Dell EMC PowerEdge R7425

Installation and Service Manual

DELLEMC

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

PowerEdge R7425 system overview

The PowerEdge R7425 is a 2U rack server that supports up to:

- Two AMD EPYC™ processors
- 32 DIMM slots
- Two AC or DC power supply units
- 32 SAS, SATA, Nearline SAS hard drives or SSDs, and up to 24 NVMe drives. For more information about supported drives, see the Technical specifications section.

ⓘ **NOTE: Hot swap for the NVMe drives is supported for your system. For more information on correct usage and technical specifications, see the** *Dell PowerEdge Express Flash NVMe PCIe SSD 2.5 inch Small Form Factor User's Guide* **at Dell.com/ support/manuals > All Products > Server, Storage, & Networking > Dell Adapters page.**

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

Topics:

- Supported configuration
- Front view of the system
- Back view of the system
- Locating Service Tag of your system

Supported configuration

The PowerEdge R7425 system supports the following configuration:

4x10/100/1000 Mbps(RJ45) **or**
4x100 M/1 G/10 Gbps(RJ45) **or**
2x10 Gbps+2x1 Gbps(RJ45) **or**
2x1 Gbps(RJ45)+2x10 Gbps(SFP+) **or**
4x10 Gbps(SFP+) **or**
2x25 Gbps(SFP28)

AC PSU:495 W,
750 W, 1100 W,
1600 W, 2000 W,
2400 W
or
DC PSU:1100 W
or
Mixed Mode
HVDC: 750 W,
1100 W

Rear drive cage:
4x2.5" **or**
2x3.5"(SAS,
SATA, Nearline
SAS hard drives)

AMD Naples socket
SP3 compatible
processors

Mid drive tray: 4x3.5"
or 2.5"(SAS, SATA,
Nearline SAS hard
drives or SSDs)

Up to 32
LRDIMM/RDIMM
@ 2666 MT/s

Backplane

Up to 24 SAS, SATA,
Nearline SAS hard
drives or SSDs, and
up to 24 NVMe
drives

Figure 1. Supported configuration

Front view of the system

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

Figure 2. Front view of 24 x 2.5 inch drive system

Figure 3. Front view of 12 x 3.5 inch drive system
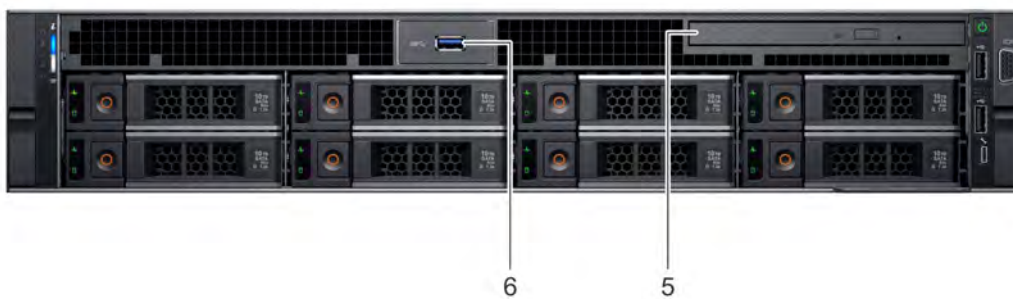
Figure 4. Front view of 8 x 3.5 inch drive system

Table 1. Features available on the front of the system

Item	Panels and slots	Icon	Description
1	Left control panel	N/A	Contains system health and system ID, status LED, and the optional iDRAC Quick Sync 2 (wireless).
2	Drive slots (3.5 inch or 2.5 inch drives)	N/A	Enable you to install drives that are supported on your system. For more information about drives, see the Technical specifications section.
3	Right control panel	N/A	Contains the power button, two USB 2.0 ports, iDRAC Direct port, iDRAC Direct LED, and VGA port.
4	Information tag	N/A	The Information 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 also contains the iDRAC secure default password.
5	Optical drive (optional)	N/A	Enables you to retrieve and store data on optical discs such as compact discs (CD) and digital versatile discs (DVD). For more information, see the Technical specifications section.
6	USB 3.0 port (optional)	ss<←	The USB port is a 9-pin, 3.0-compliant. This port enables you to connect USB devices to the system.

Left control panel view
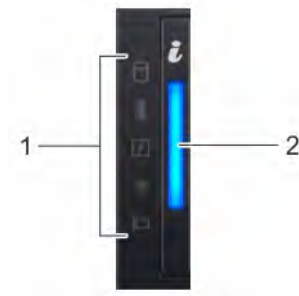
Figure 5. Left control panel without optional iDRAC Quick Sync 2.0 indicator
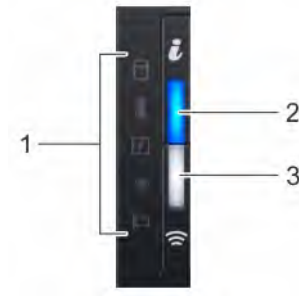
Figure 6. Left control panel with optional iDRAC Quick Sync 2.0 indicator

Table 2. Left control panel

Item	Indicator, button, or connector	Icon	Description
1	Status LED indicators	N/A	Indicate the status of the system. For more information, see the Status LED indicators section.
2	System health and system ID indicator	*i*	Indicates the system health. For more information, see the System health and system ID indicator codes section.
3	iDRAC Quick Sync 2 wireless indicator (optional)	🛜	Indicates if the iDRAC Quick Sync 2 wireless option is activated. The Quick Sync 2 feature allows management of the system using mobile devices. This feature aggregates hardware/firmware inventory and various system level diagnostic/error information that can be used in troubleshooting the system. You can access system inventory, Dell Lifecycle Controller logs or system logs, system health status, and also configure iDRAC, BIOS, and networking parameters. You can also launch the virtual Keyboard, Video, and Mouse (KVM) viewer and virtual Kernel based Virtual Machine (KVM), on a supported mobile device. For more information, see the Integrated Dell Remote Access Controller User's Guide at **Dell.com/idracmanuals**.

Status LED indicators

ⓘ | NOTE: The indicators display solid amber if any error occurs.

Table 3. 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, memory module blank, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed. If the problem persists, see the Getting help section.
⚡	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.

Icon	Description	Condition	Corrective action
			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 your system.

Table 4. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is turned on, system 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 or the LCD panel, if available on the bezel, for specific error message. For more information about error messages, see the *Dell Event and Error Messages Reference Guide* at **Dell.com/ openmanagemanuals** > **OpenManage software**.

iDRAC Quick Sync 2 indicator codes

iDRAC Quick Sync 2 module (optional) is located on the left control panel of your system.

Figure 8. iDRAC Quick Sync 2 indicator

Table 5. 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 turned off. Press the iDRAC Quick Sync 2 button to turn on the iDRAC Quick Sync 2 feature.	If the LED fails to turn on, reseat the left control panel flex cable and check again. 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 turn off.	If the LED fails to turn 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 firmware update is in progress.	If the indicator continues to blink indefinitely, see the Getting help section.
Blinks white five times rapidly and then turns off	Indicates that the iDRAC Quick Sync 2 feature is disabled.	Check if iDRAC Quick Sync 2 feature is configured to be disabled by iDRAC. If the problem persists, see the Getting help section. For more information, see *Integrated Dell Remote Access Controller User's Guide* at **Dell.com/idracmanuals** or *Dell OpenManage Server Administrator User's Guide* at **Dell.com/openmanagemanuals**.
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.

Right control panel view

Figure 9. Right control panel view

Table 6. Right control panel features

Item	Indicator, button, or connector	Icon	Description
1	Power button	⏻	Indicates if the system is turned on or off. Press the power button to manually turn on or off the system. ⓘ **NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.**
2	USB port (2)	⛊	The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.
3	iDRAC Direct port	⚒	The iDRAC Direct port is micro USB 2.0-compliant. This port enables you to access the iDRAC Direct features. For more information, see the iDRAC User's Guide at **Dell.com/idracmanuals**.
4	iDRAC Direct LED	N/A	The iDRAC Direct LED indicator lights up to indicate that the iDRAC Direct port is connected. For more information, see the iDRAC Direct LED indicator codes section.
5	VGA port	▯	Enables you to connect a display device to the system. For more information, see the Technical specifications 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.

iDRAC Direct LED indicator is located below the iDRAC Direct port on the right control panel.

You can configure iDRAC Direct by using a type A to micro B USB cable, which you can connect to your laptop or tablet. The following table describes iDRAC Direct activity when the iDRAC Direct port is active:

Table 7. iDRAC Direct LED indicator codes

iDRAC Direct LED indicator code	Condition
Solid green for two seconds	Indicates that the laptop or tablet is connected.
Flashing green (on for two seconds and off for two seconds)	Indicates that the laptop or tablet connected is recognized.
Turns off	Indicates that the laptop or tablet is unplugged.

Back view of the system
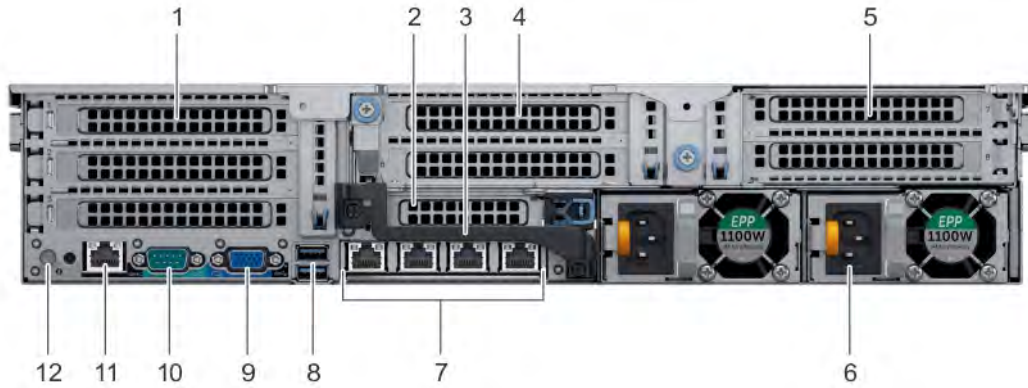
Figure 10. Back view of three riser system

Figure 11. Back view of 4 x 2.5 inch drive system

Figure 12. Back view of 2 x 3.5 inch drive system

Table 8. Features available on the back view

Item	Panels, ports and slots	Icon	Description
1	Full-height PCIe expansion card slot (3)	N/A	The PCIe expansion card slot (riser 1) connects up to three full-height PCIe expansion cards to the system. For more information, see the Expansion card installation guidelines section.
2	Half-height PCIe expansion card slot	N/A	The PCIe expansion card slot (riser 2) connects one half-height PCIe expansion cards to the system. For more information, see the Expansion card installation guidelines section.
3	Rear handle	N/A	The rear handle can be removed to enable any external cabling of PCIe cards that are installed in the PCIe expansion card slot 6.
4	Full-height PCIe expansion card slot (2)	N/A	The PCIe expansion card slot (riser 2) connects up to two full-height PCIe expansion cards to the system. For more information, see the Expansion card installation guidelines section.
5	Full-height PCIe expansion card slot (2)	N/A	The PCIe expansion card slot (riser 3) connects up to two full-height PCIe expansion cards to the system. For more information, see the Expansion card installation guidelines section.
6	Power supply unit (2)	N/A	For more information, see the Technical specifications section.
7	NIC port	🖧	The NIC ports that are integrated on the network daughter card (NDC) provide network connectivity. For more information about the supported configurations, see the Technical specifications section.
8	USB port (2)	SS⇆	The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
9	VGA port	▯◻▯	Enables you to connect a display deviceto the system. For more information, see the Technical specifications section.
10	Serial port	IOIOI	Enables you to connect a serial device to the system. For more information, see the Technical specifications section.
11	iDRAC9 dedicated port	🔧	Enables you to remotely access iDRAC. For more information, see the iDRAC User's Guide at **Dell.com/idracmanuals**.
12	System identification button	ⓘ	Press the system ID button: • To locate a particular system within a rack. • To turn the system ID on or off. To reset iDRAC, press and hold the button for more than 15 seconds. ⓘ | NOTE: **To reset iDRAC using system ID, ensure that the system ID button is enabled in the iDRAC setup.** ⓘ | NOTE: **If the system stops responding during POST, press and hold the system ID button (for more than five seconds) to enter the BIOS progress mode.**
13	Drive slots (3.5 inch or 2.5 inch drives)	N/A	Enable you to install drives that are supported on your system. For more information about drives, see the Technical specifications section.

NIC indicator codes

Each NIC on the back panel 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.
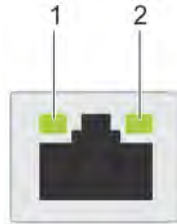
Figure 13. NIC indicator codes

1   link LED indicator   2   activity LED indicator

Table 9. NIC indicator codes

Status	Condition
Link and activity indicators are off	The NIC is not connected to the network.
Link indicator is green and activity indicator is blinking green	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	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	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	The NIC is connected to a valid network at less than its maximum port speed and data is not being sent or received.
Link indicator is blinking green and activity is off	NIC identify is enabled through the NIC configuration utility.

Power supply unit indicator codes

AC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator and DC PSUs have an LED that serves as an indicator. The indicator shows whether power is present or a power fault has occurred.
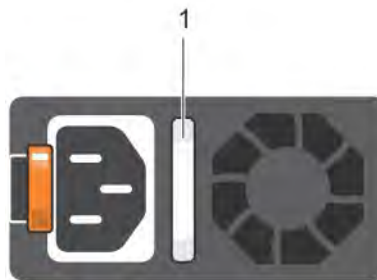
Figure 14. AC PSU status indicator

1   AC PSU status indicator/handle

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Table 10. AC PSU status indicator codes

Power indicator codes	Condition
Green	A valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates a problem with the PSU.
Not illuminated	Power is not connected to the PSU.
Blinking green	When the firmware of the PSU is being updated, the PSU handle blinks green. ⚠ **CAUTION: Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs do not function.**
Blinking green and turns off	When hot-plugging a PSU, the PSU handle blinks green five times at a rate of 4 Hz and turns off. This indicates a PSU mismatch with respect to efficiency, feature set, health status, or supported voltage. ⚠ **CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to turn the system on.** ⚠ **CAUTION: When correcting a PSU mismatch, replace only the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must turn 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.** ⚠ **CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power.** ⚠ **CAUTION: Combining AC and DC PSUs is not supported and triggers a mismatch.**
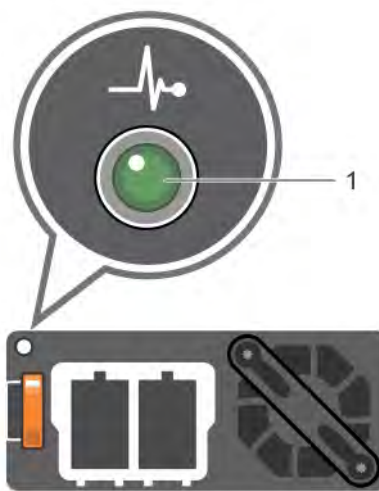
Figure 15. DC PSU status indicator

1   DC PSU status indicator

Table 11. DC PSU status indicator codes

Power indicator codes	Condition
Green	A valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates a problem with the PSU.
Not illuminated	Power is not connected to the PSU.
Blinking green	When hot-plugging a PSU, the PSU indicator blinks green. This indicates that there is a PSU mismatch with respect to efficiency, feature set, health status, or supported voltage.

⚠ **CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to turn the system on.**

⚠ **CAUTION: When correcting a PSU mismatch, replace only the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and unexpected system shutdown. To change from a High Output configuration to a Low Output configuration or vice versa, you must turn off the system.**

⚠ **CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power.**

⚠ **CAUTION: Combining AC and DC PSUs is not supported and triggers a mismatch.**

Drive indicator codes

Each drive carrier has an activity LED indicator and a status LED indicator. The indicators provide information about the current status of the drive. The activity LED indicator indicates whether the drive is currently in use or not. The status LED indicator indicates the power condition of the drive.
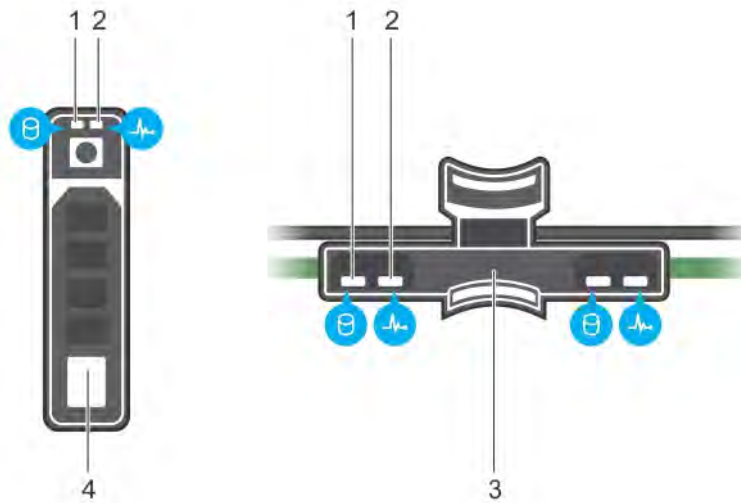
Figure 16. Drive indicators on the drive and the mid drive tray backplane

1	drive activity LED indicator	2	drive status LED indicator
3	drive backplane on mid drive tray	4	drive

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

Table 12. Drive indicator codes

Drive status indicator code	Condition
Flashes green twice per second	Identifying drive or preparing for removal.
Off	Drive ready for removal.
	ⓘ NOTE: **The drive status indicator remains off until all drives are initialized after the system is turned on. Drives are not ready for removal during this time.**
Flashes green, amber, and then turns off	Predicted drive failure.
Flashes amber four times per second	Drive failed.
Flashes green slowly	Drive rebuilding.
Solid green	Drive online.
Flashes green for three seconds, amber for three seconds, and then turns off after six seconds	Rebuild stopped.

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 can be used to configure or view the system's iDRAC IP address. For more information about error messages, see the *Dell Event and Error Messages Reference Guide* at **Dell.com/openmanagemanuals** > **OpenManage software**.

The LCD panel is available only on the optional LCD bezel. The optional LCD bezel is hot pluggable.

The statuses and conditions of the LCD panel are outlined here:

- The LCD backlight is white during normal operating conditions.
- When the system needs attention, 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 turned on or off.**

- 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.
- If the LCD panel stops responding, remove the bezel and reinstall it.

  If the problem persists, see the Getting help section.
- The LCD backlight remains off if LCD messaging is turned off using the iDRAC utility, the LCD panel, or other tools.

Figure 17. LCD panel features

Table 13. 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 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.

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.

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. For more information about error messages, see the *Dell Event and Error Messages Reference Guide* at **Dell.com/openmanagemanuals** > **OpenManage software**.
Set home	Select the default information to be displayed on the **Home** screen. See View 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.**

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.

Locating Service Tag of your system

You can identify your system using the unique Express Service Code and Service Tag. Pull out the information tag in front of the system to view the Express Service Code and Service Tag. Alternatively, the information may be on a sticker on the chassis of the system. The mini Enterprise Service Tag (EST) is found on the back of the system. This information is used by Dell to route support calls to the appropriate personnel.
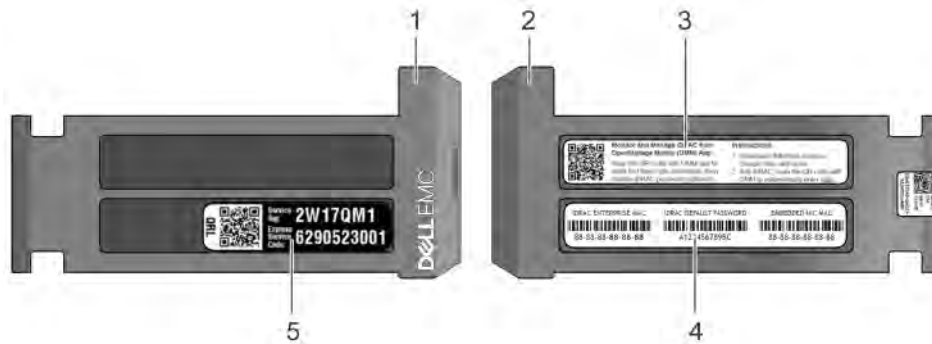
Figure 18. Locating Service Tag of your system

1	information tag (front view)	2	information tag (back view)
3	OpenManage Mobile (OMM) label (optional)	4	iDRAC MAC address and iDRAC secure password label
5	Service Tag		

2

Documentation resources

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

Table 14. 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 rack documentation included with your rack solution.	Dell.com/poweredgemanuals
	For information about setting up and turning on the system, see the *Getting Started Guide* document that is shipped with your system.	Dell.com/poweredgemanuals
Configuring your system	For information about the iDRAC features, configuring and logging in to iDRAC, and managing your system remotely, see the Integrated Dell Remote Access Controller User's Guide.	Dell.com/idracmanuals
	For information about installing the operating system, see the operating system documentation.	Dell.com/operatingsystemmanuals
	For information about understanding Remote Access Controller Admin (RACADM) subcommands and supported RACADM interfaces, see the RACADM Command Line Reference Guide for iDRAC.	Dell.com/idracmanuals
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	To download drivers: Dell.com/support/drivers
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	Dell.com/openmanagemanuals
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	Dell.com/openmanagemanuals
	For information about installing, using, and troubleshooting Dell OpenManage Essentials, see the Dell OpenManage Essentials User's Guide.	Dell.com/openmanagemanuals
	For information about installing and using Dell SupportAssist, see the Dell EMC SupportAssist Enterprise User's Guide.	Dell.com/serviceabilitytools
	For understanding the features of Dell Lifecycle Controller, see the Dell Lifecycle Controller User's Guide.	Dell.com/idracmanuals

Task	Document	Location
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	Dell.com/openmanagemanuals
Working with the Dell PowerEdge RAID controllers	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	Dell.com/storagecontrollermanuals
Understanding event and error messages	For information about checking the event and error messages generated by the system firmware and agents that monitor system components, see the Dell Event and Error Messages Reference Guide.	Dell.com/openmanagemanuals > OpenManage software
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	Dell.com/poweredgemanuals

Technical specifications

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

Topics:

- System dimensions
- Chassis weight
- Processor specifications
- PSU specifications
- System battery specifications
- Expansion card riser specifications
- Memory specifications
- Storage controller specifications
- Drive specifications
- Ports and connectors specifications
- Video specifications
- Environmental specifications

System dimensions

This section describes the physical dimensions of the system.
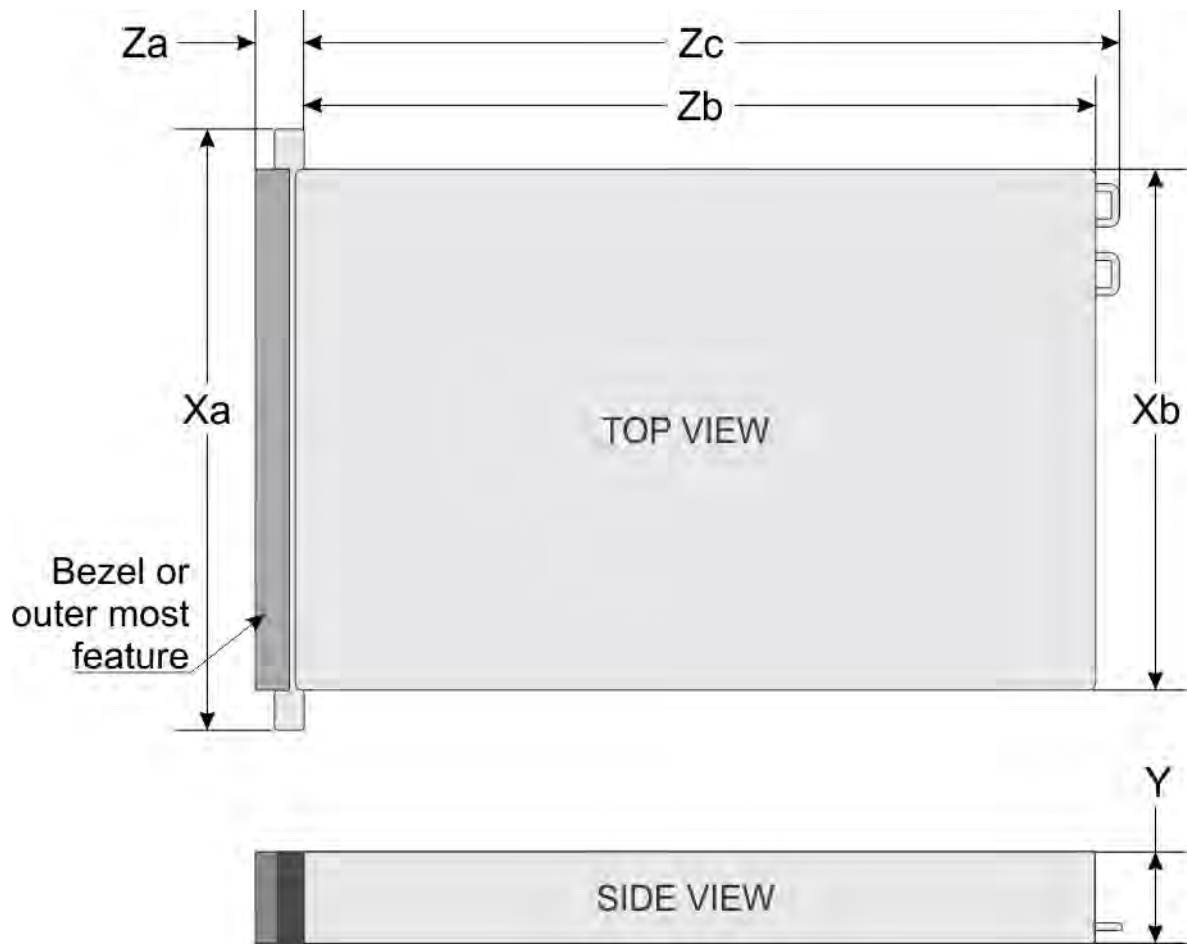
Figure 19. System dimensions of PowerEdge R7425 system

Table 15. Dimensions

System	Xa	Xb	Y	Za (with bezel)	Za (without bezel)	Zb	Zc
PowerEdge R7425	482.0 mm (18.98 inches)	434.0 mm (17.09 inches)	86.8 mm (3.42 inches)	35.84 mm (1.41 inches)	22.0 mm (0.87 inches)	677.3 mm (26.66 inches)	715.63 mm (28.17 inches)

Chassis weight

Table 16. Chassis weight

System	Maximum weight (with all drives/SSDs)
2.5 inch	28.4 kg (62.6 lb)
3.5 inch	33.4 kg (73.6 lb)

Processor specifications

The PowerEdge R7425 system supports up to two AMD EPYC™ processors.

PSU specifications

The PowerEdge R7425 system supports up to two AC or DC power supply units (PSUs).

Table 17. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	High line 200v240 V	Low line 100– 140 V	DC	Current
495 W AC	Platinum	1908 BTU/hr	50/60 Hz	100–240 V AC, autoranging	495 W	495 W	N/A	6.5 A–3 A
750 W AC	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC, autoranging	750 W	750 W	N/A	10 A–5 A
750 W AC	Titanium	2843 BTU/hr	50/60 Hz	200–240 V AC, autoranging	750 W	N/A	N/A	5 A
750 W Mixed Mode HVDC (for China only)	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC, autoranging	750 W	750 W	N/A	10 A–5 A
	N/A	2891 BTU/hr	N/A	240 V DC, autoranging	N/A	N/A	750 W	4.5 A
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1100 W	1050 W	N/A	12 A–6.5 A
1100 W DC	N/A	4416 BTU/hr	N/A	–(48–60) V DC, autoranging	N/A	N/A	1100 W	32 A
1100 W Mixed Mode HVDC (for China and Japan only)	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1100 W	1050 W	N/A	12 A–6.5 A
	N/A	4100 BTU/hr	N/A	200–380 V DC, autoranging	N/A	N/A	1100 W	6.4 A–3.2 A
1600 W AC	Platinum	6000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1600 W	800 W	N/A	10 A
2000 W AC	Platinum	7500 BTU/hr	50/60 Hz	100–240 V AC, autoranging	2000 W	1000 W	N/A	11.5 A
2400 W AC	Platinum	9000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	2400 W	1400 W	N/A	16 A

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

ⓘ NOTE: This system is also designed to connect to the IT power systems with a phase to phase voltage not exceeding 240 V.

ⓘ NOTE: PSUs rated for 1100 W AC or 1100 W Mixed Mode HVDC and higher require high-line voltage (200–240 V AC) to supply their rated capacity.

System battery specifications

The PowerEdge R7425 system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion card riser specifications

The PowerEdge R7425 system supports up to eight PCI express (PCIe) generation 3 expansion cards that can be installed on the system board using expansion card risers. The following table provides detailed information about the expansion card riser specifications:

Table 18. Expansion card riser specifications

PCIe slot	Riser	Processor connection	Height	Length	Slot width
1	1A	Processor 1	Full height	Full length	x16
	1D	Processor 1	Full height	Full length	x16
	1E	Processor 1	Full height	Full length	x16
2	1D	Processor 1	Full height	Full length	x8
	1E	Processor 1	Full height	Full length	x16
3	1A	Processor 1	Full height	Full length	x16
	1D	Processor 1	Full height	Full length	x8
4	2D	Processor 1	Full height	Full length	x16
	2A	Processor 2	Full height	Full length	x16
	2E	Processor 2	Full height	Full length	x16
5	2D	Processor 2	Full height	Full length	x16
6	2D	Processor 2	Low profile	Half length	x8
	2A	Processor 2	Low profile	Half length	x8
	2C	Processor 2	Low profile	Half length	x16
	2E	Processor 2	Low profile	Half length	x8
7	3A	Processor 2	Full height	Full length	x8
	3B	Processor 2	Full height	Full length	x16
8	3A	Processor 2	Full height	Full length	x16
	3B	Processor 2	Full height	Full length	x16

Memory specifications

The PowerEdge R7425 system supports up to thirty two 288-pins RDIMMs, and LRDIMMs with speeds of 2666 MT/s, 2400 MT/s, 2133 MT/s, and 1866 MT/s with support for memory optimized operation.

Table 19. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
			Minimum RAM	Maximum RAM	Minimum RAM	Maximum RAM
LRDIMM	Octal rank	128 GB*	128 GB	2 TB	256 GB	4 TB
LRDIMM	Quad rank	64 GB	64 GB	1 TB	128 GB	2 TB
RDIMM	Single rank	8 GB	8 GB	128 GB	16 GB	256 GB
RDIMM	Dual rank	16 GB	16 GB	256 GB	32 GB	512 GB
RDIMM	Dual rank	32 GB	32 GB	512 GB	64 GB	1024 GB

* - Maximum DIMM capacity of 128 GB will be available at a later time.

> (i) **NOTE:** For optimal performance, it is recommended to populate one DIMM per channel with DDR4, 2666 MT/s memory modules on the first slot of each memory channel. The first slot of each channel can be identified as the DIMM slots with white latches. For example, 64 GB system memory capacity can be divided into 8 x 8 GB DIMM slots.

Storage controller specifications

The PowerEdge R7425 system supports:

- Internal storage controller cards: PowerEdge RAID Controller (PERC) H330+, PERC H730+, PERC H740P, HBA330, and Boot Optimized Server Storage (BOSS-S1).
- External storage controller cards: PERC H840 and 12Gbps SAS HBA.

Drive specifications

Drives

The PowerEdge R7425 system supports SAS, SATA, Nearline SAS hard drives/SSDs, or NVMe drives.

Table 20. Supported drive options for the PowerEdge R7425 system

8 drives system	• Up to eight 3.5 inch or 2.5 inch (SAS, SATA or Nearline SAS) front accessible drives in slots 0 through 7
12 drives system	• Up to 12 3.5 inch (SAS, SATA or Nearline SAS) front accessible drives in slots 0 to 11
18 drives system	• Up to 12 3.5 inch (SAS, SATA or Nearline SAS) front accessible drives in slots 0 to 11 • up to four 3.5 inch (SAS, SATA or Nearline SAS) mid drives in slots 14 to 17 • up to two 3.5 inch (SAS, SATA or Nearline SAS) rear accessible drives in slots 12 to 13
24 drives system	• Up to 24 2.5 inch (SAS, SATA or Nearline SAS) front accessible drives in slots 0 to 23
24 drives system	• Up to 24 2.5 inch NVMe front accessible drives in slots 0 to 23
32 drives system	• Up to 24 2.5 inch (SAS, SATA or Nearline SAS) front accessible drives in slots 0 to 23 • up to four 3.5 inch (SAS, SATA or Nearline SAS) mid drives in slots 28 to 31

DELLEMC

- up to four 2.5 inch (SAS, SATA or Nearline SAS) rear accessible drives in slots 24 to 27

ⓘ **NOTE: Hot swap for the NVMe drives is supported for your system. For more information on correct usage and technical specifications, see the** *Dell PowerEdge Express Flash NVMe PCIe SSD 2.5 inch Small Form Factor User's Guide* **at Dell.com/support/manuals > All Products > Server, Storage, & Networking > Dell Adapters page.**

Optical drive

The PowerEdge R7425 system supports one optional slim SATA DVD-ROM drive or DVD +/-RW drive.

Ports and connectors specifications

USB ports

The PowerEdge R7425 system supports:

- Two USB 2.0-compliant ports on the front of the system
- One internal USB 3.0-compliant port
- One optional USB 3.0-compliant port on the front of the system
- One micro USB 2.0-compliant port in the front of the system for iDRAC Direct

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

- Two USB 3.0-compliant ports on the back of the system

NIC ports

The PowerEdge R7425 system supports up to four Network Interface Controller (NIC) ports that are integrated on the network daughter card (NDC), and are available in the following configurations:

- Four RJ-45 ports that support 10, 100 and 1000 Mbps
- Four RJ-45 ports that support 100 M, 1 G and 10 Gbps
- Four RJ-45 ports, where two ports support maximum of 10 G and the other two ports maximum of 1 G
- Two RJ-45 ports that support up to 1 Gbps and 2 SFP+ ports that support up to 10 Gbps
- Four SFP+ ports that support up to 10 Gbps
- Two SFP28 ports that support up to 25 Gbps

ⓘ **NOTE: You can install up to eight PCIe add-on NIC cards.**

ⓘ **NOTE: For information about Linux network settings, see the** *Linux® Network Tuning Guide for AMD EPYC™ Processor Based Servers* **AMD tuning guide.**

VGA ports

The Video Graphic Array (VGA) port enables you to connect the system to a VGA display. The PowerEdge R7425 system supports two 15-pin VGA ports on the front and back panels.

Serial connector

The PowerEdge R7425 system supports one serial connector on the back panel, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant.

IDSDM or vFlash module

The PowerEdge R7425 system supports optional Internal Dual SD module (IDSDM) or vFlash module. In 14th generation of PowerEdge servers, IDSDM or vFlash module are combined into a single card module, and are available in these configurations:

- vFlash or
- vFlash and IDSDM

The IDSDM or vFlash module sits in the back of the system, in a Dell-proprietary slot. IDSDM or vFlash module supports three micro SD cards (two cards for IDSDM and one card for vFlash). Micro SD cards capacity for IDSDM are 16, 32, 64 GB while for vFlash the microSD card capacity is 16 GB.

(i) **NOTE: There are two dip switches on the IDSDM or vFlash module for write-protection.**

(i) **NOTE: One IDSDM card slot is dedicated for redundancy.**

(i) **NOTE: It is recommended to use Dell branded MicroSD cards associated with the IDSDM or vFlash configured systems.**

Video specifications

The PowerEdge R7425 system supports integrated Matrox G200eW3 graphics controller with 16 MB of video frame buffer.

Table 21. 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

(i) **NOTE: 1920 x 1080 and 1920 x 1200 resolutions are only supported in reduced blanking mode.**

Environmental specifications

(i) **NOTE: For additional information about environmental measurements for specific system configurations, see Dell.com/ environmental_datasheets.**

Table 22. Temperature specifications

Temperature	Specifications
Storage	−40°C to 65°C (−40°F to 149°F)
Continuous operation (for altitude less than 950 m or 3117 ft)	10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment.
Maximum temperature gradient (operating and storage)	20°C/h (68°F/h)

Table 23. Relative humidity specifications

Relative humidity	Specifications
Storage	5% to 95% RH with 33°C (91°F) maximum dew point. Atmosphere must be non-condensing at all times.
Operating	10% to 80% relative humidity with 29°C (84.2°F) maximum dew point.

Table 24. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26 G_{rms} at 5 Hz to 350 Hz (all three axes).
Storage	1.88 G_{rms} at 10 Hz to 500 Hz for 15 min (all six sides tested).

Table 25. Maximum shock specifications

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

Table 26. Maximum altitude specifications

Maximum altitude	Specifications
Operating	3048 m (10,000 ft)
Storage	12,000 m (39,370 ft)

Table 27. Operating temperature de-rating specifications

Operating temperature de-rating	Specifications
Up to 35°C (95°F)	Maximum temperature is reduced by 1°C/300 m (1°F/547 ft) above 950 m (3,117 ft).
35°C to 40°C (95°F to 104°F)	Maximum temperature is reduced by 1°C/175 m (1°F/319 ft) above 950 m (3,117 ft).
40°C to 45°C (104°F to 113°F)	Maximum temperature is reduced by 1°C/125 m (1°F/228 ft) above 950 m (3,117 ft).

Standard operating temperature

Table 28. Standard operating temperature specifications

Standard operating temperature	Specifications
Continuous operation (for altitude less than 950 m or 3117 ft)	10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment.

Expanded operating temperature

Table 29. Expanded operating temperature specifications

Expanded operating temperature	Specifications
Continuous operation	5°C to 40°C at 5% to 85% RH with 29°C dew point.
	ⓘ **NOTE: Outside the standard operating temperature (10°C to 35°C), the system can operate continuously in temperatures as low as 5°C and as high as 40°C.**
	For temperatures between 35°C to 40°C, de-rate maximum allowable temperature by 1°C per 175 m above 950 m (1°F per 319 ft).
≤ 1% of annual operating hours	−5°C to 45°C at 5% to 90% RH with 29°C dew point.
	ⓘ **NOTE: Outside the standard operating temperature (10°C to 35°C), the system can operate down to −5°C or up to 45°C for a maximum of 1% of its annual operating hours.**
	For temperatures between 40°C and 45°C, de-rate maximum allowable temperature by 1°C per 125 m above 950 m (1°F per 228 ft).

ⓘ **NOTE: When operating in the expanded temperature range, system performance may be impacted.**

ⓘ **NOTE: When operating in the expanded temperature range, ambient temperature warnings may be reported in the System Event Log.**

Expanded operating temperature restrictions

- Do not perform a cold startup below 5°C.

- The operating temperature specified is for a maximum altitude of 3050 m (10,000 ft).
- 180 W/200 W CPUs are not supported.
- Redundant power supply unit is required.
- Non-Dell qualified peripheral cards and/or peripheral cards greater than 25 W are not supported.
- PCIe SSD is not supported.
- Mid drive tray is not supported.
- Rear storage devices or drives are not supported.

Thermal restrictions

Following table lists the configuration required for efficient cooling.

Table 30. Thermal restrictions support matrix

Configuration number	Mid/rear configuration	Number of processors	Heatsink		Fan type	Shroud	DIMM blank	Processor/ DIMM blank	Fan blank
			180 W/200 W processor	155 W/170 W/120 W processor					
1 (8 x 3.5 inch)	8 PCIe	1	2U	1U standard performance	Four standard	Standard	N/A	Yes	Yes
1 (8 x 3.5 inch)	8 PCIe	2	2U	1U standard performance	Six standard	Standard	N/A	N/A	N/A
2A (24 x 2.5 inch)	8 PCIe	2	2U	1U standard performance	Six standard	Standard	N/A	N/A	N/A
2D (32 x 2.5 inch)	Mid 4 x 2.5 inch + rear 4 x 2.5 inch	2	1U high performance	1U standard performance	Six high performance	N/A	Yes	N/A	N/A
3A (12 x 3.5 inch)	8 PCIe	2	2U	1U standard performance	Six standard	Standard	N/A	N/A	N/A
3B (18 x 3.5 inch)	Mid 4 x 3.5 inch + rear 2 x 3.5 inch	2	1U high performance	1U standard performance	Six high performance	N/A	Yes	N/A	N/A
4 (24 NVMe)	7 PCIe	2	2U	1U standard performance	Six standard	Standard	N/A	N/A	N/A

Ambient temperature limitations

The following table lists configurations that require ambient temperature less than 35°C.

ⓘ NOTE: **The ambient temperature limit must be adhered to ensure proper cooling and to avoid excess CPU throttling, which may impact system performance.**

Table 31. Configuration based ambient temperature restrictions

Storage configuration	Chassis or hardware configuration	CPU Thermal Design Power (TDP)	CPU heat sink	Fan type	Ambient restriction
12 x 3.5 inch	Mid (SAS) and rear drive	200 W/180 W	1U high performance	High performance	30°C
12 x 3.5 inch	Mid (SAS) and rear drive	120-170 W	1U standard	High performance	35°C
24 x 2.5 inch	Mid (SAS) and rear drive	All	1U high performance for 180/200W 1U standard for 120-170W	High performance	35°C
24 x 2.5 inch	All PCIe cards	200 W/180 W	2U	Standard	35°C
12 x 3.5 inch	All PCIe cards	200 W/180 W	2U	Standard	35°C
8 x 3.5 inch	All PCIe cards	200 W/180 W	2U	Standard	35°C
24 NVMe	All PCIe cards	200 W/180 W	2U	Standard	35°C

Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any equipment damage or failure from particulate and gaseous contamination. If the levels of particulate 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 32. 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: **The ISO Class 8 condition applies to data center environments only. This air filtration requirement does 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.

Particulate contamination	Specifications
	ⓘ **NOTE:** This condition applies to data center and non-data center environments.

Table 33. 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.

ⓘ **NOTE: Maximum corrosive contaminant levels measured at ≤50% relative humidity.**

Initial system setup and configuration

Setting up your system

Complete the following steps to set up your system:

1 Unpack the system.
2 Install the system into the rack. For more information about installing the system into the rack, see the *Rail Installation Guide* at Dell.com/poweredgemanuals.
3 Connect the peripherals to the system.
4 Connect the system to its electrical outlet.
5 Turn the system on by pressing the power button or by using iDRAC.
6 Turn on the attached peripherals.
   For more information about setting up your system, see the *Getting Started Guide* that shipped with your system.

Related links

iDRAC configuration
Options to set up iDRAC IP address

iDRAC configuration

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

Options to set up iDRAC IP address

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

You must use the default iDRAC IP address 192.168.0.120 to configure the initial network settings, including setting up DHCP or a static IP for iDRAC. You can set up the IP address by using one of the following interfaces:

Interfaces	Document/Section
iDRAC Settings utility	See *Dell Integrated Dell Remote Access Controller User's Guide* at Dell.com/idracmanuals
Dell Deployment Toolkit	See *Dell Deployment Toolkit User's Guide* at Dell.com/openmanagemanuals
Dell Lifecycle Controller	See *Dell Lifecycle Controller User's Guide* at Dell.com/idracmanuals
Chassis or Server LCD panel	See the LCD panel section

Interfaces	Document/Section
iDRAC Direct and Quick Sync 2 (optional)	See *Dell Integrated Dell Remote Access Controller User's Guide* at Dell.com/idracmanuals

> (i) **NOTE:** To access iDRAC, ensure that you connect the Ethernet cable to the iDRAC direct port. You can also access iDRAC through the shared LOM mode, if you have opted for a system that has the shared LOM mode enabled.

Log in to iDRAC

You can log in to iDRAC as:

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

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

> (i) **NOTE:** You must have the iDRAC credentials to log in to iDRAC.

> (i) **NOTE:** Ensure that you change the default user name 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 Dell.com/idracmanuals.

You can also access iDRAC by using RACADM. For more information, see the *RACADM Command Line Interface Reference Guide* at Dell.com/idracmanuals.

Options to install the operating system

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

Table 34. Resources to install the operating system

Resources	Location
Systems Management Tools and Documentation media	Dell.com/operatingsystemmanuals
Lifecycle Controller	Dell.com/idracmanuals
OpenManage Deployment Toolkit	Dell.com/openmanagemanuals
Dell certified VMware ESXi	Dell.com/virtualizationsolutions
Supported operating systems on PowerEdge systems	Dell.com/ossupport
Installation and How-to videos for supported operating systems on PowerEdge systems	Supported Operating Systems for Dell PowerEdge Systems

Methods to download firmware and drivers

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

Table 35. Firmware and drivers

Methods	Location
From the Dell Support site	Dell.com/support/home
Using Dell Remote Access Controller Lifecycle Controller (iDRAC with LC)	Dell.com/idracmanuals
Using Dell Repository Manager (DRM)	Dell.com/openmanagemanuals
Using Dell OpenManage Essentials (OME)	Dell.com/openmanagemanuals
Using Dell Server Update Utility (SUU)	Dell.com/openmanagemanuals
Using Dell OpenManage Deployment Toolkit (DTK)	Dell.com/openmanagemanuals

Downloading drivers and firmware

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

Prerequisite

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

Steps

1   Go to Dell.com/support/drivers.

2   In the **Drivers & Downloads** section, type the Service Tag of your system in the **Enter a Service Tag or product ID** box, and then click **Submit**.

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

3   Click **Drivers & Downloads**.

The drivers that are applicable to your selection are displayed.

4   Download the drivers to a USB drive, CD, or DVD.

Pre-operating system management applications

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

Topics:

- Options to manage the pre-operating system applications
- System Setup
- Dell Lifecycle Controller
- Boot Manager
- PXE boot

Options to manage the pre-operating system applications

Your system has the following options to manage the pre-operating system applications:

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

System Setup

By using the **System Setup** screen, you can configure the BIOS settings, iDRAC settings, and device settings of your system.

ⓘ **NOTE: Help text for the selected field is displayed in the graphical browser by default. To view the help text in the text browser, press F1.**

You can access system setup by using two methods:

- Standard graphical browser—The browser is enabled by default.
- Text browser—The browser is enabled by using Console Redirection.

Viewing System Setup

To view the **System Setup** screen, perform the following steps:

1. Turn on, or restart your system.
2. Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

System Setup details

The **System Setup Main Menu** screen details are explained as follows:

Option	Description
System BIOS	Enables you to configure 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 Dell.com/idracmanuals.
Device Settings	Enables you to configure device settings.
Service Tag Settings	Enables you to configure service tag settings.

System BIOS

You can use the **System BIOS** screen to edit specific functions such as boot order, system password, setup password, set the SATA and PCIe NVMe, and enable or disable USB ports.

Viewing System BIOS

To view the **System BIOS** screen, perform the following steps:

1. Turn on, or restart your system.
2. Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3. On the **System Setup Main Menu** screen, click **System BIOS**.

System BIOS Settings details

The **System BIOS Settings** screen details are explained as follows:

Option	Description
System Information	Specifies information about the system such as the system model name, BIOS version, and Service Tag.
Memory Settings	Specifies information and options related to the installed memory.
Processor Settings	Specifies information and options related to the processor such as speed and cache size.
SATA Settings	Specifies options to enable or disable the integrated SATA controller and ports.
NVMe Settings	Specifies options to change the NVMe settings.
Boot Settings	Specifies options to specify the UEFI mode.

Option	Description
Network Settings	Specifies options to manage the UEFI network settings and boot protocols. Legacy network settings are managed from the **Device Settings** menu.
Integrated Devices	Specifies options to manage integrated device controllers and ports, specifies related features and options.
Serial Communication	Specifies options to manage the serial ports, its related features and options.
System Profile Settings	Specifies options to change the processor power management settings, memory frequency.
System Security	Specifies options to configure the system security settings, such as system password, setup password, Trusted Platform Module (TPM) security, and UEFI secure boot. It also manages the power button on the system.
Redundant OS Control	Sets the redundant OS info for redundant OS control.
Miscellaneous Settings	Specifies options to change the system date and time.

System Information

You can use the **System Information** screen to view system properties such as Service Tag, system model name, and the BIOS version.

Viewing System BIOS

To view the **System BIOS** screen, perform the following steps:

1   Turn on, or restart your system.
2   Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3   On the **System Setup Main Menu** screen, click **System BIOS**.

System Information details

The **System Information** screen details are explained as follows:

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	Specifies the contact information of the system manufacturer.

Option	Description

Option	Description
Memory Interleaving	Specifies if Non-Uniform Memory Architecture (NUMA) is supported.

Table 36. Memory interleaving options

Memory	Options
Single memory module	**Disabled** by default
Two or more memory modules	· **Disabled** · **Channel Interleaving** · **Die Interleaving** · **Socket Interleaving** Memory Interleaving is set to **Channel Interleaving** by default.

> ⓘ **NOTE: The AMD EPYC micro architecture utilizes four NUMA per socket. An additional performance fine tuning and/or NUMA-aware software is required for best performance.**

Option	Description
Opportunistic Self-Refresh	Enables or disables opportunistic self-refresh feature. This option is set to **Disabled** by default.

Processor Settings

You can use the **Processor Settings** screen to view the processor settings, and perform specific functions such as enabling virtualization technology, hardware prefetcher and software prefetcher.

Viewing Processor Settings

To view the **Processor Settings** screen, perform the following steps:

1 Turn on, or restart your system.
2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3 On the **System Setup Main Menu** screen, click **System BIOS**.
4 On the **System BIOS** screen, click **Processor Settings**.

Processor Settings details

The **Processor Settings** screen details are explained as follows:

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.
Virtualization Technology	Enables or disables the virtualization technology for the processor. This option is set to **Enabled** by default.

Option	Description
Hardware Prefetcher	Enables or disables the hardware prefetcher. This option is set to **Enabled** by default.
Software Prefetcher	Enables or disables the software prefetcher. This option is set to **Enabled** by default.
Number of Cores per Processor	Controls the number of enabled cores in each processor. 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 installed in the system:

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.
Number of Cores	Specifies the number of cores per processor.

SATA Settings

You can use the **SATA Settings** screen to view the SATA settings of SATA devices and enable SATA and PCIe NVMe on your system.

Viewing SATA Settings

To view the **SATA Settings** screen, perform the following steps:

1 Turn on, or restart your system.
2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3 On the **System Setup Main Menu** screen, click **System BIOS**.
4 On the **System BIOS** screen, click **SATA Settings**.

SATA Settings details

The **SATA Settings** screen details are explained as follows:

Option	Description
Embedded SATA	Enables the embedded SATA option to be set to **Off** or **AHCI** modes. This option is set to **AHCI Mode** by default.
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.

Option	Description
Write Cache	Enables or disables the command for the embedded SATA drives during POST. This option is set to **Disabled** by default.
Port n	Sets the drive type of the selected device. For **AHCI Mode**, BIOS support is always enabled.

Option	Description
Model	Specifies the drive model of the selected device.
Drive Type	Specifies the type of drive attached to the SATA port.
Capacity	Specifies the total capacity of the drive. This field is undefined for removable media devices such as optical drives.

NVMe Settings

The NVMe settings is set to **Non-RAID** mode.

Viewing NVMe Settings

To view the **NVMe Settings** screen, perform the following steps:

1   Turn on, or restart your system.
2   Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3   On the **System Setup Main Menu** screen, click **System BIOS**.
4   On the **System BIOS** screen, click **NVMe Settings**.

NVMe Settings details

> ⓘ **NOTE: This setting is disabled by default.**

The NVMe Settings screen details are explained as follows:

Option	Description
NVMe Mode	Enables you to set the NVMe mode. This option is set to **Non RAID** by default.

Boot Settings

- **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, also boot and runtime service calls that are available to the operating system and its loader. The following benefits are available when the booting to the **UEFI**:
  - Support for drive partitions larger than 2 TB.
  - Enhanced security (e.g., UEFI Secure Boot).
  - Faster boot time.

Viewing Boot Settings

To view the **Boot Settings** screen, perform the following steps:

1 Turn on, or restart your system.
2 Press F2 immediately after you see the following message:
```
F2 = System Setup
```

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

3 On the **System Setup Main Menu** screen, click **System BIOS**.
4 On the **System BIOS** screen, click **Boot Settings**.

Boot Settings details

The **Boot Settings** screen details are explained as follows:

Option	Description
Boot Mode	Specifies the Boot Mode of the system. This option is set to **UEFI** by default.
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.
UEFI Boot Settings	Enables or disables UEFI Boot options. ⓘ **NOTE: This option is enabled only if the boot mode is UEFI.**

Network Settings

You can use the **Network Settings** screen to modify UEFI PXE, iSCSI, and HTTP boot settings. The network settings option is available only in the UEFI mode.

ⓘ **NOTE: For information about Linux network settings, see the** *Linux® Network Tuning Guide for AMD EPYC™ Processor Based Servers* **AMD tuning guide.**

Viewing Network Settings

To view the **Network Settings** screen, perform the following steps:

1 Turn on, or restart your system.
2 Press F2 immediately after you see the following message:
```
F2 = System Setup
```

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

3 On the **System Setup Main Menu** screen, click **System BIOS**.
4 On the **System BIOS** screen, click **Network Settings**.

Network Settings screen details

The **Network Settings** screen details are explained as follows:

Option	Description
PXE Device n (n = 1 to 4)	Enables or disables the device. When enabled, a UEFI PXE boot option is created for the device.
PXE Device n Settings(n = 1 to 4)	Enables you to control the configuration of the PXE device.
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.
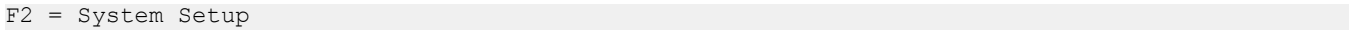
ⓘ | **NOTE: Ensure that you configure the PXE boot environment to be UEFI compatible.**

UEFI iSCSI Settings

You can use the iSCSI Settings screen to modify iSCSI device settings. The iSCSI Settings option is available only in the UEFI boot mode.

Viewing UEFI iSCSI Settings

To view the **UEFI iSCSI Settings** screen, perform the following steps:

1   Turn on, or restart your system.
2   Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3   On the **System Setup Main Menu** screen, click **System BIOS**.
4   On the **System BIOS** screen, click **Network Settings**.
5   On the **Network Settings** screen, click **UEFI iSCSI Settings**.

UEFI iSCSI Settings details

The **UEFI iSCSI Settings** screen details are explained as follows:

Option	Description
iSCSI Initiator Name	Specifies the name of the iSCSI initiator (iqn format).
iSCSI Device1	Enables or disables the iSCSI device. When disabled, a UEFI boot option is created for the iSCSI device automatically.
iSCSI Device1 Settings	Enables you to control the configuration of the iSCSI device.

Integrated Devices

You can use the **Integrated Devices** screen to view and configure the settings of all integrated devices including the video controller, integrated RAID controller, and the USB ports.

Viewing Integrated Devices

To view the **Integrated Devices** screen, perform the following steps:

1   Turn on, or restart your system.
2   Press F2 immediately after you see the following message:

    F2 = System Setup

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

3   On the **System Setup Main Menu** screen, click **System BIOS**.
4   On the **System BIOS** screen, click **Integrated Devices**.

Integrated Devices details

The **Integrated Devices** screen details are explained as follows:

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. 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.
Integrated RAID Controller	Enables or disables the integrated RAID controller. This option is set to **Enabled** by default.
Integrated Network	Enables or disables the integrated Network Daughter Card (NDC). When set to **Disabled**, the NDC is not available to the operating system (OS). This option is set to **Enabled** by default.
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.

Option	Description
Internal MicroSD Card Port	Enables or disables the internal MicroSD card port of the Internal Dual SD Module (IDSDM). This option is set to **On** by default.
Internal MicroSD Card Redundancy	Configures the redundancy mode of the Internal Dual SD Module (IDSDM). When set to **Mirror** Mode, data is written on both MicroSD cards. After failure of either card and replacement of the failed card, the data of the active card is copied to the offline card during the system boot. When Internal SD Card Redundancy is set to **Disabled**, only the primary MicroSD card is visible to the OS. This option is set to **Disabled** by default.
Internal microSD Primary Card	When **Redundancy** is set to **Disabled**, either one of the MicroSD card can be selected to present itself as mass storage device by setting it to be primary card. By default primary MicroSD card is selected to be SD Card 1. If MicroSD Card 1 is not present, then the controller will select MicroSD Card 2 to be the primary MicroSD card.
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.

Table 37. Slot Disablement

Slot 1	Enables or disables or only the boot driver is disabled for the PCIe slot 1. This option is set to **Enabled** by default.
Slot 2	Enables or disables or only the boot driver is disabled for the PCIe slot 2. This option is set to **Enabled** by default.
Slot 3	Enables or disables or only the boot driver is disabled for the PCIe slot 3. This option is set to **Enabled** by default.
Slot 4	Enables or disables or only the boot driver is disabled for the PCIe slot 4. This option is set to **Enabled** by default.
Slot 5	Enables or disables or only the boot driver is disabled for the PCIe slot 5. This option is set to **Enabled** by default.
Slot 6	Enables or disables or only the boot driver is disabled for the PCIe slot 6. This option is set to **Enabled** by default.
Slot 7	Enables or disables or only the boot driver is disabled for the PCIe slot 7. This option is set to **Enabled** by default.
Slot 8	Enables or disables or only the boot driver is disabled for the PCIe slot 8. This option is set to **Enabled** by default.

Option	Description
Slot Bifurcation	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**.

Option	Description

Table 38. Slot Bifurcation

Slot 1 Bifurcation	X16 or X8 or X4 or X4X4X8 or X8X4X4 Bifurcation
Slot 2 Bifurcation	X16 or X8 or X4 or X4X4X8 or X8X4X4 Bifurcation
Slot 3 Bifurcation	X16 or X8 or X4 or X4X4X8 or X8X4X4 Bifurcation
Slot 4 Bifurcation	X16 or X8 or X4 or X4X4X8 or X8X4X4 Bifurcation
Slot 5 Bifurcation	X16 or X8 or X4 or X4X4X8 or X8X4X4 Bifurcation
Slot 6 Bifurcation	X8 or X4 or X4X4 Bifurcation
Slot 7 Bifurcation	X16 or X8 or X4 or X4X4X8 or X8X4X4 Bifurcation
Slot 8 Bifurcation	X16 or X8 or X4 or X4X4X8 or X8X4X4 Bifurcation

Serial Communication

You can use the **Serial Communication** screen to view the properties of the serial communication port.

Viewing Serial Communication

To view the **Serial Communication** screen, perform the following steps:

1. Turn on, or restart your system.
2. Press F2 immediately after you see the following message:
   ```
   F2 = System Setup
   ```

   ⓘ **NOTE:** If your operating system begins to load before you press F2, wait for the system to finish booting, and then restart your system and try again.
3. On the **System Setup Main Menu** screen, click **System BIOS**.
4. On the **System BIOS** screen, click **Serial Communication**.

Serial Communication details

The **Serial Communication** screen details are explained as follows:

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. This option is set to **Serial Device1=COM2, Serial Device 2=COM1** by default.

> ⓘ **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 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.
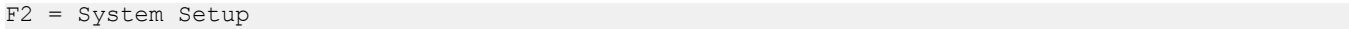
Option	Description
External Serial Connector	Enables you to associate the External Serial Connector to **Serial Device 1**, **Serial Device 2**, or the **Remote Access Device** by using this option. This option is set to **Serial Device 1** by default. ⓘ **NOTE: Only Serial Device 2 can be used for Serial 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

You can use the **System Profile Settings** screen to enable specific system performance settings such as power management.

Viewing System Profile Settings

To view the **System Profile Settings** screen, perform the following steps:

1   Turn on, or restart your system.
2   Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3   On the **System Setup Main Menu** screen, click **System BIOS**.
4   On the **System BIOS** screen, click **System Profile Settings**.

System Profile Settings details

The **System Profile Settings** screen details are explained as follows:

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.

Option	Description
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. This option is set to **Enabled** by default.
Memory Patrol Scrub	Sets the memory patrol scrub frequency. 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.
PCI ASPM L1 Link Power Management	Enables or disables the PCI ASPM L1 Link Power Management. This option is set to **Enabled** by default.

System Security

You can use the **System Security** screen to perform specific functions such as setting the system password, setup password and disabling the power button.

Viewing System Security

To view the **System Security** screen, perform the following steps:

1 Turn on, or restart your system.
2 Press F2 immediately after you see the following message:

`F2 = System Setup`

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

3 On the **System Setup Main Menu** screen, click **System BIOS**.
4 On the **System BIOS** screen, click **System Security**.

System Security Settings details

The **System Security Settings** screen details are explained as follows:

Option	Description
CPU AES-NI	Improves the speed of applications by performing encryption and decryption by using the Advanced Encryption Standard Instruction Set (AES-NI). This option is set to **Enabled** by default.
System Password	Sets the system password. This option is 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 Security	> (i) NOTE: The TPM menu is available only when the TPM module is installed. Enables you to control the reporting mode of the TPM. The **TPM Security** option is set to **Off** by default. You can only modify the TPM Status, and TPM Activation if the **TPM Status** field is set to either **On with Pre-boot Measurements** or **On without Pre-boot Measurements**. When TPM 1.2 is installed, the **TPM Security** option is set to **Off**, **On with Pre-boot Measurements**, or **On without Pre-boot Measurements**.

Option   Description

Table 39. TPM 1.2 security information

TPM Information	Changes the operational state of the TPM. This option is set to **No Change** by default.
TPM Firmware	Indicates the firmware version of the TPM.
TPM Status	Specifies the TPM status.
TPM Command	Controls the Trusted Platform Module (TPM). When set to **None**, no command is sent to the TPM. When set to **Activate**, the TPM is enabled and activated. When set to **Deactivate**, the TPM is disabled and deactivated. When set to **Clear**, all the contents of the TPM are cleared. This option is set to **None** by default.

When TPM 2.0 is installed, the **TPM Security** option is set to **On** or **Off**. This option is set to **Off** by default.

Table 40. TPM 2.0 security information

TPM Information	Changes the operational state of the TPM. This option is set to **No Change** by default.
TPM Firmware	Indicates the firmware version of the TPM.
TPM Hierarcy	Enable, disable, or clear 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**.

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 up after AC power is restored to the system. This option is set to **Immediate** by default.
User Defined Delay (60 s to 240 s)	Sets the **User Defined Delay** option when the **User Defined** option for **AC Power Recovery Delay** is selected.
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.
Secure Boot	Enables Secure Boot, where the BIOS authenticates each pre-boot image by using the certificates in the Secure Boot Policy. Secure Boot is set to **Disabled** by default.
Secure Boot Policy	When Secure Boot policy is set to **Standard**, the BIOS uses the system manufacturer's key and certificates to authenticate pre-boot images. When Secure Boot policy is set to **Custom**, the BIOS uses the user-defined key and certificates. Secure Boot policy is set to **Standard** by default.
Secure Boot Mode	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**.

Option	Description	
	Options	**Description**
	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.
	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

Prerequisite

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.

> (i) 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.
  · The password can contain the numbers 0 through 9.
  · Only the following special characters are allowed: space, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

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.

    (i) **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 step

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

(i) **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

Prerequisite

(i) **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.

    (i) **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

You can use the **Redundant OS Control** screen to set the redundant OS info for redundant OS control. It enables you to set up a physical recovery disk on your system.

Viewing Redundant OS Control

To view the **Redundant OS Control** screen, perform the following steps:

1   Turn on, or restart your system.
2   Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3   On the **System Setup Main Menu** screen, click **System BIOS**.
4   On the **System BIOS** screen, click **Redundant OS Control**.

Redundant OS Control screen details

The **Redundant OS Control** screen details are explained as follows:

Option	Description
Redundant OS Location	Enables you to select a backup disk from the following devices: - **None** - **IDSDM** - **SATA Ports in AHCI mode** - **BOSS PCIe Cards (Internal M.2 Drives)** - **Internal USB** ⓘ **NOTE: RAID configurations and NVMe cards not are included as BIOS does not have the ability to distinguish between individual drives in those configurations.**
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 will disable the device in hardware, so it cannot be 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.**

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Option	Description
	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

You can use the **Miscellaneous Settings** screen to perform specific functions such as updating the asset tag and changing the system date and time.

Viewing Miscellaneous Settings

To view the **Miscellaneous Settings** screen, perform the following steps:

1. Turn on, or restart your system.
2. Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

3. On the **System Setup Main Menu** screen, click **System BIOS**.
4. On the **System BIOS** screen, click **Miscellaneous Settings**.

Miscellaneous Settings details

The **Miscellaneous Settings** screen details are explained as follows:

Option	Description
System Time	Enables you to set the time on the system.
System Date	Enables you to set the date on the system.
Asset Tag	Specifies the asset tag and enables you to modify it for security and tracking purposes.
Keyboard NumLock	Enables you to set whether the system boots with the NumLock enabled or disabled. This option is set to **On** by default. ⓘ **NOTE:** This option does not apply to 84-key keyboards.
F1/F2 Prompt on Error	Enables or disables the F1/F2 prompt on error. This option is set to **Enabled** by default. The F1/F2 prompt also includes keyboard errors.
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 **Dell.com/idracmanuals**.

Device Settings

Device Settings enables you to configure device parameters.

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 system's lifecycle. The Dell Lifecycle Controller can be started during the boot sequence and can function independently of the operating system.

> (i) | **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 **Dell.com/idracmanuals**.

Boot Manager

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

Viewing Boot Manager

About this task
To enter Boot Manager:
Steps
1   Turn on, or restart your system.
    Enter the result of your step here (optional).
2   Press F11 when you see the following message:
    ```
    F11 = Boot Manager
    ```

    If your operating system begins to load before you press F11, allow the system to complete the booting, and then restart your system and try again.

Boot Manager main menu

Menu item	Description
Continue Normal Boot	The system attempts to boot to devices starting with the first item in the boot order. If the boot attempt fails, the system continues with the next item in the boot order until the boot is successful or no more boot options are found.
One-shot Boot Menu	Enables you to access boot menu, where you can select a one-time boot device to boot from.

Menu item	Description
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 System Diagnostics and UEFI shell.

One-shot BIOS boot menu

One-shot BIOS boot menu enables you to select a boot device to boot from.

System Utilities

System Utilities contains the following utilities that can be launched:

- 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.

ⓘ | **NOTE: Ensure that you configure the PXE boot environment to be UEFI compatible.**

Installing and removing system components

Safety instructions

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

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

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

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

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

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

Before working inside your system

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Turn off the system, including 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 *Rack Installation Guide* at **Dell.com/poweredgemanuals**.
4 Remove the system cover.

After working inside your system

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Install the system cover.
2 If applicable, install the system into the rack.

 For more information, see the *Rack Installation Guide* at **Dell.com/poweredgemanuals**.
3 Reconnect the peripherals and connect the system to the electrical outlet.
4 Turn on the attached peripherals and then turn on the system.

Recommended tools

You need 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 #T20 screwdriver
- Wrist grounding strap

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).**

Optional front bezel

An optional metal bezel is mounted on the front of the system to display system branding. A lock on the bezel is used to protect unauthorized access to the drives. There are two versions of bezel available:

- With LCD panel
- Without LCD panel

For bezels with LCD panel, the system status can be viewed on the LCD panel. For more information, see the LCD panel section.

The LCD bezel is hot pluggable and can be used in any server of the same branding even if that system was originally not ordered with that LCD bezel.

Removing the front bezel

The procedure to remove the optional front bezel with the LCD panel and the front bezel without the LCD panel is the same.

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Unlock the bezel by using the bezel key.
2 Press the release button, and pull the left end of the bezel.
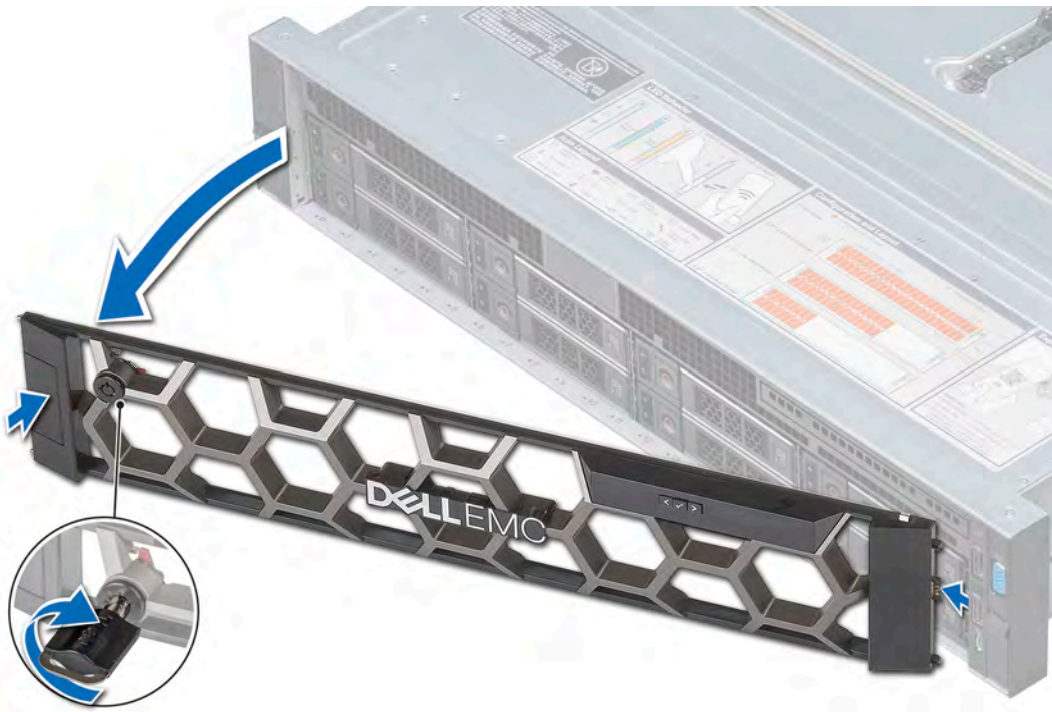3 Unhook the right end, and remove the bezel.

Figure 20. Removing the front bezel

Next step

Install the front bezel.

Installing the front bezel

The procedure to install the front bezel with the LCD panel and the front bezel without the LCD panel is the same.

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Locate and remove the bezel key.

> ⓘ **NOTE: The bezel key is part of the LCD bezel package.**

2 Align and insert the right end of the bezel onto the system.

3 Push the bezel on the system until it clicks into place.

4 Lock the bezel by using the key.

Figure 21. Installing the front bezel

System cover

System cover provides security for the entire system and also helps in maintaining proper air flow inside the system.

Removing the system cover

Prerequisites

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

Steps

1   Using a flat or a Phillips head screwdriver, rotate the latch release lock counter clockwise to the unlocked position.
2   Lift the latch till the system cover slides back and the tabs on the system cover disengage from the guide slots on the system.
3   Hold the cover on both sides, and lift the cover away from the system.

Figure 22. Removing the system cover

Next step

Install the system cover.

Installing the system cover

Prerequisites

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

Steps

1   Align the tabs on the system cover with the guide slots on the system.
2   Push the system cover latch down.

     The system cover slides forward, the tabs on the system cover engage with the guide slots on the system and the system cover latch locks into place.

3   Using a flat or Phillips head screwdriver, rotate the latch release lock clockwise to the locked position.

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Figure 23. Installing the system cover

Next steps

1   Reconnect the peripherals and connect the system to the electrical outlet.
2   Turn on the system, including any attached peripherals.

Backplane cover

Removing the backplane cover

Prerequisites

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

Steps

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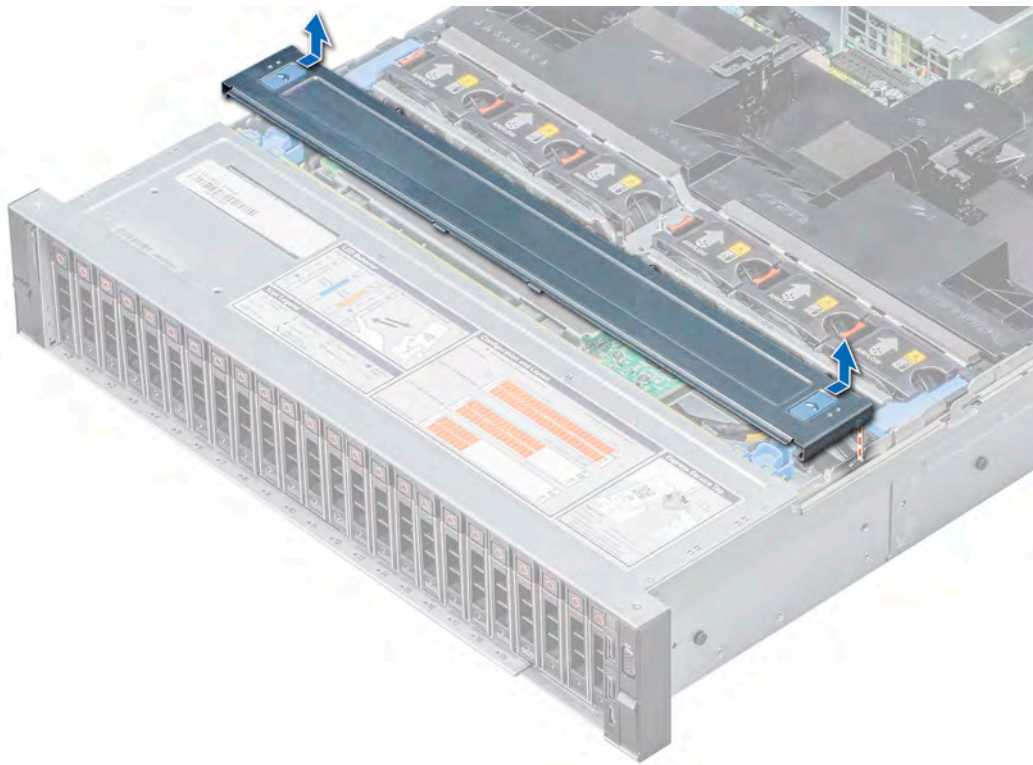2   Lift the backplane cover away from the system.

Figure 24. Removing the backplane cover

Next step

Install the backplane cover.

Installing the backplane cover

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Align the backplane cover with the guide slots on the system.
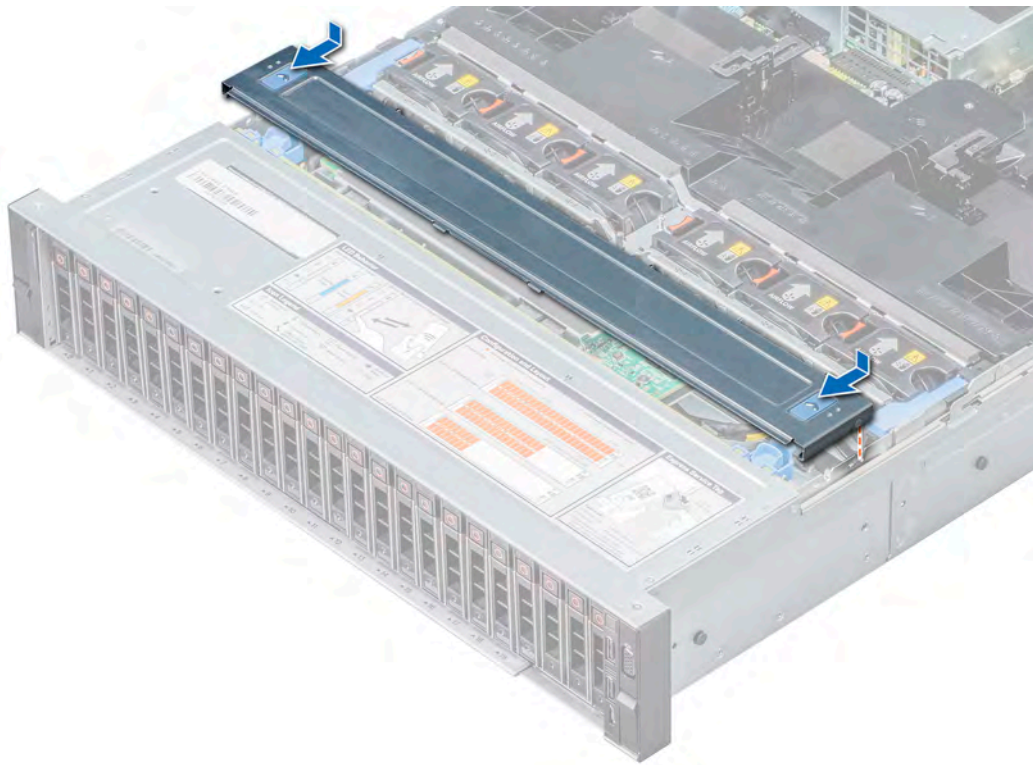2   Slide the backplane cover toward the front of the system until the cover locks into place.

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Figure 25. Installing the backplane cover

Next step

Follow the procedure listed in After working inside your system.

Inside the system

⚠ **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.**
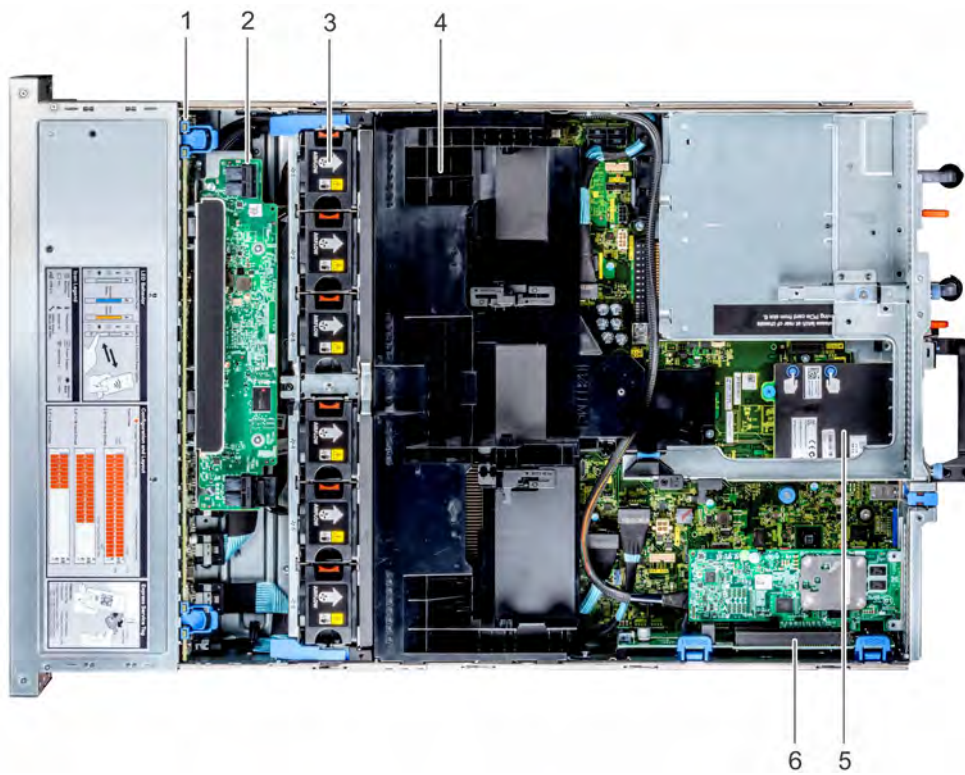
Figure 26. Inside the system - Configuration showing air shroud

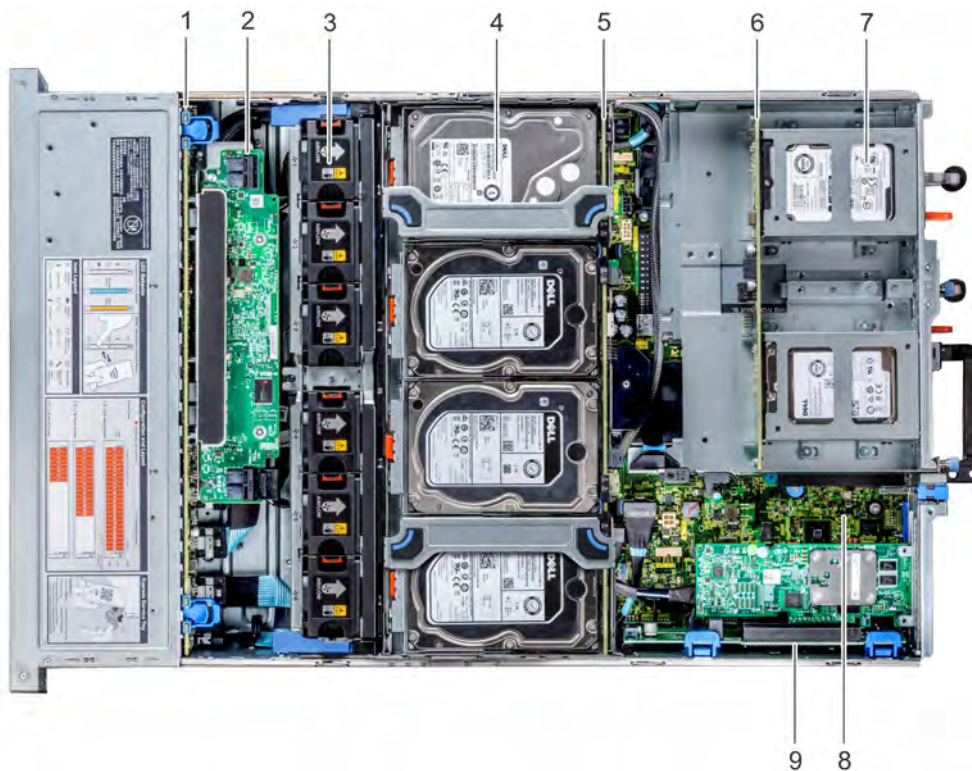|			
1	backplane	2	backplane expander
3	cooling fan (6) in the cooling fan assembly	4	air shroud
5	network daughter card	6	riser 1

Figure 27. Inside the system – Configuration showing mid drive tray and rear drive cage

1	backplane	2	backplane expander
3	cooling fan (6) in the cooling fan assembly	4	drive (4) in the mid drive tray
5	mid drive backplane	6	rear drive backplane
7	drive (2 x 3.5 inch or 4 x 2.5 inch) in the rear drive cage	8	system board
9	riser 1		

Air shroud

The air shroud directs the airflow across the entire system. Air shroud prevents the system from overheating and is used to maintain uniform airflow inside the system.

Removing the air shroud

Prerequisites

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

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   If installed, remove the expansion cards.

Step

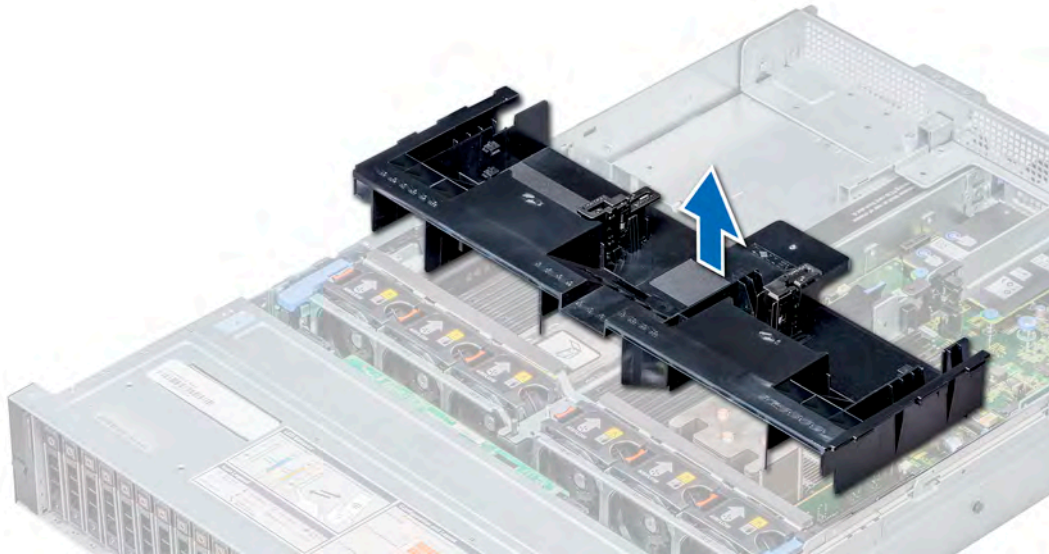Hold the air shroud at both ends and lift it away from the system.

Figure 28. Removing the air shroud

Next step

Install the air shroud.

Installing the air shroud

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   If applicable, route the cables inside the system along the system wall and secure the cables by using the cable latch.

Steps

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

    When firmly seated, the memory socket numbers marked on the air shroud align with the respective memory sockets.
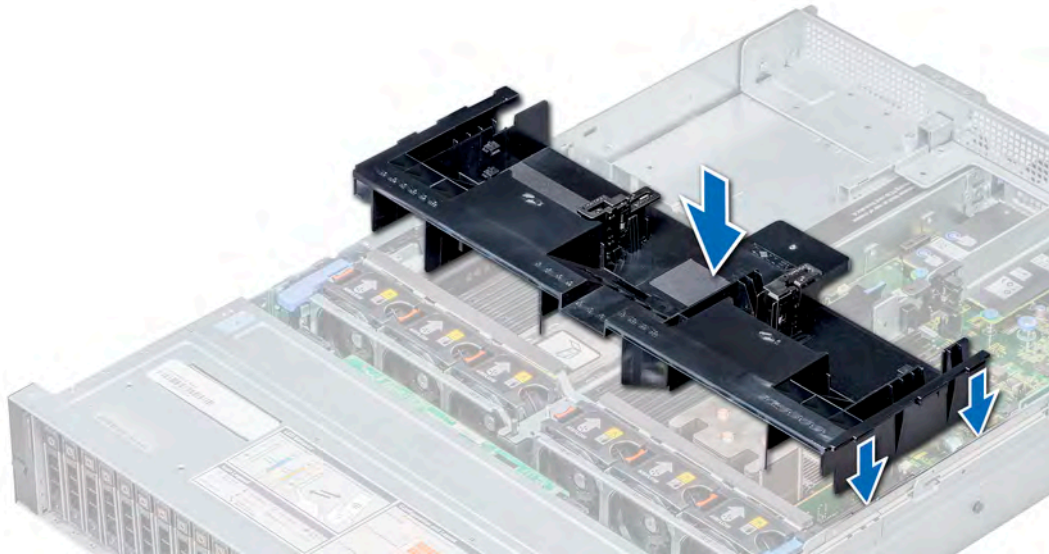
Figure 29. Installing the air shroud

Next steps

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

Cooling fan assembly

The cooling fan assembly ensures that the key components of the server such as the processors, drives, and memory get adequate air circulation to keep them cool. A failure in the server's cooling system can result in the server overheating and may lead to damage.

Removing the cooling fan assembly

Prerequisites

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

Steps

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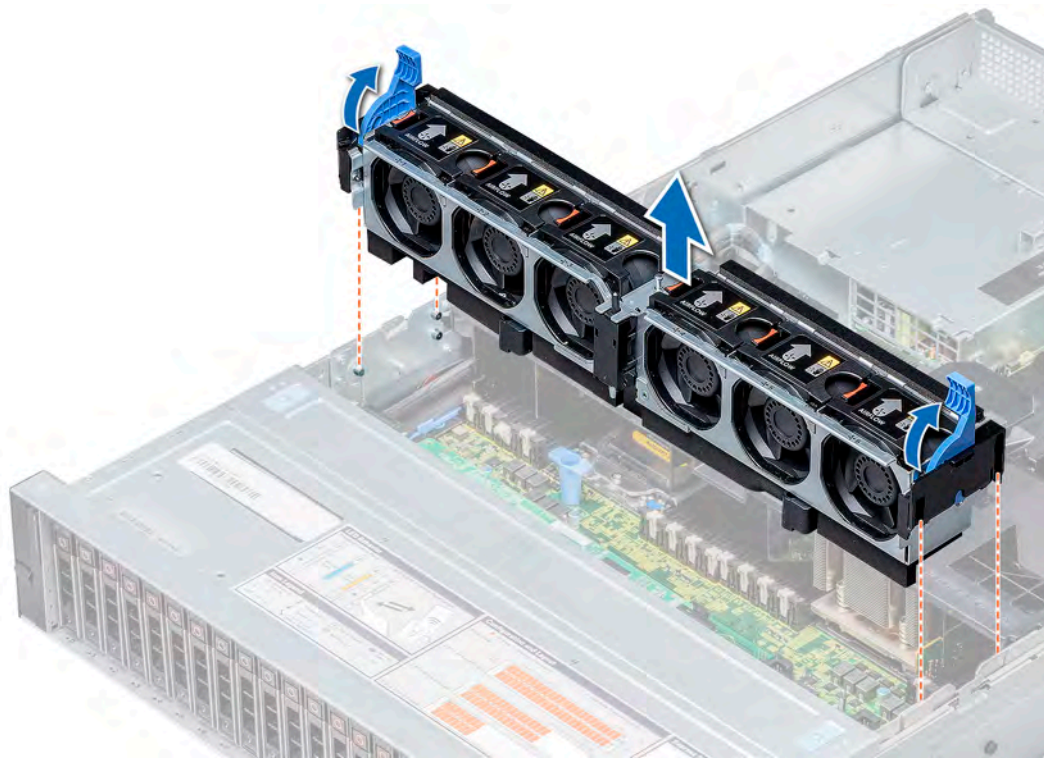2   Hold the release levers, and lift the cooling fan assembly away from the system.

Figure 30. Removing the cooling fan assembly

Next step

Install the cooling fan assembly.

Installing the cooling fan assembly

Prerequisite

Follow the safety guidelines listed in Safety instructions.

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

Steps

1 Align the guide rails on the cooling fan assembly with the standoffs on the system.
2 Lower the cooling fan assembly into the system until the cooling fan connectors engage with the connectors on the system board.
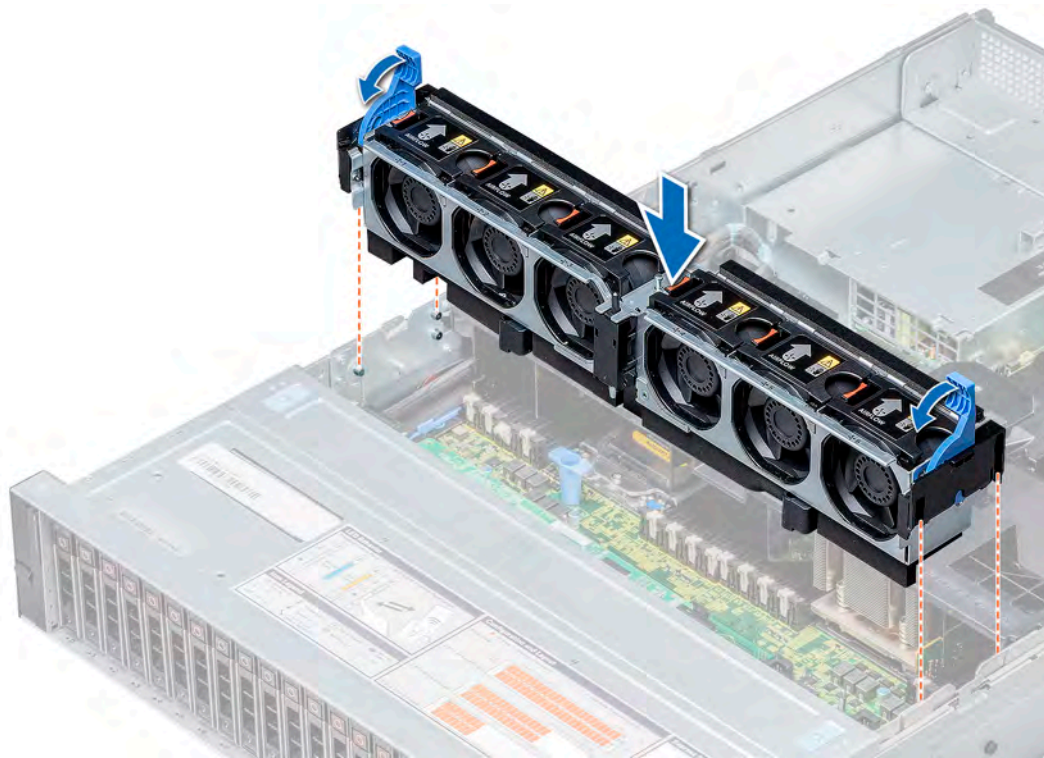3 Lower the release levers to lock the cooling fan assembly into the system.

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Figure 31. Installing the cooling fan assembly

Next step

Follow the procedure listed in .

Cooling fans

The cooling fans are integrated into the system to dissipate the heat generated by the functioning of the system. These fans provide cooling for the processors, expansion cards, and memory modules.

Your system supports up to six standard or high performance hot swappable cooling fans.

ⓘ **NOTE:**

- Mixing of standard and high performance cooling fans is not supported.
- For single processor systems, only four cooling fans are required. Fan bays one and two are covered by a fan blank.
- For systems that support mid drive tray configurations, high-performance fans are required to maintain proper air flow.
- Each fan is listed in the systems management software, referenced by the respective fan number. If there is a problem with a particular fan, you can easily identify and replace the proper fan by noting the fan numbers on the cooling fan assembly.

Removing a cooling fan

The procedure for removing standard and high performance fans is identical.

Prerequisites

⚠ **WARNING: Opening or removing the system cover when the system is on may expose you to a risk of electric shock. Exercise utmost care while removing or installing cooling fans.**

⚠ **CAUTION: The cooling fans are hot swappable. To maintain proper cooling while the system is on, replace only one fan at a time.**

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

Step

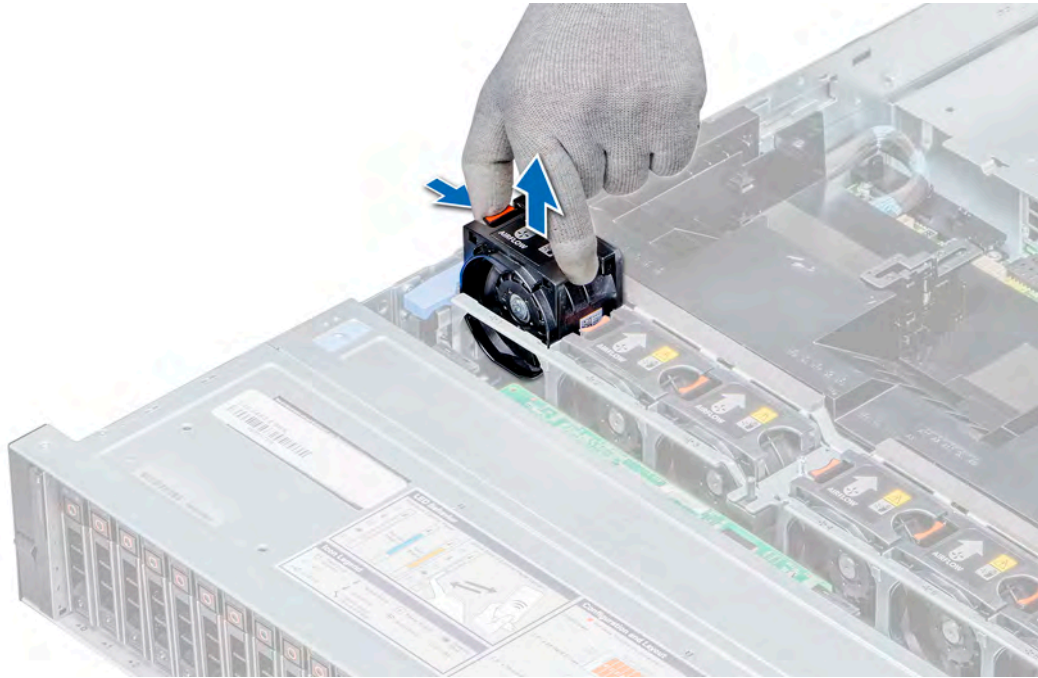Press the release tab and lift the cooling fan out of the cooling fan assembly.

Figure 32. Removing a cooling fan

Next step
Install the cooling fan.

Installing a cooling fan

The procedure for installing standard and high performance fans is identical.

Prerequisites

⚠ **WARNING: Opening or removing the system cover when the system is on may expose you to a risk of electric shock. Exercise utmost care while removing or installing cooling fans.**

⚠ **CAUTION: The cooling fans are hot swappable. To maintain proper cooling while the system is on, replace only one fan at a time.**

Follow the safety guidelines listed in Safety instructions.

Steps
1   Holding the release tab, align the connector at the base of the cooling fan with the connector on the system board.
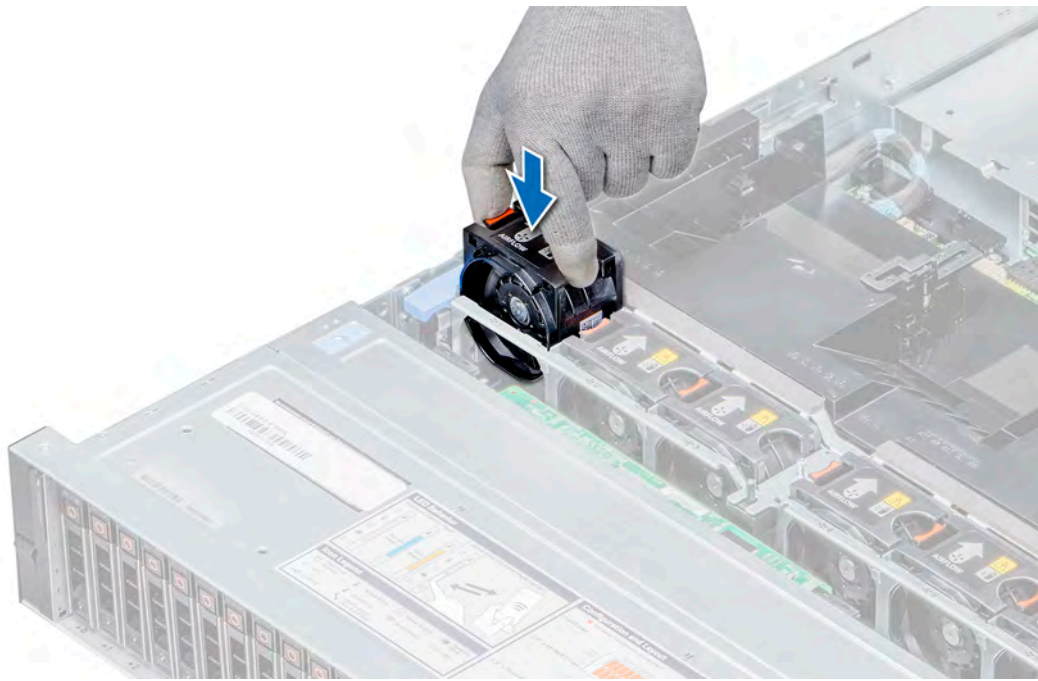2   Slide the cooling fan into the cooling fan assembly until the release tab locks into place.

Figure 33. Installing a cooling fan

Next step

Follow the procedure listed in After working inside your system.

Intrusion switch

The Chassis Intrusion Switch is activated when the cover of your system is removed while your system is on. The system event logs [SEL] records the number of times the cover is removed when the system is turned on.

Removing an intrusion switch

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your system.
3 Remove the cooling fan assembly.

Step

    Press the intrusion switch and slide it out of the intrusion switch slot on the cooling fan assembly.
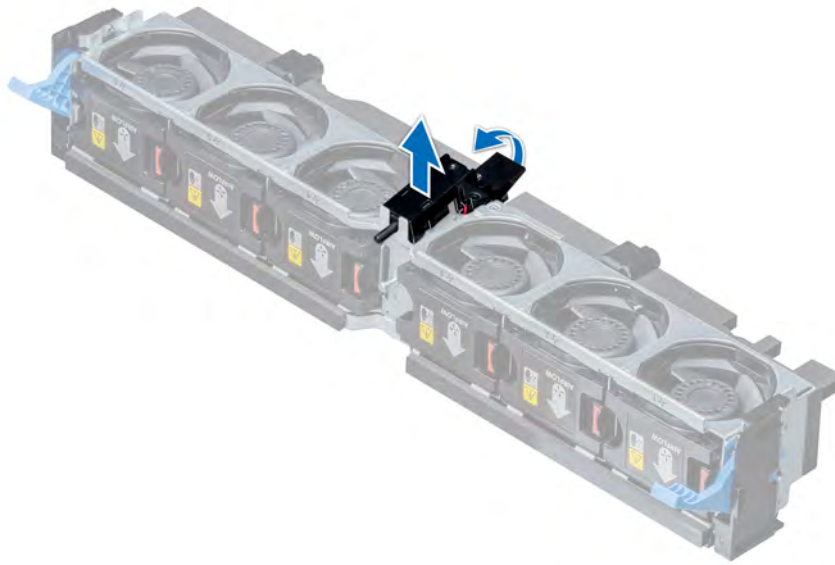
Figure 34. Removing an intrusion switch

Next step

Install an intrusion switch.

Installing an intrusion switch

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Align the tabs on the intrusion switch with the slots on the cooling fan assembly.
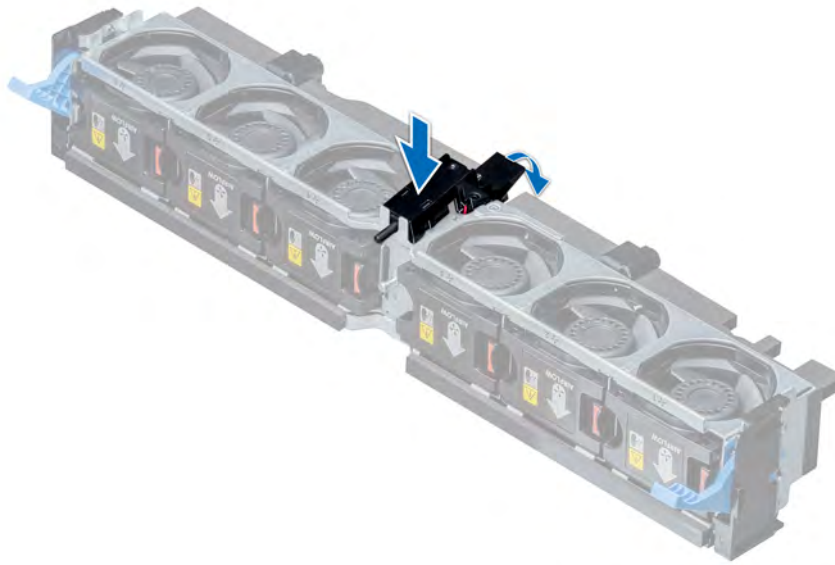
2   Push the intrusion switch until it locks in place.

Figure 35. Installing an intrusion switch

Next steps

1   Install the cooling fan assembly.
2   Follow the procedure listed in After working inside your system.

Mid drive tray

The mid drive tray is located behind the cooling fan assembly. It supports up to four 2.5 inch or four 3.5 inch drives.

ⓘ | **NOTE: The mid drive tray is supported only in 32 drives and 18 drives system configurations.**

ⓘ | **NOTE: Systems that support the internal mid drive tray require low-profile heat sinks and do not require or support an air shroud.**

Removing the mid drive tray

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Disconnect all the cables from the mid drive backplane.

⚠ | **CAUTION: The mid drive tray is hot to touch for some time after the system has been powered down. Allow time for the drive tray to cool before handling it.**

Steps

1   Lift the drive tray handles 90 degrees upward.
2   Hold the drive tray handles, and lift the drive tray out of the system.
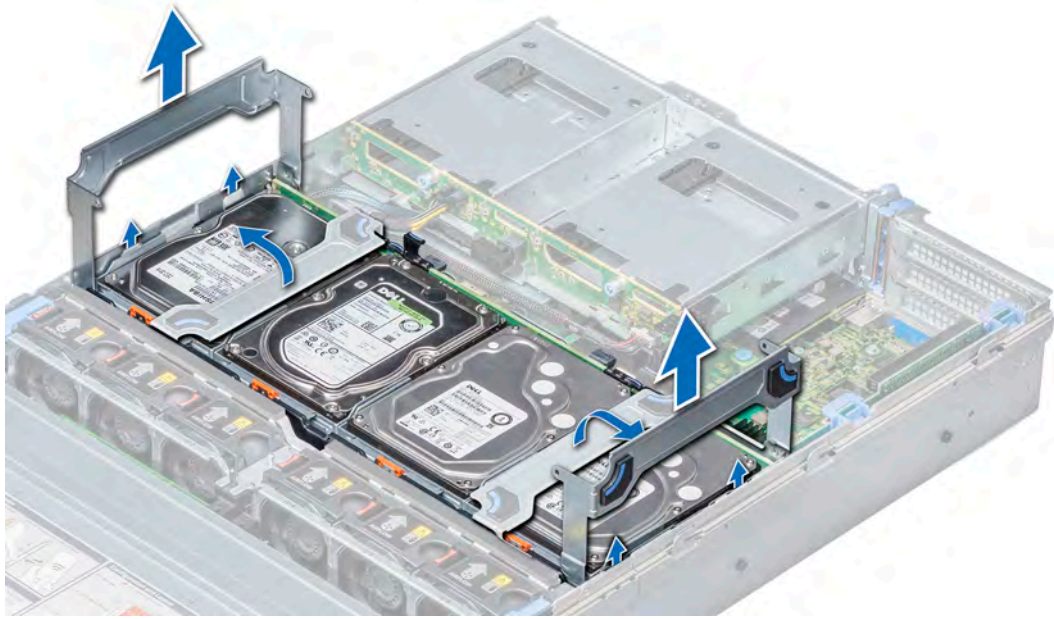
Figure 36. Removing the mid drive tray

Next step

Install the mid drive tray.

Installing the mid drive tray

Prerequisite

Follow the safety guidelines listed in Safety instructions.

ⓘ | **NOTE: Systems that support the internal mid drive tray support low-profile heat sinks and do not support an air shroud.**

Steps

1   Lift the drive tray handles to 90 degrees upward.
2   Hold the drive tray handles, and align the slots on the drive tray with the guide pins on the system.
3   Lower the drive tray into the system.
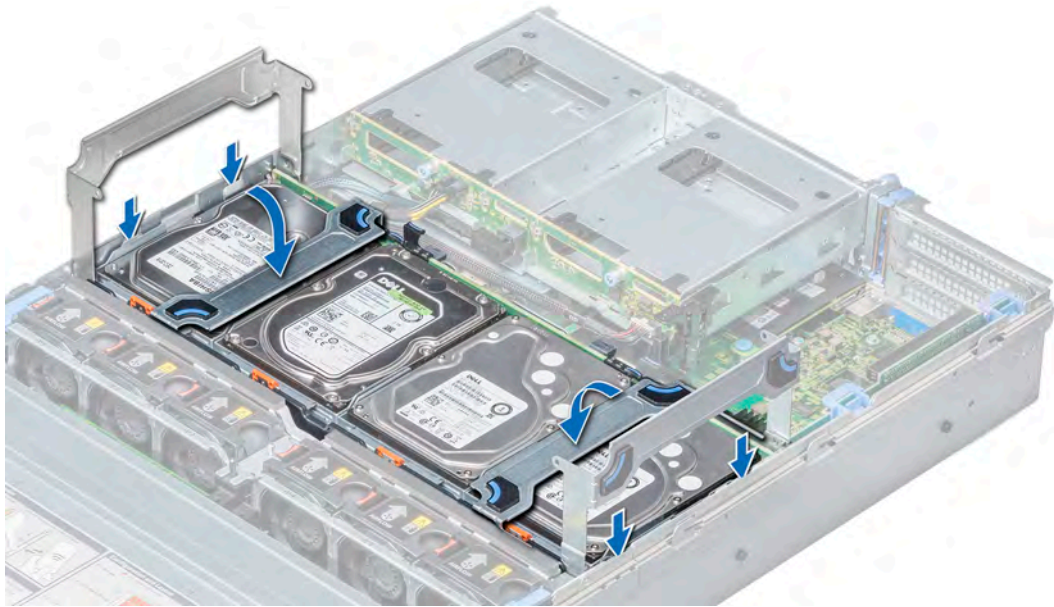4   Lower the drive tray handles to lock the drive tray in place.

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Figure 37. Installing the mid drive tray

Next steps

1 Connect all the cables to the mid drive backplane.
2 Follow the procedure listed in After working inside your system.

Removing drive blank from the mid drive carrier

The procedure for removing 2.5 inch and 3.5 inch blanks is identical.

Prerequisites

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

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

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

Steps

1 Push out at the edges of the drive carrier to disengage the tabs on the drive carrier from the slots on the drive blank.
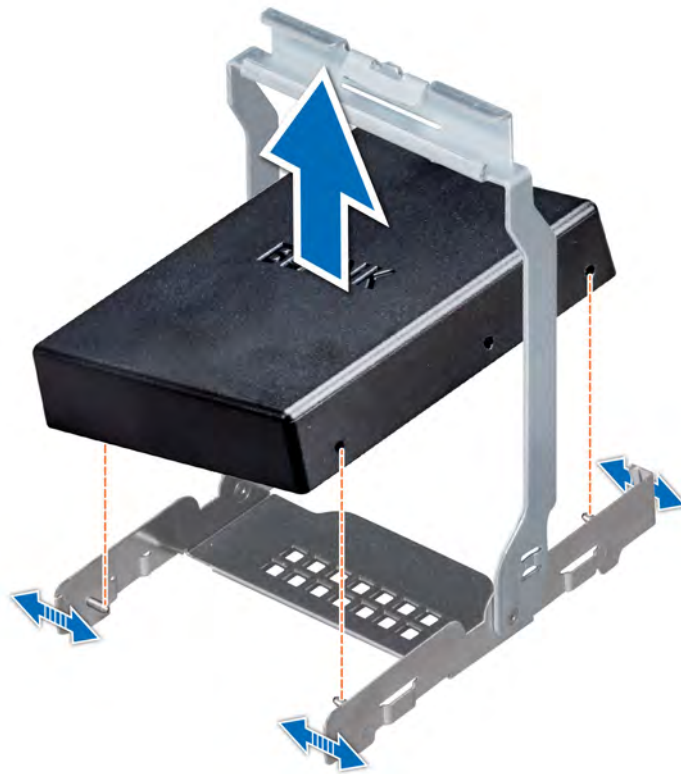2 Lift the drive carrier away from the drive blank.

Figure 38. Removing drive blank from the mid drive carrier

Next step

Install drive blank into the mid drive carrier.

Installing drive blank into the mid drive carrier

The procedure to install drive blank from mid drive carrier is identical to installation of drive into mid drive carrier. The procedure for installing 2.5 inch and 3.5 inch blanks into mid drive carriers is identical.

Prerequisites

Follow the safety guidelines listed in Safety instructions.

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

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

Steps

1   Align the tabs on the drive carrier with the slots on the drive blank.

2   Pull the edges of the carrier to fit over the drive blank.

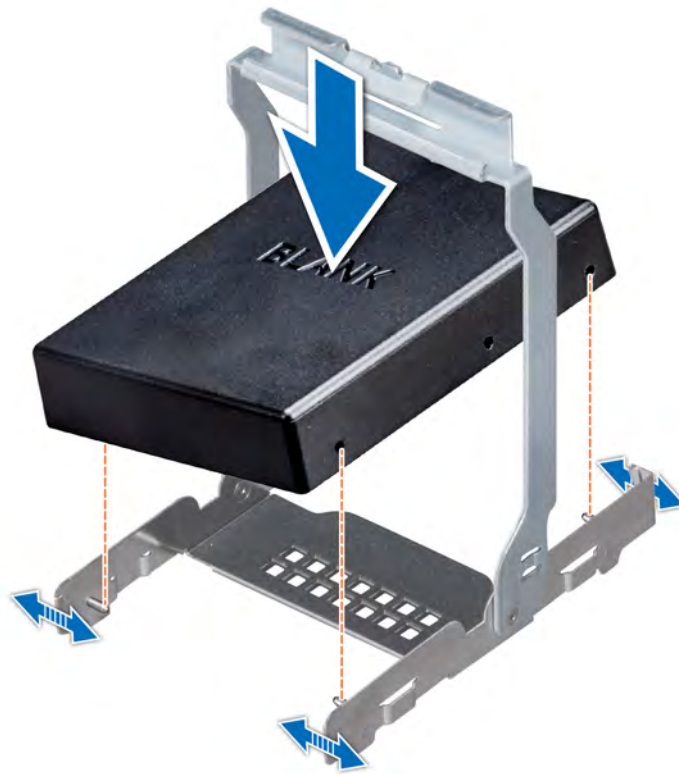3   Lower the drive carrier onto the drive blank to secure it.

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Figure 39. Installing drive blank into the mid drive carrier

Next step

Follow the procedure listed in After working inside your system.

Removing the drive carrier from the mid drive tray

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.

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

3   From the management software, prepare the drive for removal. Wait until the indicators on the drive carrier signal that the drive can be removed safely. For more information, see the documentation for the storage controller at **Dell.com/storagecontrollermanuals**.

If the drive is online, the green activity/fault indicator flashes as the drive is turned off. When the drive indicators are off, the drive is ready for removal.

⚠ | **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.**

⚠ | **CAUTION: Mixing drive carriers from previous generations of PowerEdge servers is not supported.**

Steps

1   If required, lift the mid drive tray handles to 90 degrees upward.

2   Press the release tab on the drive tray and lift the drive carrier handle upward to disengage the drive from the backplane.

3   Hold the drive carrier handle and lift the drive carrier out of the drive tray.

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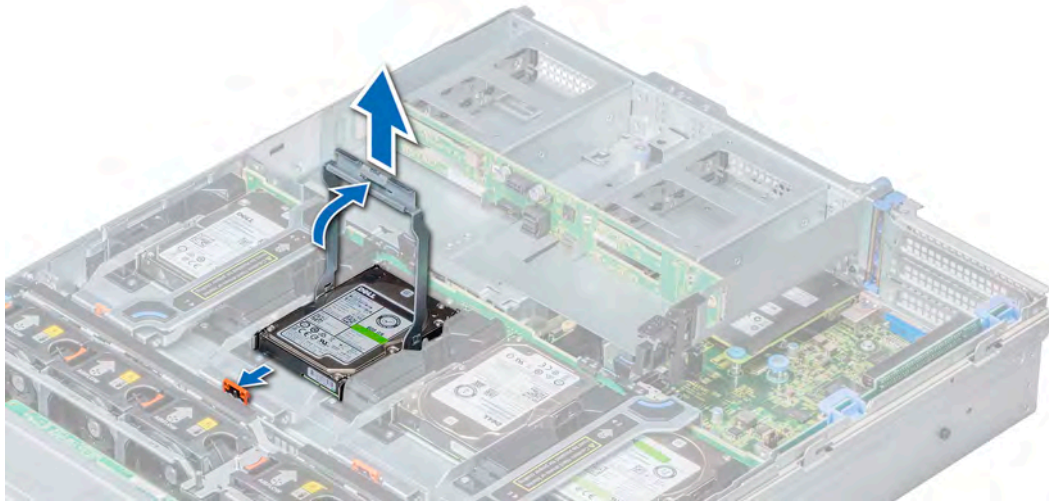

Figure 40. Removing the drive carrier from the mid drive tray

Next steps

1   Install the drive carrier into the mid drive tray.
2   If you are not replacing the drive carrier immediately, install drive blank into the drive carrier.

ⓘ **NOTE: Install the drive blanks in the drive carrier before installing the drive carrier into the drive tray.**

Installing the drive carrier into the mid drive tray

Prerequisites

Follow the safety guidelines listed in Safety instructions.

⚠️ **CAUTION: Use only drives that have been tested and approved for use with the drive backplane.**

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

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

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

⚠️ **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.**

Steps

1   If a drive blank is installed, remove drive blank from the drive carrier.
2   Place the drive carrier on the mid drive tray.
3   Lower the drive carrier handle to engage the drive to the connector on the backplane and lock the drive in place.
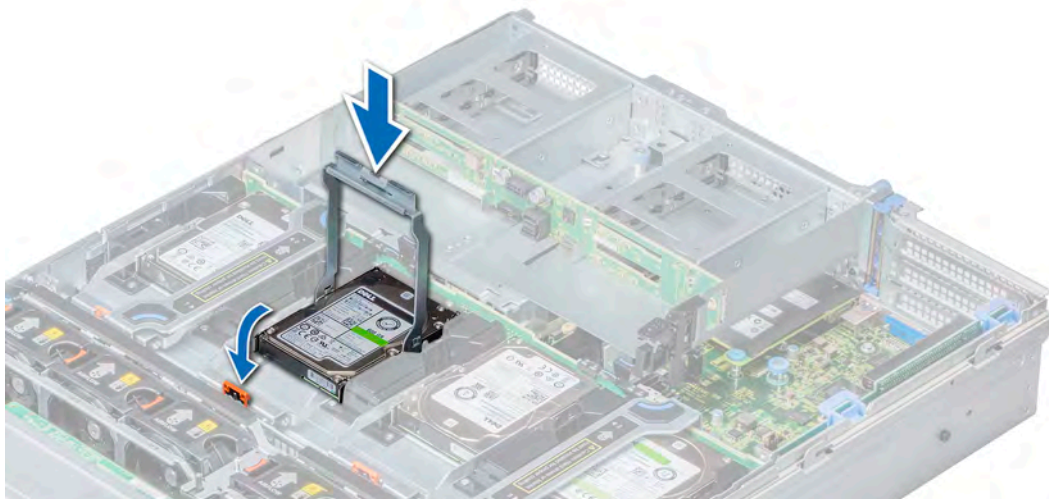4   If required, lower the mid drive tray handle.

Figure 41. Installing the drive carrier into mid drive tray

Next step

Follow the procedure listed in After working inside your system.

Removing a 3.5 inch drive from the 3.5 inch drive carrier

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove the drive carrier from the mid drive tray.

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

⚠ | **CAUTION: To maintain proper system cooling, all empty drive slots must have drive blanks installed.**

Steps

1   Push out at the edges of the carrier to disengage the tabs on the drive carrier from the slots on the drive.
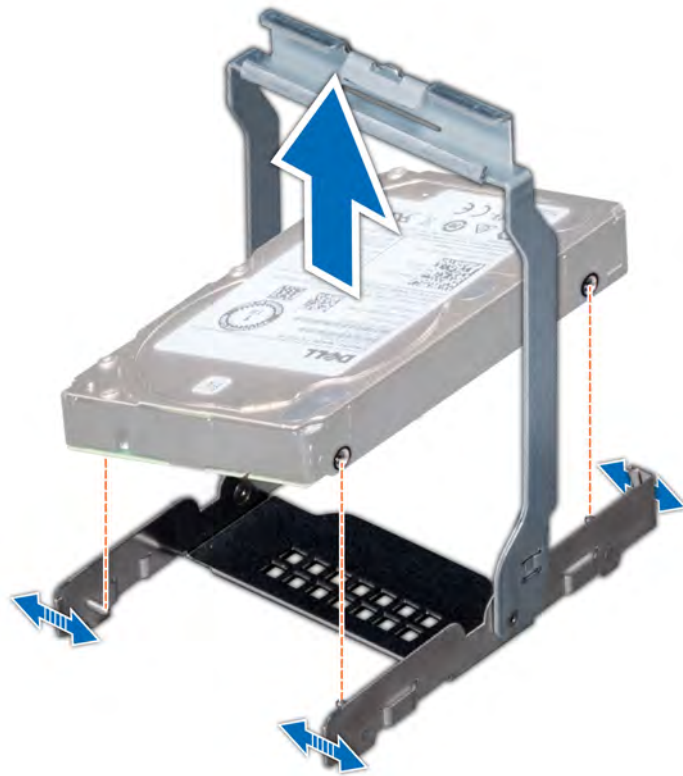2   Lift the drive out of the drive carrier.

Figure 42. Removing a 3.5 inch drive from the 3.5 inch drive carrier

Next step

Install a 3.5 inch drive into the 3.5 inch drive carrier.

Installing a 3.5 inch drive into the 3.5 inch drive carrier

Prerequisite

Follow the safety guidelines listed in Safety instructions.

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

Steps

1   Align the tabs on the drive carrier with the slots on the drive.

2   Pull the edges of the carrier to fit the drive.
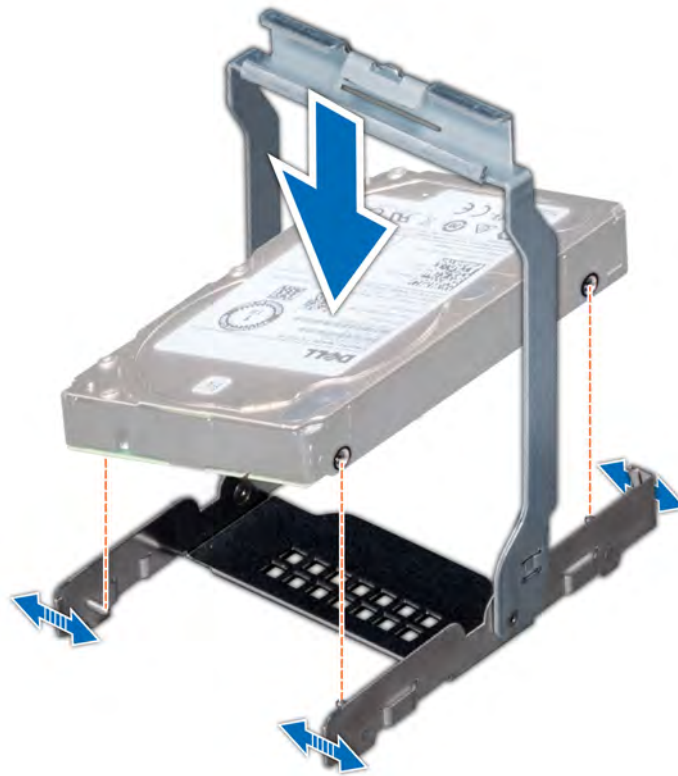
3   Lower the drive onto the drive carrier to secure it.

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Figure 43. Installing a 3.5 inch drive into the 3.5 inch drive carrier

Next steps

1   Install the drive carrier into the mid drive tray.
2   Follow the procedure listed in After working inside your system.

Removing a 2.5 inch drive from the 3.5 inch drive carrier

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove the drive carrier from the mid drive tray.

> △ | **CAUTION: To maintain proper system cooling, all empty drive slots must have drive blanks installed.**

Steps

1   Push out at the edges of the carrier to disengage the tabs on the drive carrier from the slots on the drive.
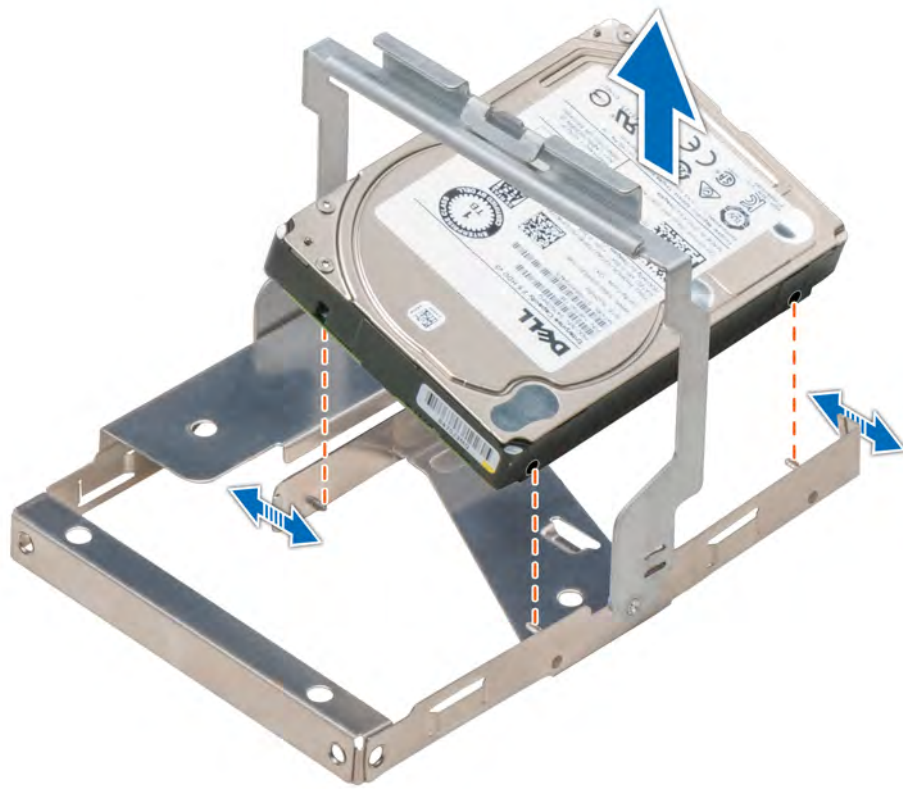2   Lift the drive carrier away from the drive.

Figure 44. Removing a 2.5 inch drive from the 3.5 inch drive carrier

Next step

Install a 2.5 inch drive into the 3.5 inch drive carrier.

Installing a 2.5 inch drive into the 3.5 inch drive carrier

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Align the tabs on the drive carrier with the slots on the drive.

2   Pull the edges of the carrier to fit over the drive.
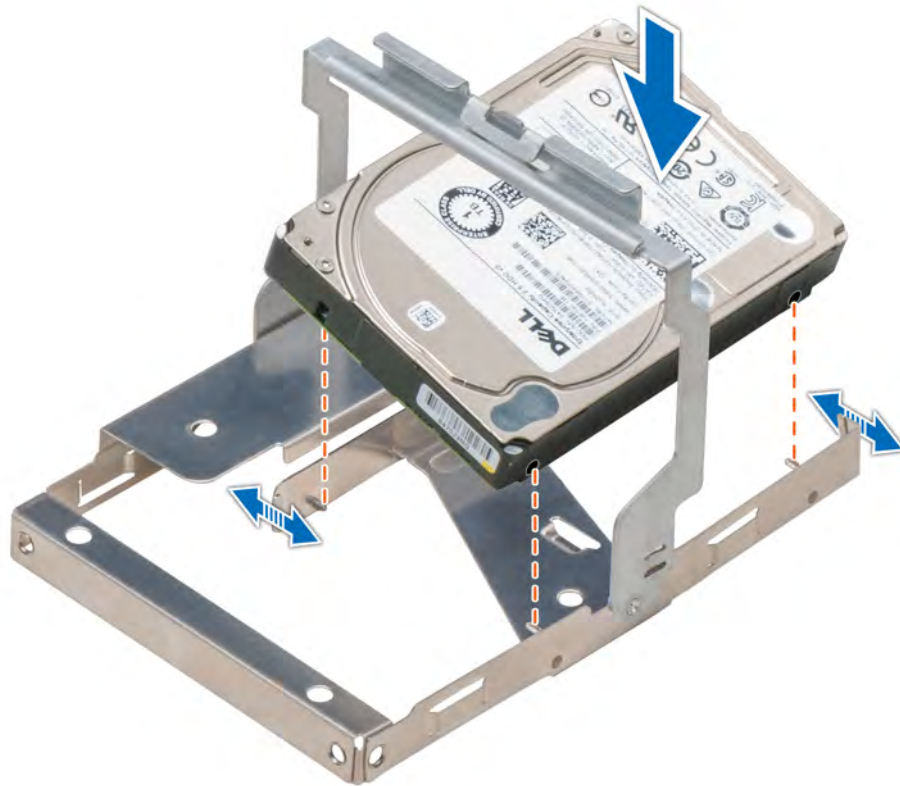
3   Lower the drive carrier onto the drive to secure it.

Figure 45. Installing a 2.5 inch drive into the 3.5 inch drive carrier

Next steps

1 Install the drive carrier into the mid drive tray.
2 Follow the procedure listed in After working inside your system.

Drives

Drives are supplied in hot swappable drive carriers that fit in the drive slots.

⚠ **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.**

⚠ **CAUTION: Do not turn off or restart your system while a drive is being formatted. Doing so can cause a drive failure.**

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

Removing a drive blank

The procedure for removing 2.5 inch and 3.5 inch drive blanks is identical.

Prerequisites

1 Follow the safety guidelines listed in 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.**

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

Step

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

Figure 46. Removing a drive blank

Next steps

1   Follow the procedure listed in After working inside your system.
2   Install a drive or Install a drive blank.

Installing a drive blank

The procedure for installing 2.5 inch and 3.5 inch drive blanks is identical.

Prerequisite

Follow the safety guidelines listed in Safety instructions.

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

Step

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

Figure 47. Installing a drive blank

Next step

If removed, install the front bezel.

Removing a drive carrier

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 If installed, 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 documentation for the storage controller.

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

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

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

Steps

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

Figure 48. Removing a drive carrier

Next steps

1 Follow the procedure listed in After working inside your system.
2 Install a drive carrier.
3 If you are not replacing the drive carrier immediately, insert a drive blank in the empty drive slot to maintain proper system cooling.

Installing a drive carrier

Prerequisites

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

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

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

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

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

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

1   Follow the safety guidelines listed in Safety instructions.
2   If installed, remove the drive blank.

Steps

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

Figure 49. Installing a drive carrier

Next step
If installed, install the front bezel.

Removing a 2.5 inch drive from the 3.5 inch drive adapter

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove 3.5 inch drive adapter from the 3.5 inch drive carrier.

(i) **NOTE: A 2.5 inch hot swappable drive is installed in a 3.5 inch drive adapter, which is then installed in the 3.5 inch hot swappable drive carrier.**

Steps

1   Using a Phillips #2 screwdriver, remove the screws from the side of the 3.5 inch drive adapter.
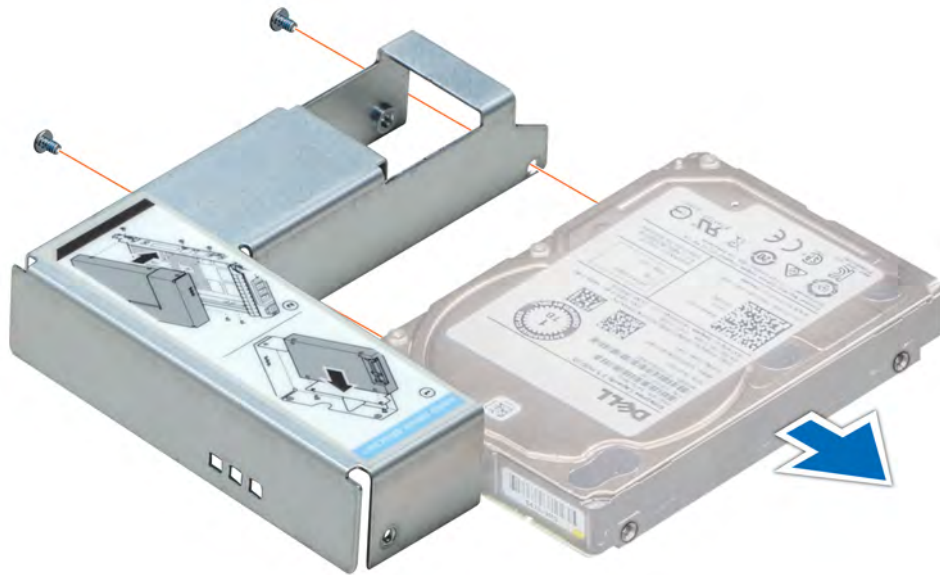2   Remove the drive from the 3.5 inch drive adapter.

Figure 50. Removing a 2.5 inch drive from the 3.5 inch drive adapter

Next step

Install a 2.5 inch drive into the 3.5 inch drive adapter.

Installing a 2.5 inch drive into the 3.5 inch drive adapter

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Align the screw holes on the 2.5 inch drive with the screw holes on the 3.5 inch drive adapter.
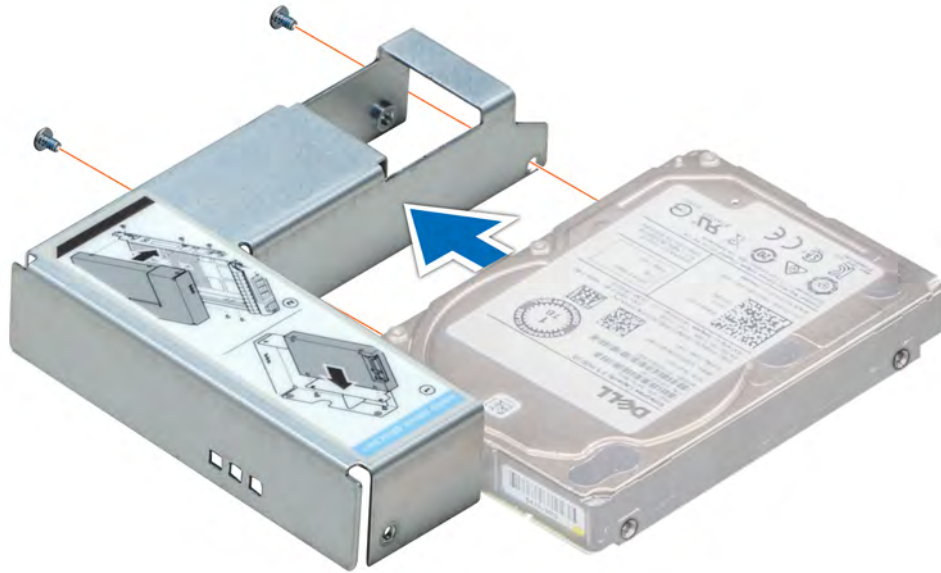2   Using a Phillips #2 screwdriver, install the screws to secure the drive to the 3.5 inch drive adapter.

Figure 51. Installing a 2.5 inch drive into the 3.5 inch drive adapter

Next steps

1 Install a 3.5 inch adapter into the 3.5 inch drive carrier.
2 Follow the procedure listed in After working inside your system.

Removing a 3.5 inch adapter from a 3.5 inch drive carrier

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your system.
3 Remove the 3.5 inch drive carrier from the system.

Steps

1 Remove the screws from the rails on the drive carrier.
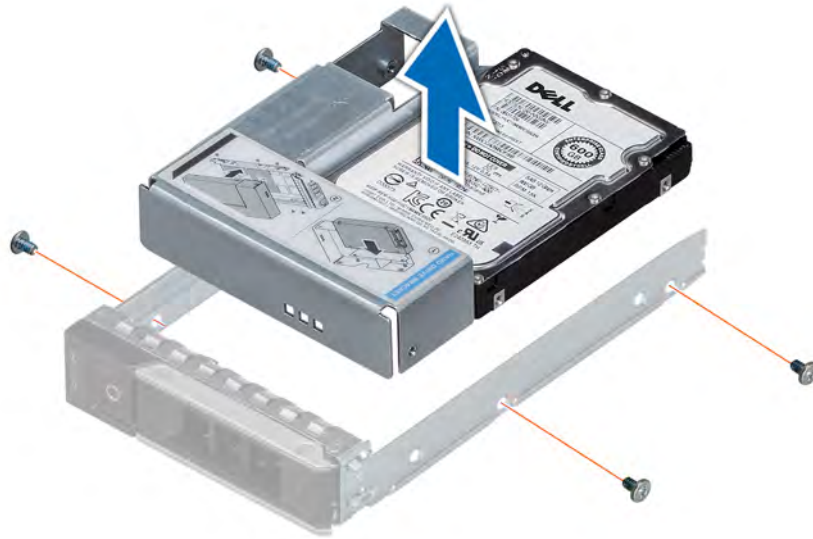2 Lift the 3.5 inch drive adapter out of the drive carrier.

Figure 52. Removing a 3.5 inch adapter from a 3.5 inch drive carrier

Next step

Install a 3.5 inch adapter into a 3.5 inch drive carrier.

Installing a 3.5 inch adapter into a 3.5 inch drive carrier

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Insert the 3.5 inch drive adapter into the drive carrier with the connector end of the drive toward the back of the drive carrier.

2 Align the screw holes on the drive with the holes on the drive carrier.

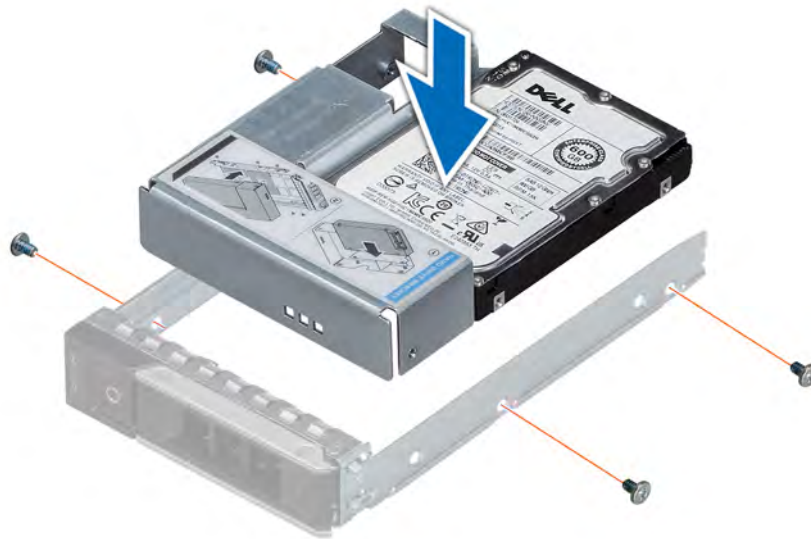3 Install the screws to secure the drive to the drive carrier.

Figure 53. Installing a 3.5 inch adapter into a 3.5 inch drive carrier

Next steps

1 Install the 3.5 inch drive carrier into the system.
2 Follow the procedure listed in After working inside your system.

Removing a drive from the drive carrier

Prerequisites

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

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

Steps

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

Figure 54. Removing a drive from the drive carrier

Next step

Install a drive into the drive carrier.

Installing a drive into the drive carrier

Prerequisite

Follow the safety guidelines listed in Safety instructions.

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

Steps

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

Figure 55. Installing a drive into the drive carrier

Next steps

1   If removed, install the front bezel.
2   Install the drive carrier.

Rear drive cage

The drive cage supports up to four 2.5 inch or two 3.5 inch drives.

Four 2.5 inch rear drive cage is supported only in 32 drives system configuration, and two 3.5 inch rear drive cage is supported only in 18 drives system configuration.

Removing the rear drive cage

The procedure for removing 2.5 inch and 3.5 inch drive cages is identical.

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove all the drives.
4   Disconnect all the cables from the rear drive backplane.

Steps

1   Using a Phillips #2 screwdriver, loosen the screws that secure the drive cage to the system.
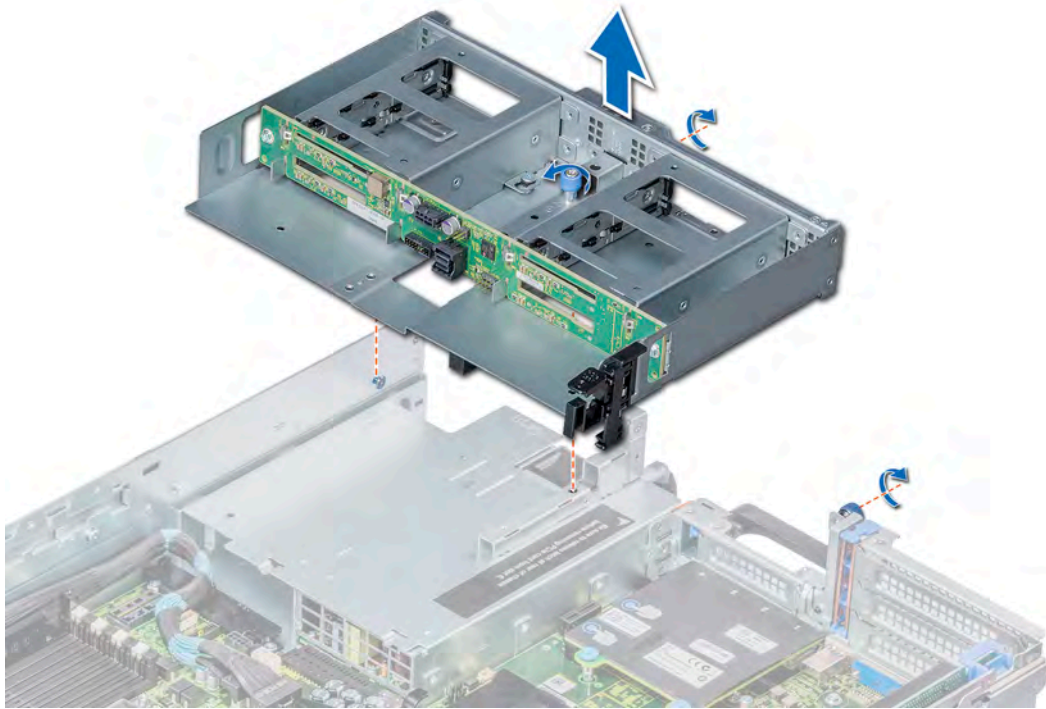2   Hold the drive cage by its sides, and lift it away from the system.

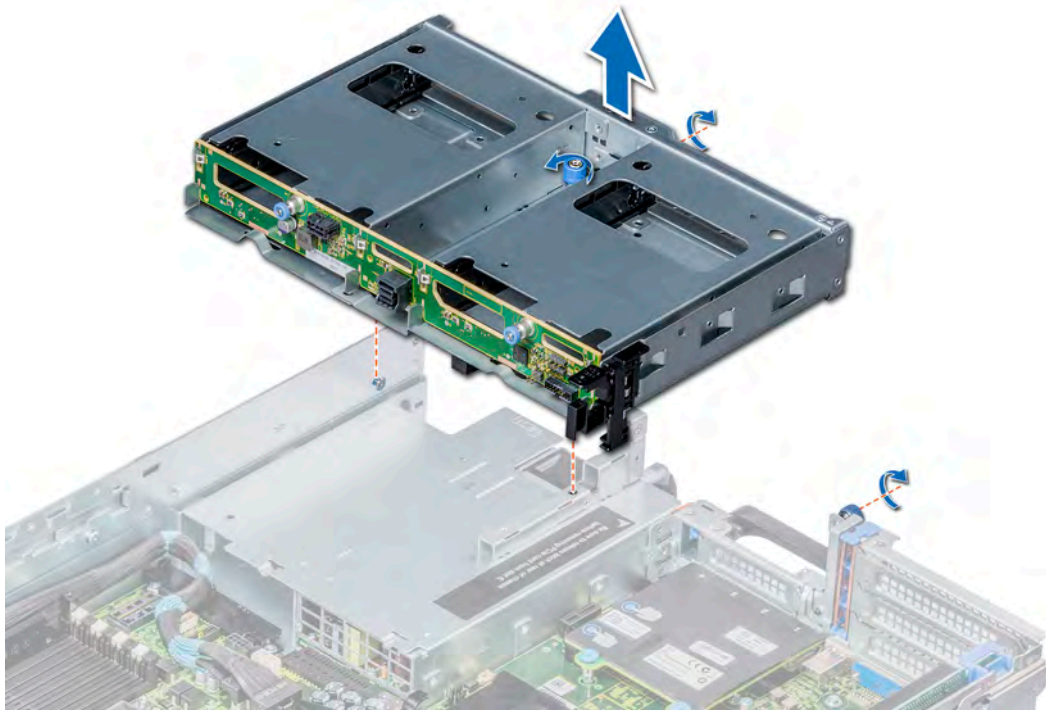**Figure 56. Removing a 4 × 2.5 inch rear hard drive cage**

Figure 57. Removing a 2 × 3.5 inch hard drive rear cage

Next step

Install the rear drive cage.

Installing the rear drive cage

The procedure for installing 2.5 inch and 3.5 inch rear drive cages is identical.

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Align the screws on the drive cage with the screw holes on the system.

2   Lower the drive cage into the system.

3   Using a Phillips #2 screwdriver, tighten the screws to secure the drive cage to the system.
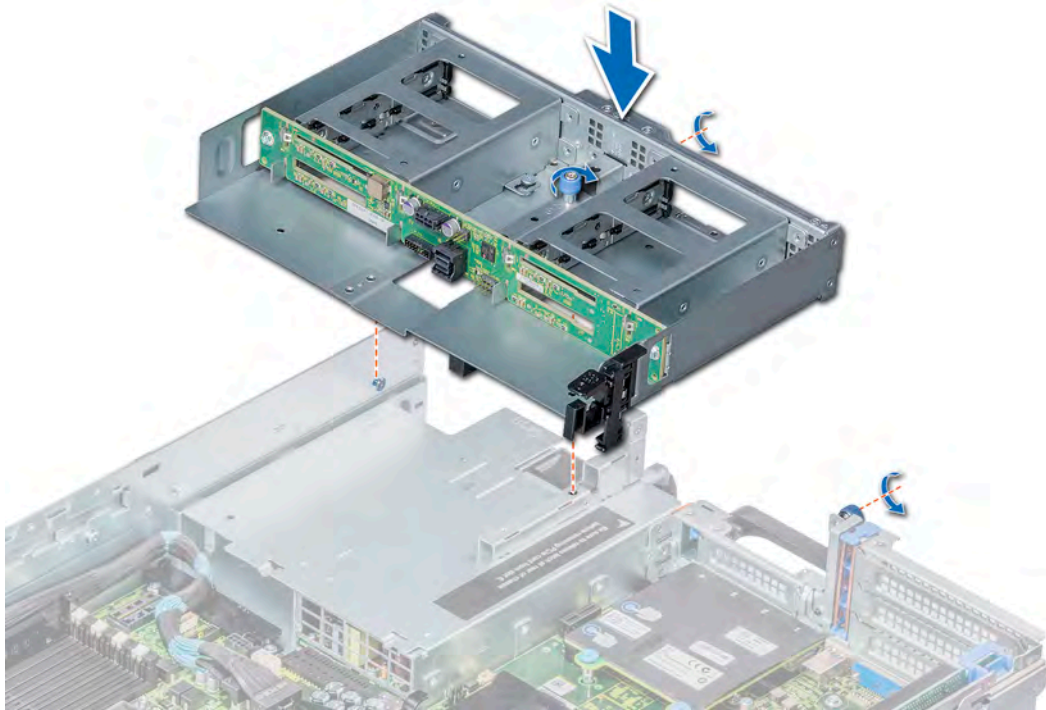

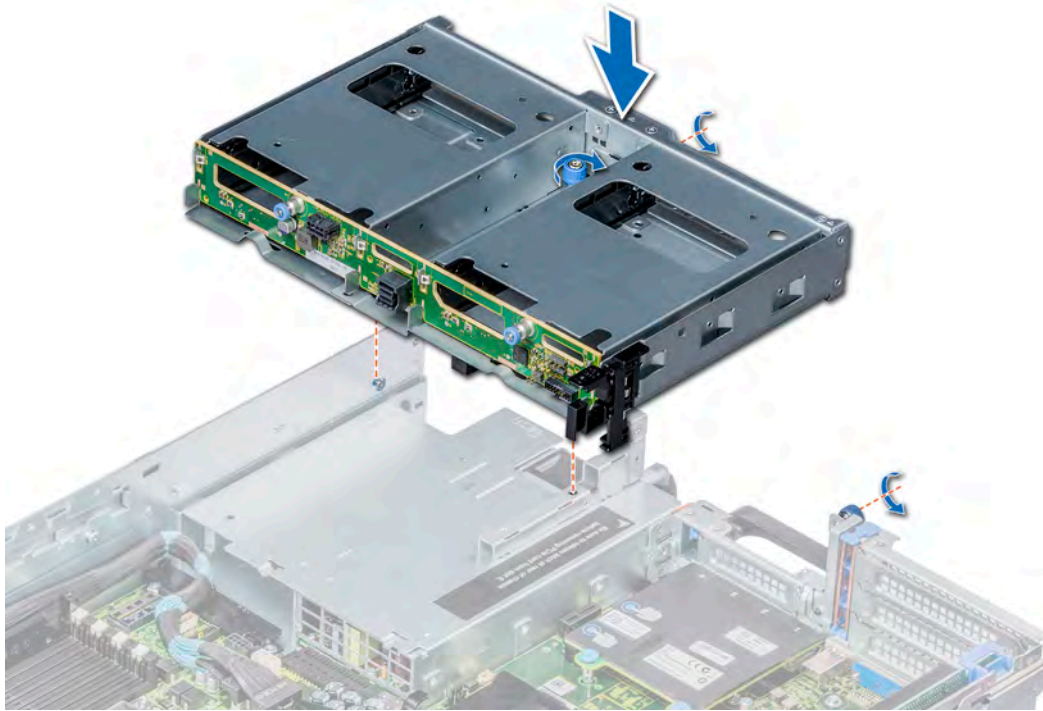**Figure 58. Installing a 4 x 2.5 inch rear hard drive cage**

Figure 59. Installing a 2 x 3.5 inch rear hard drive cage

Next steps

1 Connect all the cables to the rear drive backplane.
2 Install all the drives.
3 Follow the procedure listed in After working inside your system.

System memory

The system supports DDR4 registered DIMM (RDIMMs) slots and load reduced DIMM (LRDIMMs) slots. System memory holds the instructions that are executed by the processor.

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

Memory bus operating frequency can be 2666 MT/s, 2400 MT/s, 2133 MT/s, or 1866 MT/s depending on the following factors:

- DIMM type (RDIMM or LRDIMM)
- Number of DIMM slots populated per channel
- System profile selected (for example, Performance Optimized, or Custom [can be run at high speed or lower])
- Maximum supported DIMM frequency of the processors

ⓘ NOTE: For maximum DDR frequency of the processor, refer to AMD EPYC 7000 series table below.

Table 41. AMD EPYC 7000 Series datasheet

Model number	OPN	2P/1P	Cores	Threads	Base freq (Ghz)	All cores boost freq (Ghz)	Max boost freq (Ghz)	L3 (MB)	DDR channels	Max DDR freq (1DPC)	PCIe	TDP (W)
7601	PS7601BDVIHAF	2P OR 1P	32	64	2.20	2.70	3.20	64	8	2666	X128	180
7551	PS7551BDVIHAF	2P OR 1P	32	64	2.00	2.55	3.00	64	8	2666	X128	180
7501	PS7501BEVIHAF	2P OR 1P	32	64	2.00	2.60	3.00	64	8	2400/2666	X128	155/170
7451	PS7451BDVHCAF	2P OR 1P	24	48	2.30	2.90	3.20	64	8	2666	X128	180
7401	PS7401BEVHCAF	2P OR 1P	24	48	2.00	2.80	3.00	64	8	2400/2666	X128	155/170
7351	PS7351BEVGPAF	2P OR 1P	16	32	2.40	2.90	2.90	64	8	2400/2666	X128	155/170
7301	PS7301BEVGPAF	2P OR 1P	16	32	2.20	2.70	2.70	64	8	2400/2666	X128	155/170
7281	PS7281BEVGAAF	2P OR 1P	16	32	2.10	2.70	2.70	32	8	2400/2666	X128	155/170
7261	PS7261BEV8RAF	2P OR 1P	8	16	2.50	2.90	2.90	64	8	2400/2666	X128	155/170
7251	PS7251BFV8SAF	2P OR 1P	8	16	2.10	2.90	2.90	32	8	2400	X128	120

Your system contains 32 memory sockets split into two sets of 16 sockets, one set per processor. Each 16-socket set is organized into eight channels. In each channel, the release tabs of the first socket are marked white, and the second socket black.

> ⓘ **NOTE:** For optimal performance, it is recommended to populate one DIMM per channel with DDR4, 2666 MT/s memory modules on the first slot of each memory channel. The first slot of each channel can be identified as the DIMM slots with white latches. For example, 64 GB system memory capacity can be divided into 8 x 8 GB DIMM slots.

Table 42. Memory speed details

DIMM type	DIMM rank	DIMM capacity	DIMM rated voltage and speed	Operating Speed	
				1 DPC	2 DPC
RDIMM	1R	8 GB	DDR4 (1.2V), 2666 MT/s	2400 MT/s	1866 MT/s
RDIMM	2R	16 GB , 32 GB	DDR4 (1.2V), 2666 MT/s	2400 MT/s	1866 MT/s
LRDIMM	4R or 8R	64 or 128 GB*	DDR4 (1.2V), 2666 MT/s	2666 MT/s	2133 MT/s

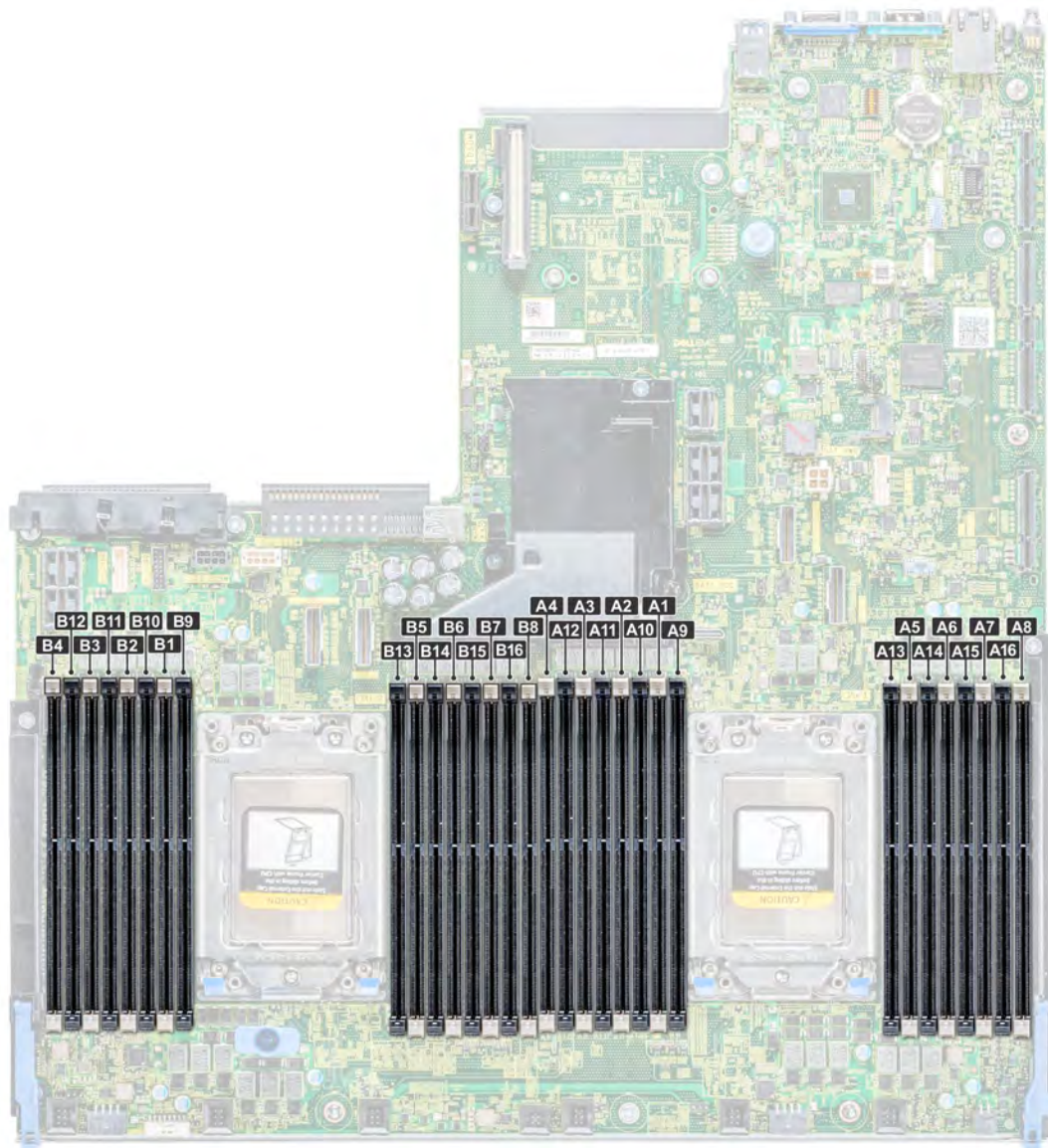* - Maximum DIMM capacity of 128 GB will be available at a later time.

Figure 60. Memory socket locations

Memory channels are organized as follows:

Table 43. Memory channels

Process or	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	Channel 7
Processor 1	Slots A1 and A9	Slots A2 and A10	Slots A3 and A11	Slots A4 and A12	Slots A5 and A13	Slots A6 and A14	Slots A7 and A15	Slots A8 and A16
Processor 2	Slots B1 and B9	Slots B2 and B10	Slots B3 and B11	Slots B4 and B12	Slots B5 and B13	Slots B6 and B14	Slots B7 and B15	Slots B8 and B16

General memory module installation guidelines

ⓘ **NOTE: If your system's memory configurations fail to observe these guidelines, your system might not boot, might stop responding during memory configuration, or might operate with reduced memory.**

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

- RDIMMs and LRDIMMs must not be mixed.
- x4 and x8 DRAM based memory modules cannot be mixed.
- Populate memory module sockets only if a processor is installed. For single-processor systems, sockets A1 to A16 are available. For dual-processor systems, sockets A1 to A16 and sockets B1 to B16 are available.
- Populate all the sockets with white release tabs first, followed by the black release tabs.
- In a dual-processor configuration, the memory configuration for each processor should be identical. For example, if you populate socket A1 for processor 1, then populate socket B1 for processor 2, and so on.
- Memory modules of different capacities is not supported.
- Populate eight memory modules per processor (one DIMM per channel) at a time to maximize performance.

ⓘ **NOTE: For optimal performance, it is recommended to populate one DIMM per channel with DDR4, 2666 MT/s memory modules on the first slot of each memory channel. The first slot of each channel can be identified as the DIMM slots with white latches. For example, 64 GB system memory capacity can be divided into 8 x 8 GB DIMM slots.**

Mode-specific guidelines

Eight memory channels are allocated to each processor. The configurations allowed depend on the memory mode selected.

Memory optimized independent channel mode

This mode supports Single Device Data Correction (SDDC) only for memory modules that use x4 device width. It does not impose any specific slot population requirements.

Table 44. Memory optimized (independent channel) mode

Processor	Configuration	Memory population rules	Memory population information
Single CPU	Optimized (independent channel) population order	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	Populate in this order, odd amount of DIMMs per CPU allowed.
Dual CPU (Starting with CPU1, CPU1 and CPU2 population should match)	Optimized (independent channel) population order	C1{1}, C2{1}, C1{2}, C2{2}, C1{3}, C2{3}...	Odd amount of DIMM slots per CPU allowed.

Removing a memory module

Prerequisites

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

4   If installed, remove the mid drive tray.

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

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

ⓘ **NOTE: You must follow the thermal restriction while using DIMM blank. For information about thermal restriction, see the Thermal restrictions section.**

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   Push the ejectors outward on both ends of the memory module socket to release the memory module from the socket.
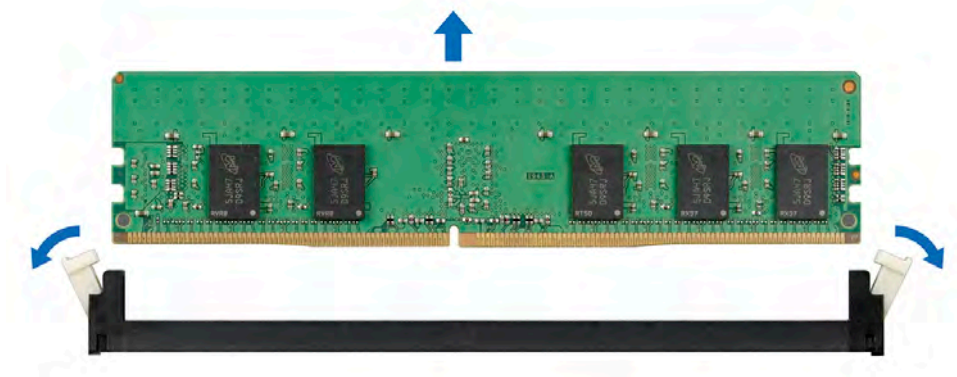
3   Lift and remove the memory module from the system.

Figure 61. Removing a memory module

Next steps

1   Install a memory module.

2   If you are removing the memory module permanently, install a memory module blank. The procedure to install a memory module blank is similar to that of the memory module.

ⓘ **NOTE: For single processor systems, install processor/DIMM blank on CPU2 socket.**

Installing a memory module

Prerequisites

Follow the safety guidelines listed in Safety instructions.

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

ⓘ **NOTE: You must follow the thermal restriction while using DIMM blank. For information about thermal restriction, see the Thermal restrictions section.**

Steps

1   Locate the appropriate memory module socket.

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

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

2   Open the ejectors on the memory module socket outward to allow the memory module to be inserted into the socket.

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

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

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

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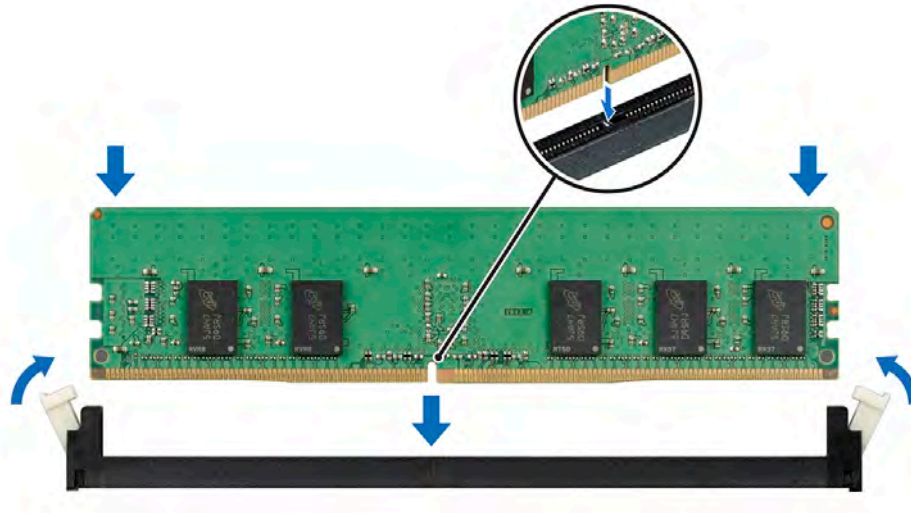

Figure 62. Installing a memory module

Next steps

1   Install the air shroud.
2   If removed, install the mid drive tray.
3   Follow the procedure listed in After working inside your system.
4   To verify if the memory module has been installed properly, press F2 and navigate to **System Setup Main Menu > System BIOS > Memory Settings**. In the **Memory Settings** screen, the System Memory Size must reflect the updated capacity of the installed memory.
5   If the value is incorrect, one or more of the memory modules may not be installed properly. Ensure that the memory module is firmly seated in the memory module socket.
6   Run the system memory test in system diagnostics.

Processors and heat sinks

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

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

Your system supports the following heat sinks:

- 2U heat sink (For 180/200W CPU in all PCIe card configurations)

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- 1U performance heat sink (For 180/200W CPU in mid drive tray configurations)
- 1U heat sink (For 120W-170W CPU)

Use the following procedures when:

- Removing and installing a heat sink
- Installing an additional processor
- Replacing a processor

(i) **NOTE: To ensure proper cooling, you must install a processor blank in any empty processor socket.**

Removing a heat sink

Prerequisites

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

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

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   If installed, remove the expansion cards.
4   Remove the air shroud.
5   If installed, remove the mid drive tray.

Steps

1   Using a Torx T20 screw driver, loosen the captive screw 4 on the heat sink. Allow some time (approximately 30 seconds) for the heat sink to loosen from the processor.

     The captive screw numbers are marked on the heat sink.

2   Loosen the captive screw 3 that is diagonally opposite to the screw 4.
3   Repeat the procedure for the remaining two captive screws 2 and 1.
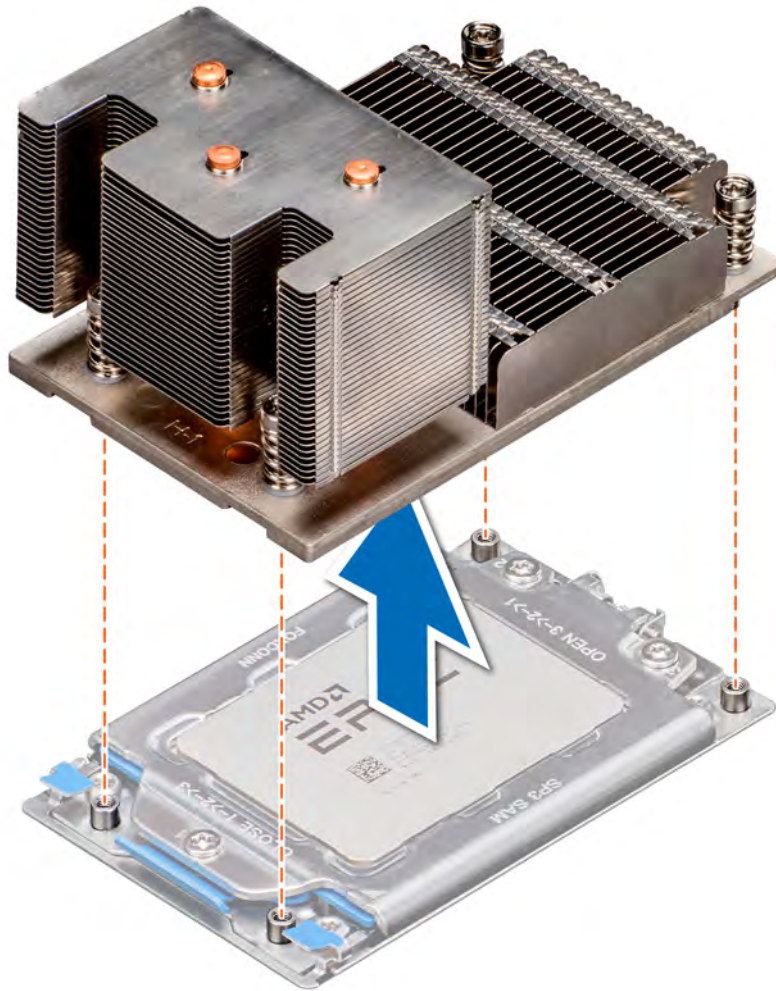4   Loosen all the captive screws in the sequence 4, 3, 2, 1 and lift the heat sink away from the system.

Figure 63. Removing a heat sink

Next step

Install the heat sink.

Removing the processor

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   If installed, remove the expansion cards.
4   Remove the air shroud.
5   If installed, remove the mid drive tray.
6   Remove the heat sink.

Steps

1   Using a Torx #T20 screwdriver, loosen the screws to release the processor socket cover. The sequence to loosen the screws is 3, 2, and 1.
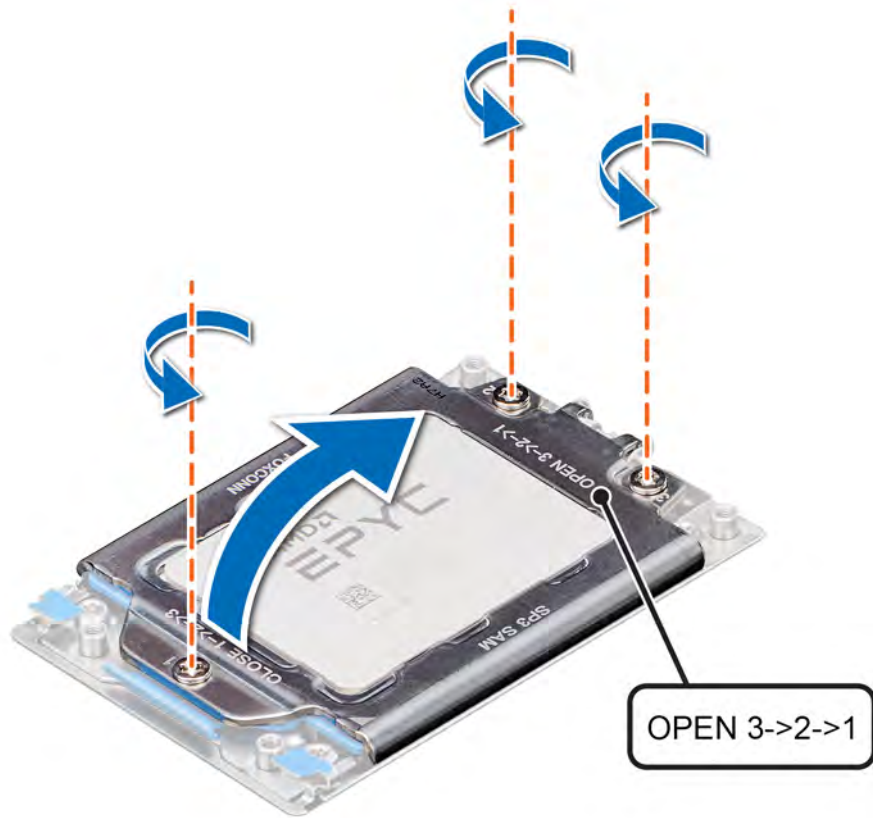
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Figure 64. Removing screws on the force plate

2   Release the processor socket frame by lifting up the blue latches.

Figure 65. Lifting the rail frame

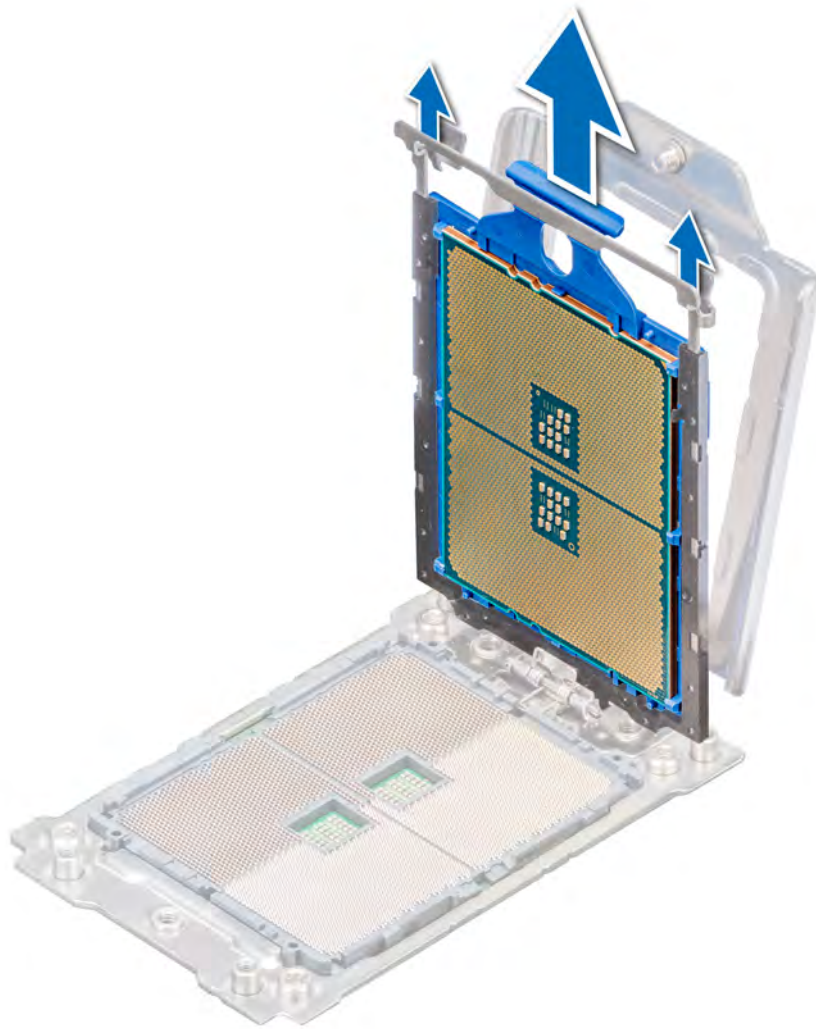3 Holding the blue tab on the processor tray, slide the tray out of the processor socket frame.

Figure 66. Removing the processor tray

4   If you are removing the processor permanently, install a processor blank. The procedure to install a processor blank is similar to that of the processor.

Figure 67. Installing a processor blank

Next step

Install the processor.

Installing the processor

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   If installed, remove the processor blank. The procedure to remove a processor blank is similar to that of the processor.

Figure 68. Removing a processor blank

2. Holding the blue tab on the processor tray, slide the tray into the processor socket frame until firmly seated.
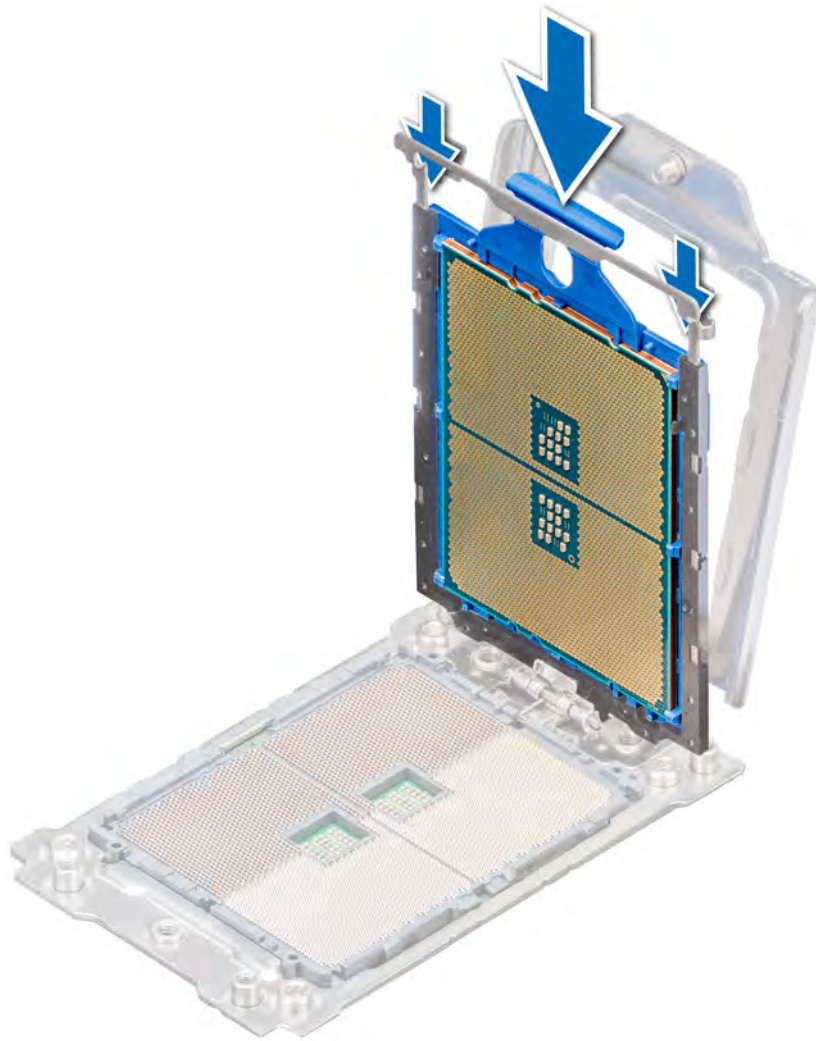
Figure 69. Placing the processor into the processor socket frame

3   Lower the rail frame down until the blue latches lock into place.

Figure 70. Closing the processor socket frame

4   Secure the processor socket cover to the processor socket base by tightening the screws in the sequence 1, 2, and 3. When all three screws are fully threaded, the socket is then actuated. The three screws are tightened to a torque value of 16.1 ± 1.2 kgf-cm (14.0 ± 1.0 lbf-in).

     ⓘ **NOTE: Press the force plate while tightening the screws to avoid tilting of the processor cover out of the processor socket.**
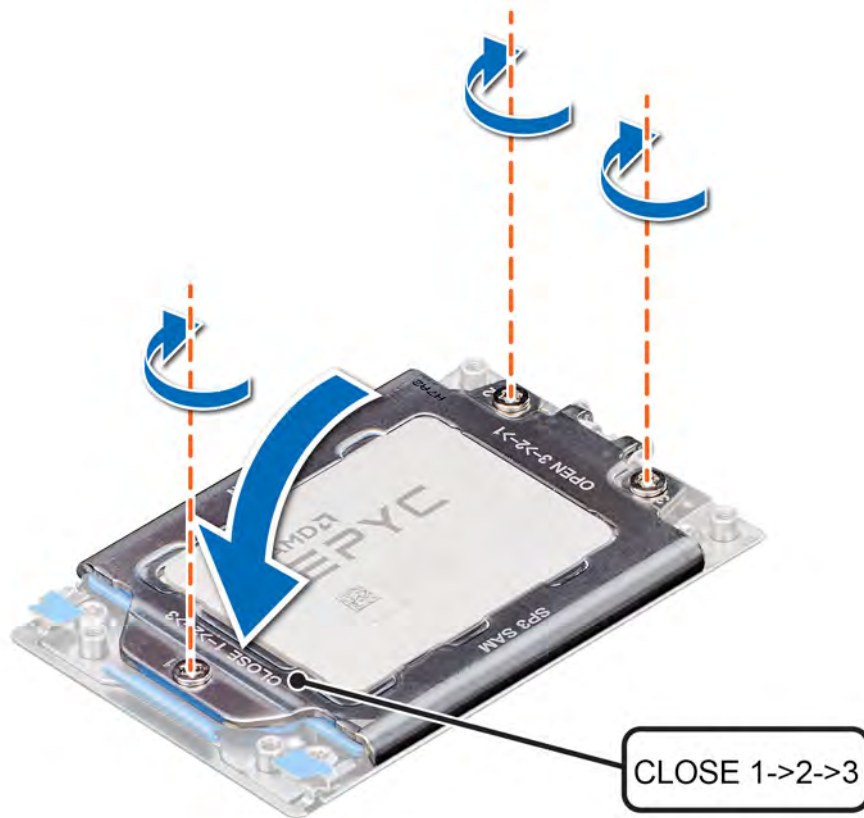
Figure 71. Securing the processor socket cover

Next steps

1 Install the heat sink.
2 Install the air shroud.
3 If removed, install the mid drive tray.
4 If removed, install the expansion cards.
5 Follow the procedure listed in After working inside your system.

Installing the heat sink

Prerequisite

⚠ **CAUTION: Never remove 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.**

Follow the safety guidelines listed in Safety instructions.

Steps

1 To install the heat sink, follow either of the options listed here, as applicable:

    a If you are re-using a heat sink, remove the thermal grease from the heat sink with a clean lint free cloth.

    b If you are using a new heat sink, the heat sink will have the thermal paste pre-applied to the heat sink. Remove the protective cover and install the heat sink.

2 If required, use the thermal grease syringe included with your processor kit to apply the grease on the top of the processor.

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

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

3   Orient the heat sink with the screw holes on the processor plate. The captive screws on the heat sink should align with the screw holes on the processor plate.

4   Using a Torx #T20 screwdriver, tighten the captive screw 1 to secure the heat sink to the system board.

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

5   Tighten the captive screw 2 that is diagonally opposite to the screw 1.

6   Repeat the procedure for the remaining captive screws 3 and 4.

7   Tighten all the captive screws in the sequence 1, 2, 3, 4.
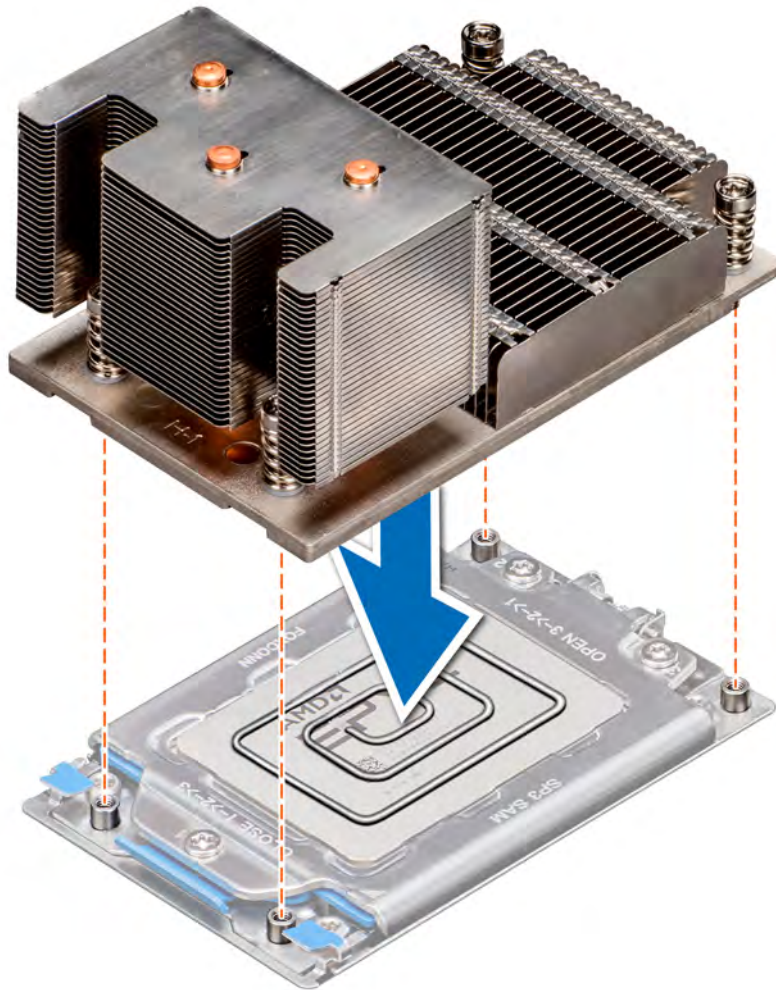
Figure 72. Installing the heat sink

Next steps

1   Install the air shroud.
2   If removed, install the mid drive tray.
3   If removed, install the expansion cards.

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

Expansion cards and expansion card risers

An expansion card in the system is an add-on card that can be inserted into an expansion slot on the system board or riser card to add enhanced functionality to the system through the expansion bus.

> (i) **NOTE: A System Event Log (SEL) event is logged if an expansion card riser is not supported or missing. It does not prevent your system from turning on. However, if F1/F2 pause occurs and an error message is displayed.**

Expansion card installation guidelines

The PowerEdge R7425 system supports up to eight PCI express (PCIe) generation 3 expansion cards, that can be installed on the system board using expansion card risers. The following table provides detailed information about the expansion card riser specifications:

Table 45. Expansion card riser specifications

Riser configuration and supported risers	Slot description	PCIe slots on riser (Height and length)	Processor connection
Riser configuration 0 (No riser) Without rear storage	No PCIe slots and rear storage	N/A	N/A
Riser configuration 1 (1D) With or without rear storage	Two x8 and one x16 slots	Slot 1: x16 full-height, full length	Processor 1
		Slot 2: x8 full-height, full length	Processor 1
		Slot 3: x8 full-height, half length	Processor 1
Riser configuration 2 (1D+2C) With or without rear storage	Two x8 and two x16 slots	Slot 1: x16 full-height, full length	Processor 1
		Slot 2: x8 full-height, full length	Processor 1
		Slot 3: x8 full-height, half length	Processor 1
		Slot 4: x16 low profile, half length	Processor 2
Riser configuration 3 (1D+2D)	Three x8 and three x16 slots	Slot 1: x16 full-height, full length	Processor 1
		Slot 2: x8 full-height, full length	Processor 1
		Slot 3: x8 full-height, half length	Processor 1
		Slot 4: x16 full-height, full length	Processor 1
		Slot 5: x16 full-height, full length	Processor 2
		Slot 6: x8 low profile, half length	Processor 2
Riser configuration 4 (1A+2A +3A)	Two x8 and four x16 slots	Slot 1: x16 full-height, full length	Processor 1
		Slot 3: x16 full-height, half length	Processor 1
		Slot 4: x16 full-height, full length	Processor 2
		Slot 6: x8 low profile, half length	Processor 2
		Slot 7: x8 full-height, full length	Processor 2
		Slot 8: x16 full-height, full length	Processor 2
Riser configuration 5 (1D+2A +3A)	Four x8 and three x16 slots	Slot 1: x16 full-height, full length	Processor 1
		Slot 2: x8 full-height, full length	Processor 1

Riser configuration and supported risers	Slot description	PCIe slots on riser (Height and length)	Processor connection
		Slot 3: x8 full-height, half length	Processor 1
		Slot 4: x16 full-height, full length	Processor 2
		Slot 6: x8 low profile, half length	Processor 2
		Slot 7: x8 full-height, full length	Processor 2
		Slot 8: x16 full-height, full length	Processor 2
		Slot1: x16 full-height, full length	Processor 1
		Slot 2: x16 full-height, full length	Processor 1
Riser configuration 6 (1E+2D +3B)	One x8 and six x16 slots	Slot 4: x16 full-height, full length	Processor 1
		Slot 5: x16 full-height, full length	Processor 2
		Slot 6: x8 low profile, half length	Processor 2
		Slot 7: x16 full-height, full length	Processor 2
		Slot 8: x16 full-height, full length	Processor 2
		Slot 1: x16 full-height, full length	Processor 1
		Slot 2: x8 full-height, full length	Processor 1
		Slot 3: x8 full-height, half length	Processor 1
Riser configuration 7 (1D+2D +3B)	Three x8 and five x16 slots	Slot 4: x16 full-height, full length	Processor 1
		Slot 5: x16 full-height, full length	Processor 2
		Slot 6: x8 low profile, half length	Processor 2
		Slot 7: x16 full-height, full length	Processor 2
		Slot 8: x16 full-height, full length	Processor 2
		Slot 1: x16 full-height, full length	Processor 1
		Slot 3: x16 full-height, half length	Processor 1
Riser configuration 8 (1A+2E +3A)	Two x8 and four x16 slots	Slot 4: x16 full-height, full length	Processor 2
		Slot 6: x8 low profile, half length	Processor 2
		Slot 7: x8 full-height, full length	Processor 2
		Slot 8: x16 full-height, full length	Processor 2
		Slot 1: x16 full-height, full length	Processor 1
		Slot 2: x8 full-height, full length	Processor 1
		Slot 3: x8 full-height, half length	Processor 1
Riser configuration 9 (1D+2E +3A)	Four x8 and three x16 slots	Slot 4: x16 full-height, full length	Processor 2
		Slot 6: x8 low profile, half length	Processor 2
		Slot 7: x8 full-height, full length	Processor 2
		Slot 8: x16 full-height, full length	Processor 2

Table 46. Riser configurations with 4 PCIe slots [Riser configuration 1 with or without rear storage (1D) and Riser configuration 2 with or without rear storage (1D+2C)]

Card Type	Slot priority	Maximum number of cards
Internal storage adapter	3	1
HCA EDR	1	1
HCA EDR	4	1
HBA FC32	2, 1	2
HBA FC32	4	1
25 GB NIC	2, 1	2
25 GB NIC	4	1
HBA FC16	2, 1	2
HBA FC16	4	1
10 GB NIC	2, 1	2
10 GB NIC	4	1
HBA FC8	2, 1	2
HBA FC8	4	1
1 GB NIC	2, 1	2
1 GB NIC	4	1
External storage adapter	2, 1	2
External storage adapter	4	1
NDC	Integrated Slot	1
BOSS	2, 1	1

Table 47. Riser configurations with greater than 4 PCIe slots [Riser configuration 3 (1D+2D), Riser configuration 4 (1A+2A+3A), Riser configuration 5 (1D+2A+3A), Riser configuration 6 (1E+2D+3B), Riser configuration 7 (1D+2D+3B), Riser configuration 8 (1A+2E+3A) and Riser configuration 9 (1D+2E+3A)]

Card Type	Slot priority	Maximum number of cards
Internal storage adapter	3	1
Internal storage adapter	6	1
HCA EDR	1, 4, 5	3
HCA EDR	3, 1, 8, 4	4
HCA EDR	1, 8, 4	3
HCA EDR	1, 8, 4, 2, 7, 5	6
HCA EDR	7, 8, 1, 4, 5	5
HBA FC32	2, 1, 4, 5	4
HBA FC32	6	1
HBA FC32	7, 3, 1, 8, 4	5

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Card Type	Slot priority	Maximum number of cards
HBA FC32	7, 2, 1, 8, 4	5
HBA FC32	1, 8, 4, 2, 7, 5	6
HBA FC32	2, 1, 4, 5, 7, 8	6
25 GB NIC	2, 1, 4, 5	4
25 GB NIC	6	1
25 GB NIC	7, 3, 1, 8, 4	5
25 GB NIC	7, 2, 1, 8, 4	5
25 GB NIC	1, 8, 4, 2, 7, 5	6
25 GB NIC	2, 1, 4, 5, 7, 8	6
HBA FC16	2, 1, 4, 5	4
HBA FC16	6	1
HBA FC16	7, 3, 1, 8, 4	5
HBA FC16	7, 2, 1, 8, 4	5
HBA FC16	1, 8, 4, 2, 7, 5	6
HBA FC16	2, 1, 4, 5, 7, 8	6
10 GB NIC	2, 1, 4, 5	4
10 GB NIC	6	1
10 GB NIC	7, 3, 1, 8, 4	5
10 GB NIC	7, 2, 1, 8, 4	5
10 GB NIC	1, 8, 4, 2, 7, 5	6
10 GB NIC	2, 1, 4, 5, 7, 8	6
HBA FC8	2, 1, 4, 5	4
HBA FC8	6	1
HBA FC8	7, 3, 1, 8, 4	5
HBA FC8	7, 2, 1, 8, 4	5
HBA FC8	1, 8, 4, 2, 7, 5	6
HBA FC8	2, 1, 4, 5, 7, 8	6
1 GB NIC	2, 1, 4, 5	4
1 GB NIC	6	1
1 GB NIC	7, 3, 1, 8, 4	5
1 GB NIC	7, 2, 1, 8, 4	5
1 GB NIC	1, 8, 4, 2, 7, 5	6
1 GB NIC	2, 1, 4, 5, 7, 8	6
External storage adapter	2, 1, 4, 5	2
External storage adapter	6	1
External storage adapter	7, 3, 1, 8, 4	2

Card Type	Slot priority	Maximum number of cards
External storage adapter	7, 2, 1, 8, 4	2
External storage adapter	1, 8, 4, 2, 7, 5	2
External storage adapter	2, 1, 4, 5, 7, 8	2
NDC	Integrated Slot	1
BOSS	2, 1, 4, 5	1
BOSS	7, 3, 1, 8, 4	1
BOSS	7, 2, 1, 8, 4	1
BOSS	1, 8, 4, 2, 7, 5	1
BOSS	2, 1, 4, 5, 7, 8	1

ⓘ | **NOTE: For information about slot form factor, see the Expansion card riser specifications table.**

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

ⓘ | **NOTE: Ensure that x16 cards are installed only in x16 slots.**

Opening and closing the PCIe card holder latch

Before installing or removing a full length PCIe card, the PCIe card holder latch must be closed. When the full length PCIe card is installed, open the PCIe card holder latch.

Prerequisites

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

Steps

1   To open the PCIe card holder latch, press the PCIe lock.

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Figure 73. Opening the PCIe card holder latch

2   To close the PCIe card holder latch, push the latch until it locks in place.

Figure 74. Closing the PCIe card holder latch

Next step

Follow the procedure listed in After working inside your system.

Removing expansion card from the expansion card riser

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove the air shroud.
4   If applicable, disconnect the cables from the expansion card.
5   When removing an expansion card from riser 2 or 3, ensure that the PCIe card holder latch is closed.

Steps

1   Lift the expansion card latch out of the slot.
2   Hold the expansion card by its edges, and pull the card until the card edge connector disengages from the expansion card connector on the riser.
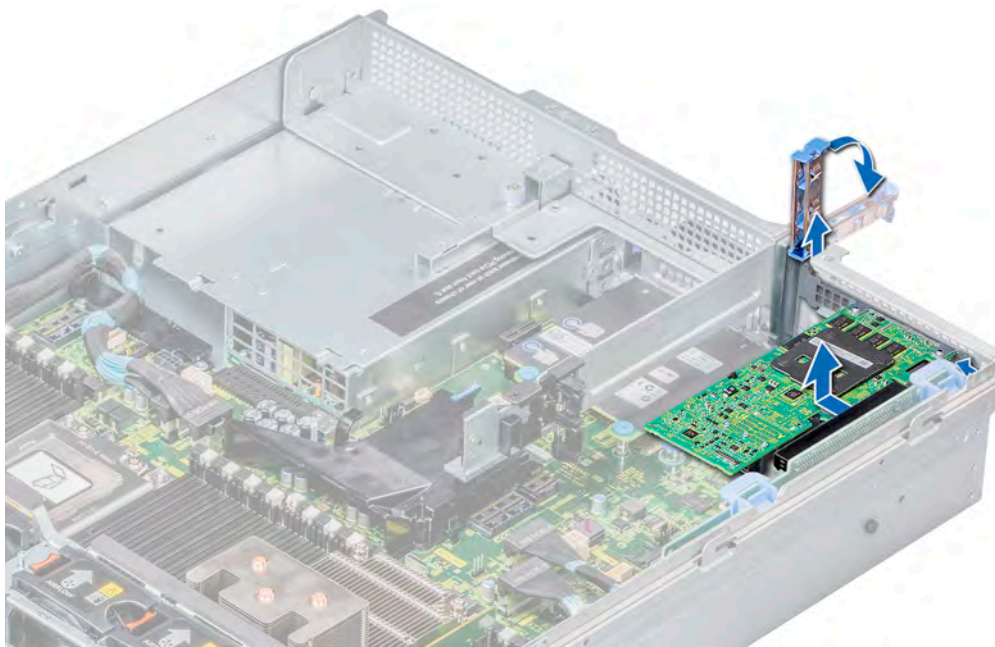
Figure 75. Removing expansion card from expansion card riser 1
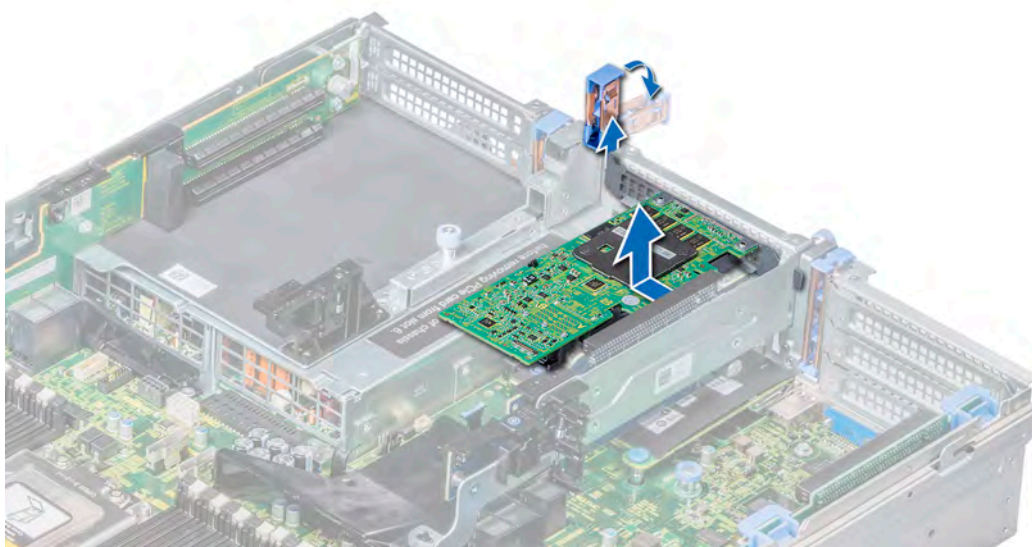
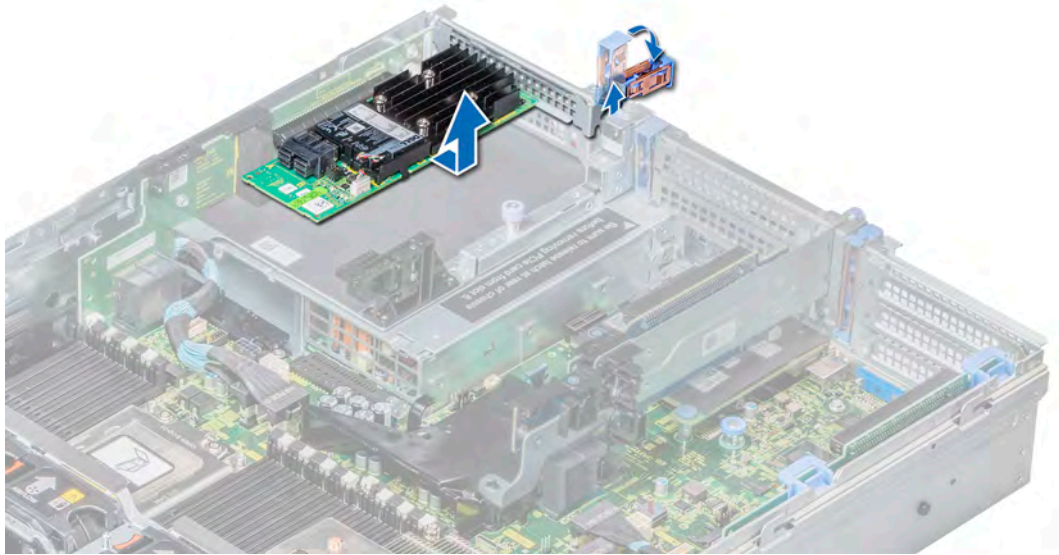**Figure 76. Removing expansion card from expansion card riser 2**

Figure 77. Removing expansion card from expansion card riser 3

3   If you are not going to replace the expansion card, install a metal filler bracket over the empty expansion slot opening and lower the expansion card latch.

ⓘ **NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.**
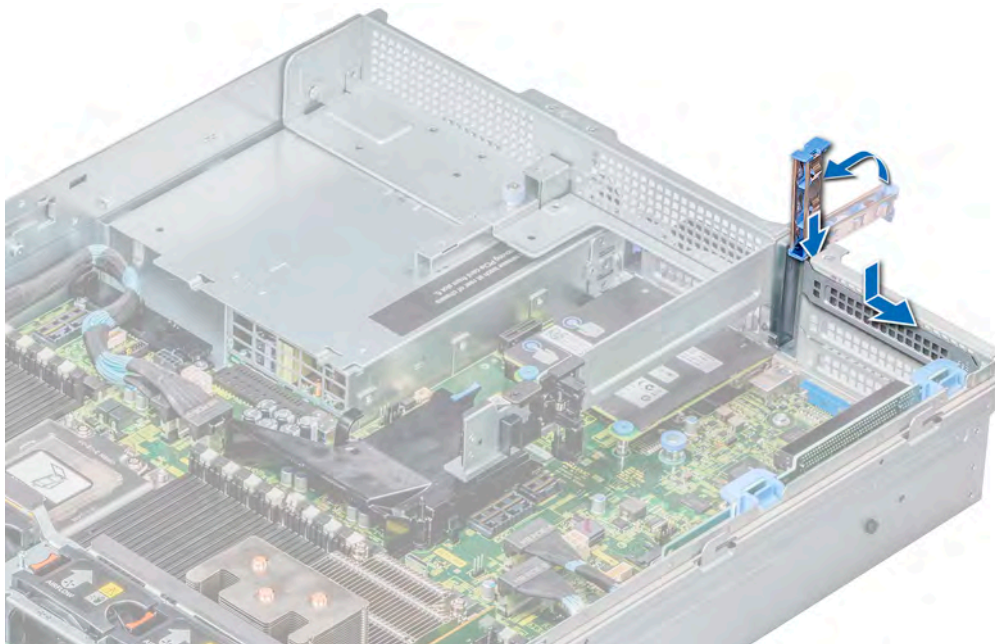
Figure 78. Installing a filler bracket for riser 1
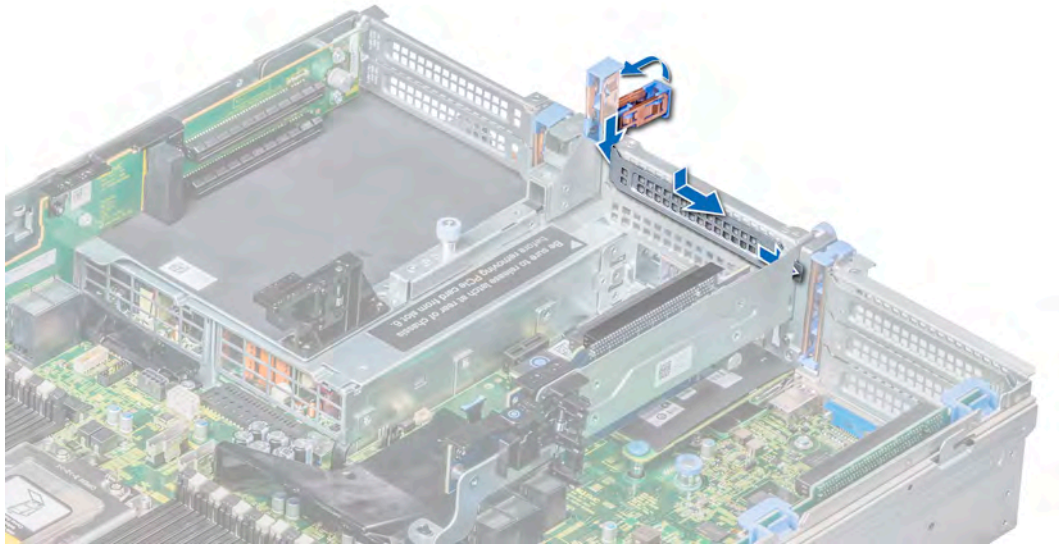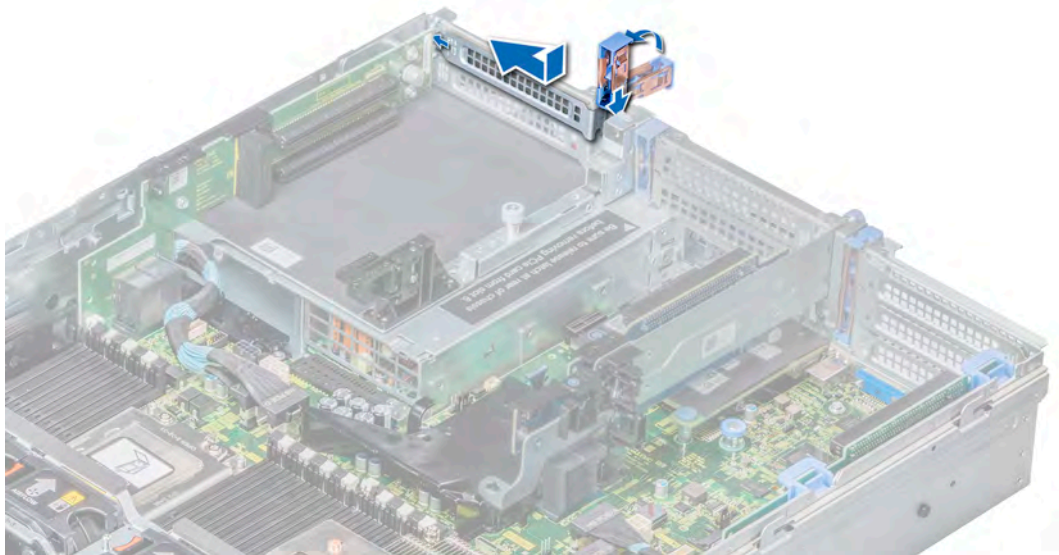
Figure 79. Installing a filler bracket for riser 2

Figure 80. Installing a filler bracket for riser 3

Next step

Install expansion card into the expansion card riser.

Installing expansion card into the expansion card riser

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.

2   If installing a new expansion card, unpack it and prepare the card for installation.

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

3   When installing a card into riser 2 or 3, open the PCIe card holder latch.

Steps

1   Lift the expansion card latch.

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.**
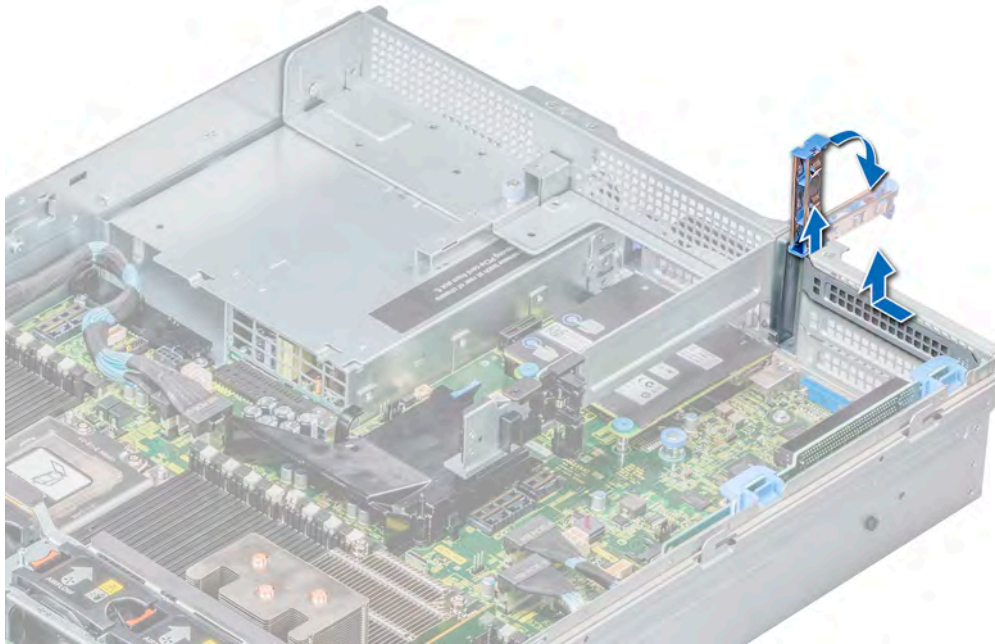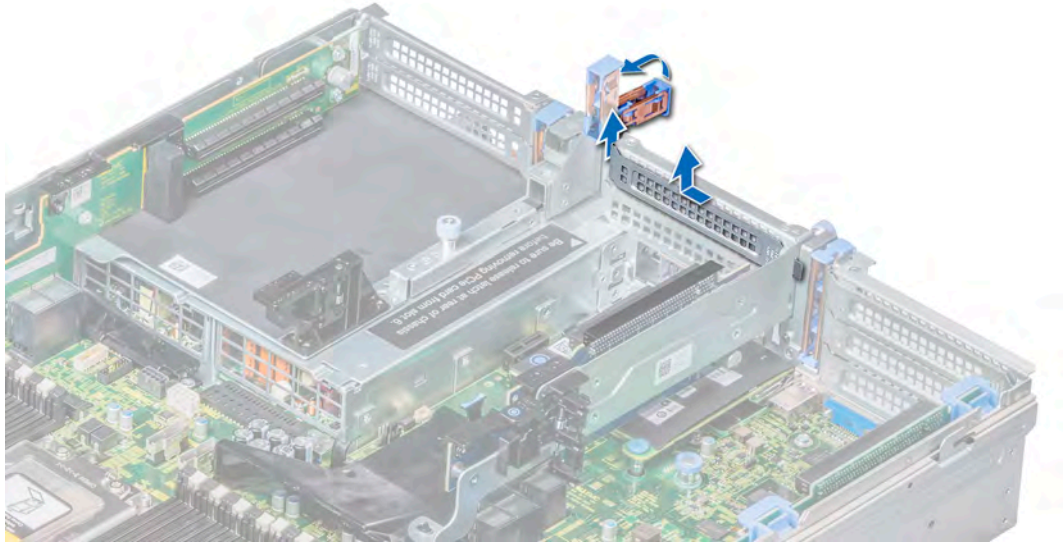

Figure 81. Removing a filler bracket for riser 1

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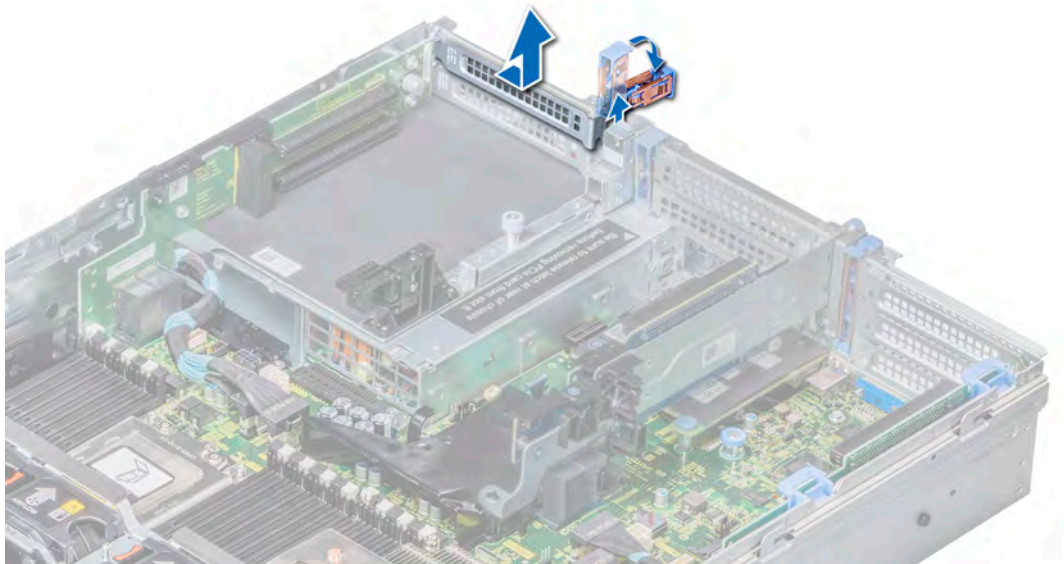**Figure 82. Removing a filler bracket for riser 2**

Figure 83. Removing a filler bracket for riser 3

3   Hold the card by its edges, and align the card edge connector with the expansion card connector on the riser.
4   Insert the card edge connector firmly into the expansion card connector until the card is fully seated.
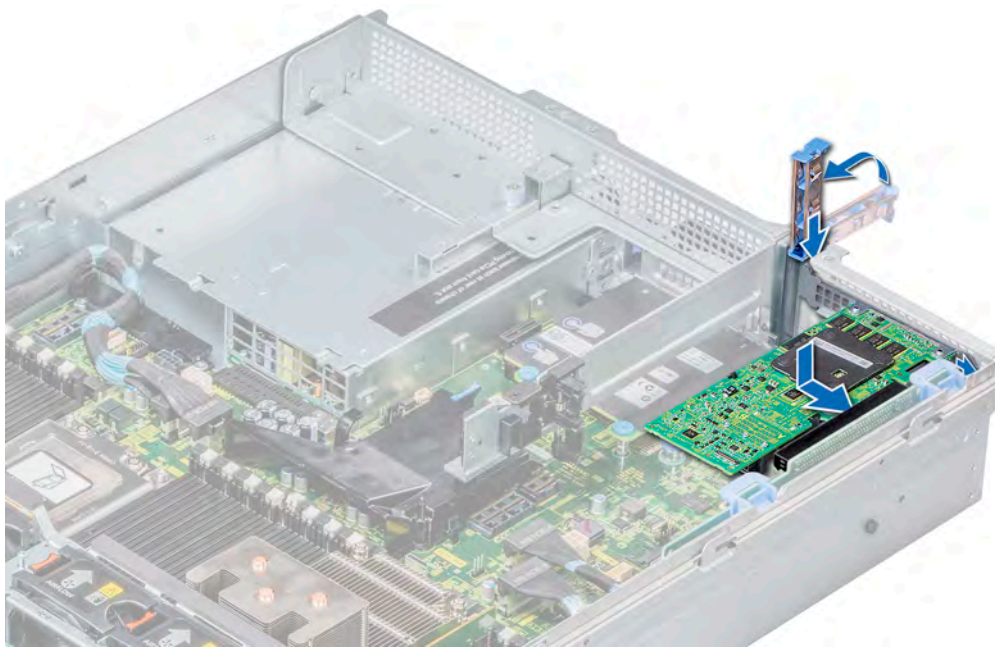5   Lower the expansion card latch to lock the card in place.

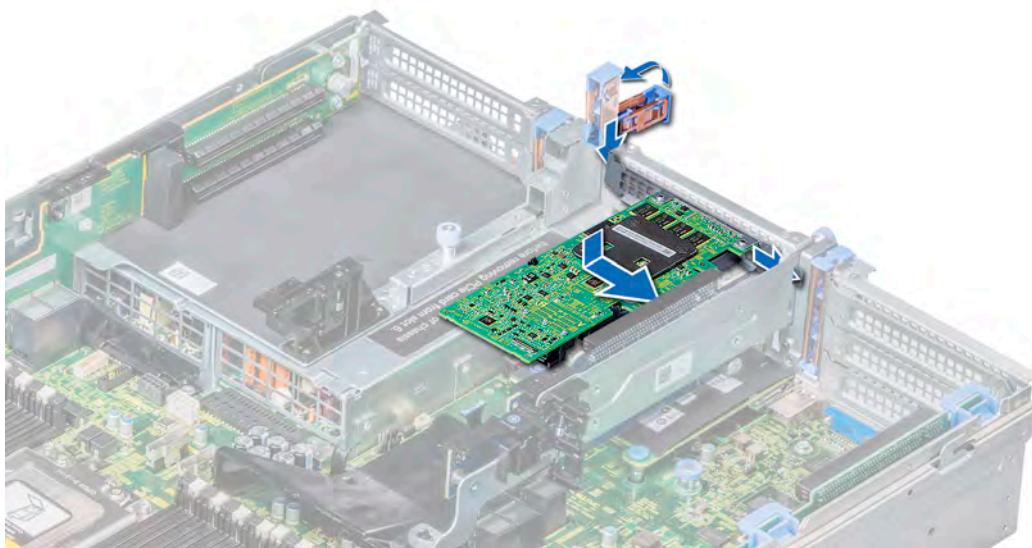Figure 84. Installing expansion card into the expansion card riser 1

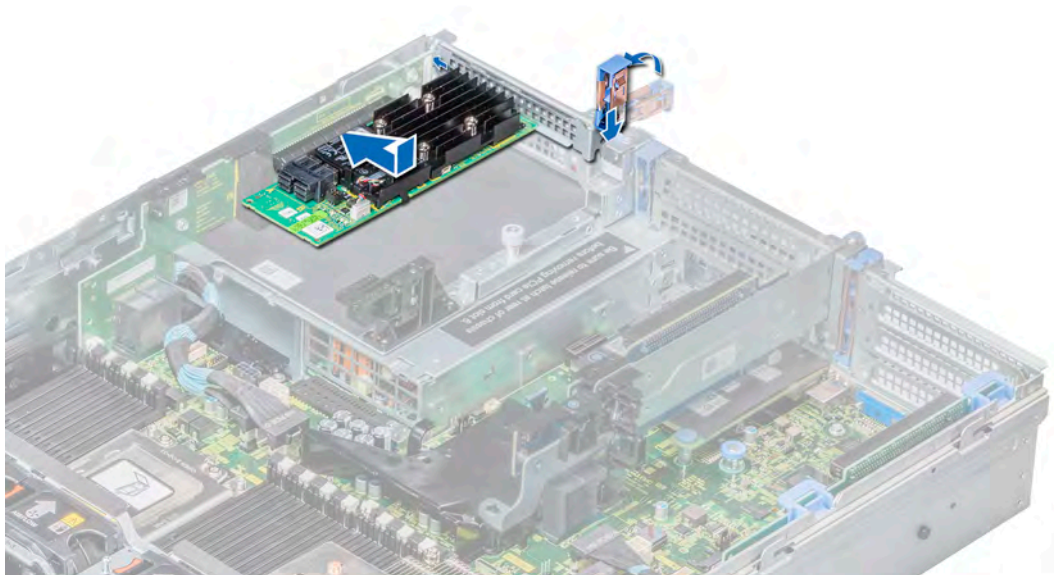Figure 85. Installing expansion card into the expansion card riser 2

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Figure 86. Installing expansion card into the expansion card riser 3

Next steps

1 If applicable, connect the cables to the expansion card.
2 If removed, install the 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 the riser 2 and 3 blank

Prerequisites

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

Steps
1 Using a Phillips #2 screwdriver, loosen the screws that secure the blank to the system.
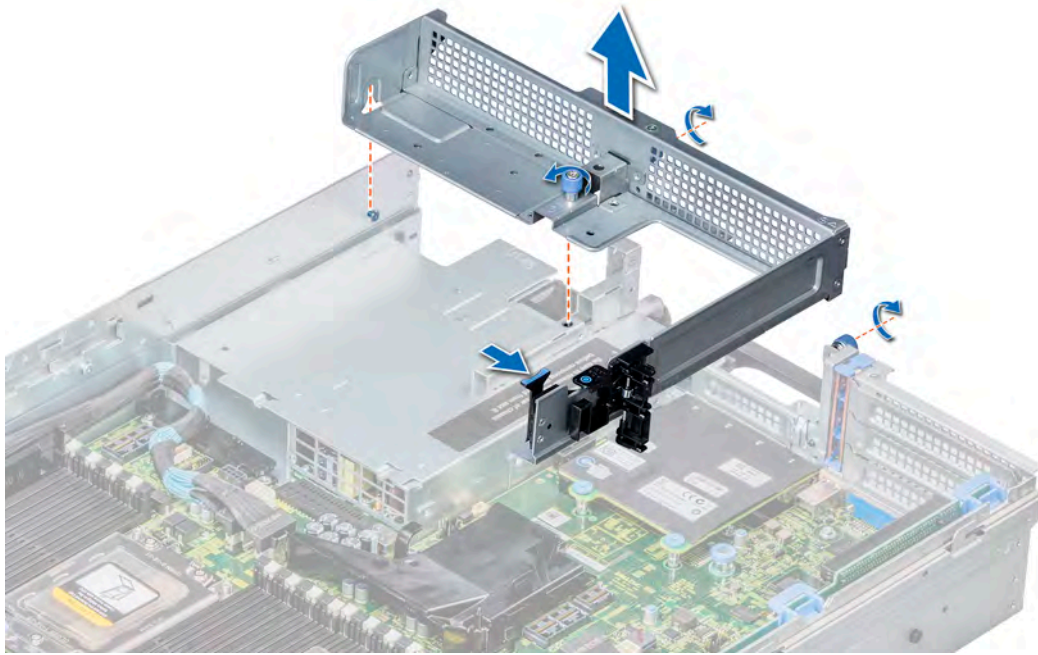2 Press the release tab, and holding the blank by its edges, lift the blank away from the system.

Figure 87. Removing the riser 2 and 3 blank

Next step

Install the riser 2 and 3 blank.

Installing the riser 2 and 3 blank

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Align the screw and guide rail on the riser blank with the screw hole and standoff on the system.

2 Lower the blank into the system until the release tab clicks into place.

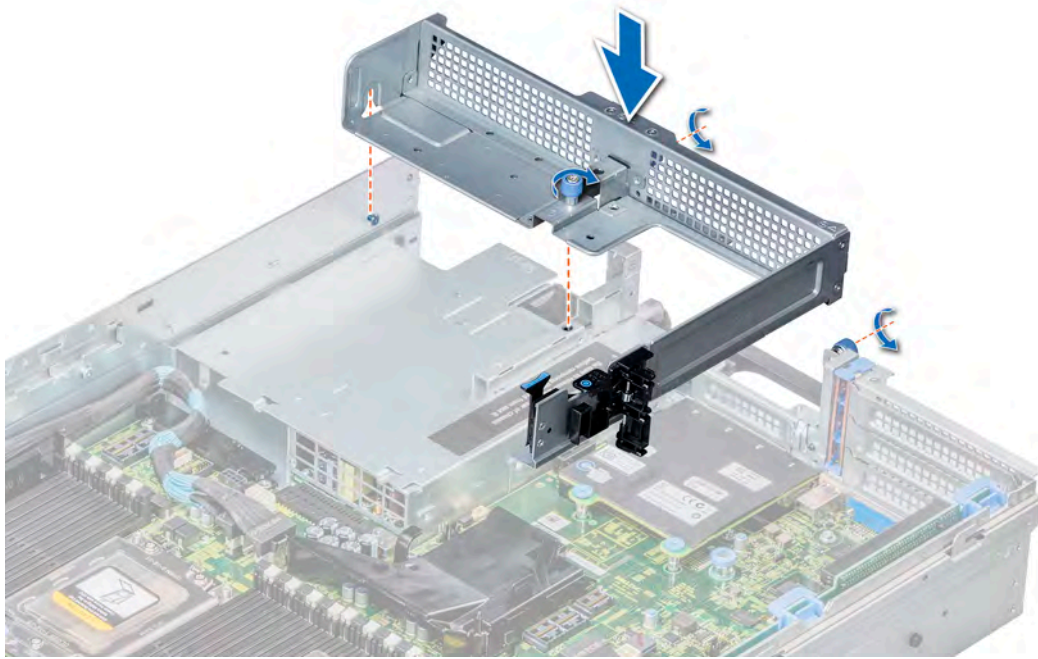3 Tighten the screws to secure the riser blank to the system.

Figure 88. Installing the riser 2 and 3 blank

Next steps

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

Removing the riser 3 blank

Prerequisites

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

Steps

1   Using a Phillips #2 screwdriver, loosen the screw that secures the blank to the system.
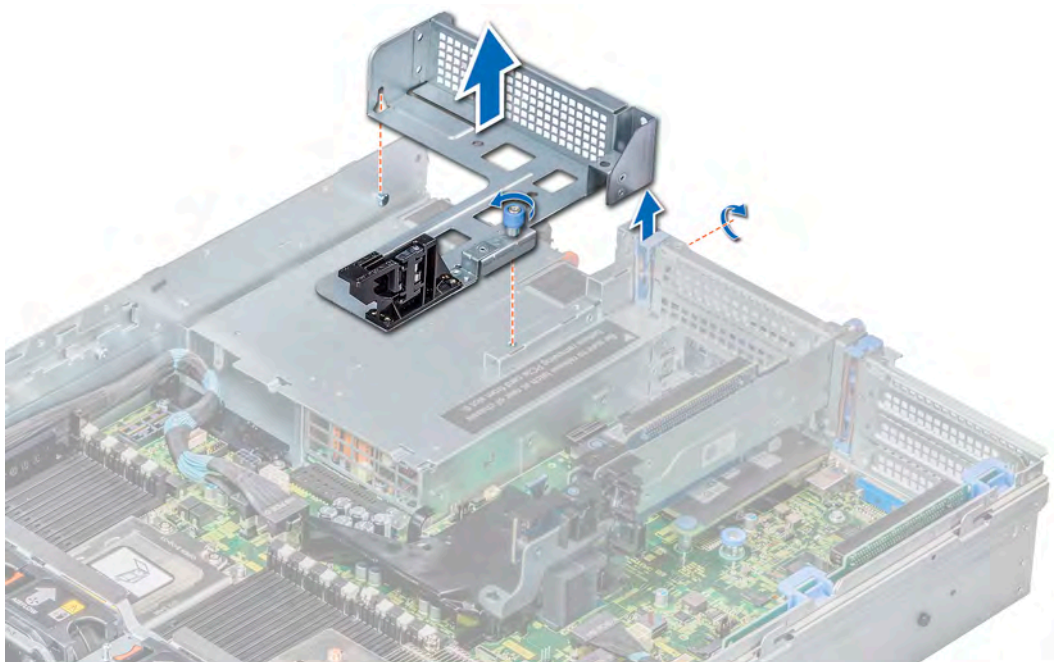2   Lift the blank away from the system.

Figure 89. Removing the riser 3 blank

Next step

Install the riser 3 blank.

Installing the riser 3 blank

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Align the screw on the riser with the screw hole on the system.

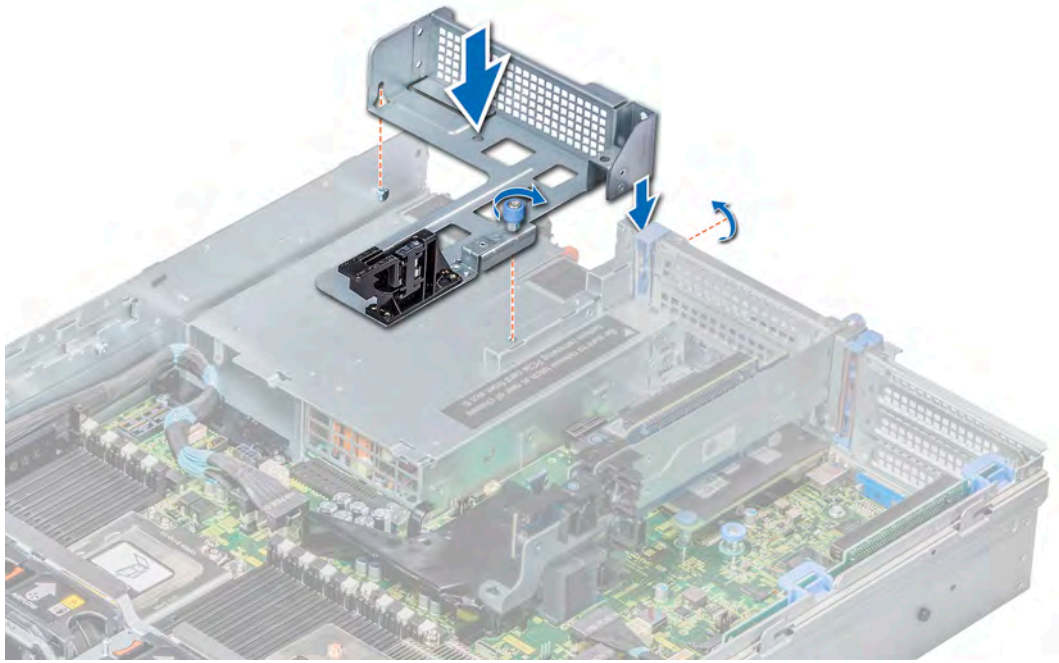2 Using a Phillips #2 screwdriver, tighten the screw to secure the blank to the system.

Figure 90. Installing the riser 3 blank

Next steps

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

Removing the expansion card riser 1

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your system.
3 If installed, remove the expansion cards from the riser.
4 Disconnect any cables connected to the riser.

Step

Press the release latches, and slide the riser to disengage the slots on the riser from the guides on the system.

Figure 91. Removing the expansion card riser 1
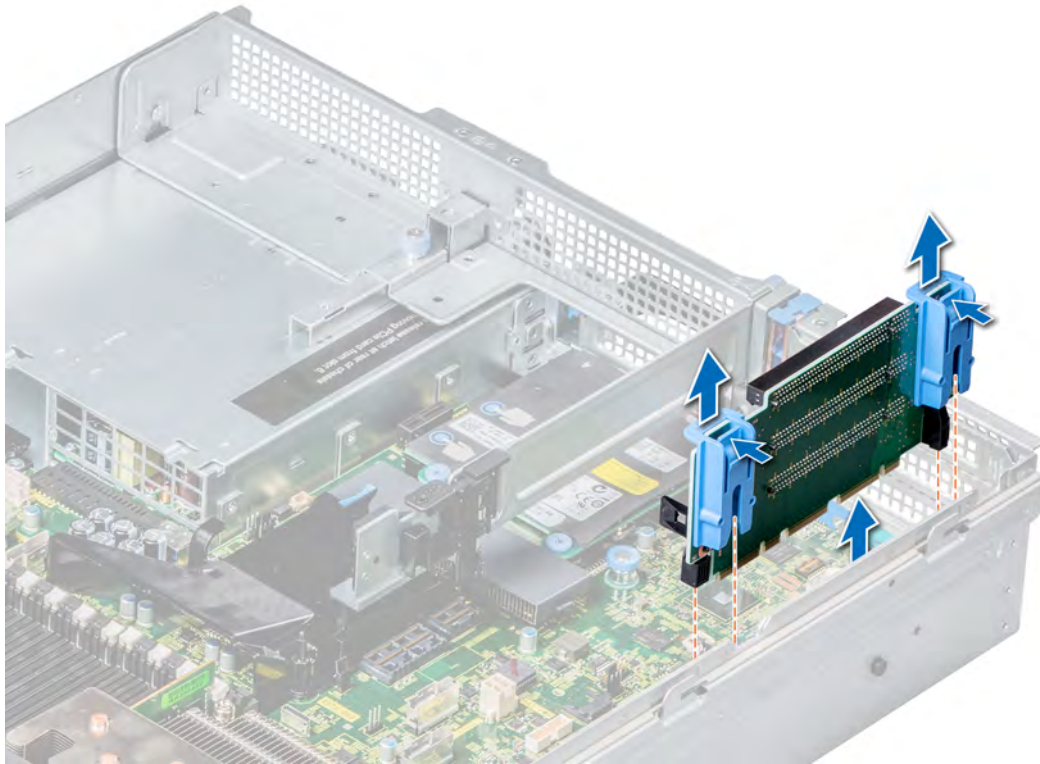
Next step

Install the expansion card riser 1.

Installing the expansion card riser 1

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Align the guide rails on the riser with the standoffs on the side of the system.

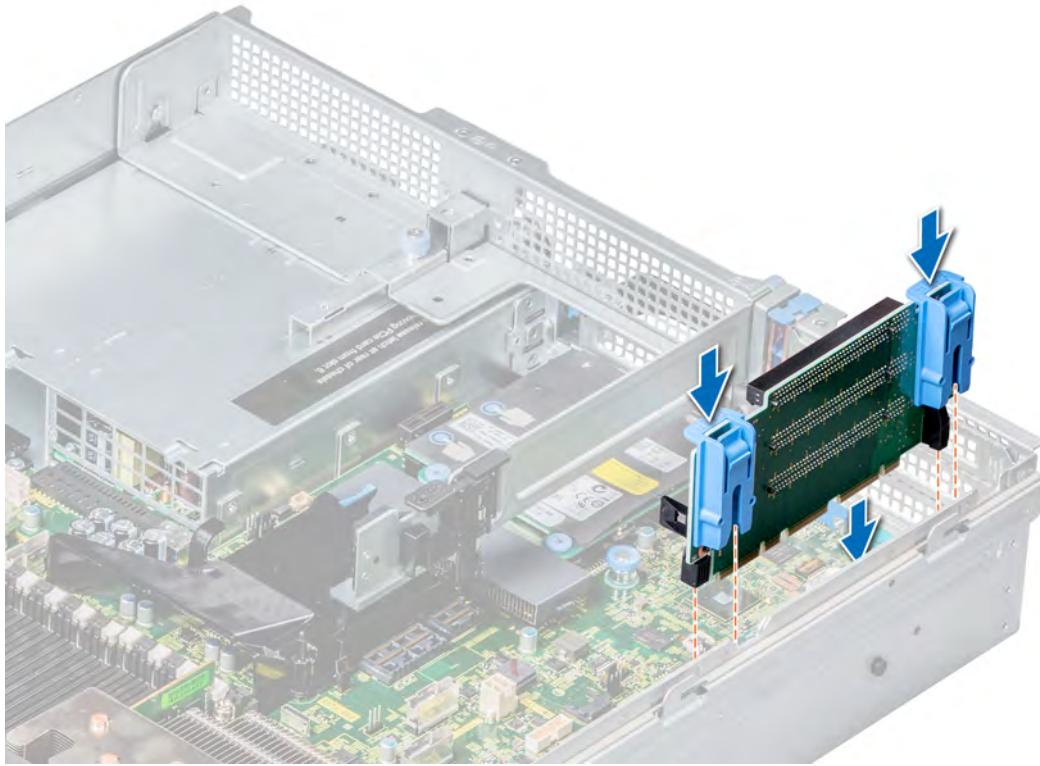2 Lower the riser into the system until the riser connector engages with the connector on the system board.

Figure 92. Installing the expansion card riser 1

Next steps

1   If removed, install the expansion cards into the riser.
2   Connect the cables to the riser.
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 the expansion card riser 2

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   If applicable, close the PCIe card holder latch on the air shroud to release the full-length PCIe card.
4   Remove the air shroud.
5   If installed, remove the expansion cards installed on the riser.
6   Disconnect any cables connected to the riser.

Steps

1   To remove expansion card riser 2A or 2E:
   a   Using a Phillips #2 screwdriver, loosen the screws that secure the riser to the system.
   b   Press the release tab, and holding the riser by its edges, lift the riser from the riser connector on the system board.
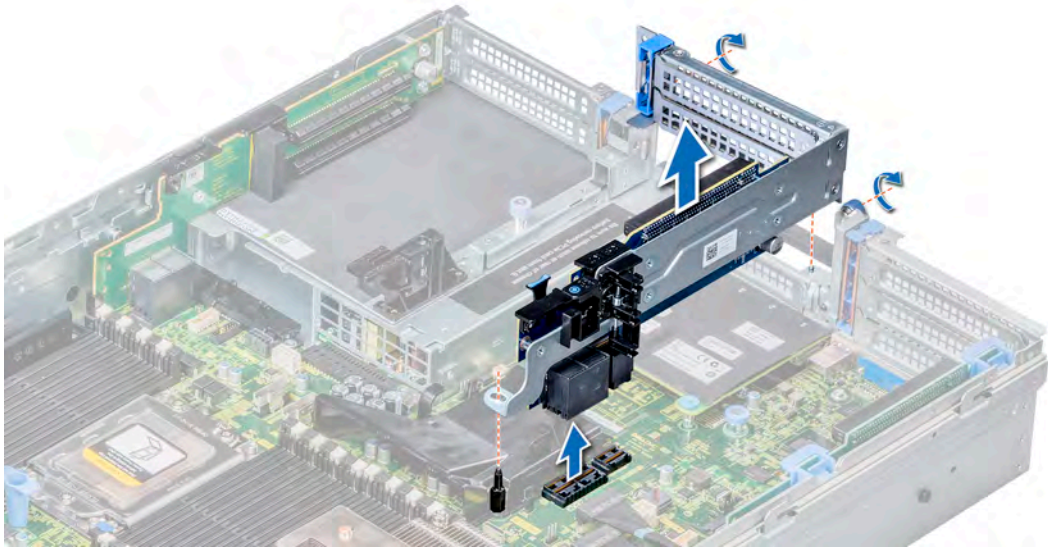
Figure 93. Removing the expansion card riser 2A or 2E

2   To remove expansion card riser 2B or 2C, hold the riser by its edges and lift the riser from the riser connector on the system board.

Figure 94. Removing the expansion card riser 2B or 2C

Next step

Install the expansion card riser 2.

Installing the expansion card riser 2

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   To install expansion card riser 2A:

   a   Align the screw and slot on the riser with the screw hole and guide pin on the system.

b   Lower the riser into the system until the riser connector engages with the connector on the system board.

c   Using a Phillips #2 screwdriver, tighten the screws to secure the riser to the system.
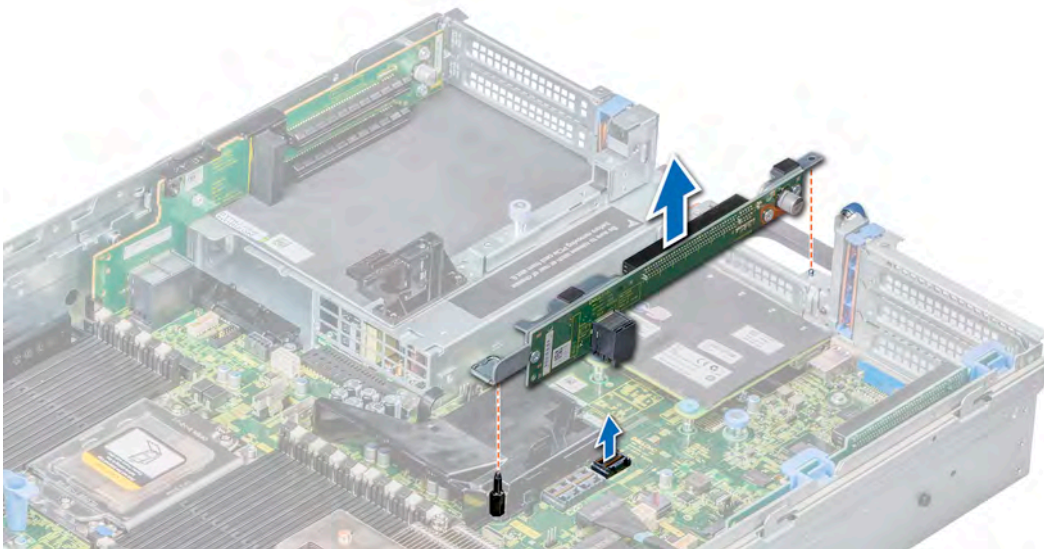

Figure 95. Installing the expansion card riser 2A

2   To install expansion card riser 2B or 2C:

a   Align the slots on the riser with the standoffs on the system.

b   Lower the riser into the system until the riser card connector engages with the connector on the system board.

Figure 96. Installing the expansion card riser 2B or 2C

Next steps

1   If removed, install the expansion cards into the riser.

2   Connect the cables to the riser.

3   Install the air shroud.

4   If applicable, open the PCIe card holder latch on the air shroud to install the full-length PCIe card.

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

6   Install any device drivers required for the card as described in the documentation for the card.

Removing the expansion card riser 3

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   If applicable, close the PCIe card holder latch on the air shroud to release the full-length PCIe card.
4   Remove the air shroud.
5   If installed, remove expansion cards installed on the riser.
6   Disconnect any cables connected to the riser card.

Steps

1   Using a Phillips #2 screwdriver, loosen the screw that secures the riser to the system.
2   Holding the riser by its edges, lift the riser from the slot on the system and riser connector on the system board.
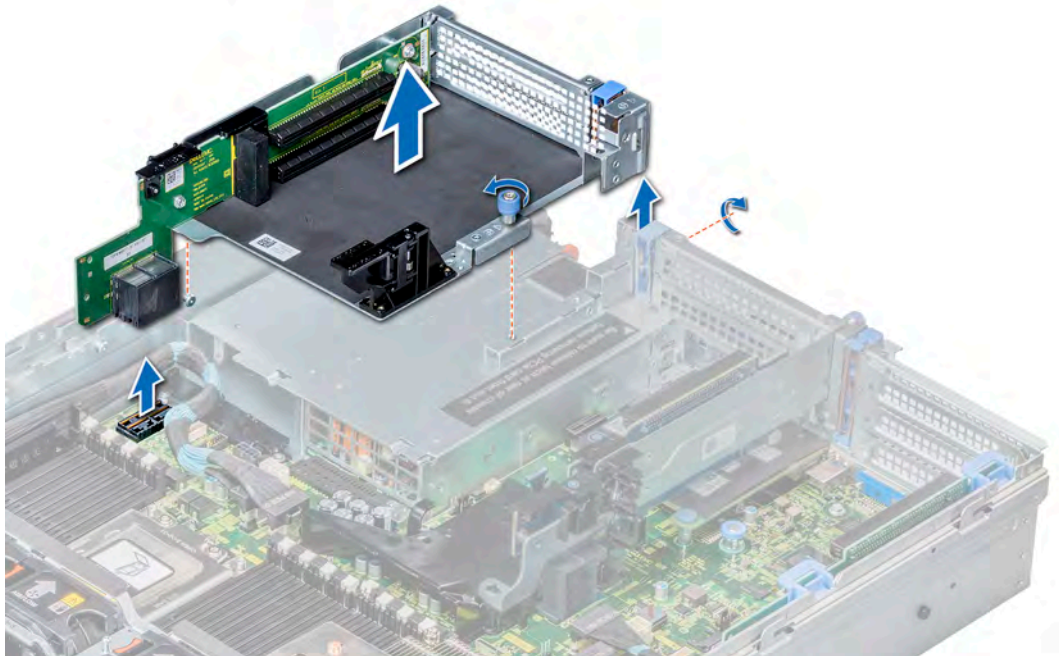
Figure 97. Removing the expansion card riser 3

Next step
Install the expansion card riser 3.

Installing the expansion card riser 3

Prerequisite
Follow the safety guidelines listed in Safety instructions.

Steps

1   Align the tab on the riser with the slot on the system, and guide rails on the riser with the standoffs on the side of the system.
2   Lower the riser into the system until the riser edge connector engages with the connector on the system board.
     The riser card edge engages with the riser guide on the system.

3　Using a Phillips #2 screwdriver, tighten the screw to secure the riser to the system.

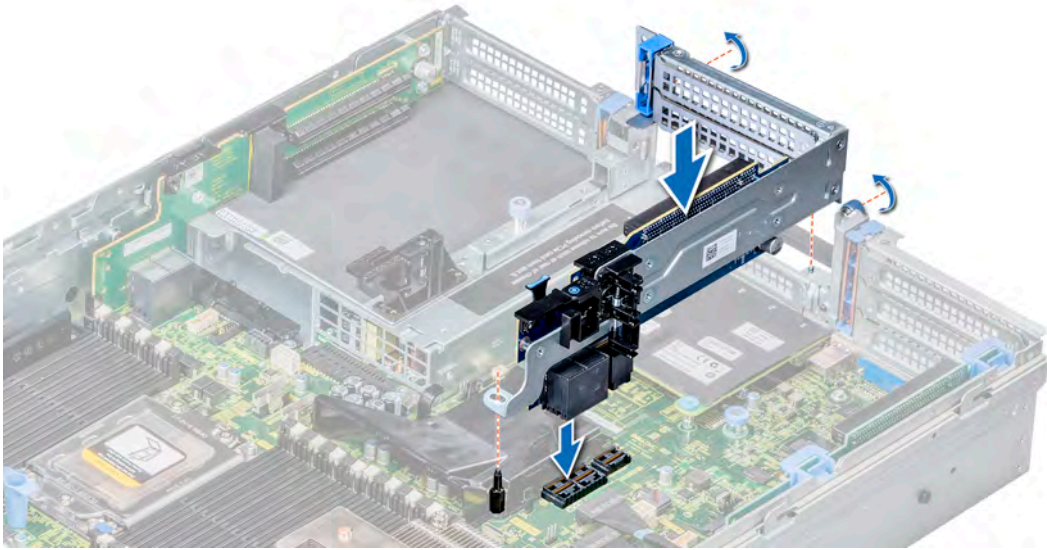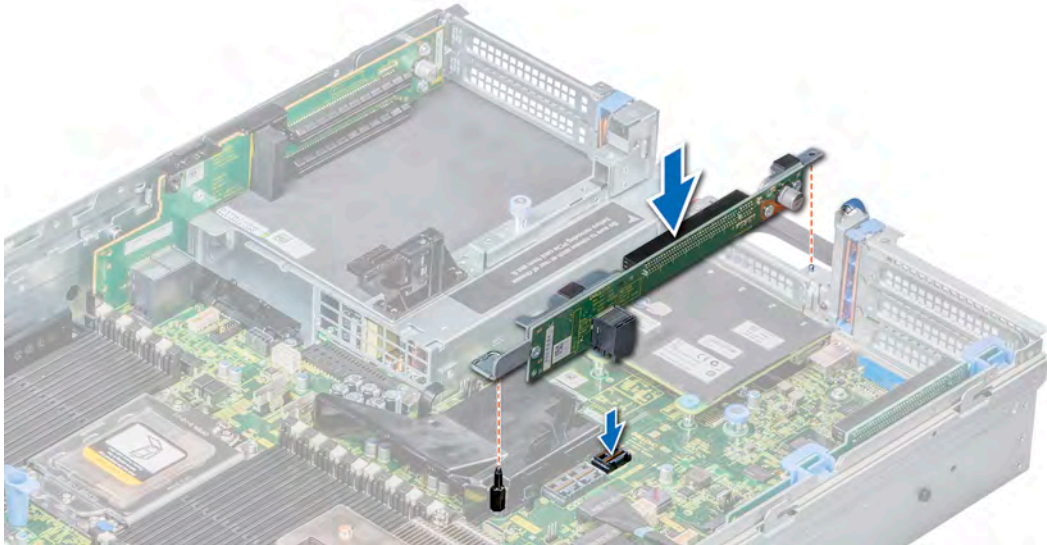**Figure 98. Installing the expansion card riser 3**

Next steps

1　If removed, install the expansion cards into the riser.
2　Connect the cables to the riser.
3　Install the air shroud.
4　If applicable, open the PCIe card holder latch on the air shroud to install the full-length PCIe card.
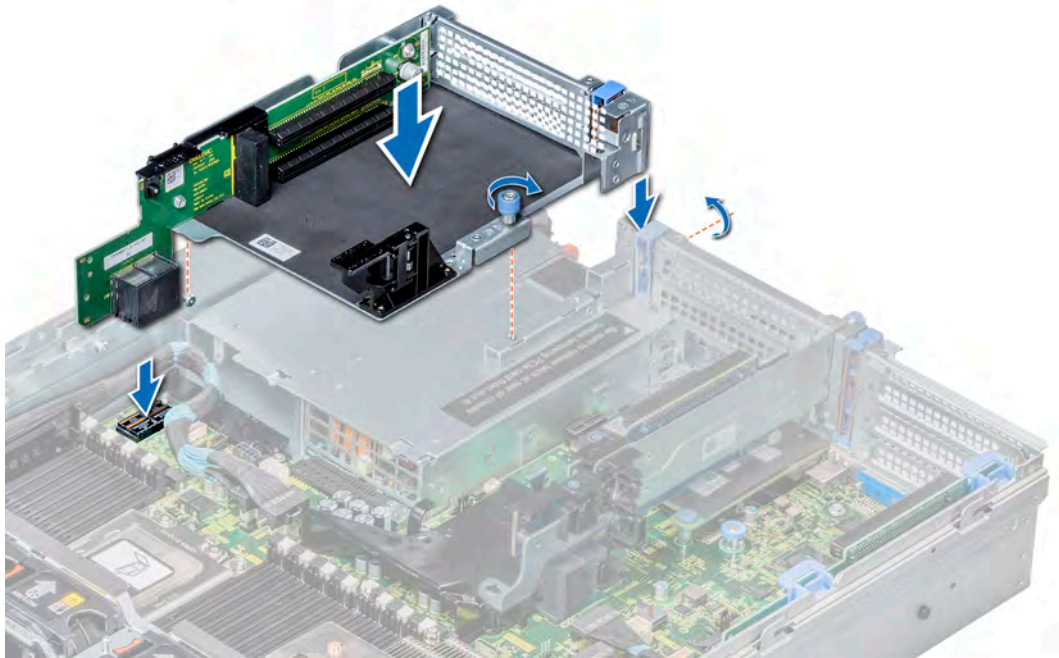5　Follow the procedure listed in After working inside your system.
6　Install any device drivers required for the card as described in the documentation for the card.

Optional IDSDM or vFlash module

The IDSDM or vFlash module combines the IDSDM and/or vFlash features into a single module.

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

Removing the MicroSD card

Prerequisites

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

Steps

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

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

Next steps

1   Follow the procedure listed in After working inside your system.
2   Install the MicroSD card.

Installing the MicroSD card

Prerequisites

Follow the safety guidelines listed in Safety instructions.

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

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

Steps

1   Locate the MicroSD card connector on the IDSDM or vFlash module. Orient the MicroSD card appropriately and insert the contact-pin end of the card into the slot.

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

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

Next step

Follow the procedure listed in After working inside your system.

Removing the IDSDM or vFlash module

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   For systems that support rear 2.5 inch or 3.5 inch drive configuration, remove the rear drive cage to access the IDSDM or vFlash module.
4   Remove the expansion card installed in slot 6 or 8, to access the IDSDM or vFlash module.
5   If you are replacing the IDSDM or vFlash module, remove the MicroSD cards.

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

Steps

1   Locate the IDSDM or vFlash connector on the system board.

   To locate IDSDM or vFlash connector, see the System board jumpers and connectors section.

2   Holding the pull tab, lift the IDSDM or vFlash module out of the system.

   ⓘ **NOTE: There are two dip switches on the IDSDM or vFlash module for write-protection.**
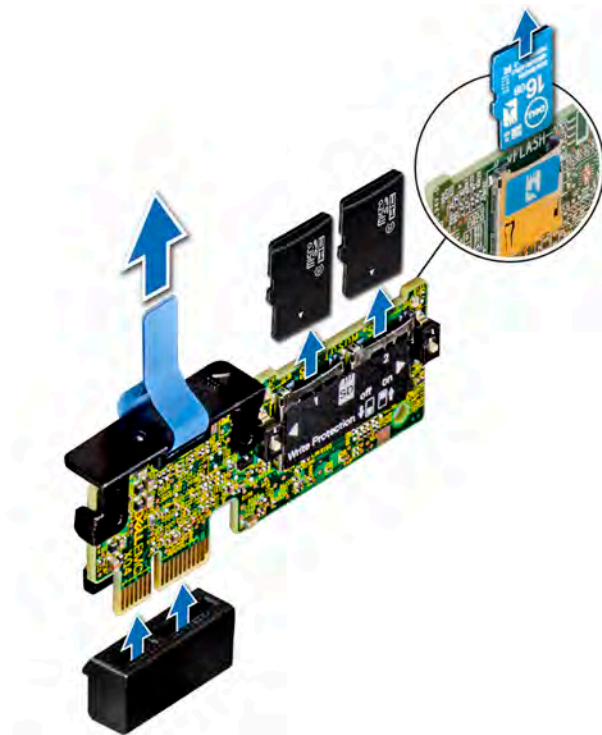
Figure 99. Removing the IDSDM or vFlash module

Next step

Install the IDSDM or vFlash module.

Installing the IDSDM or vFlash module

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Locate the IDSDM or vFlash connector on the system board.

   To locate IDSDM or vFlash connector, see the System board jumpers and connectors section.

2 Align IDSDM or vFlash module with the connector on the system board.

3 Push IDSDM or vFlash module until it is firmly seated on the system board.

Figure 100. Installing the optional IDSDM or vFlash module

Next steps

1   Install the MicroSD cards.

> ⓘ **NOTE: Re-install the MicroSD cards into the same slots based on the labels you had marked on the cards during removal.**
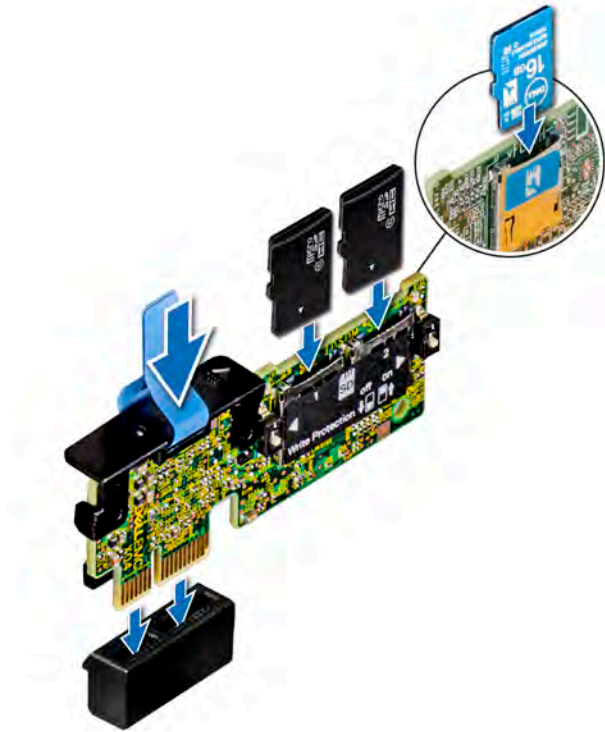
2   For systems that support rear 2.5 inch or 3.5 inch drive configuration, install the rear drive cage.
3   Install the expansion card in slot 6 or 8.
4   Follow the procedure listed in After working inside your system.

Network daughter card

The network daughter card (NDC) is a small, removable mezzanine card, which provides the flexibility of selecting different network connectivity options.

Removing the network daughter card

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove the expansion card riser 2 or remove the rear drive cage, depending on the configuration of your system.

Steps

1   Using a Phillips #2 screwdriver, loosen the captive screws that secure the network daughter card (NDC) to the system board.
2   Hold the NDC by the edges, and lift to remove it from the connector on the system board.
3   Slide the NDC towards the front of the system until the Ethernet connectors are clear of the slot in the back panel.
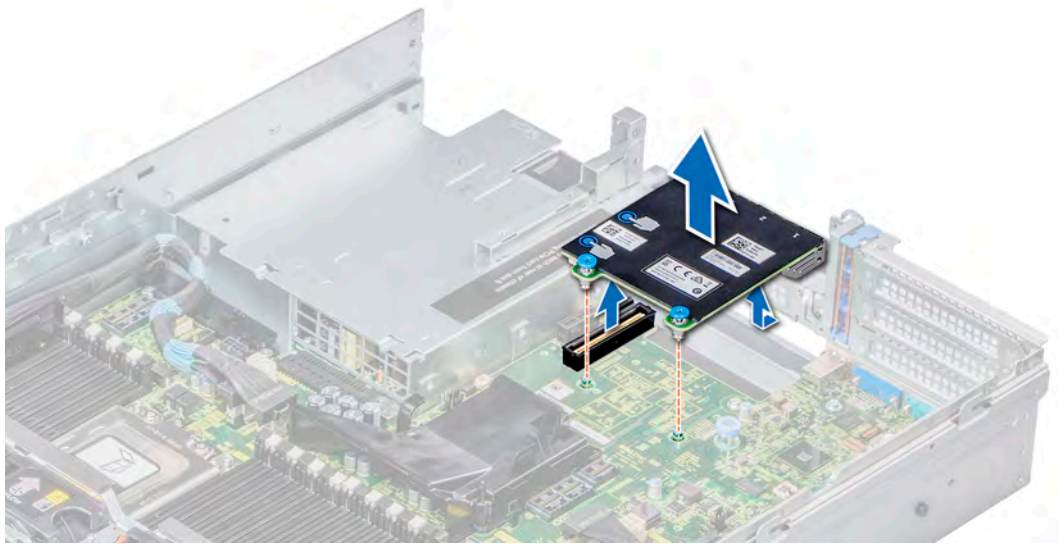
Figure 101. Removing the network daughter card

Next step

Install the NDC.

Installing the network daughter card

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Orient the NDC so that the Ethernet connectors fit through the slot in the chassis.

2   Align the captive screws at the back-end of the card with the screw holes on the system board.

3   Press the touch points on the card until the card connector is firmly connected to the connector on the system board.

4   Using a Phillips #2 screwdriver, tighten the captive screws to secure the NDC to the system board.

Figure 102. Installing the network daughter card

Next steps

1 Install the expansion card riser 2 or install the rear drive cage, depending on the configuration of your system.
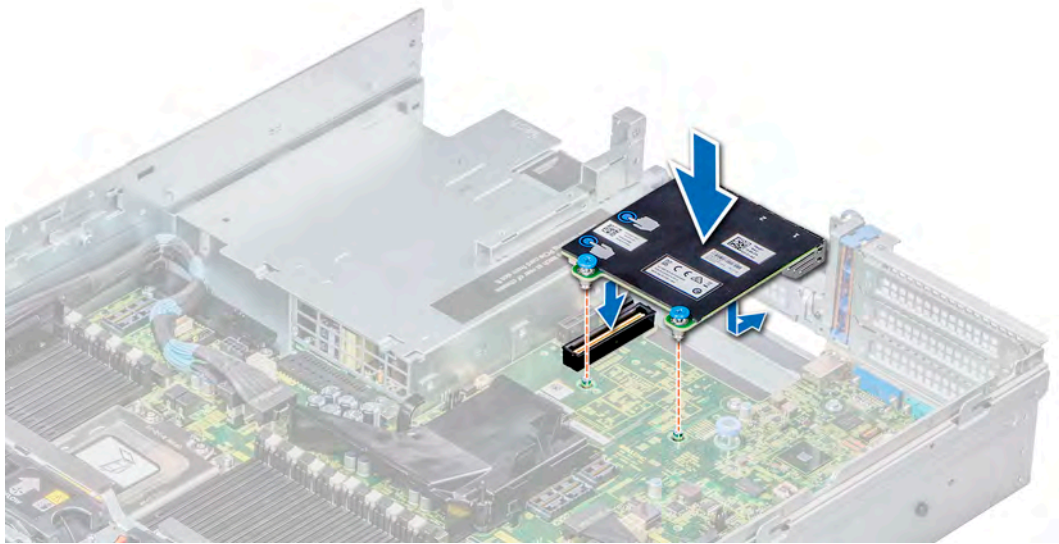
2 Follow the procedure listed in After working inside your system.

Drive backplane

Depending on your system configuration, the drive backplanes supported in PowerEdge R7425 are listed here:

Table 48. Supported backplane options for PowerEdge R7425 systems

| System	Supported backplane options
PowerEdge R7425	2.5 inch (x24) SAS/SATA/NVMe backplane, 3.5 inch (x4) SAS/SATA backplane on the mid drive tray and 2.5 inch (x4) SAS/SATA backplane (back) or
	2.5 inch (x24) NVMe backplane or
	2.5 inch (x24) SAS/SATA backplane or
	3.5 inch (x12) SAS/SATA backplane, 3.5 inch (x4) SAS/SATA backplane on the mid drive tray and 3.5 inch (x2) SAS/SATA backplane (back), or
	3.5 inch (x12) SAS/SATA backplane, or
	3.5 inch (x8) SAS/SATA backplane

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Drive backplane connectors
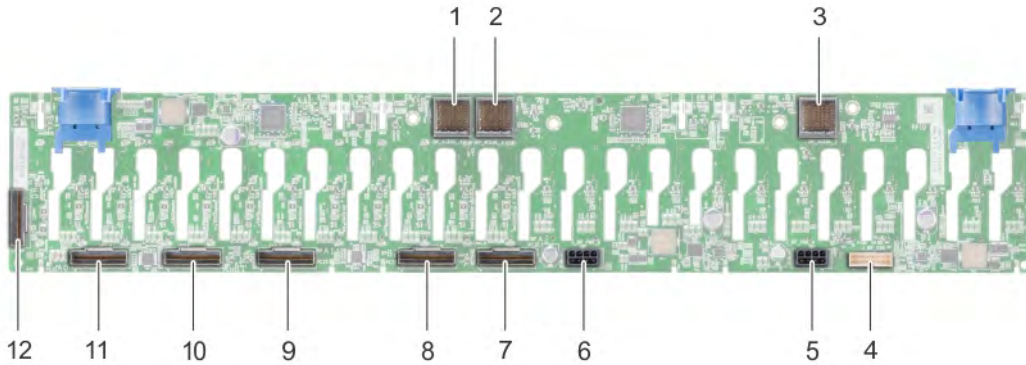
Figure 103. Back view of 24 x 2.5 inch backplane

1	backplane to expander board connector (BP_XCEDE_3)	2	backplane to expander board connector (BP_XCEDE_2)
3	backplane to expander board connector (BP_XCEDE_31)	4	signal connector (J_BP_SIG)
5	power connector (J_PWR_A)	6	power connector (J_PWR_B)
7	PCIe connector (BP PCIE A2)	8	PCIe connector (BP PCIE B2)
9	PCIe connector (BP PCIE A1)	10	PCIe connector (BP PCIE B1)
11	PCIe connector (BP PCIE A0)	12	PCIe connector (BP PCIE B0)
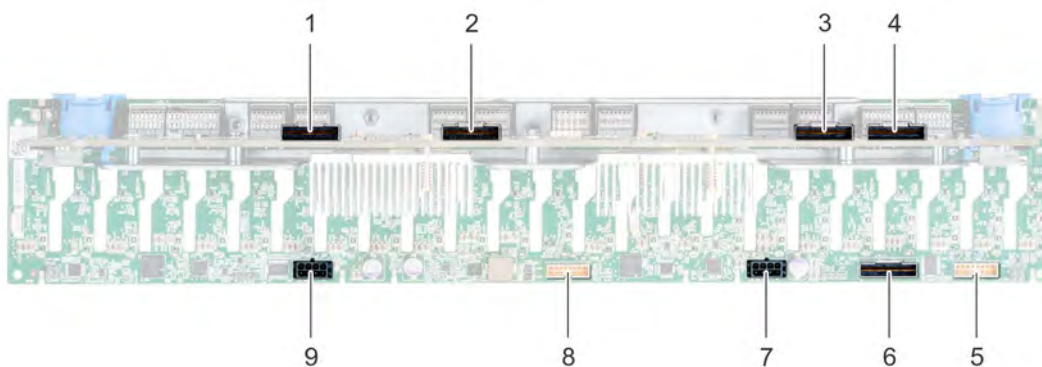
Figure 104. Back view of 24 x 2.5 inch (24 NVMe) backplane

1	expander board connector B1 (PE1_B)	2	expander board connector A1 (PE1_A)
3	expander board connector B2 (PE2_B)	4	expander board connector A2 (PE2_A)
5	signal connector (J_SIG_A1)	6	SAS connector (J_BP_SAS)
7	power connector (J_BP_PWR_A1)	8	signal connector (J_SIG_A2)
9	power connector (J_BP_PWR_A2)		
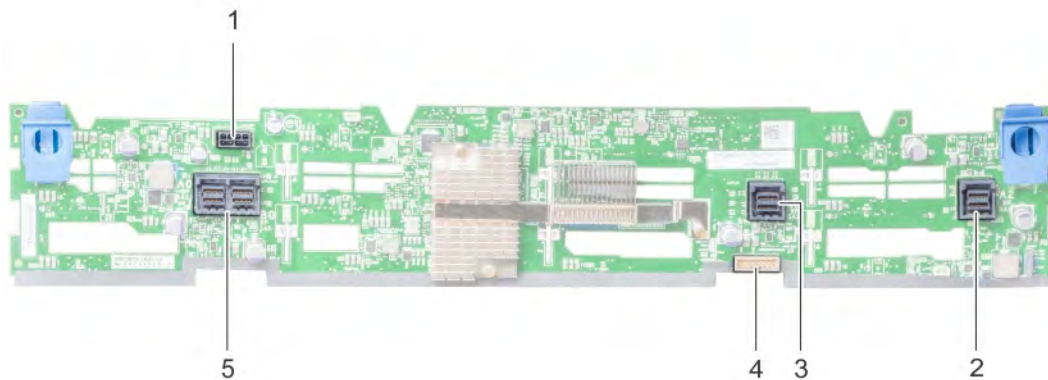
Figure 105. Back view of 12 x 3.5 inch backplane

1	power connector (J_BP_PWR)	2	SAS connector (A2 BP SAS)
3	SAS connector (A1 BP SAS)	4	signal connector (BP SIG1)
5	SAS connector (J_SAS_A0_B0)		
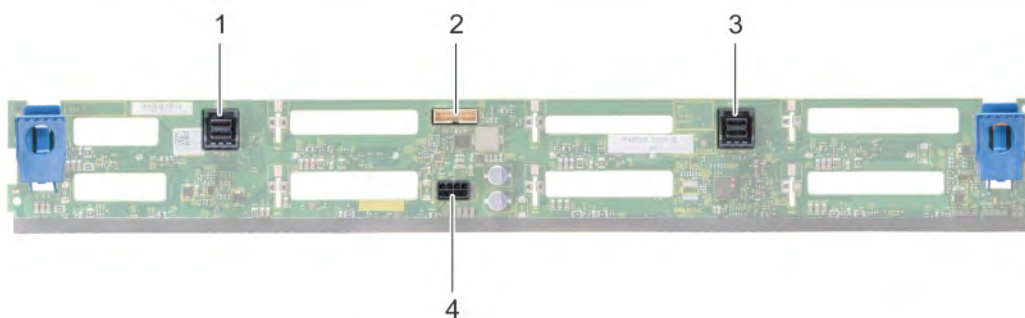
Figure 106. Back view of 8 x 3.5 inch drive backplane

1	SAS connector (BP SAS B)	2	signal connector (J_BP_SIG)
3	SAS connector (BP SAS A)	4	power connector (J_BP_PWR_A)

Figure 107. Back view of 3.5 inch backplane (mid drive tray)

1	power connector (J_BP_PWR)	2	SAS connector (J_SAS_A1)
3	signal connector (J_BP_SIG)	4	SAS connector (J_SAS_B1)
5	release tab (2)		
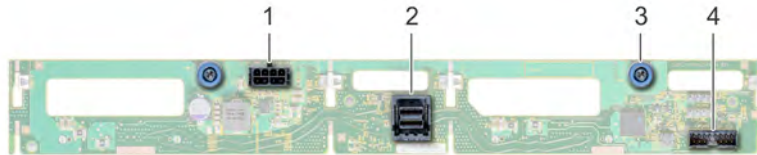
Figure 108. Back view of 3.5 inch backplane (rear drive cage)

1	power connector (J_BP_PWR_A)	2	SAS connector (J_SAS_A)
3	release pin (2)	4	signal connector (J_BP_SIG)
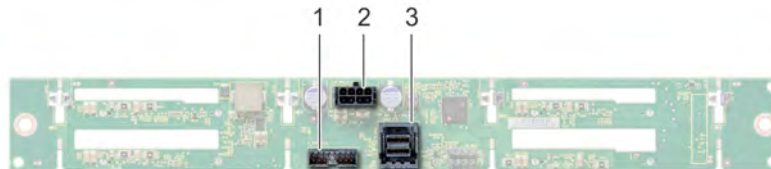
Figure 109. Back view of 2.5 inch backplane (rear drive cage)

1	signal connector (J_BP_SIG)	2	power connector (J_BP_PWR_A)
3	SAS connector (J_SAS_1)		

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 replace them in the same locations.**

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove the air shroud.
4   Remove the cooling fan assembly.
5   Remove the backplane cover.
6   Remove all drives.
7   Disconnect all the cables from the backplane.

Step

Press the release tabs and lift the backplane to disengage the backplane from the hooks on the system.
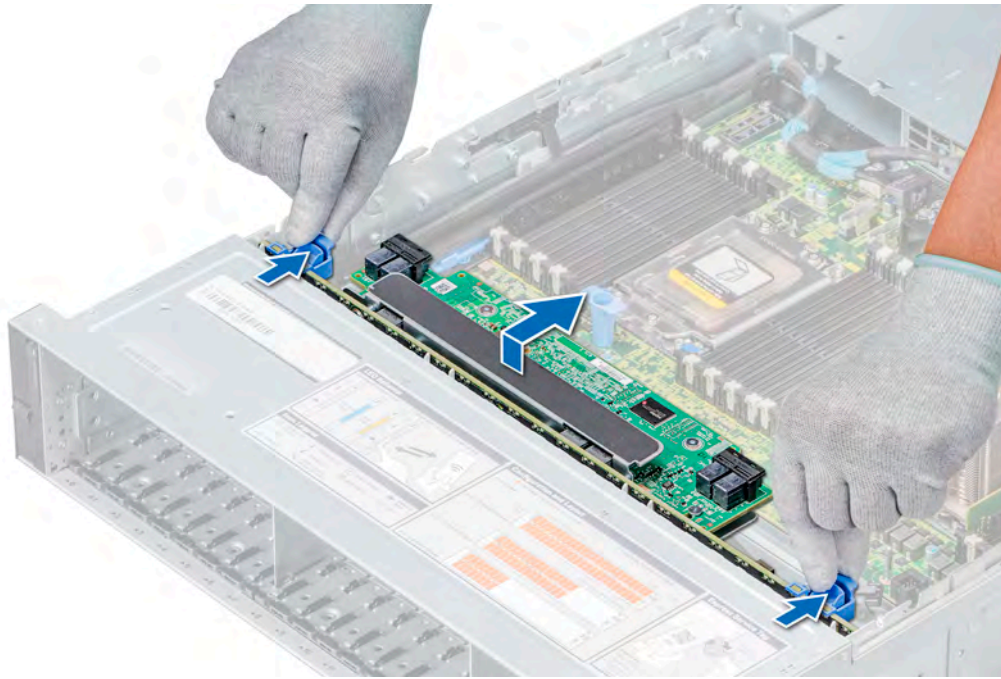
Figure 110. Removing the drive backplane

Next step

Install the drive backplane.

Installing the drive backplane

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Use the hooks on the system as guides to align the drive backplane.

2   Lower the drive backplane until the release tabs snap into place.
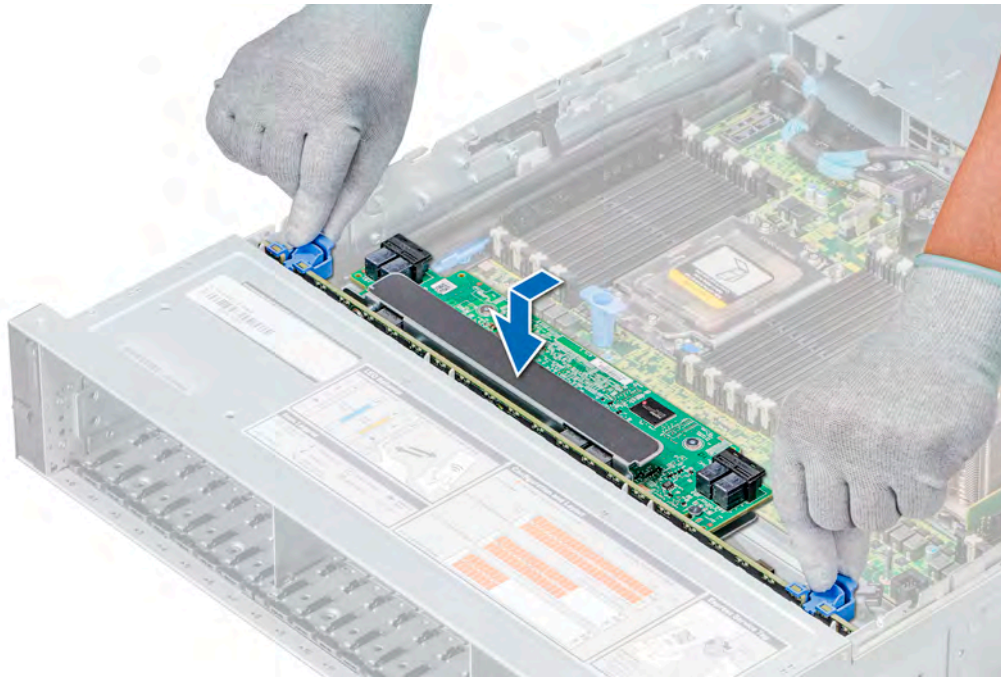
Figure 111. Installing the drive backplane

Next steps

1   Connect all the cables to the backplane.
2   Install all the drives.
3   Install the backplane cover.
4   Install the cooling fan assembly.
5   Install the air shroud.
6   Follow the procedure listed in After working inside your system.

Removing the mid drive tray backplane

The procedure to remove the backplane is identical for 2.5 and 3.5 inch configurations.

Prerequisites

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

⚠ **CAUTION: You must note the number of each drive and temporarily label them before removal so that you can replace them in the same locations.**

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove all the drive carriers from the mid drive tray.
4   Disconnect all the cables from the backplane.

Step

Press the release tabs and lift the backplane out of the mid drive tray.
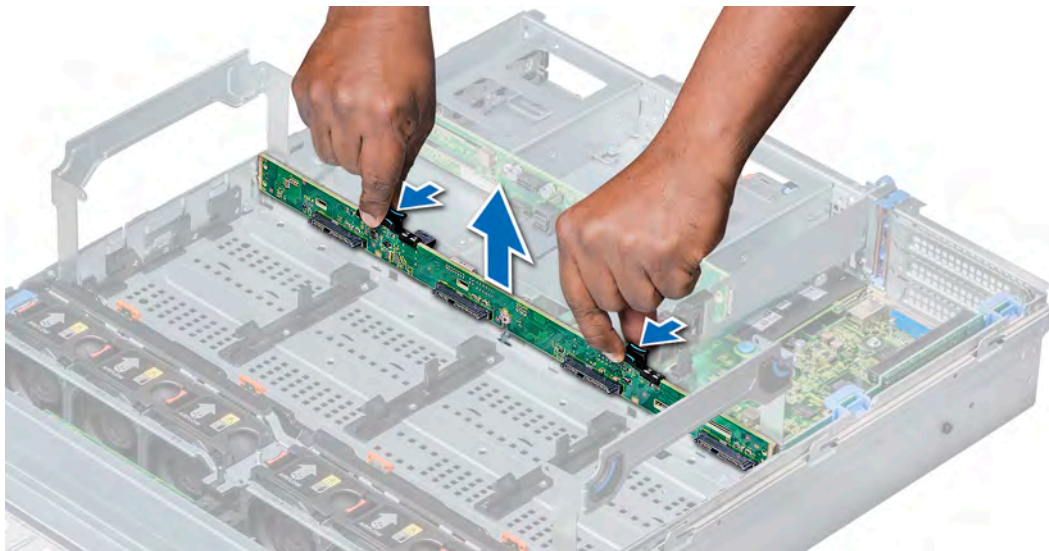
Figure 112. Removing the mid drive tray backplane

Next step

Install the mid drive tray backplane.

Installing the mid drive tray backplane

The procedure to install the backplane is identical for 2.5 and 3.5 inch configurations.

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Step

Align the drive backplane with the guide pin on the system and lower the drive backplane into the system until it is firmly seated.
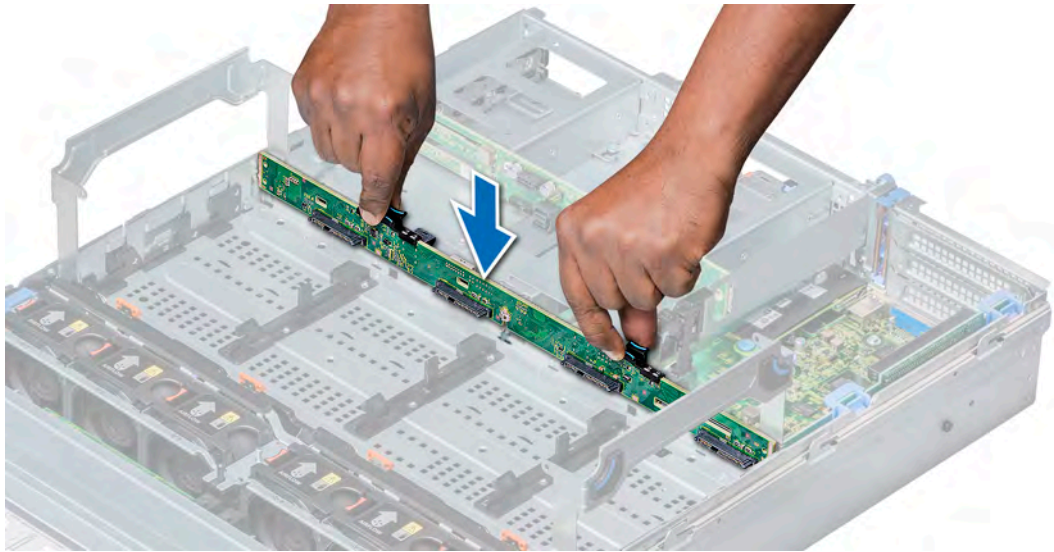
Figure 113. Installing the mid drive tray backplane

Next steps

1   Connect all the cables to the backplane.
2   Install all the drive carriers into the mid drive tray.
3   Follow the procedure listed in After working inside your system.

Removing the 3.5 inch rear drive backplane

Prerequisites

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

⚠ CAUTION: **You must note the number of each drive and temporarily label them before removal so that you can replace them in the same locations.**

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove all the drives from the rear drive cage.
4   Disconnect all the cables from the backplane.

Steps

1   Pull the release pins, and lift the drive backplane to disengage the backplane from the hooks on the rear drive cage.
2   Remove the backplane from the system.
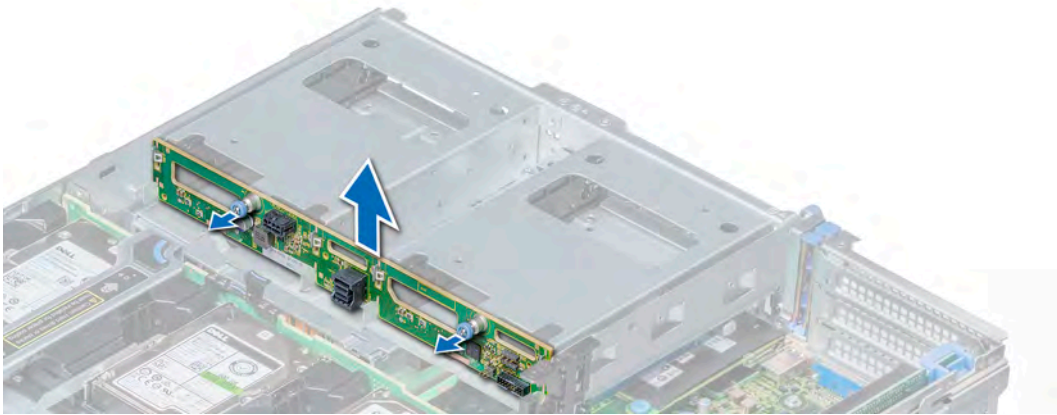
Figure 114. Removing the 3.5 inch rear drive backplane

Next step

Install the 3.5 inch rear drive backplane.

Installing the 3.5 inch rear drive backplane

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1. Use the hooks on the rear drive module as guides to align the drive backplane.
2. Lower the backplane into the system until the release pins click in place.

Figure 115. Installing the 3.5 inch rear drive backplane

Next steps

1. Install all the drives into the rear drive cage.
2. Connect all the cables to the backplane.
3. Follow the procedure listed in After working inside your system.

Removing the 2.5 inch rear drive backplane

Prerequisites

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

⚠ **CAUTION: You must note the number of each drive and temporarily label them before removal so that you can replace them in the same locations.**

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove all the drives from the rear drive cage.
4   Disconnect all the cables from the backplane.

Steps

1   Using a Phillips #2 screwdriver, remove the screws that secure the drive backplane to the rear drive cage.
2   Disengage the backplane from the hooks on the rear drive cage, and remove it from the rear drive cage.
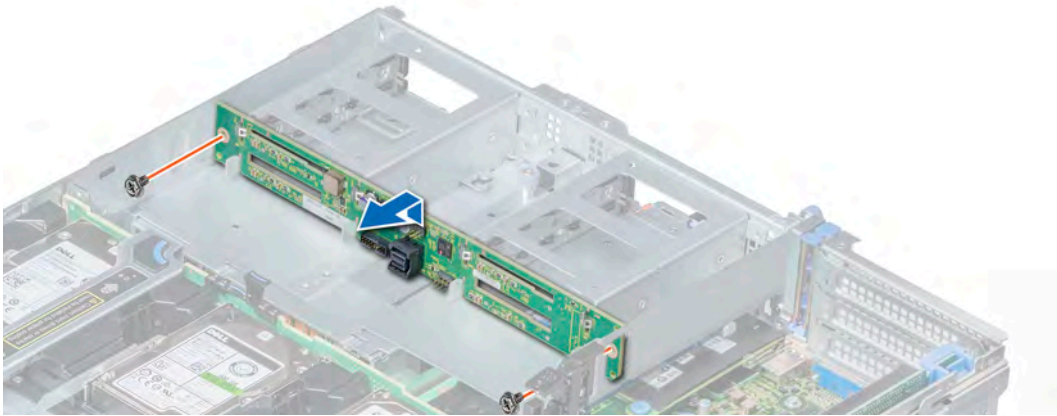
Figure 116. Removing the 2.5 inch rear drive backplane

Next step
Install the 2.5 inch rear drive backplane.

Installing the 2.5 inch rear drive backplane

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Use the hooks on the rear drive cage as guides to align the drive backplane.
2   Lower the backplane into the system until it is firmly seated.
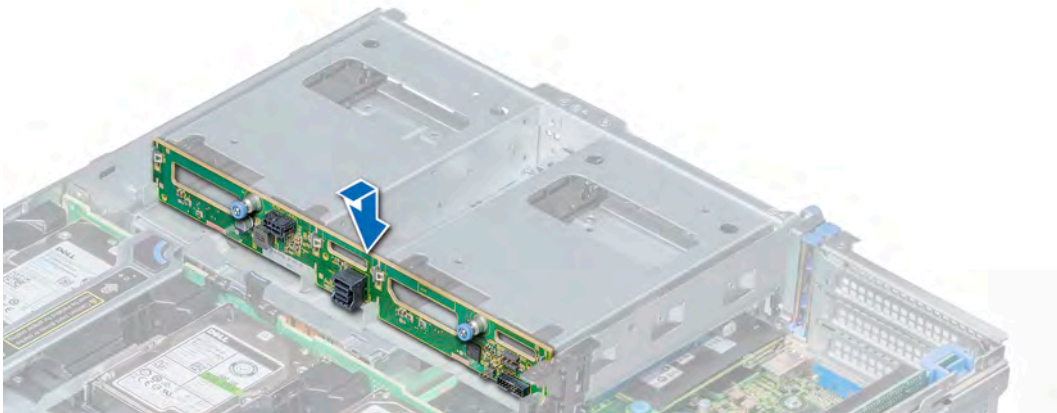3   Using a Phillips #2 screwdriver, replace the screws to secure the backplane to the rear drive cage.
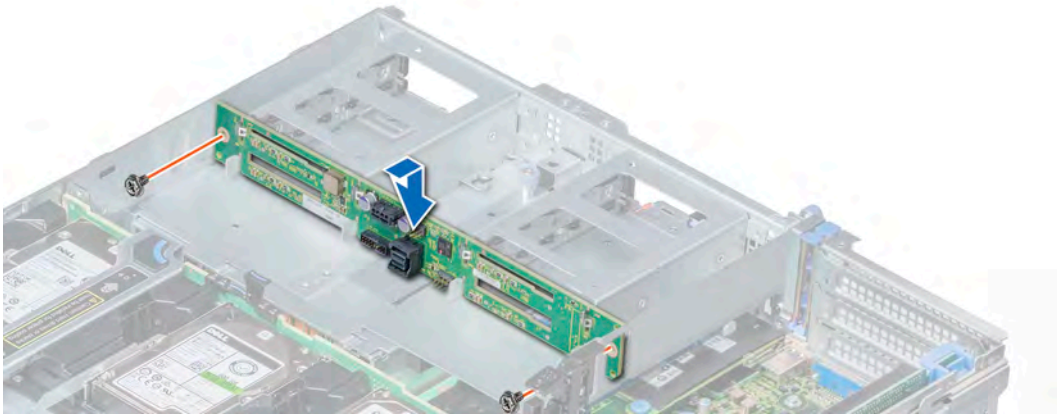
Figure 117. Installing the 2.5 inch rear drive backplane

Next steps

1 Install all the drives into the rear drive cage.
2 Connect all the cables to the backplane.
3 Follow the procedure listed in After working inside your system.

Cable routing
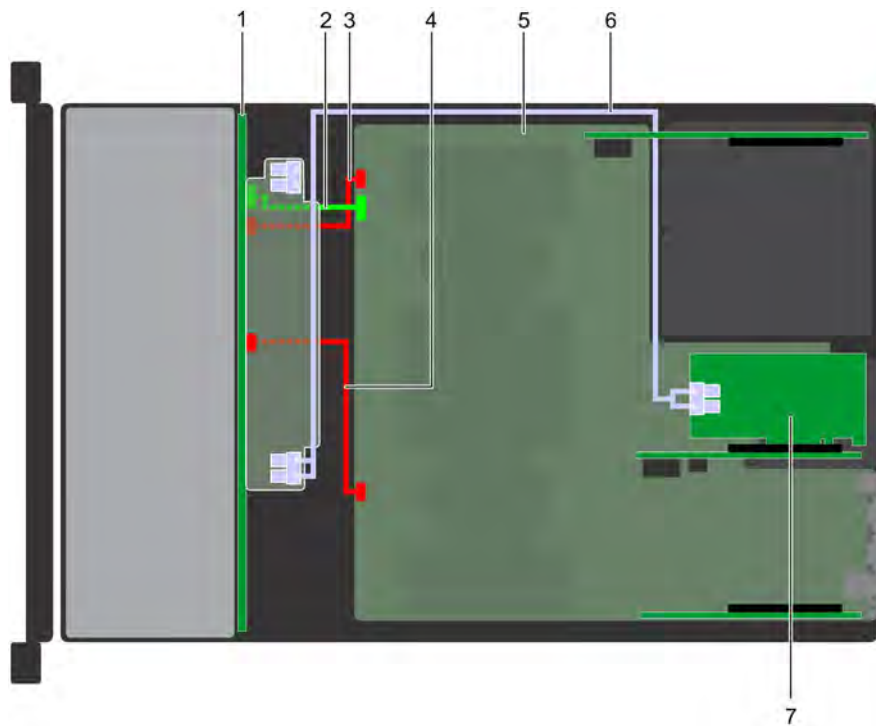
Figure 118. Cable routing – 24 x 2.5 inch drive backplane with adapter PERC (slot 6)

1	backplane	2	backplane signal cable

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3	backplane power cable A	4	backplane power cable B
5	system board	6	SAS cable
7	adapter PERC on slot 6		
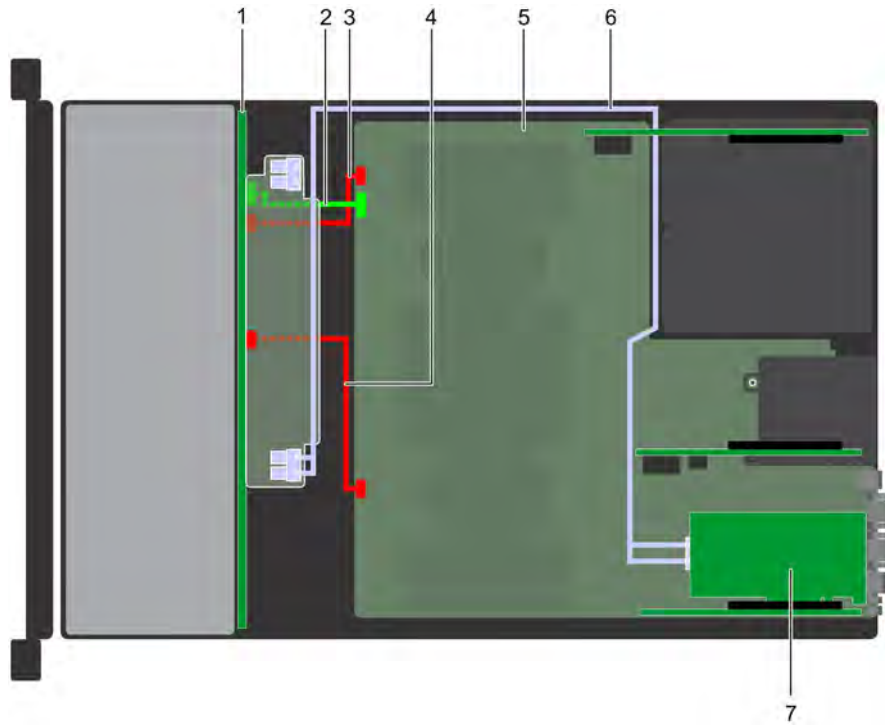
Figure 119. Cable routing – 24 x 2.5 inch drive backplane with adapter PERC (slot 3)

1	backplane	2	backplane signal cable
3	backplane power cable A	4	backplane power cable B
5	system board	6	SAS cable
7	adapter PERC on slot 3		
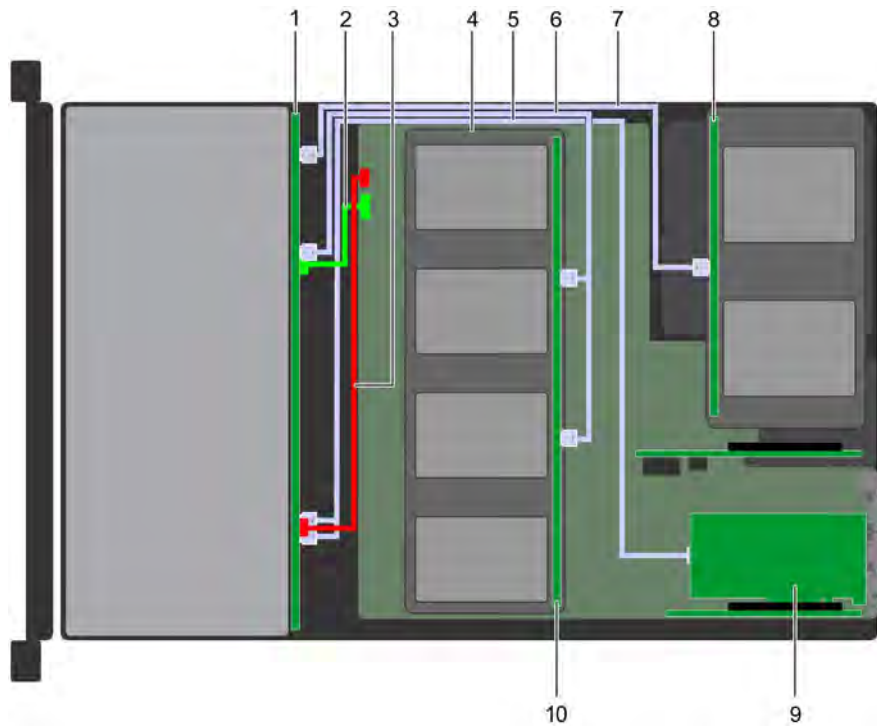
Figure 120. Cable routing – 24 x 2.5 inch drive backplane with 4 x 3.5 (with 4 x 2.5 adapter) mid drive tray and 4 x 2.5 rear drive cage

1	backplane	2	backplane signal cable
3	backplane power cable	4	4 x 3.5 inch drives (with 4 x 2.5 adapter)
5	SAS cable	6	SAS cable
7	SAS cable	8	rear 4 x 2.5 inch drive backplane
9	adapter PERC on slot 3	10	mid drive backplane
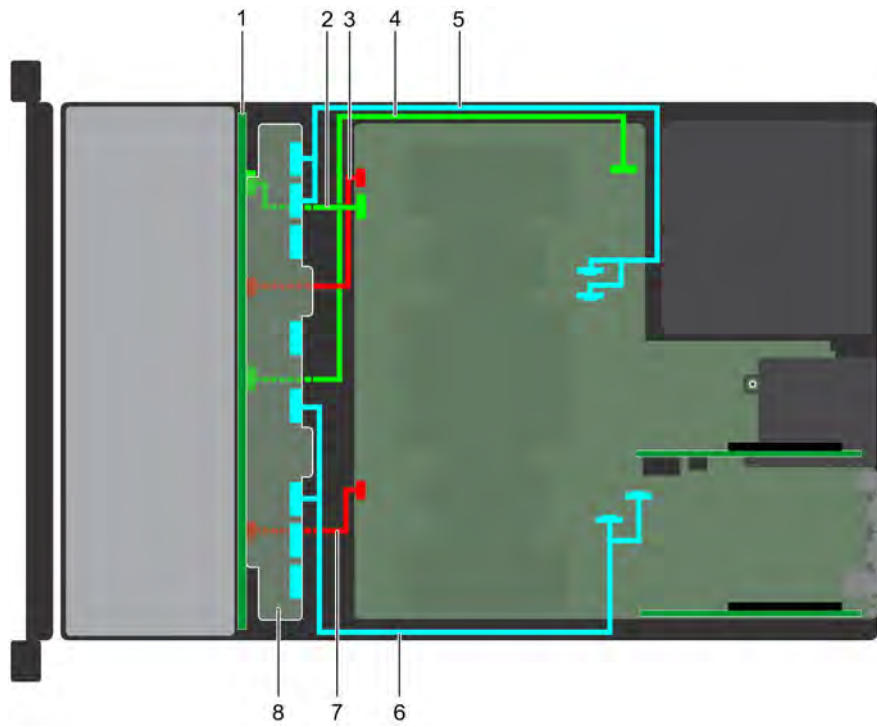
Figure 121. 24 x 2.5 inch NVMe drive backplane

1	backplane	2	backplane signal cable A
3	backplane power cable A	4	backplane signal cable B
5	PCIe cable (A2, B2 to M3, M4)	6	PCIe cable (A1, B1 to M1, M2)
7	backplane power cable B	8	backplane expander
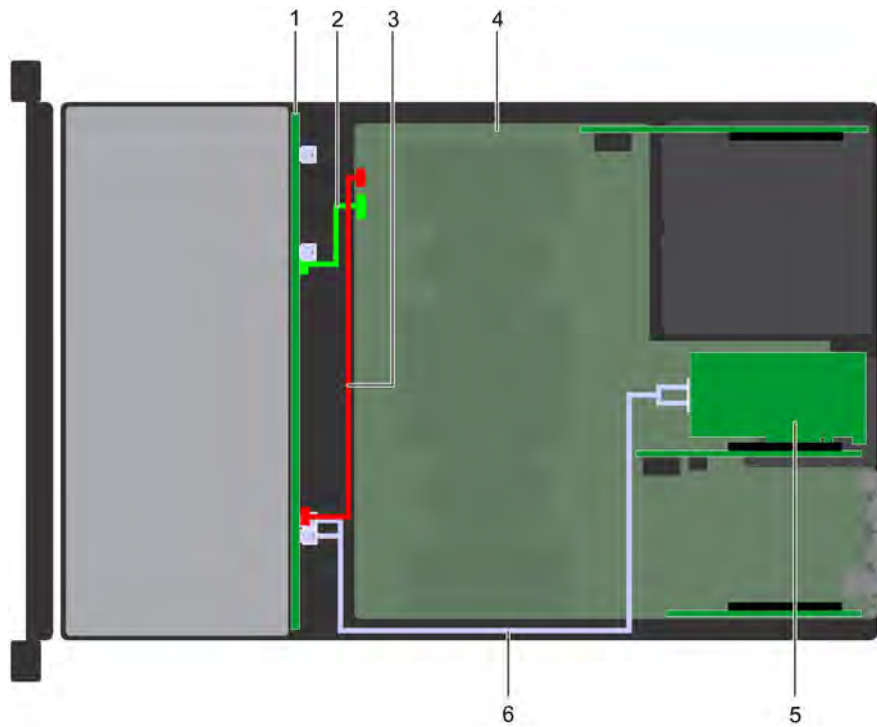
Figure 122. Cable routing – 12 x 3.5 inch drive backplane with adapter PERC (slot 6)

1	backplane	2	backplane signal cable
3	backplane power cable	4	system board
5	adapter PERC on slot 6	6	SAS cable
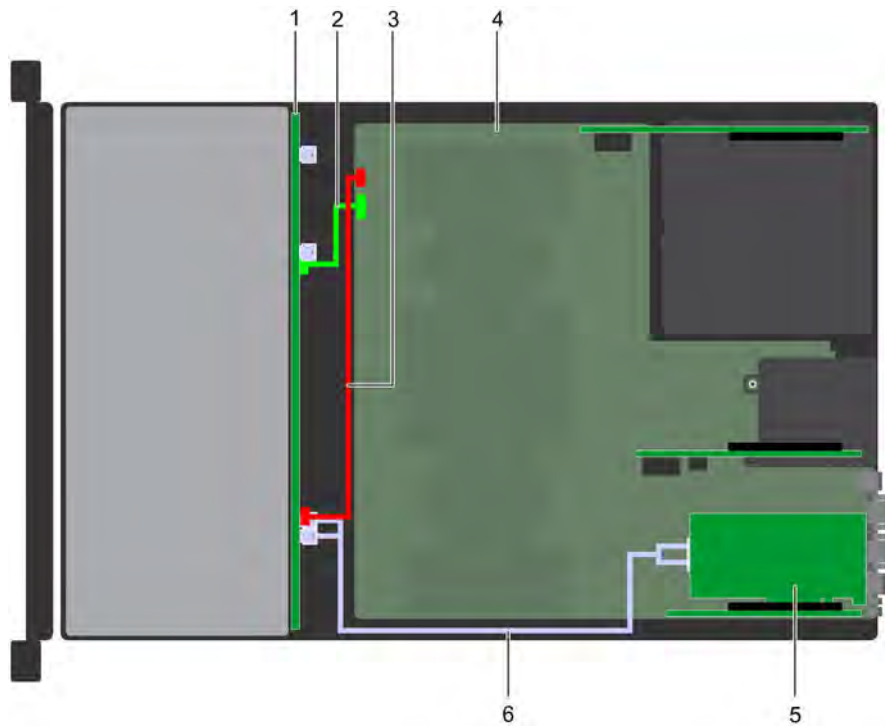
Figure 123. Cable routing – 12 x 3.5 inch drive backplane with adapter PERC (slot 3)

1	backplane	2	backplane signal cable
3	backplane power cable	4	system board
5	adapter PERC on slot 3	6	SAS cable
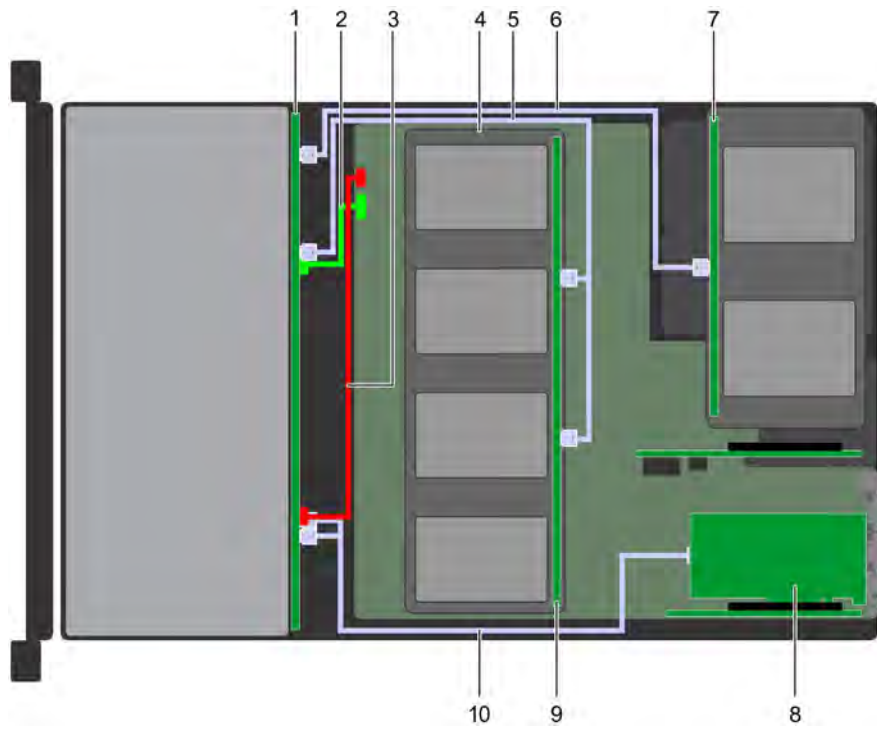
Figure 124. Cable routing – 12 × 3.5 inch drive backplane with 4 × 3.5 mid drive tray and 2 × 3.5 rear drive cage

1	backplane	2	backplane signal cable
3	backplane power cable	4	system board
5	SAS cable	6	SAS cable
7	rear drive backplane	8	adapter PERC on slot 3
9	mid drive backplane	10	4 x 3.5 inch drives
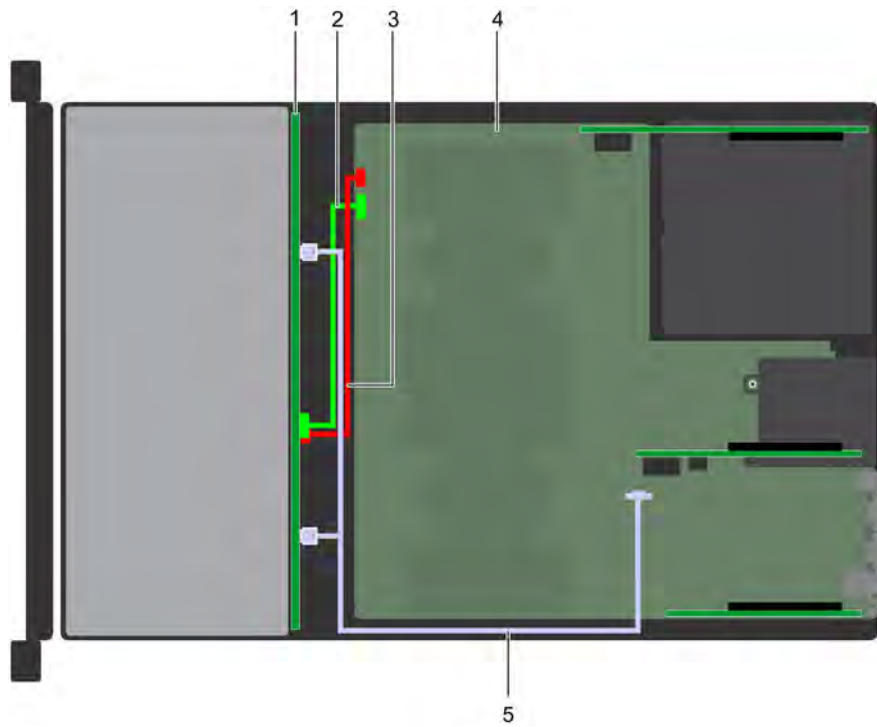
Figure 125. Cable routing – 8 × 3.5 inch drive backplane with onboard SATA

1	backplane	2	backplane signal cable
3	backplane power cable	4	system board
5	onboard SATA cable		
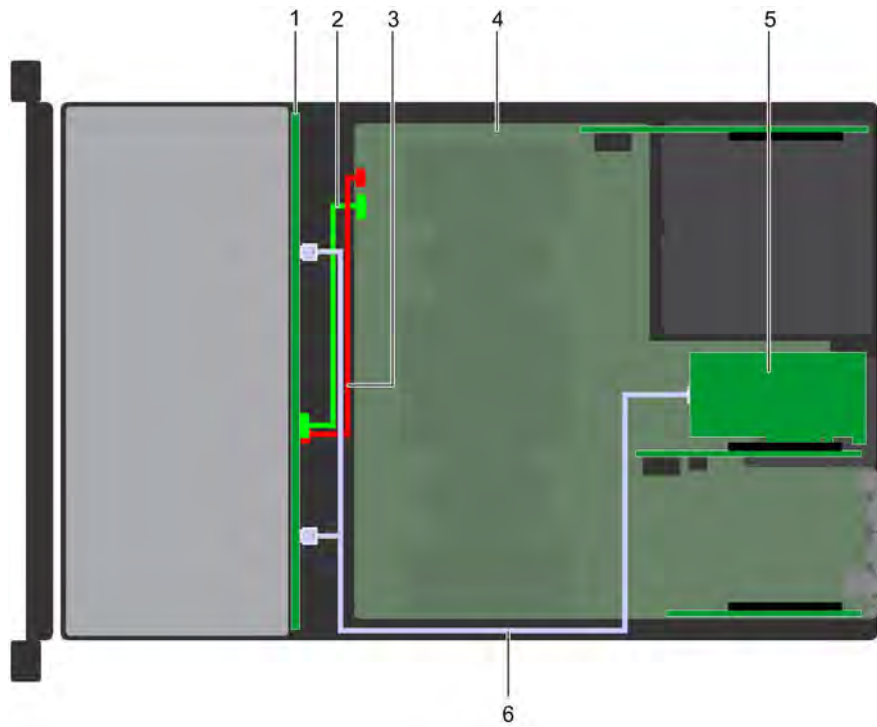
Figure 126. Cable routing – 8 x 3.5 inch drive backplane with adapter PERC (slot 6)

1	backplane	2	backplane signal cable
3	backplane power cable	4	system board
5	adapter PERC on slot 6	6	SAS cable
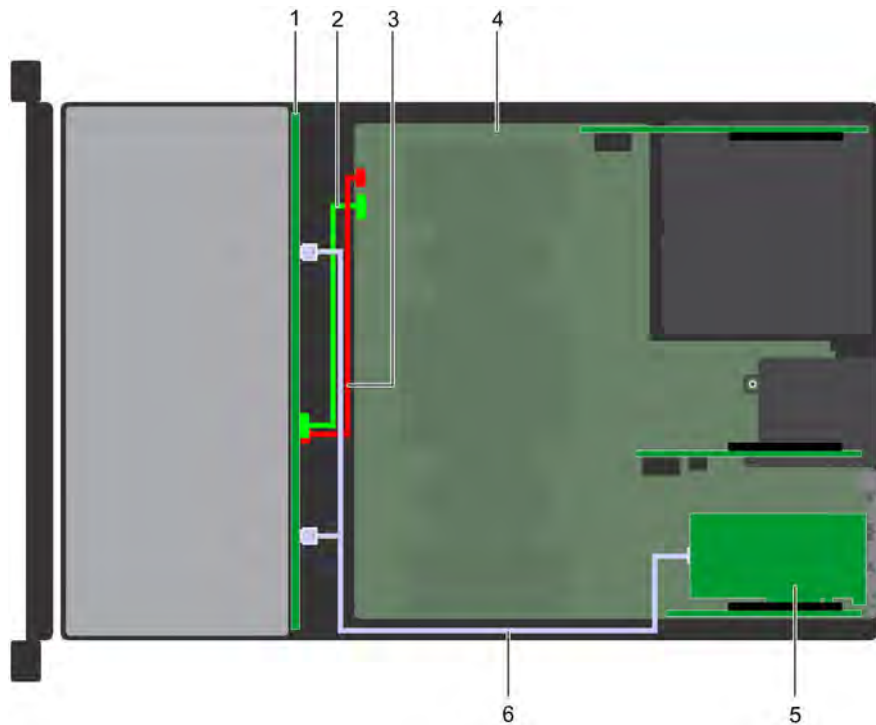
Figure 127. Cable routing – 8 x 3.5 inch drive backplane with adapter PERC (slot 3)

1	backplane	2	backplane signal cable
3	backplane power cable	4	system board
5	adapter PERC on slot 3	6	SAS cable

System battery

The system battery is used for low-level system functions such as powering the real-time and date settings of the system.

Replacing the system battery

Prerequisites

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

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   If applicable, close the PCIe card holder latch on the air shroud to release the full length card.
4   If applicable, disconnect the cables from expansion card(s) in the expansion card riser 1.
5   Remove the expansion card riser 1.

Steps

1   Locate the battery socket. For more information, see the System board jumpers and connectors section.

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

2   Use a plastic scribe to pry out the system battery.

Figure 128. Removing the system battery

3   To install a new system battery, hold the battery with the positive side facing up and slide it under the securing tabs.

4   Press the battery into the connector until it snaps into place.

Figure 129. Installing the system battery

Next steps

1   Install the expansion card riser 1.

2   If applicable, connect the cables to the expansion card(s) in the expansion card riser 1.

3   If applicable, open the PCIe card holder latch on the air shroud to secure the full length expansion card.

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

5   While booting, press F2 to enter the System Setup and ensure that the battery is operating properly.

6   Enter the correct time and date in the System Setup **Time** and **Date** fields.

7   Exit the System Setup.

USB 3.0 module

An additional USB 3.0 port can be added to the front of the system. The USB 3.0 module cable connects to the internal USB port on the system board. In this scenario, the default internal USB port is available under the backplane cover.

ⓘ **NOTE: The position of the USB 3.0 module and default internal USB port may vary depending on the configuration of your system.**

Removing the USB 3.0 module

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.

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

3   Remove the backplane cover.

4   Remove the cooling fan assembly.

5   Remove the air shroud.

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6   Remove the internal USB memory key.

ⓘ **NOTE: The position of the USB 3.0 module may vary depending on the configuration of your
system.**

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

Steps

1   Disconnect the USB cable from the internal USB port, and power cable from the backplane 3 power connector on the system board.

2   Using a Phillips #2 screwdriver, loosen the screw on the USB 3.0 module.

3   Slide the USB 3.0 module out of the system.
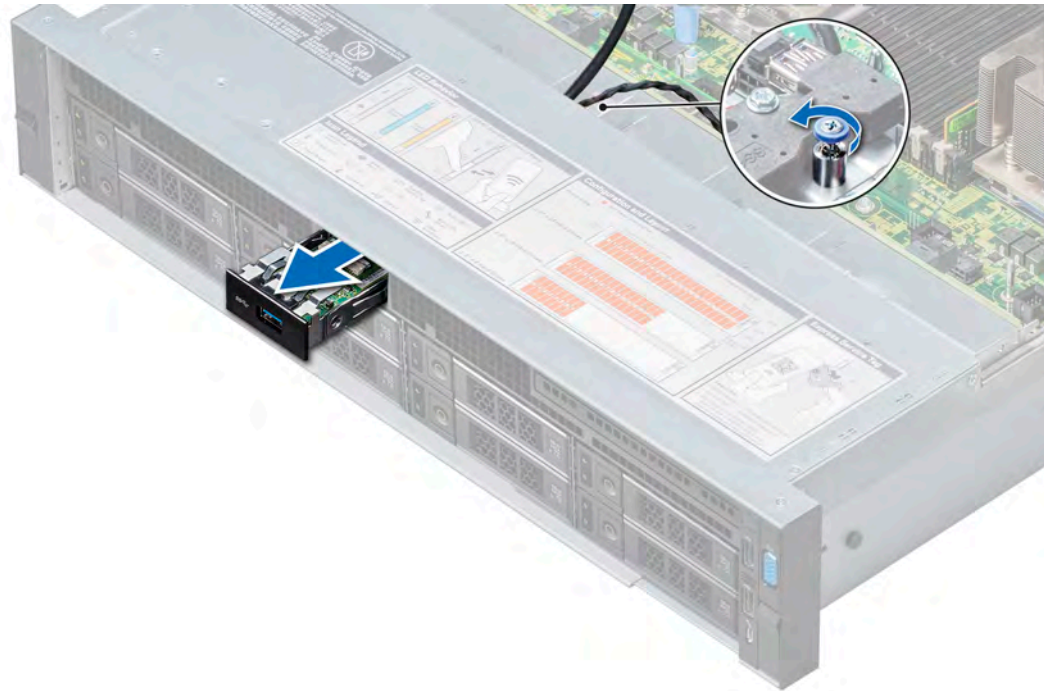
Figure 130. Removing the USB 3.0 module

Next step
Install the USB 3.0 module.

Installing the USB 3.0 module

Prerequisite

Follow the safety guidelines listed in Safety instructions.

ⓘ **NOTE: The position of the USB 3.0 module may vary depending on the configuration of your system.**

Steps

1   Route the power and the USB cables on the USB 3.0 module through the USB 3.0 module slot on the front panel.

2   Insert the USB 3.0 module into the slot on the front panel.

3   Align the screw on the module with the screw hole on the system.

4   Using a Phillips #2 screwdriver, tighten the screw to secure the module to the system.

5   Route and connect the USB cable to internal USB port and power cable to the backplane 3 power connector on the system board. To
locate the connector, see the System board jumpers and connectors section.
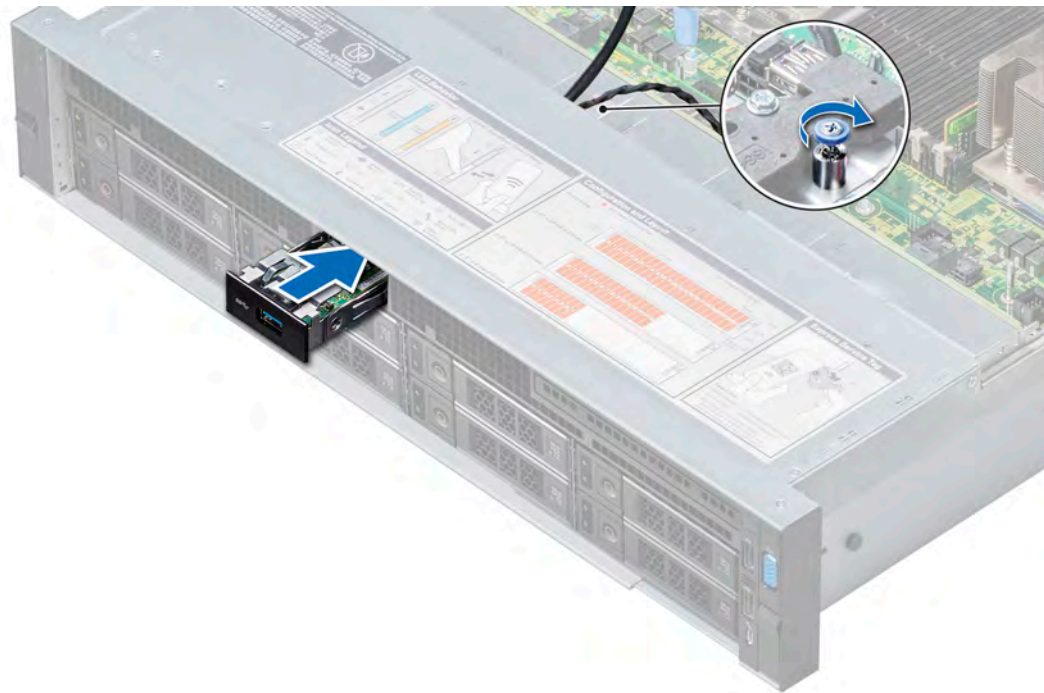
Figure 131. Installing the USB 3.0 module

Next steps

1 Install the internal USB memory key.
2 Install the air shroud.
3 Install the cooling fan assembly.
4 Install the backplane cover.
5 Follow the procedure listed in After working inside your system.

Optional internal USB memory key

An optional USB memory key can be installed in the internal USB 3.0 port.

ⓘ **NOTE: To locate the internal USB port on the system board, see the System board jumpers and connectors section.**

For configurations that support USB 3.0 module, the USB 3.0 module cable connects to the internal USB port on the system board. In this scenario, the default internal USB port is available under the backplane cover. The position of the default internal USB port may vary depending on the configuration of your system.

Replacing an internal USB memory key

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 × 57.15 mm long × 7.9 mm high.**

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

Steps

1   Locate the USB port or USB memory key on the system board.

To locate the USB port, see the Optional internal USB memory key section.

2   If installed, remove the USB memory key from the USB port.

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

Next steps

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

2   While booting, press F2 to enter **System Setup** and verify that the system detects the USB memory key.

Optional optical drive

Optical drives retrieve and store data on optical discs such as CD and DVD. Optical drives can be categorized into two basic types: optical disc readers and optical disc writers.

Removing the optical drive

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.

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

3   Remove the backplane cover.

4   Remove the air shroud.

5   Disconnect the power and data cables from the back of the drive.

> ⓘ **NOTE:** Ensure that you note the routing of the power and data cable on the side of the system as you remove them from the system board and drive. Route these cables properly when you replace them to prevent them from being pinched or crimped.

Steps

1   Press the release tab to release the optical drive.

2   Slide the optical drive out of the system.
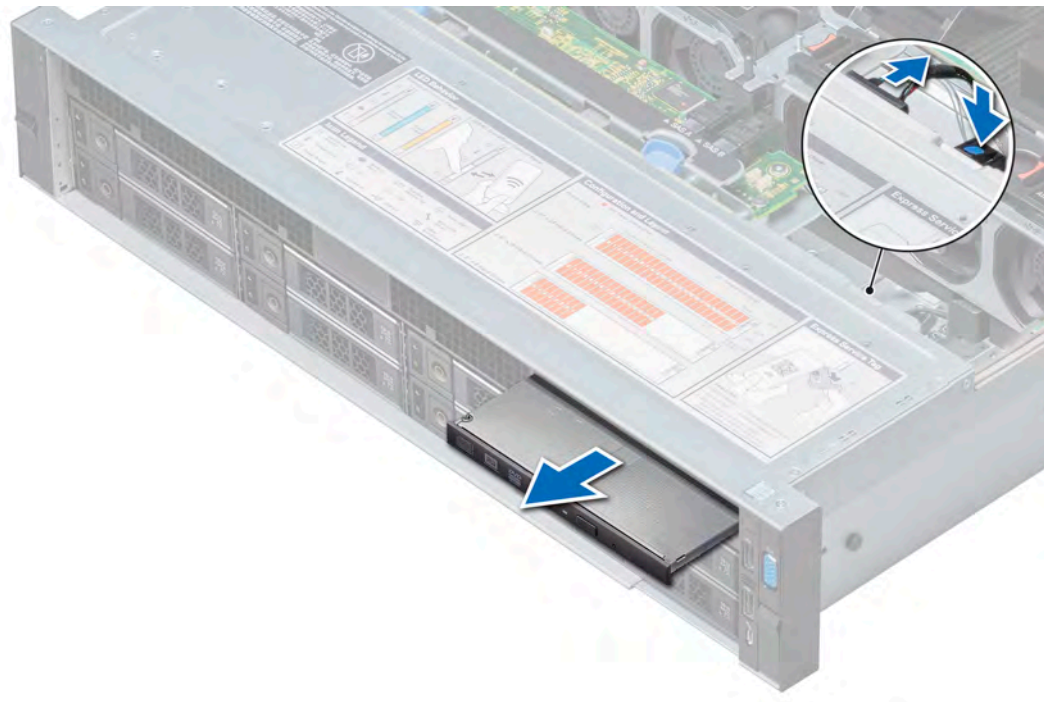
Figure 132. Removing the optical drive

Next steps

1 Install the optical drive.
2 If you are not adding a new optical drive, install the optical drive blank.
   The procedure to install the optical drive blank is the same as the optical drive.

Installing the optional optical drive

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Align the optical drive with the optical drive slot on the front of the system.
2 Slide in the optical drive until the release tab snaps into place.
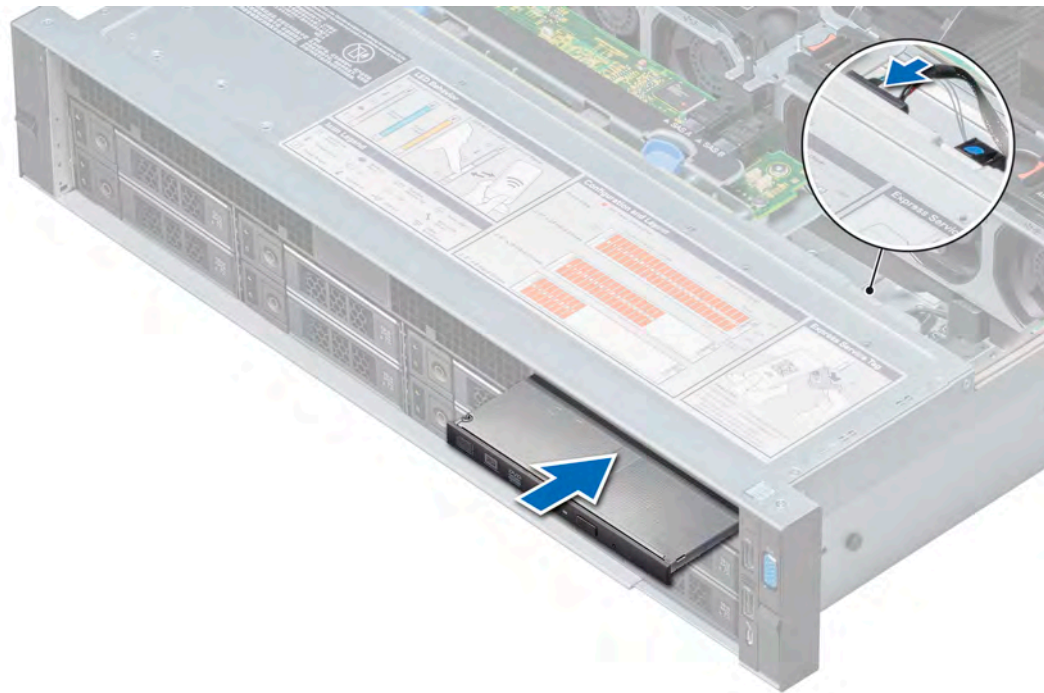
Figure 133. Installing the optional optical drive

Next steps

1   Connect the power and data cables to the optical drive.

   ⓘ | **NOTE: Route the cable properly on the side of the system to prevent it from being pinched or crimped.**

2   Install the air shroud.
3   Install the backplane cover.
4   Follow the procedure listed in After working inside your system.

Power supply units

The power supply unit (PSU) is an internal hardware component which supplies power to the components in the system.

Your system supports one of the following:

- Two 2400 W, 2000 W, 1600 W, 1100 W, 750 W, or 495 W AC PSUs
- Two 1100 W DC PSUs
- Two 1100 W or 750 W Mixed Mode HVDC PSUs

ⓘ | **NOTE: For more information, see the Technical specifications section.**

⚠ | **CAUTION: If two PSUs are installed, both the PSUs must have the same type of label. For example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. Mixing PSUs will result in mismatch condition or failure to turn the system on.**

ⓘ | **NOTE: Titanium PSU is nominally rated for 200 V AC to 240 V AC input only.**

ⓘ | **NOTE: When two identical PSUs are installed, power supply redundancy (1+1 – with redundancy or 2+0 – without redundancy) is configured in system BIOS. In redundant mode, power is supplied to the system equally from both PSUs when Hot Spare is disabled. When Hot Spare is enabled, one of the PSUs is put into the sleep mode when system utilization is low in order to maximize efficiency.**

(i) **NOTE: If two PSUs are used, they must be of the same maximum output power.**

Hot spare feature

Your system supports the hot spare feature that significantly reduces the power overhead associated with 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 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, then the redundant PSU is switched to the active state.
· If the load on the active PSU falls below 20 percent, 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 about iDRAC settings, see the *Integrated Dell Remote Access Controller User's Guide* available at **Dell.com/idracmanuals**.

Removing a power supply unit blank

Prerequisite
Follow the safety guidelines listed in Safety instructions.

Step
If you are installing a second PSU, remove the PSU blank in the bay by pulling the blank outward.

⚠ **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 134. Removing a power supply unit blank

Next step
Install the PSU or PSU blank.

Installing a power supply unit blank

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.

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2   Install the power supply unit (PSU) blank only in the second PSU bay.

Step

Align the PSU blank with the PSU slot and push it into the PSU slot until it clicks into place.
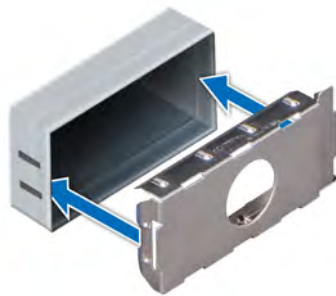
Figure 135. Installing a power supply unit blank

Removing a power supply unit

The procedure for removing AC and DC PSUs is identical.

Prerequisites

△ **CAUTION: The system needs 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 Safety instructions.

2   Disconnect the power cable from the power source and from the PSU you intend to remove, and then remove the cable from the strap on the PSU handle.

3   Unlatch and lift the optional cable management arm if it interferes with the PSU removal.

For information about the cable management arm, see the system's rack documentation at **Dell.com/poweredgemanuals**.

Step

Press the orange release latch and slide the PSU out of the system by using the PSU handle.

Figure 136. Removing a power supply unit

Next step
Install the PSU or the PSU blank.

Installing a power supply unit

The procedure for installing AC and DC PSUs is identical.

Prerequisites

1   Follow the safety guidelines listed in 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.**

Step

Slide the PSU into the system until the PSU is fully seated and the release latch snaps into place.

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Figure 137. Installing a power supply unit

Next steps

1 If you have unlatched the cable management arm, relatch it. For information about the cable management arm, see the system's rack documentation at **Dell.com/poweredgemanuals**.

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. Wait until the new PSU is discovered and enabled before you remove the other PSU. The PSU status indicator turns green to signify that the PSU is functioning properly.**

Wiring instructions for a DC power supply unit

Your system supports up to two –(48–60) V DC power supply units (PSUs).

⚠ **WARNING: For equipment using –(48–60) V DC power supply units (PSUs), a qualified electrician must perform all connections to DC power and to safety grounds. Do not attempt connecting to DC power or installing grounds yourself. All electrical wiring must comply with applicable local or national codes and practices. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow all safety instructions that came with the product.**

⚠ **CAUTION: Wire the unit with copper only, unless otherwise specified, use only 10 American Wire Gauge (AWG) wire rated minimum 90ºC for source and return. Protect the –(48–60) V DC (1 wire) with a branch circuit over-current protection rated 50 A for DC with a high interrupt current rating.**

⚠ **CAUTION: Connect the equipment to a –(48–60) V DC supply source that is electrically isolated from the AC source (reliably grounded –(48–60) V DC SELV source). Ensure that the –(48–60) V DC source is efficiently secured to earth (ground).**

ⓘ **NOTE: A readily accessible disconnect device that is suitably approved and rated shall be incorporated in the field wiring.**

Input requirements

• Supply voltage: –(48–60) V DC

- Current consumption: 32 A (maximum)

Kit contents

- Dell part number 6RYJ9 terminal block or equivalent (1)
- #6-32 nut equipped with lock washer (1)

Required tools

Wire-stripper pliers capable of removing insulation from size 10 AWG solid or stranded, insulated copper wire.

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

Required wires

- One UL 10 AWG, 2 m maximum (stranded) black wire [–(48–60) V DC].
- One UL 10 AWG, 2 m maximum (stranded) red wire (V DC return).
- One UL 10 AWG, 2 m maximum, green with a yellow stripe, stranded wire (safety ground).

Assembling and connecting safety ground wire

Prerequisite

⚠ **WARNING: For equipment using –(48–60) V DC power supply units (PSUs), a qualified electrician must perform all connections to DC power and to safety grounds. Do not attempt connecting to DC power or installing grounds yourself. All electrical wiring must comply with applicable local or national codes and practices. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow all safety instructions that came with the product.**

Steps

1. Strip the insulation from the end of the green or yellow wire, exposing approximately 4.5 mm (0.175 inch) of copper wire.

2. Using a hand-crimping tool (Tyco Electronics, 58433-3 or equivalent), crimp the ring-tongue terminal (Jeeson Terminals Inc., R5-4SA or equivalent) to the green and yellow wire (safety ground wire).

3. Connect the safety ground wire to the grounding post on the back of the system by using a #6-32 nut equipped with a locking washer.

Assembling DC input power wires

Prerequisite

⚠ **WARNING: For equipment using –(48–60) V DC power supply units (PSUs), a qualified electrician must perform all connections to DC power and to safety grounds. Do not attempt connecting to DC power or installing grounds yourself. All electrical wiring must comply with applicable local or national codes and practices. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow all safety instructions that came with the product.**

Steps

1. Strip the insulation from the ends of the DC power wires, exposing approximately 13 mm (0.5 inch) of copper wire.

   ⚠ **WARNING: Reversing polarity when connecting DC power wires can permanently damage the power supply or the system.**

2. Insert the copper ends into the mating connectors and tighten the captive screws at the top of the mating connector using a Phillips #2 screwdriver.

   ⚠ **WARNING: To protect the power supply from electrostatic discharge, the captive screws must be covered with the rubber cap before inserting the mating connector into the power supply.**

3   Rotate the rubber cap clockwise to fix it over the captive screws.

4   Insert the mating connector into the power supply.

Control panel

A control panel allows you to manually control the inputs to the server.

Your system supports:

- Left control panel: Contains status LEDs, system ID button, and iDRAC Quick Sync 2 (optional).
- Right control panel: Contains power button, USB 2.0 ports, VGA port, micro USB for iDRAC Direct, and status LED for iDRAC Direct.

Removing the left control panel

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.

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

3   Remove the cooling fan assembly.

4   Remove the air shroud.

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

Steps

1   Lift the cable latch and disconnect the control panel cable from the system board connector.

2   Using a Phillips #1 screwdriver, remove the screws that secure the control panel and cable tube to the system.

3   Holding the control panel and cable tube by its sides, remove the control panel and cable tube away from the system.

Figure 138. Removing the left control panel

Next step

Install the left control panel.

Installing the left control panel

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Route the control panel cable through the side wall of the system.

2   Align the left control panel assembly with the control panel slot on the system and attach the control panel assembly to the system.

3   Connect the control panel cable to the system board connector and secure it using cable latch.

4   Using a Phillips #1 screwdriver, install the screws that secure the control panel and cable tube to the system.
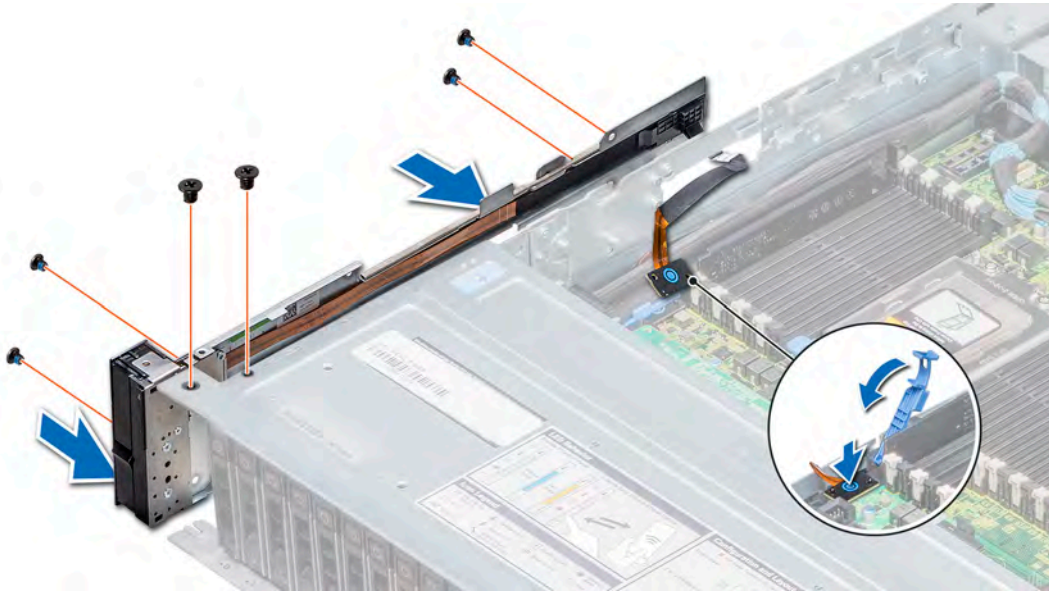
Figure 139. Installing the left control panel

Next steps

1   Install the air shroud.

2   Install the cooling fan assembly.

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

Removing the right control panel

Prerequisites

1   Follow the safety guidelines listed in Safety instructions.

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

> (i) **NOTE: Ensure that you note the routing of the cables as you remove them from the system board. You must route the cables properly when you replace them to prevent the cables from being pinched or crimped.**

3   Remove the air shroud.

4   Remove the cooling fan assembly.

Steps

1 Disconnect the VGA cable from the system board.
2 Lift the cable latch and disconnect the control panel cable from the system board connector.
3 Using a Phillips #1 screwdriver, remove the screws that secure the control panel and cable tube to the system.
4 Holding the control panel and cable tube by its sides, remove the control panel and cable tube away from the system.
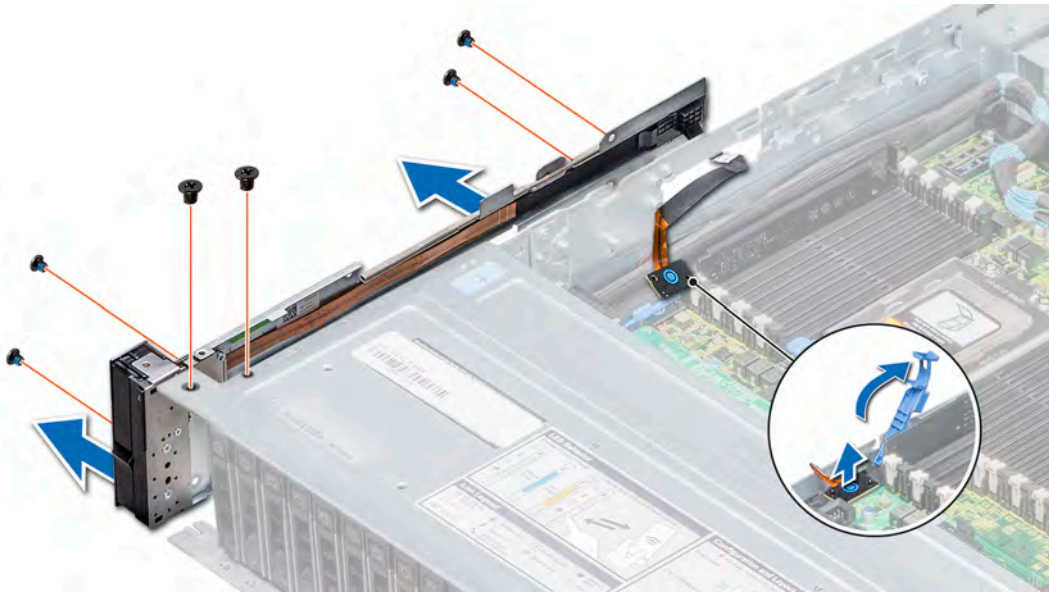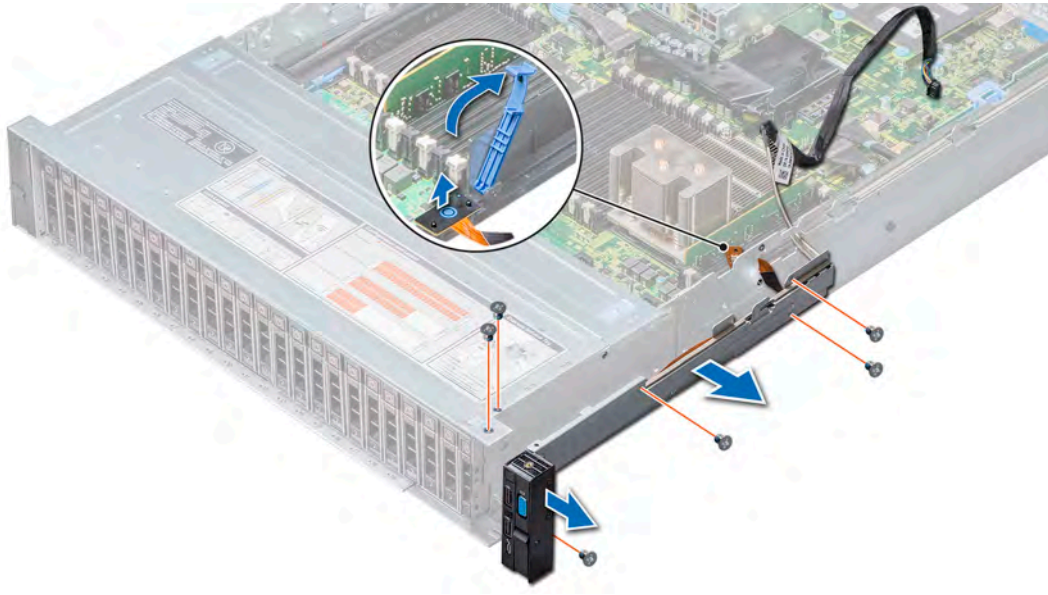

Figure 140. Removing the right control panel

Next step
Install the right control panel.

Installing the right control panel

Prerequisite
Follow the safety guidelines listed in Safety instructions.

Steps

1 Route the control panel cable and VGA cable through the side wall of the system.
2 Align the control panel with the control panel slot on the system and attach the control panel to the system.
3 Connect the VGA cable to the system board.
4 Connect the control panel cable to the system board and secure it using cable latch.
5 Using a Phillips #1 screwdriver, install the screws that secure the control panel and cable tube to the system.
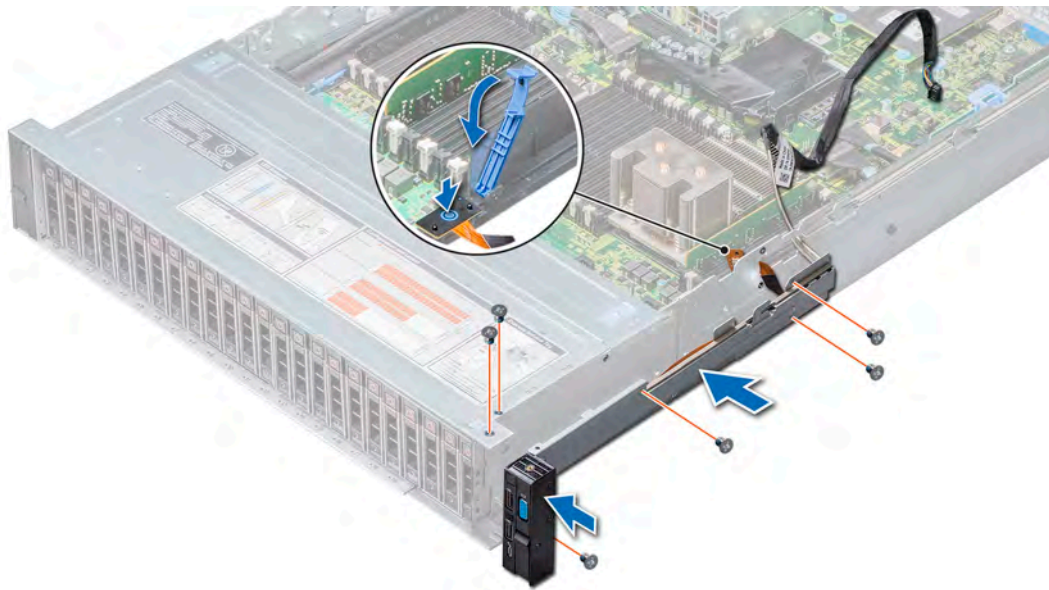
Figure 141. Installing the right control panel

Next steps

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

System board

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

Removing the system board

Prerequisites

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

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

1   Follow the safety guidelines listed in Safety instructions.
2   Follow the procedure listed in Before working inside your system.
3   Remove the following:
    a   Air shroud
    b   Cooling fan assembly
    c   Rear drive cage (if applicable)
    d   Mid drive tray (if applicable)

    e   Power supply unit(s)

    f   Expansion card riser 1

    g   Expansion card riser 2

    h   Expansion card riser 3

    i   Processors

    j   Heat sinks

    k   IDSDM or vFlash module

    l   Internal USB memory key (if applicable)

    m   USB 3.0 module (if applicable)

    n   Memory modules and memory module blanks

    o   Network daughter card

Steps

1   Disconnect all cables from the system board.

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

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

2   Holding the system board holder, lift the blue release pin, slide the system board toward the front of the system to disengage the connectors on the system board from the slot on the system, and lift the system board out of the system.
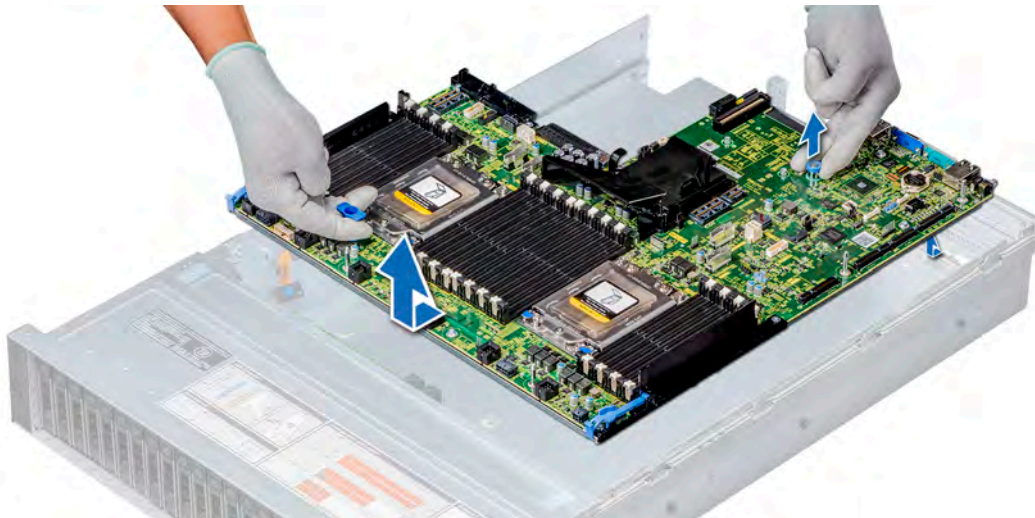

Figure 142. Removing the system board

Next step

Install the system board.

Installing the system board

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1   Unpack the replacement 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 blue release pin, lower the system board aligning the connectors into the slot, and place it in the system until the release pin click into place.
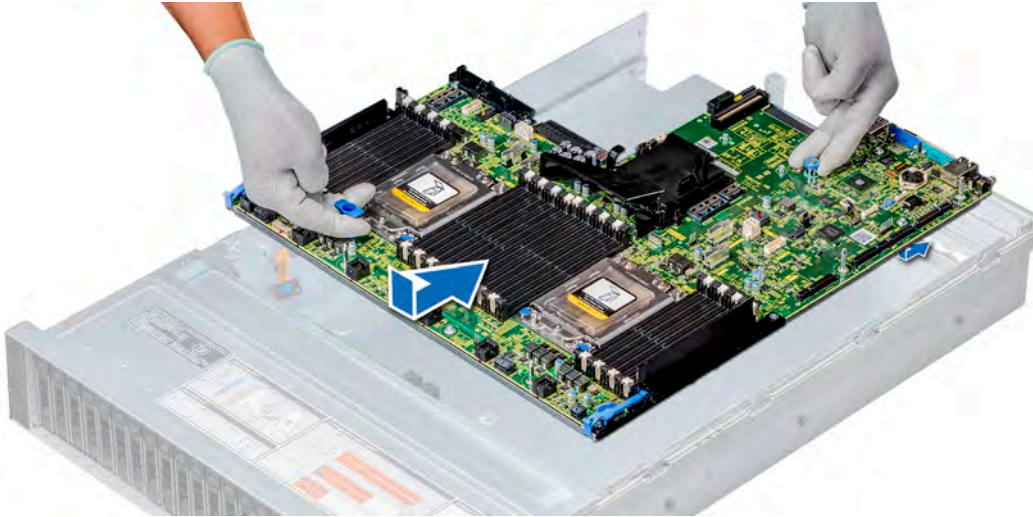
Figure 143. Installing the system board

Next steps

1   Replace the following:

   a   Trusted Platform Module (TPM).
   b   Air shroud
   c   Cooling fan assembly
   d   Rear drive cage (if applicable)
   e   Mid drive tray (if applicable)
   f   Power supply unit(s)
   g   Expansion card riser 1
   h   Expansion card riser 2
   i   Expansion card riser 3
   j   Processors
   k   Heat sinks
   l   IDSDM or vFlash module
   m   Internal USB memory key (if applicable)
   n   USB 3.0 module (if applicable)
   o   Memory modules and memory module blanks
   p   Network daughter card

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   Follow the procedure listed in After working inside your system.

4   Ensure that you:

   a   Use the Easy Restore feature to restore the Service Tag. For more information, see the Restoring the Service Tag by using the Easy Restore feature section.
   b   If the Service Tag is not backed up in the backup flash device, enter the Service Tag manually. For more information, see the Entering the system Service Tag by using System Setup section.

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      c   Update the BIOS and iDRAC versions.

      d   Re-enable the Trusted Platform Module (TPM). For more information, see the Upgrading the Trusted Platform Module section.

5   Import your new or existing iDRAC Enterprise license.

     For more information, see Integrated Dell Remote Access Controller User's Guide, at **Dell.com/idracmanuals**.

Entering the system Service Tag by using System Setup

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

1   Turn on the system.

2   Press F2 to enter System Setup.

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. After the Service Tag is entered, it cannot be updated or changed.**

5   Click **Ok**.

6   Import your new or existing iDRAC Enterprise license.

     For more information, see the *Integrated Dell Remote Access Controller User's Guide* at **Dell.com/idracmanuals**.

Restoring the Service Tag by using the Easy Restore feature

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

1   Turn on the system.

     If BIOS detects a new system board, and if the Service Tag is present in the backup flash device, BIOS displays the Service Tag, the status of the license, and the **UEFI Diagnostics** version.

2   Perform one of the following steps:

     ·   Press **Y** to restore the Service Tag, license, and diagnostics information.

     ·   Press **N** to navigate to the Dell Lifecycle Controller based restore options.

     ·   Press F10 to restore data from a previously created **Hardware Server Profile**.

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

     ⓘ **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.**

3   Perform one of the following steps:

     ·   Press **Y** to restore the system configuration data.

     ·   Press **N** to use the default configuration settings.

     After the restore process is complete, the system restarts.

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   Turn on the system.

2   To enter the **System Setup**, press **F2**.

3 Click **Service Tag Settings**.

4 Enter the service tag.

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

5 Click **OK**.

Trusted Platform Module

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

Upgrading the Trusted Platform Module

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.

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

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

About this task

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

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

Removing the TPM

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.

Figure 144. Installing the TPM

Next steps

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

Initializing TPM for BitLocker users

Initialize the TPM.

For more information, see http://technet.microsoft.com/en-us/library/cc753140.aspx.

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

Using system diagnostics

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

Dell Embedded System Diagnostics

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

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

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

Running the Embedded System Diagnostics from Boot Manager

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

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

1   As the system boots, press F10.
2   Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.

The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

System diagnostic controls

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

Jumpers and connectors

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

Topics:

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

System board jumpers and connectors
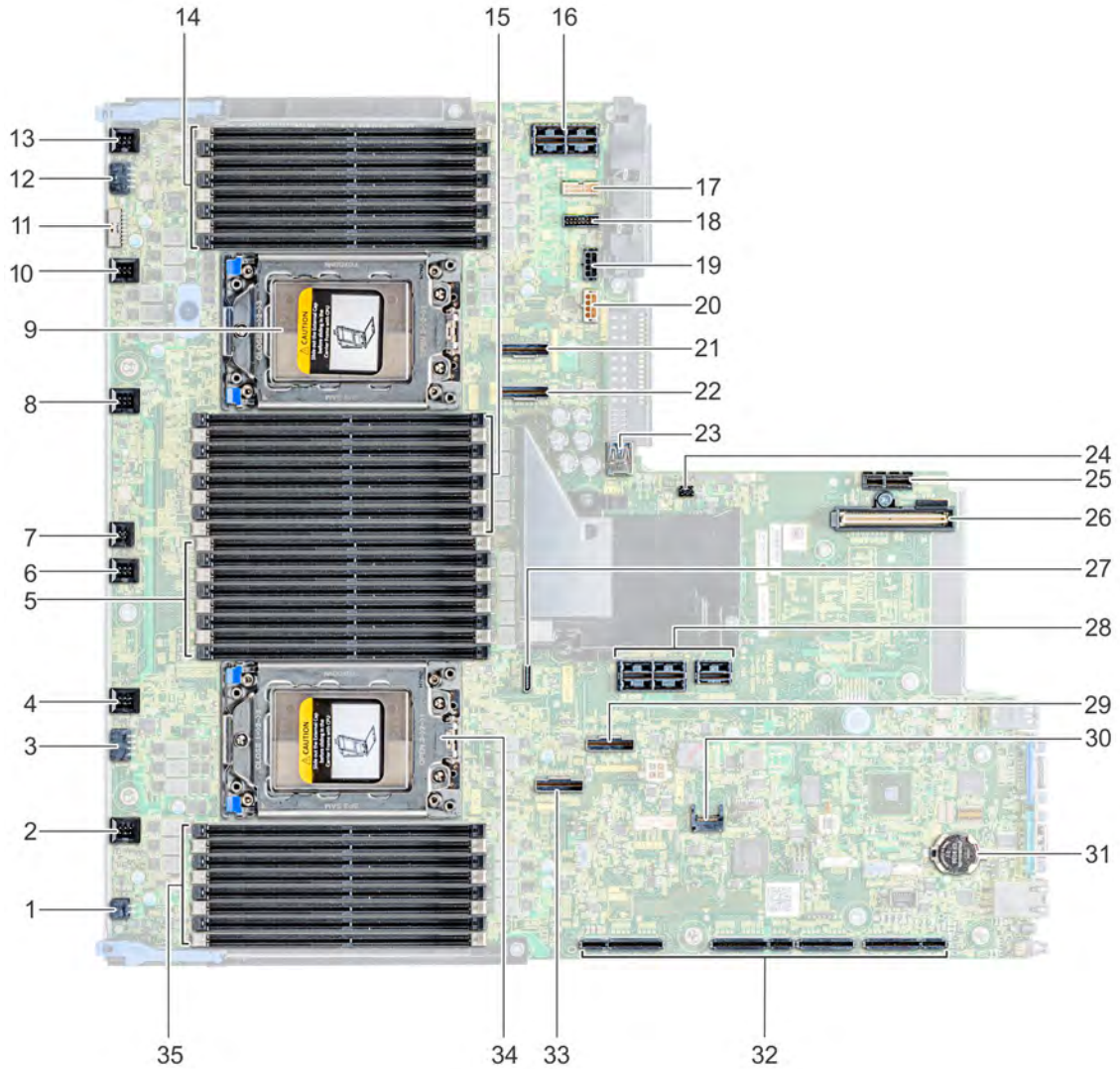
Figure 145. System board jumpers and connectors

Table 49. System board jumpers and connectors

Item	Connector	Description
1	J_ODD	Optical drive power connector
2	J_FAN2_6	Cooling fan 6 connector
3	J_BP3	Backplane 3 power connector
4	J_FAN2_5	Cooling fan 5 connector
5	A9, A1, A10, A2, A11, A3, A12, A4 (CPU1)	Memory module sockets
6	J_FAN2_4	Cooling fan 4 connector
7	INTRUSION_DET	Intrusion switch connector

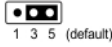| Item	Connector	Description
8	J_FAN2_3	Cooling fan 3 connector
9	CPU2	Processor 2
10	J_FAN2_2	Cooling fan 2 connector
11	J_BP_SIG1	Backplane 1 signal connector
12	J_BP1	Backplane 1 power connector
13	J_FAN2_1	Cooling fan 1 connector
14	B9, B1, B10, B2, B11, B3, B12, B4	Memory module sockets
15	B13, B5, B14, B6, B15, B7, B1, B8	Memory module sockets
16	J_R3_X24	Riser 3 connector
17	J_BP_SIG2	Backplane 2 signal connector
18	J_BP_SIG0	Backplane 0 signal connector
19	J_BP0 (RSR3_225W)	Backplane 0 power connector (Riser 3 PCIe 225 W power)
20	J_BP2 (RSR2_225W)	Backplane 2 power connector (Riser 2 PCIe 225 W power)
21	SATA_C/PCIE_C	PCIe card connector
22	SATA_D/PCIE_D	PCIe card connector
23	J_USB_INT	Internal USB connector
24	PWRD_EN/NVRAM_CLR	Reset BIOS password/clear NVRAM jumpers
25	J_IDSDM	IDSDM or vFlash connector
26	J_NDC	NDC connector
27	J_SATA	SATA optical drive
28	J_R2	Riser 2 connector
29	SATA_A/PCIE_A	PCIe card connector
30	J_TPM_MODULE	TPM connector
31	BATTERY	Battery connector
32	J_R1	Riser 1 connector
33	SATA_B/PCIE_B	PCIe card connector
34	CPU1	Processor 1
35	A8, A16, A7, A15, A6, A14, A5, A13	Memory module sockets

System board jumper settings

For information on resetting the password jumper to disable a password, see the Disabling a forgotten password section.

Table 50. System board jumper settings

Jumper	Setting	Description
PWRD_EN	2 4 6 (default)	The BIOS password feature is enabled.
	2 4 6	The BIOS password feature is disabled. iDRAC local access is unlocked at next AC power cycle. iDRAC password reset is enabled in F2 iDRAC settings menu.
NVRAM_CLR	1 3 5 (default)	The BIOS configuration settings are retained at system boot.
	1 3 5	The BIOS configuration settings are cleared at system boot.

△ **CAUTION: Be careful when altering BIOS settings. The BIOS interface is designed for advanced users, you can change a setting that could prevent your computer from starting correctly and you could suffer a potential loss of data.**

1   Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

2   Remove the system cover.

3   Move the jumper on the system board jumper from pins 3 and 5 to pins 1 and 3 and wait approximately 10 seconds.

4   Replace the jumper plug on pins 3 and 5.

5   Install the system cover. Reconnect the system to its electrical outlet and turn on the system, including any attached peripherals.

Disabling 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.

Prerequisite

△ **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   Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

2   Remove the system cover.

3   Move the jumper on the system board jumper from pins 2 and 4 to pins 4 and 6.

4   Install the system cover.

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

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

5   Reconnect the system to its electrical outlet and turn on the system, including any attached peripherals.

6   Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

7   Remove the system cover.

8   Move the jumper on the system board jumper from pins 4 and 6 to pins 2 and 4.

9   Install the system cover.

10   Reconnect the system to its electrical outlet and turn on the system, including any attached peripherals.

11   Assign a new system and/or setup password.

Getting help

Topics:

- Contacting Dell
- Documentation feedback
- Accessing system information by using QRL
- Receiving automated support with SupportAssist

Contacting Dell

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

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

Documentation feedback

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

Accessing system information by using QRL

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

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

The QRL includes the following information about your system:

- How-to videos

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

Steps

1   Go to **Dell.com/QRL** and navigate to your specific product or
2   Use your smart phone or tablet to scan the model-specific Quick Resource (QR) code on your PowerEdge system or in the Quick Resource Locator section.

Quick Resource Locator for PowerEdge R7425 system

Figure 146. Quick Resource Locator for PowerEdge R7425 system

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 Dell.com/SupportAssist.