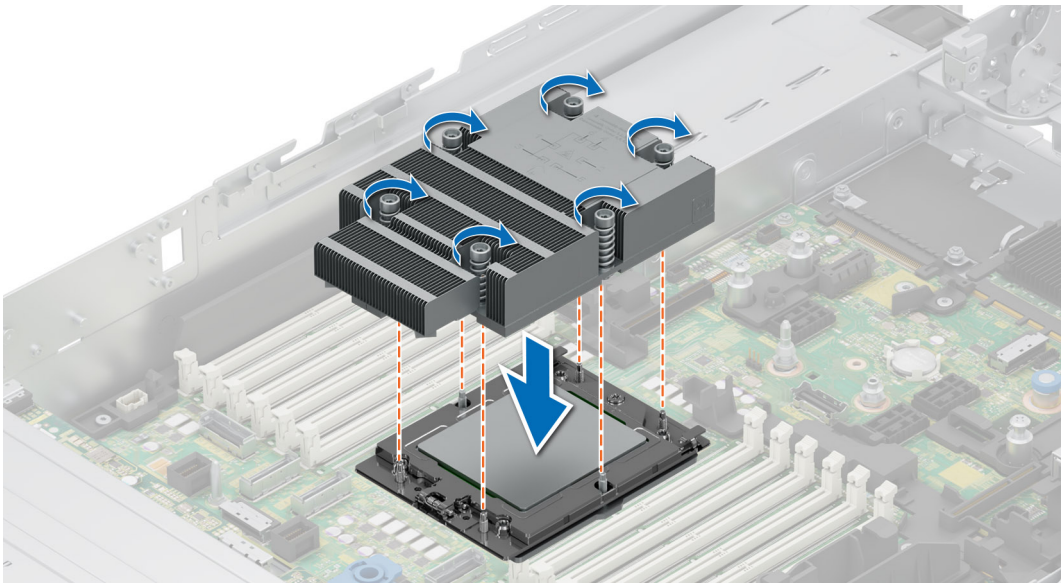

Figure 154. Installing the heat sink

Next steps

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

Installing the liquid cooling heat sink

Prerequisites

Never uninstall the heat sink from a processor unless you intend to replace the processor or system board. 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. If installed, remove the air shroud.
4. If installed, remove the processor dust cover.
5. For new heat sinks, refer to Installing the heat sink step 1 and 2 for applying the thermal grease.

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

NOTE: The recommended maximum operating pressure is 15 psi (diverter opens at 15 psi).

Steps

1. Align the screws on the liquid cooling heat sink with the standoff screws on the system board. Ensure that the liquid cooling tubes and liquid detection cable are placed towards the rear of the chassis. Using a Torx #T20 screwdriver, tighten the captive screws in the order that is mentioned below:

   NOTE: The captive screw numbers are marked on the heat sink and are tightened to a torque value of 12.0 ± 1.2 lbf-in.

   a. Partially tighten the captive screws 1 and 2 (approximately 3 turns).
   b. Partially tighten the captive screws 3 and 4 (approximately 3 turns).
   c. Tighten the captive screws 1 and 2 completely.
   d. Tighten the captive screws 3 and 4 completely.
2. Ensure that the liquid cooling tubes leading towards the front of the chassis are placed between the DIMM slots and the J_SL connectors. And the tubes leading towards the rear of the chassis are placed in between the DIMM slots and the relay components.

   NOTE: Liquid detection cable must be placed underneath the cooling tubes to ensure it does not interfere with the PCIe risers.

3. Route the liquid cooling tubes through the rear exit point next to the I/O function panel. Ensure the routing follows the numbered labels on the tube and liquid cooling ring holder (1, 2).
4. Connect the liquid cooling detection cable to the RIO card connector.
5. Insert the rubber rings on the tubes on to the rubber holder.
6. Using a Phillips #1 screwdriver, tighten the captive screw on the liquid cooling ring holder to secure it in place.

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

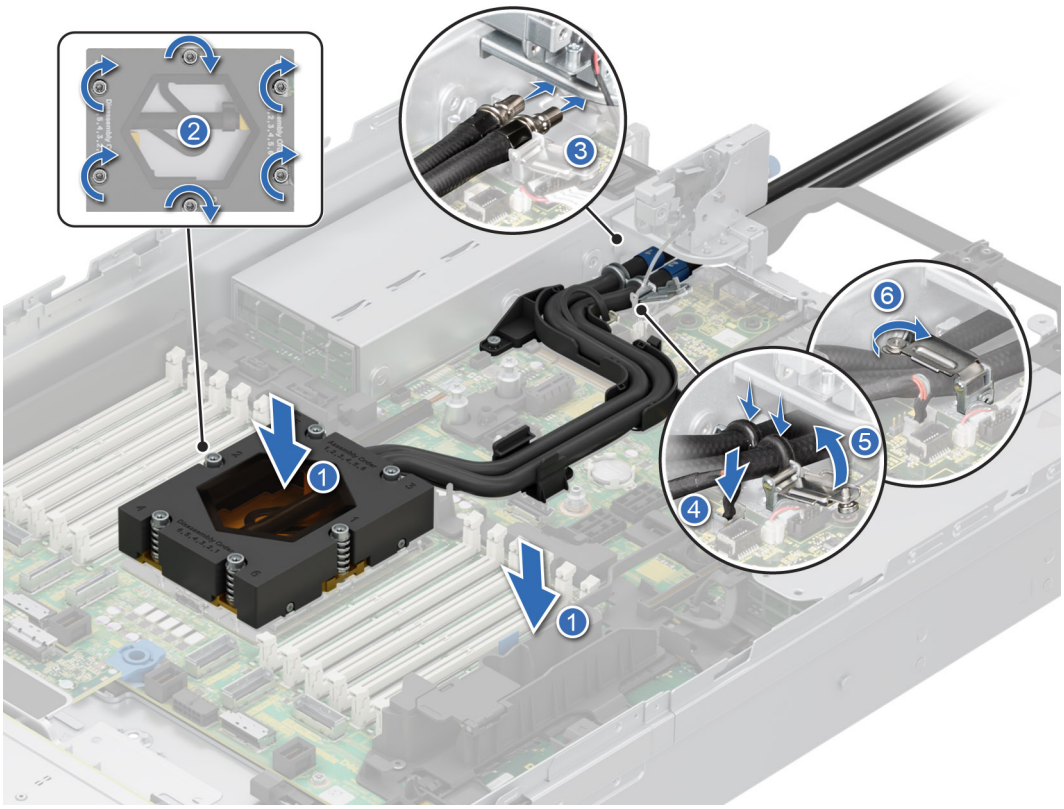

Figure 155. Installing the liquid cooling heat sink

Next steps

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

Expansion cards and expansion card risers

NOTE: A system event entry is logged in the iDRAC Lifecycle Controller if an expansion card riser is not supported or missing. It does not prevent your system from turning on. However, if a F1/F2 pause occurs with an error message, see *Troubleshooting expansion cards* section in the *Dell PowerEdge Servers Troubleshooting Guide* at PowerEdge manuals.

Expansion card installation guidelines

The following table describes the supported expansion cards and riser configurations:

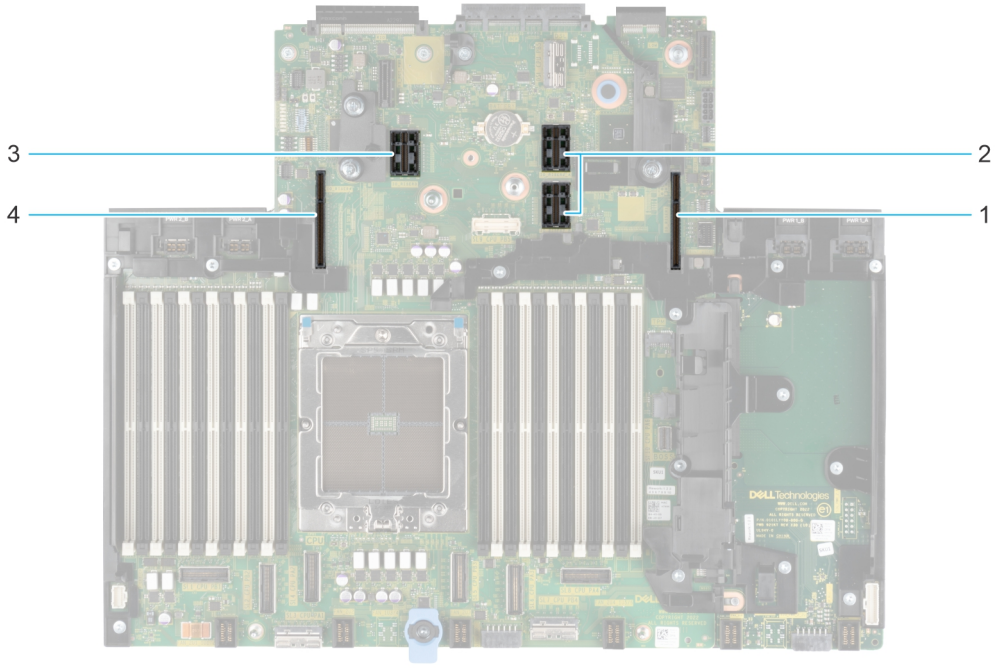

Figure 156. Expansion card riser slot connectors

1. Riser 1
2. Riser 2
3. Riser 3
4. Riser 4

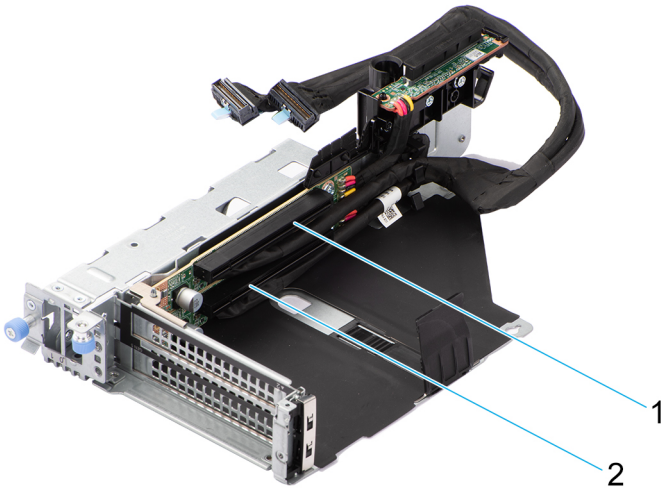

Figure 157. R1U

1. Slot 1
2. Slot 2

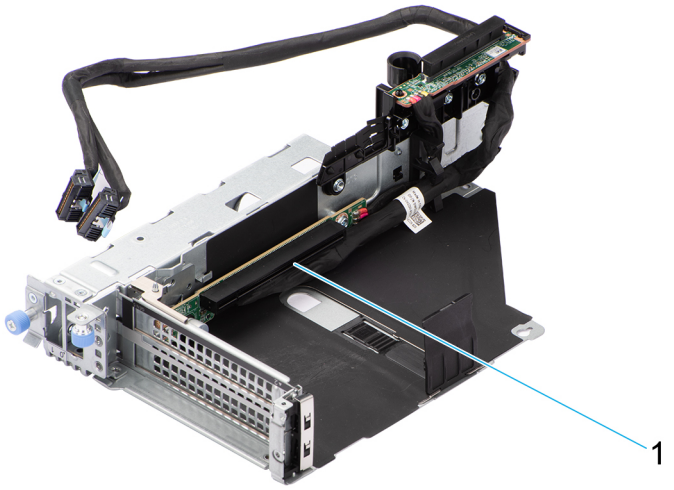

Figure 158. R1T

1. Slot 2

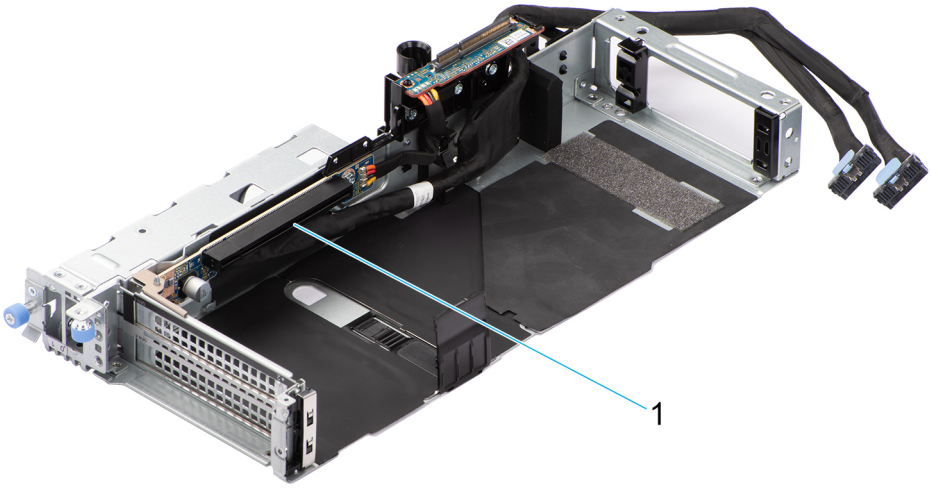

Figure 159. R1T

1. Slot 2

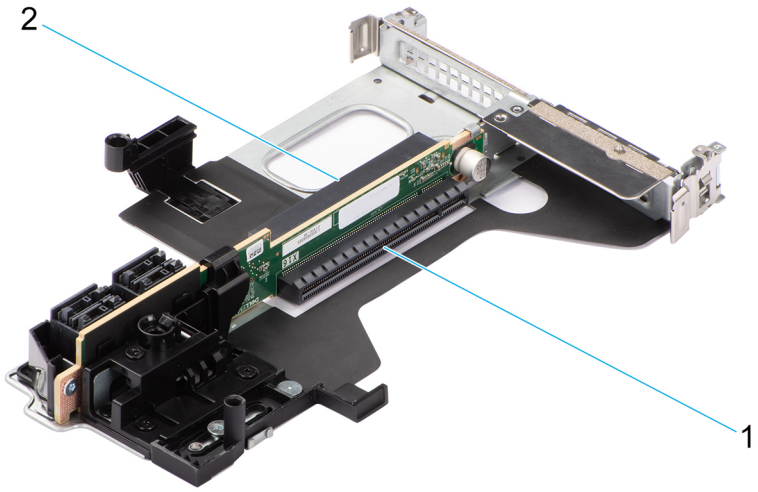

Figure 160. R2A

1. Slot 3
2. Slot 6

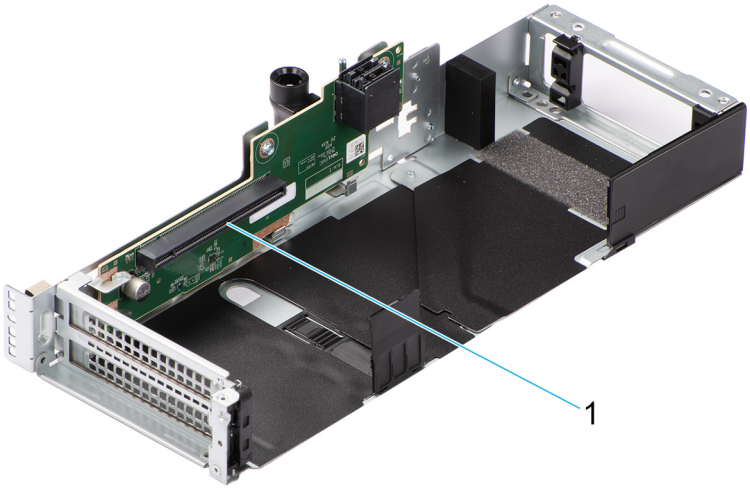

Figure 161. R3A

1. Slot 5

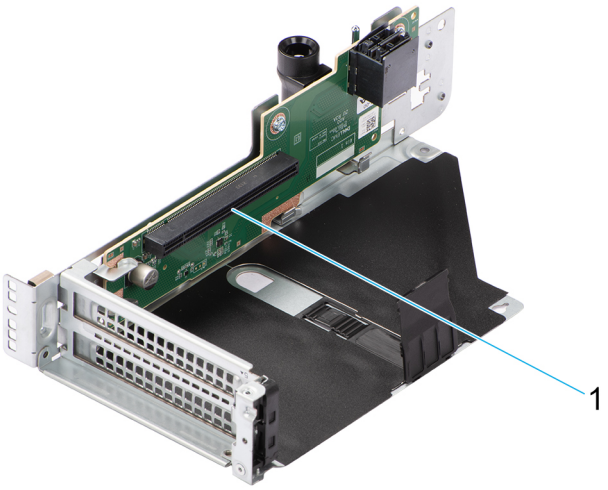

Figure 162. R3A

1. Slot 5

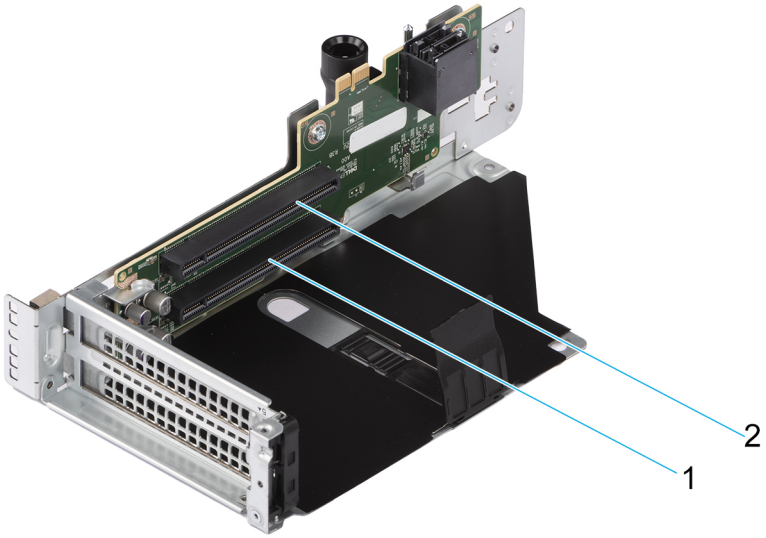

Figure 163. R3B

1. Slot 4
2. Slot 5

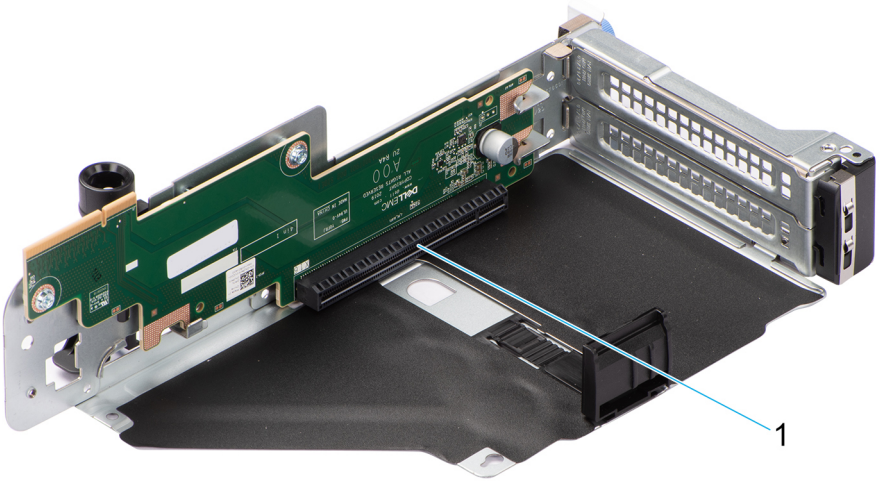

Figure 164. R4A

1. Slot 7

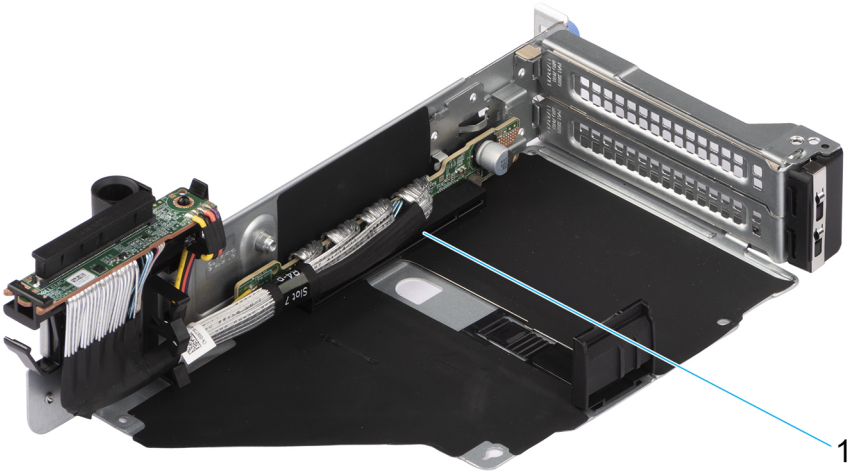

Figure 165. R4P

1. Slot 7

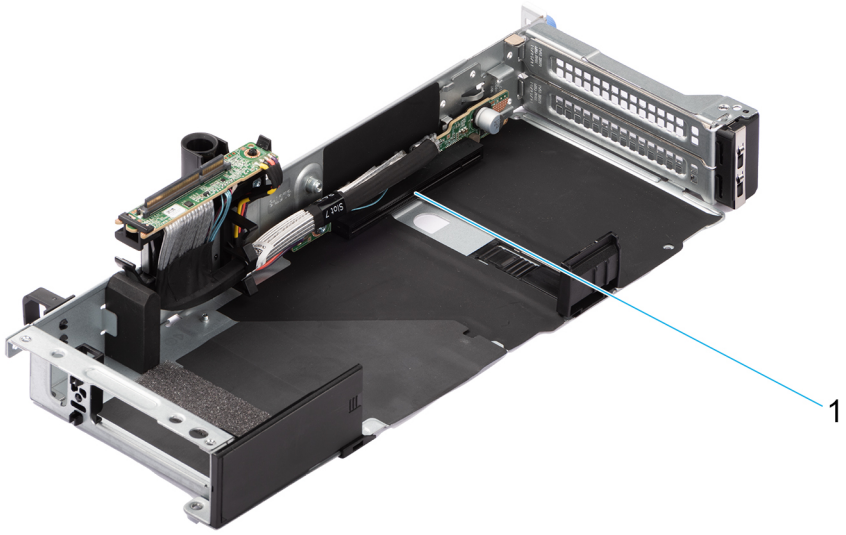

Figure 166. R4P

1. Slot 7

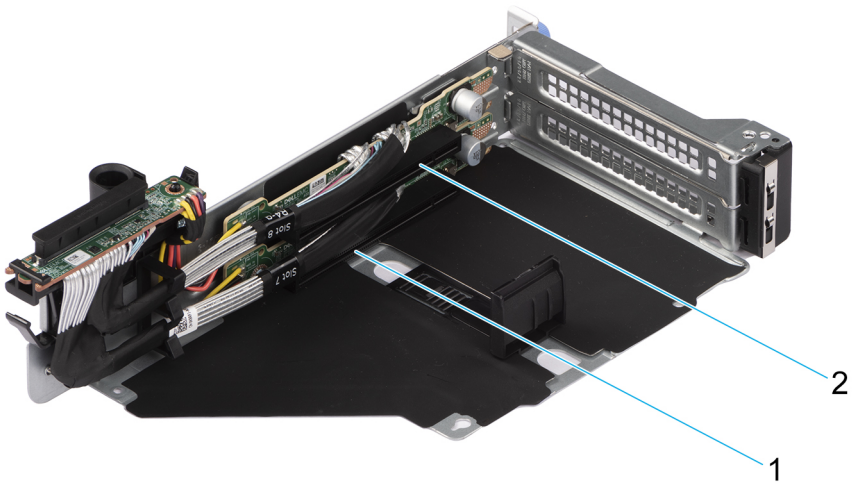

Figure 167. R4Q

1. Slot 7
2. Slot 8

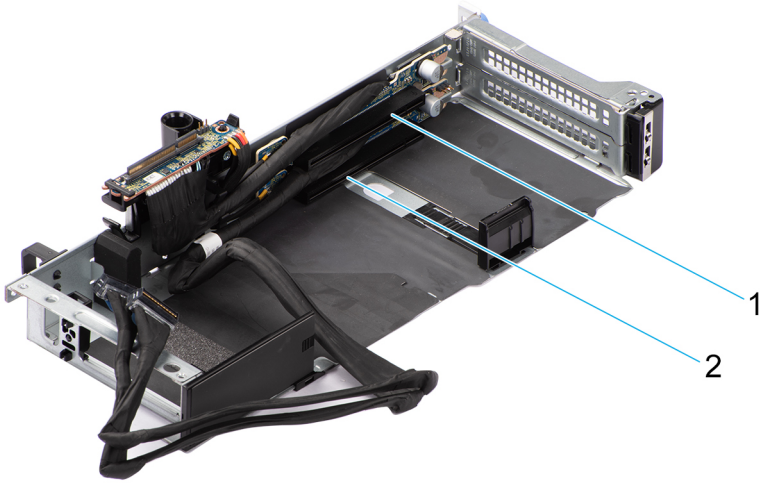

Figure 168. R4S

1. Slot 7
2. Slot 8

Table 113. Expansion card riser configurations

Configurations	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
Config1. 2 x16 FH + 2 x8 LP	R2A	3	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
	R3A	5	Full Height	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4P	7	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
Config2. 6 x8 FH + 2 x8 LP	R1U	1	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		2	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
	R2A	3	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
	R3B	4	Full Height	Processor 1	PCIe Gen4 x8 (x16 connector)
		5	Full Height	Processor 1	PCIe Gen4 x8 (x16 connector)
	R4Q	7	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		8	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)

Table 113. Expansion card riser configurations (continued)

Configurations	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
Config3-1. 2 x16 LP + 2 x8 FH + 2 x16 FH	R1T	2	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R3B	4	Full Height	Processor 1	PCIe Gen4 x8 (x16 connector)
		5	Full Height	Processor 1	PCIe Gen4 x8 (x16 connector)
	R4P	7	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
Config3-2. 2 x16 LP + 2 x8 FH + 2 x16 DW	R1T	2	Full Height (DW)	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R3B	4	Full Height	Processor 1	PCIe Gen4 x8 (x16 connector)
		5	Full Height	Processor 1	PCIe Gen4 x8 (x16 connector)
	R4P	7	Full Height (DW)	Processor 1	PCIe Gen5 x16 (x16 connector)
Config4-1. 2 x16 LP, 3 x16 FH	R1T	2	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R3A	5	Full Height	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4P	7	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
Config4-2. 2 x16 LP, 3 x16 DW	R1T	2	Full Height (DW)	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R3A	5	Full Height (DW)	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4P	7	Full Height (DW)	Processor 1	PCIe Gen5 x16 (x16 connector)

Table 113. Expansion card riser configurations (continued)

Configurations	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
Config5-1. 6 x16 SW (HL)	R1T	2	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R3A	5	Full Height	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4S	7	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
		8	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
Config5-2. 6 x16 SW (FL)	R1T	2	Full Height (DW)	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R3A	5	Full Height	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4S	7	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
		8	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
Config6. 2 x16 LP + 2 x8 FH	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4Q	7	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		8	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
Config7. 4 x8 FH + 2 x16 LP	R1U	1	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		2	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
	R2T	3	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4Q	7	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)
		8	Full Height	Processor 1	PCIe Gen5 x8 (x16 connector)

Table 113. Expansion card riser configurations (continued)

Configurations	Expansion card risers	PCIe Slots	Form factor	Controlling processor	Slot's electrical bandwidth/ physical connector
Config8. 1 x16 FH + 2 x8 LP	R2A	3	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
	R4A	6	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
		7	Full Height	Processor 1	PCIe Gen4 x16 (x16 connector)
Config9. 1 x16 FH + 2 x8 LP	R2A	3	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
		6	Low Profile	Processor 1	PCIe Gen4 x8 (x16 connector)
	R3A	5	Full Height	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4P	7	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
Config10. 1 x 16 FH, 2 x 8 LP	R1U	1	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
		2	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R3B	4	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
		5	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R4Q	7	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)
		8	Full Height	Processor 1	PCIe Gen5 x16 (x16 connector)

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 114. Config 0: No riser – CPU

Card Type	Slot Priority	Maximum number of cards
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Broadcom (OCP: 100Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100Gb) 2P,S56	Internal	1
Mellanox (OCP: 25Gb) 2P,S28	Internal	1
Broadcom (OCP: 25Gb) 4P,V3	Internal	1

Table 114. Config 0: No riser – CPU (continued)

Card Type	Slot Priority	Maximum number of cards
Broadcom (OCP: 25Gb) 2P,V3	Internal	1
Intel (OCP: 25Gb) 2P,V2	Internal	1
Intel (OCP: 25Gb) 4P,V2	Internal	1
Broadcom (OCP: 10Gb) 4P,BT	Internal	1
Intel (OCP: 10Gb) 2P,V2	Internal	1
Broadcom (OCP: 10Gb) 2P,V2	Internal	1
Intel (OCP: 10Gb) 4P,V2	Internal	1
Intel (OCP: 1Gb) 4P,V2	Internal	1
Intel (OCP: 1Gb) 4P,V3	Internal	1
Broadcom (OCP: 1Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 115. Config1. R2A+R3A+R4P (HL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	4,8	1
NVIDIA (GPU) A2,16GB,60W	5,7	2
NVIDIA (GPU) A2,16GB,V2,FH	5,7	2
NVIDIA (GPU) L4 24GB 70 FH	5,7	2
FOXCONN (Front PERC) H965i,FRONT	Internal	2
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	2
FOXCONN (Front PERC) H755N,FRONT	Internal	2
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	2
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (External Adapter) HBA355e	3,6,5,7	4
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	5,7	2
Dell (External Adapter) H965e External RAID Controller	5,7	2
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1

Table 115. Config1. R2A+R3A+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	7	1
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	5,7	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	5,7	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	5,7	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	5,7	2
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	5,7	2
Mellanox (NIC: 25 Gb) 2P,S28	5,7	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	5,7	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	5,7	2
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	5,7	2
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	5,7	2
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	5,7	2
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	5,7	2
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	5,7	2
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	5,7	2
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	5,7	2
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	5,7	2
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	5,7	2
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	5,7	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2

Table 115. Config1. R2A+R3A+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
Mellanox (NIC: NDR200) PCIe FH	5,7	2
Mellanox (NIC: HDRV CRD) 1P,Q56	5,7	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	5,7	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 116. Config2. R1U+R2A+R3B+R4Q

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	8	1
NVIDIA (GPU) A2,16GB,60W	1,2,4,5,7,8	6
NVIDIA (GPU) A2,16GB,V2,FH	1,2,4,5,7,8	6
FOXCONN (Front PERC) H965i,FRONT	Internal	2
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	2
FOXCONN (Front PERC) H755N,FRONT	Internal	2
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	2
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1

Table 116. Config2. R1U+R2A+R3B+R4Q (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (PERC Adapter) H755,ADPT	3	1
FOXCONN (PERC Adapter) H355,ADPT	3	1
FOXCONN (PERC Adapter) HBA355i,ADPT,V2	3	1
FOXCONN (External Adapter) HBA355e	3,6,1,2,4,5,7,8	8
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	1,2,4,5,7,8	6
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	1,2,4,5,7,8	6
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	1,2,4,5,7,8	6
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	1,2,4,5,7,8	6
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	1,2,4,5,7,8	6
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	1,2,4,5,7,8	6
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	1,2,4,5,7,8	6
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	1,2,4,5,7,8	6
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	1,2,4,5,7,8	6
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	1,2,4,5,7,8	6
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	1,2,4,5,7,8	6
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	1,2,4,5,7,8	6
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	1,2,4,5,7,8	6
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2

Table 116. Config2. R1U+R2A+R3B+R4Q (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 117. Config3-1. R1T+R2T+R3B+R4P (HL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	4	1
Inventec (MIC Board) PAIGE,16G	Internal	1
Pensando (DPU: 100 Gb) FH,100G,2P,Q56	7	1
NVIDIA (Mellanox) (DPU: 100 Gb) FH,100G,2P,Q28	7	1
Pensando (DPU: 25 Gb) FH,25G,2P,S28	7	1
NVIDIA (MLNX) (DPU: 25 Gb) FH,25G,2P,S28	7	1
Mellanox (DPU: 25 Gb) 2P,S28,C	7	1
NVIDIA (GPU) A2,16GB,60W	2,4,5,7	4
NVIDIA (GPU) A2,16GB,V2,FH	2,4,5,7	4
NVIDIA (GPU) L4 24GB 70 FH	2,7	2
FOXCONN (Front PERC) H965i,FRONT	Internal	2
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	2
FOXCONN (Front PERC) H755N,FRONT	Internal	2

Table 117. Config3-1. R1T+R2T+R3B+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	2
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (PERC Adapter) H755,ADPT	3	1
FOXCONN (PERC Adapter) H355,ADPT	3	1
FOXCONN (PERC Adapter) HBA355i,ADPT,V2	3	1
FOXCONN (External Adapter) HBA355e	3,6,2,4,5,7	6
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	3,6,2,7	4
Dell (External Adapter) H965e External RAID Controller	3,6,2,7	4
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	2,7	2
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	2,7	2
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	2,7	2
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	2,7	2
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	2,4,5,7	4
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	2,7	2
Mellanox (NIC: 25 Gb) 2P,S28	2,7	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	2,7	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	2,4,5,7	4
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2

Table 117. Config3-1. R1T+R2T+R3B+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	2,4,5,7	4
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	2,4,5,7	4
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	2,4,5,7	4
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	2,4,5,7	4
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	2,4,5,7	4
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	2,4,5,7	4
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	2,4,5,7	4
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	2,4,5,7	4
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	2,4,5,7	4
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	2,4,5,7	4
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	2,7	2
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	2,7	2
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	2,7	2
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1

Table 117. Config3-1. R1T+R2T+R3B+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 118. Config3-2. R1T+R2T+R3B+R4P (FL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	4	1
Inventec (MIC Board) PAIGE,16G	Internal	1
Pensando (DPU: 100 Gb) FH,100G,2P,Q56	7	1
NVIDIA (Mellanox) (DPU: 100 Gb) FH,100G,2P,Q28	7	1
Pensando (DPU: 25 Gb) FH,25G,2P,S28	7	1
NVIDIA (MLNX) (DPU: 25 Gb) FH,25G,2P,S28	7	1
Mellanox (DPU: 25 Gb) 2P,S28,C	7	1
NVIDIA (GPU) A40,48GB,V2	2,7	2
NVIDIA (GPU) A100,80GB,V2	2,7	2
NVIDIA (GPU) H100,80GB,350W	2,7	2
NVIDIA (GPU) H100,80G,350W,V2	2,7	2
NVIDIA (GPU) A800,80GB,300W	2,7	2
NVIDIA (GPU) A30,24GB,V2	2,7	2
NVIDIA (GPU) A16,64GB,V2	2,7	2
AMD (GPU) MI210,64GB,300W	2,7	2
AMD (GPU) MI210,64GB,300W	2,7	2
NVIDIA (GPU) L40,48GB,300W	2,7	2
NVIDIA (GPU) L40,48GB,300W,V2	2,7	2
NVIDIA (GPU) L40S,48GB,350W	2,7	2
NVIDIA (GPU) A2,16GB,60W	2,4,5,7	4
NVIDIA (GPU) A2,16GB,V2,FH	2,4,5,7	4
NVIDIA (GPU) L4 24GB 70 FH	2,7	2
FOXCONN (Front PERC) H965i,FRONT	Internal	2

Table 118. Config3-2. R1T+R2T+R3B+R4P (FL) (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	2
FOXCONN (Front PERC) H755N,FRONT	Internal	2
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	2
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (PERC Adapter) H755,ADPT	3	1
FOXCONN (PERC Adapter) H355,ADPT	3	1
FOXCONN (PERC Adapter) HBA355i,ADPT,V2	3	1
FOXCONN (External Adapter) HBA355e	3,6,2,4,5,7	6
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	3,6,2,7	4
Dell (External Adapter) H965e External RAID Controller	3,6,2,7	4
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	2,7	2
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	2,7	2
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	2,7	2
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	2,7	2
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	2,4,5,7	4
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	2,7	2
Mellanox (NIC: 25 Gb) 2P,S28	2,7	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	2,7	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2

Table 118. Config3-2. R1T+R2T+R3B+R4P (FL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (NIC: 25 Gb) 2P,SFP,F1	2,4,5,7	4
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	2,4,5,7	4
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	2,4,5,7	4
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	2,4,5,7	4
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	2,4,5,7	4
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	2,4,5,7	4
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	2,4,5,7	4
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	2,4,5,7	4
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	2,4,5,7	4
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	2,4,5,7	4
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	2,4,5,7	4
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	2,7	2
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	2,7	2
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	2,7	2
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1

Table 118. Config3-2. R1T+R2T+R3B+R4P (FL) (continued)

Card type	Slot priority	Maximum number of cards
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 119. Config4-1. R1T+R2T+R3A+R4P (HL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	4,8	1
Inventec (MIC Board) PAIGE,16G	Internal	1
Pensando (DPU: 100 Gb) FH,100G,2P,Q56	7	1
NVIDIA (Mellanox) (DPU: 100 Gb) FH,100G,2P,Q28	7	1
Pensando (DPU: 25 Gb) FH,25G,2P,S28	7	1
NVIDIA (MLNX) (DPU: 25 Gb) FH,25G,2P,S28	7	1
Mellanox (DPU: 25 Gb) 2P,S28,C	7	1
NVIDIA (GPU) A2,16GB,60W	2,5,7	3
NVIDIA (GPU) A2,16GB,V2,FH	2,5,7	3
NVIDIA (GPU) L4 24GB 70 FH	2,5,7	3
FOXCONN (Front PERC) H965i,FRONT	Internal	2
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	2
FOXCONN (Front PERC) H755N,FRONT	Internal	2
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	2
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1

Table 119. Config4-1. R1T+R2T+R3A+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (External Adapter) HBA355e	3,6,2,5,7	5
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	3,6,2,5,7	5
Dell (External Adapter) H965e External RAID Controller	3,6,2,5,7	5
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	2,7	2
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7	3
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7	3
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	2,5,7	3
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	2,5,7	3
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	2,5,7	3
Mellanox (NIC: 25 Gb) 2P,S28	2,5,7	3
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	2,5,7	3
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	2,5,7	3
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	2,5,7	3
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	2,5,7	3
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	2,5,7	3
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	2,5,7	3
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	2,5,7	3

Table 119. Config4-1. R1T+R2T+R3A+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	2,5,7	3
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	2,5,7	3
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	2,5,7	3
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	2,5,7	3
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	2,5,7	3
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	2,5,7	3
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	2,5,7	3
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	2,5,7	3
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 120. Config4-2. R1T+R2T+R3A+R4P (FL)

Card type	Slot priority	Maximum number of cards
Inventec (MIC Board) PAIGE,16G	Internal	1
Pensando (DPU: 100 Gb) FH,100G,2P,Q56	7	1
NVIDIA (Mellanox) (DPU: 100 Gb) FH,100G,2P,Q28	7	1
Pensando (DPU: 25 Gb) FH,25G,2P,S28	7	1
NVIDIA (MLNX) (DPU: 25 Gb) FH,25G,2P,S28	7	1
Mellanox (DPU: 25 Gb) 2P,S28,C	7	1
NVIDIA (GPU) A40,48GB,V2	2,7,5	3
NVIDIA (GPU) A100,80GB,V2	2,7,5	3
NVIDIA (GPU) H100,80GB,350W	2,7,5	3
NVIDIA (GPU) H100,80G,350W,V2	2,7,5	3
NVIDIA (GPU) A800,80GB,300W	2,7,5	3
NVIDIA (GPU) A30,24GB,V2	2,7,5	3
NVIDIA (GPU) A16,64GB,V2	2,7,5	3
AMD (GPU) MI210,64GB,300W	2,7,5	3
AMD (GPU) MI210,64GB,300W	2,7,5	3
NVIDIA (GPU) L40,48GB,300W	2,7,5	3
NVIDIA (GPU) L40,48GB,300W,V2	2,7,5	3
NVIDIA (GPU) L40S,48GB,350W	2,7,5	3
NVIDIA (GPU) A2,16GB,60W	2,5,7	3
NVIDIA (GPU) A2,16GB,V2,FH	2,5,7	3
NVIDIA (GPU) L4 24GB 70 FH	2,5,7	3
FOXCONN (Front PERC) H965i,FRONT	Internal	2
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	2
FOXCONN (Front PERC) H755N,FRONT	Internal	2
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	2
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (External Adapter) HBA355e	3,6,2,5,7	5
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2

Table 120. Config4-2. R1T+R2T+R3A+R4P (FL) (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (External Adapter) H965e,ADPT	3,6,2,5,7	5
Dell (External Adapter) H965e External RAID Controller	3,6,2,5,7	5
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	2,7	2
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7	3
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7	3
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	2,5,7	3
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	2,5,7	3
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	2,5,7	3
Mellanox (NIC: 25 Gb) 2P,S28	2,5,7	3
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	2,5,7	3
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	2,5,7	3
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	2,5,7	3
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	2,5,7	3
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	2,5,7	3
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	2,5,7	3
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	2,5,7	3
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	2,5,7	3

Table 120. Config4-2. R1T+R2T+R3A+R4P (FL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	2,5,7	3
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	2,5,7	3
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	2,5,7	3
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	2,5,7	3
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	2,5,7	3
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	2,5,7	3
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	2,5,7	3
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 121. Config5-1. R1T+R2T+R3A+R4S (HL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	8	1

Table 121. Config5-1. R1T+R2T+R3A+R4S (HL) (continued)

Card type	Slot priority	Maximum number of cards
NVIDIA (GPU) A2,16GB,60W	2,5,7,8	4
NVIDIA (GPU) A2,16GB,V2,FH	2,5,7,8	4
NVIDIA (GPU) L4 24GB 70 FH	2,5,7,8	4
FOXCONN (Front PERC) H965i,FRONT	Internal	1
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	1
FOXCONN (Front PERC) H755N,FRONT	Internal	1
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	1
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (External Adapter) HBA355e	3,6,2,5,7,8	6
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	3,6,2,5,7,8	6
Dell (External Adapter) H965e External RAID Controller	3,6,2,5,7,8	6
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	2,7,8	3
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7,8	4
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7,8	4
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	2,5,7,8	4
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	2,5,7,8	4
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	2,5,7,8	4
Mellanox (NIC: 25 Gb) 2P,S28	2,5,7,8	4
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	2,5,7,8	4

Table 121. Config5-1. R1T+R2T+R3A+R4S (HL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	2,5,7,8	4
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	2,5,7,8	4
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	2,5,7,8	4
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	2,5,7,8	4
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	2,5,7,8	4
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	2,5,7,8	4
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	2,5,7,8	4
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	2,5,7,8	4
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	2,5,7,8	4
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	2,5,7,8	4
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	2,5,7,8	4
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	2,5,7,8	4
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	2,5,7,8	4
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	2,5,7,8	4
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1

Table 121. Config5-1. R1T+R2T+R3A+R4S (HL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 122. Config5-2. R1T+R2T+R3A+R4S (FL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	8	1
NVIDIA (GPU) A40,48GB,V2	2,5	2
NVIDIA (GPU) A100,80GB,V2	2,5	2
NVIDIA (GPU) H100,80GB,350W	2,5	2
NVIDIA (GPU) H100,80G,350W,V2	2,5	2
NVIDIA (GPU) A800,80GB,300W	2,5	2
NVIDIA (GPU) A30,24GB,V2	2,5	2
NVIDIA (GPU) A16,64GB,V2	2,5	2
AMD (GPU) MI210,64GB,300W	2,5	2
AMD (GPU) MI210,64GB,300W	2,5	2
NVIDIA (GPU) L40,48GB,300W	2,5	2
NVIDIA (GPU) L40,48GB,300W,V2	2,5	2
NVIDIA (GPU) L40S,48GB,350W	2,5	2
NVIDIA (GPU) A2,16GB,60W	2,5,7,8	4
NVIDIA (GPU) A2,16GB,V2,FH	2,5,7,8	4
NVIDIA (GPU) L4 24GB 70 FH	2,5,7,8	4
FOXCONN (Front PERC) H965i,FRONT	Internal	1
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	1
FOXCONN (Front PERC) H755N,FRONT	Internal	1
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	1

Table 122. Config5-2. R1T+R2T+R3A+R4S (FL) (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (External Adapter) HBA355e	3,6,2,5,7,8	6
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	3,6,2,5,7,8	6
Dell (External Adapter) H965e External RAID Controller	3,6,2,5,7,8	6
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	2,7,8	3
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7,8	4
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	2,5,7,8	4
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	2,5,7,8	4
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	2,5,7,8	4
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	2,5,7,8	4
Mellanox (NIC: 25 Gb) 2P,S28	2,5,7,8	4
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	2,5,7,8	4
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	2,5,7,8	4
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	2,5,7,8	4
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	2,5,7,8	4

Table 122. Config5-2. R1T+R2T+R3A+R4S (FL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	2,5,7,8	4
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	2,5,7,8	4
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	2,5,7,8	4
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	2,5,7,8	4
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	2,5,7,8	4
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	2,5,7,8	4
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	2,5,7,8	4
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	2,5,7,8	4
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	2,7,8	3
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	2,5,7,8	4
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	2,5,7,8	4
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1

Table 122. Config5-2. R1T+R2T+R3A+R4S (FL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 123. Config6. R2T+R4Q

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	8	1
NVIDIA (GPU) A2,16GB,60W	7,8	2
NVIDIA (GPU) A2,16GB,V2,FH	7,8	2
FOXCONN (Front PERC) H965i,FRONT	Internal	1
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	1
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (PERC Adapter ASSY,CRD,CTL,H965i,ADPT	3	1
FOXCONN (PERC Adapter) H755,ADPT	3	1
FOXCONN (PERC Adapter) H355,ADPT	3	1
FOXCONN (PERC Adapter) HBA355i,ADPT,V2	3	1
FOXCONN (External Adapter) HBA355e	3,6,7,8	4
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	3,6	2
Dell (External Adapter) H965e External RAID Controller	3,6	2
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	7,8	2
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	7,8	2

Table 123. Config6. R2T+R4Q (continued)

Card type	Slot priority	Maximum number of cards
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	7,8	2
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	7,8	2
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	7,8	2
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	7,8	2
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	7,8	2
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	7,8	2
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	7,8	2
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	7,8	2
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	7,8	2
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	7,8	2
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	7,8	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1

Table 123. Config6. R2T+R4Q (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 124. Config7. R1U+R2T+R4Q

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	8	1
NVIDIA (GPU) A2,16GB,60W	1,2,7,8	4
NVIDIA (GPU) A2,16GB,V2,FH	1,2,7,8	4
FOXCONN (Front PERC) H965i,FRONT	Internal	1
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	1
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (PERC Adapter ASSY,CRD,CTL,H965i,ADPT	3	1
FOXCONN (PERC Adapter) H755,ADPT	3	1
FOXCONN (PERC Adapter) H355,ADPT	3	1
FOXCONN (PERC Adapter) HBA355i,ADPT,V2	3	1
FOXCONN (External Adapter) HBA355e	3,6,1,2,7,8	6
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	3,6	2
Dell (External Adapter) H965e External RAID Controller	3,6	2
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Broadcom (NIC: 100 Gb) 2P,Q56	3,6	2

Table 124. Config7. R1U+R2T+R4Q (continued)

Card type	Slot priority	Maximum number of cards
Mellanox (NIC: 100 Gb) 2P,Q56	3,6	2
Intel (NIC: 100 Gb) 2P,Q28	3,6	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	1,2,7,8	4
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	1,2,7,8	4
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	1,2,7,8	4
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	1,2,7,8	4
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	1,2,7,8	4
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	1,2,7,8	4
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	1,2,7,8	4
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	1,2,7,8	4
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	1,2,7,8	4
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	1,2,7,8	4
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	1,2,7,8	4
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	1,2,7,8	4
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	1,2,7,8	4
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe LP	3,6	2
Mellanox (NIC: HDRV CRD) 1P,Q56	3,6	2
Mellanox (NIC: HDR100 VPI CRD) CX6,SP,L,ML	3,6	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1

Table 124. Config7. R1U+R2T+R4Q (continued)

Card type	Slot priority	Maximum number of cards
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 125. Config8. R2A+R4A (HL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	8	1
NVIDIA (GPU) A2,16GB,60W	7	1
NVIDIA (GPU) A2,16GB,V2,FH	7	1
NVIDIA (GPU) L4 24GB 70 FH	7	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (PERC Adapter) H755,ADPT	3	1
FOXCONN (PERC Adapter) H355,ADPT	3	1
FOXCONN (PERC Adapter) HBA355i,ADPT,V2	3	1
FOXCONN (External Adapter) HBA355e	3,6,7	3
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	7	1
Dell (External Adapter) H965e External RAID Controller	7	1
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1

Table 125. Config8. R2A+R4A (HL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	7	1
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	7	1
Intel (NIC: 100 Gb) FH,100G,2P,Q28	7	1
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	7	1
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	7	1
Mellanox (NIC: 25 Gb) 2P,S28	7	1
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	7	1
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	7	1
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	7	1
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	7	1
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	7	1
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	7	1
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	7	1
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	7	1
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	7	1
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,V3	7	1
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	7	1
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	7	1
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	7	1
Mellanox (NIC: HDRV CRD) 1P,Q56	7	1

Table 125. Config8. R2A+R4A (HL) (continued)

Card type	Slot priority	Maximum number of cards
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	7	1
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 126. Config9. R2A+R3A+R4P (HL)

Card type	Slot priority	Maximum number of cards
Inventec (2U seriel board) FH,SVR,15G	4,8	1
NVIDIA (GPU) A2,16GB,60W	5,7	2
NVIDIA (GPU) A2,16GB,V2,FH	5,7	2
NVIDIA (GPU) L4 24GB 70 FH	5,7	2
FOXCONN (Front PERC) H965i,FRONT	Internal	1
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	1
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (PERC Adapter) H755,ADPT	3	1
FOXCONN (PERC Adapter) H355,ADPT	3	1
FOXCONN (PERC Adapter) HBA355i,ADPT,V2	3	1
FOXCONN (External Adapter) HBA355e	3,6,5,7	4

Table 126. Config9. R2A+R3A+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (External Adapter) HBA355e,ADPT,LPH,V2	3,6	2
FOXCONN (External Adapter) H965e,ADPT	5,7	2
Dell (External Adapter) H965e External RAID Controller	5,7	2
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Mellanox (NIC: 400 Gb) FH,N400,1P,OSF	7	1
Broadcom (NIC: 100 Gb) FH,100G,2P,Q56	5,7	2
Mellanox (NIC: 100 Gb) FH,100G,2P,Q56	5,7	2
Intel (NIC: 100 Gb) FH,100G,2P,Q28	5,7	2
Intel (NIC: 40 Gb) DP,QSFP,INTEL,L	3,6	2
Intel (NIC: 25 Gb) FH,25G,2P,S28	5,7	2
Intel (NIC: 25 Gb) 2P,S28	3,6	2
Intel (NIC: 25 Gb) 4P,S28	5,7	2
Mellanox (NIC: 25 Gb) 2P,S28	5,7	2
Mellanox (NIC: 25 Gb) 2P,S28	3,6	2
Broadcom (NIC: 25 Gb) 4P,S28	5,7	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	3,6	2
Broadcom (NIC: 25 Gb) 2P,SFP,F1	5,7	2
Mellanox (NIC: 25 Gb) DP,CX5,EN,MLX,L,Z	3,6	2
Mellanox (NIC: 25 Gb) CX4LX,DP,SFP,F1	3,6	2
Broadcom (HBA: FC64) 2P,SPDM	5,7	2
Broadcom (HBA: FC64) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 2P,SPDM	5,7	2
Broadcom (HBA: FC32) 2P,SPDM	3,6	2
Broadcom (HBA: FC32) 1P,SPDM	5,7	2
Broadcom (HBA: FC32) 1P,SPDM	3,6	2
Marvell (HBA: FC32) 2P,S28,F1	5,7	2
Marvell (HBA: FC32) 2P,S28,F1	3,6	2
Marvell (HBA: FC32) 1P,S28,F1	5,7	2
Marvell (HBA: FC32) 1P,S28,F1	3,6	2
Broadcom (NIC: 10 Gb) 4P,BT	5,7	2
Broadcom (NIC: 10 Gb) 4P,BT	3,6	2
Broadcom (NIC: 10 Gb) 57416,FH	5,7	2
Broadcom (NIC: 10 Gb) 57416,LP	3,6	2

Table 126. Config9. R2A+R3A+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 1 Gb) QP,INTEL,V3	5,7	2
Intel (NIC: 1 Gb) QP,Internal,LP,F1	3,6	2
Intel (NIC: 1 Gb) QP,INTEL,F1	5,7	2
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	5,7	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Broadcom (NIC: 1 Gb) LP,1G,4P,F1	3,6	2
Mellanox (NIC: NDR200) PCIe FH	5,7	2
Mellanox (NIC: HDRV CRD) 1P,Q56	5,7	2
Mellanox (NIC: HDR100 VPI CRD) PCIE,H100,CX6,SP,F,ML	5,7	2
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Table 127. Config10. R1U+R3B+R4Q

Card type	Slot priority	Maximum number of cards
Inventec (2U VGA cable ASSY,ENCL,VGA,FH,H2C,2U	8	1
Inventec (2U seriel board) FH,SVR,15G	4,8	1
NVIDIA (GPU) A2,16GB,60W	1,2,4,5,7,8	6
NVIDIA (GPU) A2,16GB,V2,FH	1,2,4,5,7,8	6
FOXCONN (Front PERC) H965i,FRONT	Internal	2
FOXCONN (Front PERC) H965i,FRONT,M1	Internal	2

Table 127. Config10. R1U+R3B+R4Q (continued)

Card type	Slot priority	Maximum number of cards
FOXCONN (Front PERC) H755N,FRONT	Internal	2
FOXCONN (Front PERC) H755N,FRT,GDL	Internal	2
FOXCONN (Front PERC) H755,FRONT	Internal	1
FOXCONN (Front PERC) H755,FRT,GDL	Internal	1
FOXCONN (Front PERC) H355,FRONT	Internal	1
FOXCONN (Front PERC) HBA355i,FRONT,V2	Internal	1
FOXCONN (External Adapter) HBA355e	1,2,4,5,7,8	6
Inventec (LOM Card) 1GX2,16G	Internal	1
Inventec (LOM Card) 1GX2,V2,16G	Internal	1
Intel (NIC: 25 Gb) FH,25G,2P,S28	1,2,4,5,7,8	6
Mellanox (NIC: 25 Gb) 2P,S28	1,2,4,5,7,8	6
Broadcom (NIC: 25 Gb) 2P,SFP,F1	1,2,4,5,7,8	6
Broadcom (HBA: FC64) 2P,SPDM	1,2,4,5,7,8	6
Broadcom (HBA: FC32) 2P,SPDM	1,2,4,5,7,8	6
Broadcom (HBA: FC32) 1P,SPDM	1,2,4,5,7,8	6
Marvell (HBA: FC32) 2P,S28,F1	1,2,4,5,7,8	6
Marvell (HBA: FC32) 1P,S28,F1	1,2,4,5,7,8	6
Broadcom (NIC: 10 Gb) 4P,BT	1,2,4,5,7,8	6
Broadcom (NIC: 10 Gb) 57416,FH	1,2,4,5,7,8	6
Intel (NIC: 1 Gb) QP,INTEL,V3	1,2,4,5,7,8	6
Intel (NIC: 1 Gb) QP,INTEL,F1	1,2,4,5,7,8	6
Broadcom (NIC: 1 Gb) FH,1G,4P,F1	1,2,4,5,7,8	6
Broadcom (OCP: 100 Gb) 2P,Q56	Internal	1
Mellanox (OCP: 100 Gb) 2P,S56	Internal	1
Mellanox (OCP: 25 Gb) 2P,S28	Internal	1
Broadcom (OCP: 25 Gb) 25G,4P,V3	Internal	1
Broadcom (OCP: 25 Gb) 2P,V3	Internal	1
Intel (OCP: 25 Gb) 2P,V2	Internal	1
Intel (OCP: 25 Gb) 4P,V2	Internal	1
Broadcom (OCP: 10 Gb) 4P,BT	Internal	1
Intel (OCP: 10 Gb) 2P,V2	Internal	1
Broadcom (OCP: 10 Gb) 2P,V2	Internal	1
Intel (OCP: 10 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V2	Internal	1
Intel (OCP: 1 Gb) 4P,V3	Internal	1

Table 127. Config10. R1U+R3B+R4Q (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (OCP: 1 Gb) 4P,BT,V2	Internal	1
FOXCONN (BOSS-N1) ASSY MONOLITHC	Internal	1
FOXCONN (BOSS-N1) CARR MONOLITHIC	Internal	1

Removing the 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. **NOTE:** If the BOSS-N1 module is installed, ensure to disconnect the BOSS-N1 power cable and Signal cable before removing the Riser 1 cage.

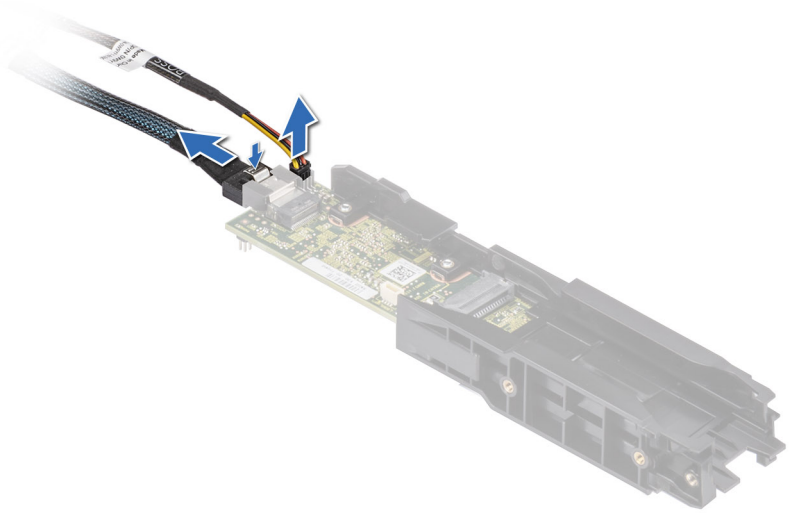

Figure 169. Removing the BOSS-N1 module

5. If applicable, disconnect the cables from the expansion card or system board.

Steps

1. Loosen the captive screws on the riser and system.
2. Press the blue release tab or blue button on the riser and holding the edges lift the expansion card riser from the riser connector on the system board.

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

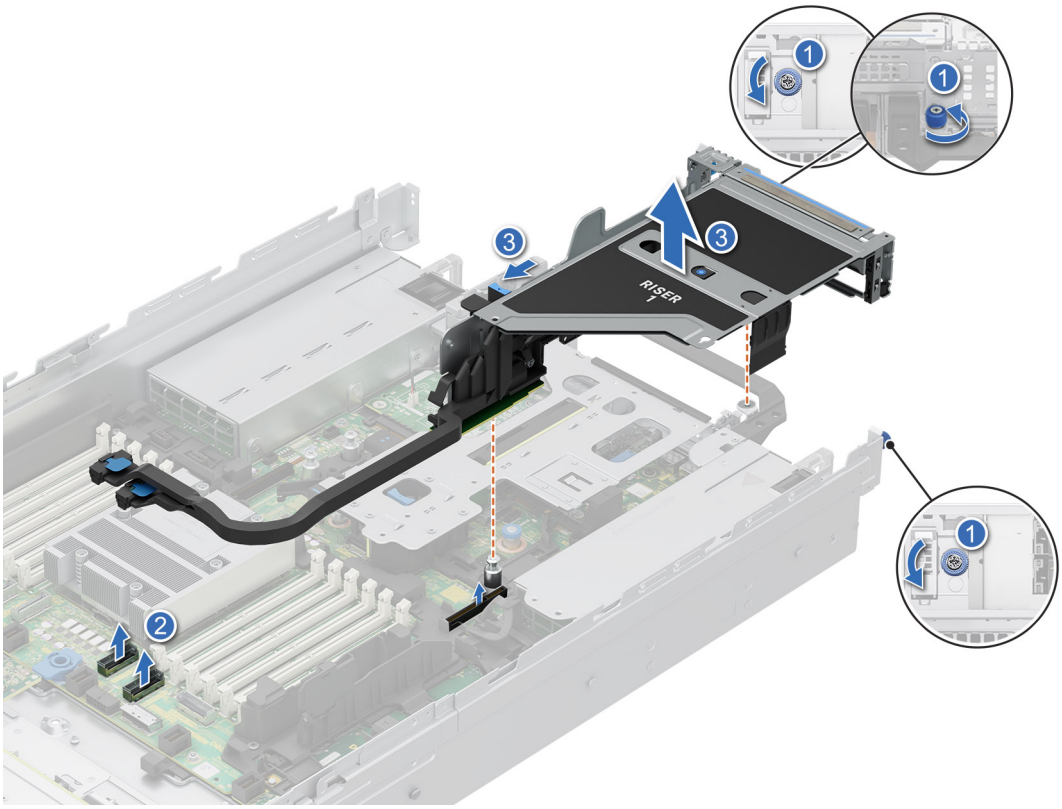

Figure 170. Removing the expansion card riser 1

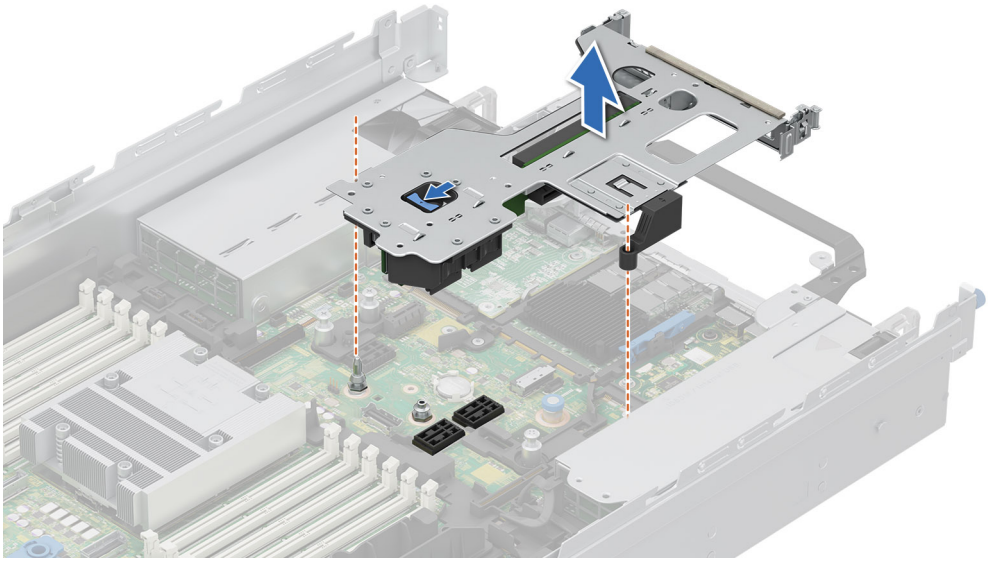

Figure 171. Removing the expansion card riser 2

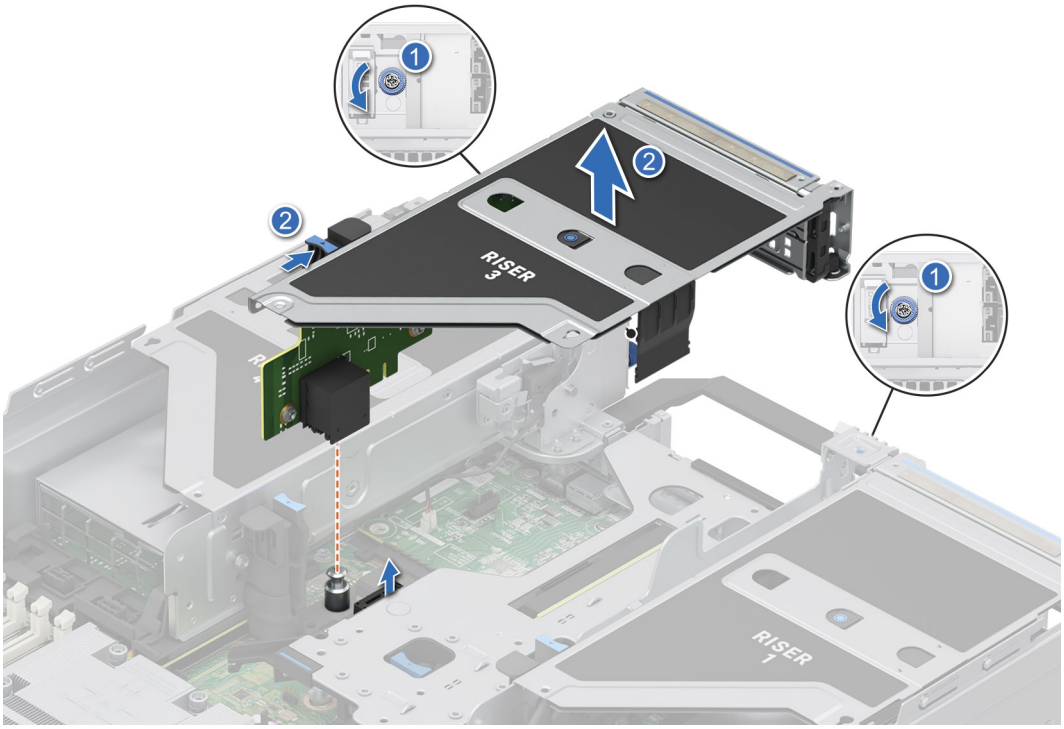

Figure 172. Removing the expansion card riser 3

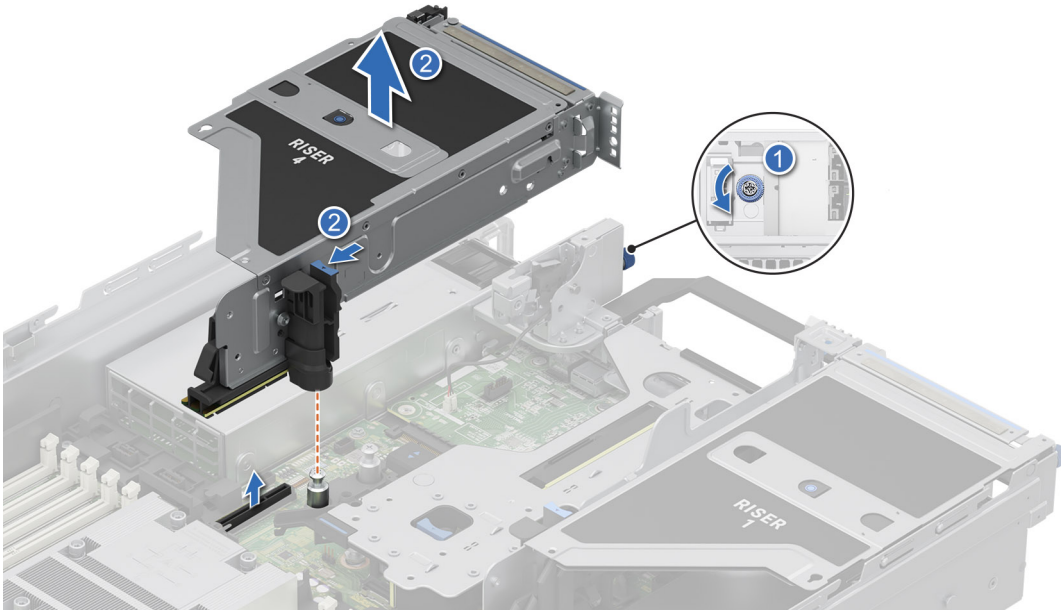

Figure 173. Removing the expansion card riser 4

3. If the risers are not going to be replaced, install riser blanks, and if required tighten the captive screws.

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.

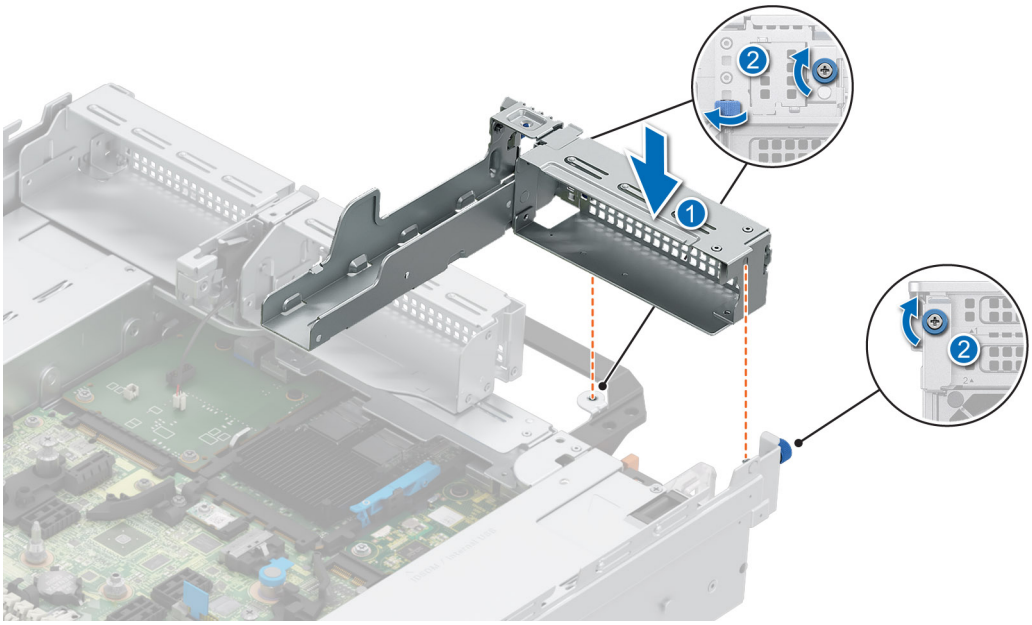

Figure 174. Installing the Riser 1 blank

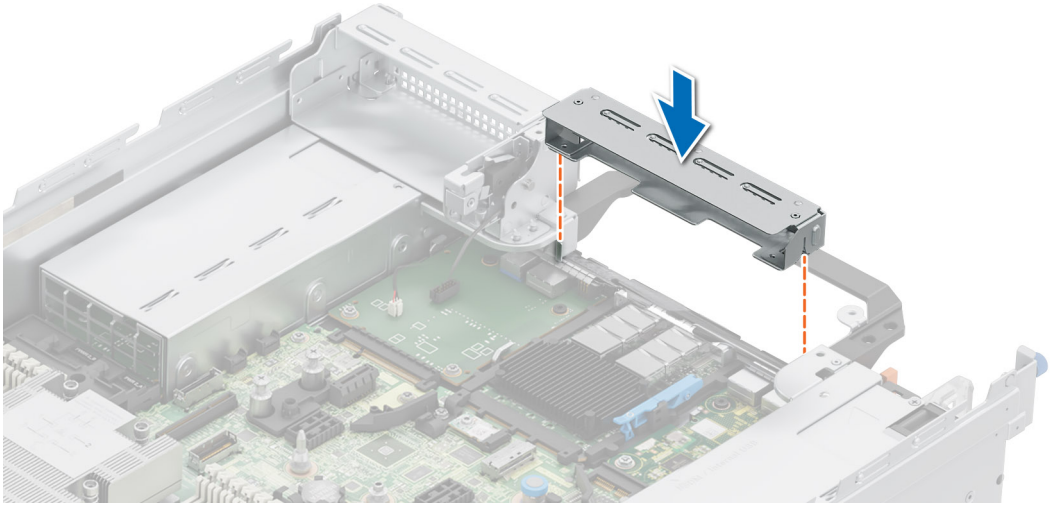

Figure 175. Installing the Riser 2 blank

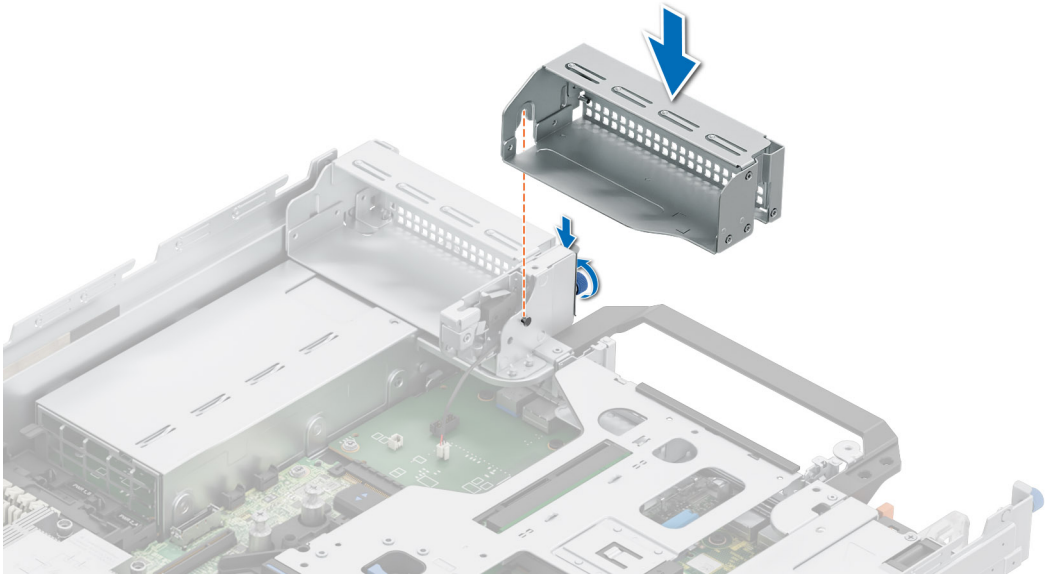

Figure 176. Installing the Riser 3 blank

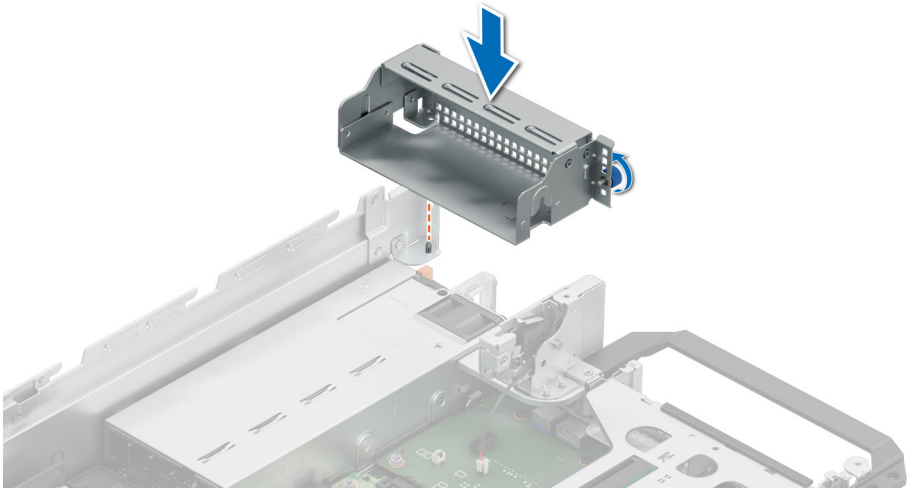

Figure 177. Installing the Riser 4 blank

Next steps

1. Replace the expansion card riser.

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

NOTE: Install Riser 2 before installing Riser 1 and Riser 3. Install Riser 4 after 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 riser blanks and if required loosen the captive screws.

   NOTE: Store the riser blanks 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.

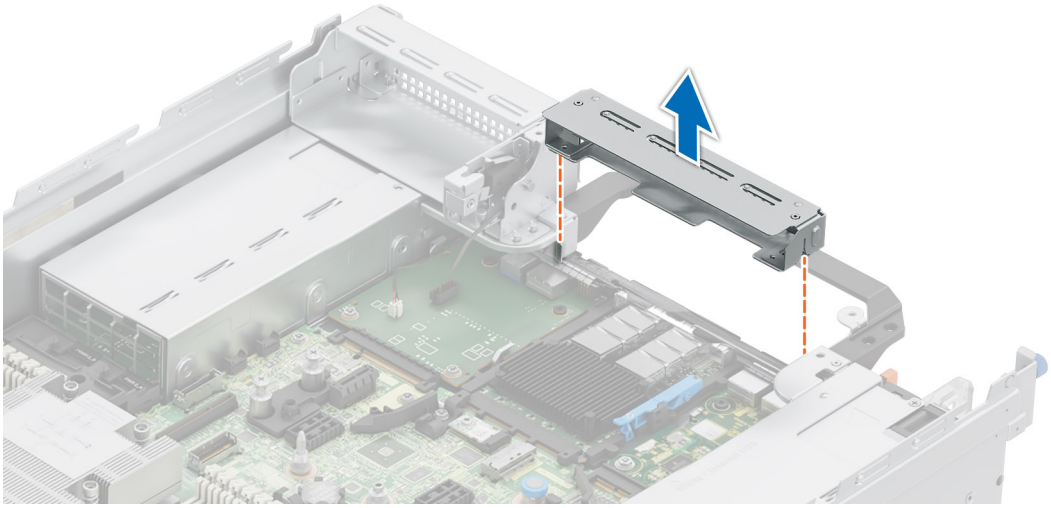

Figure 178. Removing the Riser 2 blank

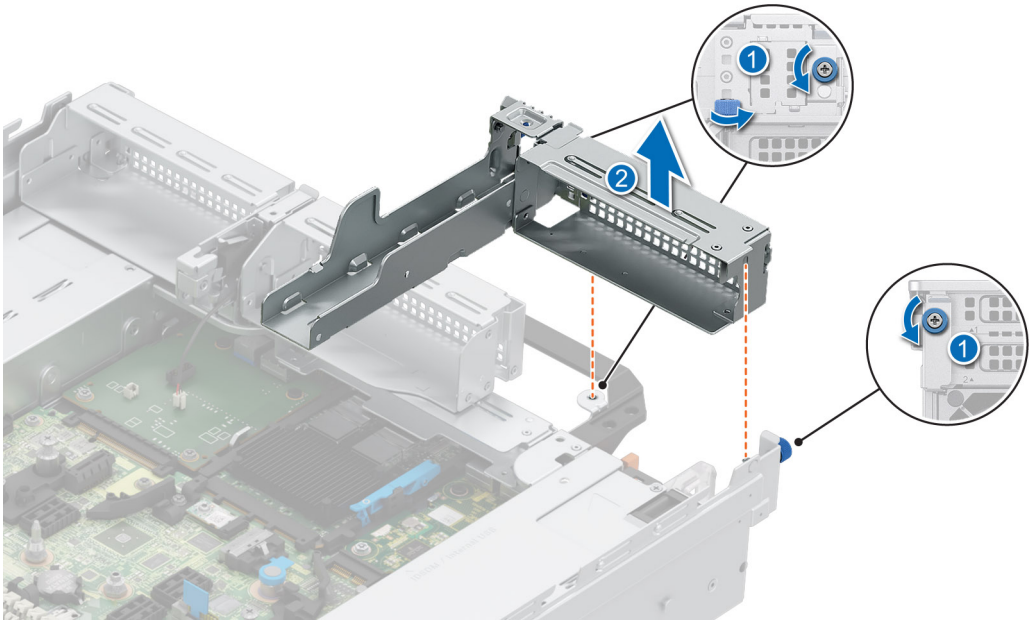

Figure 179. Removing the Riser 1 blank

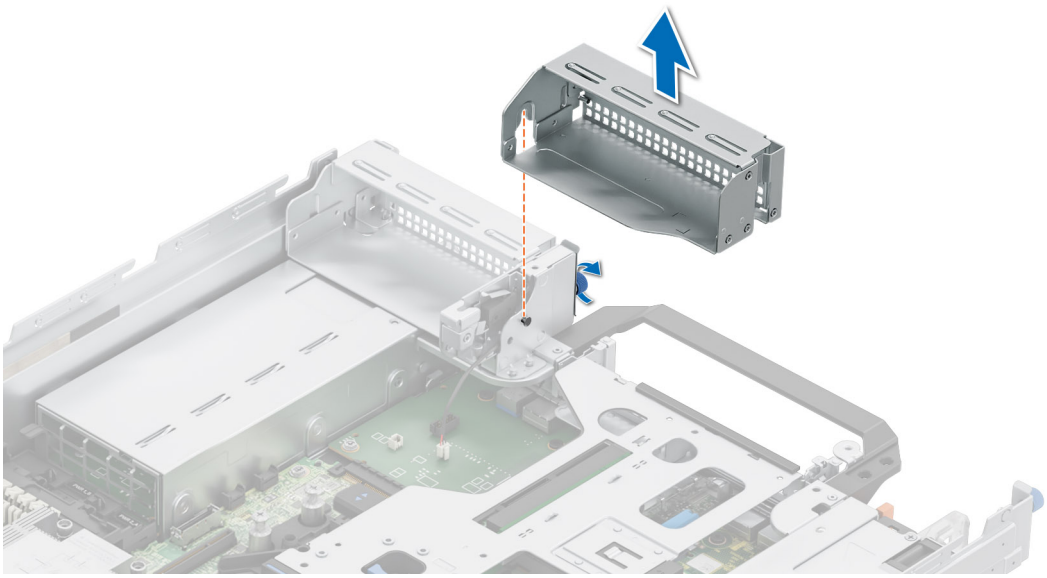

Figure 180. Removing the Riser 3 blank

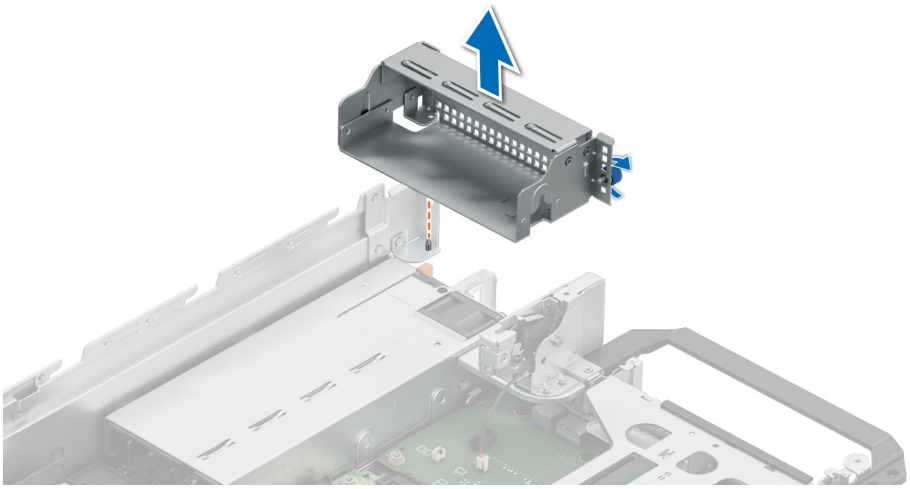

Figure 181. Removing the Riser 4 blank

2. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board.
3. 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.
4. Tighten the captive screws on the risers and system if any.

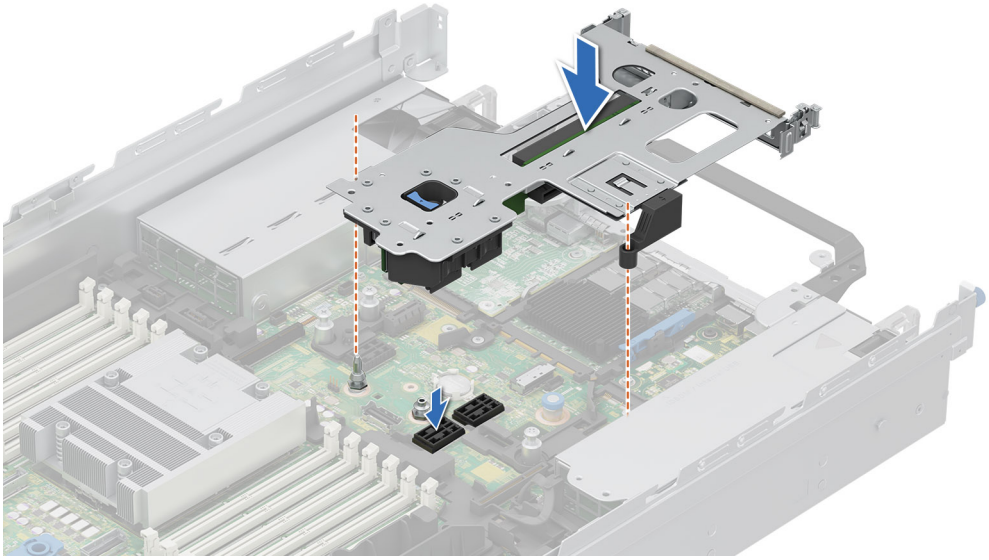

Figure 182. Installing the expansion card riser 2

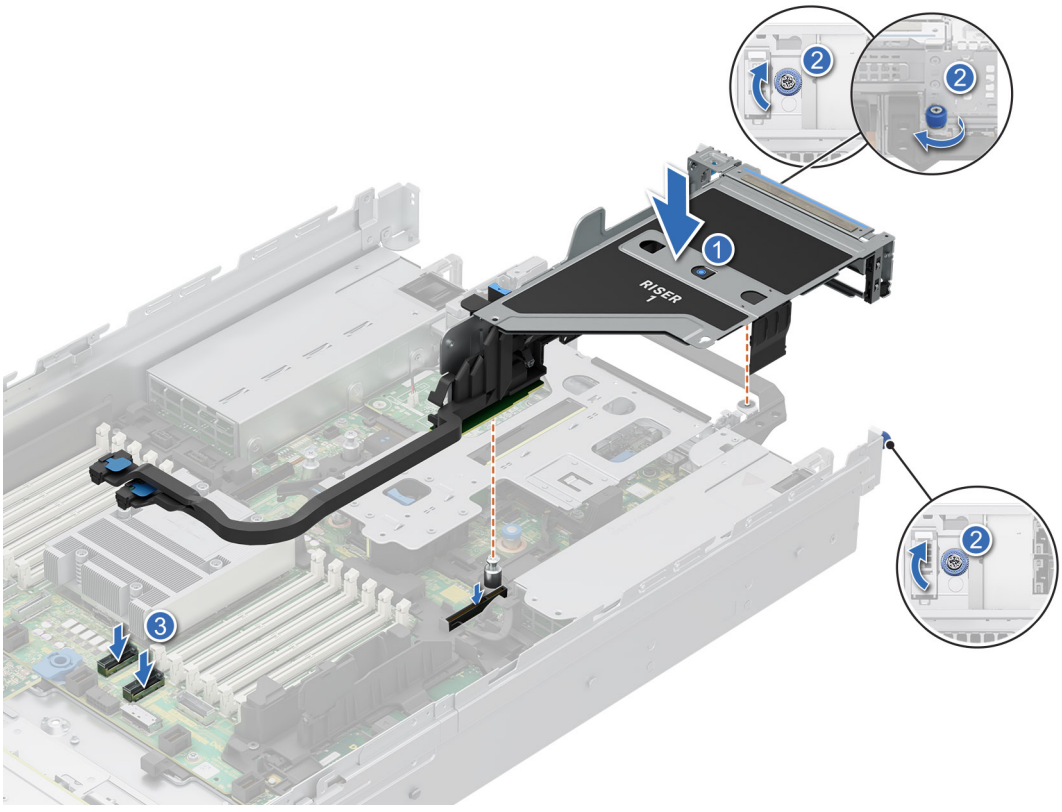

Figure 183. Installing the expansion card riser 1

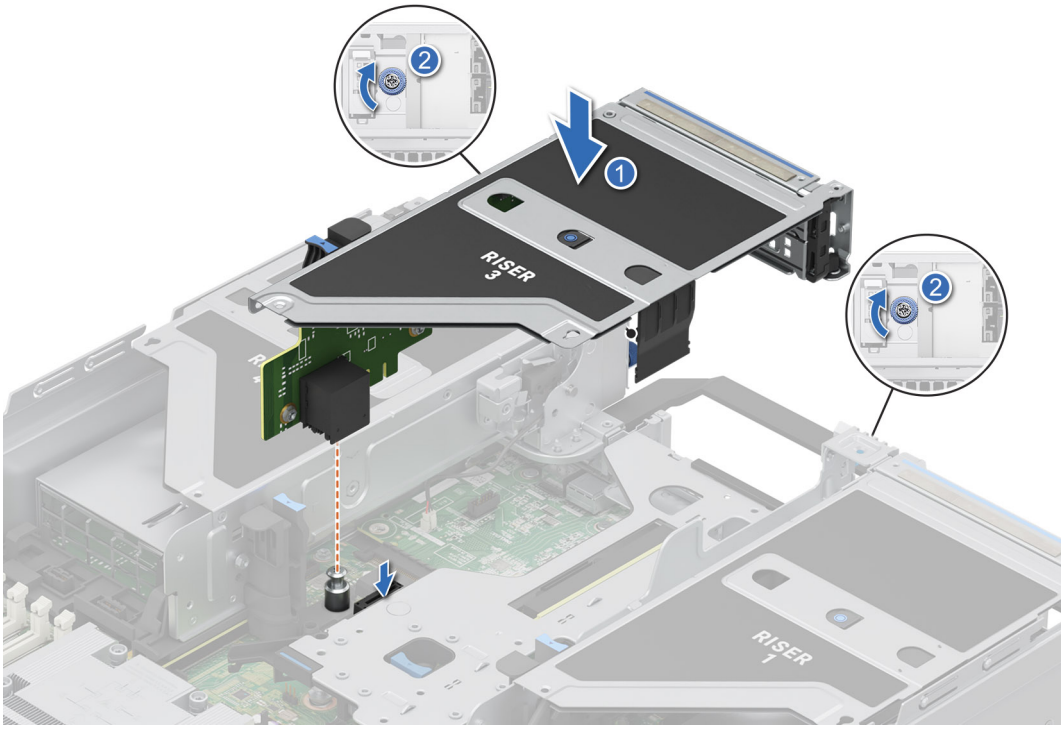

Figure 184. Installing the expansion card riser 3

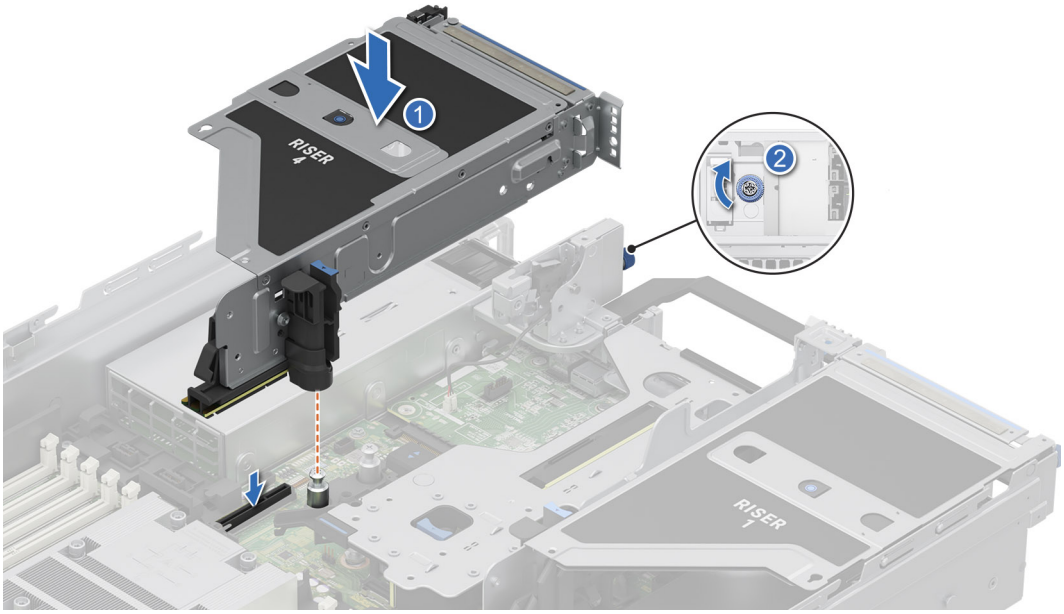

Figure 185. Installing the expansion card riser 4

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.
4. Install any device drivers required for the card as described in the documentation for the card.

Removing expansion card from the expansion card riser

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 applicable, disconnect the cables from the expansion card.
4. Remove the air shroud or remove the GPU air shroud.
5. Remove the expansion card riser.

Steps

1. Tilt the expansion card retention latch lock to open.
2. Pull the card holder before removing the card from the riser.
3. 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.

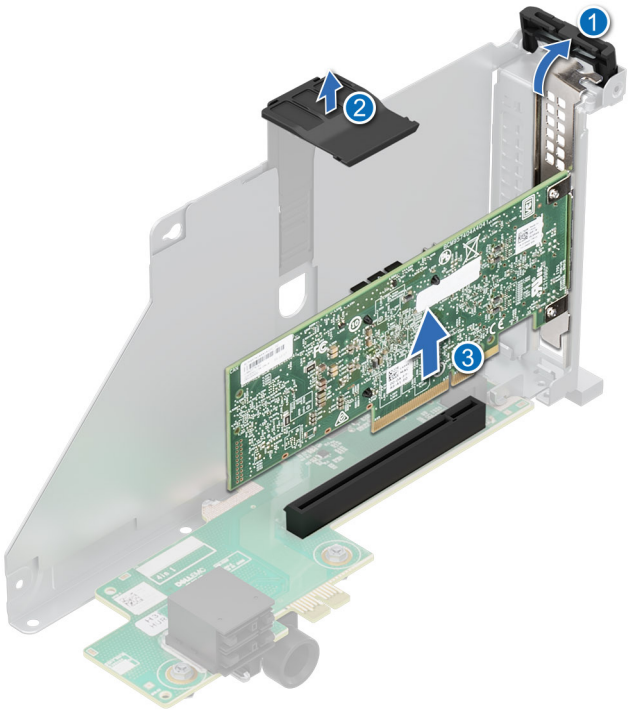

Figure 186. Removing expansion card from the expansion card riser

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

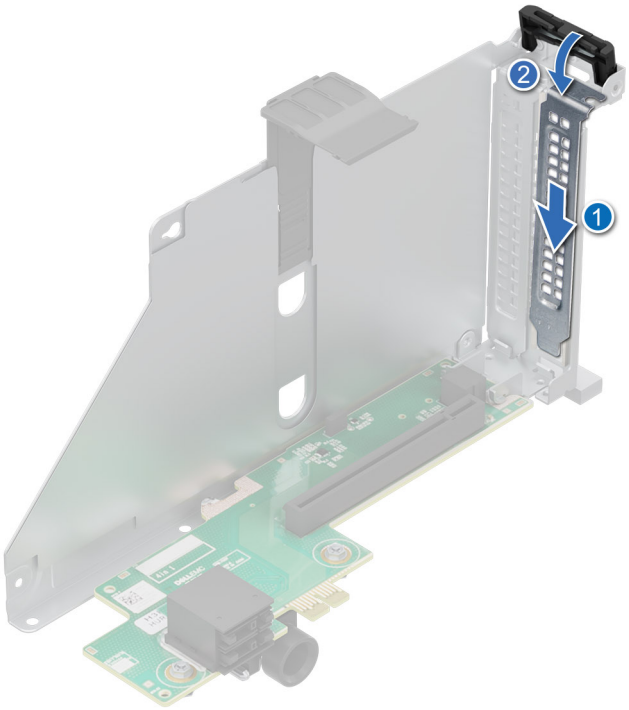

Figure 187. Installing the filler bracket

Next steps

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

Installing an expansion card into the 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. Remove the air shroud or remove the GPU air shroud.
4. Remove the 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. 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.

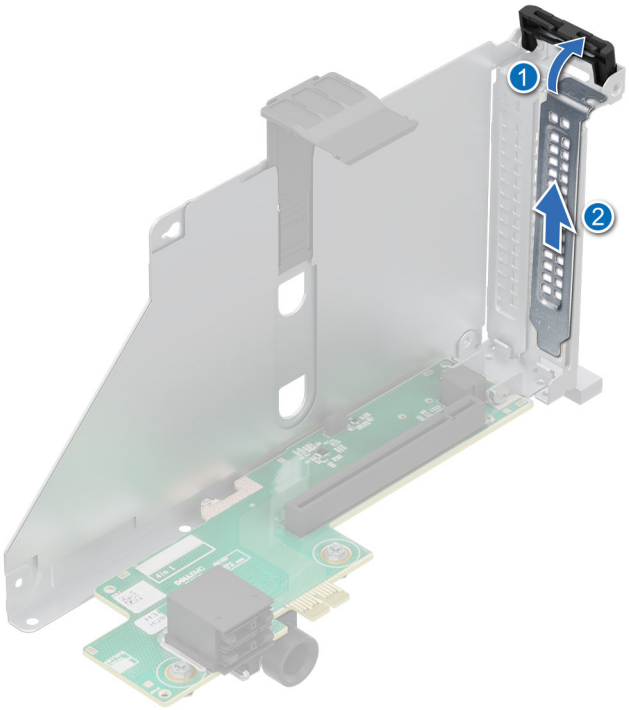

Figure 188. Removing the filler bracket

3. Hold the card by edges, and align the card with the connector on the riser.
4. Insert the card firmly into the expansion card connector until seated.
5. Close the expansion card retention latch.
6. 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.

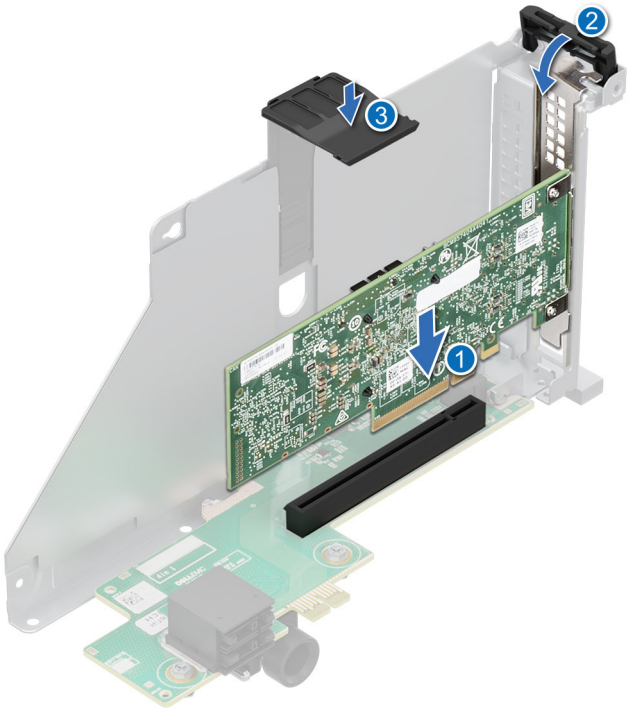

Figure 189. Installing an expansion card into the expansion card riser

Next steps

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

Removing the full length 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 GPU air shroud top cover.
4. If applicable, disconnect the cables from the expansion card or system board.
5. **NOTE:** If the BOSS-N1 module is installed, ensure to disconnect the BOSS-N1 power cable and Signal cable before removing the Riser 1 cage.

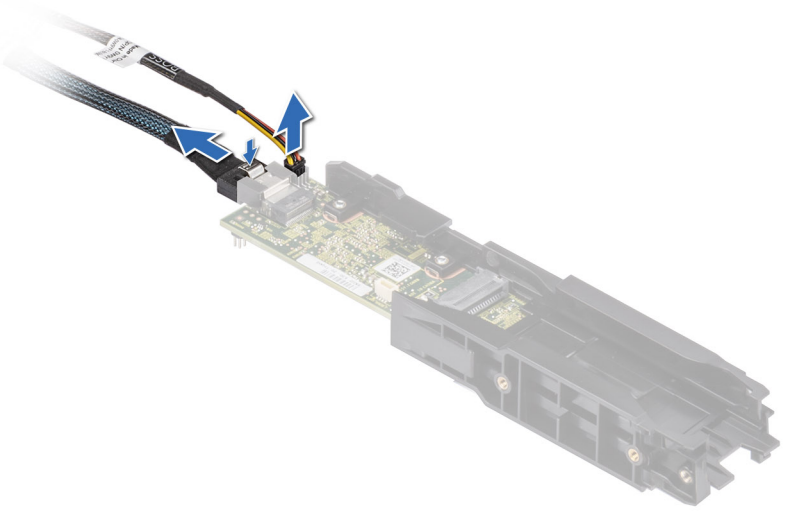

Figure 190. Removing the Boss-N1 module

Steps

1. To remove full length expansion card riser:
   a. Loosen the captive screws on the riser.
   b. Press the blue release tab and holding the edges, lift the expansion card riser from the riser connector on the system board.
   c. Disconnect the GPU power cable and signal cable from the system board.

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

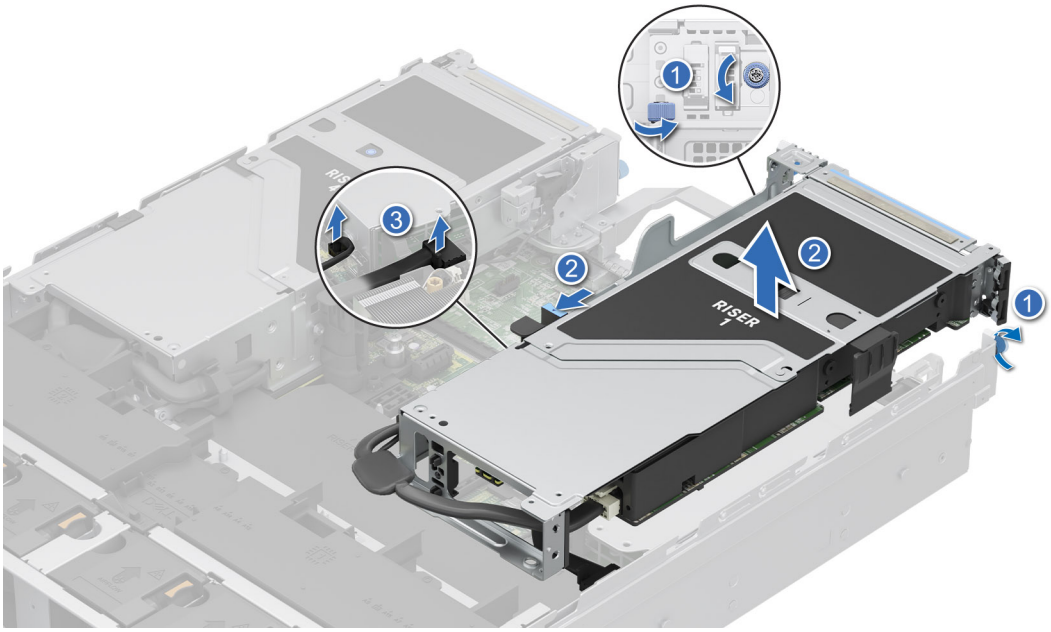

Figure 191. Removing the expansion card riser (Riser 1)

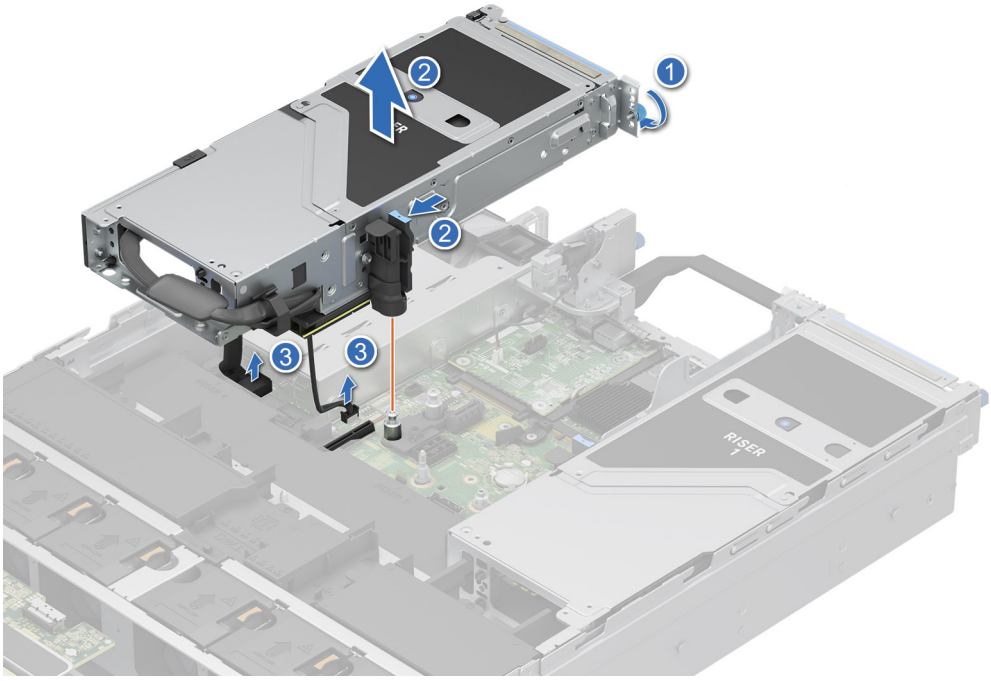

Figure 192. Removing the expansion card riser (Riser 4)

2. If the risers are not going to be replaced, install riser blanks and tighten the captive screws.

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.

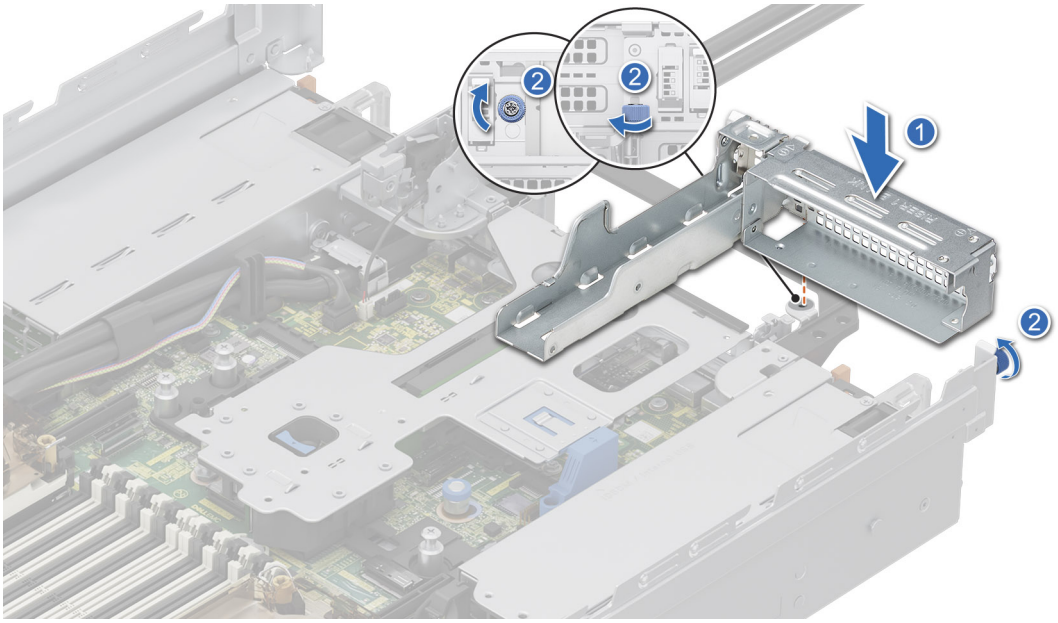

Figure 193. Installing the Riser 1 blank

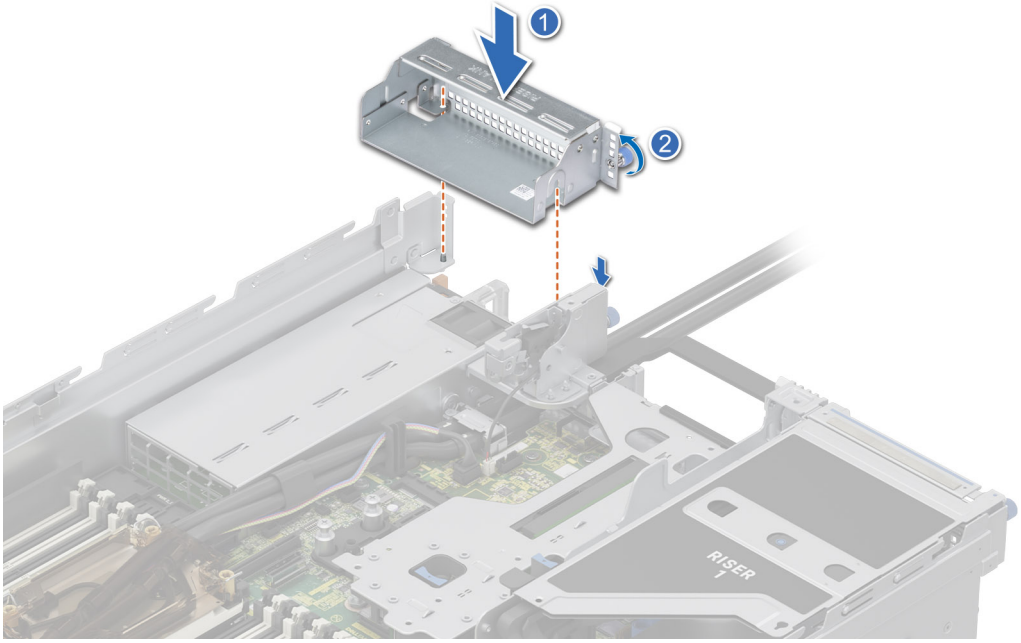

Figure 194. Installing the Riser 4 blank

Next steps

1. Replace the full length expansion card riser.

Installing the full length 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 installing full length expansion card riser for the first time, remove air shroud and replace it with GPU air shroud.

4. Remove the GPU air shroud top cover.
5. If installed, remove the GPU air shroud filler.
6. If removed, install the GPU into the expansion card risers.

NOTE: Full length risers are supported only in Riser 1 and Riser 4 slot and first install Riser4 and then Riser1.

Steps

1. If installed, remove the riser blanks by loosening the captive screws.

   NOTE: Store the Riser blanks 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.

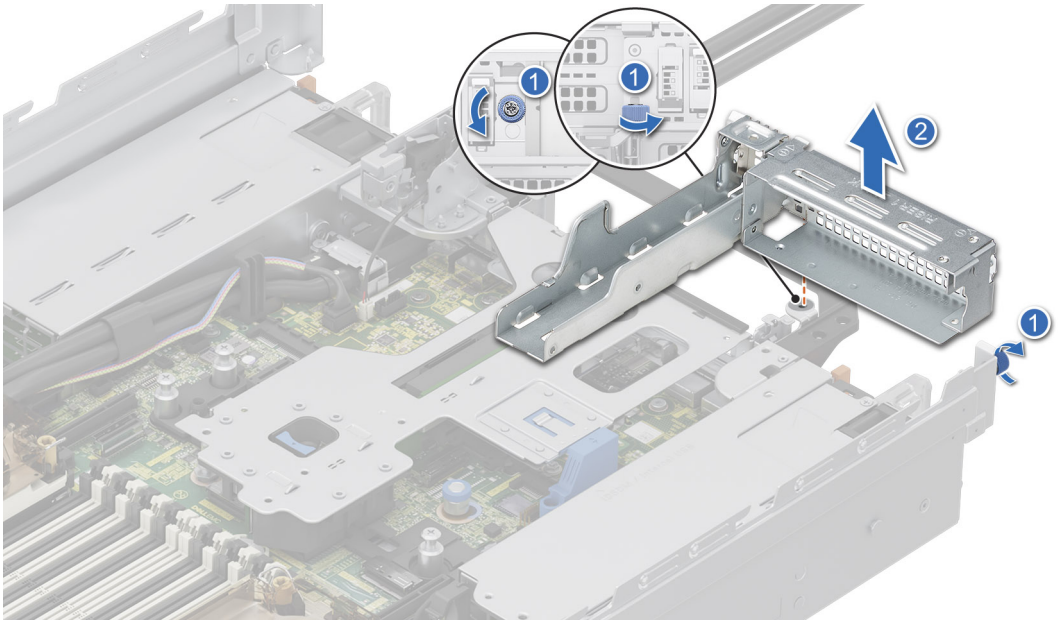

Figure 195. Removing the Riser 1 blank

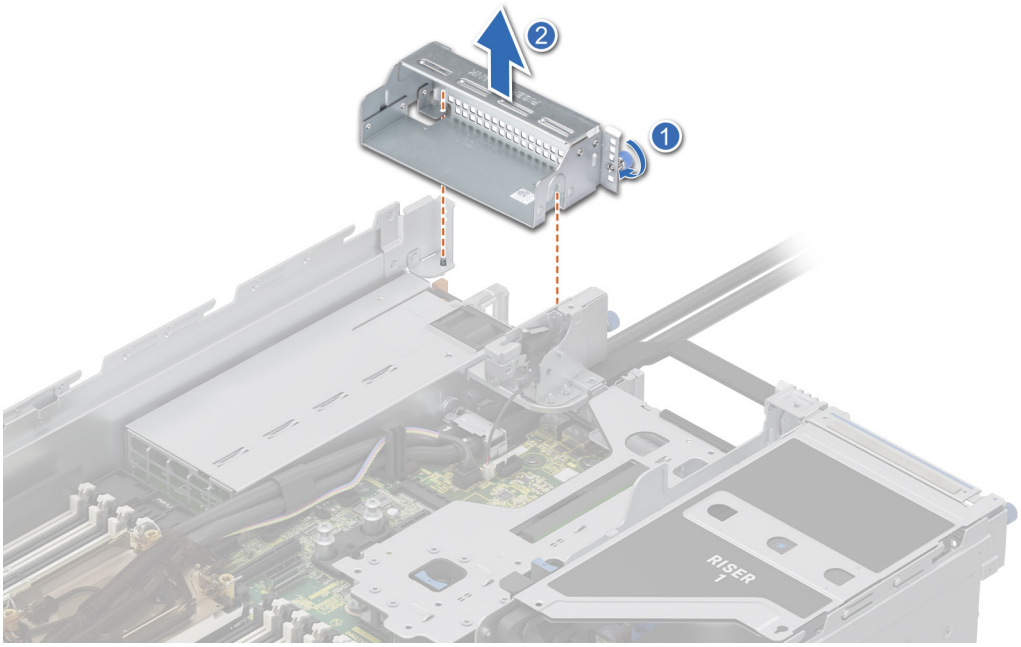

Figure 196. Removing the Riser 4 blank

2. To install the full length expansion card risers:
   a. Connect the GPU power cable and signal cable to the connectors on the system board.

      NOTE: Temporarily unplug and plug the VGA cable for making space to connect Riser 1 GPU power cable to system board.

   b. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board and GPU air shroud.
   c. 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.
   d. Tighten the captive screws on the risers and system if any.

      NOTE: Route the cables properly through the riser clip.

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

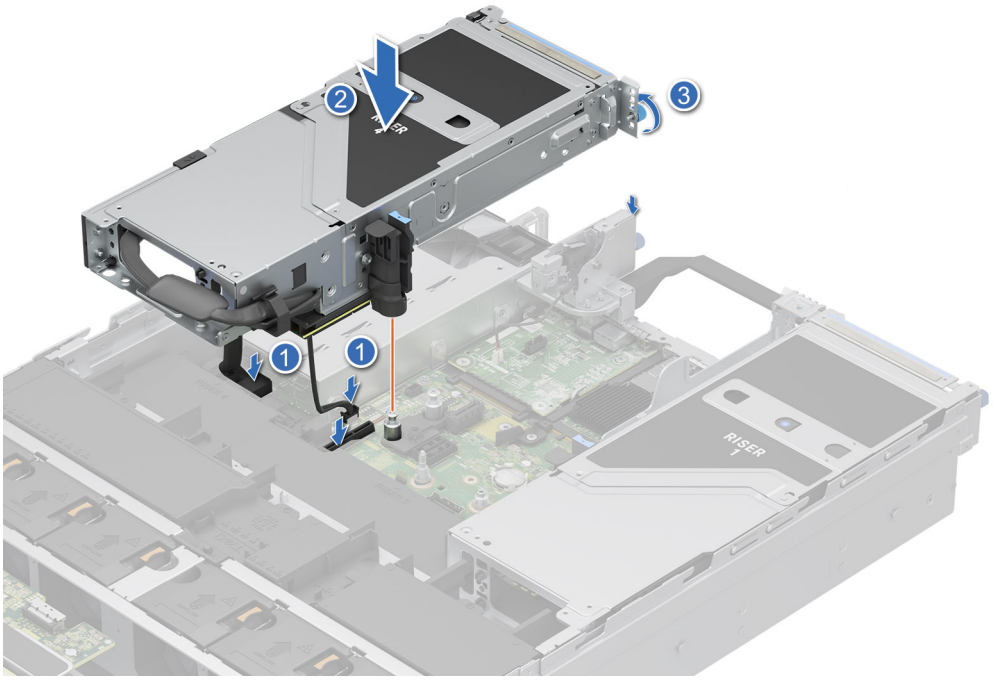

Figure 197. Installing the expansion card riser (Riser 4)

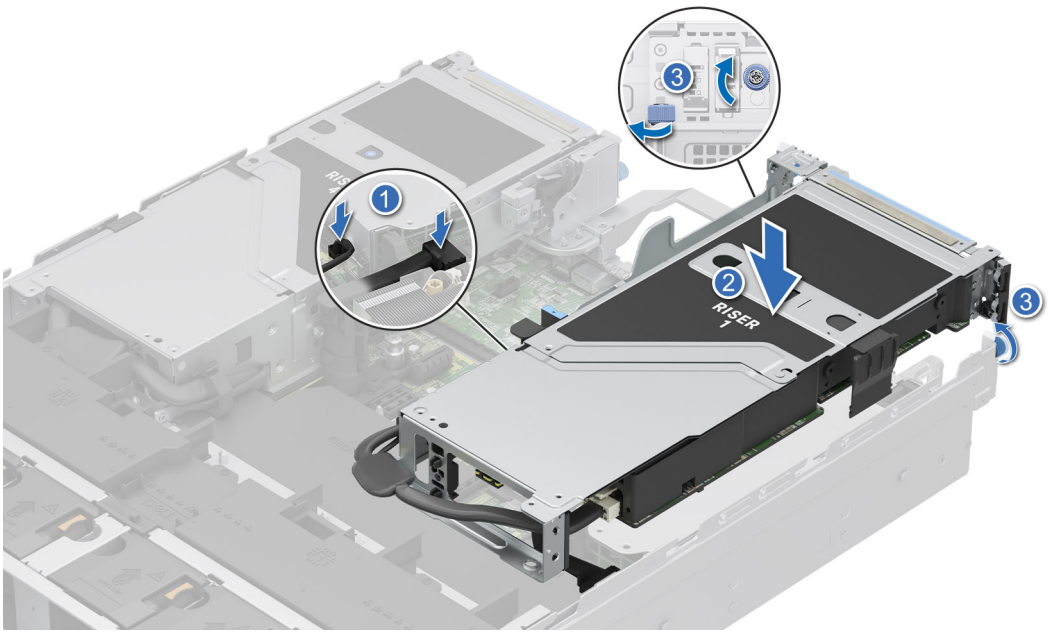

Figure 198. Installing the expansion card riser (Riser 1)

Next steps

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

Removing a GPU

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 applicable, disconnect the cables from the expansion card.
4. Remove the GPU air shroud top cover.
5. Remove the full length expansion card riser.

Steps

1. To remove the GPU from Riser 1:
   a. Tilt the expansion card holder latch on the riser.
   b. Press the tab, and pull the card holder from the riser.
   c. Hold the GPU card by the edges and pull the card from the riser.
   d. Disconnect the GPU power cable from the GPU card.

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

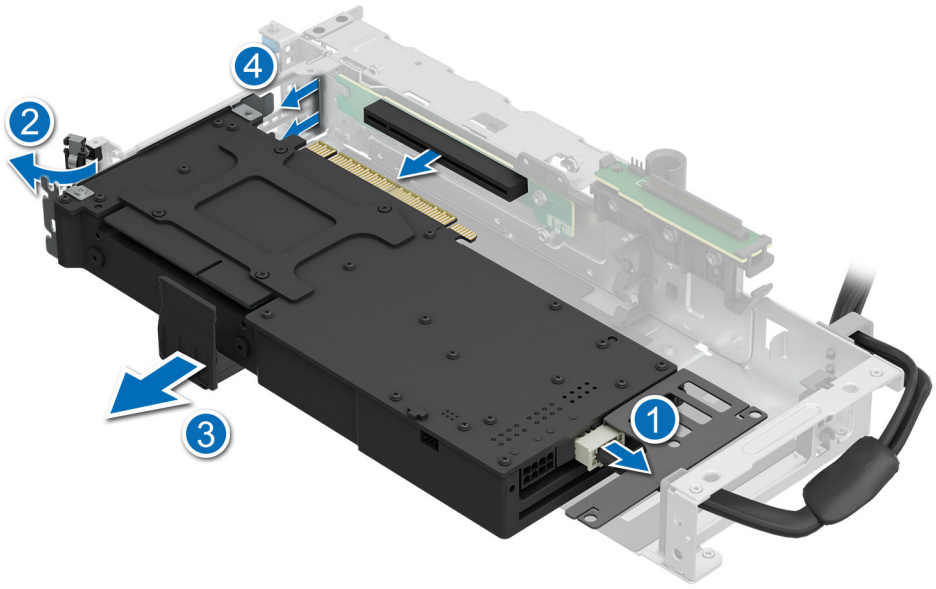

Figure 199. Removing GPU from Riser 1

2. To remove the GPU from Riser 4:
   a. Slide the expansion card latch on the riser.
   b. Press the tab, and pull the card holder from the riser.
   c. Tilt the expansion card holder latch on the riser.
   d. Hold the GPU card by the edges and pull the card from the riser.
   e. Disconnect the GPU power cable from the GPU card.

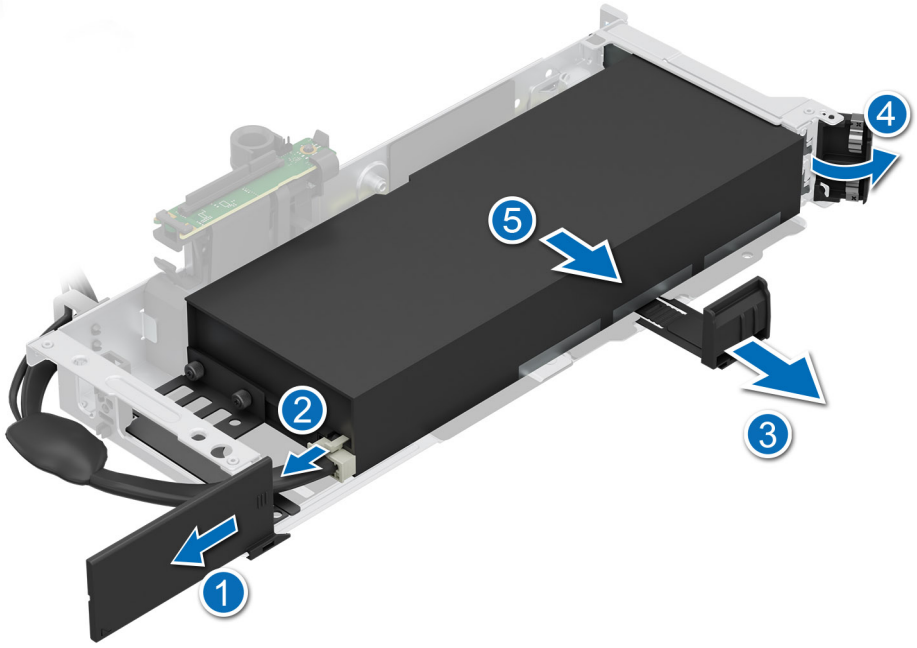

Figure 200. Removing GPU from Riser 4

3. If removing the GPU permanently, 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. The filler bracket is necessary to maintain proper thermal conditions.

4. Install a metal filler bracket over the empty expansion slot opening and close the expansion card latch.

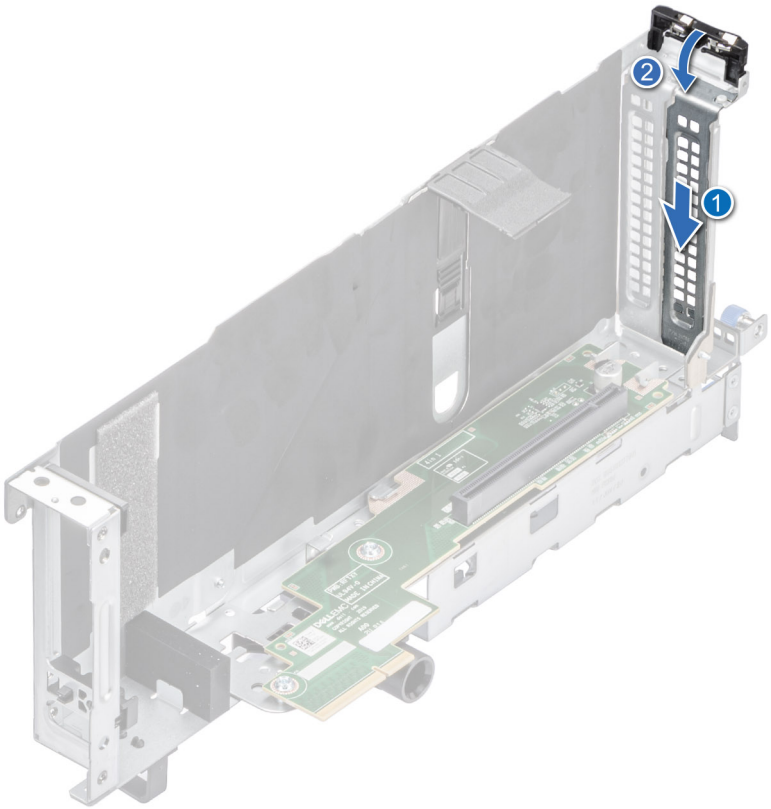

Figure 201. Installing the metal filler bracket

Next steps

1. Replace the GPU.

Installing a GPU

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If installing a new expansion card, unpack it and prepare the card for installation.

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

4. Remove the GPU air shroud top cover.
5. Remove the GPU air shroud filler.
6. Remove the full length expansion card riser.

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.

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

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.

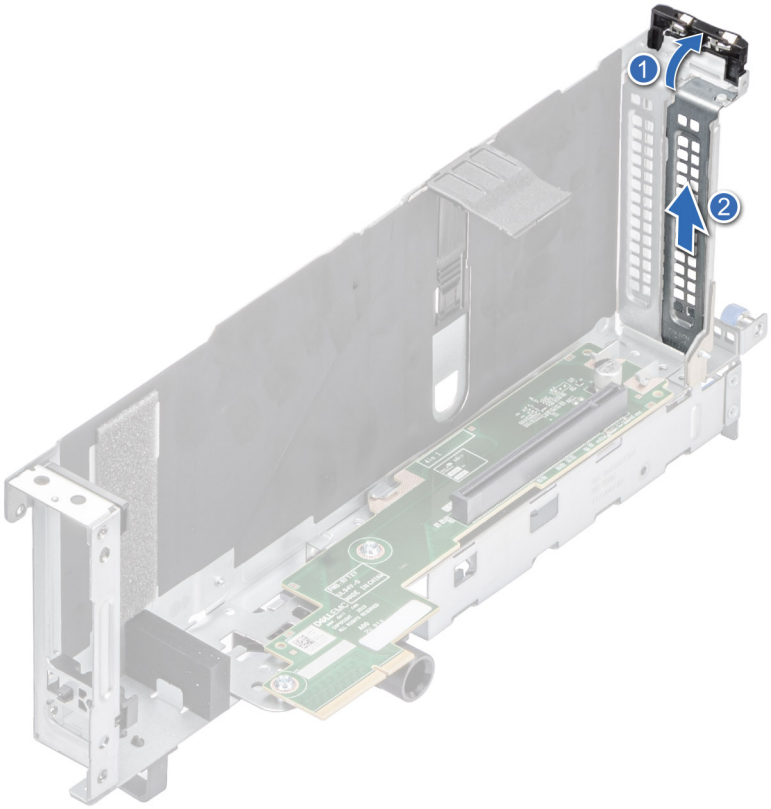

Figure 202. Removing the filler bracket

2. To install the GPU on Riser 1:
   a. Connect the GPU power cable to the GPU card.
   b. Align the connector on the GPU with the connector on the riser.
   c. Insert the GPU into the riser until firmly seated.
   d. Tilt the expansion card holder latch.
   e. Press the card holder latch to secure the GPU card to the riser.

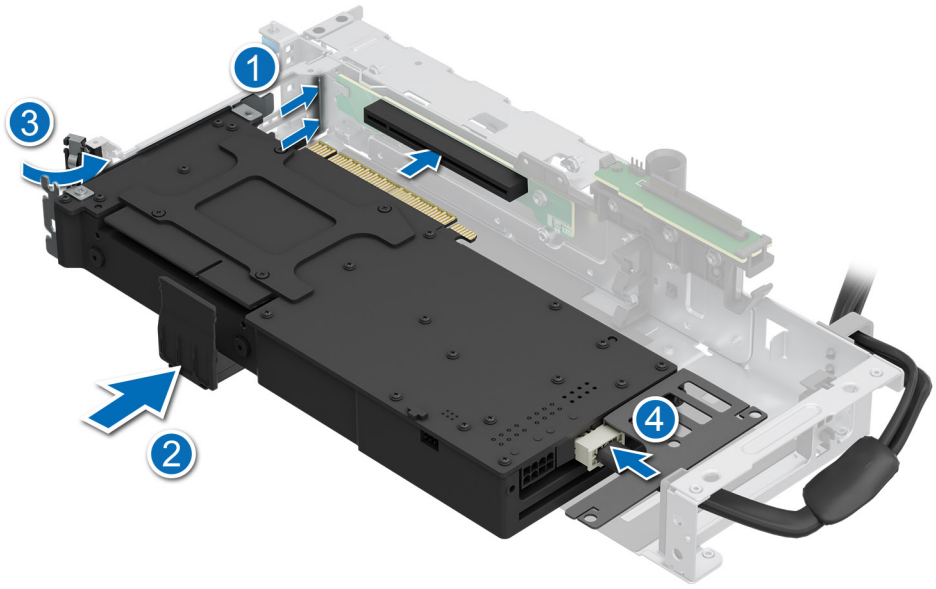

Figure 203. Installing GPU on Riser 1

3. To install the GPU on Riser 4:
   a. Connect the GPU power cable to the GPU card.
   b. Align the connector on the GPU with the connector on the riser.
   c. Insert the GPU into the riser until firmly seated.
   d. Tilt the expansion card holder latch.
   e. Press the card holder latch to secure the GPU card to the riser.
   f. Slide the expansion card latch on the riser.

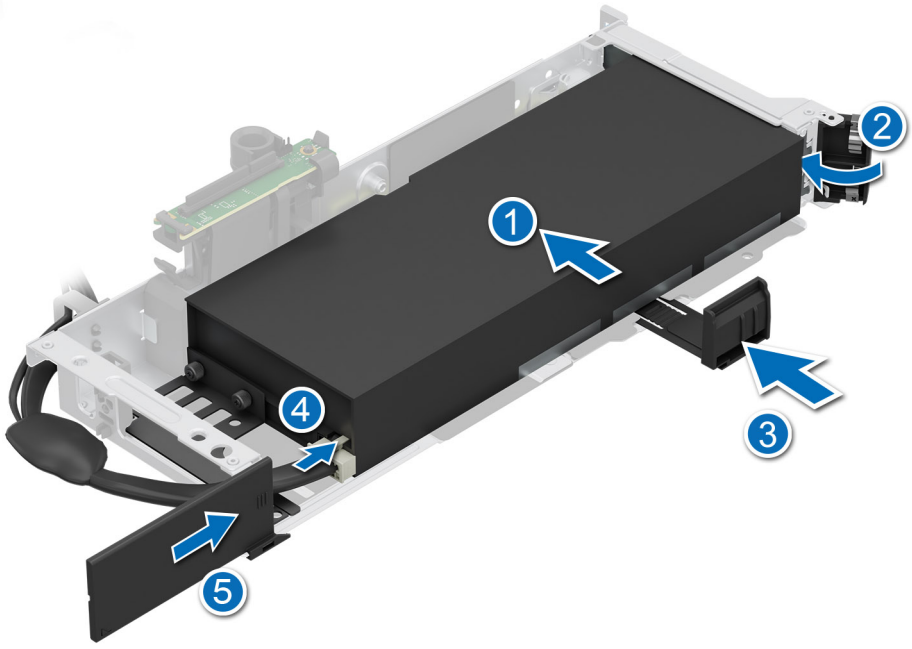

Figure 204. Installing GPU on Riser 4

Next steps

1. If removed, install the GPU air shroud .

2. Install the full length expansion card riser.
3. Install the GPU air shroud top cover.
4. Follow the procedure listed in After working inside your system.
5. Install any device drivers required for the card as described in the documentation for the card.

Optional serial COM port

This is a service technician replaceable part only.

Removing the serial COM port

The procedure to remove serial COM port from Riser 3 or 4 is same.

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 serial COM port is supported only in slot 4 or slot 8 of the expansion card riser.

Steps

1. Loosen the captive screws on the system.
2. Press the blue release tab or blue button on the riser and holding the edges lift the expansion card riser from the riser connector on the system board.
3. Disconnect the serial COM port cable from the rear I/O board.

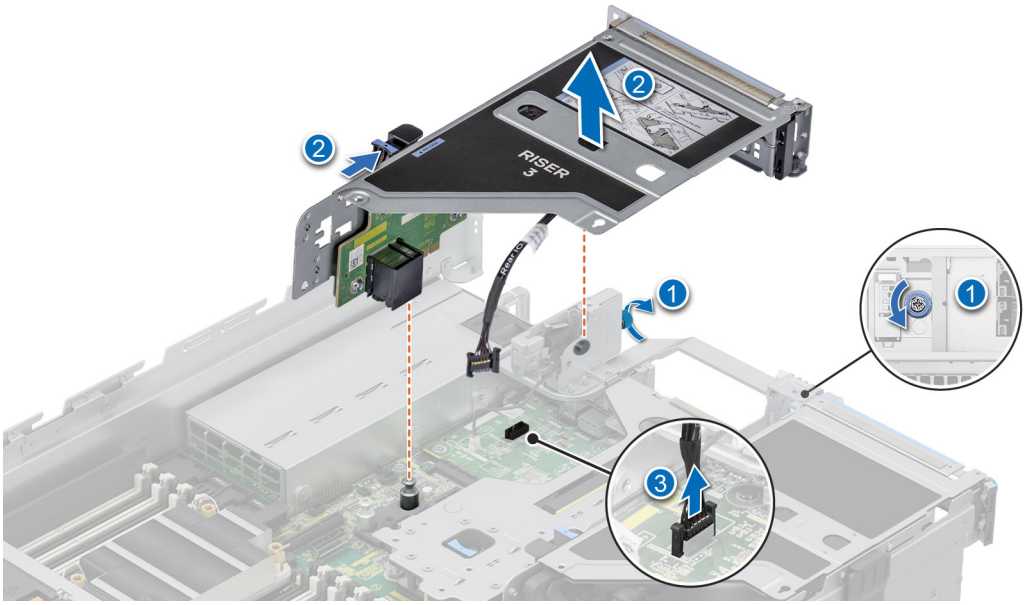

Figure 205. Disconnecting the serial COM port

4. Open the latch on the expansion card riser and slide the serial COM port out of the expansion card riser.

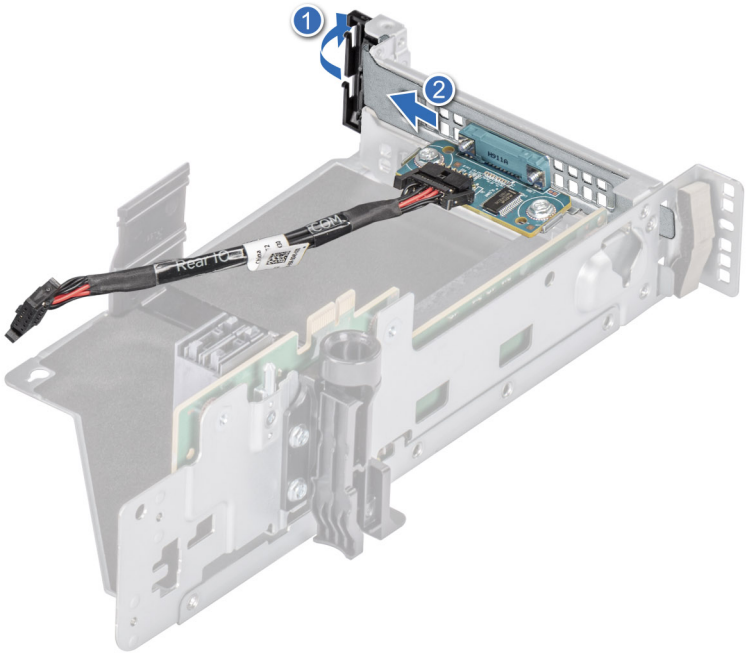

Figure 206. Removing the Serial COM port

5. Install the filler bracket if not replacing the serial COM port.

Next steps

1. Replace the serial COM port.

Installing the serial COM port

The procedure to install serial COM port to Riser 3 or 4 is same.

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.
4. Remove expansion card riser.

Steps

1. Open the latch on the expansion card riser and remove the filler bracket from the expansion card riser.
2. Slide the serial COM port into the expansion card riser and close the latch.

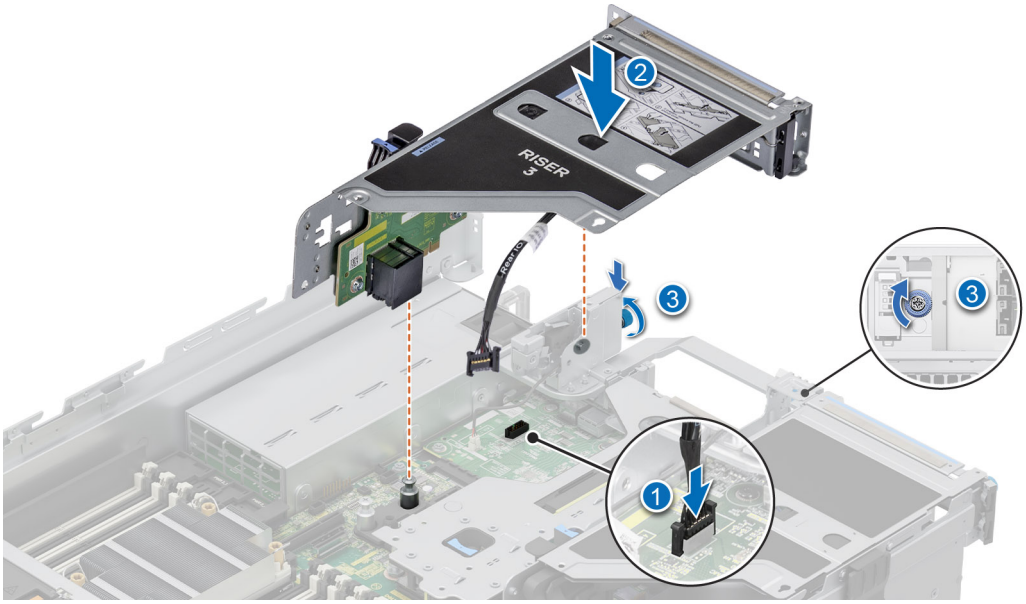

Figure 207. Installing the serial COM port

3. Connect the serial COM port cable to the rear I/O board.
4. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board.
5. 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.
6. Tighten the captive screws on the system.

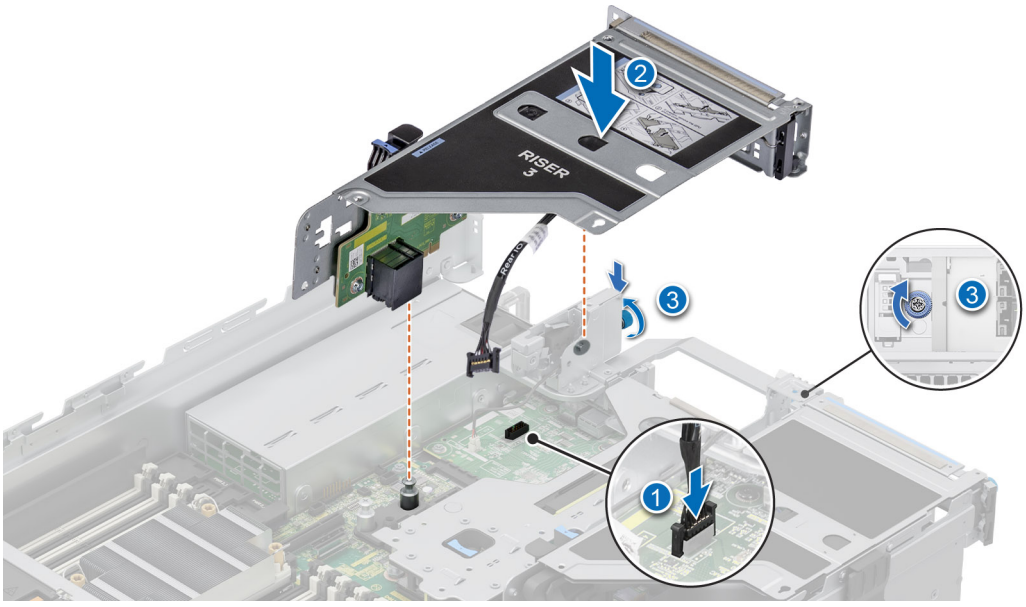

Figure 208. Connecting the serial COM port

Next steps

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

Optional VGA port for Direct Liquid Cooling module

Removing the VGA port

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: VGA port is supported only in slot 4 of the expansion card riser.

Steps

1. Loosen the captive screws on the system.
2. Press the blue release tab or blue button on the riser and holding the edges lift the expansion card riser from the riser connector on the system board.
3. Disconnect the VGA port cable from the liquid cooling (LC) rear I/O board.

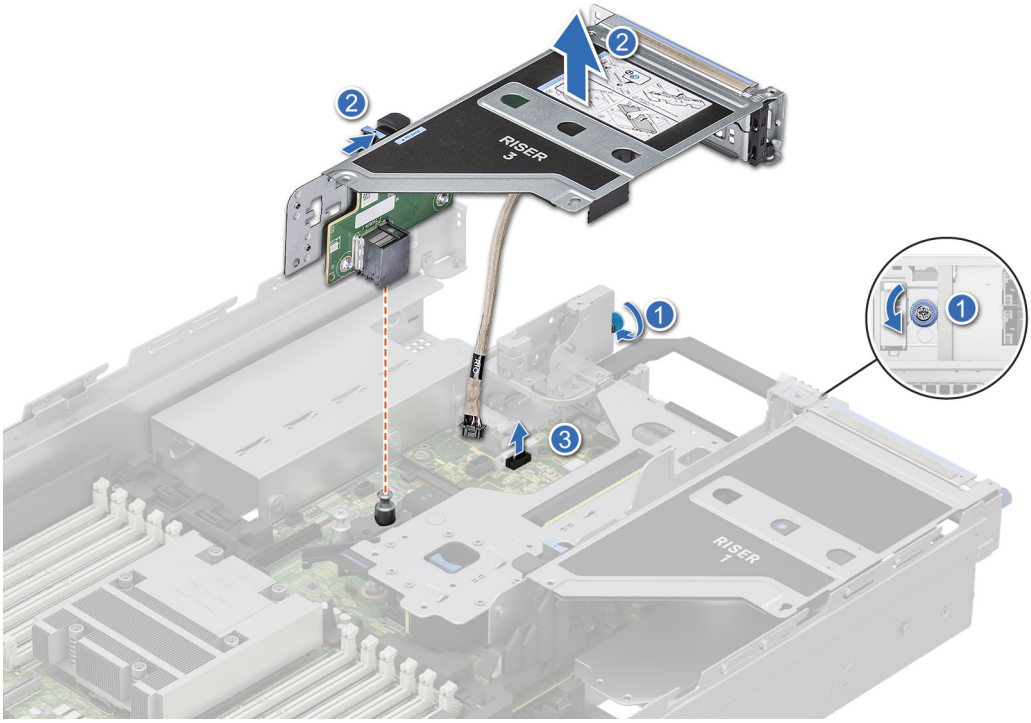

Figure 209. Disconnecting the VGA port cable

4. Open the latch on the expansion card riser and slide the VGA port out of the expansion card riser.

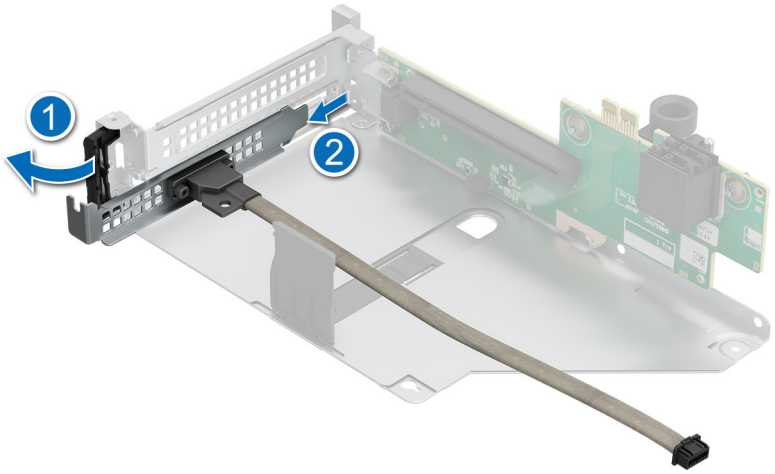

Figure 210. Removing the VGA port

5. Install the filler bracket if not replacing the VGA port.

Next steps

1. Replace the VGA port.

Installing the VGA port

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.
4. Remove expansion card riser.

NOTE: VGA port is supported only in slot 4 of the expansion card riser.

Steps

1. Open the latch on the expansion card riser and remove the filler bracket from the expansion card riser.
2. Slide the VGA port into the expansion card riser.

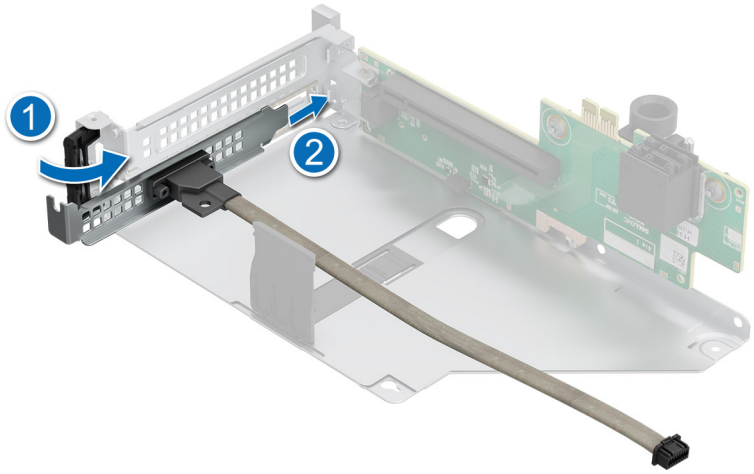

Figure 211. Installing the VGA port

3. Connect the VGA port cable to the LC rear I/O board.
4. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board.
5. 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.
6. Tighten the captive screws on the system.

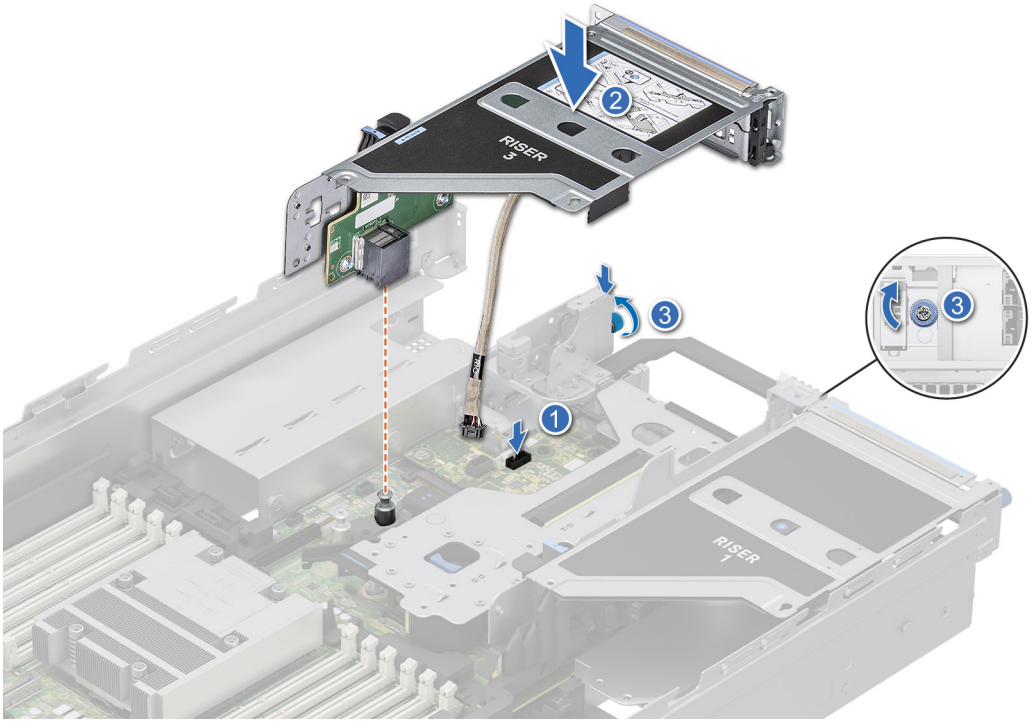

Figure 212. Connecting the VGA port cable to the port on the system

Next steps

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

Optional BOSS-N1 module

Removing the BOSS-N1 module blank

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Use a screwdriver to push out the blank from the BOSS-N1 module bay.

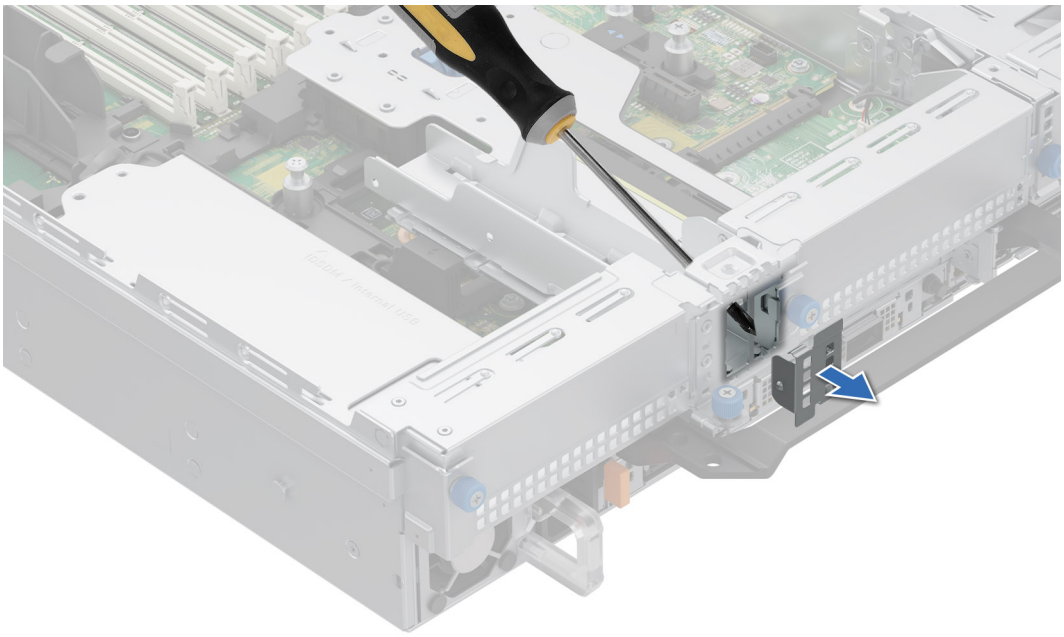

Figure 213. Removing the BOSS-N1 module blank

Next steps

1. Replace the BOSS-N1 module blank or install BOSS-N1 module.

Installing the BOSS-N1 module blank

Prerequisites

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

Steps

Align the blank with the BOSS-N1 module bay and push it into the bay until it clicks into place.

ss

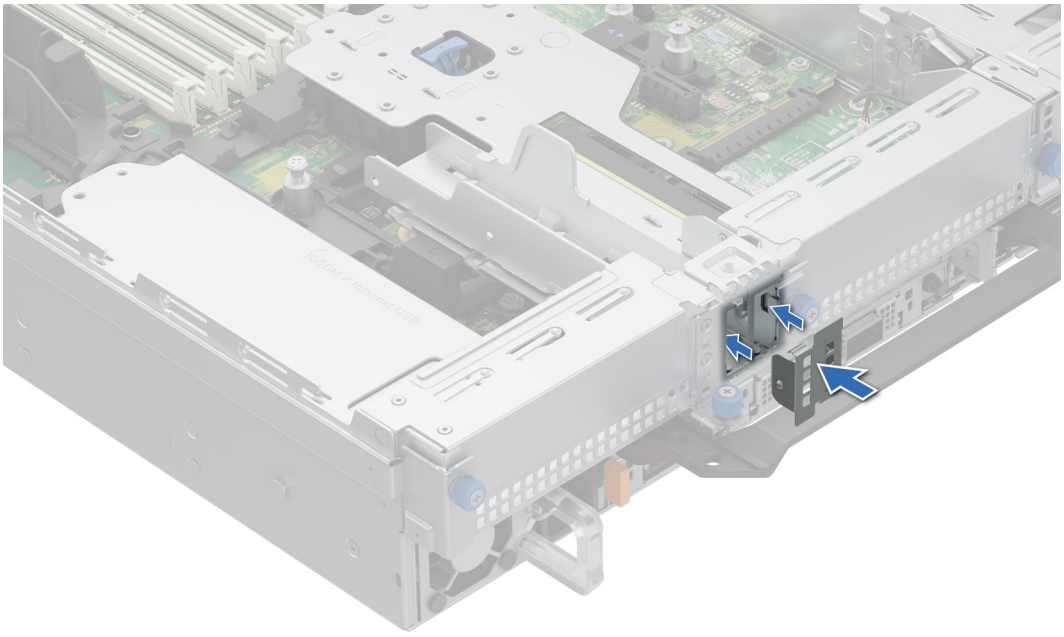

Figure 214. Installing the BOSS-N1 module blank

Removing the BOSS-N1 card carrier blank

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Press and pull the BOSS-N1 card carrier blank out from the BOSS-N1 module.

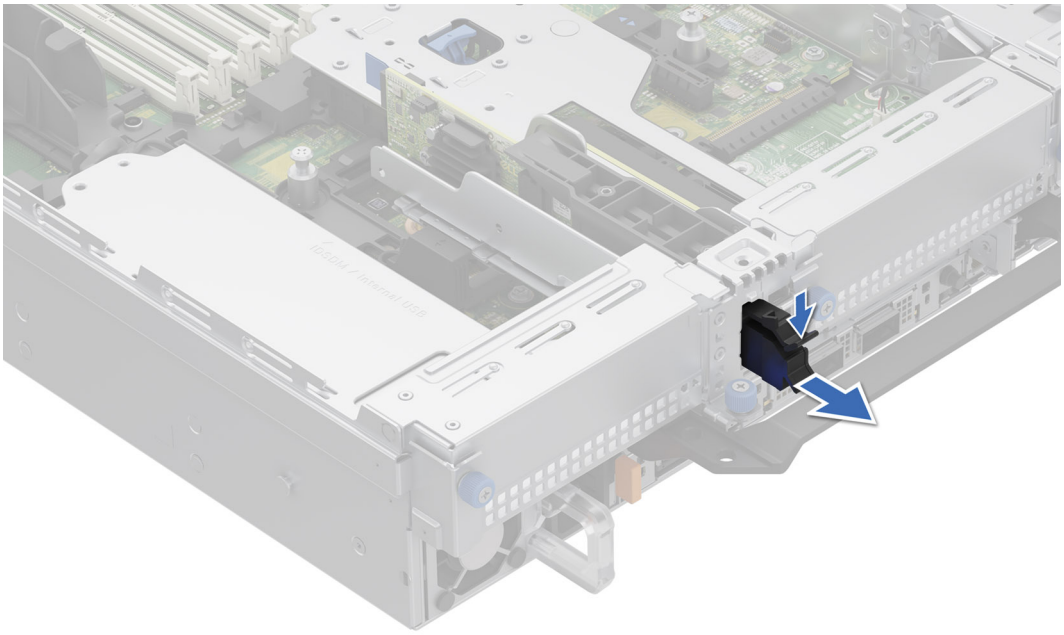

Figure 215. Removing the BOSS-N1 card carrier blank

Next steps

1. Replace the BOSS-N1 card carrier blank.

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 module bay and push it into the bay until it clicks into place.

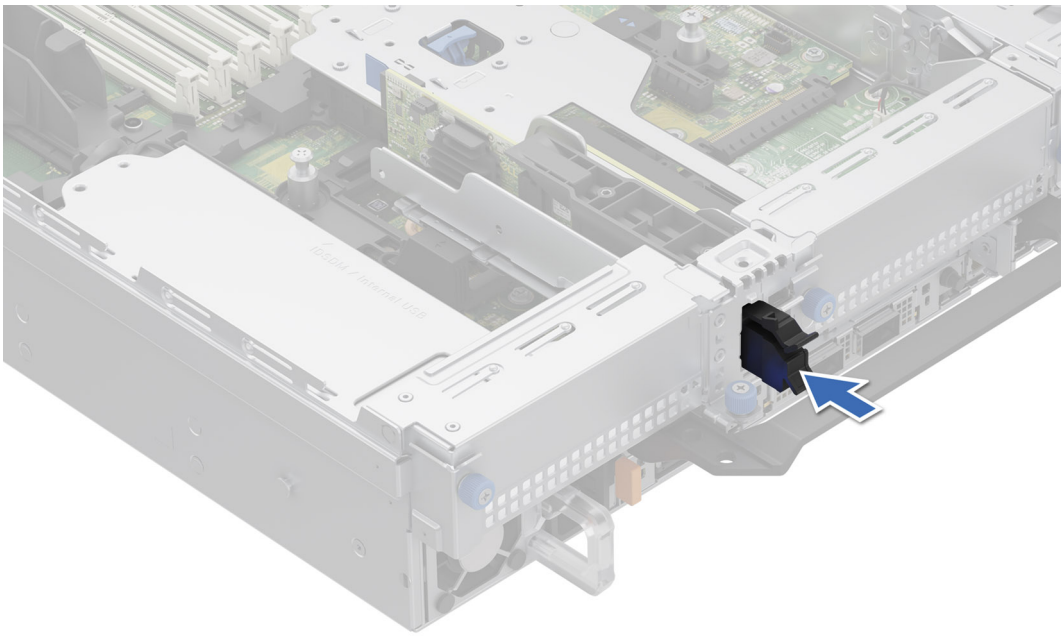

Figure 216. Installing the BOSS-N1 card carrier blank

Removing the BOSS-N1 module

The procedure to remove is the BOSS-N1 module with 4 x 2.5-inch rear drive module 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.

Steps

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

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

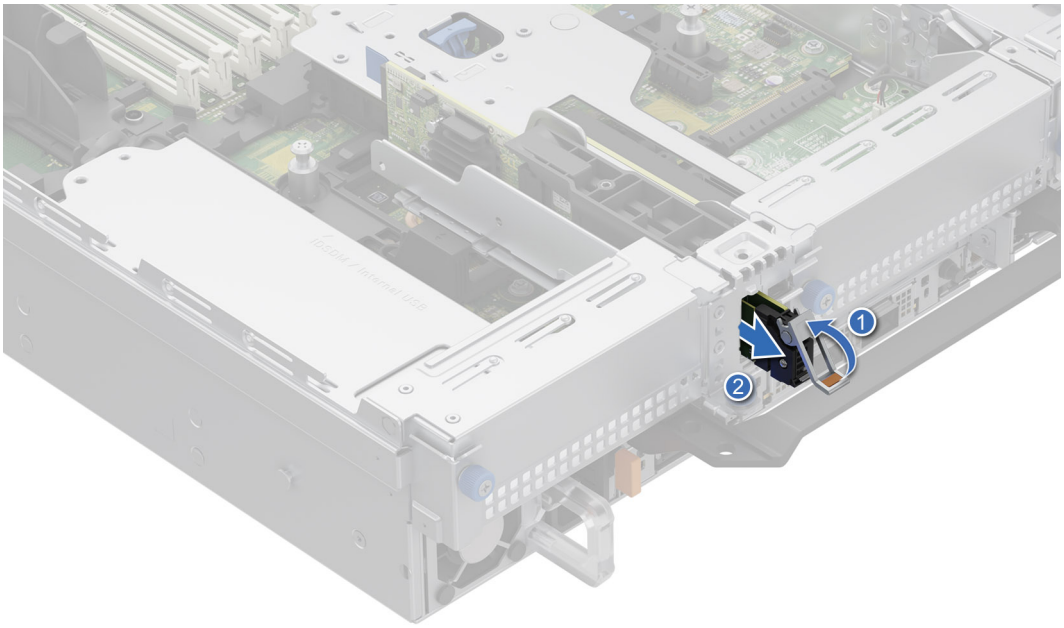

Figure 217. Removing the BOSS-N1 card carrier

3. Using the Phillips #1 screwdriver remove the M3 x 0.5 x 4.5 mm screw that secures the M.2 SSD to the BOSS-N1 card carrier.
4. Slide the M.2 SSD out from the BOSS-N1 card carrier.

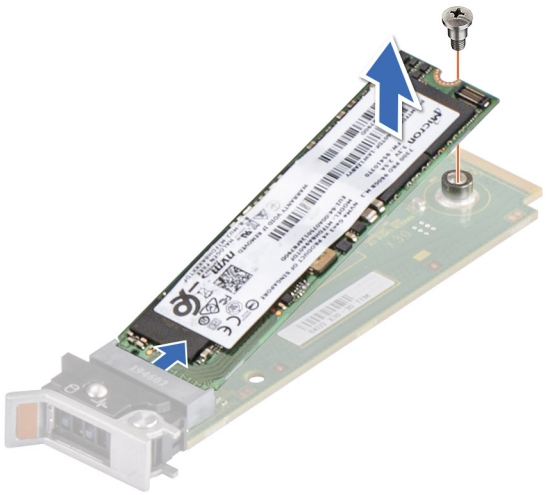

Figure 218. Removing the M.2 SSD

5. Disconnect the BOSS-N1 power and signal cable from the system board.
6. Using the Phillips #1 screwdriver remove the M3 x 0.5 x 4.5 mm screw that secures the BOSS-N1 module on Riser 1.
7. Slide the BOSS-N1 module towards the front of the chassis and lift the module.

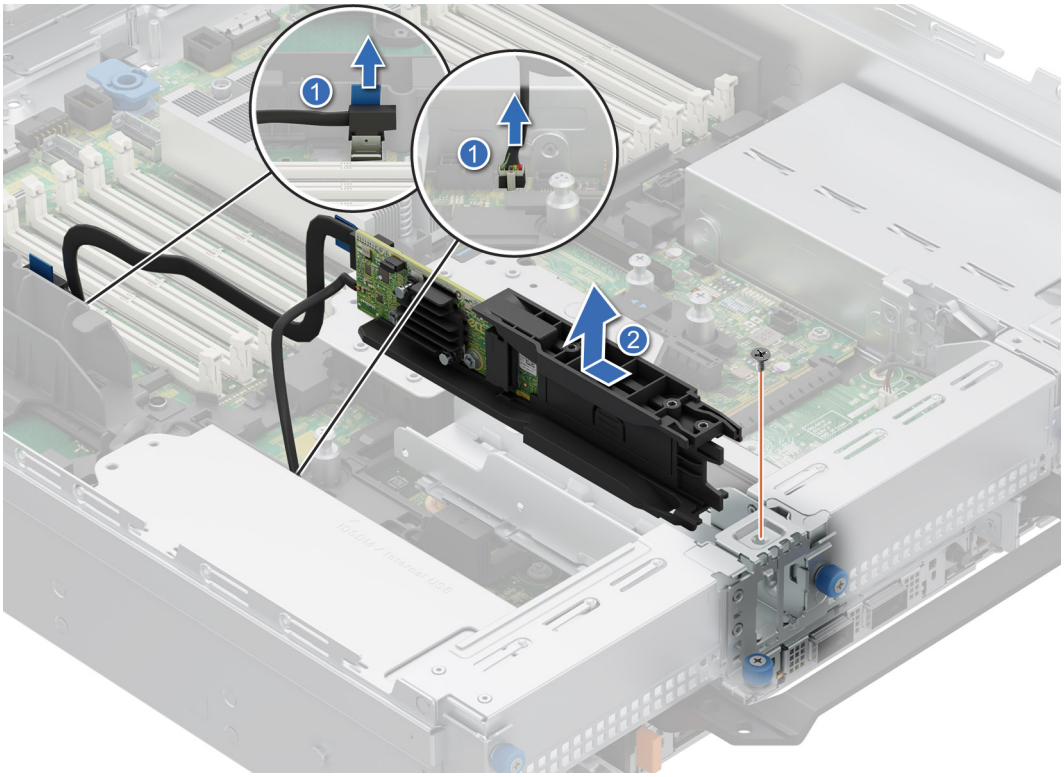

Figure 219. Removing the BOSS-N1 module

Next steps

1. Replace the BOSS-N1 module or Install the BOSS-N1 module blank.

Installing the BOSS-N1 module

The procedure to install is the BOSS-N1 module with 4 x 2.5-inch rear drive module 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 installed, remove the BOSS module blank.

Steps

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

   Align the BOSS-N1 module at an angle with the controller card module slot.
2. Insert the BOSS-N1 module and push the module horizontally towards the rear of the system until it is firmly seated.
3. Using the Phillips #1 screwdriver, secure the BOSS-N1 module with the M3 x 0.5 x 4.5 mm screw.
4. Connect the BOSS-N1 power and signal cable to the connectors on the system board.

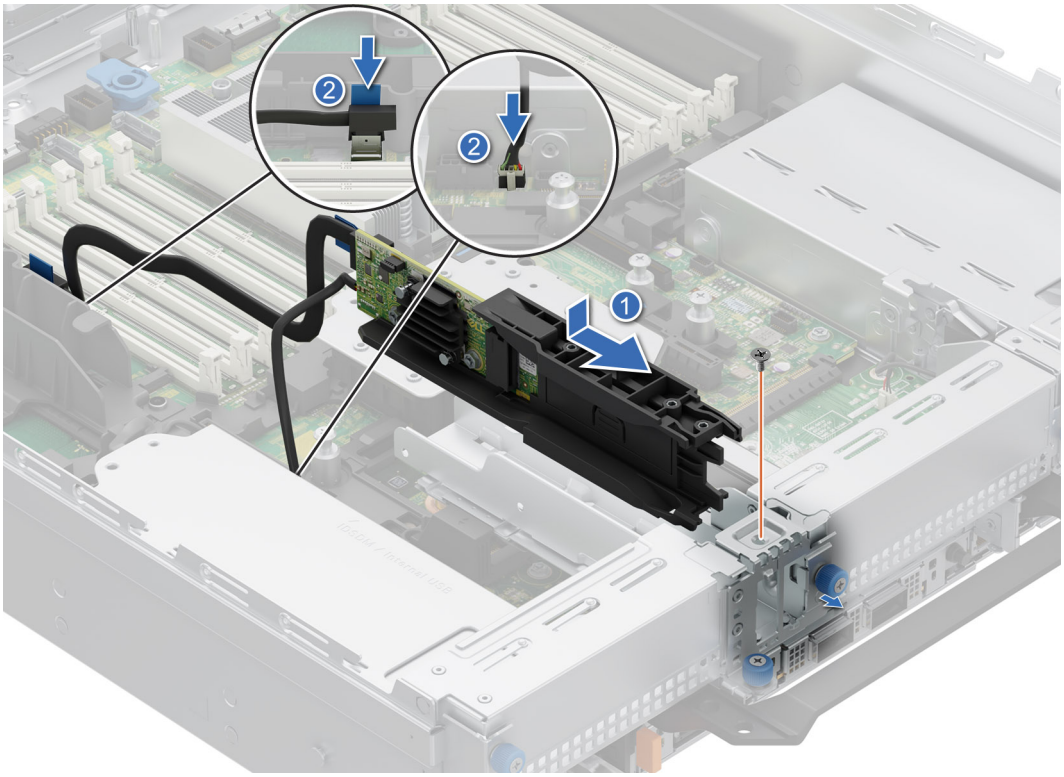

Figure 220. Installing the BOSS-N1 module

5. Align the M.2 SSD at an angle with the BOSS-N1 card carrier.
6. Insert the M.2 SSD until it is firmly seated in the BOSS-N1 card carrier.
7. Using the Phillips #1 screwdriver, secure the M.2 SSD on the BOSS-N1 card carrier with the M3 x 0.5 x 4.5 mm screw.

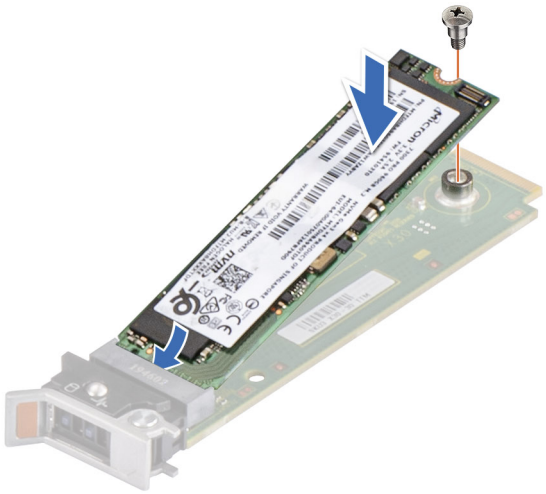

Figure 221. Installing the M.2 SSD

8. Slide the BOSS-N1 card carrier into the BOSS-N1 module slot.
9. Close the BOSS-N1 card carrier release latch to lock the carrier in place.

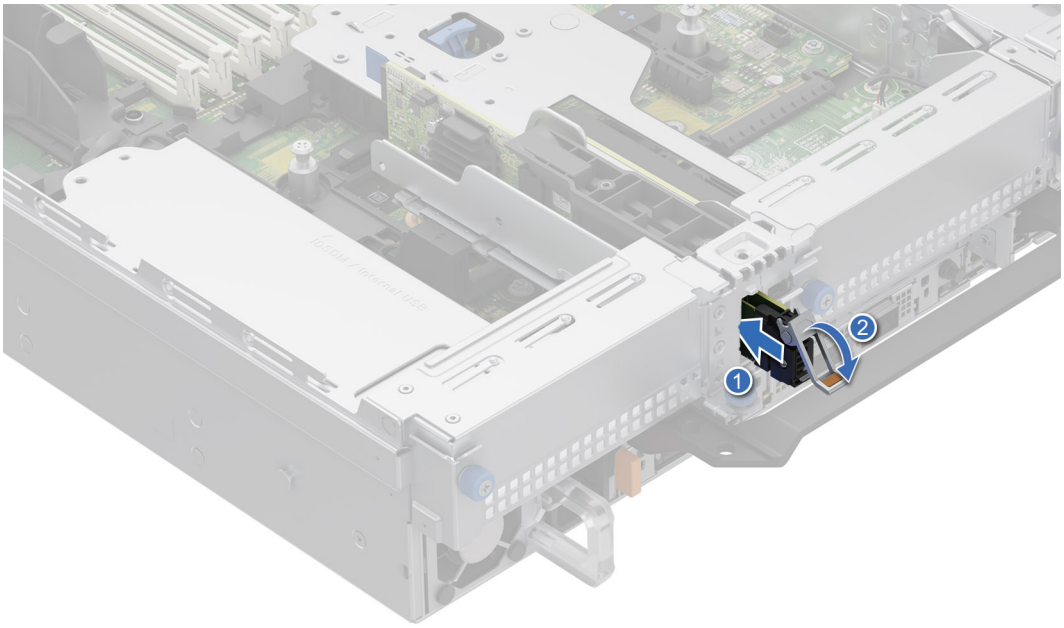

Figure 222. Installing the BOSS-N1card carrier

Next steps

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

System battery

Replacing the system battery

Prerequisites

NOTE: 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. Remove the air shroud.
4. Locate the battery socket. For more information, see the System board jumpers and connectors section.

Steps

1. Press and hold the battery socket retention latch for the battery to pop out.

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

   NOTE: If the battery does not pop out, then lift it out of the socket.

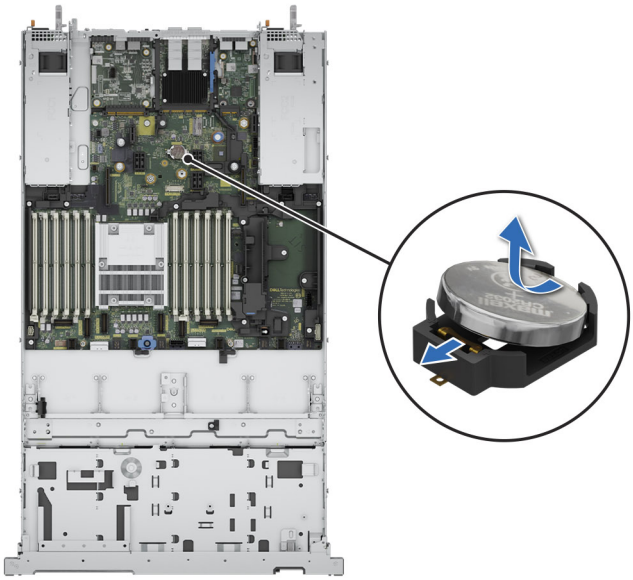

Figure 223. Removing the system battery

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 socket latch.
3. Press the battery into the connector until it snaps into place.

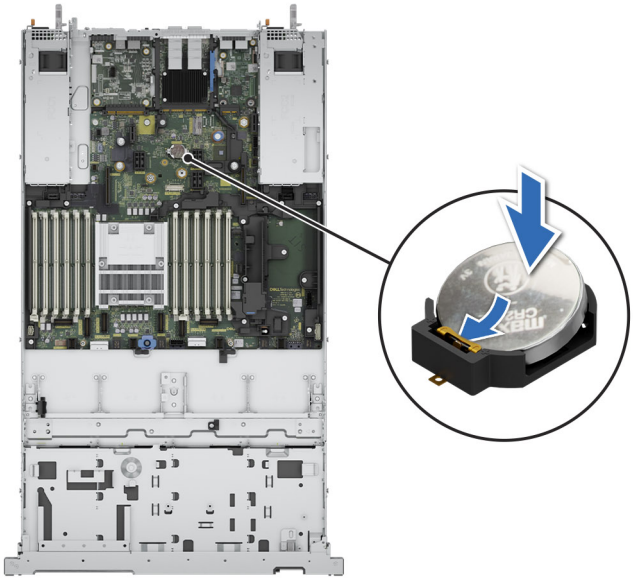

Figure 224. Installing the system battery

Next steps

1. Install the air shroud.
2. Follow the procedure listed in After working inside your system.
3. Confirm that the battery is operating properly, by performing the following steps:
   a. Enter the System Setup, while booting, by pressing **F2**.
   b. Enter the correct time and date in the System Setup **Time** and **Date** fields.
   c. **Exit** the System Setup.
   d. To test the newly installed battery, remove the system from the enclosure for at least an hour.

e. Reinstall the system into the enclosure after an hour.
f. Enter the System Setup and if the time and date are still incorrect, see Getting help section.

Optional internal USB card

NOTE: To locate the internal USB port on the system board, see the System board jumpers and connectors section.

Removing the internal USB card

Prerequisites

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the expansion card risers.

Steps

1. Holding the blue tag, lift the internal USB card to disconnect from the connector on the system board.
2. Remove the USB memory key from the internal USB card.

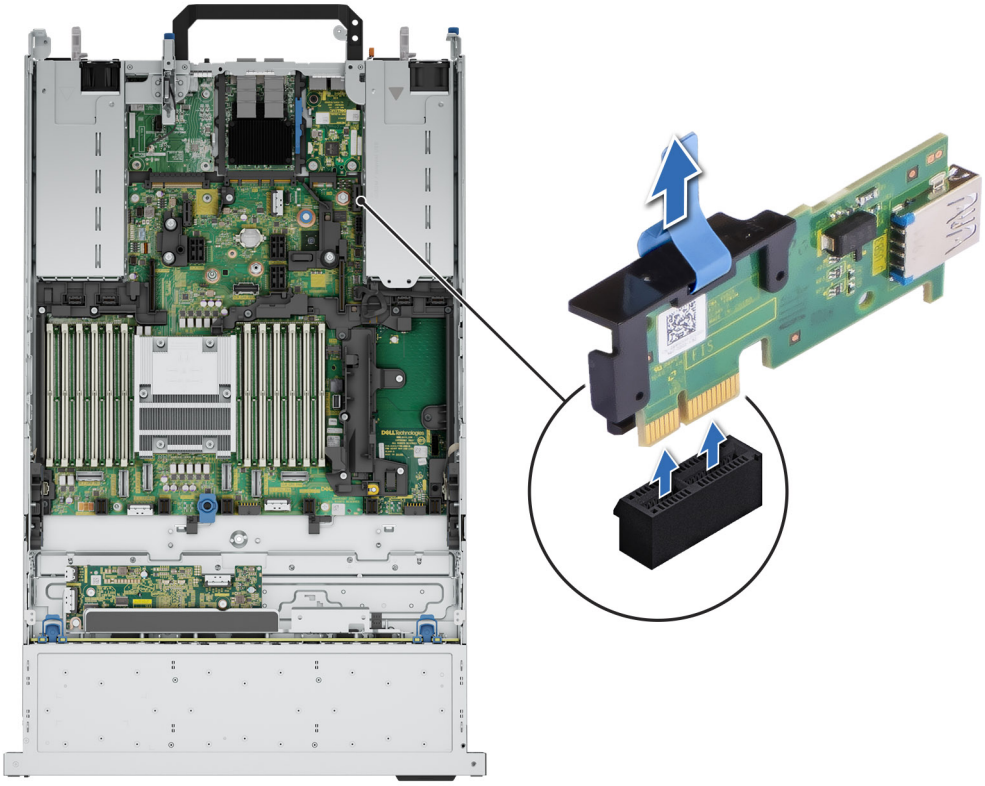

Figure 225. Removing the internal USB card

Next steps

1. Replace the internal USB card.

Installing the internal USB 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. Remove the expansion card risers.

Steps

1. Connect the USB key to the internal USB card.

   NOTE: For information about the exact location of USB on system board, see System board jumpers and connectors section.

2. Align the internal USB card with the connector on the system board and press firmly until the internal USB card is seated.
   inter

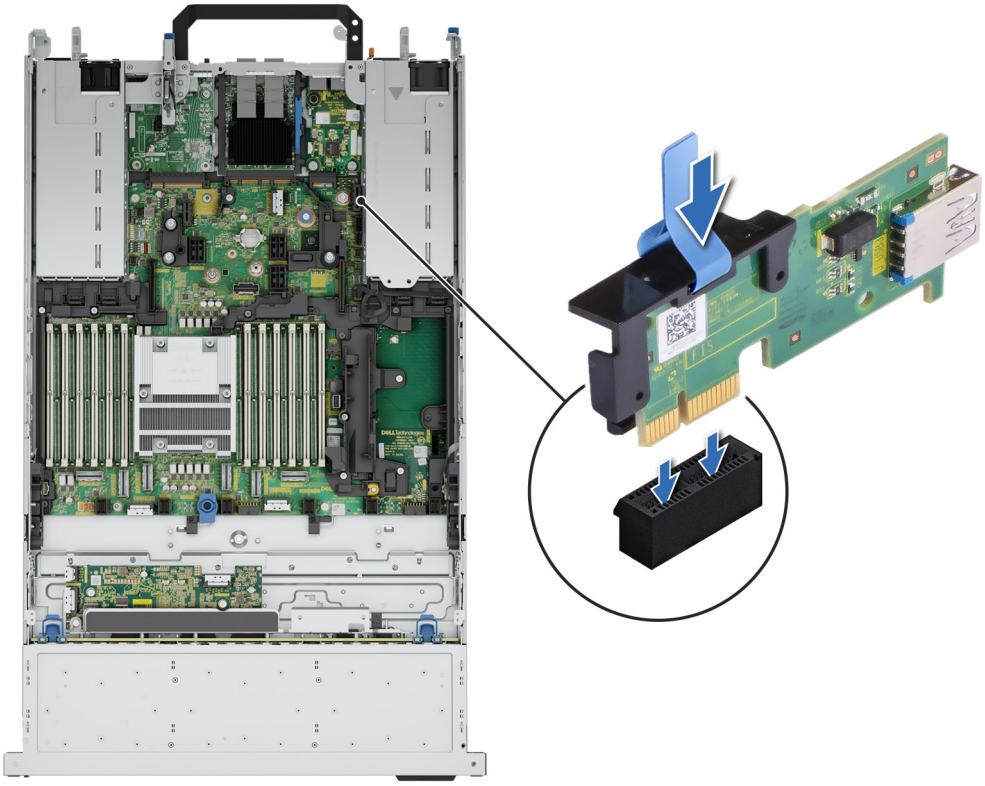

Figure 226. Installing the internal USB card

Next steps

1. Install the expansion card risers.
2. Follow the procedure listed in After working inside your system.
3. While booting, press F2 to enter **System Setup** and verify that the system detects the USB memory key.

Intrusion switch module

Removing the intrusion switch

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.
4. Keep the plastic scribe ready.

Steps

1. Disconnect and remove the intrusion switch cable connector from connector on the system board.

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

2. Using a Phillips #2 screwdriver, remove the screw that secures the intrusion switch on the intrusion switch slot.
3. Lift to remove the intrusion switch out of the intrusion switch slot.

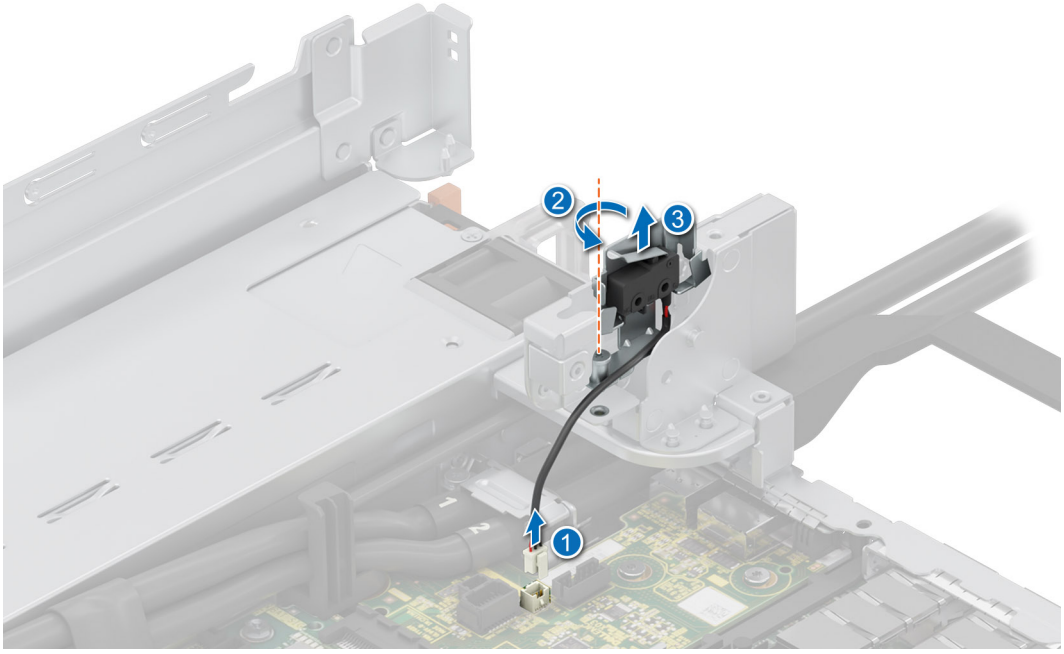

Figure 227. Removing the intrusion switch

Next steps

1. Replace the intrusion switch.

Installing the intrusion switch

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.

Steps

1. Align and insert the intrusion switch in the slot until it is firmly seated in the slot on the system.

   NOTE: Route the cable properly when you replace it to prevent the cable from being pinched or crimped.

2. Using a Phillips #2 screwdriver, tighten the screw that secures the intrusion switch on the intrusion switch slot.
3. Connect the intrusion switch cable to the connector on the system board.

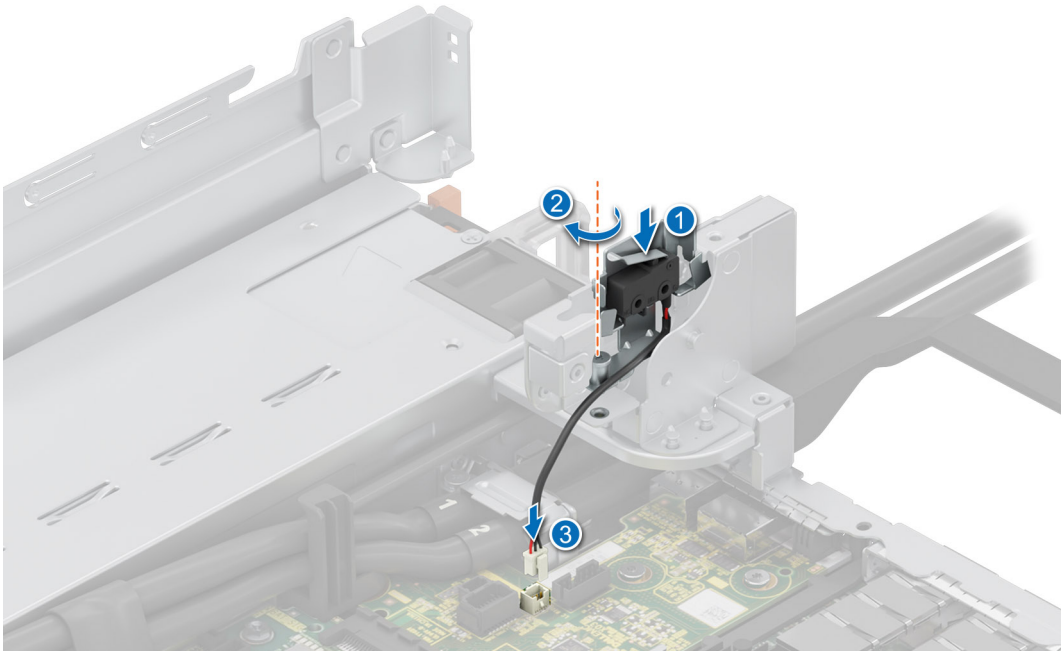

Figure 228. Installing the intrusion switch

Next steps

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

Optional OCP card

Removing the OCP card shroud

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 expansion card riser.

Steps

Hold the edges of the OCP shroud and lift the shroud out of the system.

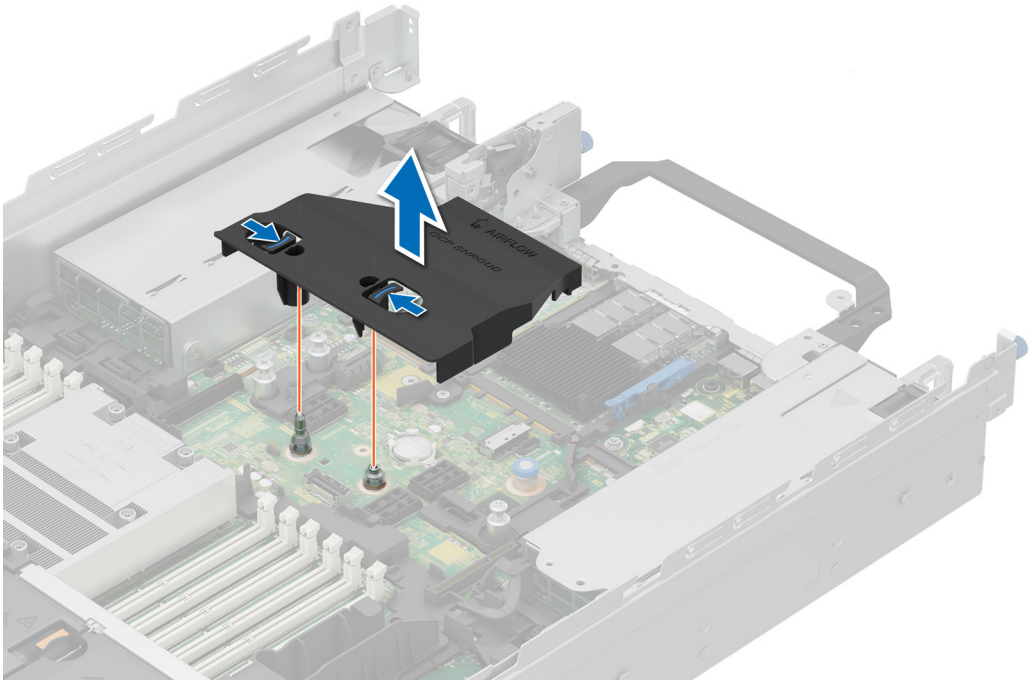

Figure 229. Removing the OCP shroud

Next steps

1. Replace the OCP card.

Installing the OCP card shroud

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 expansion card riser.

Steps

1. Align OCP card shroud with the slot on the system.
2. Lower and press the OCP shroud until it clicks into place.

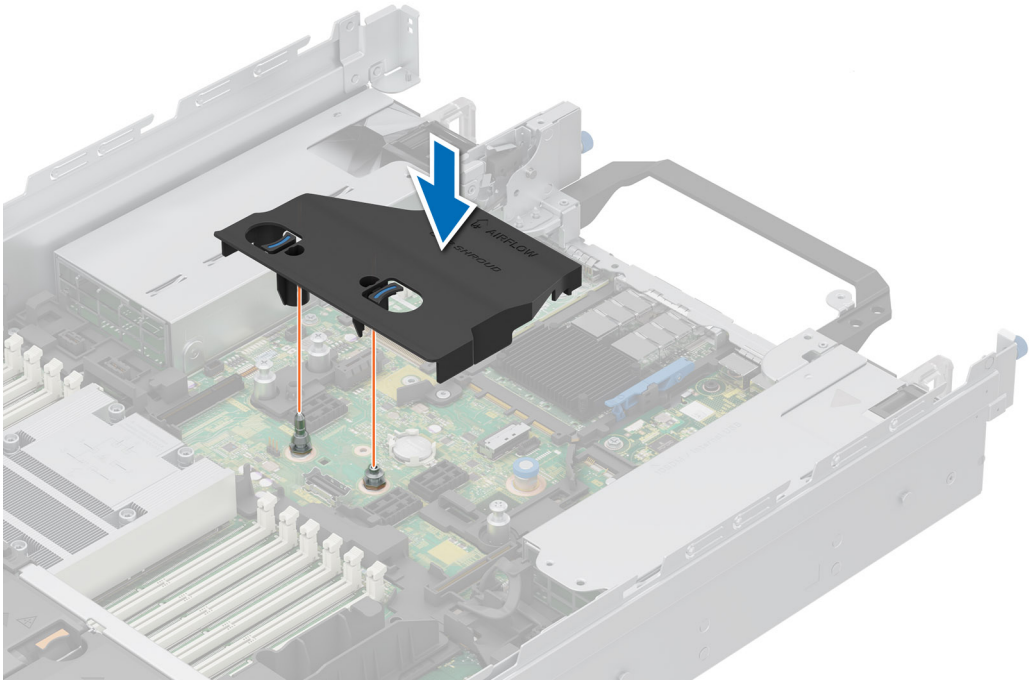

Figure 230. Installing the OCP card shroud

Next steps

1. Replace the OCP card.

Removing the OCP 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. Remove the expansion card riser.

Steps

1. Open the blue latch to disengage the OCP card.
2. Push the OCP card towards the rear end of the system to disconnect from the connector on the system board.
3. Slide the OCP card out of the slot on the system.

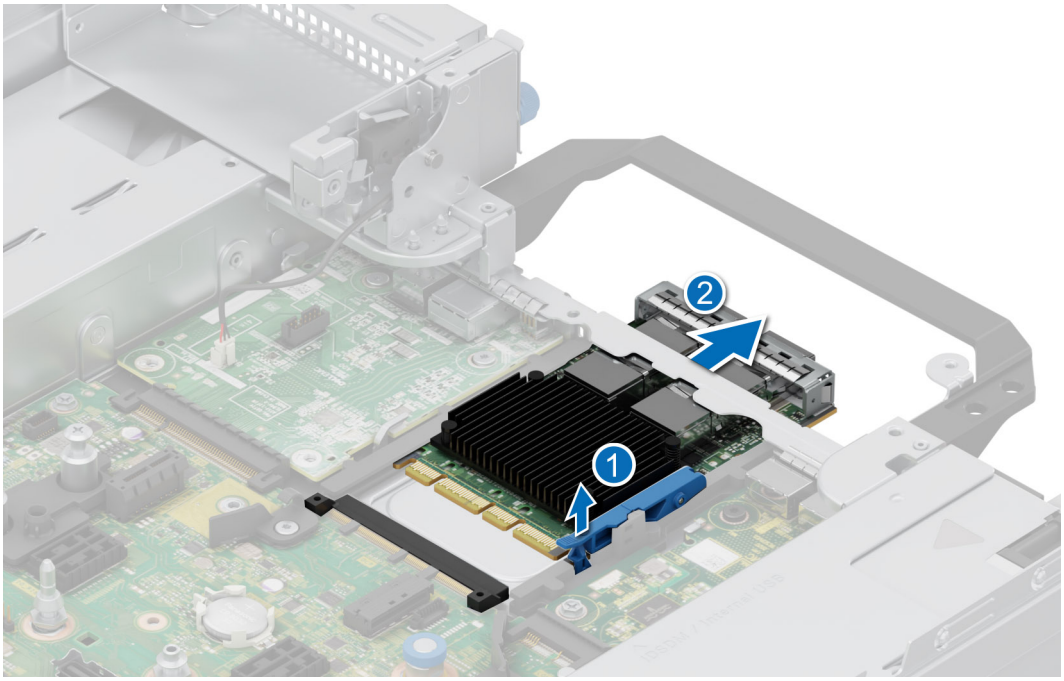

Figure 231. Removing the OCP card

4. If the OCP card is not going to be replaced, install a filler bracket .

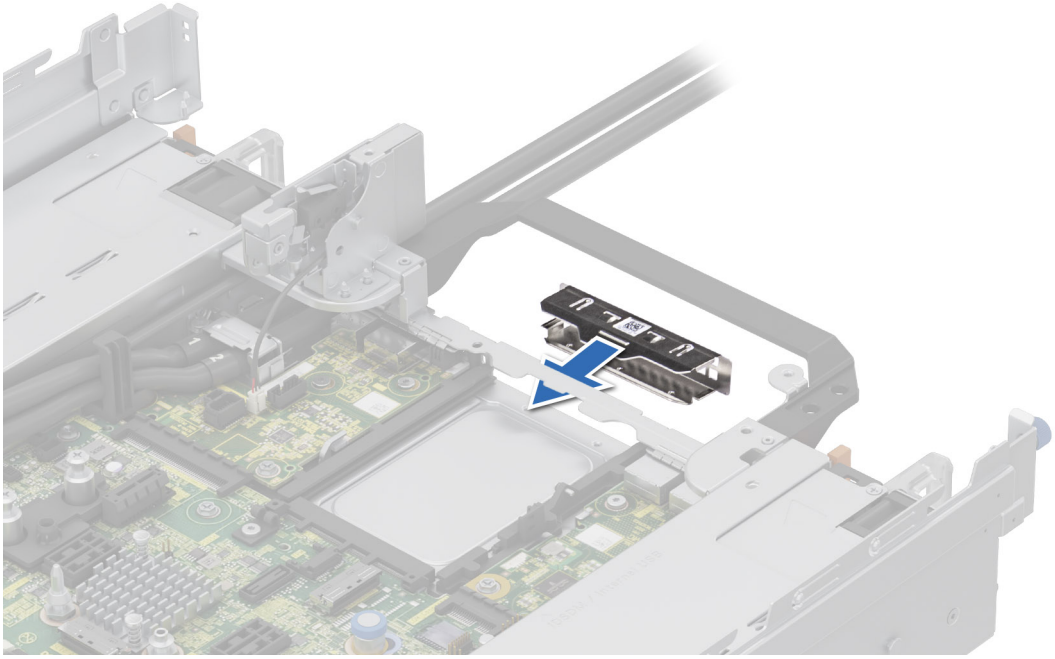

Figure 232. Installation of filler bracket

Next steps

1. Replace the OCP card.

Installing the OCP 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. Remove the expansion card riser.

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.

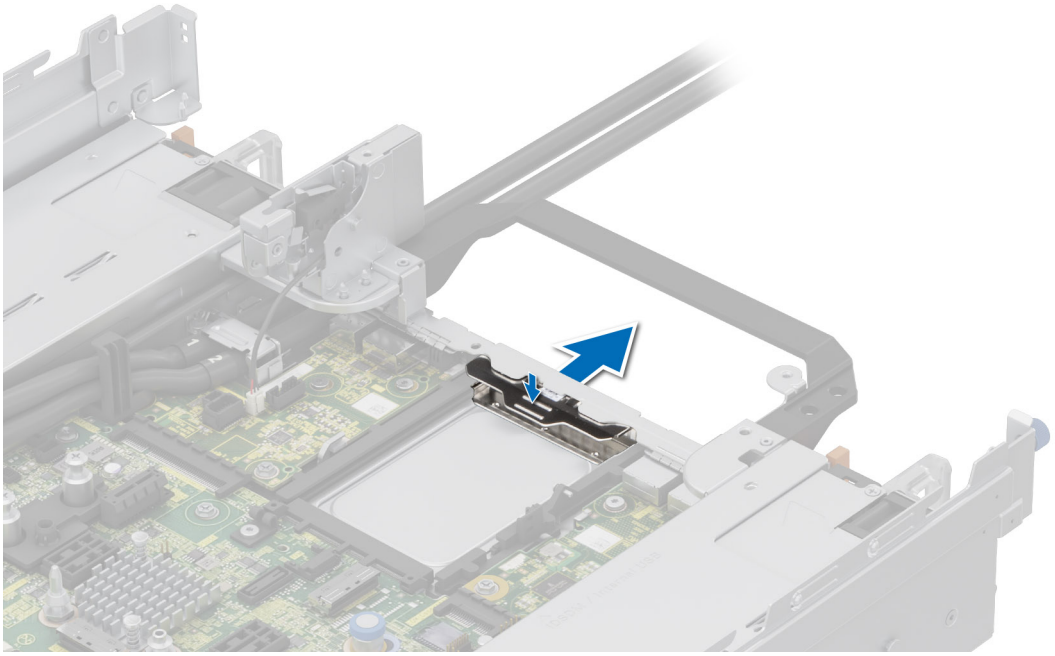

Figure 233. Removal of filler bracket

2. Open the blue latch on the system board.
3. Slide the OCP card into the slot in the system.
4. Push until the OCP card is connected to the connector on the system board.
5. Close the blue latch to lock the OCP card to the system.

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

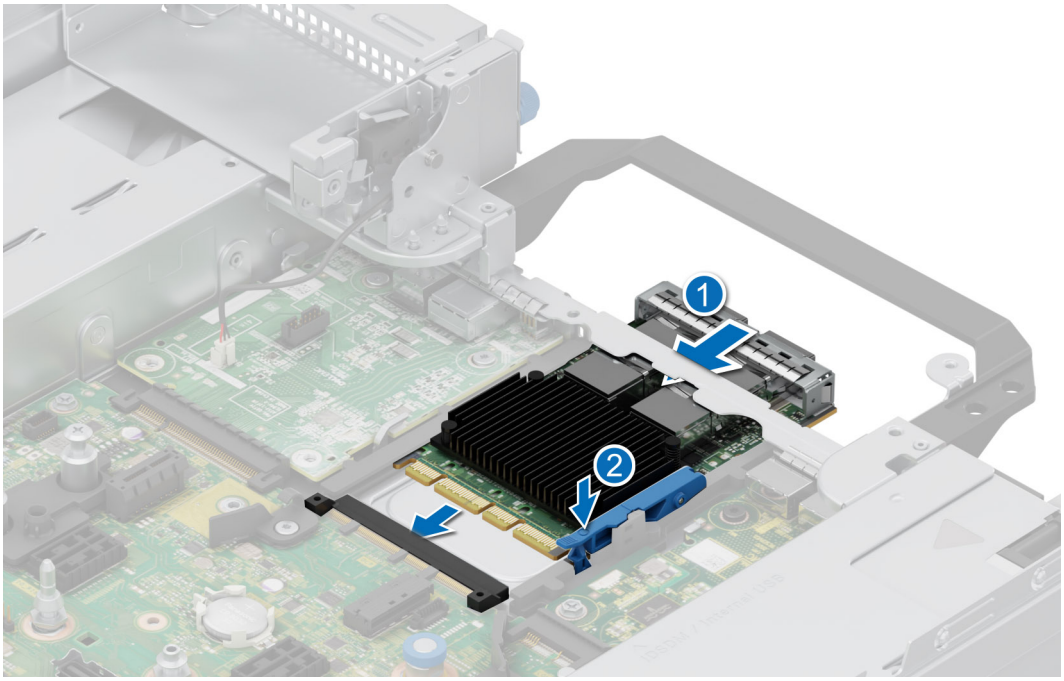

Figure 234. Installing the OCP card

Next steps

1. Install the expansion card riser.
2. Follow the procedure listed in After working inside your system.

Power supply unit

NOTE: While replacing the hot swappable PSU, after next server boot; the new PSU automatically updates to the same firmware and configuration of the replaced one. For updating to the latest firmware and changing the configuration, see the *Lifecycle Controller User's Guide* at iDRAC Manuals.

NOTE: For information about DC PSU cabling instructions, go to PowerEdge Manuals > **Rack Servers** > PowerEdge R7615 > **Select This Product** > **Documentation** > **Manuals and Documents** > Cabling instructions for – 48 – 60 V DC power supply.

Hot spare feature

Your system supports the hot spare feature that significantly reduces the power overhead associated with the power supply unit (PSU) redundancy.

When the hot spare feature is enabled, one of the redundant PSUs is switched to the sleep state. The active PSU supports 100 percent of the system load, thus operating at higher efficiency. The PSU in the sleep state monitors output voltage of the active PSU. If the output voltage of the active PSU drops, the PSU in the sleep state returns to an active output state.

If having both PSUs active is more efficient than having one PSU in the sleep state, the active PSU can also activate the sleeping PSU.

The default PSU settings are as follows:

- If the load on the active PSU is more than 50 percent of PSU rated power wattage, then the redundant PSU is switched to the active state.
- If the load on the active PSU falls below 20 percent of PSU rated power wattage, then the redundant PSU is switched to the sleep state.

You can configure the hot spare feature by using the iDRAC settings. For more information, see the *iDRAC User's Guide* available at PowerEdge Manuals.

Removing a power supply unit blank

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Pull the blank out of the system.

CAUTION: To ensure 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.

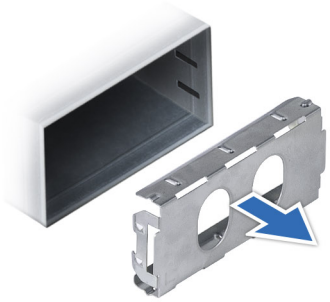

Figure 235. Removing a power supply unit blank

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.

Figure 236. Installing a power supply unit blank

Removing a power supply unit adapter blank

Remove the PSU adapter, when installing PSU with 86 mm wide form factor.

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Using a Phillips #1 screwdriver, loosen the screw and remove the power supply unit adapter blank.

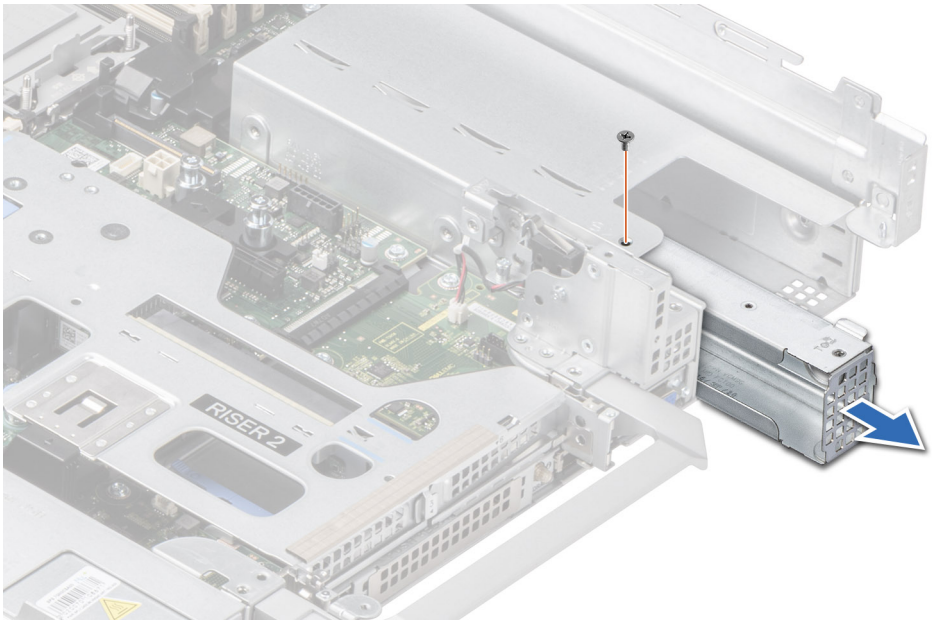

Figure 237. Removing a power supply unit adapter blank

Next steps

1. Replace the PSU adapter or Install the PSU.

Installing a power supply unit adapter blank

Prerequisites

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

2. If required, Remove the PSU.

NOTE: Remove the PSU adapter, when installing PSU with 86 mm wide form factor.

Steps

1. Align and insert the power supply unit adapter blank.
2. Using a phillips #1 screwdriver, tighten the screw.

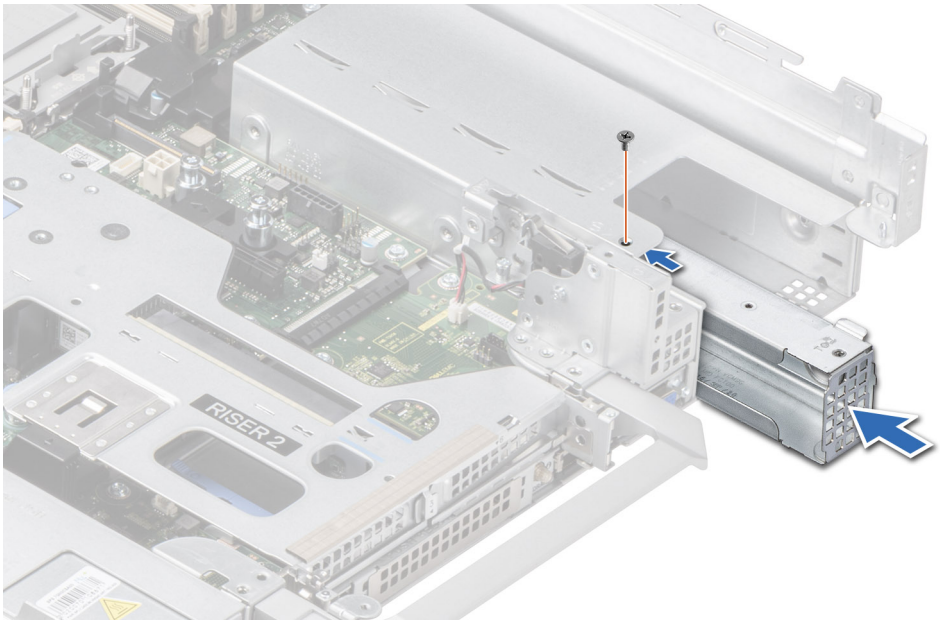

Figure 238. Installing a power supply unit adapter blank

Removing a power supply unit

Prerequisites

CAUTION: The system requires one power supply unit (PSU) for normal operation. On power-redundant systems, remove and replace only one PSU at a time in a system that is powered on.

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.

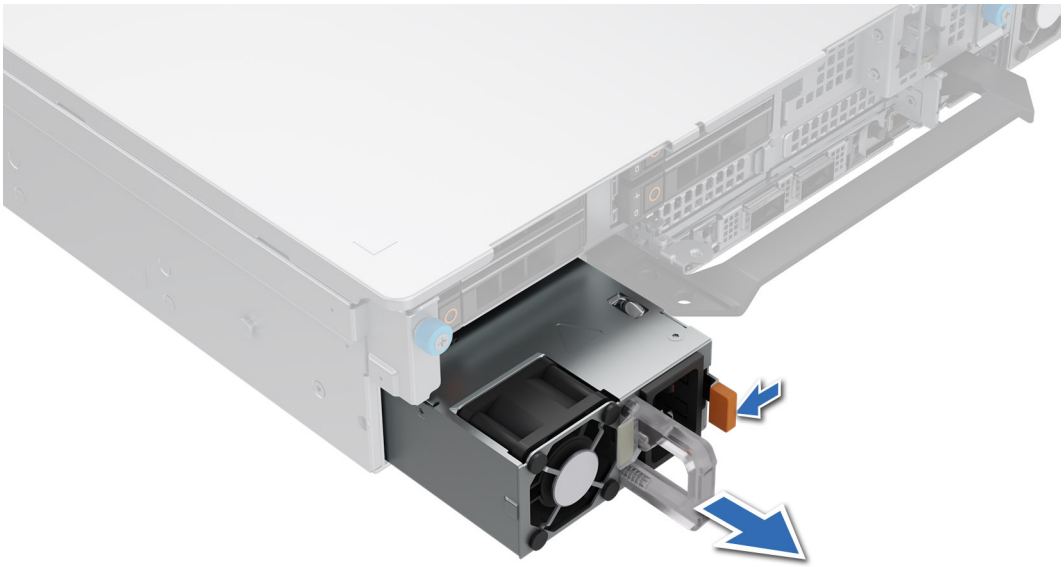

Figure 239. Removing a power supply unit

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

Slide the PSU into the PSU bay until the release latch snaps into place.

Figure 240. Installing a 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 redundancy may not occur until discovery is complete. The PSU status indicator turns green to indicate that the PSU is functioning properly.

Trusted Platform Module

Upgrading the Trusted Platform Module

Removing the TPM

Prerequisites

NOTE:

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

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

Steps

1. Locate the TPM connector on the system board.
2. Press to hold the module down and remove the screw using the security Torx 8-bit shipped with the TPM module.
3. Slide the TPM module out from its connector.
4. Push the plastic rivet away from the TPM connector and rotate it 90° counterclockwise to release it from the system board.
5. Pull the plastic rivet out of its slot on the system board.

Installing the TPM

Steps

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

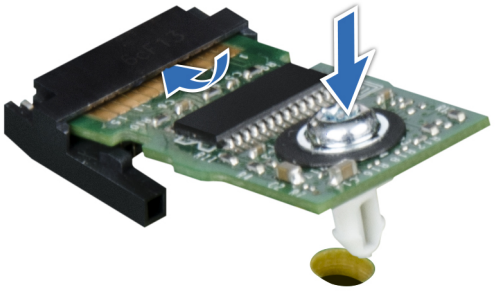

Figure 241. Installing the TPM

Initializing TPM for users

Steps

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

Initializing the TPM 2.0 for users

Steps

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
3. From the **TPM Security** option, select **On**.
4. Save the settings.
5. Restart your system.

System board

Removing the system board

Prerequisites

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in 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. Serial COM port (if installed)
   f. VGA port (if installed)
   g. Expansion card risers
   h. Rear drive module
   i. Processor and heat sink module
   j. BOSS-N1 module
   k. GPU air shroud (if installed)
   l. Internal USB card (if installed)
   m. OCP card (if installed)
   n. LOM card (if installed)
   o. Power supply units (PSU)
   p. Disconnect all the cables from the system board and make note of all the cable connections.

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

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

Steps

1. Using the system board holder and plunger, slide the system board towards the front of the system.
2. At a tilted angle, lift the system board out of the chassis.

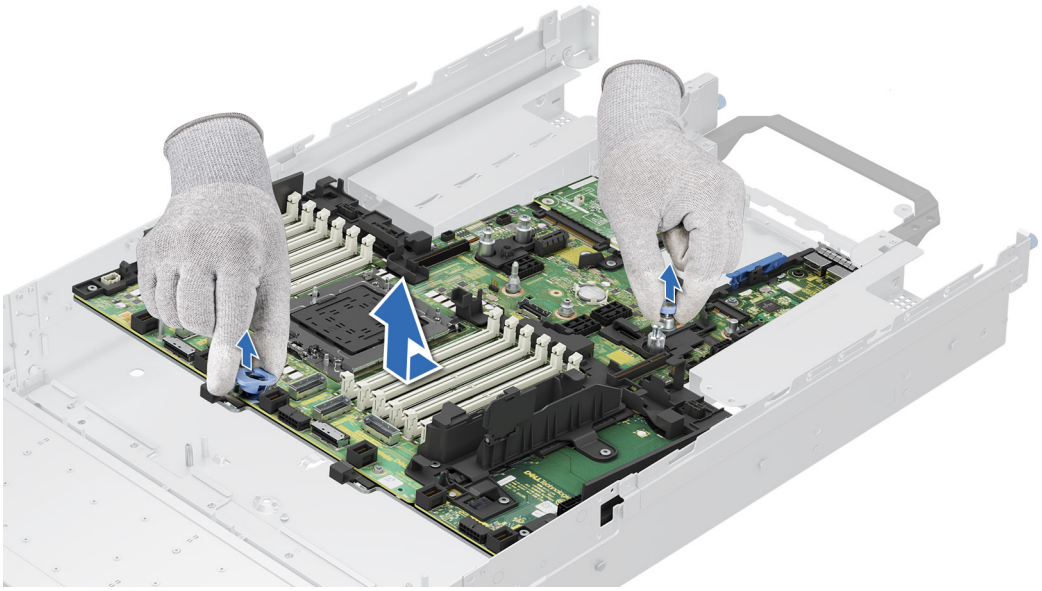

Figure 242. Removing the system board

Next steps

1. Install the system board.

Installing the system board

Prerequisites

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

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

Steps

1. Unpack the new system board assembly.

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

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

2. Holding the system board holder and plunger, lower the system board at a tilted angle into the system.
3. Slide the system board towards the rear of the chassis until the connectors are firmly seated in the slots.

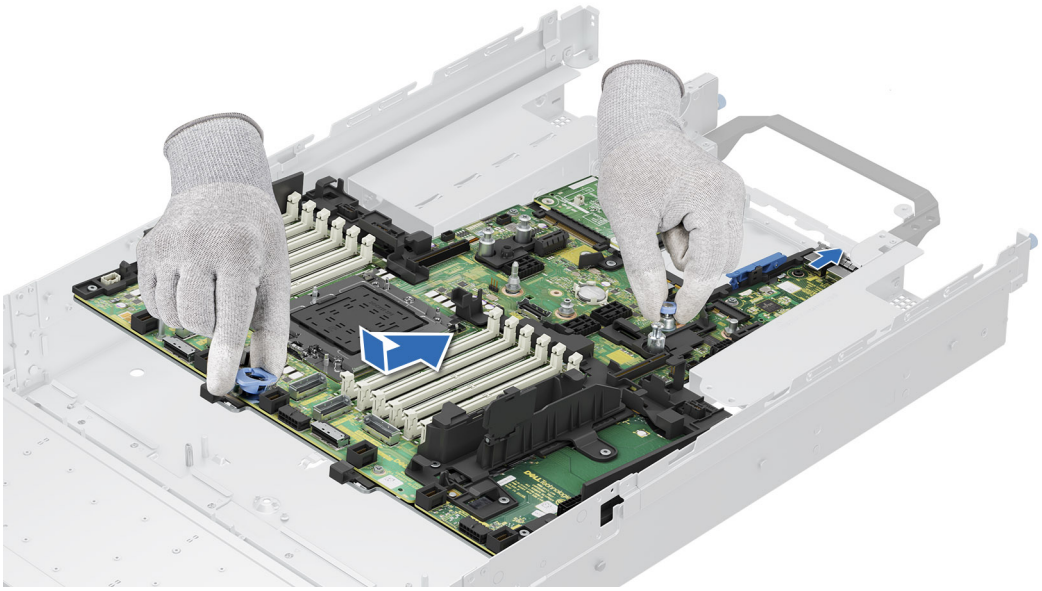

Figure 243. Installing the system board

Next steps

1. Replace the following components:
   a. Trusted Platform Module (TPM)

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

   b. Internal USB card (if removed)
   c. OCP card (if removed)
   d. Processor and heat sink module
   e. Memory modules
   f. GPU air shroud (if removed)
   g. Expansion card risers
   h. Rear drive module
   i. VGA port (if removed)
   j. Serial COM port (if removed)
   k. BOSS-N1 module
   l. Side wall bracket
   m. Cooling fan cage assembly
   n. Air shroud
   o. Power supply units (PSU)
2. Reconnect all cables to the system board.

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

3. Ensure that you perform the following steps:
   a. Use the Easy Restore feature to restore the Service Tag. See the Restoring the system by using the Easy Restore feature section.
   b. If the service tag is not backed up in the backup flash device, enter the system service tag manually. See the Manually update the Service Tag by using System Setup section.
   c. Update the BIOS and iDRAC versions.
   d. Re-enable the Trusted Platform Module (TPM). See the Upgrading the Trusted Platform Module section.
4. Follow the procedure listed in After working inside your system.

Restoring Service Tag using Easy Restore

The Easy Restore feature allows you to restore your Service Tag, iDRAC license, UEFI configuration, and the system configuration data after replacing the system board. All data is backed up in a backup Flash drive device automatically. If BIOS detects a new system board, and the Service Tag in the backup Flash drive device is different, BIOS prompts the user to restore the backup information.

About this task

Below is a list of options available:

Steps

1. Restore the service tag, license, and diagnostics information, press **Y**
2. Navigate to the Lifecycle Controller based restore options, press **N**
3. Restore data from a previously created **Hardware Server Profile**, press **F10**

   NOTE: When the restore process is complete, BIOS prompts to restore the system configuration data.

4. Restore data from a previously created **Hardware Server Profile**, press **F10**
5. To restore the system configuration data, press **Y**
6. To use the default configuration settings, press **N**

   NOTE: After the restore process is complete, system reboots.

   NOTE: If restoring the Service Tag is successful, you can check the Service Tag information in the **System Information** screen and compare it with the Service Tag on the system.

Manually update the Service Tag

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

About this task

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

Steps

1. Power on the system.
2. To enter the **System Setup**, press **F2**.
3. Click **Service Tag Settings**.
4. Enter the service tag.

   NOTE: You can enter the service tag only when the **Service Tag** field is empty. Ensure that you enter the correct service tag. Once the service tag is entered, it cannot be updated or changed. Incorrectly entered service tag will lead to system board replacement.

5. Click **OK**.

LOM card, MIC card, and rear I/O board

Removing the LOM card and rear I/O 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 system board.

NOTE: The procedure to remove the liquid cooling rear I/O board and rear I/O boards is the same.

Steps

1. Using a Phillips # 2 screwdriver, remove the screws that secure the LAN on Motherboard (LOM) card and rear I/O board to the system board.
2. Holding the edges, pull the LOM card or rear I/O board to disconnect from the connector on the system board.

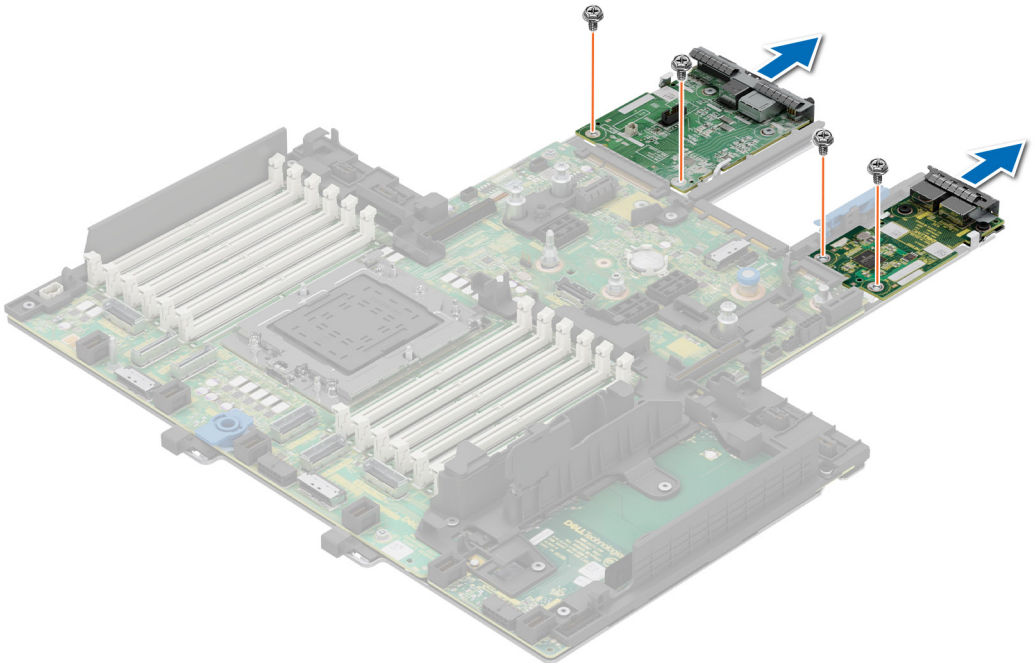

Figure 244. Removing the LOM card and rear I/O board

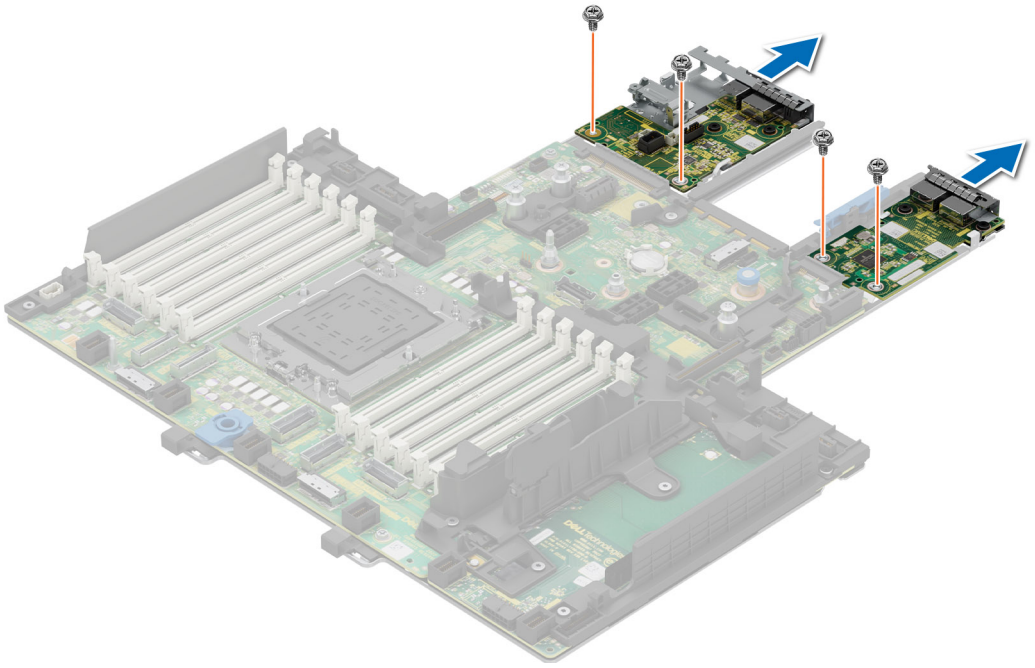

Figure 245. Removing the LOM card and liquid cooling rear I/O board

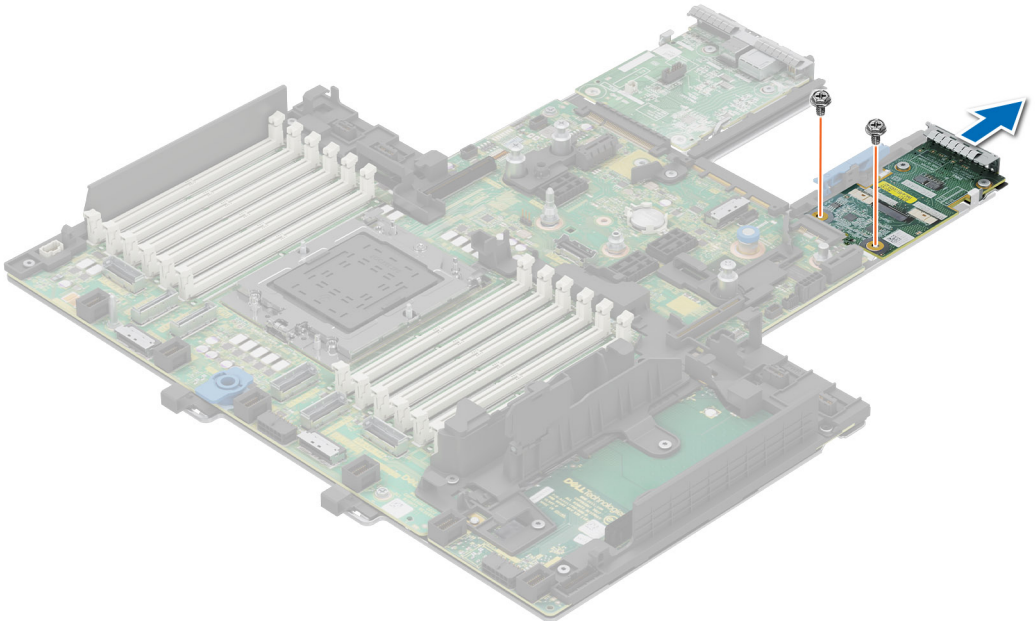

Figure 246. Removing the MIC card

Next steps

1. Replace the LOM card. MIC card, and rear I/O board.

Installing the LOM card and rear I/O 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 system board.

NOTE: The procedure to install the liquid cooling rear I/O board and rear I/O boards is the same.

Steps

1. Align the connectors and slots on the LOM card or rear I/O board with the connector and standoffs on the system board.
2. Press the LOM card or rear I/O board until firmly seated on the system board connector.
3. Using a Phillips #2 screwdriver, secure the LOM card or rear I/O board to the system board with screws.

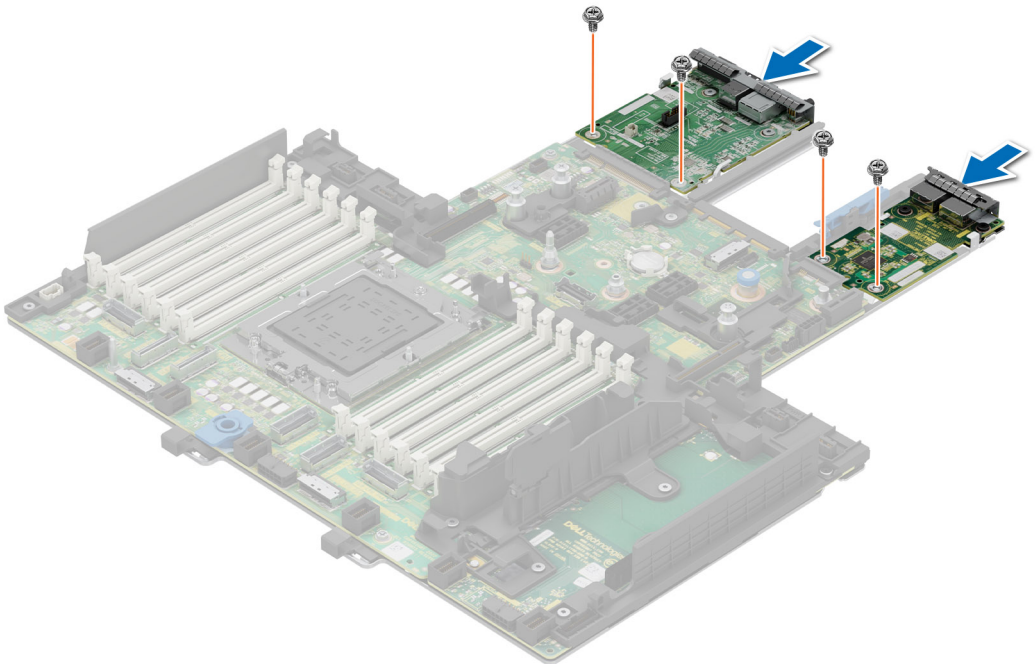

Figure 247. Installing the LOM card and rear I/O board

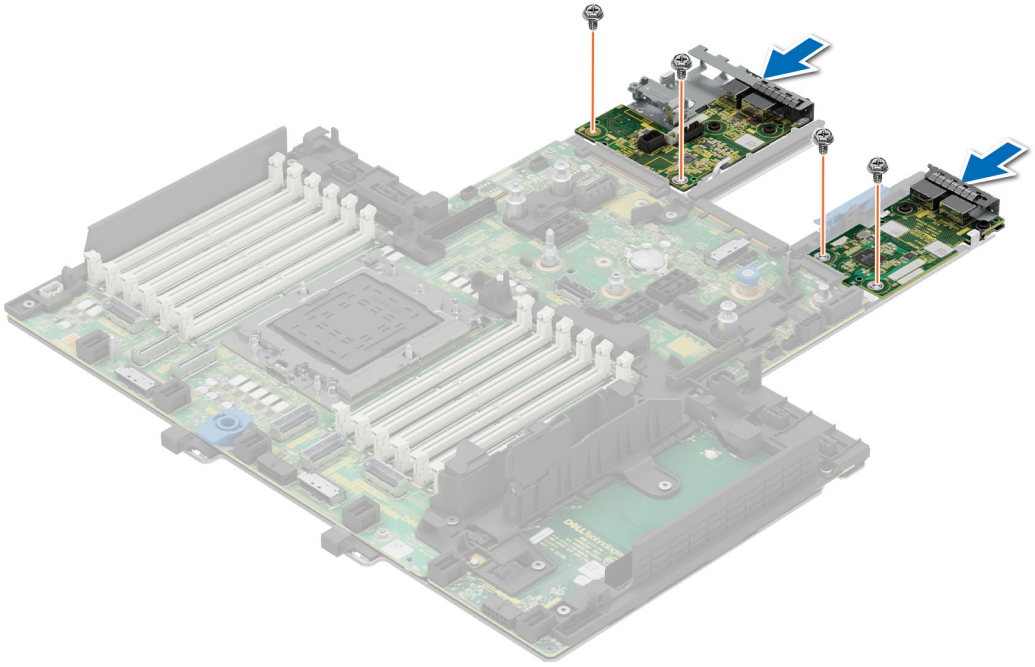

Figure 248. Installing the LOM card and Liquid cooling rear I/O board

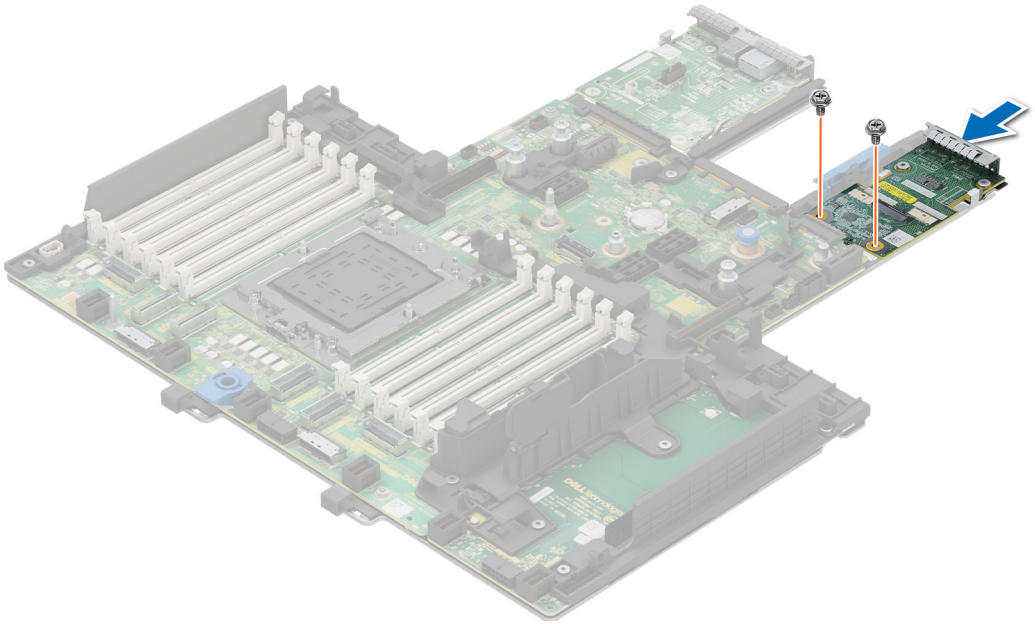

Figure 249. Installing the MIC card

Next steps

1. Install the system board.
2. 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.
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 and the VGA cable from the connectors on the system board.
4. Holding the right control panel and VGA 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.

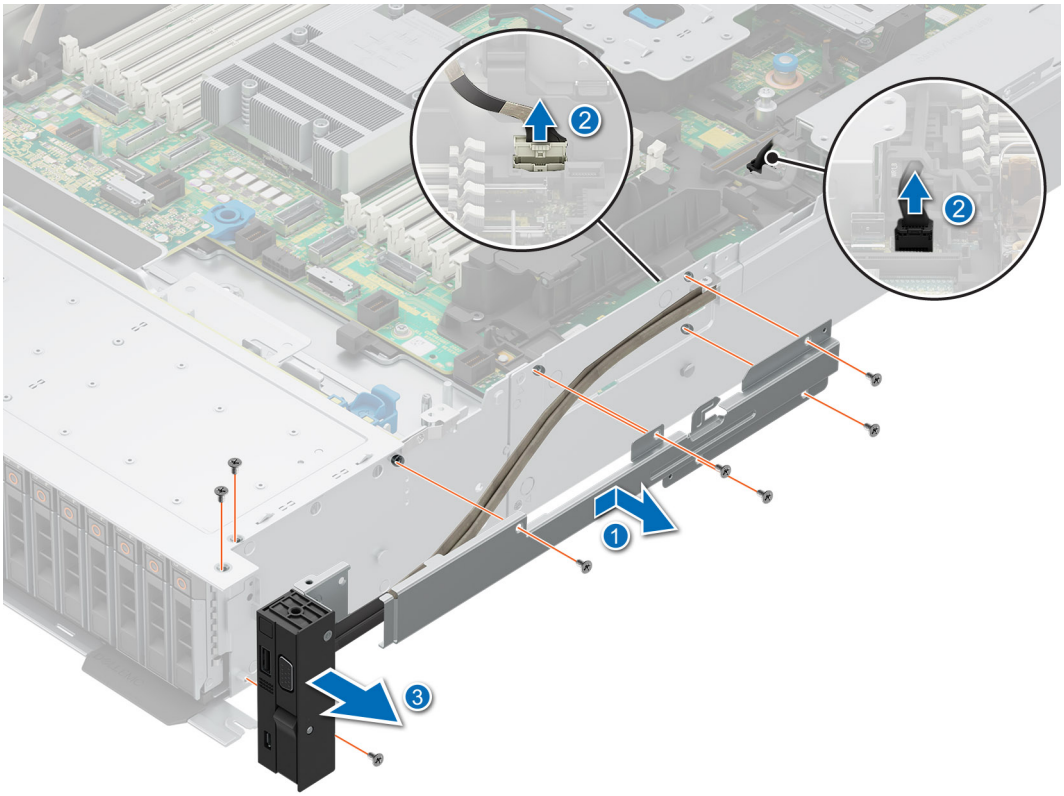

Figure 250. Removing the right control panel

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.
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 and VGA cable to the connectors 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.

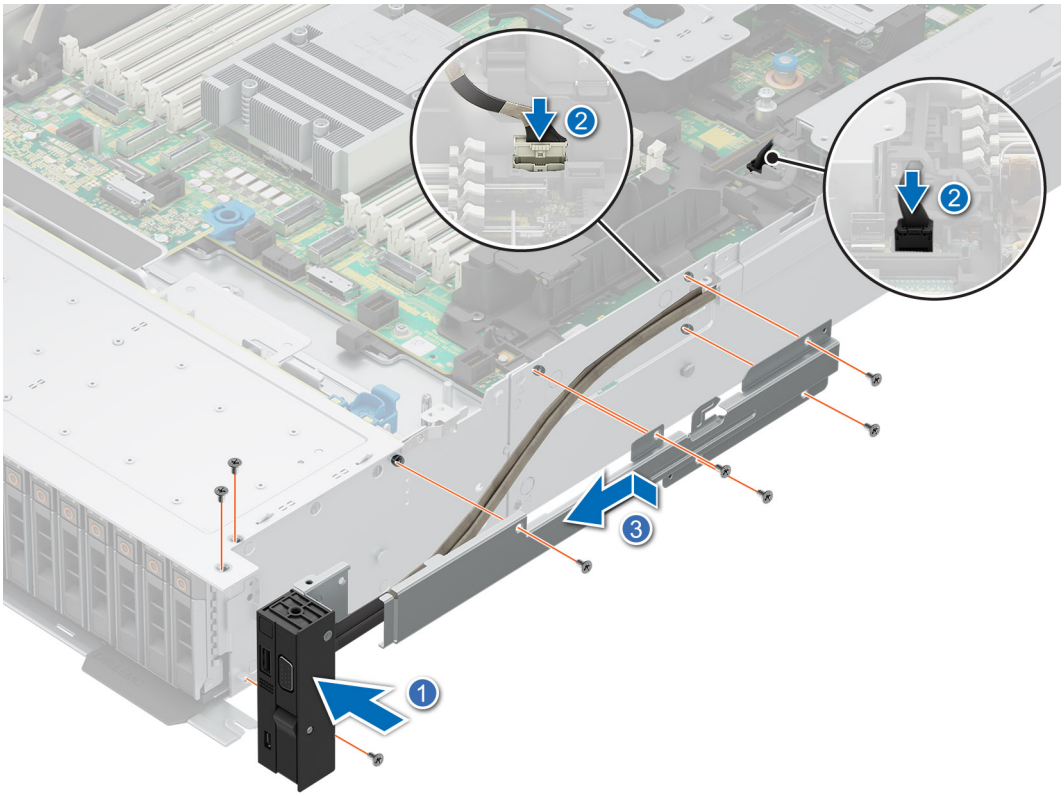

Figure 251. Installing the right control panel

Next steps

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

Removing the 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.
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 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 system 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 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.

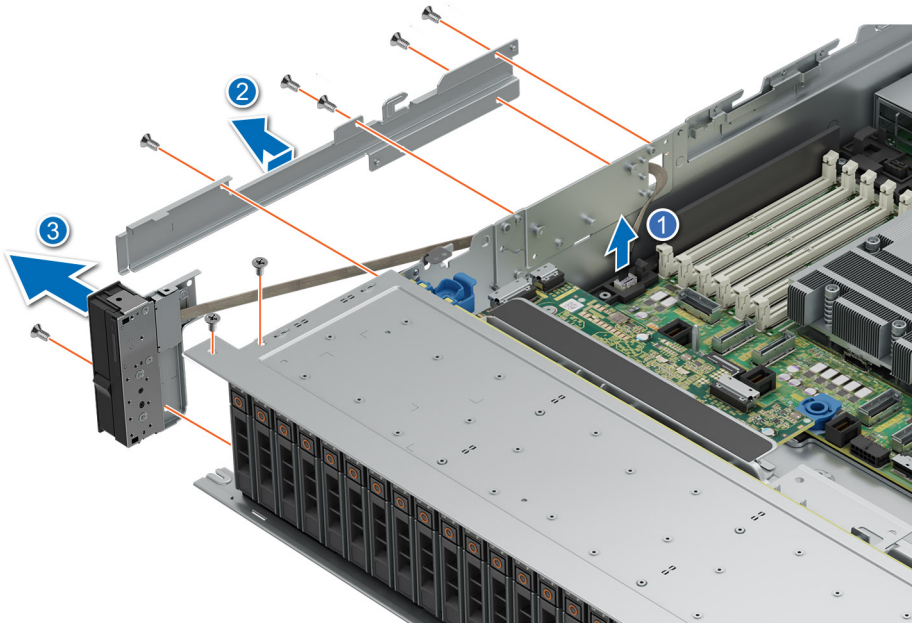

Figure 252. Removing the left control panel

Next steps

1. Replace the left control panel.

Installing the 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.
5. Remove the cooling fan cage assembly.
6. Remove the side wall bracket.

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 to prevent the cable from being pinched or crimped.

4. Connect the left control panel cable to the connector on the system 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.

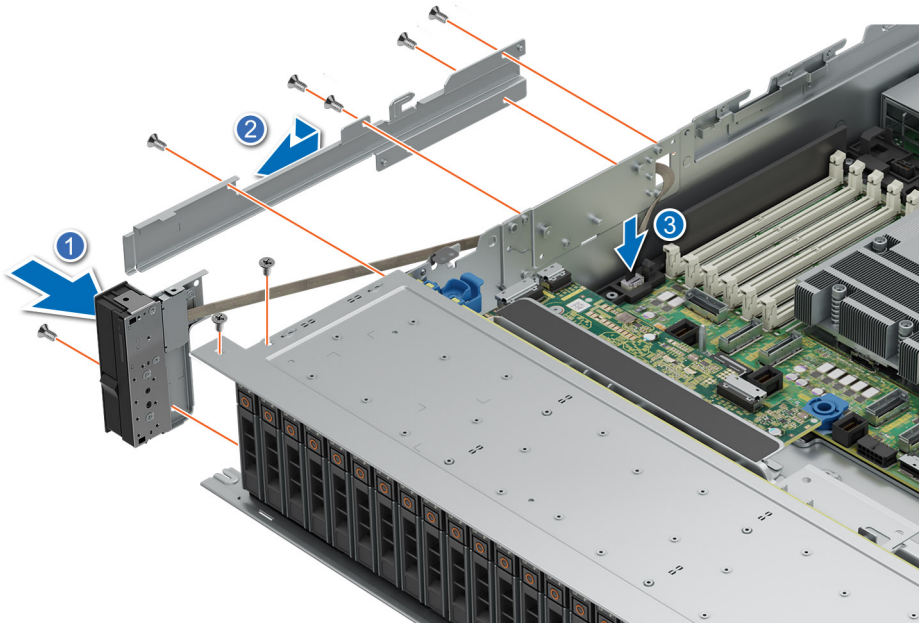

Figure 253. Installing the left control panel

Next steps

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

8

Upgrade Kits

The table lists the available After Point Of Sale [APOS] kits.

Table 128. Upgrade kits

Kits	Related links to service instructions
Bezel	See Installing the front bezel
BOSS-N1	See Installing the BOSS-N1 controller card module
GPU/Accelerator enablement kit	See GPU kit
Drives	See Installing the drive
Memory	See Installing a memory module
Network cards (Standard PCIe adapter LP/FH)	See Installing the LOM card and rear I/O board
Network cards (OCP)	See Installing the OCP card
PCIe SSD card	See Installing the drive
Power cords	N/A
Power supplies	See Installing a power supply unit
Quick sync	N/A
TPM	See Upgrading the Trusted Platform Module
Processor enablement thermal kits	See Installing the processor
Internal USB 3.0 card	See Internal USB card kit
Serial COM port daughter card	See Installing the serial COM port
VGA port for Irect Liquid Cooling system	See Installing the VGA port
Cables	N/A
Fans	See Installing a fan
Heat sink	See Installing a processor heat sink module
Risers	See Installing the expansion riser
Rail	N/A
CMA	N/A

Topics:

BOSS-N1 module kit

The BOSS-N1 module supports up to two M.2 SSDs.

NOTE: To enable the BOSS-N1 module in the system, ensure that the BIOS firmware version is 1.5.5 and the iDRAC firmware version is 4.30.30.30 or later.

Before you begin the installation or removal process, follow the Safety instructions and Before working inside your system instructions.

Table 129. BOSS-N1 module kit components

R660 (quantity)	Components in kit
NA	BOSS cover
1	M3 x 0.05 x 4.5 mm screws
1	BOSS signal cable
1	BOSS power cable
1	BOSS-N1 module
1 or 2	BOSS-N1 card carrier
1 or 2	M.2 SSD
2	M.2 480 GB information label
2	M.2 960 GB information label
1	BOSS card filler
1	Tech sheet

To remove the BOSS blank :

1. Power off the system and remove the system cover.
2. Using a Phillips #1 screwdriver, remove the screw that secures the BOSS-N1 module bay to the chassis.
3. Remove the blank from the BOSS-N1 module bay.

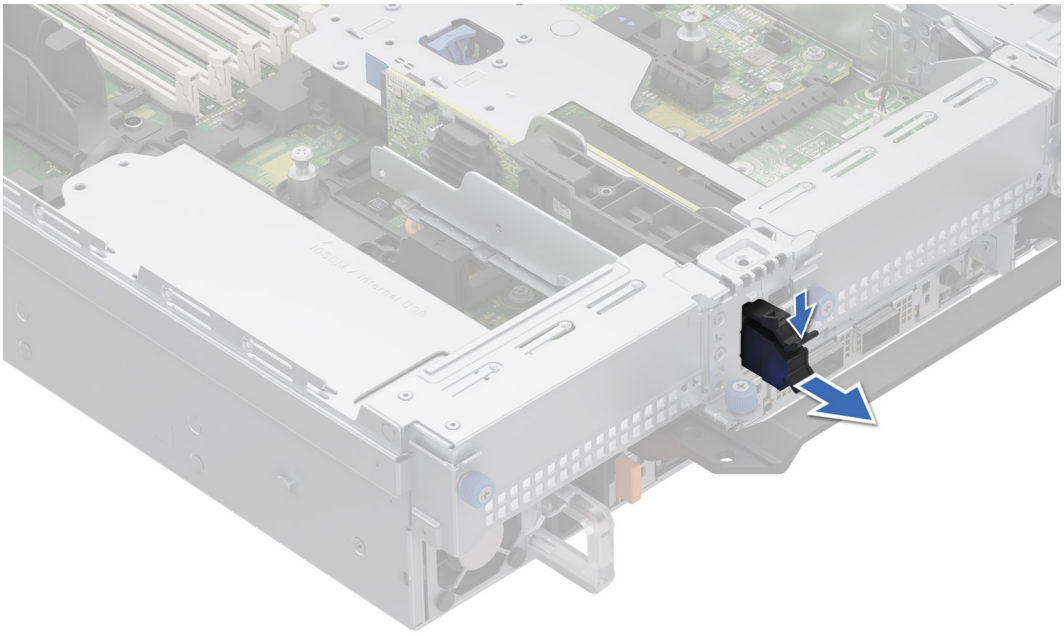

Figure 254. Removing the BOSS-N1 module blank

To install the BOSS blank:

1. Align the blank with the BOSS-N1 module bay and push it into the bay until it clicks into place.

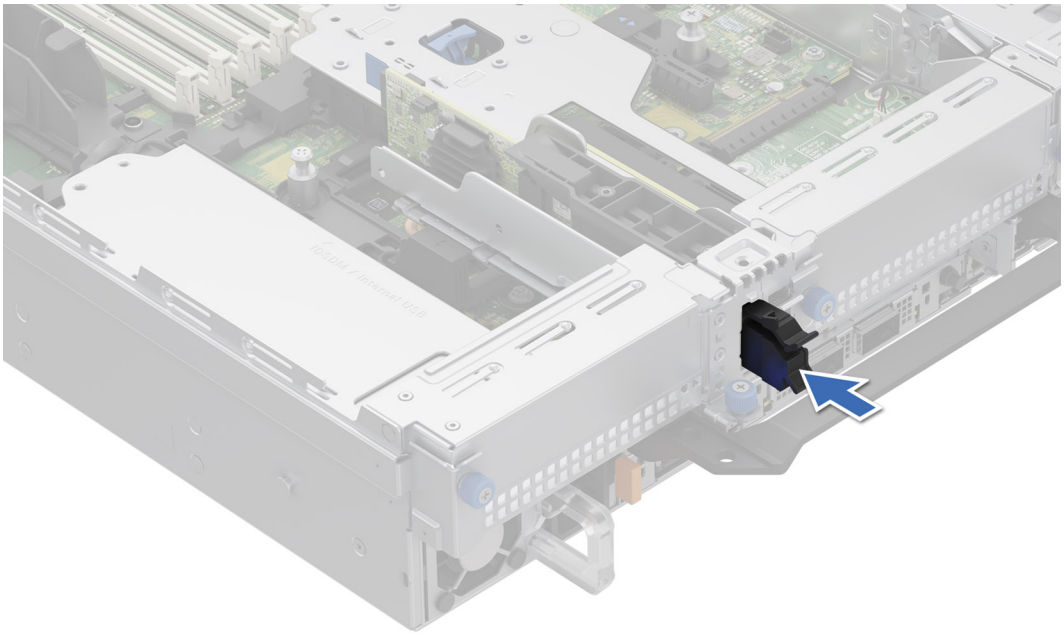

Figure 255. Installing the BOSS-N1 module blank

To install the BOSS-N1 module:

1. Install the BOSS-N1 module . To install the BOSS-N1 , see installing the BOSS-N1 module.
2. Install the M.2 SSD. To install the M.2 SSD, see installing M.2 SSD.

NOTE: Installing the BOSS-N1 card carrier does not require the system to be powered off. System shutdown is only required when installing the BOSS-N1 controller card module.

To remove the BOSS-N1 module:

1. Power off the system.
2. Remove the M.2 SSD. To remove the M.2 SSD, see removing the M.2 SSD.
3. Remove the BOSS-N1 module. To remove the BOSS-N1 controller card module, see removing the BOSS-N1 module.
4. Install the BOSS-N1 module blank.

NOTE: Removal of the BOSS-N1 card carrier does not require the system to be powered off. System shutdown is only required when removing the BOSS-N1 module.

NOTE: Disconnect the BOSS signal cable and the BOSS power cable before lifting the module from the system.

GPU kit

The GPU FL kit is available for the Customer. Depending on the kit ordered, the respective components are available.

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.

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

Table 130. Components in the full length (FL) GPU kit

Components	GPU FL kit	
	Details	**Quantity**
Risers	Riser configuration (RC) 3-2, 5-2*, or, 10-2*	RC 3-2: R1P^ (FL) + R2A (HL) + R3B (HL) + R4P^ (FL) RC 5-2: R1R (FL) + R2A (HL) + R3A (FL) + R4P^ (FL) RC 10-2: R1P^ (FL) + R2A (HL) + R4R (FL)
Shroud	GPU shroud	1
Fans	HPR GOLD fan	6
Heat sinks	L-type heat sink for processor 1 and processor 2	RC 3-2, 5-2: 2 RC 10-2: 1
Cables	Power cable	2 x 4 (8-position) or 2 x 6 + 1 x 4 (12-position + 4-sideband)
FL - Full Length, HL - Half Length, HPR - High Performance, RC - Riser configuration		

NOTE: See expansion card installation guidelines for more information about riser configuration supported for the system.

NOTE: ^ R1P and R4P supports Double Width (DW) GPU.

NOTE: * The configuration 5-2 supports DW GPU only on slots 7 and configuration 10-2 supports DW GPU only on slot 2.

NOTE: All GPU cards require L-type heat sink and GPU shroud, irrespective of the length. However, the cooling fan and foam are dependent on different configurations which is shown in below table.

Before you begin, follow the **safety guidelines** and **before working inside the system** instructions.

1. Remove the standard or High Performance Silver (HPR) cooling fans and install the High performance Gold (VHP) cooling fans.

   NOTE: See the cooling fan and foam requirement matrix for the cooling fan and foam requirement for different configurations.

Table 131. Cooling fan and foam requirement matrix

System configuration	Cooling fan	Foam requirement
	w/GPU	**w/GPU**
8 x 2.5-inch NVMe	HPR GOLD	No
8 x 2.5-inch NVMe + 8 x 2.5-inch SAS/SATA	HPR GOLD	Yes
16 x 2.5-inch SAS/SATA	HPR GOLD	Yes
16 x 2.5-inch NVMe	HPR GOLD	No
24 x 2.5-inch SAS/SATA	HPR GOLD	Yes

Table 131. Cooling fan and foam requirement matrix (continued)

System configuration	Cooling fan	Foam requirement
	w/GPU	w/GPU
16 x 2.5-inch SAS/SATA + 8 x 2.5-inch NVMe	HPR GOLD	Yes
24 x 2.5-inch NVMe	HPR GOLD	No
NOTE: HPR GOLD fans also known as High performance Gold (VHP) fans.		

NOTE: For more information about supported cooling fans matrix, see the thermal restriction matrix section.

NOTE: 12 x 3.5-inch and rear drive configuration systems do not support GPU card.

2. Remove the heat sink and install the required L-type heat sink.

NOTE: All GPU cards require L-type heat sink and GPU shroud, irrespective of the length.

3. Remove the air shroud and install the GPU air shroud.
4. Remove the GPU air shroud top cover.

NOTE: The GPU air shroud top cover is part of the GPU air shroud.

5. Remove the GPU air shroud filler.
6. Install the GPU into full length risers.

NOTE: See full length expansion card riser into the system.

NOTE: For information about riser slot location on the system board, see the System board jumpers and connectors topic.

7. If applicable, connect the power cables to the GPU. To know the connectors for GPU on the system board, see the System board jumpers and connectors topic. See the GPU power cable matrix to know about the requirement of cable for the GPU.

Table 132. GPU power cable matrix

Category	Supported GPUs	Type	Vendor	Cable	Cable quantity
GPU	NVIDIA A2	HL (FH and LP brackets)	NVIDIA	Not required	Not required
GPU	NVIDIA A30, A40, A16, and A100	FH and FL	NVIDIA	2 x 4 (8-position)	1 piece per GPU riser
GPU	NVIDIA H100	FH and FL	NVIDIA	2 x 6 + 1 x 4 (12-position + 4-sideband)	1 piece per GPU riser
HL - Half Length, FH - Full Height, FL - Full Length					

NOTE: Maximum of two double width GPUs with power cables or a maximum of eight single width GPUs are supported in a system.

8. Install the full length expansion card riser or half height expansion card riser. See GPU kit components table for supported GPU risers.
9. Install the GPU air shroud filler.
10. Install the GPU air shroud top cover.
11. Install the foam on the system cover. To install the foam,
    a. Place the system cover with the System Information Label (SIL) side facing up.
    b. For easier handling, peel off a small section of the adhesive cover and align the foam with the system cover.
    c. Remove rest of the adhesive cover, and install foam on the system cover.

d. Press along the length of the foam to ensure that it is firmly affixed to the system cover.

Figure 256. Installing Mylar foam on the system cover

After installing, follow the After working inside the system instructions.

Internal USB card kit

The internal USB card kit contains one internal USB card. For installation of internal USB card, see installing the internal USB card section.

NOTE: Ensure to install the internal USB card in the IDSDM/USB card port and not in the J_R3_PCIE_PWR connector port.

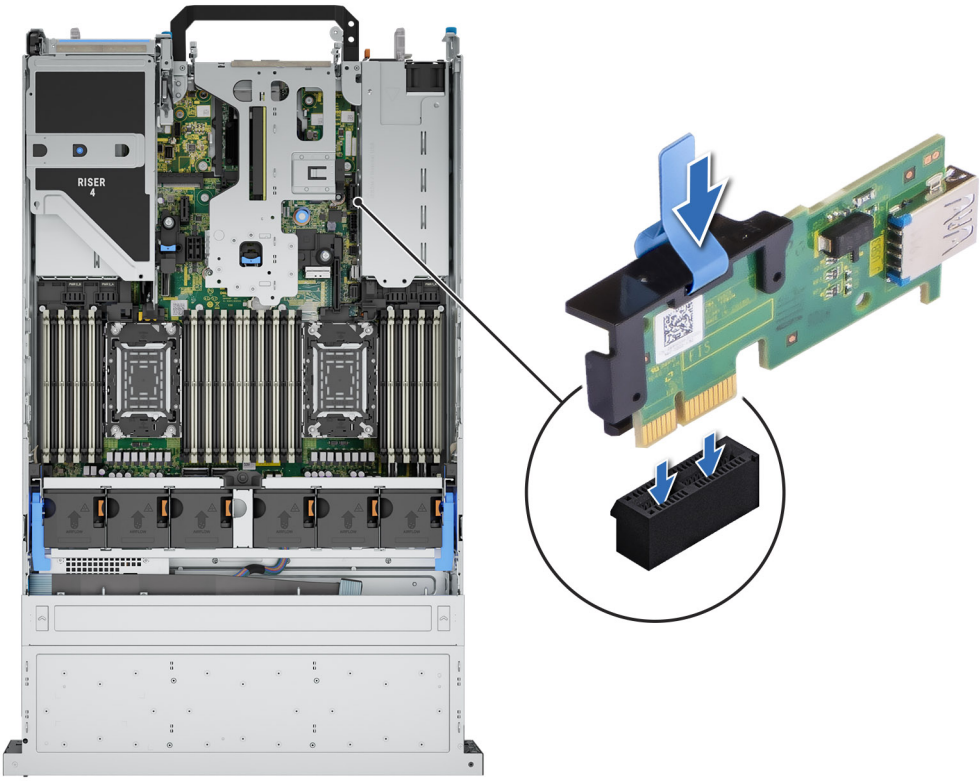

Figure 257. Internal USB card port information

Serial COM port kit

The serial COM port kit contains the components that are listed in the table.

Table 133. Serial COM port kit

Components	Quantity
Serial COM port card	1
Cable	1

For installation procedure of the serial COM port, see serial COM port section.

VGA port kit

The VGA port kit contains the components that are listed in the table.

Table 134. VGA port kit

Components	Quantity
VGA port card	1
Cable	1

For installation procedure of the VGA port, see VGA port section.

9

Jumpers and connectors

This section provides essential and specific information about jumpers and switches. It also describes the connectors on the various boards in the system. Jumpers on the system board help to disable the system and reset the passwords. To install components and cables correctly, you must be able to identify the connectors on the system board.

Topics:

System board connectors

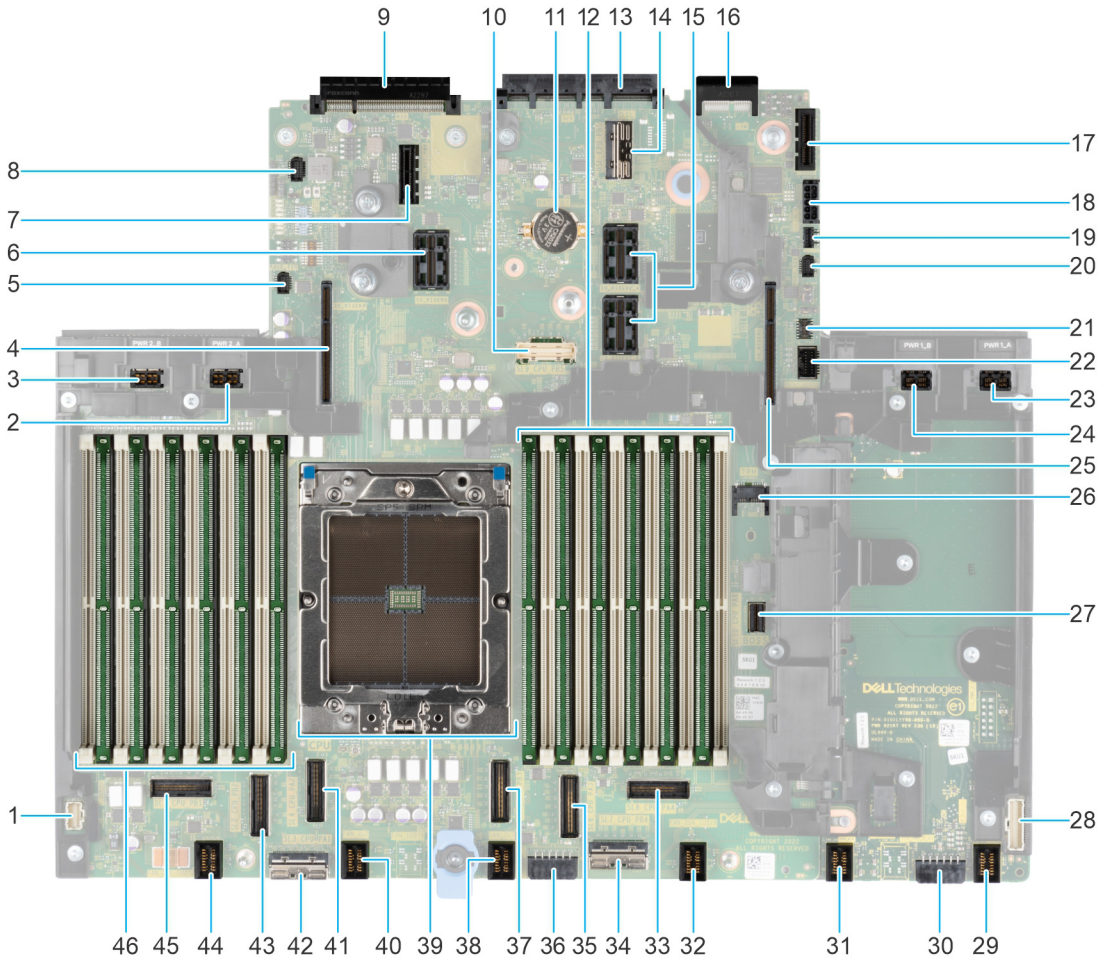

Figure 258. System board connectors

Table 135. System board jumpers and connectors

Item	connector	Description
1.	Left Control Panel connector	Left Control Panel connector

Table 135. System board jumpers and connectors (continued)

Item	connector	Description
2.	PWR_2_A	Power connector 0
3.	PWR_2_B	Power connector 1
4	IO_RISER4	Riser 4
5.	PUCK_PSU2	PSU 2 PUCK Sideband Signal
6.	IO_RISER3	Riser 3
7.	J_R3_PCIE_PWR	Riser 3 power connector
8.	Battery SIG connector	Battery SIG connector
9.	Rear_I/O_connector	Rear_I/O_connector
10.	SL9_CPU_PB5	PCIe connector
11.	Coin Cell	Coin Cell
12.	A1, A5, A3, A9, A7, A11	DIMMs for CPU 1
13.	OCP	OCP NIC 3.0 connector
14.	DSL_CPU_PB5	PCIe connector
15.	IO_RISER2_A and IO_RISER2_B	Riser 2
16.	LOM Conenctor	LOM connector
17.	IDSDM or Internal USB connector	IDSDM or Internal USB connector
18.	SIG_PWR_0	Power connector 0 - use for rear BP only
19.	BOSS Card Power	BOSS card Power
20.	PUCK_PSU1	PSU 1 PUCK Sideband Signal
21.	Jumper PWR1_B	Jumper
22.	Front VGA connector	Front VGA connector
23.	PWR1_A	For Riser 1 GPU power and signal cable
24.	PWR1_B	For Riser 1 GPU power and signal cable
25.	IO_RISER1	Riser 1
26.	TPM	TPM connector
27.	SL10_CPU_PA6	PCIe connector 10
28.	Right Control Panel connector	Right Control Panel connector
29.	FAN_2U4	Fan 4 connector
30.	SIG_PWR_2	Power connector 2 - use for BP only
31.	FAN_2U5	Fan 5 connector
32.	FAN_2U4	Fan 4 connector
33.	SL8_CPU_PA4	PCIe connector 8
34.	SL7_CPU_PB4	PCIe connector 7
35.	SL6_CPU_PA3	PCIe connector 6
36.	SIG_PWR_1	Power connector 1 -use for BP only
37.	SL5_CPU_PB3	PCIe connector 5
38.	FAN_2U3	Fan 3 connector

Table 135. System board jumpers and connectors (continued)

Item	connector	Description
39.	CPU	Processor
40.	FAN_2U2	Fan 2 connector
41.	SL4_CPU_PA2	PCIe connector 4
42.	SL3_CPU_PA1	PCIe connector 3
43.	SL2_CPU_PB2	PCIe connector 2
44.	FAN_2U1	Fan 1 connector
45.	SL1_CPU_PB1	PCIe connector 1
46.	A12, A8, A10, A4, A6, A2	DIMMs for CPU 1

System board jumper settings

For information about resetting the password jumper to disable a password, see the Disabling a forgotten password section.

Table 136. System board jumper settings

Jumper	Setting	Description
PWRD_EN		The BIOS password feature is enabled.
		The BIOS password feature is disabled. The BIOS password is now disabled and you are not allowed to set a new password.
NVRAM_CLR		The BIOS configuration settings are retained at system boot.
		The BIOS configuration settings are cleared at system boot.

CAUTION: Be careful when changing the BIOS settings. The BIOS interface is designed for advanced users. Any change in the setting could prevent your system from starting correctly and you might have potential loss of data.

Disabling a forgotten password

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

Prerequisites

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

Steps

1. Power off the system, and all the attached peripherals, and disconnect the system from the electrical outlet.
2. Remove the system cover.
3. Replace the system cover.

4. Reconnect the system and all the attached peripherals.
5. Power off the system.
6. Remove the system cover.
7. Replace the system cover.
8. Reconnect the system to the electrical outlet and power on the system, and all the attached peripherals.
9. Assign a new system and/or setup password.

10

System diagnostics and indicator codes

This section describes the diagnostic indicators on the system front panel that displays the system status during system startup.

Topics:

Status LED indicators

NOTE: The indicators display solid amber if any error occurs.

Figure 259. Status LED indicators

Table 137. Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air shroud, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed. If the problem persists, see the Getting help section.

Table 137. Status LED indicators and descriptions (continued)

Icon	Description	Condition	Corrective action
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU. If the problem persists, see the Getting help section.
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module. If the problem persists, see the Getting help section.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card. If the problem persists, see the Getting help section. **NOTE:** For more information about the supported PCIe cards, see the Expansion card installation guidelines section.

System health and system ID indicator codes

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

Figure 260. System health and system ID indicator

Table 138. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system health and system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system health and system ID button to switch to system health mode.
Solid amber	Indicates that the system is in fail-safe mode.If the problem persists, see the Getting help section.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log for specific error messages. EEMI guide

iDRAC Quick Sync 2 indicator codes

iDRAC Quick Sync 2 module (optional) is located on the left control panel of the system.

Table 139. iDRAC Quick Sync 2 indicators and descriptions

iDRAC Quick Sync 2 indicator code	Condition	Corrective action
Off (default state)	Indicates that the iDRAC Quick Sync 2 feature is powered off. Press the iDRAC Quick Sync 2 button to power on the iDRAC Quick Sync 2 feature.	If the LED fails to power on, reseat the left control panel flex cable and check. If the problem persists, see the Getting help section.
Solid white	Indicates that iDRAC Quick Sync 2 is ready to communicate. Press the iDRAC Quick Sync 2 button to power off.	If the LED fails to power off, restart the system. If the problem persists, see the Getting help section.
Blinks white rapidly	Indicates data transfer activity.	If the indicator continues to blink indefinitely, see the Getting help section.
Blinks white slowly	Indicates that a firmware update is in progress.	If the indicator continues to blink indefinitely, see the Getting help section.
Blinks white five times rapidly and then powers off	Indicates that the iDRAC Quick Sync 2 feature is disabled.	Check if the iDRAC Quick Sync 2 feature is configured to be disabled by iDRAC. If the problem persists, see the Getting help section. PowerEdge manuals or *Dell OpenManage Server Administrator User's Guide* at OpenManage Manuals.
Solid amber	Indicates that the system is in fail-safe mode.	Restart the system. If the problem persists, see the Getting help section.
Blinking amber	Indicates that the iDRAC Quick Sync 2 hardware is not responding properly.	Restart the system. If the problem persists, see the Getting help section.

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 AB) 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 140. 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 connected is recognized.
Powers off	Indicates that the laptop or tablet is unplugged.

LCD panel

The LCD panel provides system information, status, and error messages to indicate if the system is functioning correctly or requires attention. The LCD panel is used to configure or view the iDRAC IP address of the system. EEMI Guide.

The LCD panel is available only on the optional front bezel. The optional front bezel is hot pluggable.

The status and conditions of the LCD panel are outlined here:

- The LCD backlight is white during normal operating conditions.
- If there is an issue, the LCD backlight turns amber and displays an error code followed by descriptive text.

  NOTE: If the system is connected to a power source and an error is detected, the LCD turns amber regardless of whether the system is powered on or off.

- When the system powers off and there are no errors, the LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to power it on.
- If the LCD panel stops responding, remove the bezel and reinstall it.

  If the problem persists, see Getting help.
- The LCD backlight remains off if LCD messaging is powered off using the iDRAC utility, the LCD panel, or other tools.

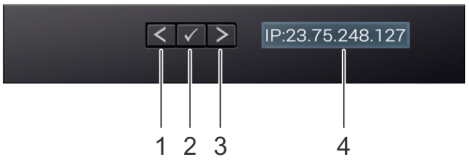

Figure 261. LCD panel features

Table 141. LCD panel features

Item	Button or display	Description
1	Left	Moves the cursor back in one-step increments.
2	Select	Selects the menu item highlighted by the cursor.
3	Right	Moves the cursor forward in one-step increments. During message scrolling: • Press and hold the right button to increase scrolling speed. • Release the button to stop. **NOTE:** The display stops scrolling when the button is released. After 45 seconds of inactivity, the display starts scrolling.
4	LCD display	Displays the system information, status, and error messages or iDRAC IP address.

Viewing Home screen

The **Home** screen displays user-configurable information about the system. This screen is displayed during normal system operation when there are no status messages or errors. When the system turns off and there are no errors, LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to turn it on.

Steps

1. To view the **Home** screen, press one of the three navigation buttons (Select, Left, or Right).
2. To navigate to the **Home** screen from another menu, complete the following steps:
   a. Press and hold the navigation button till the up arrow is displayed.
   b. Navigate to the **Home** icon using the up arrow .
   c. Select the **Home** icon.

d. On the **Home** screen, press the **Select** button to enter the main menu.

Setup menu

NOTE: When you select an option in the Setup menu, you must confirm the option before proceeding to the next action.

Table 142. Setup menu

Option	Description
iDRAC	Select **DHCP** or **Static IP** to configure the network mode. If **Static IP** is selected, the available fields are **IP**, **Subnet (Sub)**, and **Gateway (Gtw)**. Select **Setup DNS** to enable DNS and to view domain addresses. Two separate DNS entries are available.
Set error	Select **SEL** to view LCD error messages in a format that matches the IPMI description in the SEL. This enables you to match an LCD message with an SEL entry. Select **Simple** to view LCD error messages in a simplified user-friendly description. EEMI Guide.
Set home	Select the default information to be displayed on the **Home** screen. See View Home menu section for the options and option items that can be set as the default on the **Home** screen.

View menu

NOTE: When you select an option in the View menu, you must confirm the option before proceeding to the next action.

Table 143. View menu

Option	Description
iDRAC IP	Displays the **IPv4** or **IPv6** addresses for iDRAC9. Addresses include **DNS** (**Primary** and **Secondary**), **Gateway**, **IP**, and **Subnet** (IPv6 does not have Subnet).
MAC	Displays the MAC addresses for **iDRAC**, **iSCSI**, or **Network** devices.
Name	Displays the name of the **Host**, **Model**, or **User String** for the system.
Number	Displays the **Asset tag** or the **Service tag** for the system.
Power	Displays the power output of the system in BTU/hr or Watts. The display format can be configured in the **Set home** submenu of the **Setup** menu.
Temperature	Displays the temperature of the system in Celsius or Fahrenheit. The display format can be configured in the **Set home** submenu of the **Setup** menu.

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.

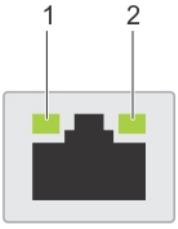

Figure 262. NIC indicator codes

1. Link LED indicator
2. Activity LED indicator

Table 144. 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 mot being sent or received.
Link indicator is blinking green, and activity is off.	Indicates that the NIC identify 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.

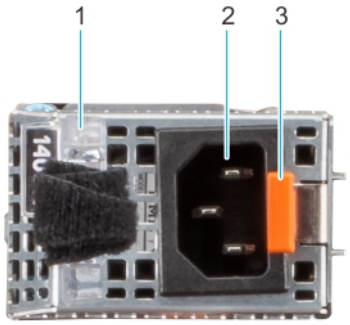

Figure 263. AC PSU status indicator

1. AC PSU handle
2. Socket
3. Release latch

Table 145. 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 green 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**

Table 145. AC and DC PSU status indicator codes (continued)

Power indicator codes	Condition
	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.**

Drive indicator codes

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

Figure 264. Drive indicators

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

Figure 265. Drive indicators

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

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

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

Table 146. Drive indicator codes

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

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 266. 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 147. 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 148. 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

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Using system diagnostics

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

Topics:

Dell Embedded System Diagnostics

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

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

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

Running the Embedded System Diagnostics from Boot Manager

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

Steps

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

Running the Embedded System Diagnostics from the Dell Lifecycle Controller

Steps

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

System diagnostic controls

Table 149. System diagnostic controls

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

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System board diagnostic LED indicators

The system board LED indicators provide status of the system when it is powered on, which help identify POST and hardware issues.

For information about the different LED indicator sequences and description, see the interactive LED pattern decoder tool.

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Enhanced Preboot System Assessment

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 requiring more 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 Preboot System Assessment (ePSA) diagnostics.

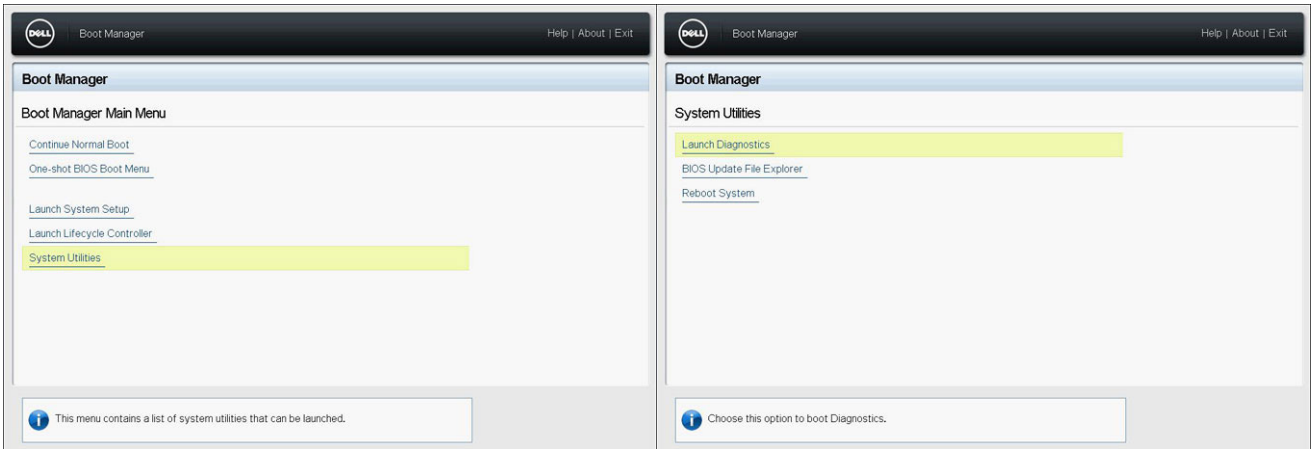
The embedded system diagnostics provides a set of options for particular device groups or devices that allow you to:

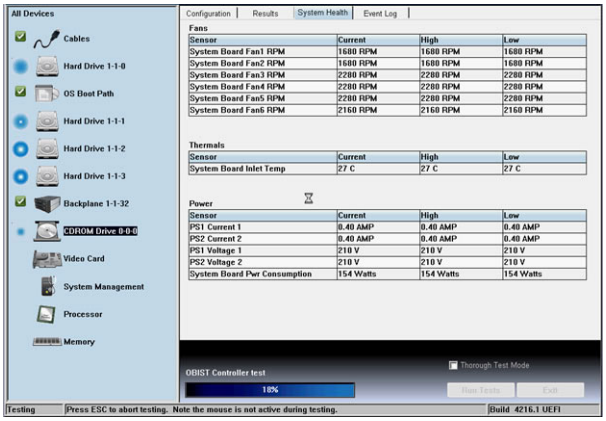
- Run tests automatically or in an interactive mode.
- Repeat tests
- Display or save test results.
- Introduce more test options for extra information about the failed devices, run a thorough test.
- View status messages that inform you if tests are completed successfully.
- View error messages that inform you of issues encountered during testing.

Running the Embedded system diagnostics from Boot Manager

To run the embedded system diagnostics from Boot Manager:

1. As the system boots, press <F11>.
2. Using the arrow keys select **System Utilities** → **Launch Diagnostics**.



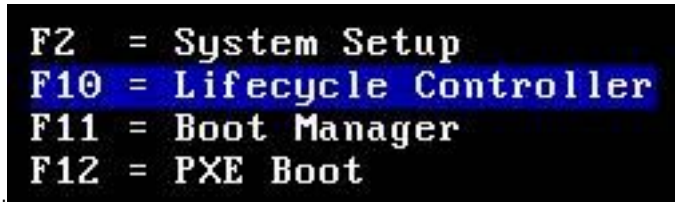


3. Wait while the Quick Tests automatically run.
4. Once the tests have been completed, you can view the results and additional information on the **Results** tab, the **System Health** tab, the **Configuration** tab, and the **Event Log** tab.
5. Close the **Embedded System Diagnostics** utility.
6. To leave the diagnostics, click **Exit.**
7. Click **OK** when prompted, and the system reboots.

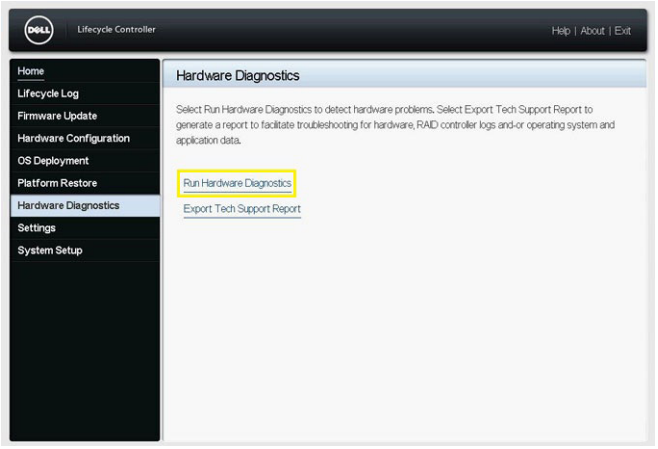
Running the Embedded System Diagnostics from the Dell Lifecycle Controller

To run the embedded system diagnostics from the Dell Lifecycle Controller:

1. As the system boots, press **F10**.



2. Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.



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Getting help

You can download drivers, firmware, and documents from the FTP site. For more information about username and password, contact your TAM (Tech Account Manager).

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.

Contacting Dell Technologies

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

Steps

1. Go to Dell Support.
2. Select your country from the drop-down menu on the lower right corner of the page.
3. For customized support:
   a. Enter the system Service Tag in the **Enter a Service Tag, Serial Number, Service Request, Model, or Keyword** field.
   b. Click **Search**.
   The support page that lists the various support categories is displayed.
4. For general support:
   a. Select your product category.
   b. Select your product segment.
   c. Select your product.
   The support page that lists the various support categories is displayed.
5. For contact details of Dell Global Technical Support:
   a. Click Contact Technical Support.
   b. The **Contact Technical Support** page is displayed with details to call, chat, or e-mail the Dell Global Technical Support team.

Accessing system information by using QR code

You can use the QR code located on the Express service tag in the front of the R7615 system, to access information about PowerEdge R7615. There is also another QR code for accessing product information on the back of the system cover.

Prerequisites

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

The QR code 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

1. Go to PowerEdge Manuals, and navigate to your specific product or
2. Use your smart phone or tablet to scan the model-specific QR code on your system.

QR code for PowerEdge R7615 system resources

Figure 267. QR code for PowerEdge R7615 system

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Receiving automated support with SupportAssist

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

- Automated issue detection — SupportAssist monitors your Dell devices and automatically detects hardware issues, both proactively and predictively.
- Automated case creation — When an issue is detected, SupportAssist automatically opens a support case with Dell Technical Support.
- Automated diagnostic collection — SupportAssist 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 SupportAssist, go to SupportAssist.

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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 150. 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 *Getting Started Guide* document that is shipped with your system.	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 150. 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 systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	PowerEdge Manuals
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	OpenManage Manuals
	For information about installing and using Dell SupportAssist, see the Dell SupportAssist Enterprise User's Guide.	serviceability tools
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	OpenManage Manuals
Working with the Dell PowerEdge RAID controllers	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	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