Dell EMC XC Core XC6515

Installation and Service Manual

August 2020
Rev. 2.0

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

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Revision history

Date	Document revision	Description of changes
August 2020	2	Edited the following sections: • Dell EMC XC Core XC6515 system overview • Initial system setup and configuration • Pre-operating system management applications • Jumpers and connectors • Technical specifications
July 2020	1	Initial release

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About this document

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

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Dell EMC XC Core XC6515 system overview

The Dell EMC XC Core XC6515 system is a 1U server that supports:

- One AMD EPYC 7002 series processor
- Sixteen DIMM slots
- Two redundant AC power supply units
- 8 x 2.5 inch SAS/SATA drives

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

For more information about supported drives, see the Drive specifications section.

Topics:

Front view of the system

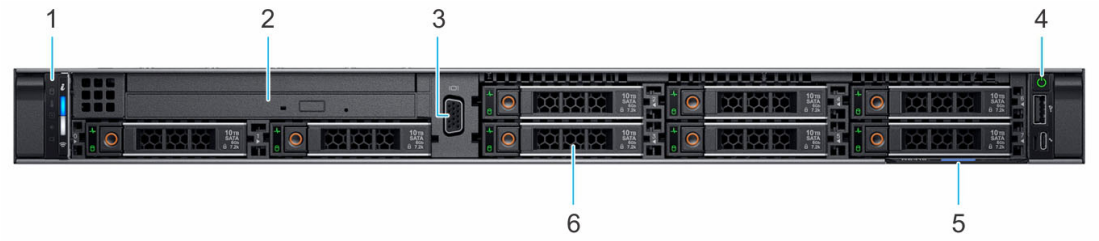


Figure 1. Front view of 8 x 2.5-inch drive system

1. Left control panel
2. Optical drive (optional)
3. VGA port
4. Right control panel
5. Information tag
6. Drive (8)

Table 1. Features available on the front of the system

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the system health, system ID, status LED, and the iDRAC Quick Sync 2 (wireless) indicator. **NOTE:** The iDRAC Quick Sync 2 indicator is available only on certain configurations. • Status LED: Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED (Chassis health and system ID) bar. For more information, see the Status LED indicators section. • Quick Sync 2 (wireless): Indicates a Quick Sync enabled system. The Quick Sync feature is optional. This feature

Table 1. Features available on the front of the system (continued)

Item	Ports, panels, and slots	Icon	Description
			allows management of the system by using mobile devices called as OpenManage Mobile (OMM) feature. Using iDRAC Quick Sync 2 with OpenManage Mobile (OMM) aggregates hardware or firmware inventory and various system level diagnostic and error information that can be used in troubleshooting the system. For more information, see the *iDRAC User's Guide* available at www.dell.com/idracmanuals
2	Optical drive (optional)	N/A	One optional slim SATA DVD-ROM drive or DVD+/-RW drive.
3	VGA port		Enables you to connect a display device to the system. For more information, see the VGA ports specifications section.
4	Right control panel	N/A	Contains the power button, USB port, iDRAC Direct micro port, and the iDRAC Direct status LED.
5	Information tag		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.
6	Drive (8)	N/A	Enables you to install drives that are supported on your system. For more information about drives, see the Drives section.

Left control panel view

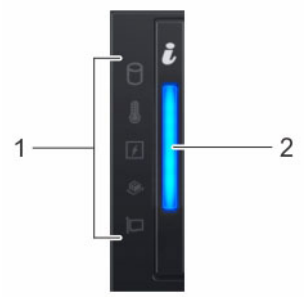


Figure 2. Left control panel without optional iDRAC Quick Sync 2.0 indicator

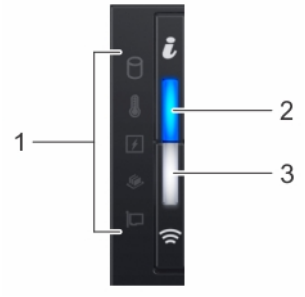


Figure 3. Left control panel with optional iDRAC Quick Sync 2.0 indicator

1. Status LED indicators
2. System health and system ID indicator
3. iDRAC Quick Sync 2 wireless indicator (optional)

Table 2. Left control panel

Item	Indicator, button, or connector	Icon	Description
1	Status LED indicators	N/A	Indicates the status of the system. For more information, see the Status LED indicators section.
2	System health and system ID indicator	🛈	Indicates the system health. For more information, see the System health and system ID indicator codes section.

NOTE: For more information about the indicator codes, see the System diagnostics and indicator codes section.

Table 3. Decoding of ID button and Wireless button

Status	ID Button	Wireless Button
Healthy	Solid Blue	Off
Fault	Blinking Amber	Off
System ID	Blinking Blue	Off
Healthy, Wireless ON	Solid Blue	Solid White
Fault, Wireless ON	Blinking Amber	Solid White
System ID, Wireless ON	Blinking Blue	Solid White
Healthy, Wireless Communication	Solid Blue	Blinking White
Fault, Wireless Communication	Blinking Amber	Blinking White
System ID, Wireless Communication	Solid Blue	Blinking White
Healthy, Wireless Fault	Solid Blue	Blinking Amber
Fault, Wireless Fault	Blinking Amber	Blinking Amber
System ID, Wireless Fault	Blinking Blue	Blinking Amber

Front panel features

Status LED indicators

Indicate the status of the system. For more information, see the Status LED indicators section.

System health and system ID

Indicates the system health. For more information, see the System health and system ID indicator codes section.

iDRAC Quick Sync 2 wireless indicator

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 www.dell.com/poweredgemanuals

Power-on indicator/Power button

Indicates if the system is powered on or off. Press the power button to manually power on or off the system.

NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.

NMI button

Press the Non-Maskable Interrupt (NMI) button to troubleshoot software application and device driver errors when running certain operating systems. Use the end of a paper clip to press the NMI button.

NOTE: Use the NMI button only if directed to do so by qualified support personnel or by the operating system documentation.

System Identification (ID) button

The System Identification (ID) button is available on the front and back panels. Press the button to identify a system in a rack by powering on or off the system ID LED.

When pressed, the system ID LED in the back panel blinks until either the front or rear button is pressed again. Press the button to click between on or off mode.

NOTE: If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the BIOS progress mode.

NOTE: To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the **System ID** button for more than 15 seconds.

VGA port

Enables you to connect a display device to the system. For more information, see the Technical specifications section.

LCD menu buttons

The LCD menu buttons enable you to perform actions similar to GUI, RACADM, and the WS-Man interfaces.

Information tag

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.

LCD panel

The LCD panel displays system ID, status information, and system error messages. For more information, see the LCD panel section.

Hard drive

Enable you to install drives that are supported on your system. For more information about drives, see the Technical specifications section.

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 *Integrated Dell Remote Access Controller User's Guide* at www.dell.com/poweredgemanuals.

SD vFlash media card slot

The SD vFlash media card slot provides persistent on-demand local storage and a custom deployment environment that enables automation of system configuration, scripts, and imaging.

One vFlash media card is supported.

USB 3.0 port

The USB ports are 9-pin, 3.0-compliant. These ports enable you to connect USB devices to the system.

USB 2.0 port

The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.

Optical drive (optional)

Enables you to retrieve and store data on optical disks such as compact disks (CD) and digital versatile disks (DVD). For more information, see the Technical specifications section.

Tape drive slot (optional)

For information about the supported tape drives, see the Technical specifications section.

Quick Sync (optional)

By default, the Quick Sync feature is not available. The Quick Sync enables system management by using mobile phones. This feature aggregates hardware or firmware inventory, various system level diagnostics, and error information used in troubleshooting the system. For more information, see the *Integrated Dell Remote Access Controller User's Guide* at www.dell.com/openmanagemanuals

Blade handle

Use the blade handle to slide the blade out of the enclosure.

Status indicator

Indicates the status of a blade that is installed in an enclosure.

Management indicator

Indicates if the management functions of the USB1 port are controlled by the iDRAC.

Blade power button

Press the blade power button to power the system on or off. The indicator on the button indicates whether the system is on or off.

NOTE: To gracefully shut down an ACPI-compliant operating system, press the power button.

QSFP+ port

Use the QSFP+ port to access InfiniBand or Ethernet networks.

Numbers on the image

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

For more information about error messages, see the *Event and Error Message Reference Guide for 14th Generation Dell EMC PowerEdge Servers* at www.dell.com/qrl.

Right Control Panel View

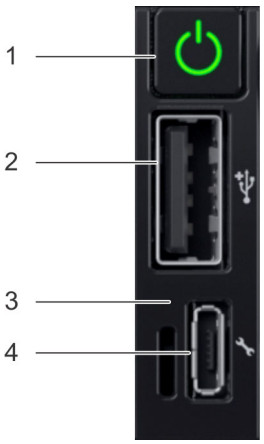


Figure 4. Right control panel

Table 4. Right control panel

Item	Indicator or button	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. **NOTE:** Press the power button to gracefully shut down an ACPI-compliant operating system.
2	USB 2.0-compliant port		The USB port is a 4-pin connector and 2.0-compliant. This port enables you to connect USB devices to the system.
3	iDRAC Direct LED indicator	N/A	The iDRAC Direct LED indicator lights up to indicate that the iDRAC Direct port is actively connected to a device.
4	iDRAC Direct port (Micro-AB USB)		The iDRAC Direct port (Micro-AB USB) enables you to access the iDRAC direct Micro-AB USB features. For more information, see the www.dell.com/idracmanuals. **NOTE:** You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 ft (0.91 meters). Cable quality can affect performance.

NOTE: For more information about the ports, see the USB ports specifications section.

Rear view of the system

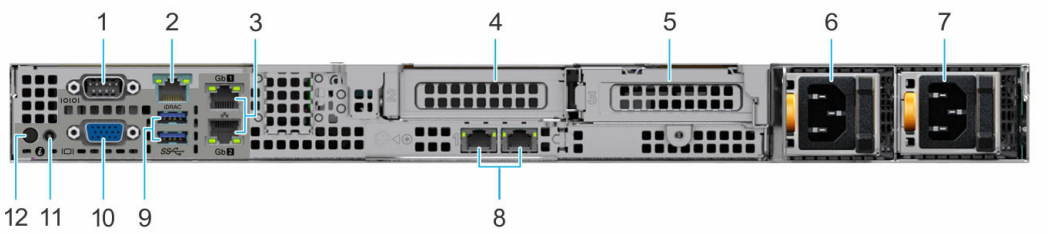


Figure 5. Rear view of the system

Table 5. Rear view of the system

Item	Ports, panels, or slots	Icon	Description
1	Serial port		Enables you to connect a serial device to the system. For more information, see the Technical Specifications section.
2	iDRAC dedicated port		Enables you to remotely access iDRAC. For more information, see the iDRAC User's Guide at www.dell.com/poweredgemanuals.
3	Ethernet ports (2)		The Ethernet ports that are integrated on the system board provide network connectivity. These NIC ports can also be shared with iDRAC when iDRAC network settings is set to shared mode. For more information about the supported configurations, see the Technical Specifications section.
4	PCIe expansion card riser 1A (slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information on the expansion cards that are supported on your system, see Technical Specifications section.
5	PCIe expansion card riser 2 (slot 3)	N/A	The expansion card riser enables you to connect PCI Express expansion cards. For more information on the expansion cards that are supported on your system, see Technical Specifications section.
6	Power supply unit (PSU 1)	N/A	For more information about the PSU configurations, see the Technical Specifications section.
7	Power supply unit (PSU 2)	N/A	For more information about the PSU configurations, see the Technical Specifications section.
8	LOM Riser Ethernet port (2) (Optional)	N/A	The NIC ports that are integrated on the LAN on Motherboard (LOM) riser provide network connectivity. For more information about the supported configurations, see theTechnical Specifications section.
9	USB 3.0 port (2)		These USB ports support USB 3.0.
10	VGA port		Enables you to connect a display device to the system. For more information, see the Technical Specifications section.
11	System status indicator cable port	N/A	Enables you to connect the status indicator cable and view system status when the CMA is installed.
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 16 seconds. **NOTE:** • To reset iDRAC using system ID, ensure that the system ID button is enabled in the iDRAC setup.

Table 5. Rear view of the system (continued)

Item	Ports, panels, or slots	Icon	Description
			• 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.

For more information about the ports and connectors, see the Technical Specifications section.

Inside the system

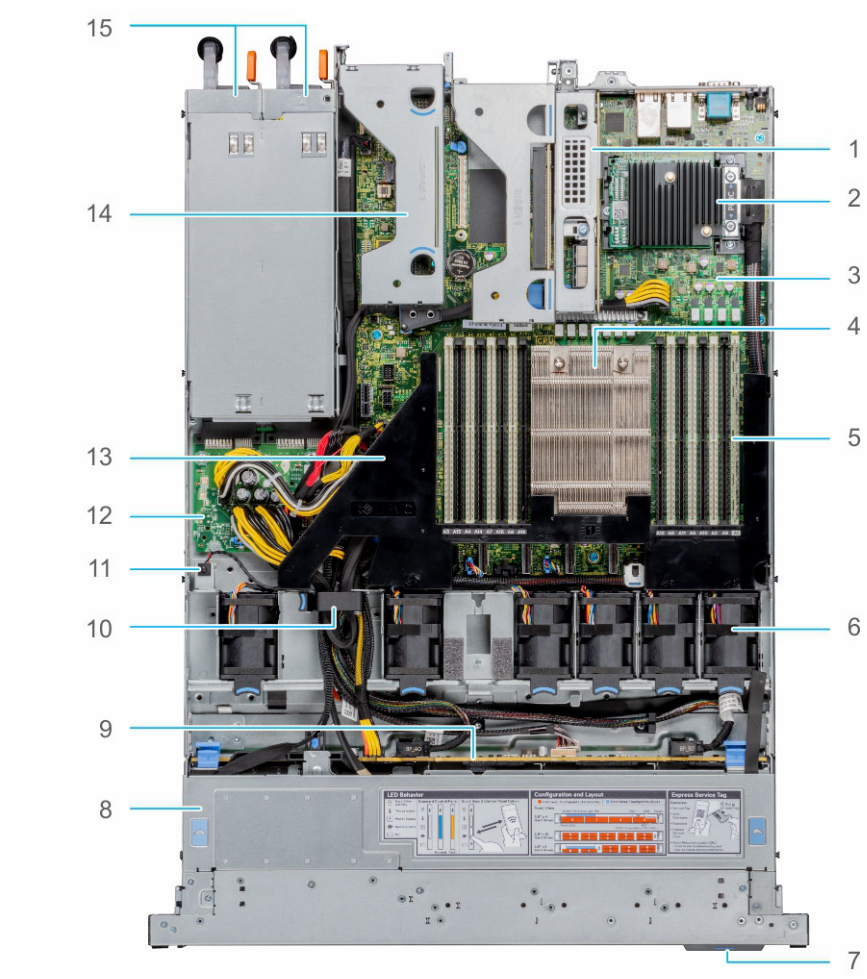


Figure 6. Inside the system

1. Riser 1A
2. Mini PERC card
3. System board
4. Heat sink
5. Memory module slots
6. Fan
7. Information tag
8. Backplane cover
9. Backplane
10. Cable retention latch
11. Intrusion switch
12. Power interposer board
13. Air shroud
14. Riser 2
15. PSU 1 and PSU 2

Locating your system service information

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

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

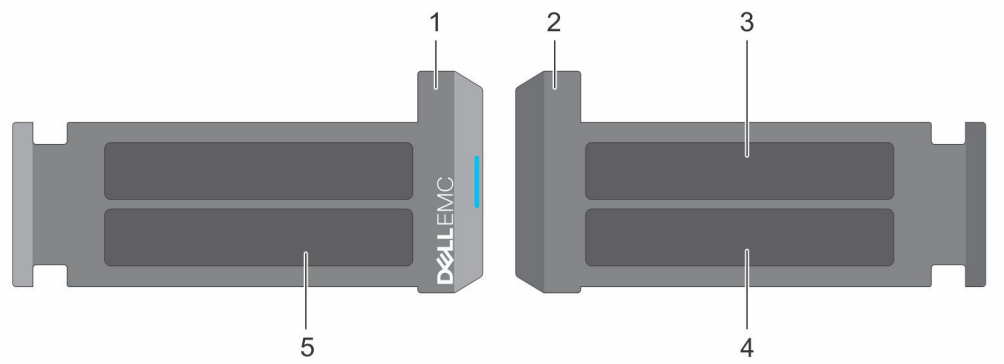


Figure 7. Locating the Express Service Code and Service tag

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

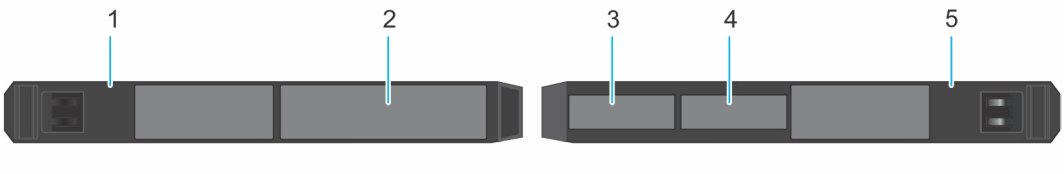


Figure 8. Locating the Service Tag of your system

1. Information tag (top view)
2. Express Service Tag label
3. Network MAC address information label
4. iDRAC MAC address information label
5. Information tag (bottom view)

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

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

System information label

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

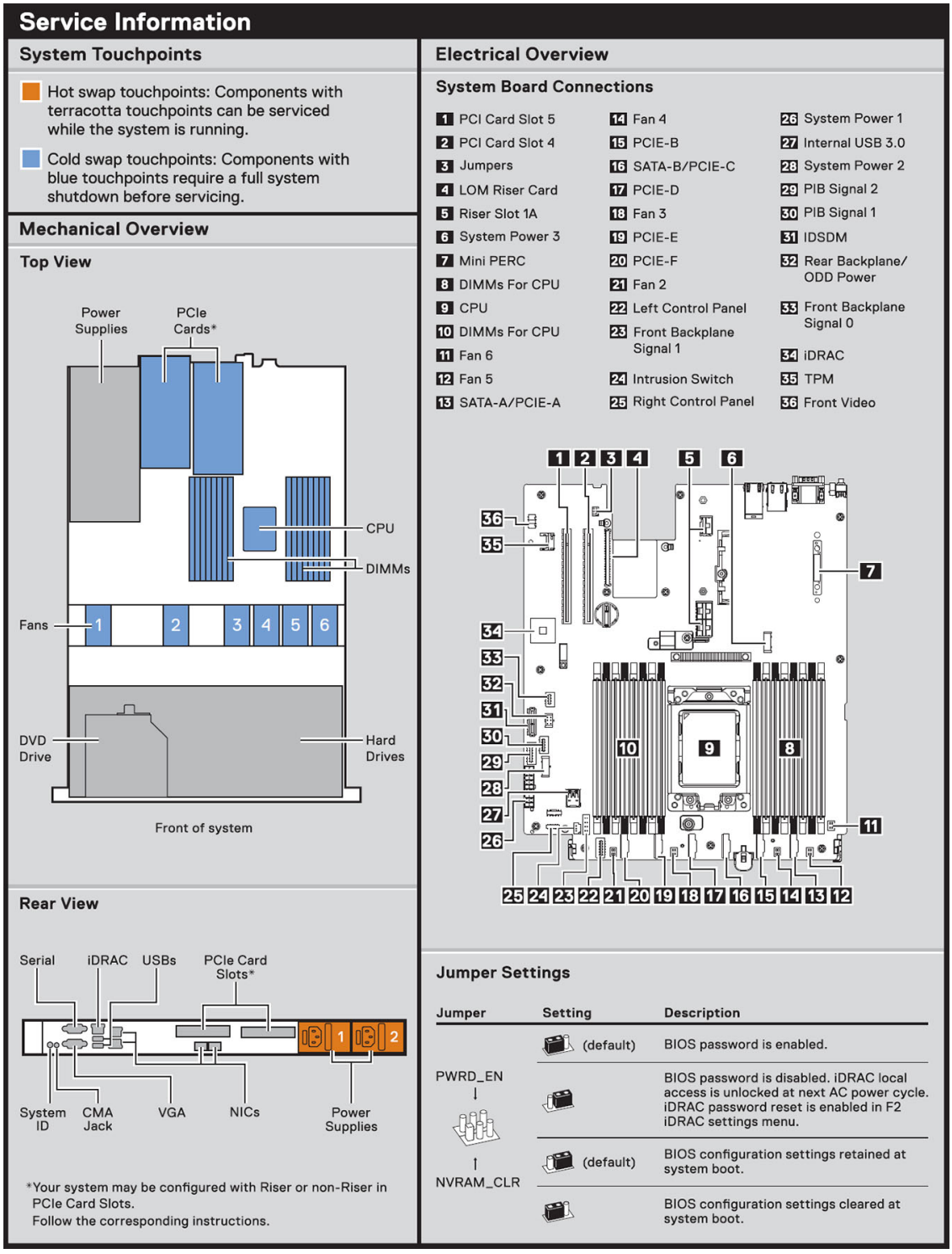


Figure 9. Service information

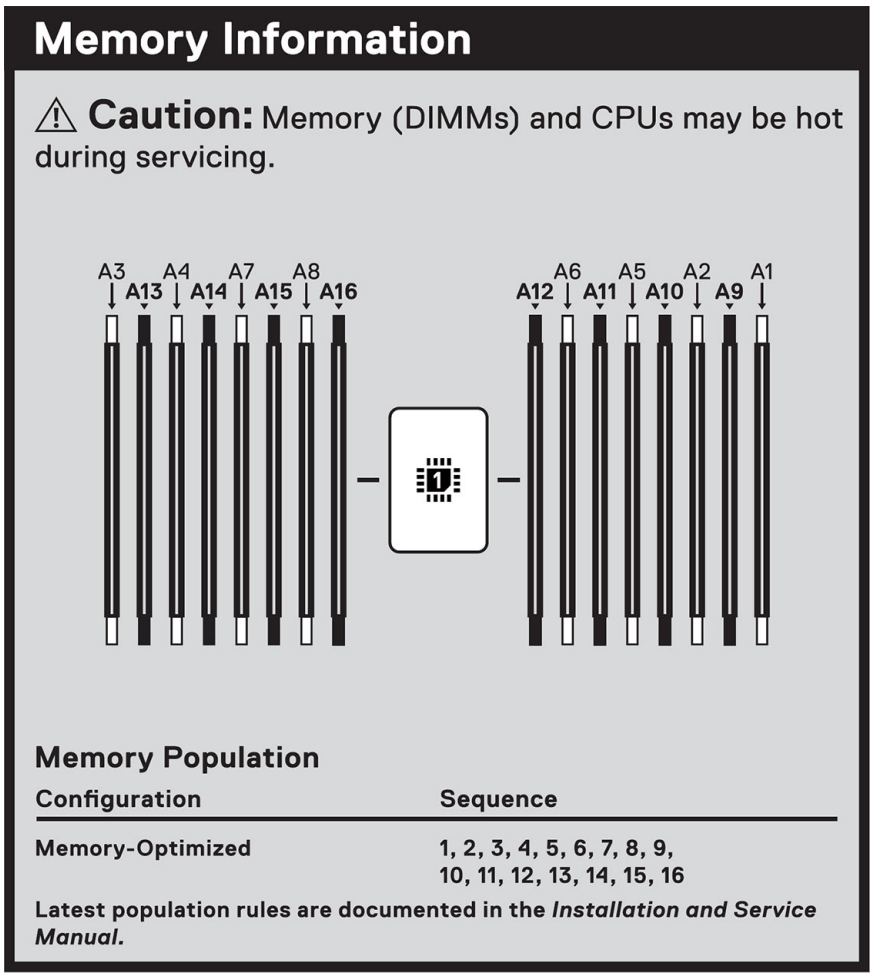


Figure 10. Memory information

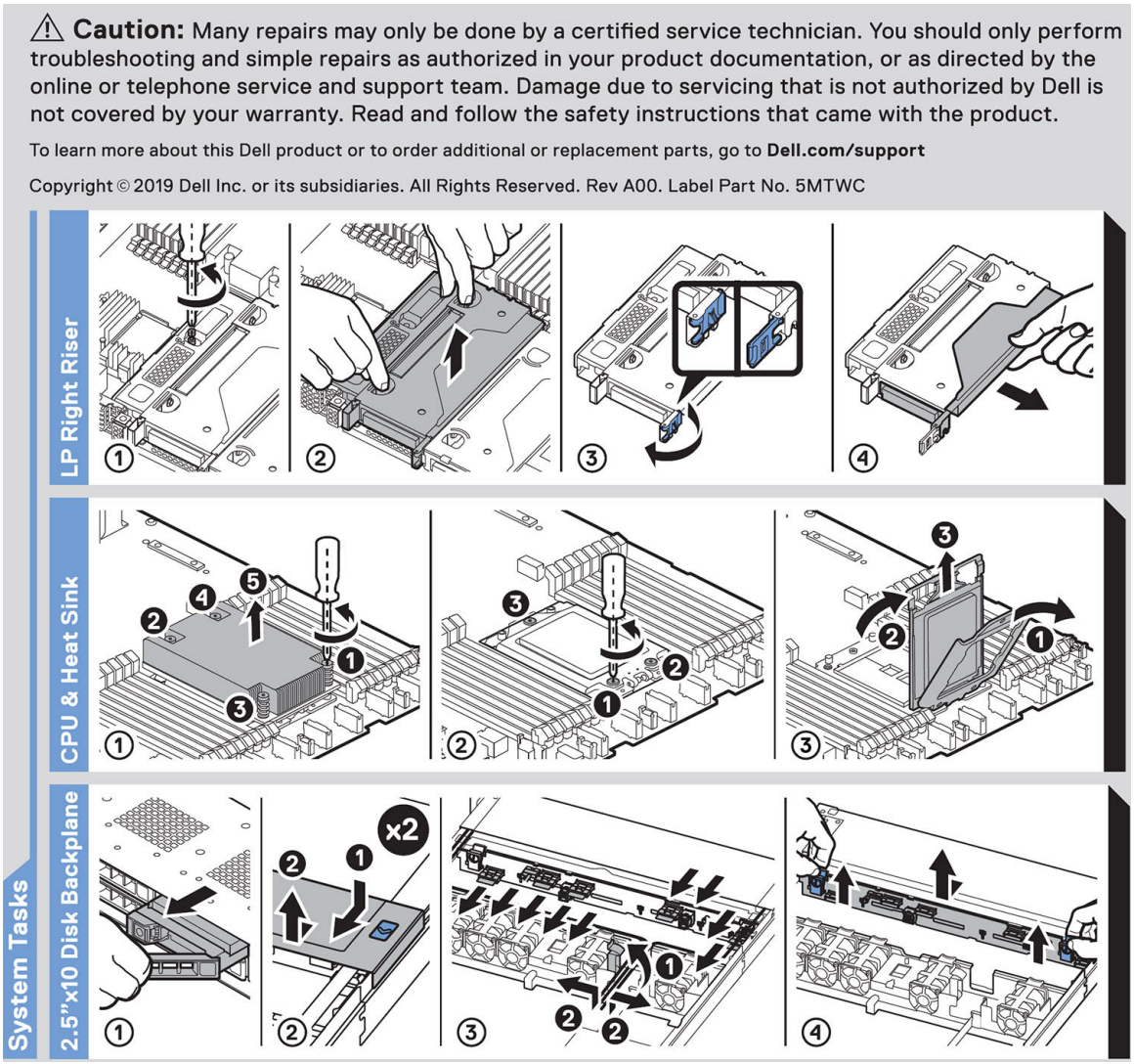


Figure 11. System tasks

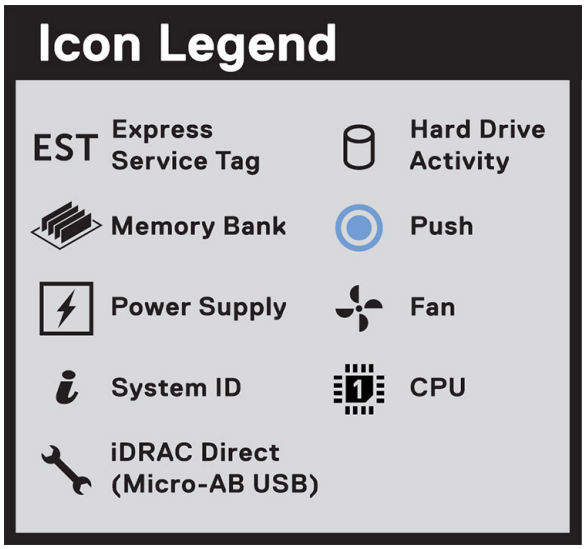


Figure 12. Icon Legend

Figure 13. XC 6515 QRL

Rail sizing and rack compatibility matrix

For specific information about the rail solutions compatible with your system, refer to the *Dell EMC Enterprise Systems Rail Sizing and Rack Compatibility Matrix* available at https://i.dell.com/sites/csdocuments/Business_solutions_engineering-Docs_Documents/en/rail-rack-matrix.pdf.

The document provides the information listed below:

- Specific details about rail types and their functionalities
- Rail adjustability ranges for various rack mounting flange types
- Rail depth with and without cable management accessories
- Rack types supported for various rack mounting flange types

4

Initial system setup and configuration

This section describes the tasks for initial setup and configuration of the Dell EMC system. The sections provide general steps that you must complete to set up the system and the reference guides for detailed information.

Topics:

Setting up the system

Perform the steps in this procedure to set up the system.

Steps

1. Unpack the system.
2. Install the system into the rack. For more information, see the rail installation and cable management accessory guides relevant to your rail and cable management solution at www.dell.com/xcseriesmanuals.
3. Connect the peripherals to the system and the system to the electrical outlet.
4. Power on the system by pressing the power button.

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

iDRAC configuration

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

Options to set up the iDRAC IP address

To enable communication between your system and iDRAC, you must first configure the network settings based on your network infrastructure.

The network settings option is set to **DHCP**, by default.

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

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

Table 6. Interfaces to set up the iDRAC IP address

Interface	Documentation links
iDRAC Settings utility	*Integrated Dell Remote Access Controller User's Guide* at www.dell.com/idracmanuals or for system specific *Integrated Dell Remote Access Controller User's Guide*, go to www.dell.com/poweredgemanuals > **Product Support** page of your system > **Manuals & documents**.

Table 6. Interfaces to set up the iDRAC IP address (continued)

Interface	Documentation links
	NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article www.dell.com/support/article/sln308699.
Lifecycle Controller	*Lifecycle Controller User's Guide* at www.dell.com/idracmanuals or for system specific *Lifecycle Controller User's Guide*, go to www.dell.com/poweredgemanuals > **Product Support** page of your system > **Manuals & documents**. **NOTE:** To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article www.dell.com/support/article/sln308699.
Server LCD panel	LCD panel section.

NOTE: To access iDRAC, ensure that you connect the ethernet cable to the iDRAC9 dedicated network port or use iDRAC Direct port by using the USB cable. You can also access iDRAC through the shared LOM mode, if you have opted for a system that has the shared LOM mode enabled.

Options to log in to the iDRAC

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

You can log in to the iDRAC as:

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

In the login screen displayed, if you have opted for secure default access to iDRAC, enter the iDRAC secure default password available on back side of the Information Tag. If you have not opted for secure default access to iDRAC, enter the default user name and password – `root` and `calvin`. You can also log in by using your Single Sign-On or Smart Card.

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

For more information about logging in to the iDRAC and iDRAC licenses, see the latest *Integrated Dell Remote Access Controller User's Guide* at www.dell.com/idracmanuals.

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

You can also access iDRAC using command-line protocol - RACADM. For more information, see the *iDRAC with Lifecycle Controller RACADM CLI Guide* available at www.dell.com/idracmanuals

You can also access iDRAC using automation tool - Redfish API. For more information, see the *iDRAC9 with Lifecycle Controller Redfish API Guide* available at www.dell.com/idracmanuals

Resources to install the operating system

If the system is shipped without an operating system, you can install a supported operating system by using one of the resources provided in the table.

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

Table 7. Resources to install the operating system

Resource	Documentation links
iDRAC	*Integrated Dell Remote Access Controller User's Guide* at www.dell.com/idracmanuals or for system specific documentation, go to www.dell.com/xcseriesmanuals > **Product Support** page of your system > **Manuals & documents**.

Table 7. Resources to install the operating system (continued)

Resource	Documentation links
	NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at www.dell.com/support/article/sln308699.
Lifecycle Controller	*Lifecycle Controller User's Guide* at www.dell.com/idracmanuals or for system specific documentation, go to www.dell.com/xcseriesmanuals > **Product Support** page of your system > **Manuals & documents**. Dell recommends installing Lifecycle Controller to install the OS, since all required drivers are installed to the system. **NOTE:** To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at www.dell.com/support/article/sln308699.
Dell certified VMware ESXi	www.dell.com/virtualizationsolutions

Options to download firmware

You can download firmware from the Dell support site.

NOTE: We recommend that you use LCM. However, there may be cases when Support needs to direct you manually.

For information, see the Downloading drivers and firmware section.

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

Table 8. Options to download firmware

Option	Documentation link
Using Dell Remote Access Controller Lifecycle Controller (iDRAC with LC)	www.dell.com/idracmanuals
Using Dell Repository Manager (DRM)	www.dell.com/openmanagemanuals > Repository Manager
Using Dell OpenManage Enterprise	www.dell.com/openmanagemanuals > OpenManage Enterprise
Using Dell Server Update Utility (SUU)	www.dell.com/openmanagemanuals > Server Update Utility
Using Dell OpenManage Deployment Toolkit (DTK)	www.dell.com/openmanagemanuals > OpenManage Deployment Toolkit
Using iDRAC virtual media	www.dell.com/idracmanuals

Options to download and install operating system drivers

You can choose any one of several options to download and install OS drivers.

For information about how to download or install OS drivers, see the documentation links provided in the following table:

Table 9. Options to download and install OS drivers

Option	Documentation
Dell EMC support site	Downloading drivers and firmware section.
iDRAC virtual media	*Integrated Dell Remote Access Controller User's Guide* at www.dell.com/idracmanuals or for system specific product documentation, go to www.dell.com/xcseriesmanuals > **Product Support** page of your system > **Manuals & documents**.

Table 9. Options to download and install OS drivers (continued)

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

Downloading drivers and firmware

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

Prerequisites

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

Steps

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

   NOTE: If you do not have the Service Tag, select **Detect PC** to automatically detect the Service Tag, or click **Browse all products**, and browse to your product.

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

5

Pre-operating system management applications

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

Options to manage the pre-operating system applications

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

- System Setup
- Dell Lifecycle Controller
- Boot Manager

Topics:

System setup

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

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

- Graphical User interface — To access go to iDRAC Dashboard, click **Configuration**, and click **BIOS Settings**.
- Text browser — The browser is enabled by using Console Redirection.

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

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

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

Table 10. System Setup Main Menu

Option	Description
System BIOS	Enables you to configure the BIOS settings.
iDRAC Settings	Enables you to configure the iDRAC settings. The iDRAC settings utility is an interface to set up and configure the iDRAC parameters by using UEFI (Unified Extensible Firmware Interface). You can enable or disable various iDRAC parameters by using the iDRAC settings utility. For more information about this utility, see *Integrated Dell Remote Access Controller User's Guide* at www.dell.com/poweredgemanuals.
Device Settings	Enabled you to configure device settings for devices such as storage controllers or network cards.

System BIOS

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

Table 11. System BIOS details

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

System information

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

Table 12. System Information details

Option	Description
System Model Name	Specifies the system model name.
System BIOS Version	Specifies the BIOS version installed on the system.
System Service Tag	Specifies the system Service Tag.
System Manufacturer	Specifies the name of the system manufacturer.
System Manufacturer Contact Information	Specifies the contact information of the system manufacturer.
System CPLD Version	Specifies the current version of the system complex programmable logic device (CPLD) firmware.
UEFI Compliance Version	Specifies the UEFI compliance level of the system firmware.
AGESA Version	Specifies the AGESA reference code version.
SMU Version	Specifies the SMU firmware version.

Table 12. System Information details (continued)

Option	Description
DXIO Version	Specifies the DXIO firmware version.

Memory settings

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

Table 13. Memory Settings details

Option	Description
System Memory Size	Specifies the memory size in the system.
System Memory Type	Specifies the type of memory that is installed in the system.
System Memory Speed	Specifies the system memory speed.
System Memory Voltage	Specifies the system memory voltage.
Video Memory	Specifies the amount of video memory.
System Memory Testing	Specifies whether the system memory tests are run during system boot. The two options available are **Enabled** and **Disabled**. This option is set to **Disabled** by default.
Memory Operating Mode	Specifies the memory operating mode. The option is available and is set to **Optimizer Mode**, by default.
Current State of Memory Operating Mode	Specifies the current state of the memory operating mode.
Memory Interleaving	Enables or disables the memory interleaving option. The two options available are **Auto** and **Disabled**. This option is set to **Auto** by default.
Opportunistic Self-Refresh	Enables or disables opportunistic self-refresh feature. This option is set to **Disabled** by default.
Correctable Error Logging	Enables or disables correctable error logging. This option is set to **Enabled** by default.

Table 14. Memory Settings details

Option	Description
System Memory Size	Specifies the memory size in the system.
System Memory Type	Specifies the type of memory that is installed in the system.
System Memory Speed	Specifies the system memory speed.
System Memory Voltage	Specifies the system memory voltage.
Video Memory	Specifies the amount of video memory.
System Memory Testing	Specifies whether the system memory tests are run during system boot. The two options available are **Enabled** and **Disabled**. This option is set to **Disabled** by default.
Memory Operating Mode	Specifies the memory operating mode. The option is available and is set to **Optimizer Mode**, by default.
Current State of Memory Operating Mode	Specifies the mode that is selected in the memory operating mode.
Memory Interleaving	Enables or disables the memory interleaving option. The two options available are **Auto** and **Disabled**. This option is set to **Auto** by default.
Opportunistic Self-Refresh	Enables or disables opportunistic self-refresh feature. This option is set to **Disabled** by default.

Table 14. Memory Settings details (continued)

Option	Description
Correctable Error Logging	Enables or disables correctable error logging. This option is set to **Enabled** by default.

Processor settings

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

Table 15. Processor Settings details

Option	Description
Logical Processor	Each processor core supports up to two logical processors. If this option is set to **Enabled**, the BIOS displays all the logical processors. If this option is set to **Disabled**, the BIOS displays only one logical processor per core. This option is set to **Enabled** by default.
Virtualization Technology	Enables or disables the virtualization technology for the processor. This option is set to **Enabled** by default.
IOMMU Support	Enable or Disable IOMMU support. It is required to create IVRS ACPI table. This option is set to **Enabled** by default.
L1 Stream HW Prefetcher	Enables or disables the L1 stream hardware prefetcher. This option is set to **Enabled** by default.
L2 Stream HW Prefetcher	Enables or disables the L2 stream hardware prefetcher. This option is set to **Enabled** by default.
MADT Core Enumeration	Specifies the MADT Core Enumeration. This option is set to **Linear** by default.
NUMA Nodes Per Socket	Specifies the number of NUMA nodes per socket. This option is set to **1** by default.
CCX as NUMA Domain L3 cache as NUMA Domain	Enables or disables the CCXL3 cache as NUMA Domain. This option is set to **Disabled** by default.
Minimum SEV-ES ASID	Determines the number of Secure Encrypted Virtualization ES and non ES available Address Space IDs. This option is set to **1** by default.
x2APIC Mode	Enable or disable x2APIC mode. This option is set to **Enabled** by default.
Number of CCDs per Processor	Controls the number of enabled CCDs in each processor. This option is set to **All** by default.
Number of Cores per CCD	specifies the number of cores per CCD. This option is set to **All** by default.
Processor Core Speed	Specifies the maximum core frequency of the processor.
Processor Bus Speed	Specifies the bus speed of the processor. **NOTE:** The processor bus speed option displays only when both processors are installed.
Processor n	**NOTE:** Depending on the number of CPUs, there might be up to n processors listed. The following settings are displayed for each processor that is installed in the system:

Table 16. Processor n details

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

SATA settings

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

Table 17. SATA Settings details

Option	Description
Embedded SATA	Enables the embedded SATA option to be set to **Off**, **AHCI mode** , or **RAID modes**. This option is set to **AHCI Mode** by default. **NOTE:** 1. You might also have to change the Boot Mode setting to UEFI. Otherwise, you should set the field to Non-RAID mode. 2. No ESXi and Ubuntu operating system support under RAID mode.
Security Freeze Lock	Sends **Security Freeze Lock** command to the embedded SATA drives during POST. This option is applicable only for AHCI Mode. This option is set to **Enabled** by default.
Write Cache	Enables or disables the command for the embedded SATA drives during POST. This option is set to **Disabled** by default.
Port n	Sets the drive type of the selected device. For **AHCI Mode** or **RAID Mode**, BIOS support is always enabled. **Table 18. Port n** **Options** / **Descriptions** **Model** — Specifies the drive model of the selected device. **Drive Type** — Specifies the type of drive that is 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.

Boot settings

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

NOTE: The settings are set to UEFI. If you change the settings, the appliance might not boot.

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

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

Table 19. Boot Settings details

Option	Description
Boot Mode	Enables you to set the boot mode of the system. If the operating system supports UEFI, you can set this option to UEFI. Setting this field to BIOS allows compatibility with non-UEFI operating systems. This option is set to **UEFI** by default. **CAUTION: Switching the boot mode may prevent the system from booting if the operating system is not installed in the same boot mode.** **NOTE:** Setting this field to UEFI disables the **BIOS Boot Settings** menu.
Boot Sequence Retry	Enables or disables the **Boot Sequence Retry** feature. If this option is set to **Enabled** and the system fails to boot, the system re-attempts the boot sequence after 30 seconds. This option is set to **Enabled** by default.
Hard-disk Failover	Enables or disables the Hard-disk failover. This option is set to **Disabled** by default.
Generic USB Boot	Enables or disables the generic USB boot placeholder. This option is set to **Disabled** by default.
Hard-disk Drive Placeholder	Enables or disables the Hard-disk drive placeholder. This option is set to **Disabled** by default.
UEFI Boot Settings	Specifies the UEFI boot sequence. Enables or disables UEFI Boot options. **NOTE:** This option controls the UEFI boot order. The first option in the list will be attempted first. **Table 20. UEFI Boot Settings** **Option** / **Description** **UEFI Boot Sequence** — Enables you to change the boot device order. **Boot Options Enable/Disable** — Enables you to select the enabled or disabled boot devices

Choosing the system boot mode

System Setup enables you to specify the boot mode for installing your operating system.

About this task

- UEFI boot mode (the default) is an enhanced 64-bit boot interface.

  If you have configured your system to boot to UEFI mode, it replaces the system BIOS.

Steps

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

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

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

Changing the boot order

This section describes how to change the boot order.

About this task

You may have to change the boot order if you want to boot from a USB drive or an optical drive.

The instructions may vary if you have selected **BIOS** for **Boot Mode**.

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

Steps

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

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

Network settings

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

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

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

Table 21. Network Settings details

Option	Description
UEFI PXE Settings	Enables you to control the configuration of the UEFI PXE device.
PXE Device n (n = 1 to 4)	Enables or disables the device. When enabled, a UEFI PXE boot option is created for the device.
PXE Device n Settings(n = 1 to 4)	Enables you to control the configuration of the PXE device.
UEFI HTTP Settings	Enables you to control the configuration of the UEFI HTTP device.
HTTP Device n (n = 1 to 4)	Enables or disables the device. When enabled, a UEFI HTTP boot option is created for the device.
HTTP Device n Settings (n = 1 to 4)	Enables you to control the configuration of the HTTP device.
UEFI iSCSI Settings	Enables you to control the configuration of the iSCSI device.

Table 22. PXE Device n Settings details

Option	Description
Interface	Specifies NIC interface that is used for the PXE device.
Protocol	Specifies Protocol that is used for PXE device. This option is set to **IPv4** or **IPv6**. This option is set to **IPv4** by default.

Table 22. PXE Device n Settings details (continued)

Option	Description
Vlan	Enables Vlan for PXE device. This option is set to **Enable** or **Disable**. This option is set to **Disable** by default.
Vlan ID	Shows the Vlan ID for the PXE device
Vlan Priority	Shows the Vlan Priority for the PXE device.

Table 23. HTTP Device n Settings details

Option	Description
Interface	Specifies NIC interface used for the HTTP device.
Protocol	Specifies Protocol that is used for HTTP device. This option is set to **IPv4** or **IPv6**. This option is set to **IPv4** by default.
Vlan	Enables Vlan for HTTP device. This option is set to **Enable** or **Disable**. This option is set to **Disable** by default.
Vlan ID	Shows the Vlan ID for the HTTP device
Vlan Priority	Shows the Vlan Priority for the HTTP device.
DHCP	Enables or disables DHCP for this HTTP device. This option is set to **Enable** by default.
IP Address	Specifies IP address for the HTTP device.
Subnet Mask	Specifies subnet mask for the HTTP device.
Gateway	Specifies gateway for the HTTP device.
DNS info via DHCP	Enables or disables DNS Information from DHCP. This option is set to **Enable** by default.
Primary DNS	Specifies the primary DNS server IP address for the HTTP Device.
Secondary DNS	Specifies the secondary DNS server IP address for the HTTP Device.
URI	Obtain URI from the DHCP server if not specified

Table 24. HTTP Device n Settings details

Option	Description
Interface	Specifies NIC interface used for the HTTP device.
Protocol	Specifies Protocol used for HTTP device. This option is set to **IPv4** or **IPv6**. This option is set to **IPv4** by default.
Vlan	Enables Vlan for HTTP device. This option is set to **Enable** or **Disable**. This option is set to **Disable** by default.
Vlan ID	Shows the Vlan ID for the HTTP device
Vlan Priority	Shows the Vlan Priority for the HTTP device.
DHCP	Enables or disables DHCP for this HTTP device. This option is set to **Enable** by default.
IP Address	Specifies IP address for the HTTP device.
Subnet Mask	Specifies subnet mask for the HTTP device.
Gateway	Specifies gateway for the HTTP device.
DNS info via DHCP	Enables or disables DNS Information from DHCP. This option is set to **Enable** by default.
Primary DNS	Specifies the primary DNS server IP address for the HTTP Device.
Secondary DNS	Specifies the secondary DNS server IP address for the HTTP Device.
URI	Obtain URI from the DHCP server if not specified.

Table 24. HTTP Device n Settings details (continued)

Option	Description
TLS Authentication Configuration	Specifies the option for TLS authentication configuration.

Table 25. UEFI iSCSI Settings screen details

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

Table 26. ISCSI Device1 Settings screen details

Option	Description
Connection 1	Enables or disables the iSCSI connection. This option is set to **Disable** by default.
Connection 2	Enables or disables the iSCSI connection. This option is set to **Disable** by default.
Connection 1 Settings	Enables you to control the configuration for the iSCSI connection.
Connection 2 Settings	Enables you to control the configuration for the iSCSI connection.
Connection Order	Enables you to control the order for which the iSCSI connections will be attempted.

Integrated devices

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

Table 27. Integrated Devices details

Option	Description
User Accessible USB Ports	Configures the user accessible USB ports. Selecting **Only Back Ports On** disables the front USB ports; selecting **All Ports Off** disables all front and back USB ports; selecting **All Ports Off (Dynamic)** disables all front and back USB ports during POST. This option is set to **All Ports On** by default. When user accessible USB ports is set to **All Ports Off (Dynamic)** the **Enable Front Ports Only** option is enabled. • **Enable Front Ports Only**: Enables or disables the front USB ports during the operating system runtime. The USB keyboard and mouse still function in certain USB ports during the boot process, depending on the selection. After the boot process is complete, the USB ports will be enabled or disabled as per the setting.
Internal USBSD card Port	Enables or disables the **Internal USBSD card Port**. This option is set to **On** or **Off**. This option is set to **On** by default.
iDRAC Direct USB Port	The iDRAC Direct USB port is managed by iDRAC exclusively with no host visibility. This option is set to **ON** or **OFF**. When set to **OFF**, iDRAC does not detect any USB devices that are installed in this managed port. 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.
Embedded NIC1 and NIC2 Embedded NIC1	Enables or disables the **Embedded NIC1 and NIC2Embedded NIC1** options. If set to **Disabled (OS)**, the NIC may still be available for shared network access

Table 27. Integrated Devices details (continued)

Option	Description
	by the embedded management controller. Configure the **Embedded NIC1 and NIC2Embedded NIC1** option by using the NIC management utilities of the system.
Embedded Video Controller	Enables or disables the use of Embedded Video Controller as the primary display. When set to **Enabled**, the Embedded Video Controller will be the primary display even if add-in graphic cards are installed. When set to **Disabled**, an add-in graphics card will be used as the primary display. BIOS will output displays to both the primary add-in video and the embedded video during POST and preboot 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 that are installed in the system, the first card discovered during PCI enumeration is selected as the primary video. You might have to rearrange the cards in the slots in order to control which card is the primary video.
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**.
PCIe Preferred IO Device	When set to **Enabled**, you can provide the Bus/device/function address (in decimal) to choose end device for preferred I/O device. This option is set to **Disabled** by default.
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.
Internal SD Card Port	Enables or disables the internal SD card port of the Internal Dual SD Module (IDSDM). This option is set to **On** by default.
Internal SD Card Redundancy	Configures the redundancy mode of the Internal Dual SD Module (IDSDM). When set to **Mirror** Mode, data is written on both SD 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 SD card is visible to the operating system. This option is set to **Mirror** by default.
Internal SD Primary Card	By default, the primary SD card is selected to be SD Card 1. If SD Card 1 is not present, then the controller selects SD Card 2 to be the primary SD card. This option is set to **SD Card 1** by default.
OS Watchdog Timer	If your system stops responding, this watchdog timer aids in the recovery of your operating system. When this option is set to **Enabled**, the operating system initializes the timer. When this option is set to **Disabled** (the default), the timer does not have any effect on the system.
Memory Mapped I/O Limit	Controls where MMIO is mapped. The **1 TB** option is designed for specific operating system 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 usually.
Slot Disablement	Enables or disables the available PCIe slots on your system. The slot disablement feature controls the configuration of the PCIe cards that are installed in the specified slot. Slots must be disabled only when the installed peripheral card prevents booting into the operating system or causes delays in system startup. If the slot is disabled, both the Option ROM and UEFI drivers are disabled. Only slots that are present on the system will be available for control.

Table 27. Integrated Devices details (continued)

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

Serial communication

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

NOTE: The serial port is optional for the XC Core XC6515 system. The Serial Communication option is applicable only if the serial COM port is installed in the system.

Table 28. Serial Communication details

Option	Description
Serial Communication	Selects serial communication devices (Serial Device 1 and Serial Device 2) in BIOS. BIOS console redirection can also be enabled, and the port address can be specified. This option is set to **Auto** by default.
Serial Port Address	Enables you to set the port address for serial devices. This option is set to **Serial Device1=COM2, Serial Device 2=COM1** by default. This field sets the serial port address to either COM1 or COM2 (COM1=0x3F8, COM2=0x2F8). **NOTE:** You can use only Serial Device 2 for the Serial Over LAN (SOL) feature. To use console redirection by SOL, configure the same port address for console redirection and the serial device. **NOTE:** Every time the system boots, the BIOS syncs the serial MUX setting that is saved in iDRAC. The serial MUX setting can independently be changed in iDRAC. Loading the BIOS default settings from within the BIOS setup utility may not always revert the serial MUX setting to the default setting of Serial Device 1.
External Serial Connector	Enables you to associate the External Serial Connector to **Serial Device 1**, **Serial Device 2**, or the **Remote Access Device** by using this option. This option is set to **Serial Device 1** by default. **NOTE:** Only Serial Device 2 can be used for Serial Over LAN (SOL). To use console redirection by SOL, configure the same port address for console redirection and the serial device. **NOTE:** Every time the system boots, the BIOS syncs the serial MUX setting saved in iDRAC. The serial MUX setting can independently be changed in iDRAC. Loading the BIOS default settings from within the BIOS setup utility may not always revert this setting to the default setting of Serial Device 1.
Failsafe Baud Rate	Specifies the failsafe baud rate for console redirection. The BIOS attempts to determine the baud rate automatically. This failsafe baud rate is used only if the attempt fails, and the value must not be changed. This option is set to **115200** by default.
Remote Terminal Type	Sets the remote console terminal type. This option is set to **VT100/VT220** by default.

Table 28. Serial Communication details (continued)

Option	Description
Redirection After Boot	Enables or disables the BIOS console redirection when the operating system is loaded. This option is set to **Enabled** by default.

System profile settings

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

Table 29. System Profile Settings details

Option	Description
System Profile	Sets the system profile. If you set the System Profile option to a mode other than **Custom**, the BIOS automatically sets the rest of the options. You can only change the rest of the options if the mode is set to **Custom**. This option is set to **Performance Per Watt (OS)** by default. Other options include **Performance** and **Custom**. **NOTE:** All the parameters on the system profile setting screen are available only when the **System Profile** option is set to **Custom**.
CPU Power Management	Sets the CPU power management. This option is set to **OS DBPM** by default. Other option includes **Maximum Performance**.
Memory Frequency	Sets the speed of the system memory. You can select **Maximum Performance** or a specific speed. This option is set to **Maximum Performance** by default.
Turbo Boost	Enables or disables the processor to operate in the turbo boost mode. This option is set to **Enabled** by default.
C States	Enables or disables the processor to operate in all available power states. C States allow the processor to enter lower power states when idle. When set to **Enabled** (OS controlled) or when set to **Autonomous** (if hardware controlled is supported), the processor can operate in all available Power States to save power, but may increase memory latency and frequency jitter. This option is set to **Enabled** by default.
Write Data CRC	When set to **Enabled**, DDR4 data bus issues are detected and corrected during 'write' operations. Two extra cycles are required for CRC bit generation which impacts the performance. Read-only unless System Profile is set to **Custom**. This option is set to **Disabled** by default.
Memory Patrol Scrub	Sets the memory patrol scrub mode. This option is set to **Standard** by default.
Memory Refresh Rate	Sets the memory refresh rate to either 1x or 2x. This option is set to **1x** by default.
PCI ASPM L1 Link Power Management	Enables or disables the PCI ASPM L1 Link Power Management. This option is set to **Enabled** by default.
Determinism Slider	Set the system determinism by **Power Determinism** or **Performance Determinism**. This option is set to **Power Determinism** by default.
Efficiency Optimized Mode	Efficiency Optimized Mode maximizes Performance-per-Watt by opportunistically reducing frequency/power. Enables or disables the Efficiency Optimized Mode.
Algorithm Performance Boost Disable (ApbDis)	Enables or disables the Algorithm Performance Boost Disable (ApbDis). This option is set to **Disabled** by default.

System security

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

Table 30. System Security details

Option	Description
CPU AES-NI	Improves the speed of applications by performing encryption and decryption by using the Advanced Encryption Standard Instruction Set (AES-NI). This option is set to **Enabled** by default.
System Password	Sets the system password. This option is 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.

Table 31. TPM 1.2 security information

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

Table 32. TPM 2.0 security information

Option	Description
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	Enables, disables, or clears the storage and endorsement hierarchies. When set to **Enabled**, the storage and endorsement hierarchies can be used. When set to **Disabled**, the storage and endorsement hierarchies cannot be used. When set to **Clear**, the storage and endorsement hierarchies are cleared of any values, and then reset to **Enabled**.
TPM Advanced Settings	Specifies TPM Advanced Settings details.

Table 33. System Security details

Option	Description
Power Button	Enables or disables the power button on the front of the system. This option is set to **Enabled** by default.
AC Power Recovery	Sets how the system behaves after AC power is restored to the system. This option is set to **Last** by default.
AC Power Recovery Delay	Sets the time delay for the system to power on after AC power is restored to the system. This option is set to **Immediate** by default.
User Defined Delay (60 s to 600 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**. **Table 34. Secure Boot Mode** **Options** / **Descriptions** **User Mode**: In **User Mode**, PK must be installed, and BIOS performs signature verification on programmatic attempts to update policy objects. The BIOS allows unauthenticated programmatic transitions between modes. **Deployed Mode**: **Deployed Mode** is the most secure mode. In **Deployed Mode**, PK must be installed and the BIOS performs signature verification on programmatic attempts to update policy objects. **Deployed Mode** restricts the programmatic mode transitions. **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 runs 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.

Table 35. System Security details

<table>
<tr><th>Option</th><th>Description</th></tr>
<tr><td>Power Button</td><td>Enables or disables the power button on the front of the system. This option is set to Enabled by default.</td></tr>
<tr><td>AC Power Recovery</td><td>Sets how the system behaves after AC power is restored to the system. This option is set to Last by default.</td></tr>
<tr><td>UEFI Variable Access</td><td>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.</td></tr>
<tr><td>Secure Boot</td><td>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.</td></tr>
<tr><td>Secure Boot Policy</td><td>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.</td></tr>
<tr><td>Secure Boot Mode</td><td>Configures how the BIOS uses the Secure Boot Policy Objects (PK, KEK, db, dbx).

If the current mode is set to Deployed Mode, the available options are User Mode and Deployed Mode. If the current mode is set to User Mode, the available options are User Mode, Audit Mode, and Deployed Mode.

Table 36. Secure Boot Mode<table><tr><th>Options</th><th>Descriptions</th></tr><tr><td>User Mode</td><td>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.</td></tr><tr><td>Deployed Mode</td><td>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.</td></tr><tr><td>Audit Mode</td><td>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 starts the images whether they pass or fail verification.

Audit Mode is useful for programmatic determination of a working set of policy objects.</td></tr></table></td></tr>
<tr><td>Authorize Device Firmware</td><td>Specifies the status of the device firmware.</td></tr>
<tr><td>Secure Boot Policy Summary</td><td>Specifies the list of certificates and hashes that secure boot uses to authenticate images.

Table 37. Secure Boot Custom Policy Settings screen<table><tr><th>Options</th><th>Descriptions</th></tr><tr><td>Platform Key</td><td>Imports, exports, deletes, or restores the platform key (PK).</td></tr><tr><td>Key Exchange</td><td>Enables you to import, export, delete, or restore entries in the Key Exchange Key (KEK) Database.</td></tr></table></td></tr>
</table>

Table 35. System Security details (continued)

Option	Description
	Table 37. Secure Boot Custom Policy Settings screen (continued)

Options	Descriptions
Key Database	
Authorized Signature Database	Imports, exports, deletes, or restores entries in the Authorized Signature Database (db).
Forbidden Signature Database	Imports, exports, deletes, or restores entries in the Forbidden Signature Database (dbx).

Create passwords

Use this procedure to create a system password and a set-up password.

Prerequisites

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

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

Steps

1. To enter System Setup, press F2 immediately after turning on or rebooting your system.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security**.
3. On the **System Security** screen, verify that **Password Status** is set to **Unlocked**.
4. In the **System Password** field, type your system password, and press Enter or Tab.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - 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.
   NOTE: Password protection does not take effect until the system reboots.

Secure your appliance

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

Steps

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

Next steps

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

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

Change or delete the appliance or setup password

About this task

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

Steps

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

Operations with the setup password enabled

If **Setup Password** is set to **Enabled**, enter 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.

Miscellaneous settings

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

Table 38. Miscellaneous Settings details

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

Table 39. Miscellaneous Settings details

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

iDRAC settings utility

The iDRAC settings utility is an interface to set up and configure the iDRAC parameters by using UEFI.

You can enable or disable various iDRAC parameters by using the iDRAC settings utility.

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

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

Device settings

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

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 life cycle of the system. The Dell Lifecycle Controller is started during the boot sequence and functions independently of the operating system.

NOTE: Certain platform configurations may not support the full set of features that are 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 www.dell.com/idracmanuals.

Boot manager

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

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

Table 40. Boot Manager details

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

6

Installing and removing system components

The topics in this section contain the procedures for removing and replacing system components.

Topics:

Safety instructions

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

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.

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.

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

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

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

Before you work inside your system

Prerequisites

Follow the safety guidelines listed in Safety instructions.

Steps

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

After you work inside your system

Prerequisites

Follow the safety guidelines listed in Safety instructions.

Steps

1. Replace the system cover.
2. If applicable, install the system into the rack.
   For more information, see the *Rail Installation Guide* relevant to your rail solutions at www.dell.com/xcseriesmanuals.
3. Reconnect the peripherals and connect the system to the electrical outlet, and then power 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
- 5mm hex nut screwdriver
- Plastic scribe
- 1/4 inch flat blade screwdriver
- Wrist grounding strap connected to the ground
- ESD mat

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

NOTE: LCD panel is optional on the front bezel. If the front bezel has an LCD panel, see LCD panel section.

Remove the front bezel

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

Prerequisites

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

  The bezel key is part of the LCD bezel package.

Steps

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

Figure 14. Removing the front bezel with the LCD panel

Next steps

Install the front bezel.

Install the front bezel

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

Prerequisites

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

  The bezel key is part of the LCD bezel package.

Steps

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

Figure 15. Installing the front bezel with the LCD panel

System cover

Remove the system cover

Prerequisites

- Follow the safety guidelines listed in the Safety instructions on page 51.
- Power off the system, and any attached peripherals.
- Disconnect the system from the electrical outlet and peripherals.

Steps

1. Use a 0.635 cm (0.25 inches) flat head or a Phillips number 2 screwdriver to rotate the lock counterclockwise to the unlock position.
2. Lift the release latch until the system cover slides back.
3. Lift the cover from the system.

Figure 16. Removing the system cover

Next steps

Install the system cover.

Install the system cover

This section describes how to install the system cover.

Prerequisites

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

Steps

1. Align the tabs on the system cover with the guide slots on the system.
2. Close the system cover release latch.
3. Using a 0.635 cm (0.25 inches) flat head or Phillips #2 screwdriver, rotate the lock clockwise to the lock position.

Figure 17. Installing the system cover

Next steps

Follow the procedure listed in After you work inside your system.

Drive backplane cover

Remove the drive backplane cover

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the 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 from the system.

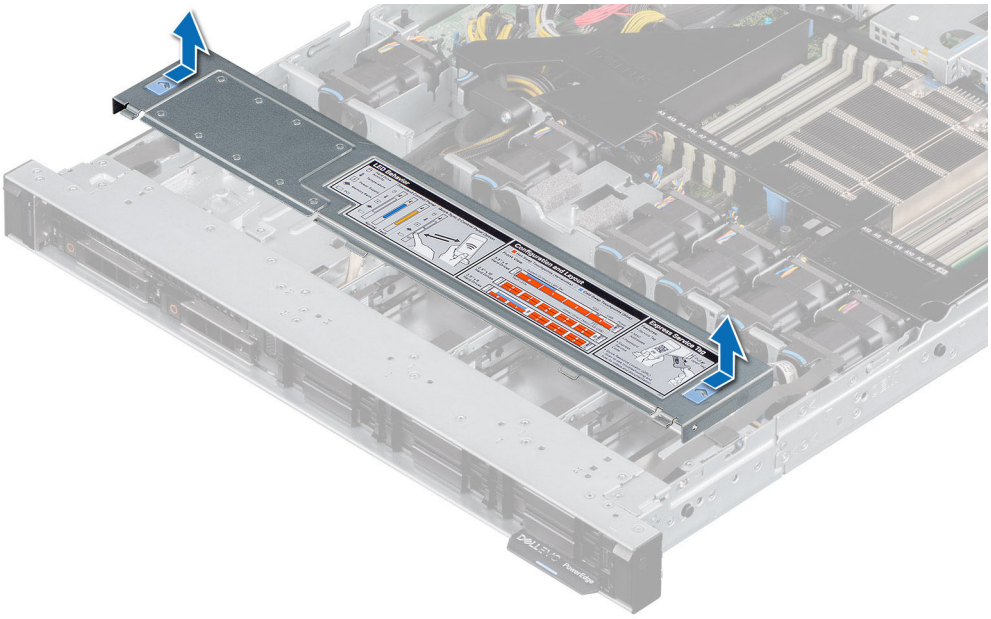


Figure 18. Removing the drive backplane cover

Next steps

Replace the backplane cover.

Install the drive backplane cover

Prerequisites

Follow the safety guidelines listed in the 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 backplane cover fits into place.

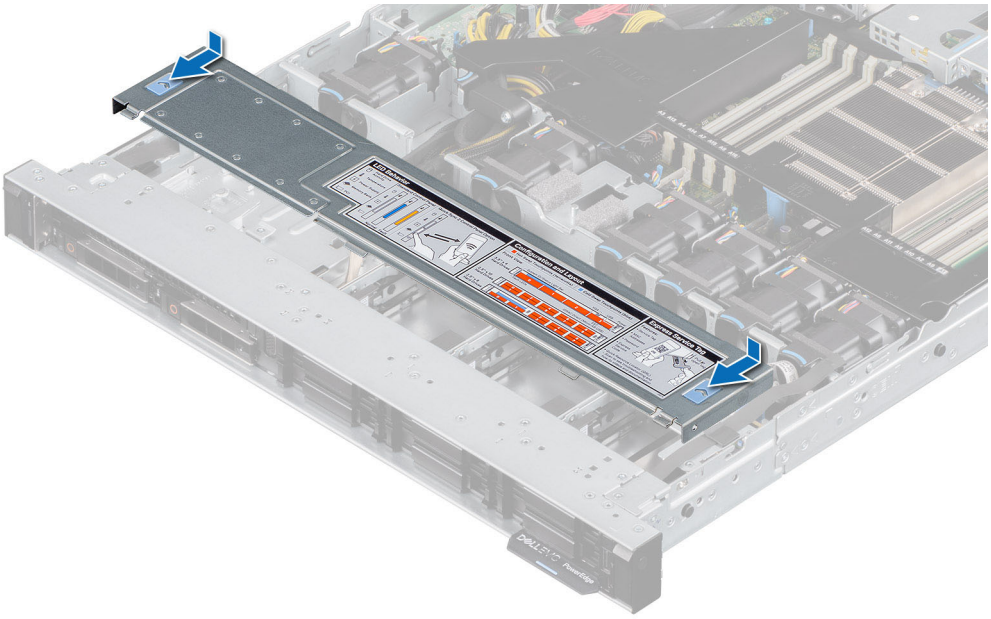


Figure 19. Installing the drive backplane cover

Next steps

Follow the procedure listed in After you work inside your system.

Air shroud

Remove the air shroud

Prerequisites

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

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

Steps

Hold the air shroud touch points at both ends and lift the air shroud out of the system.

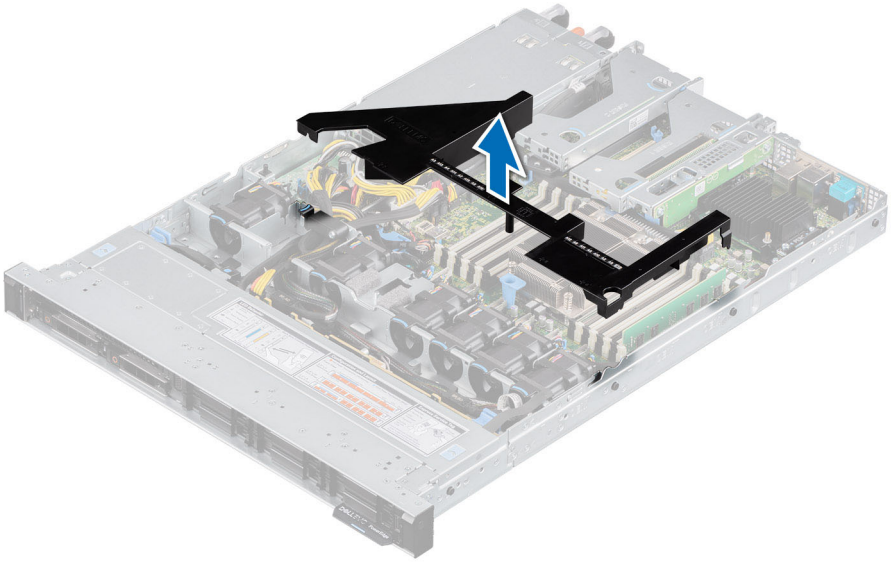


Figure 20. Removing the air shroud

Next steps

Install the air shroud.

Install the air shroud

Prerequisites

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

Steps

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

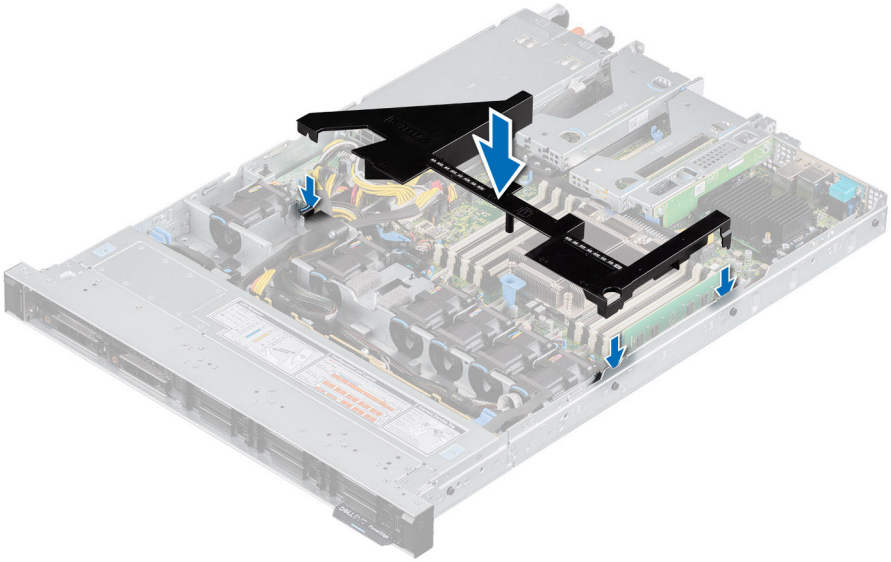


Figure 21. Installing the air shroud

Next steps

Follow the procedure listed in After working inside your system.

Cooling fan

Remove a cooling fan

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before working inside your system.
- Remove the air shroud.
- Move the cables out of way to access the fan cable connector on the system board.

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

Steps

1. Disconnect the cooling fan cable connected to the system board connector.
2. Holding the blue tab, lift the cooling fan out of the fan cage.

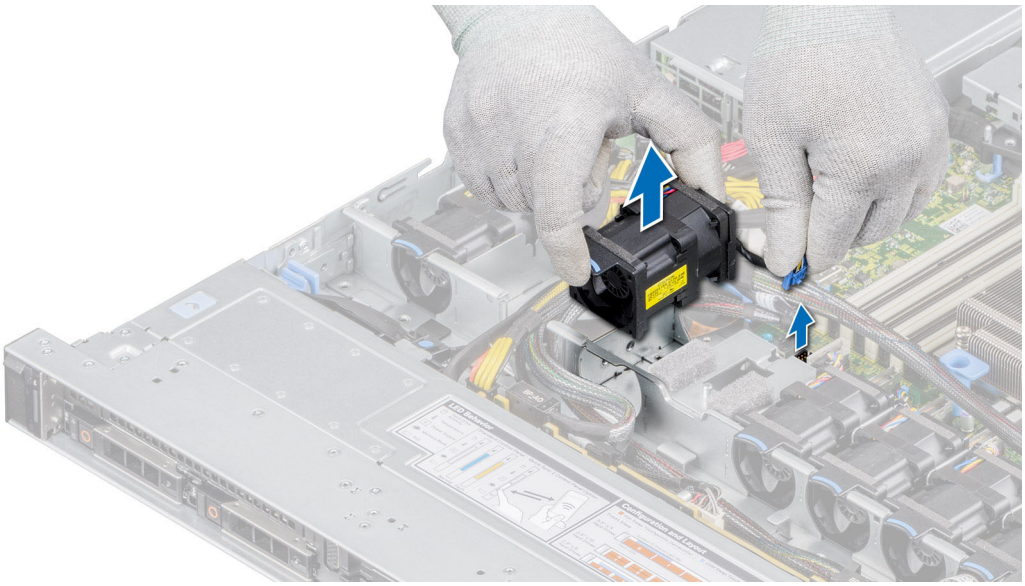


Figure 22. Removing a cooling fan

Next steps

Replace the cooling fan.

Install a cooling fan

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.

Steps

1. Lower the cooling fan into the cage until it is seated firmly.
2. Route the cable properly to prevent the cable from being pinched or crimped.

3. Press the release tabs on the fan cable connector and connect the cable to the system board.

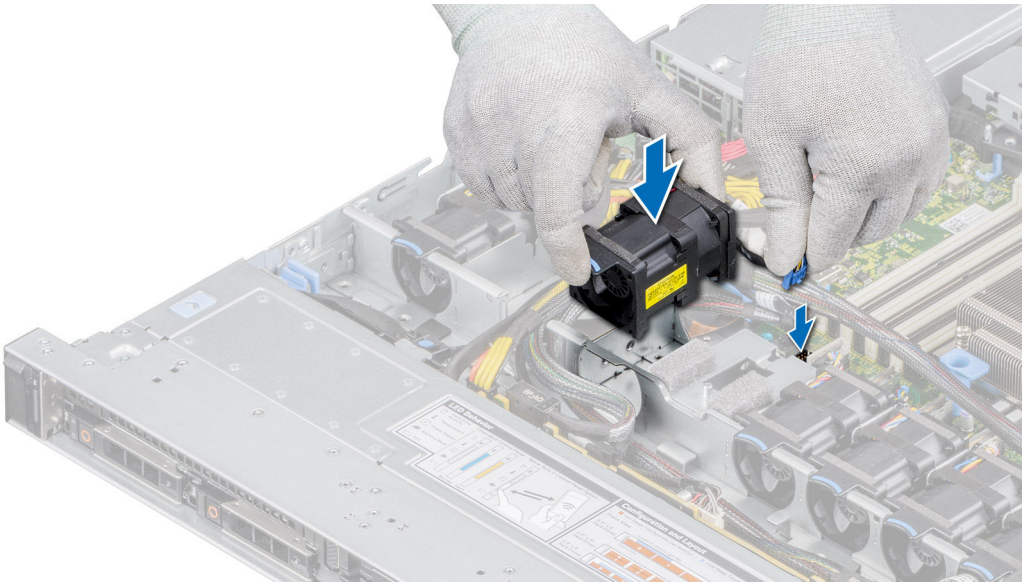


Figure 23. Installing a cooling fan

Next steps

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

Intrusion switch

Remove the intrusion switch

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before working inside your system.
- Remove the air shroud.
- Keep the plastic scribe ready.

Steps

1. Disconnect and remove the intrusion switch cable from the connector on the system board.

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

2. Using a plastic scribe, slide the intrusion switch out of the intrusion switch slot.

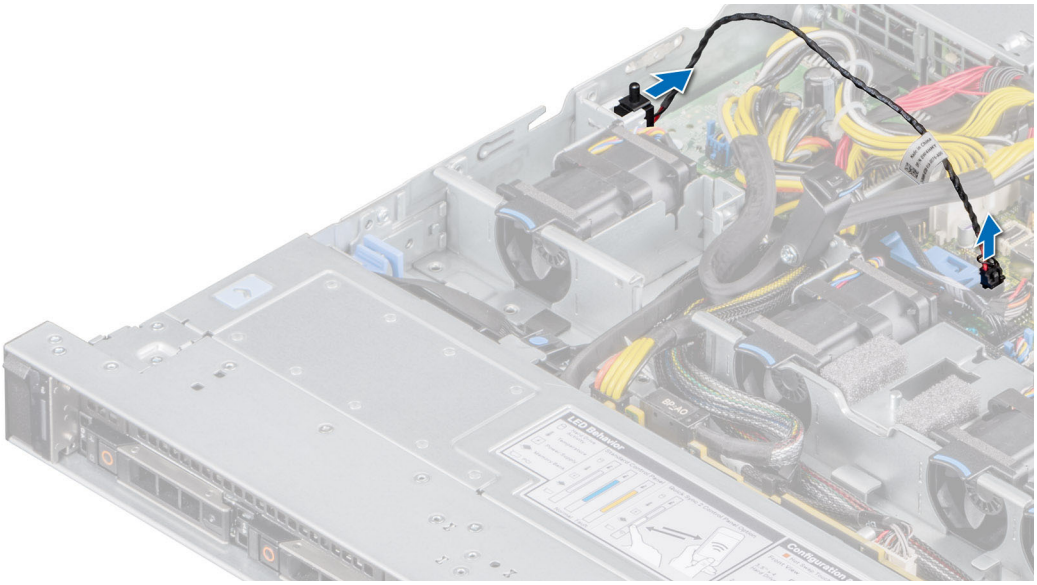


Figure 24. Removing the intrusion switch

Next steps

Replace the intrusion switch.

Install the intrusion switch

Prerequisites

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

Steps

1. Align and slide the intrusion switch in the slot until it is firmly seated in the slot on the system.

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

2. Connect the intrusion switch cable to the connector on the system board.

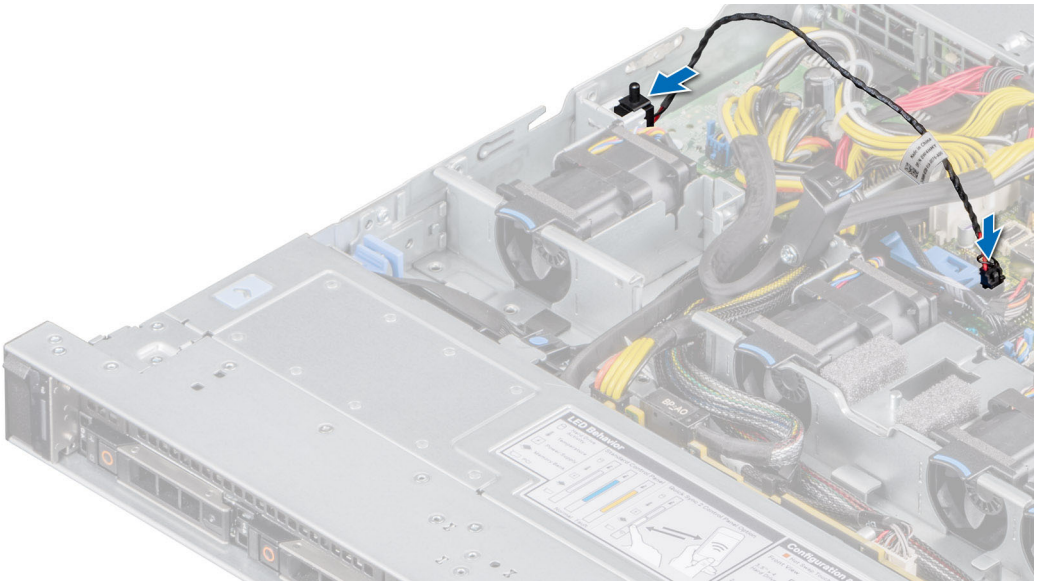


Figure 25. Installing the intrusion switch

Next steps

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

Drives

Remove a drive blank

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- If installed, Remove the front bezel.

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

Steps

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

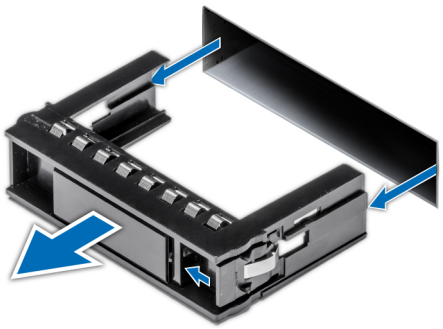


Figure 26. Removing a drive blank

Next steps

Install a drive in a drive carrier or Install a drive blank.

Install a drive blank

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- If installed, Remove the front bezel.

Steps

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

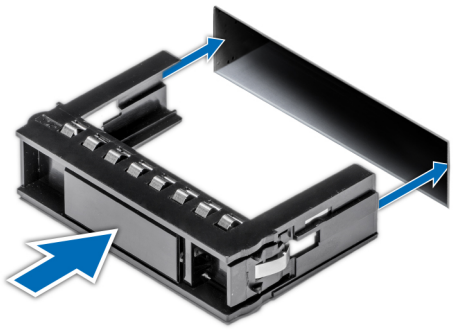


Figure 27. Installing a drive blank

Next steps

If removed, Install the front bezel.

Remove a drive carrier

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- If installed, Remove the front bezel.
- Using the management software, prepare the drive for removal.

  If the drive is online, the green activity or fault indicator blinks while the drive is powering off. When the drive indicators are off, the drive is ready for removal. For more information, see the documentation for the storage controller.

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

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

Steps

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

Figure 28. Removing a drive carrier

Next steps

Install a drive carrier or Install a drive blank.

Install a drive carrier

Prerequisites

Safety instructions

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

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

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

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

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.

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

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

Steps

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

Figure 29. Installing a drive carrier

Next steps

If removed, Install the front bezel.

Remove a drive from a drive carrier

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- If installed, Remove the front bezel.

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.

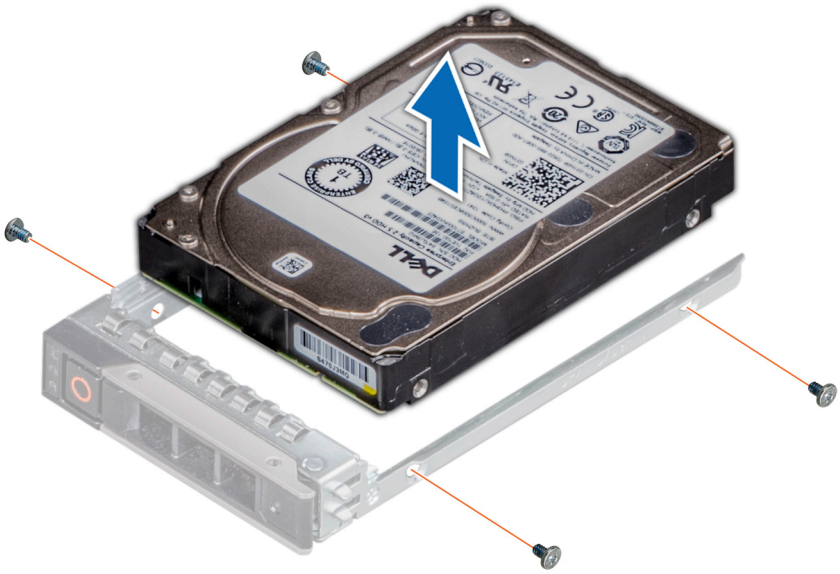


Figure 30. Removing the drive from the drive carrier

Next steps

Install a drive in a drive carrier.

Install a drive in a drive carrier

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- If installed, Remove the front bezel.
- Remove the drive blank.

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

Steps

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

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

Figure 31. Installing a drive into the drive carrier

Next steps

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

Drive backplane

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

Table 41. Supported backplane options

System	Supported hard drives options
XC Core XC6515	2.5 inch (x8) SAS or SATA backplane

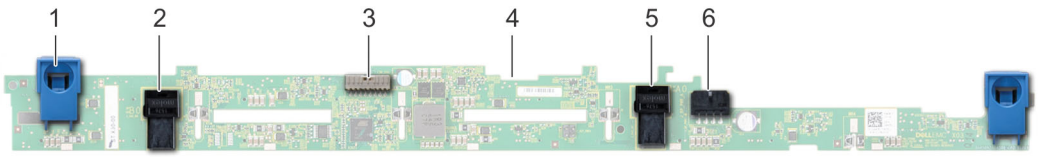


Figure 32. 8 x 2.5-drive backplane

1. release tab
2. SATA_A cable connector
3. backplane signal cable
4. backplane
5. SATA_B cable connector
6. backplane power cable

Remove the drive backplane

Prerequisites

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

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

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

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before you work inside your system.
3. Remove the air shroud.
4. Remove the backplane cover.
5. Remove all the drives.
6. Disconnect the VGA cable from the system board.

   NOTE: Observe the routing of the cable as you remove it from the system.
7. If installed, disconnect the optical drive signal and power cables from the drive.

Steps

1. Press the blue release tabs to disengage the drive backplane from the hooks on the system.
2. Lift the drive backplane out of the system.

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

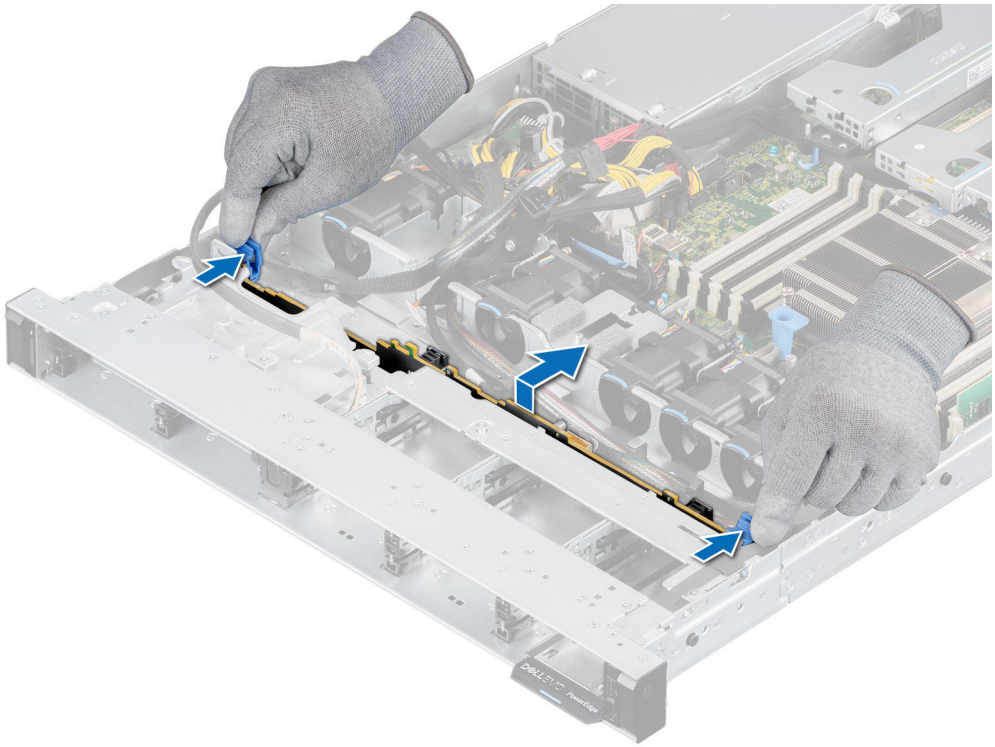


Figure 33. Removing the backplane

Next steps

Install the drive backplane.

Install the drive backplane

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before you work inside your system.
3. Remove the air shroud.
4. Remove the backplane cover.
5. Remove all the drives.

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

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

Steps

1. Use the hooks on the system as guides to align the slots on the backplane with the guides on the system.
2. Insert the backplane into the guides and lower the backplane until the blue release tabs click into place.

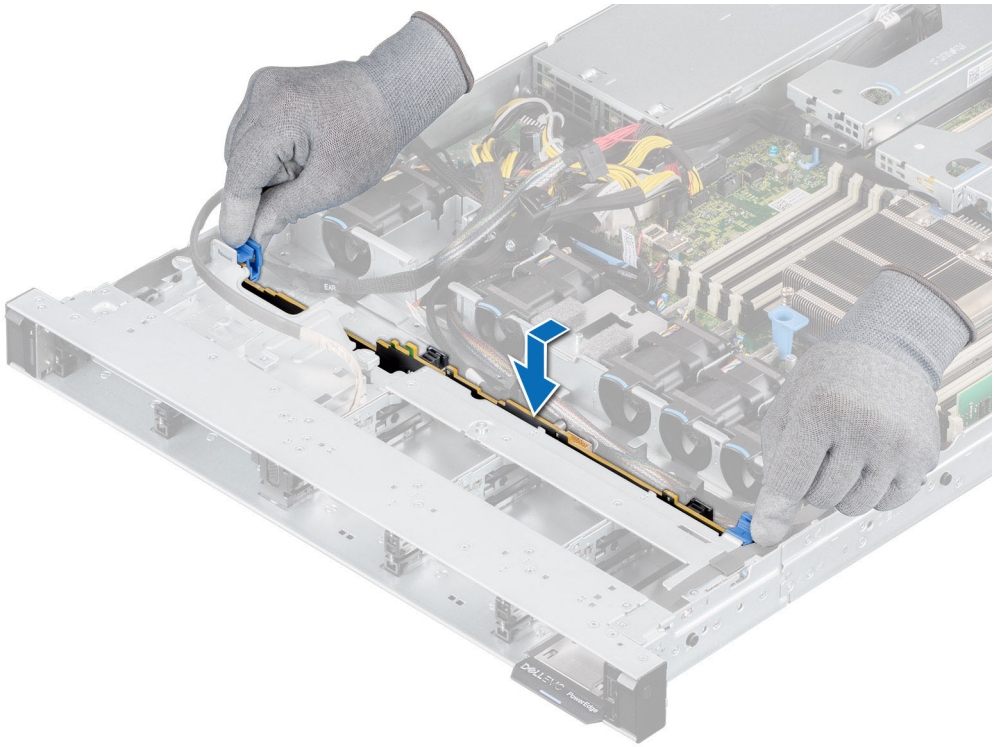


Figure 34. Installing the drive backplane

Next steps

1. Reconnect the VGA cable to the system board.
2. If disconnected, reconnect the optical drive power and signal cables to the drive.
3. Reconnect all the disconnected cables to the backplane.
4. Install all the drives.
5. Install the backplane cover.
6. Install the air shroud.
7. Follow the procedure listed in After you work inside your system.

Cable routing

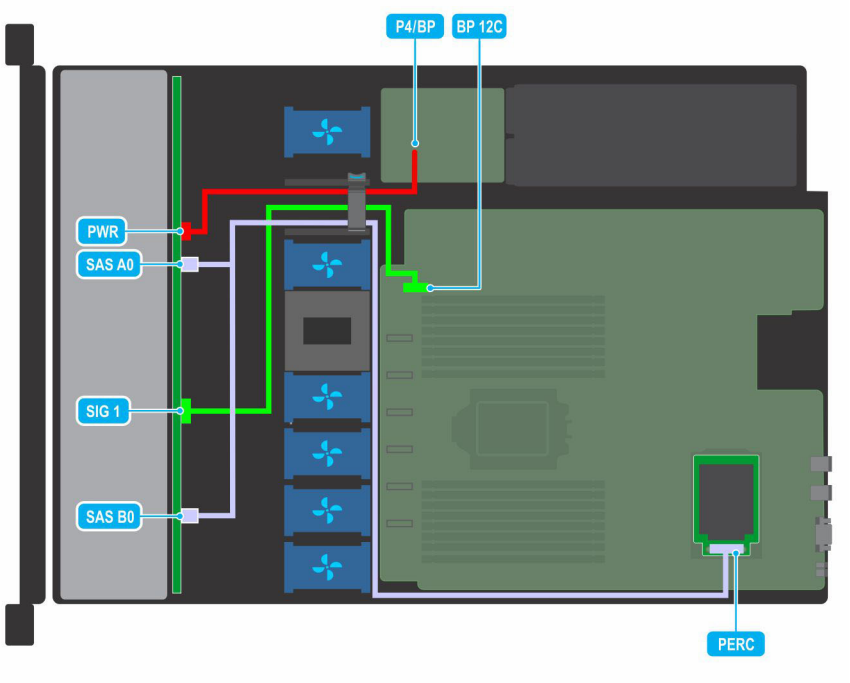


Figure 35. Cable routing - 8 x 2.5-inch drive backplane to the mini-PERC card

System memory

System memory guidelines

The Dell EMC XC Core XC6515 system supports DDR4 registered DIMMs (RDIMMs). System memory holds the instructions that are started by the processor.

Your system memory is organized into eight channels per processor (two memory sockets per channel) for a total of 16 memory sockets per processor. In each channel, the 1st socket is marked white and the 2nd socket black.

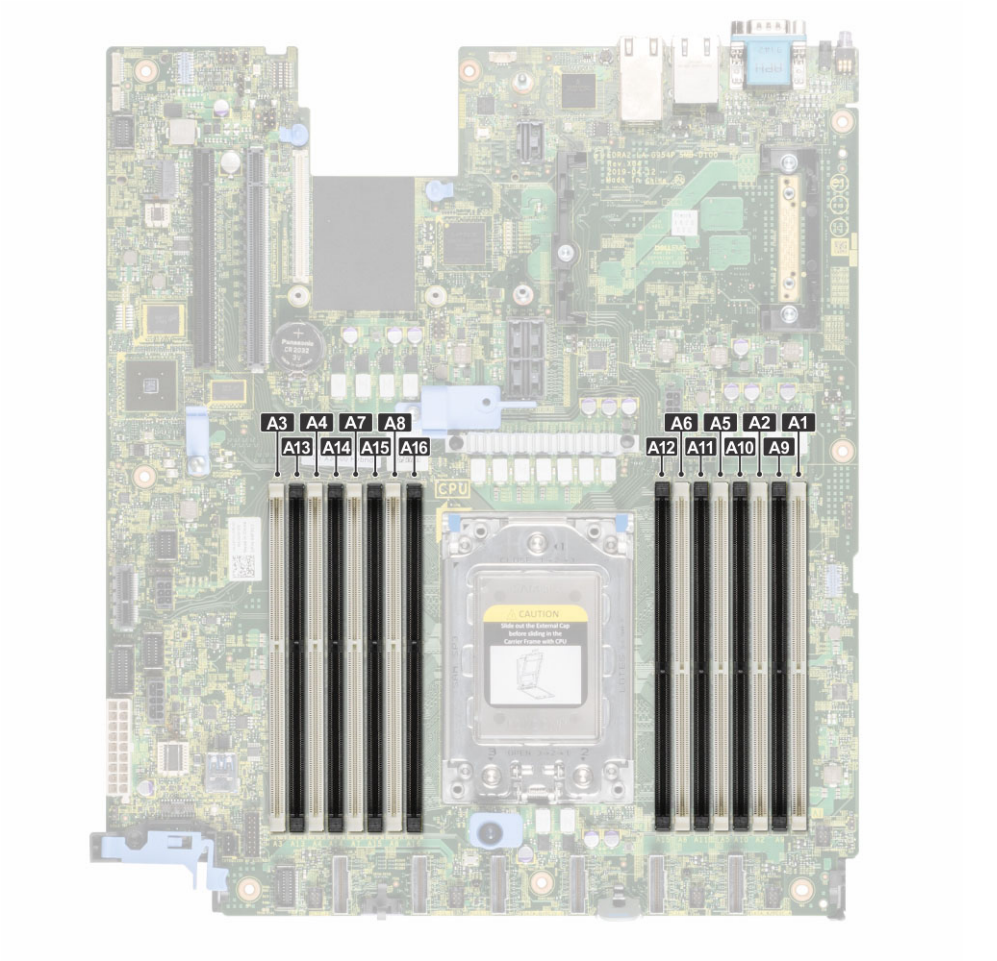


Figure 36. Memory socket location

Memory channels are organized as follows:

Table 42. Memory channels

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
AMD Processor	Slots 6 and 12	Slots 5 and 11	Slots 2 and 10	Slots 1 and 9	Slots 8 and 16	Slots 7 and 15	Slots 4 and 14	Slots 3 and 13

Table 43. Supported memory matrix

DIMM type	Rank type	Capacity	DIMM rated voltage and speed	Operating Speed	
				1 DIMMs per Channel (DPC)	2 DIMMs per Channel (DPC)
RDIMM	2R	16 GB, 32 GB, 64 GB	DDR4 (1.2V), 3200 MT/s	3200 MT/s	2933 MT/s

General memory module installation guidelines

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

The memory bus may operate at speeds of 3200 MT/s, 2933 MT/s, or 2666 MT/s depending on the following factors:

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

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

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

- All DIMMs must be DDR4.
- Mixing of memory module capacities in a system is not supported.
- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory module(s).
- Populate memory module sockets only if a processor is installed.
  - For single-processor systems, sockets A1 to A16 are available.
  - For single-processor systems, sockets A1 to A16 are available.
  - For dual-processor systems, sockets A1 to A16 and sockets B1 to B16 are available.
  - In Optimizer Mode, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

Table 44. Memory population rules

Processor	Configuration	Memory population	Memory population information
Single processor	Optimizer (Independent channel) population order	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}, A{9}, A{10}, A{11}, A{12}, A{13}, A{14}, A{15}, A{16}	Odd amount of DIMMs per processor allowed.

Table 45. Memory population rules

Processor	Configuration	Memory population	Memory population information
Single processor	Optimizer (Independent channel) population order	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}, A{9}, A{10}, A{11}, A{12}, A{13}, A{14}, A{15}, A{16}	Odd amount of DIMMs per processor allowed.
Dual processor (Start with processor1. Processor 1 and processor 2 population should match)	Optimizer (Independent channel) population order	A{1}, B{1}, A{2}, B{2}, A{3}, B{3}, A{4}, B{4}, A{5}, B{5}, A{6}, B{6}, A{7}, B{7} A{8}, B{8}	Odd amount of DIMMs per processor is allowed. DIMMs must be populated identically per processor.

Table 46. Memory population rules

Processor	Configuration	Memory population	Memory population information
Single processor	Optimizer (Independent channel) population order	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}	Odd amount of DIMMs per processor allowed.
Dual processor (Start with processor1. Processor 1 and processor 2 population should match)	Optimizer (Independent channel) population order	A{1}, B{1}, A{2}, B{2}, A{3}, B{3}, A{4}, B{4}, A{5}, B{5}, A{6}, B{6}, A{7}, B{7} A{8}, B{8}	Odd amount of DIMMs per processor allowed. **NOTE:** Odd number of DIMMs will result in unbalanced memory configurations, which in turn will result in performance loss. It is recommended to populate all memory channels identically with identical electrical

Table 46. Memory population rules (continued)

Processor	Configuration	Memory population	Memory population information
			specification DIMMs for best performance. Optimizer population order is not traditional for 8 and 16 DIMMs installations for dual processor. ▪ For 8 DIMMs: A{6}, A{5}, A{2}, A{1}, A{8}, A{7}, A{4}, A{3} ▪ For 16 DIMMs: A{6}, B{6} A{5}, B{5} A{2}, B{2} A{1}, B{1}, A{8}, B{8}, A{7}, B{7}, A{4}, B{4} A{3}, B{3}

- 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 must be identical.

  For example, if you populate socket A1 for processor 1, then populate socket B1 for processor 2, and so on.

- Unbalanced or odd memory configuration results in a performance loss and system may not identify the memory modules being installed, so always populate memory channels identically with equal DIMMs for best performance.
- Minimum recommended configuration is to populate four equal memory modules per processor. AMD recommends limiting processors in that system to 32 cores or less.
- Populate eight equal memory modules per processor (one DIMM per channel) at a time to maximize performance.

  NOTE: Equal memory modules refer to DIMMs with identical electrical specification and capacity that may be from different vendors.

Memory interleaving with Non-uniform memory access (NUMA)

Non-uniform memory access (NUMA) is a memory design used in multi-processing, where the memory access time depends on the memory location relative to the processor. In NUMA, a processor can access its own local memory faster than the non-local memory.

NUMA nodes per socket (NPS) is a new feature added that allows you to configure the memory NUMA domains per socket. The configuration can consist of one whole domain (NPS1), two domains (NPS2), or four domains (NPS4). In the case of a two-socket platform, an additional NPS profile is available to have whole system memory to be mapped as single NUMA domain (NPS0). For more information on the memory interleaving for NPSx, see the Memory interleaving population rules section in this topic.

BIOS implementation for NPSx

- The BIOS Setup menu presents the applicable NPSx options based on the underlying model number. A change to the current NPSx is communicated to pre-BIOS firmware to take effect on the next boot. The default NPS setting is 1.
- During boot, if the selected NPSx option is not allowed for the model number (for example, if the processor model number changes between reboot), system will halt at the end of POST with UEFI0388 message displayed. On the next reboot, the system will fall back to NPS1 default setting.
- During boot, if the preferred interleaving for the current NPSx is not possible due to memory configuration (for example, the memory population is inconsistent with the preferred interleaving), BIOS shows a warning message UEFI0391.

  NOTE: System is functional when UEFI0391 message is displayed. However, the system may not be configured for optimal performance.

NPS system optimization

Optimal system configuration is dependent on the processor model, memory configuration, and NPS settings. Match the memory configuration with the NPS settings available for the processor.

Table 47. Supported NPS modes by Processors

Model Number	NPS modes supported
7702P	4, 2, 1

Table 47. Supported NPS modes by Processors (continued)

Model Number	NPS modes supported
7502P	4, 2, 1
7402P	4, 2, 1
7302P	4, 2, 1

NOTE: NVIDIA GPU support is restricted to the processors which support NPS4.

Table 48. Optimal NPS configuration

Number of DIMMs per processor	NPS		
	0/1	2	4
1			X
2			X
3			X
4	X		
5			X
6			X
7			X
8	X		
9			X
10			X
11			X
12		X	
13			X
14			X
15			X
16	X		

- Recommended NPS setting is marked by X that indicate optimal performance.
- NPS0 is only available for dual processor systems and is the preferred setting.
- The NPS setting that are blank are functional. However, indicate non-optimal performance.
- BIOS default NPS setting is 1.
- UEFI0391 message may be displayed during boot if DIMMs are configured in the blank spaces of the table.
- If the processor does not support the desired NPS setting for a given number of DIMMs, then use default setting (NPS1) and the UEFI0391 message is displayed.

Table 49. Interleaving Options Based on NPSx

NPSx	Preferred	Alternate
4	2-channel	None
2	4-channel	2-channel
1	8-channel	4-channel, 2-channel

Table 50. Interleaving Options Based on NPSx

NPSx	Preferred	Alternate
4	2-channel	None

Table 50. Interleaving Options Based on NPSx (continued)

NPSx	Preferred	Alternate
2	4-channel	2-channel
1	8-channel	4-channel, 2-channel
0	16-channel (dual processor)	2-channel

Memory interleaving population rules

- NPS4: Two channel interleaving
  - This interleaves channel [A and B], [C and D], etc.
  - Each channel within the pair requires at least one equal memory modules populated.
  - Works with three memory modules per channel pair, non-symmetrical module is stacked on top (odd configurations).
  - Any memory channel where one of the two channels is not populated is not interleaved.
  - There is no alternate, as all configurations can be mapped into this mode.
- NPS2: Four channel interleaving
  - This interleaves the four channels on the left or right half of a processor which are channels [A, B, C, D] and [E, F, G, H].
  - All four channels require equal memory modules populated.
  - Each half or interleave set may have different total memory capacity with respect to each other.
- NPS1: Eight channel interleaving
  - This interleaves all channels in a processor [A, B, C, D, E, F, G, H].
  - All channels in a processor require equal memory modules populated.
  - Single processor system creates a single NUMA node for the system.

    NOTE: An exception is allowed when system has 4-channels populated [C, D, G, H] with equal memory allowing the system to enter NPS1 mode even though all the 8 channels are not populated.
- NPS0: Sixteen channel interleaving (dual processor)
  - This interleaves all 16 channels in a dual processor system.
  - All channels in a system require equal memory modules populated.
  - Dual processor systems create a single NUMA node for the system.

Remove a memory module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.

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

Steps

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

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

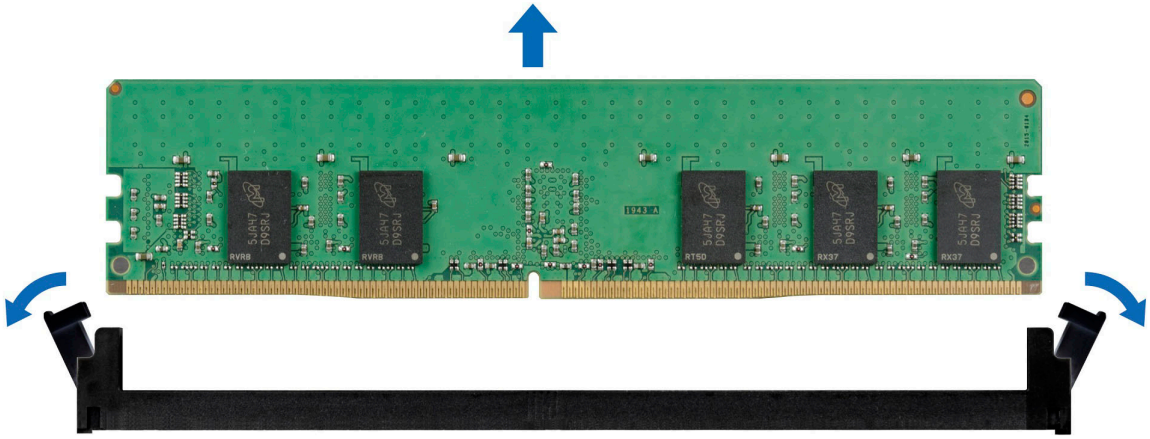


Figure 37. Removing a memory module

Next steps

Install the memory module.

Install a memory module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.

Steps

1. Locate the appropriate memory module socket.

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

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

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

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

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

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

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

4. Press the memory module with your thumbs until the ejectors firmly click into place. When the memory module is properly seated in the socket, the levers on the memory module socket align with the levers on the other sockets that have memory modules that are installed.

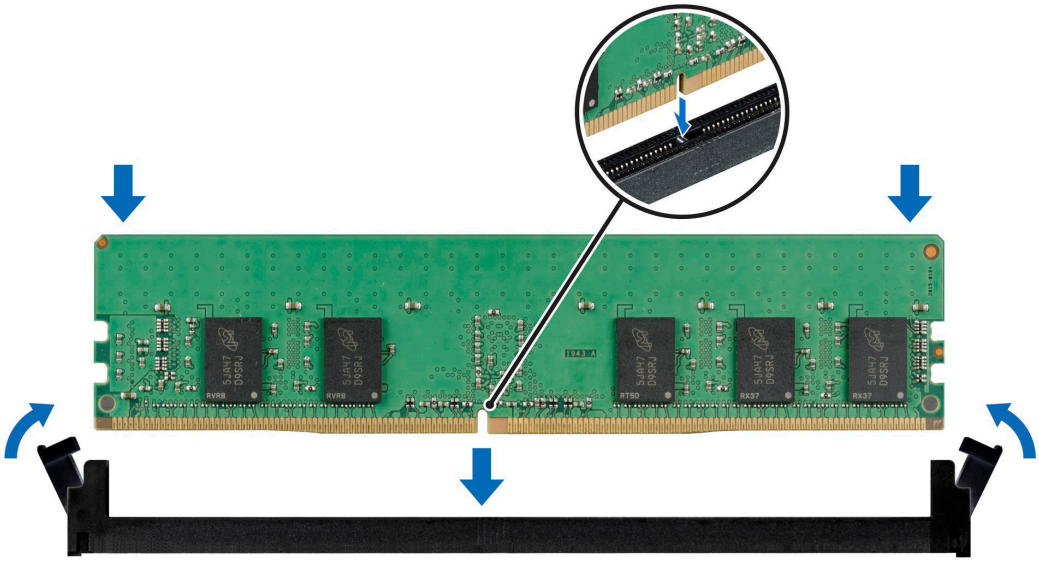


Figure 38. Installing a memory module

Next steps

1. Install the air shroud.
2. Follow the procedure listed in After you work inside your system.
3. To verify if the memory module has been installed properly, press F2 and browse **System Setup Main Menu > System BIOS > Memory Settings**. In the **Memory Settings** screen, the System Memory Size must reflect the updated capacity of the installed memory.
4. If the System Memory Size is incorrect, one or more of the memory modules may not be installed properly. Ensure that the memory modules are firmly seated in their sockets.
5. Run the system memory test in system diagnostics.

Processor and heat sink

Remove the heat sink

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.

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

Steps

1. Using a Torx #T20 screwdriver, loosen the captive screws in the order mentioned on the heat sink:

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

   a. Partially loosen the captive screws 1 and 2 (approximately 3 turns).
   b. Partially loosen the captive screws 3 and 4 (approximately 3 turns).
   c. Loosen the captive screws 1 and 2 completely.
   d. Loosen the captive screws 3 and 4 completely.
2. Lift the heat sink from the system.

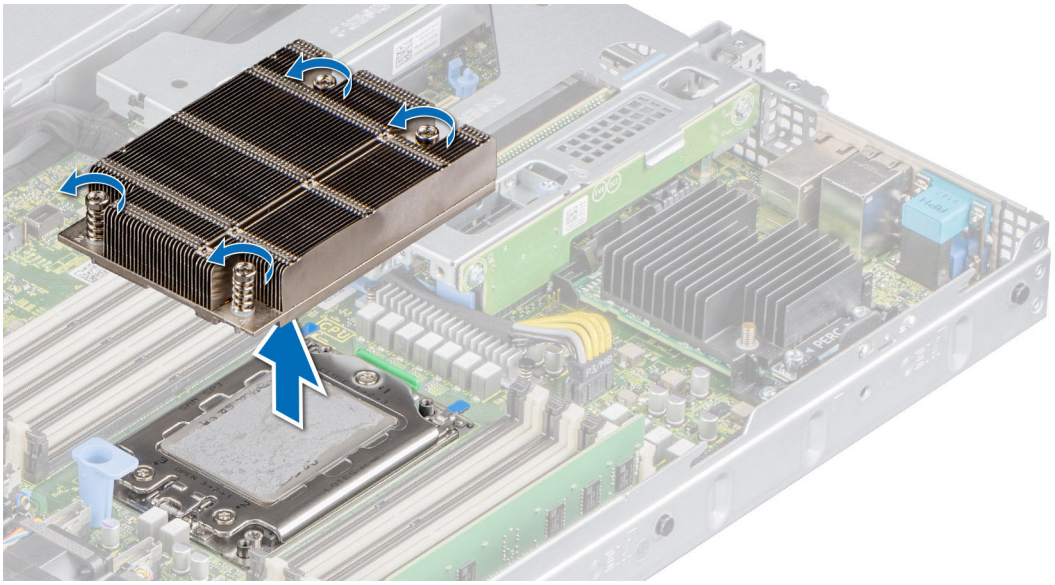


Figure 39. Removing a heat sink

Next steps

If you are removing a faulty heat sink, replace the heat sink, if not, remove the processor.

Remove the AMD processor

Prerequisites

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

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

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

Steps

1. Using a Torx #T20 screwdriver, loosen the screws to release the force plate. The sequence to loosen the screws is 3, 2, and 1.

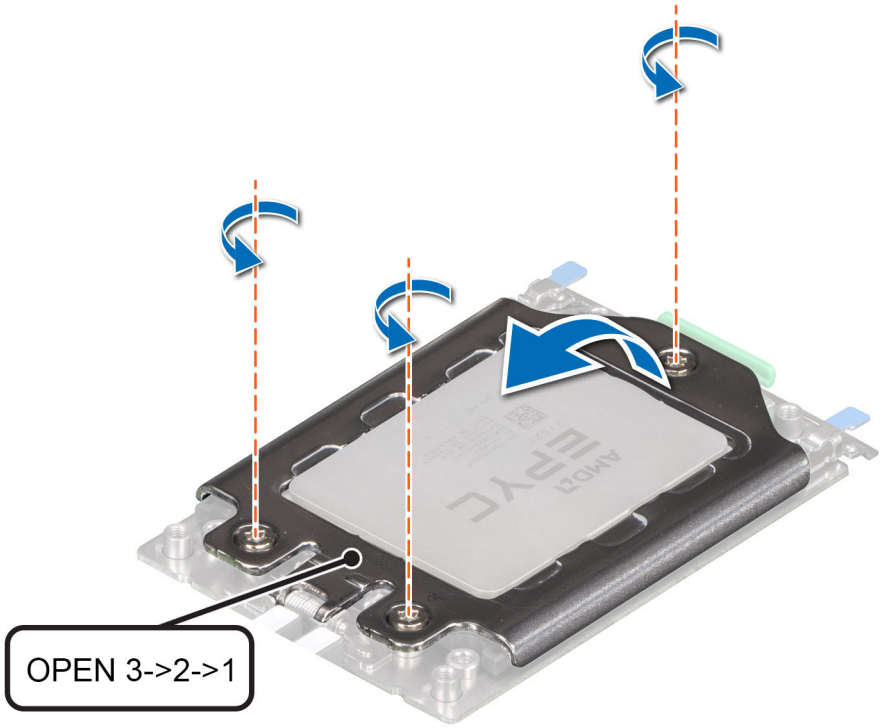


Figure 40. Removing screws on the force plate

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

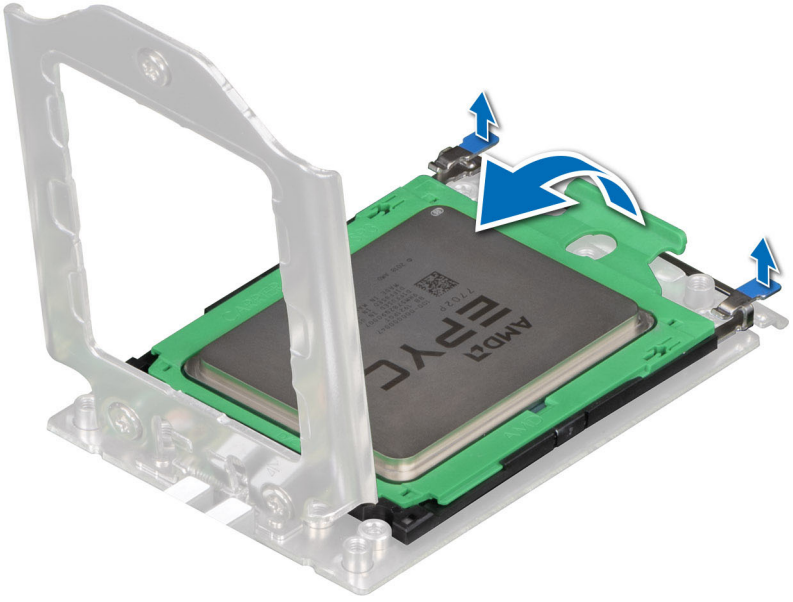


Figure 41. Lifting the rail frame

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

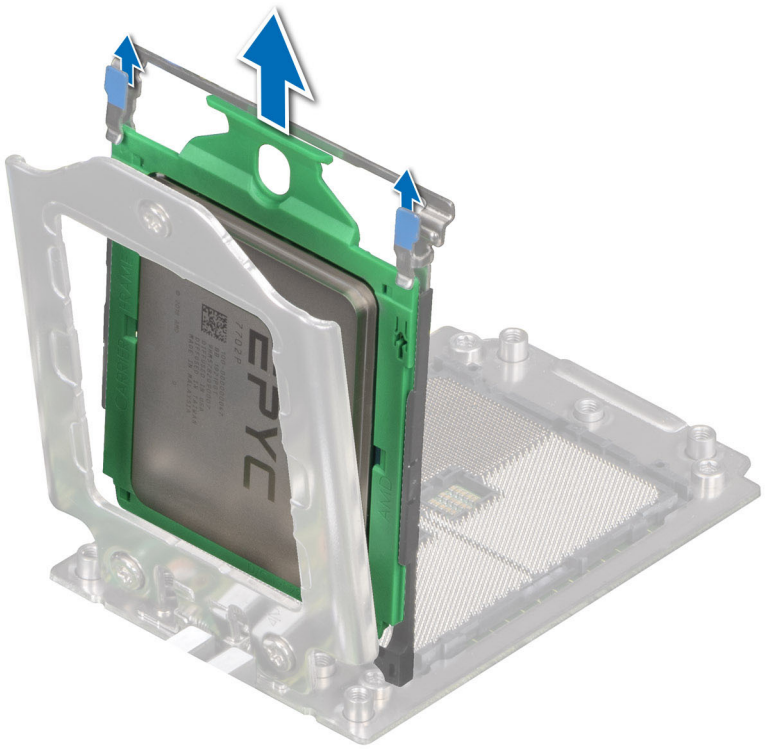


Figure 42. Removing the processor tray

Next steps

Replace the AMD processor.

Install the AMD processor

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in Before you work inside your system.

Steps

1. Holding the blue tab on the processor tray, slide the tray into the processor socket rail frame until firmly seated.

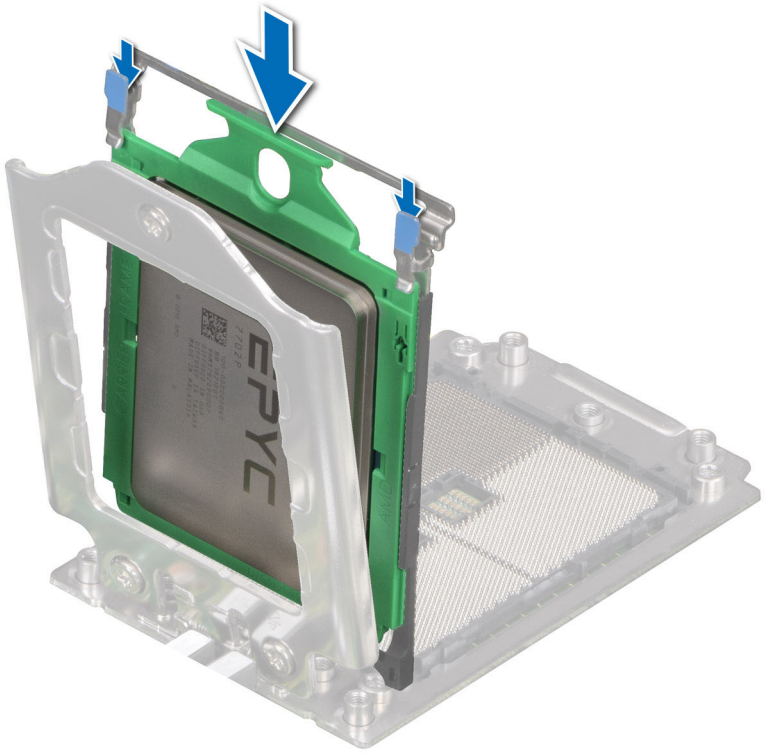


Figure 43. Placing the processor tray into the rail frame

2. Push the rail frame down until the blue latches lock into place.

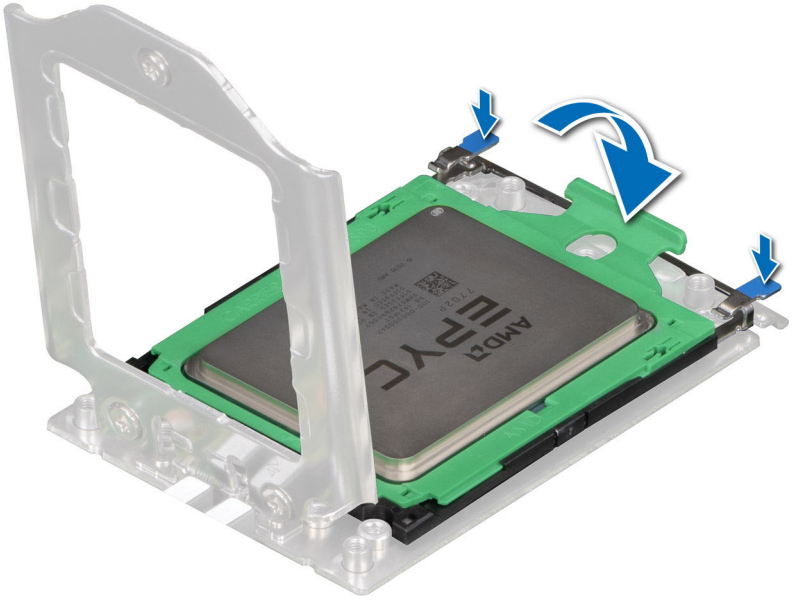


Figure 44. Closing the rail frame

3. Secure the force plate 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 12.0 ± 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.

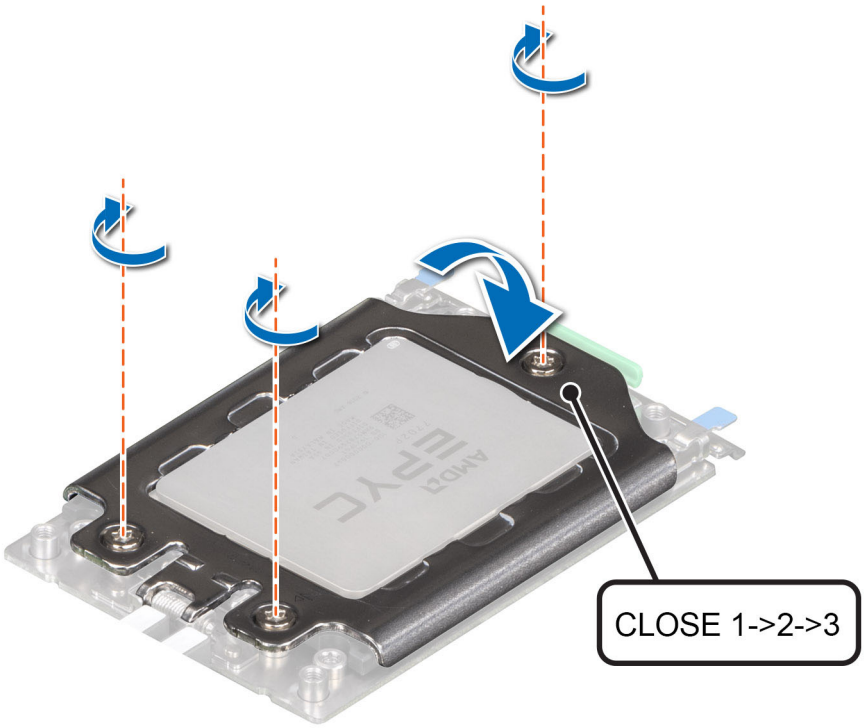


Figure 45. Securing the force plate

Next steps

1. Install the heat sink.
2. Install the air shroud.
3. Follow the procedure listed in After you work inside your system.

Install the heat sink

Prerequisites

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.

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before you work inside your system.
3. Remove the air shroud.
4. If installed, remove the processor dust cover.

Steps

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

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

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

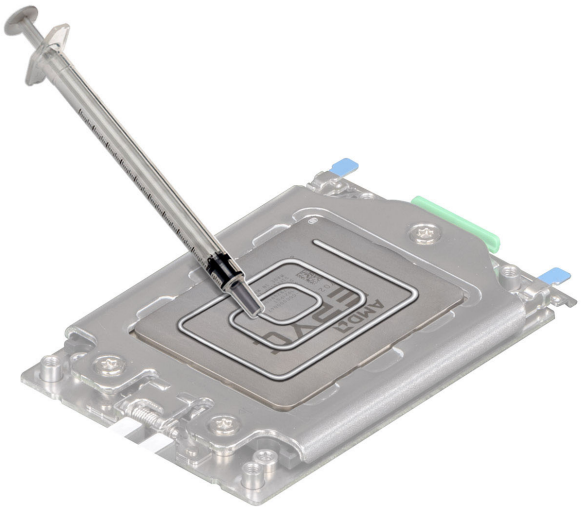


Figure 46. Installing the heat sink

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

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

3. Align 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 screws in the order that is mentioned below:

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

   a. Partially tighten the captive screws 1 and 2 (approximately three turns).
   b. Partially tighten the captive screws 3 and 4 (approximately three turns).
   c. Tighten the captive screws 1 and 2 completely.
   d. Tighten the captive screws 3 and 4 completely.

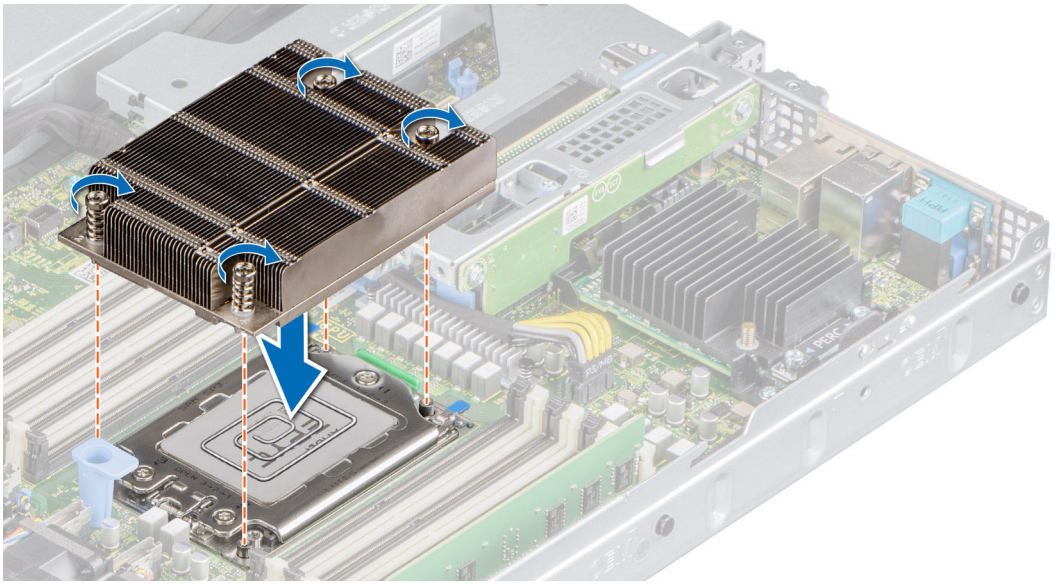


Figure 47. Installing the heat sink

Next steps

1. Install the air shroud.

2. Follow the procedure listed in the After you work inside your system.

Expansion cards and expansion card risers

NOTE: A system event entry is logged in the iDRAC Lifecycle Controller if an expansion card riser is not supported or missing. It does not prevent your system from turning on.

Expansion card installation guidelines

The following table describes the supported expansion cards:

Table 51. Expansion card riser configurations

Expansion card riser	PCIe slots on the riser	Processor connection	Height	Length	Slot width
No riser	Slot 1	Processor 1	-	-	x8
Riser 1A	Slot 2	Processor 1	Low Profile	Half Length	x16
Riser 2	Slot 3	Processor 1	Low Profile	Half Length	x16

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

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

Table 52. Riser configuration (include slots 1, 2, and 3)

Card type	Slot priority	Maximum number of cards
HBA: Mini mono (HBA330)	Integrated slot	1
Broadcom (10 G DP)	3, 2	2
Broadcom (25 G DP)	3, 2	2
Intel 10 G (BaseT DP)	3, 2	2
Intel 10 G (SFP+ DP)	3, 2	2
Intel 25 G (SFP DP)	3, 2	2
Mellanox 25 G (CX4LX DP/CX5 DP)	3, 2	2
Internal Storage (BOSS)	3, 2	1
LOM riser (2x1 G)/(2x10 G)/(2x25 G)	1	1

Remove the expansion card risers

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- Disconnect any cables connected to the expansion card.

Steps

Hold the touch points, and lift the left expansion card riser from the riser connector on the system board.

Figure 48. Removing the low profile left riser

NOTE: For low profile riser right, first loosen the captive screw and then holding the touch points lift the riser away from the system.

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

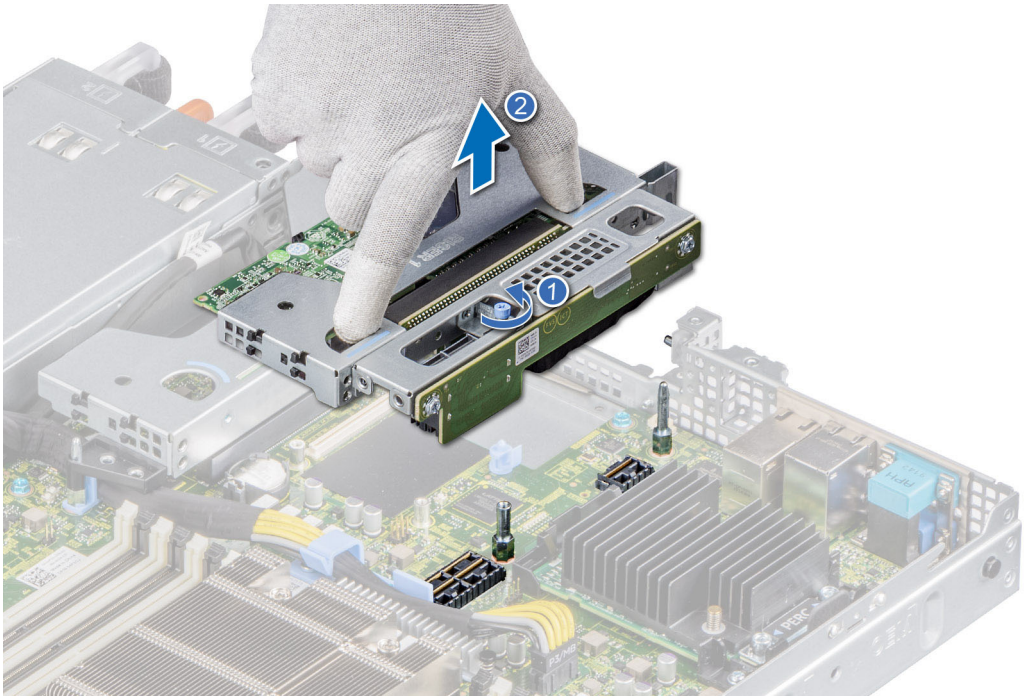


Figure 49. Removing the low profile right riser

Next steps

Install the expansion card risers.

Install the expansion card risers

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before working inside your system.
- If removed, install the expansion cards into the expansion card risers.

Steps

1. Holding the touch points, align the expansion card riser with the connector and the riser guide pin on the system board.
2. Lower the expansion card riser into place until the expansion card riser connector is fully seated in the connector.

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

Figure 50. Installing the low profile left riser

NOTE: For low profile riser right, tighten the captive screw to secure the riser to the system board.

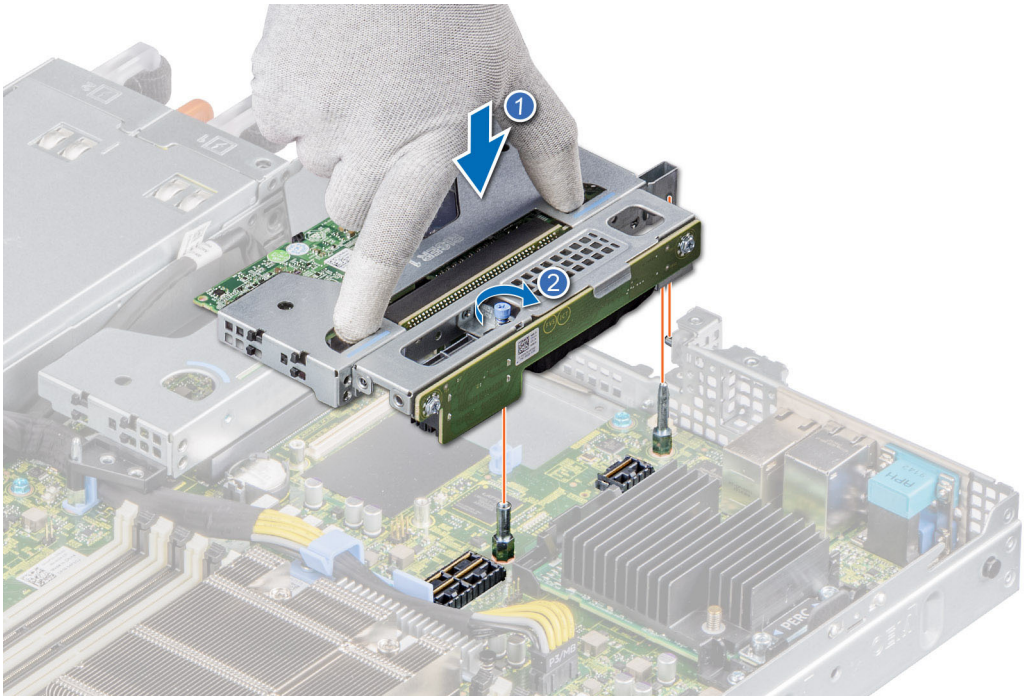


Figure 51. Installing the low profile right riser

Next steps

1. If required, reconnect the cables to the expansion card.
2. 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.

Remove the expansion card from the expansion card riser

Prerequisites

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

NOTE: The procedure to remove the T4 GPU card and the expansion card is the same.

Steps

1. Pull and lift up the expansion card retention latch lock to open.
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.

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

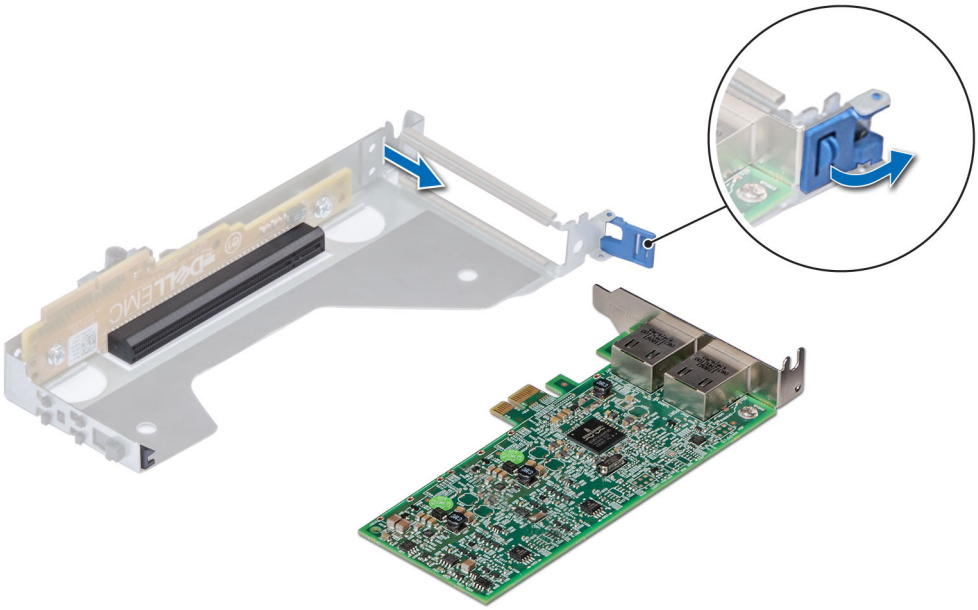


Figure 52. Removing an expansion card from the low profile left riser

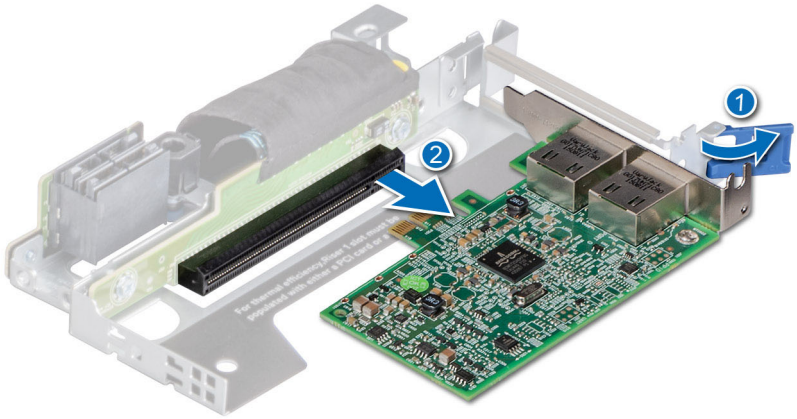


Figure 53. Removing an expansion card from the low profile right riser

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

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

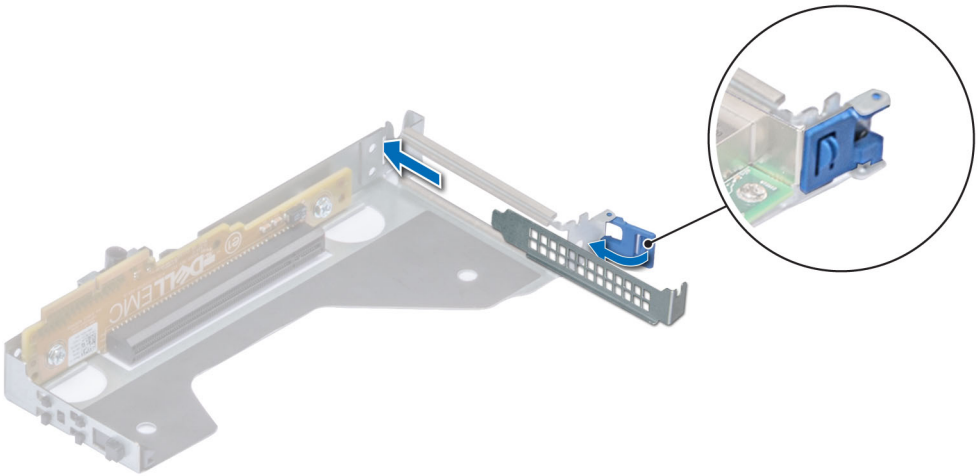


Figure 54. Installing filler bracket in the low profile left riser

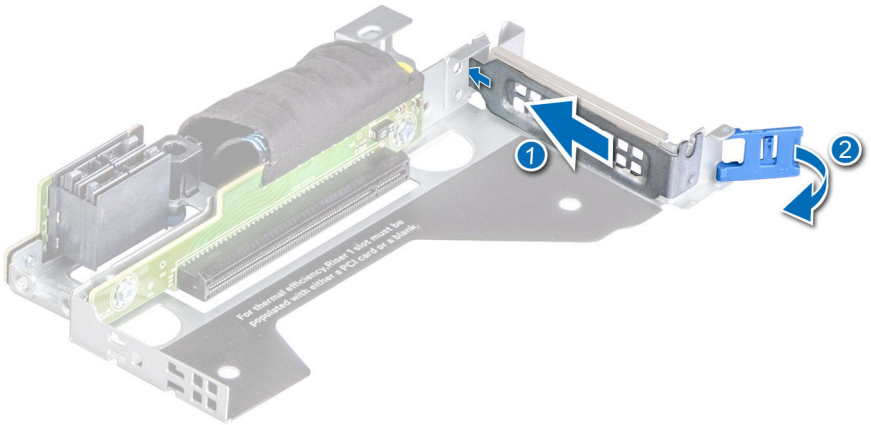


Figure 55. Installing filler bracket in the low profile right riser

Next steps

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

Install an expansion card into an expansion card riser

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- If installing a new expansion card, unpack it and prepare the card for installation.

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

NOTE: The procedure to install the T4 GPU card and the expansion card is the same.

Steps

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

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

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

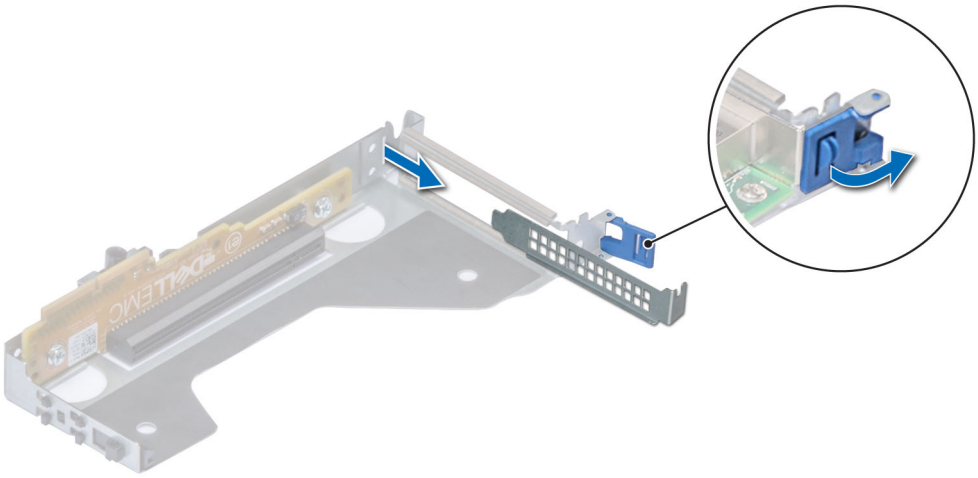


Figure 56. Removing a filler bracket from a low profile left riser

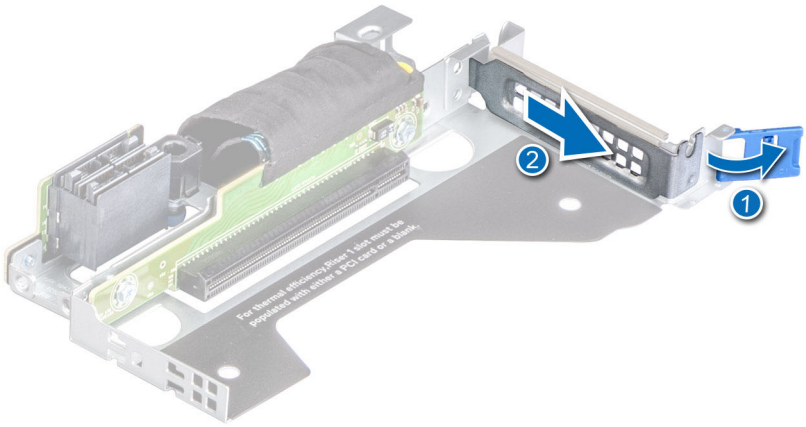


Figure 57. Removing a filler bracket from a low profile right riser

3. Hold the card by the 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. Close the expansion card retention latch.

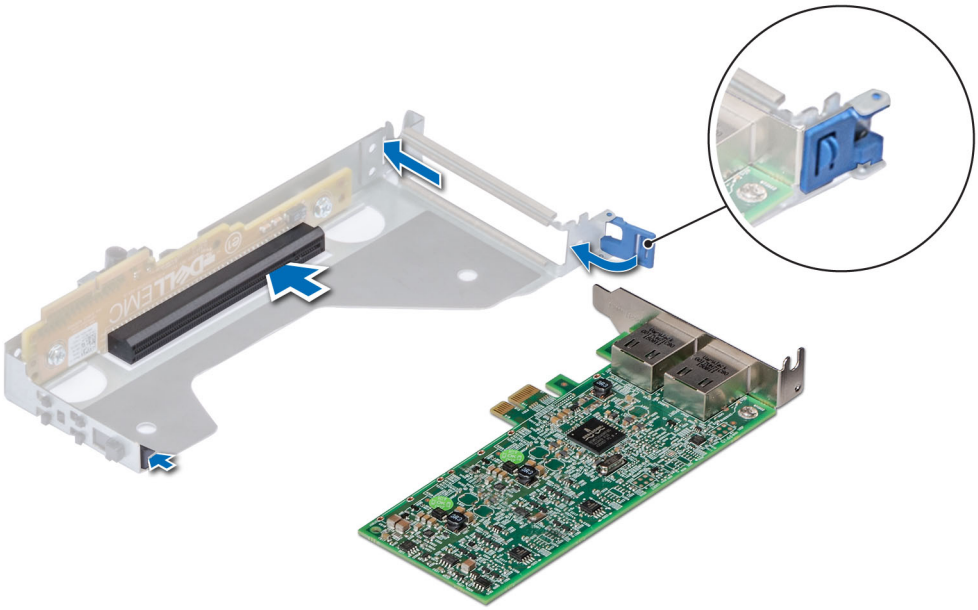


Figure 58. Installing an expansion card into a low profile left riser

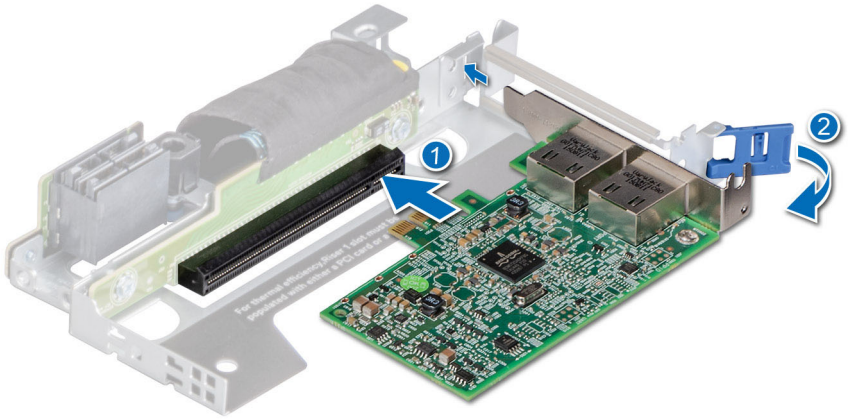


Figure 59. Installing an expansion card into a low profile right riser

Next steps

1. If applicable, connect the cables to the expansion card.
2. Install the air shroud.
3. Follow the procedure listed in After you work inside your system.
4. Install any device drivers required for the card as described in the documentation for the card.

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

MicroSD card

Remove the MicsoSD card

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- Remove the ISDM module.

Steps

1. Locate the MicroSD card slot on the IDSDM module, and press the card to partially release it from the slot. For more information on the slot location, see System board jumpers and connectors section.
2. Hold the MicroSD card and remove it from the slot..

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

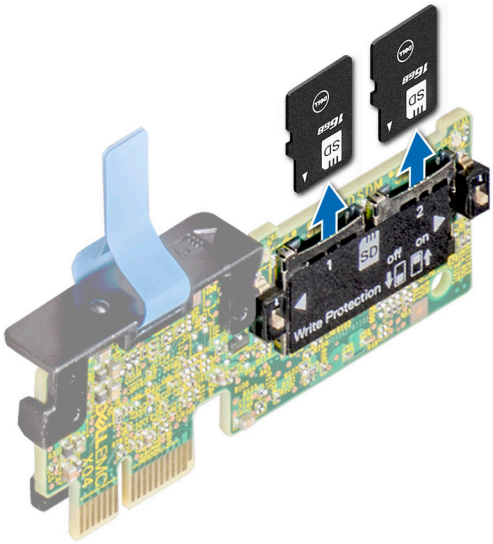


Figure 60. Removing the MicroSD card

Next steps

Install the MicroSD card.

Install the MicroSD card

Prerequisites

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

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

NOTE: Ensure that you install the MicroSD cards into the same slots that are based on the labels you had marked on the cards during removal.

Steps

1. Locate the MicroSD card slot on the IDSDM module. Orient the MicroSD card appropriately and insert the contact-pin end of the card into the slot. To locate IDSDM, see the System board jumpers and connectors section.

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

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

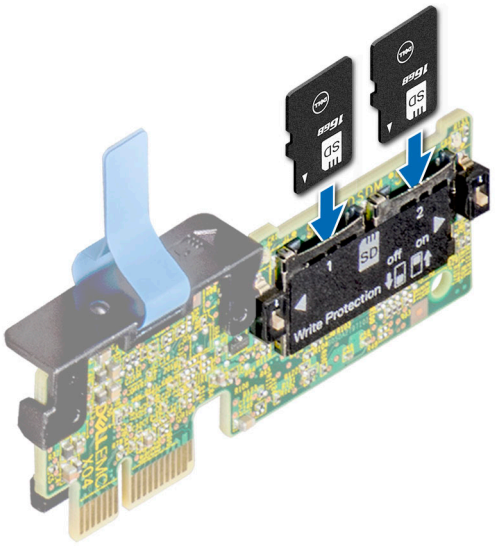


Figure 61. Installing the MicroSD card

Next steps

1. Install the IDSDM module.
2. Install the air shroud.
3. Follow the procedure listed in the After you work inside your system.

M.2 SSD module

Remove the M.2 SSD module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- Remove the BOSS card.

  NOTE: The procedure to remove the BOSS card is similar to removing an expansion card.

Steps

1. Using the Phillips #1 screwdriver, remove the screws securing the M.2 SSD module to the BOSS card.
2. Pull the M.2 SSD module to disconnect from the connector on the BOSS card.

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

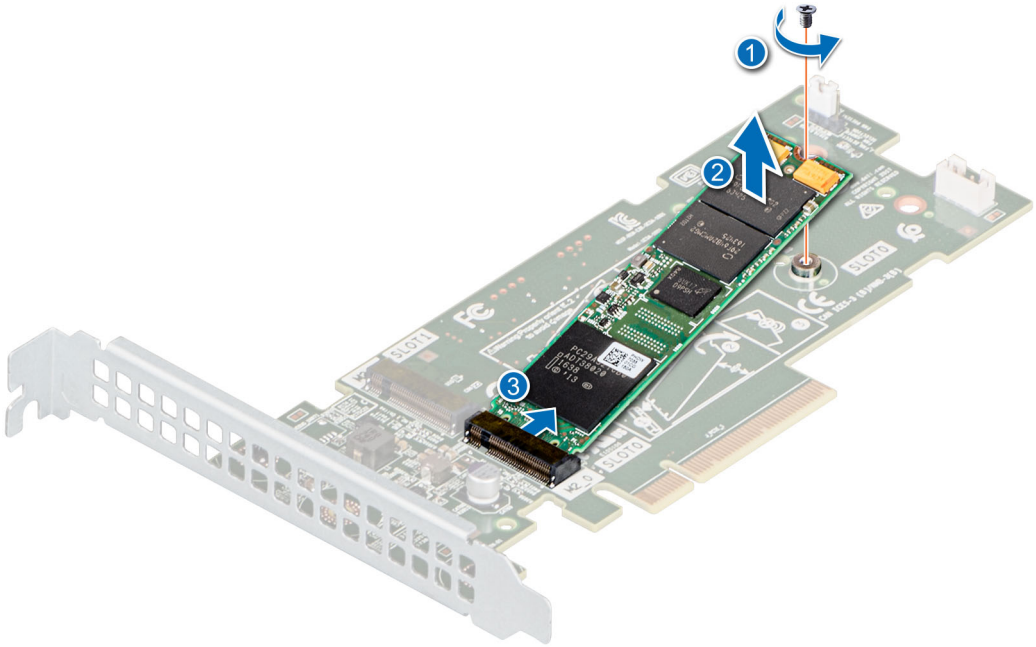


Figure 62. Removing the M.2 SSD module

Next steps

Install the M.2 SSD module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before working inside your system.
- Remove the air shroud.
- Remove the BOSS card.

  NOTE: The procedure to remove the BOSS card is similar to the removing an expansion card.

Steps

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

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

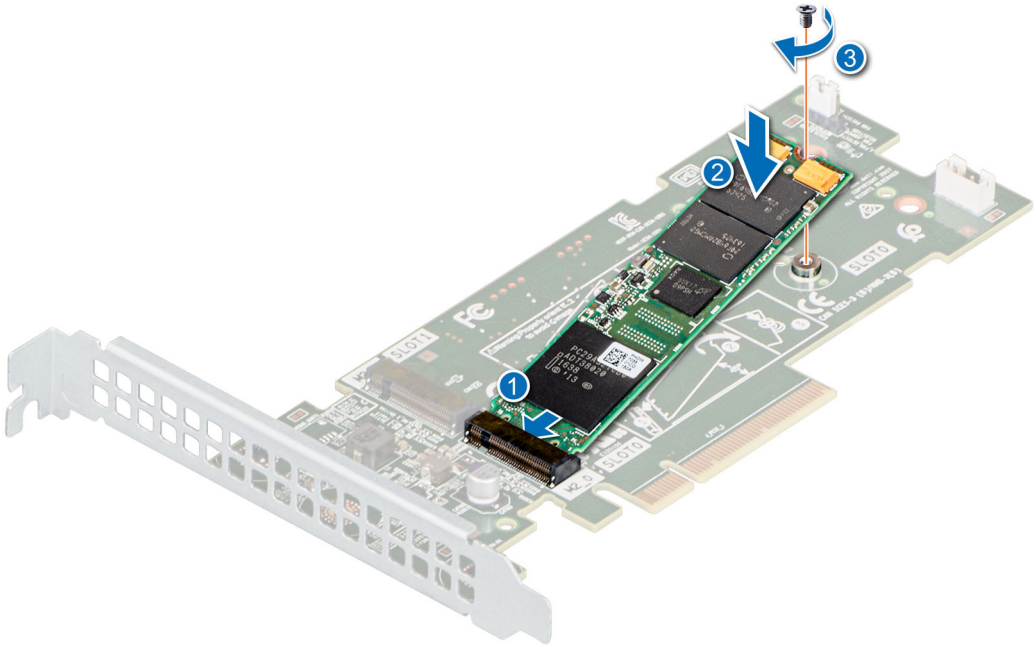


Figure 63. Installing the M.2 SSD module

Next steps

1. Install the BOSS card.

   NOTE: The procedure to install the BOSS card is similar to removing an expansion card.
2. Install the air shroud.
3. Follow the procedure listed in the After you work inside your system.

IDSDM module

Remove the IDSDM module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- If you are replacing the IDSDM card, remove the MicroSD cards.

  NOTE: Temporarily label each SD card with its corresponding slot number before removal. Reinstall the SD cards into the corresponding slots.

Steps

Holding the pull tab, lift the IDSDM card out of the system.

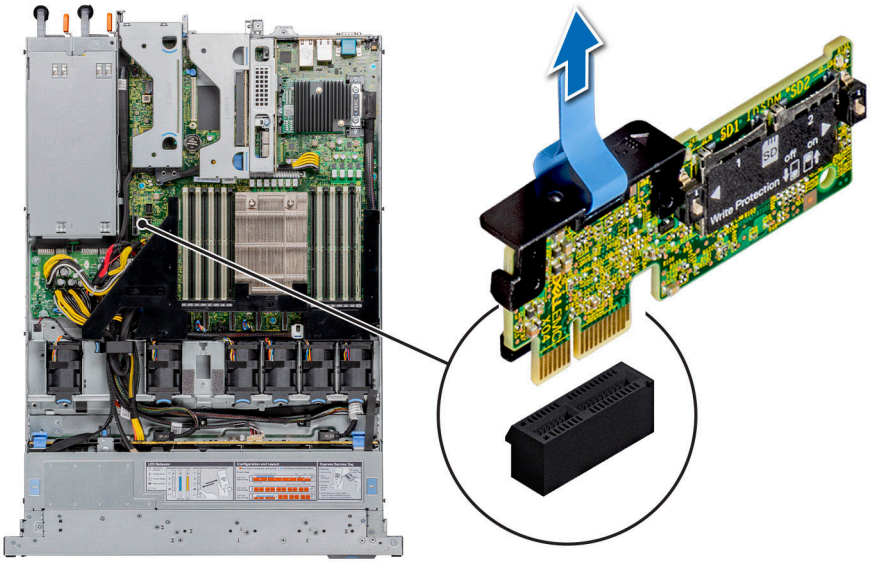


Figure 64. Removing the IDSDM module

Next steps

Install the IDSDM module.

Install the IDSDM module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.

Steps

1. Locate the IDSDM connector on the system board.
   To locate IDSDM, see the System board jumpers and connectors section.
2. Align IDSDM module with the connector on the system board.
3. Push IDSDM module until it is firmly seated in the connector on the system board.

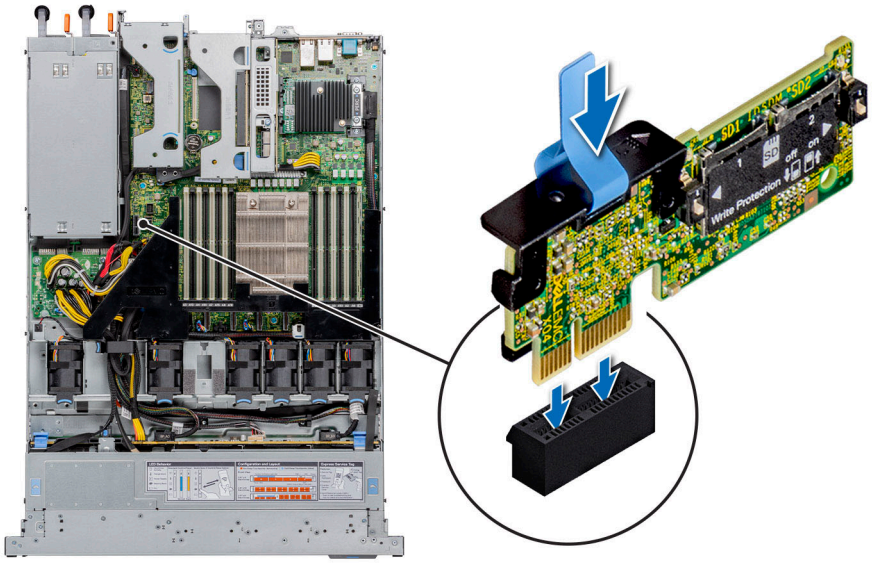


Figure 65. Installing the IDSDM module

Next steps

1. Install the MicroSD card.
   NOTE: Reinstall the MicroSD cards into the same slots based on the labels you had marked on the cards during removal.
2. Install the air shroud.
3. Follow the procedure listed in the After you work inside your system.

LOM riser card

Remove the LOM riser card

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- If installed, remove the risers.

Steps

1. Using a Phillips #2 screwdriver, remove the screws that secure the LAN on Motherboard (LOM) riser card to the system board.
2. Push apart the two blue plastic clips securing the LOM riser card to release the riser.
3. Holding the LOM riser card by the edges, lift to disconnect the card from the connector on the system board.
4. Slide the LOM riser card towards the front of the system until the Ethernet connectors or the SFP+ are clear of the slot in the back panel.

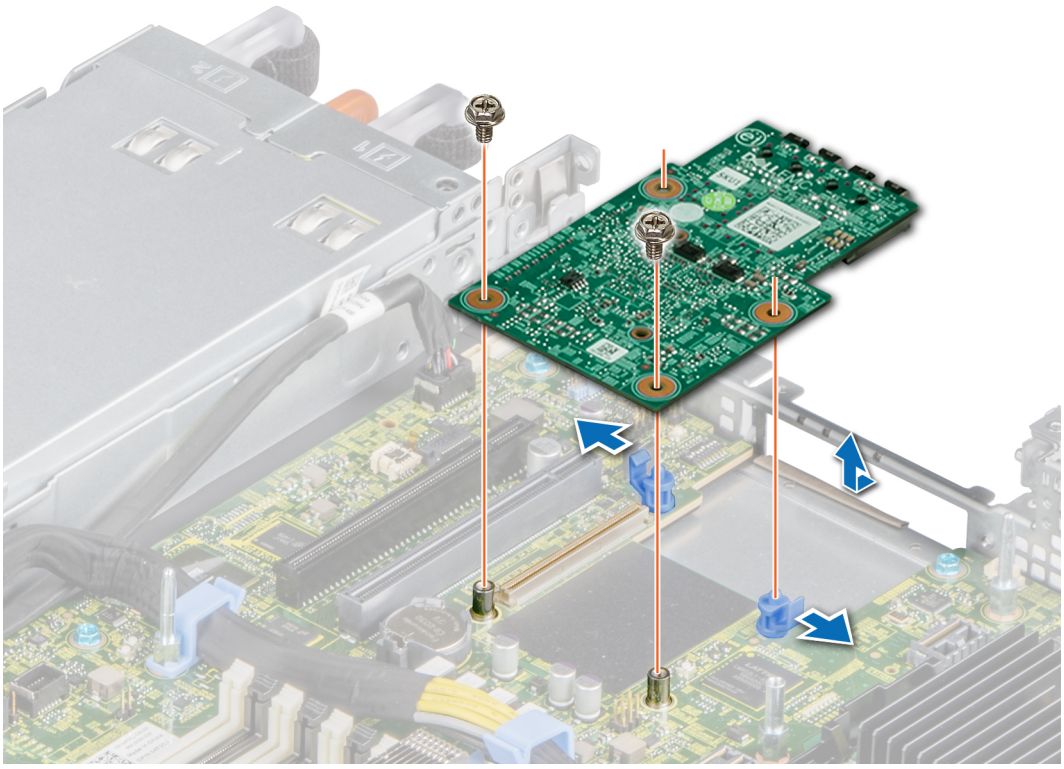


Figure 66. Removing the LOM riser card

5. Lift the LOM riser card out of the system.
6. Remove the LOM bracket.
   a. Using the Phillips #2 screwdriver, remove the screw that secures the bracket to the chassis.
   b. Slide the bracket out of the slot on the chassis.

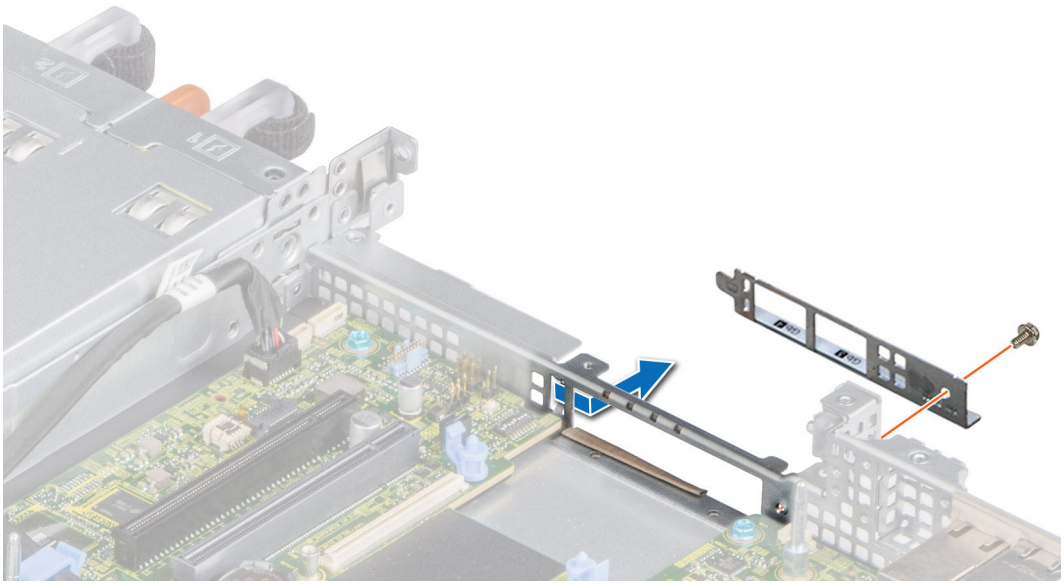


Figure 67. Removing the LOM riser bracket

7. If the LOM riser is not being replaced immediately, install the LOM filler bracket.
   a. Insert and slide the filler into the slot on the chassis.
   b. Using the Phillips #2 screwdriver, secure the filler bracket to the chassis with a screw.

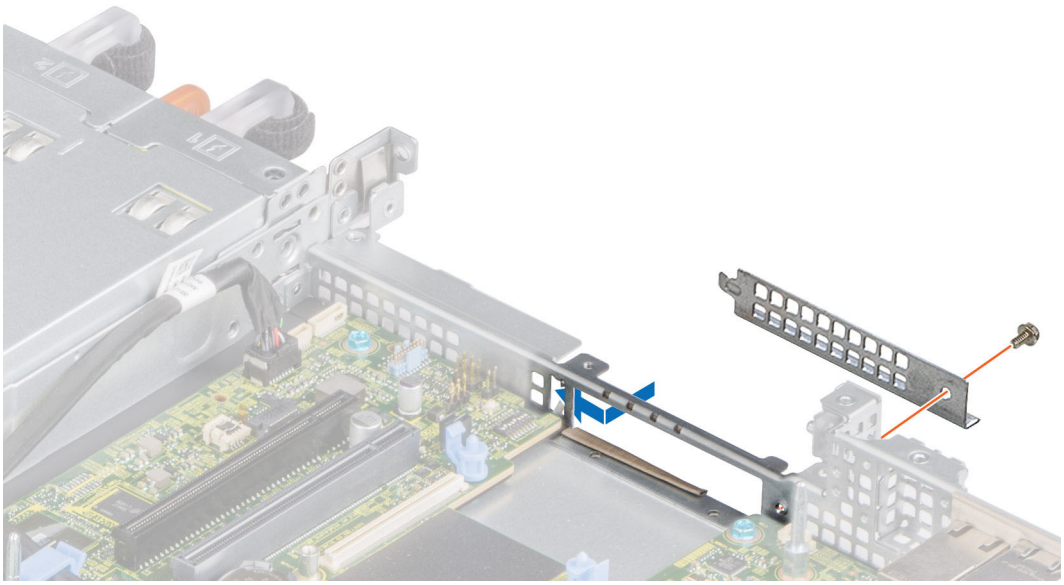


Figure 68. Installing the LOM filler bracket

Next steps

Install the LOM riser card.

Install the LOM riser card

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- If installed, remove the risers.

Steps

1. Remove the LOM filler bracket.
   a. Using the Phillips #2 screwdriver, remove the screw that secures the bracket to the system.
   b. Slide the bracket out of the slot on the system.

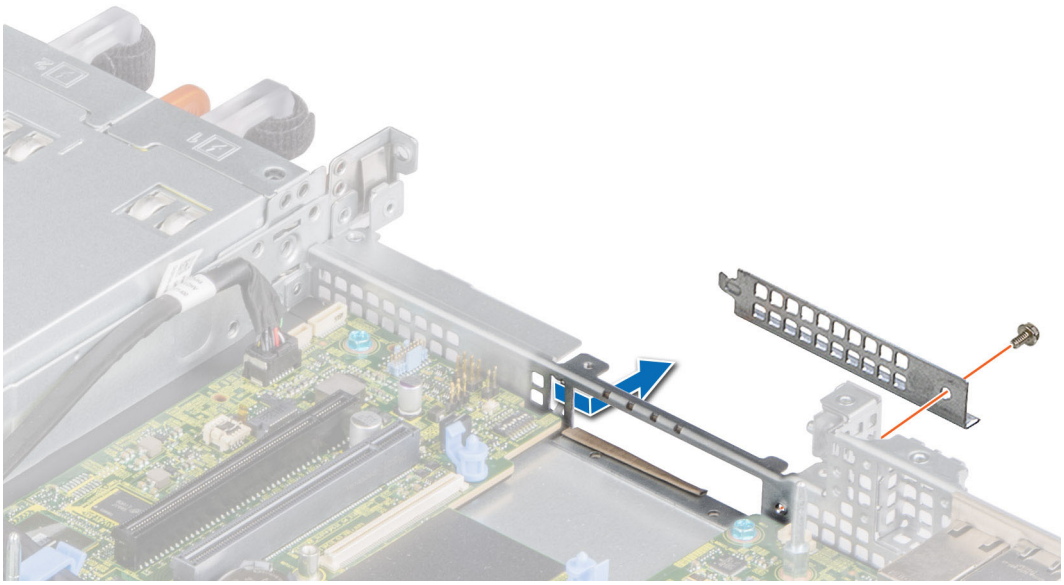


Figure 69. Removing the LOM filler bracket

2. Install the LOM bracket.
   a. Insert and slide the LOM bracket into the slot on the system.
   b. Using the Phillips #2 screwdriver, secure the bracket to the system with a screw

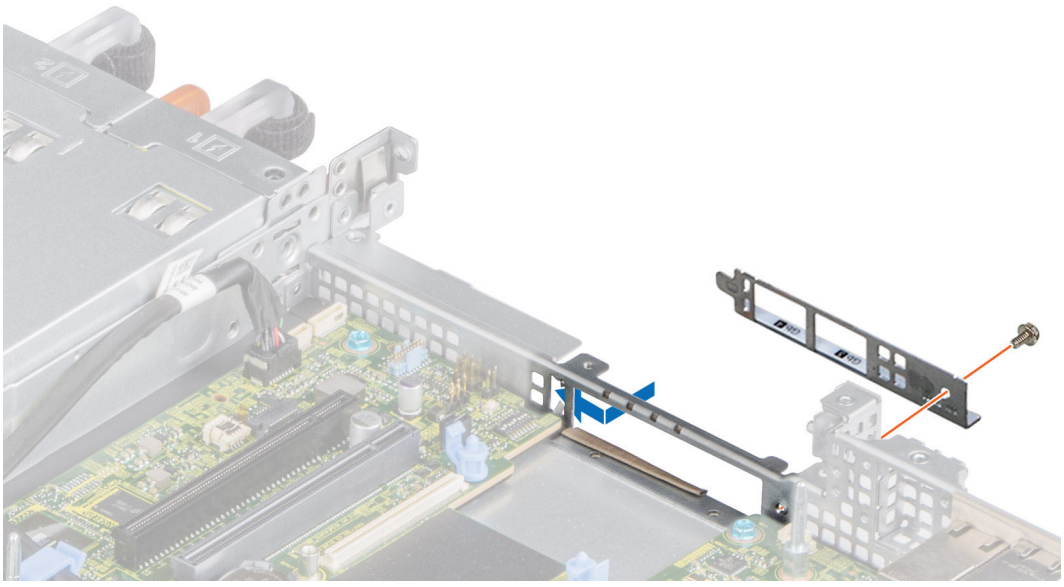


Figure 70. Installing the LOM riser bracket

3. Orient the LOM riser card to fit the Ethernet connectors or the SFP+ through the slot of the bracket.
4. Press the LOM riser card until the card is firmly seated on the system board connector and the two blue plastic clips to secure the LOM riser card in place.
5. Using a Phillips #2 screwdriver, secure the LOM riser card to the system board with screws.

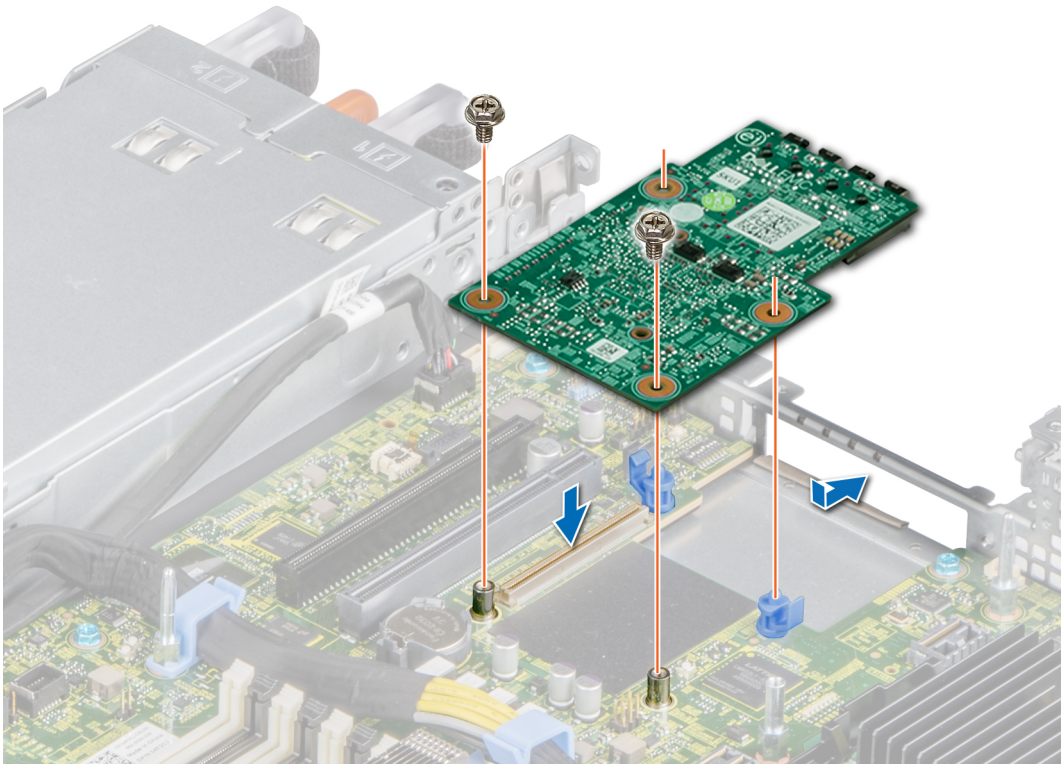


Figure 71. Installing the LOM riser card

Next steps

1. If removed, install the risers.
2. Install the air shroud.
3. Follow the procedure listed in After you work inside your system.

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

Mini PERC card

Remove the mini PERC card

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- If installed, remove the risers..

Steps

1. Using a Phillips #2 screwdriver, loosen the screws that secure the cable to the mini PERC card.
2. Holding the tab, lift the cable to disconnect from the mini PERC card.

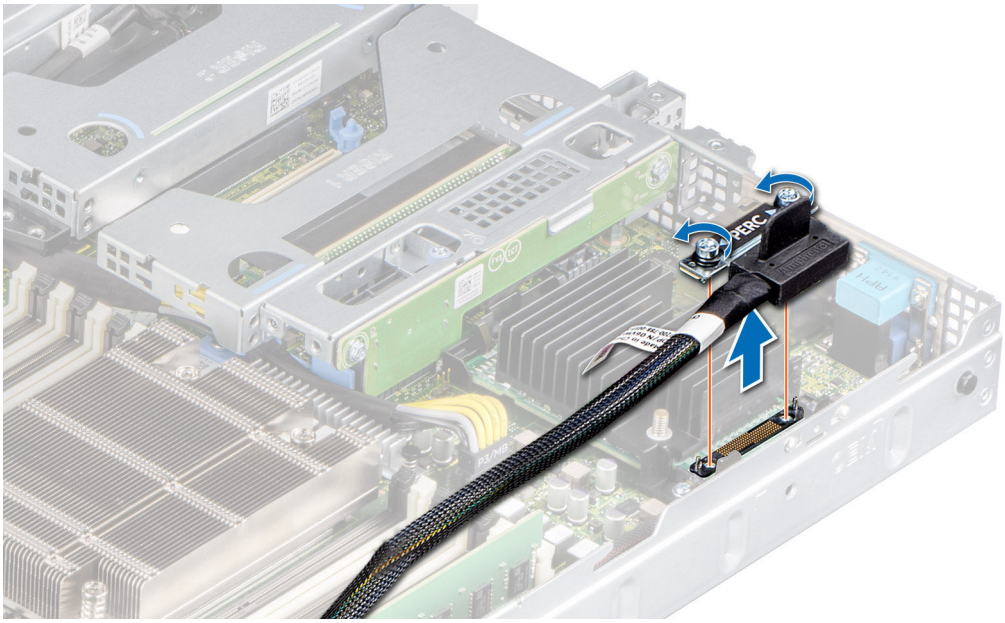


Figure 72. Removing the mini PERC card cable

3. Slide out the mini PERC card to disengage from the card holder on the system board.
4. Lift the mini PERC card out of the system.

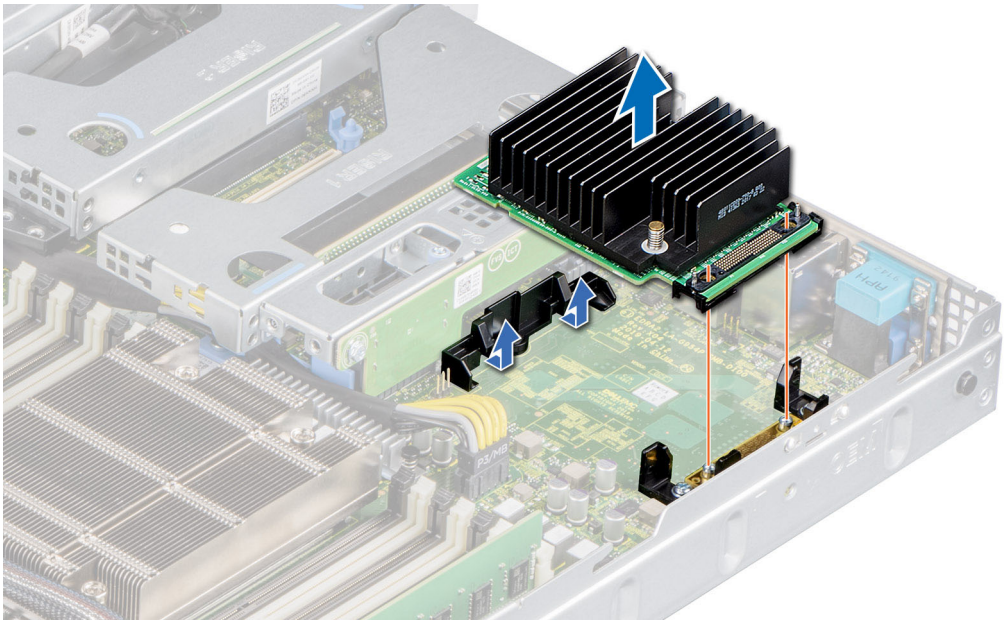


Figure 73. Removing the mini PERC card

Next steps

Install the mini PERC card.

Install the mini PERC card

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in Before you work inside your system.

Steps

1. Angle the mini PERC card to engage with the mini PERC card holder on the system board.
2. Lower the mini PERC card into place until the mini PERC card is firmly seated on the card holder.

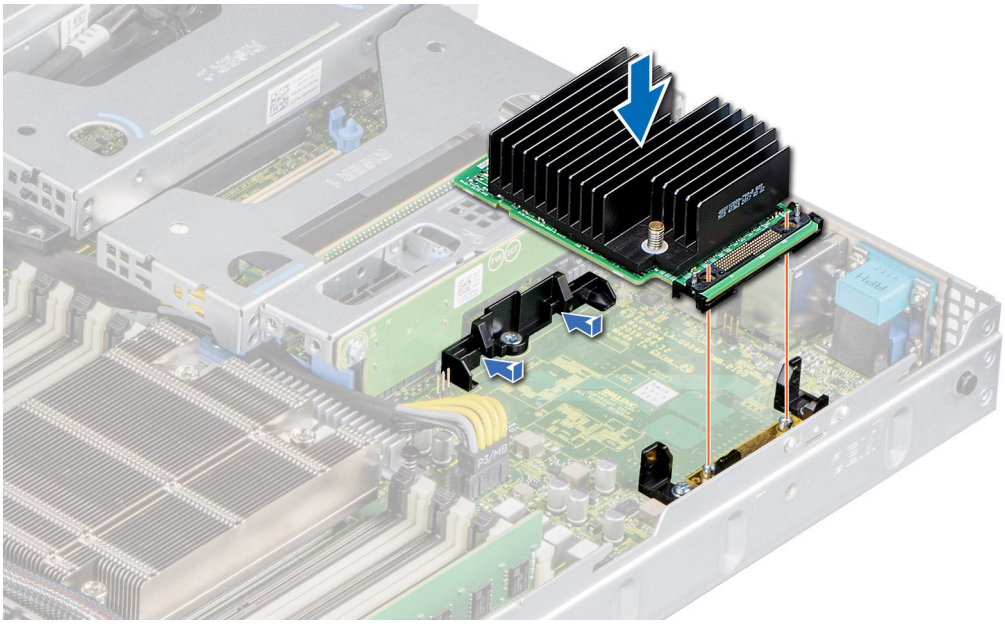


Figure 74. Installing the mini PERC card

3. Align the screws on the cable with the screw holes on the mini PERC card.
4. Using a Phillips #2 screwdriver, secure the cable to the mini PERC card with the screws.

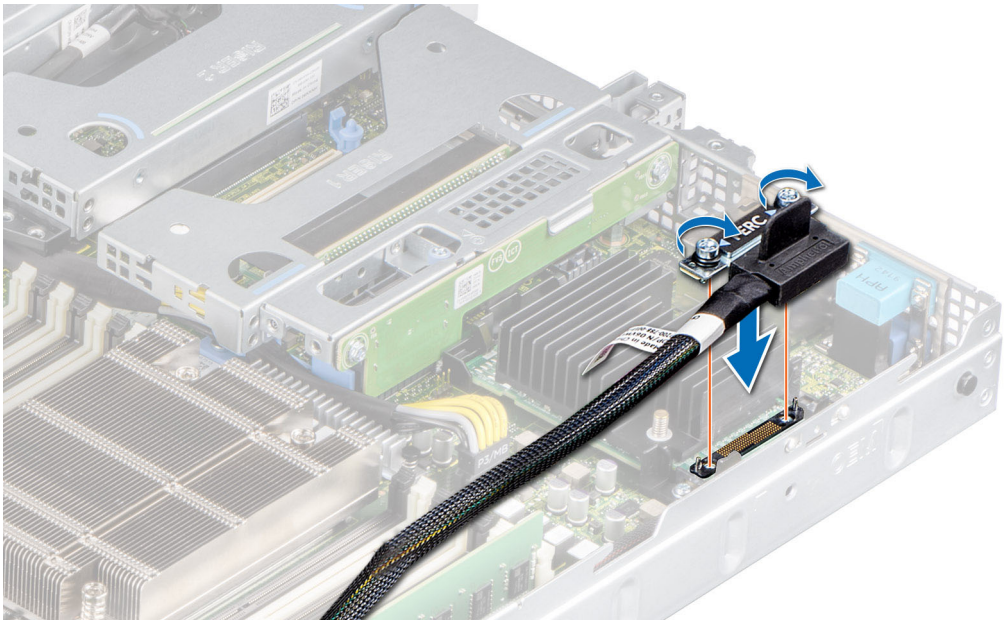


Figure 75. Installing the mini PERC card cable

Next steps

1. If removed, Install the expansion card risers.
2. Install the air shroud.
3. Follow the procedure listed in the After you work inside your system.

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

System battery

Replace the system battery

Prerequisites

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

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- If applicable, disconnect the power or data cables from the expansion card(s).
- Remoe the LOM riser card.

Steps

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

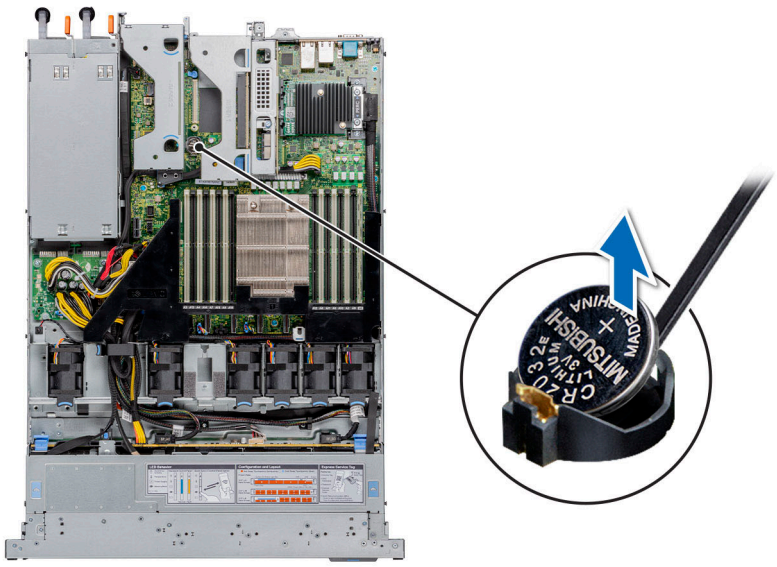


Figure 76. Removing the system battery

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

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

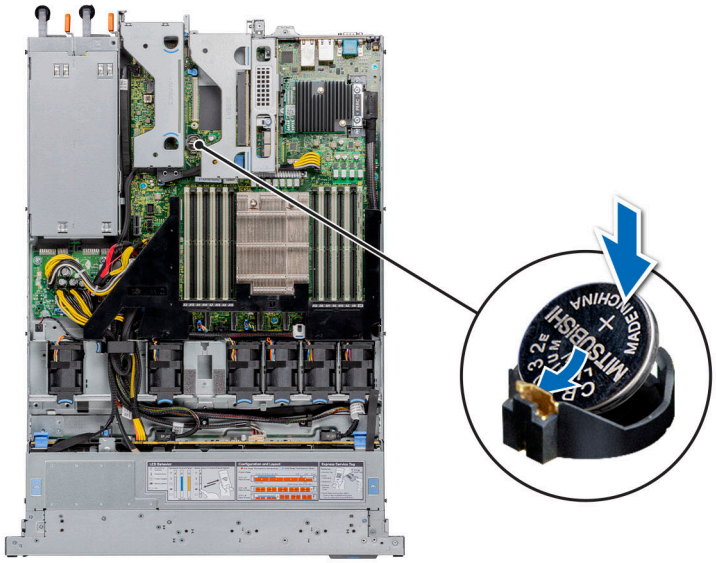


Figure 77. Installing the system battery

Next steps

1. Install the LOM riser card.
2. If applicable, connect the cables to the expansion card(s).
3. Follow the procedure listed in the After you work inside your system.
4. Confirm that the battery is operating properly, by performing the following steps:
   a. Enter the System Setup, while booting, by pressing F2.
   b. Enter the correct time and date in the System Setup **Time** and **Date** fields.
   c. **Exit** the System Setup.
   d. To test the newly installed battery, remove the system from the enclosure for at least an hour.
   e. Reinstall the system into the enclosure after an hour.
   f. Enter the System Setup and if the time and date are still incorrect, see Getting help section.

Optional internal USB memory key

NOTE: To locate the internal USB port on the system board, see the Jumpers and connectors section.

Replace the optional internal USB memory key

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.

About this task

CAUTION: To avoid interference with other components in the server, the maximum permissible dimensions of the USB memory key are 15.9 mm wide x 57.15 mm long x 7.9 mm high.

Steps

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

To locate the internal USB port on the system board, see the Jumpers and connectors section.

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

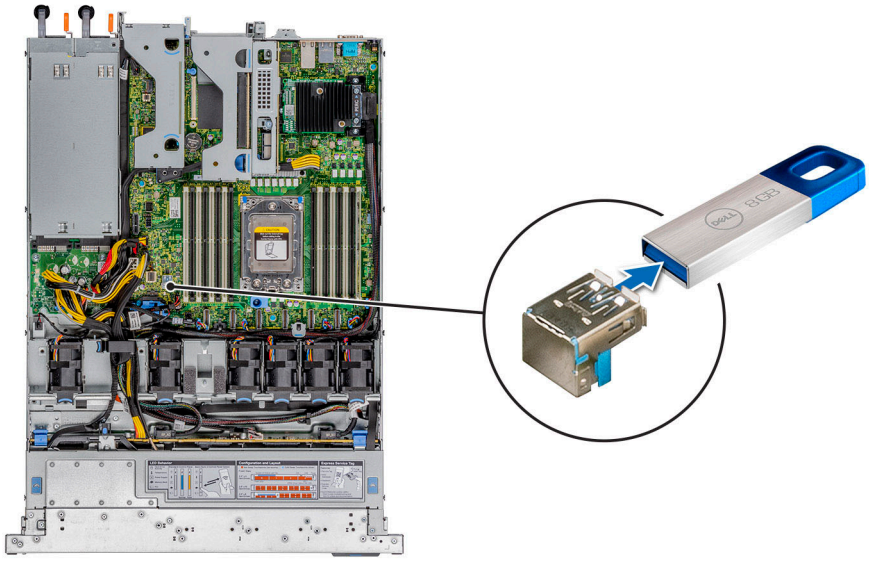


Figure 78. Removing the USB memory key

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

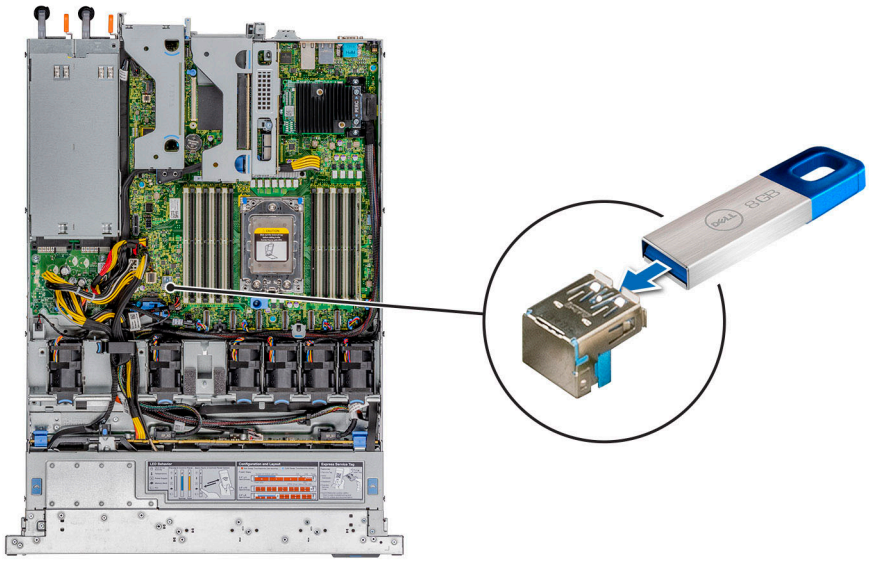


Figure 79. Installing the USB memory key

Next steps

1. Install the air shroud.
2. Follow the procedure listed in After you work inside your system.
3. While booting, press F2 to enter **System Setup** and verify that the system detects the USB memory key.

VGA module

Remove the VGA module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the front bezel.
- Remove the drive backplane cover.
- Remove the air shroud.
- Disconnect the VGA cable from the VGA connector on the system board. For locating the connector, see the Jumpers and connectors section.

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

Steps

1. Using Phillips #1 screwdriver, remove the screw on the VGA module.
2. Slide the module out of the system.

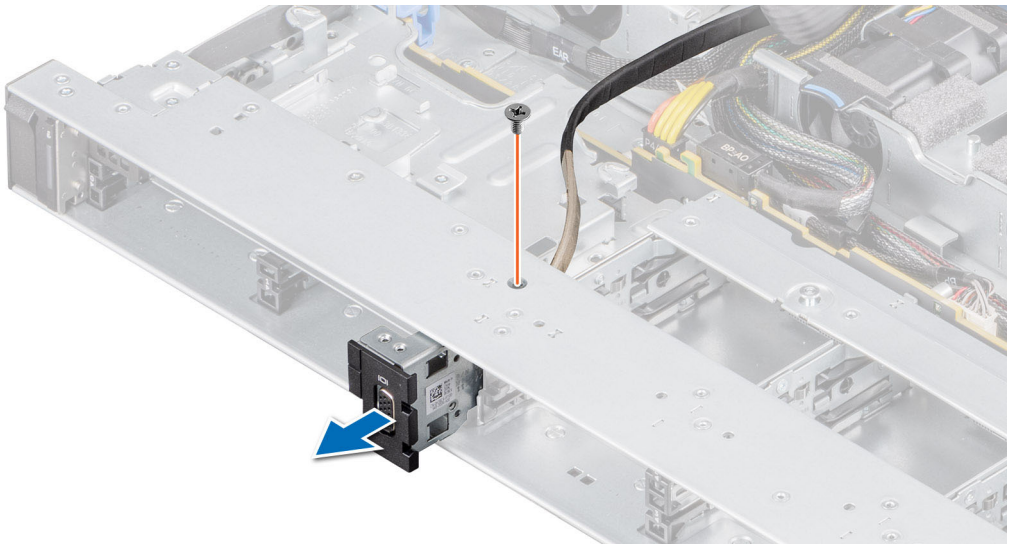


Figure 80. Removing the VGA module

Next steps

Install the VGA module.

Install the VGA module

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the front bezel.
- Remove the drive backplane cover.
- Remove the air shroud.

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

Steps

1. Route the VGA cable through the VGA module slot on the front of the system and slide the VGA module into the slot.
2. Align the hole on the module with the screw hole on the system.
3. Using the Phillips #1 screwdriver, secure the VGA module to the system with the screw.

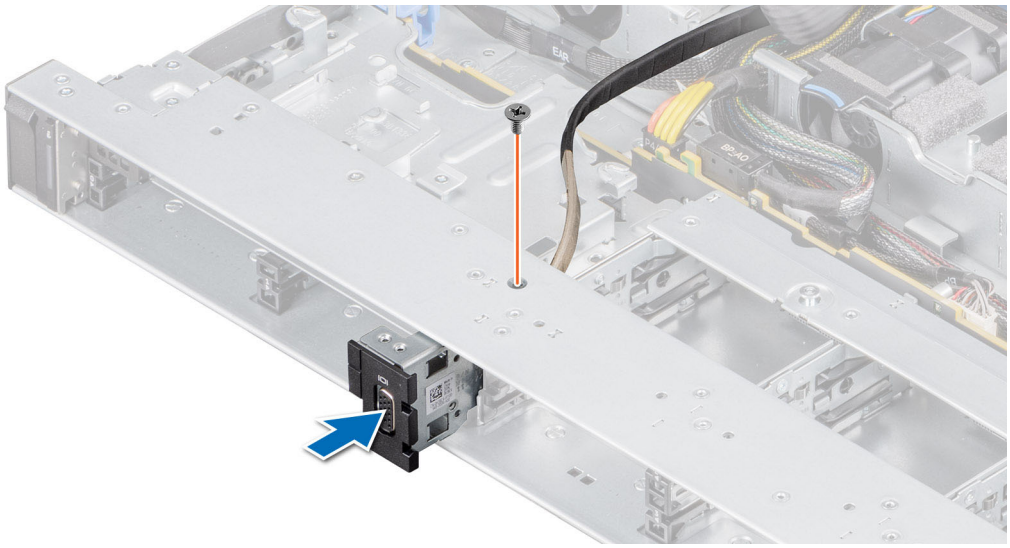


Figure 81. Installing the VGA module

Next steps

1. Route the VGA cable and connect it to the VGA connector on the system board. For locating the connector, see the Jumpers and connectors section.
2. Install the air shroud.
3. Install the drive backplane cover.
4. Install the front bezel.
5. Follow the procedure listed in the After you work inside your system.

.

Power supply unit

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

Hot spare feature

Your system supports the hot spare feature that significantly reduces the power overhead that is 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 system load, thus operating at higher efficiency. The PSU in the sleep state monitors output voltage of the active PSU. If the output voltage of the active PSU drops, the PSU in the sleep state returns to an active output state.

If having both PSUs active is more efficient than having one PSU in the sleep state, the active PSU can also activate the sleeping PSU.

The default PSU settings are as follows:

- If the load on the active PSU is more than 50 percent of PSU rated power wattage, then the redundant PSU is switched to the active state.

- If the load on the active PSU falls below 20 percent of PSU rated power wattage, then the redundant PSU is switched to the sleep state.

You can configure the hot spare feature by using the iDRAC settings. For more information, see the iDRAC User's Guide available at https://www.dell.com/support/home/us/en/19/product-support/product/poweredge-r6515/overview.

Remove the power supply unit blank

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Pull the blank out of the system.

CAUTION: To ensure proper system cooling, the PSU blank must be installed in the second PSU bay in a non-redundant configuration. Remove the PSU blank only if you are installing a second PSU.

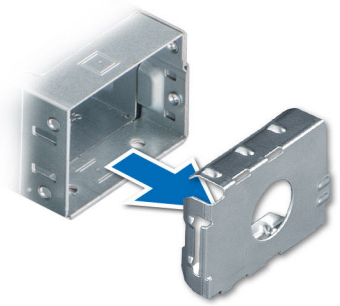


Figure 82. Removing a power supply unit blank

Next steps

Replace the PSU or PSU blank.

Install the power supply unit blank

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.

  NOTE: Install the power supply unit (PSU) blank only in the second PSU bay.
- Remove a power supply unit.

Steps

Align the PSU blank with the PSU bay and push it into the PSU bay until it clicks into place.

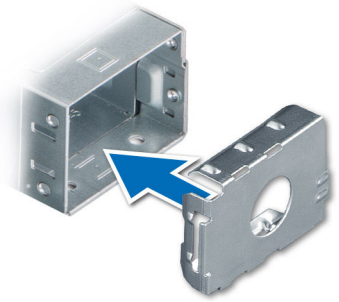


Figure 83. Installing a power supply unit blank

Remove a power supply unit

Prerequisites

CAUTION: The system requires one power supply unit (PSU) for normal operation. On power-redundant systems, remove and replace only one PSU at a time in a system that is powered on.

1. Follow the safety guidelines listed in the Safety instructions.
2. Disconnect the power cable from the power outlet and from the PSU you intend to remove.
3. Remove the cable from the strap on the PSU handle.
4. 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 www.dell.com/poweredgemanuals.

Steps

Press the release latch, and holding the PSU handle slide the PSU out of the PSU bay.

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

Figure 84. Removing a power supply unit

Next steps

Replace the PSU or install the PSU blank.

Install a power supply unit

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. For systems that support redundant PSU, ensure that both the PSUs are of the same type and have the same maximum output power.

   NOTE: The maximum output power (shown in watts) is listed on the PSU label.
3. Remove the PSU blank.

Steps

Slide the PSU into the PSU bay until the release latch snaps into place.

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

Figure 85. 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 www.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. The PSU status indicator turns green to indicate that the PSU is functioning properly.

NOTE: For certain premium configurations with high power consumption, system PSU might stay with 2+0 mode only, 1+1 redundant mode is not available.

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

Power interposer board

Remove the power interposer board

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- Remove the air shroud.
- Remove the PSU or PSU blank.

Steps

1. Using a Phillips #2 screwdriver, remove the screws securing the power interposer board (PIB) to the system.

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

2. Press the blue release latch on the PIB to release it from the hook on the PSU cage.

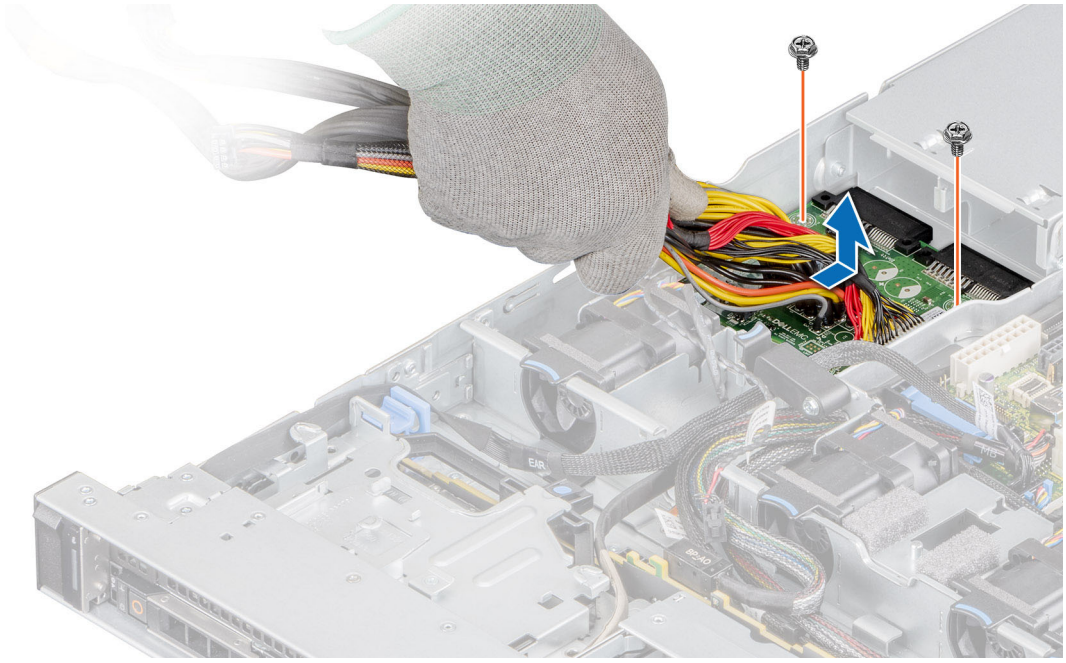


Figure 86. Removing the power interposer board

3. Lift the PIB away from the system.

Next steps

Replace the power interposer board.

Install the power interposer board

Prerequisites

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

Steps

1. Align the slots on the PIB with the hook on the PSU cage and slide it into place.

2. Using Phillips #2 screwdriver, tighten the screws to secure the PIB to the system.

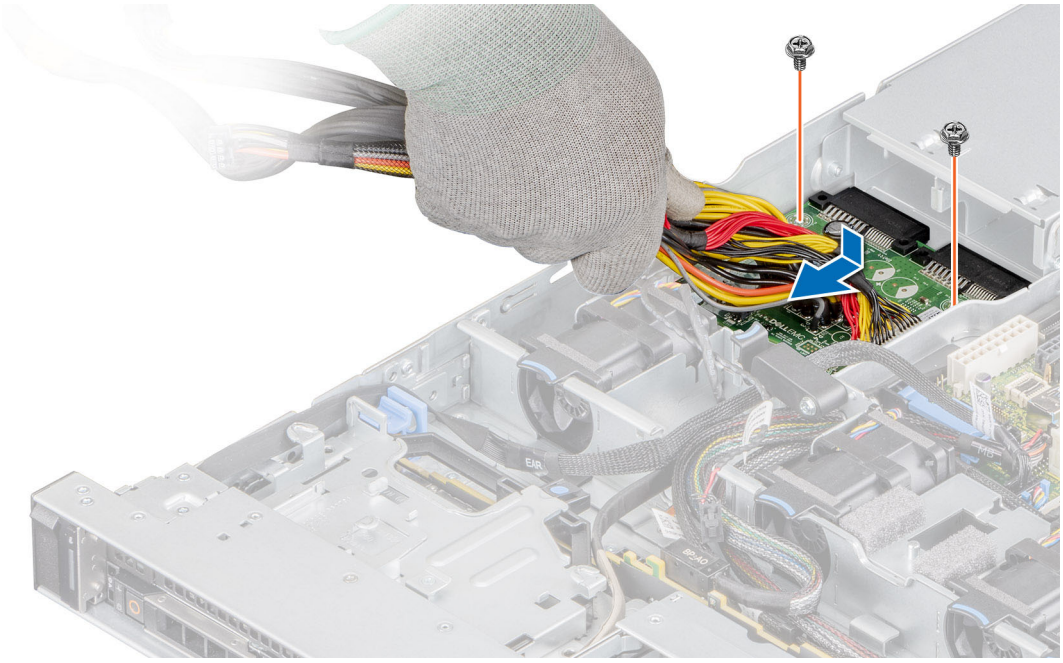


Figure 87. Installing the power interposer board

3. Route the cables and connect it to the system board.

Next steps

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

System board

Remove 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.

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before working inside your system.
- Remove the following components:
  - Air shroud
  - Expansion cards
  - Expansion card risers
  - Mini PERC card
  - IDSDM module
  - Internal USB key (if installed)
  - Processor
  - Heat sink
  - Memory modules

- LOM riser card
- Disconnect all cables from the system board.

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

Steps

1. Using a Phillips #2 screwdriver, remove the screws securing the system board to the chassis.
2. Using the system board holder, slightly lift the system board, and then slide it toward the front of the chassis.
3. Lift the system board out of the chassis.

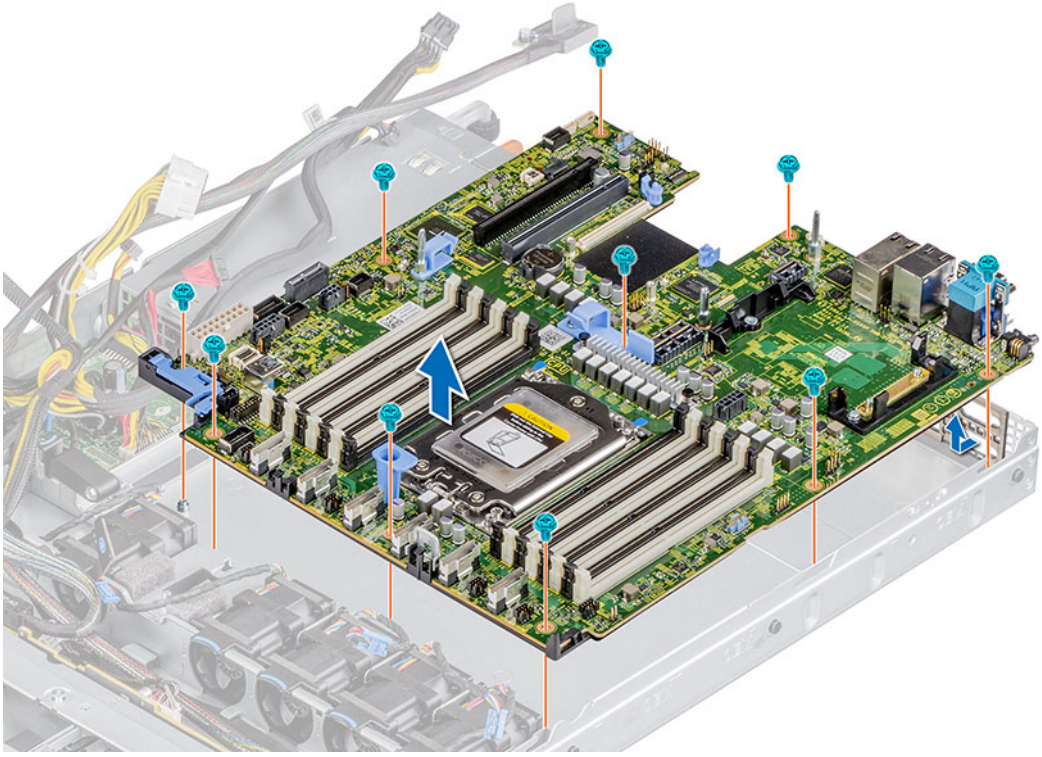


Figure 88. Removing the system board

Next steps

Install the system board.

Install the system board

Prerequisites

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

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in Before you work inside your system.
- If you are replacing the system board, remove all the components that are listed in the removing the system board section.

Steps

1. Unpack the new system board assembly.

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

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

2. Holding the system board holder, lower the system board it into the system.
3. Incline the system board at an angle and align the connectors with the slots on the rear of the chassis.
4. Slide the system board towards the rear of the chassis until the connectors are firmly seated in the slots.
5. Using a Phillips #2 screwdriver, fasten the screws that secure the system board to the chassis.

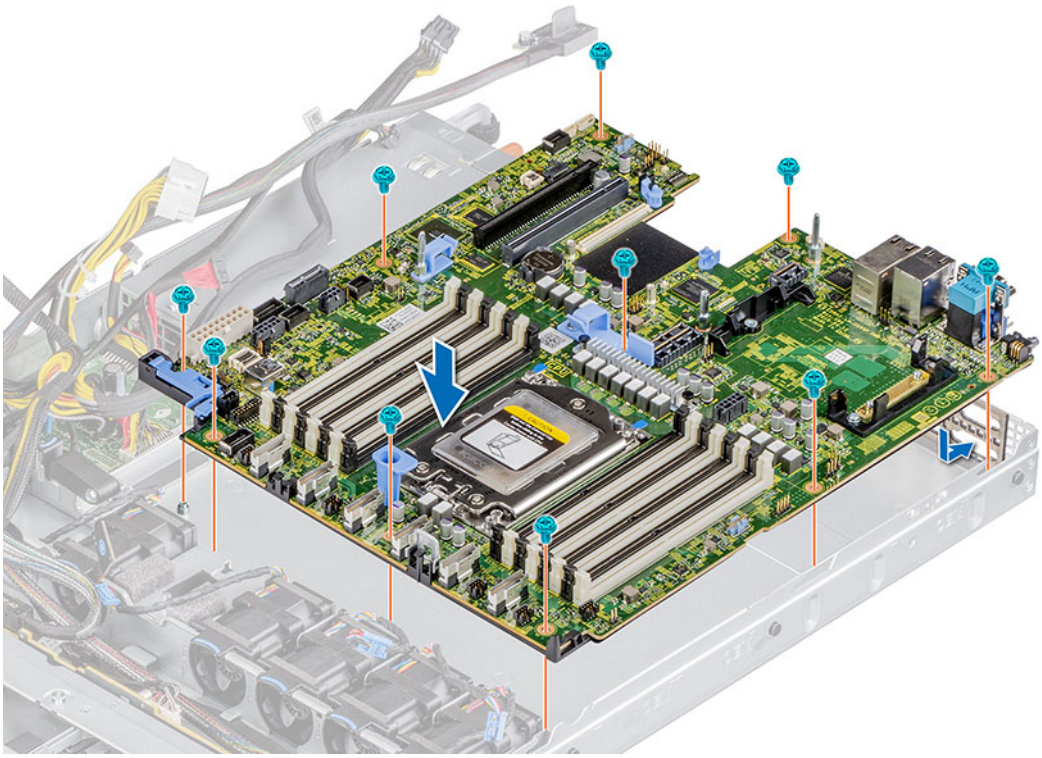


Figure 89. Installing the system board

Next steps

1. Replace the following components:
   a. Trusted Platform Module (TPM)
      NOTE: The TPM Module must be replaced only while installing new system board.
   b. Mini PERC card
   c. IDSDM module
   d. Expansion cards
   e. Expansion card risers
   f. Processor
   g. Heat sink
   h. Memory modules
   i. LOM riser card
   j. Air shroud
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. Power on the system.
4. Ensure that you perform the following steps:
   a. Use the Easy Restore feature to restore the Service Tag. See the Restoring the system by using the Easy Restore feature section.

b. If the service tag is not backed up in the backup flash device, enter the system service tag manually. See the Manually update the Service Tag by using System Setup section.
c. Update the BIOS and iDRAC versions.

Reenable the Trusted Platform Module (TPM). See the Upgrading the Trusted Platform Modulesection.

5. If you are not using Easy restore, import your new or existing iDRAC Enterprise license. For more information, see the *iDRAC User's Guide* available at www.dell.com/idracmanuals .
6. Follow the procedure listed in After you work inside your system on page 52.
7. The Easy Restore feature restores several configuration settings, most notably the Service Tag, iDRAC Licenses, and OEM ID Modules (if needed for the last two). See the Restoring the Service Tag Using Easy Restore page. When the system board is booted for the first time, it presents a screen with settings it can restore.

NOTE: If for any reason Easy Restore does not start, you must enter the service tag manually. See the Update the Service Tag page. Other configuration issues must also be done manually, for instance importing iDRAC License through iDRAC GUI.

8. Update the BIOS version.

NOTE:

- The RACADM command RACADM `sslresetcfg` is used to generate a new SSL certificate with service tag providing the unique Common Name (CN). If the certificate is not generated at time of service, inform the customer or technical support so they can follow up.
- RACADM must be installed. If RACADM is not installed, download and install the Dell DRAC Tools (Windows only). For more information about RACADM Command Line Interface, see the RACADM Command Line Interface for DRAC section.

9. Reenable the Trusted Platform Module (TPM).
10. Let the system boot.

NOTE: If this system board replacement is for an OEM-branded product, see the reference material link below:

- Internal link: PowerEdge OEM Branding > Update the System Board for OEM Branding
- External link: PowerEdge OEM Branding > Update the System Board for OEM Branding

NOTE: If this system board replacement is for a Dell-branded product with a Windows embedded operating system, do not exit manufacturing mode before you install the Dell Branded Embedded (DBE) Module.

NOTE: If you are unable to access the above link, log in to Oracle Knowledge first, then see SLN294158.

NOTE: If this replacement is a non-OEM system board or if you have already installed the proper Identity Module: At the prompt press <A> to turn off manufacturing mode. For more information about manufacturing mode, see the Troubleshooting Manufacturing Mode section or consult Dell technical support for further assistance.

Restore the service tag

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

About this task

Below is a list of options available:

- Restore the Service Tag, license, and diagnostics information, press **Y.**
- Navigate to the Lifecycle Controller based restore options, press **N.**
- Restore data from a previously created **Hardware Server Profile**, press **F10.**

  NOTE: When the restore process is complete, BIOS prompts to restore the system configuration data.
- To restore the system configuration data, press **Y**
- To use the default configuration settings, press **N**

  NOTE: After the restore process is complete, system reboots.

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.

Trusted platform module

Upgrade the trusted platform module

Prerequisites

NOTE:

- Ensure that your operating system supports the version of the TPM 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: After the TPM is installed, it is cryptographically bound to that specific system board. Any attempt to remove an installed TPM breaks the cryptographic binding. The removed TPM cannot be reinstalled or installed on another system board.

Initialize the trusted platform module for users

Steps

1. Initialize the TPM.
   For more information, see Initializing the trusted platform module for 1.2 TXT users.
2. The **TPM Status** changes to **Enabled, Activated**.

Initialize the trusted platform module for 1.2 TXT users

Steps

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
3. From the **TPM Security** option, select **On with Preboot Measurements**.
4. From the **TPM Command** option, select **Activate**.
5. Save the settings.
6. Restart your system.

Initialize the trusted platform module for 2.0 TXT users

Steps

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
3. From the **TPM Security** option, select **On**.
4. Save the settings.
5. Restart your system.

Control panel

Remove the left control panel

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- If applicable, Remove the drive backplane cover
- Remove the air shroud.

Steps

1. Disconnect the control panel cable from the system board connector.

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

2. Using a Phillips #1 screwdriver, remove the screws that secure the cable cover to the system.
3. Using the Phillips #1 screwdriver, remove the screws that secure the left control panel assembly to the system.
4. Hold the left control panel assembly and remove it from the system.

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

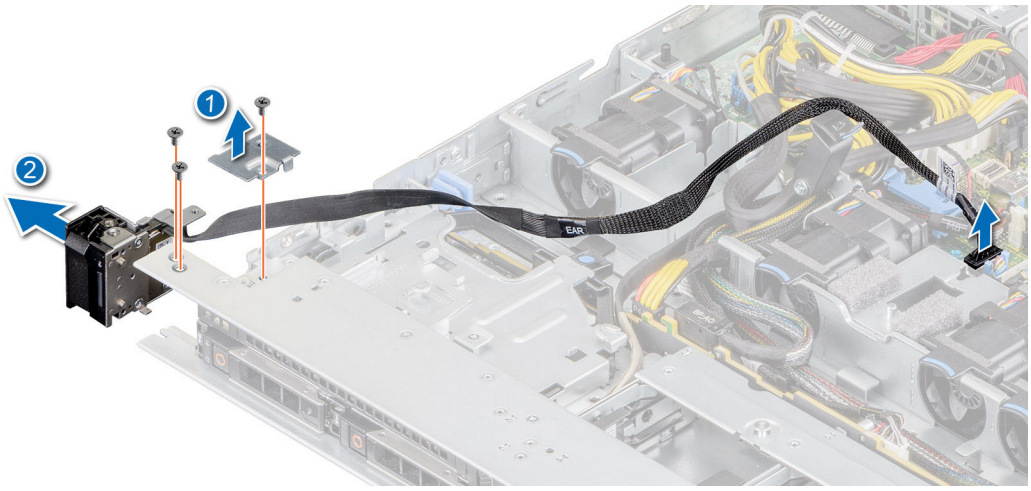


Figure 90. Removing the left control panel

Next steps

Install the left control panel.

Install the left control panel

Prerequisites

- Follow the safety guidelines listed in the Safety instructions on page 51.
- Follow the procedure listed in the Before working inside your system.

Steps

1. Route the control panel cable through the side wall and the guide slots in the system and connector on system board.

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

2. Align and insert the left control panel assembly in the slot on the system.
3. Using the Phillips #1 screwdriver, tighten the screws that secure the left control panel assembly.
4. Using the Phillips #1 screwdriver, tighten the screws to secure the cable cover to the system.

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

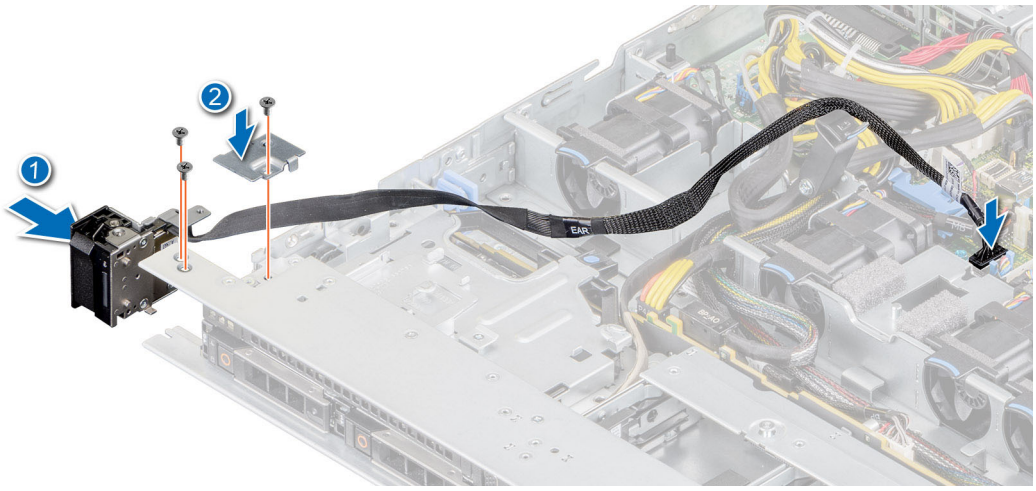


Figure 91. Installing the left control panel

Next steps

1. Replace the air shroud.
2. Install the backplane cover
3. Close and secure the cable guiding latch.
4. Follow the procedure listed in the After working inside your system.

Remove the right control panel

Prerequisites

- Follow the safety guidelines listed in the Safety instructions.
- Follow the procedure listed in the Before you work inside your system.
- If applicable, Remove the drive backplane cover
- Remove the air shroud.
- Lift the cable guiding latch.

Steps

1. Using the Phillips #1 screwdriver, remove the screws that secure the cable cover and lift the cover away from the system.

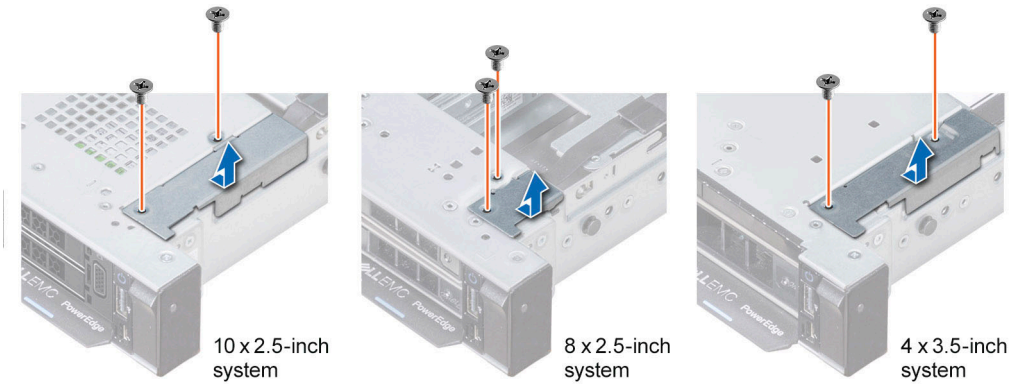


Figure 92. Removing the cable cover

2. Lift open the cable latch and disconnect the control panel cable from the connector on the system board.

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

3. Using the Phillips #1 screwdriver, remove the screws that secure the right control panel assembly.
4. Hold the right control panel assembly and remove it from the system.

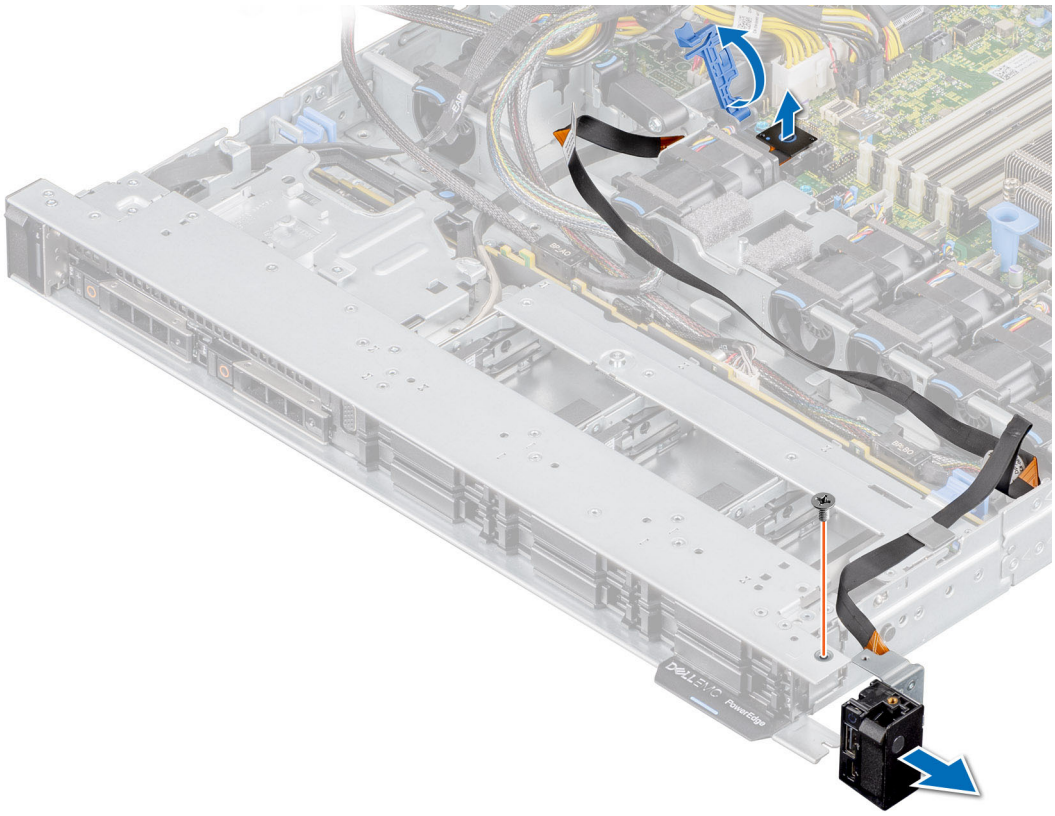


Figure 93. Removing the right control panel

Next steps

Install the right control panel.

Install the right control panel

Prerequisites

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

Steps

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

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

2. Align and insert the right control panel assembly in the slot on the system.
3. Connect the control panel cable to the connector system board and secure it using cable latch.
4. Using the Phillips #1 screwdriver, tighten the screws that secure the right control panel assembly.

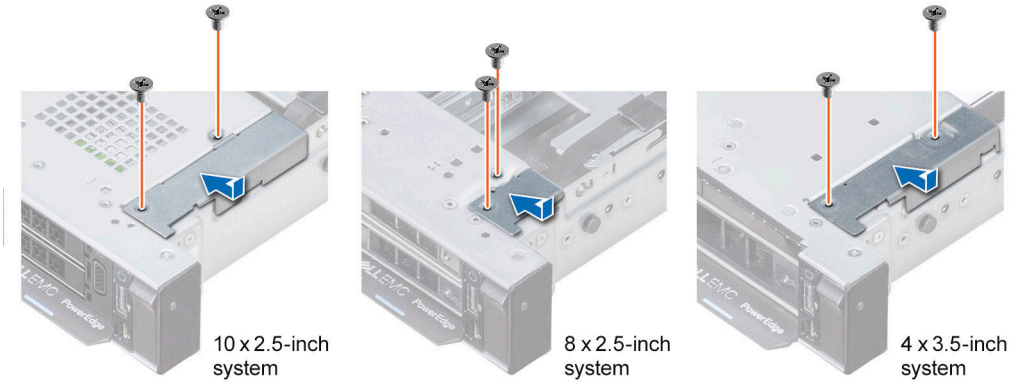


Figure 94. Installing the cable cover

5. Connect the control panel cable to the system board and secure it using cable latch.
6. Install the cable cover and secure it in place with screws, using a Phillips #1 screwdriver.

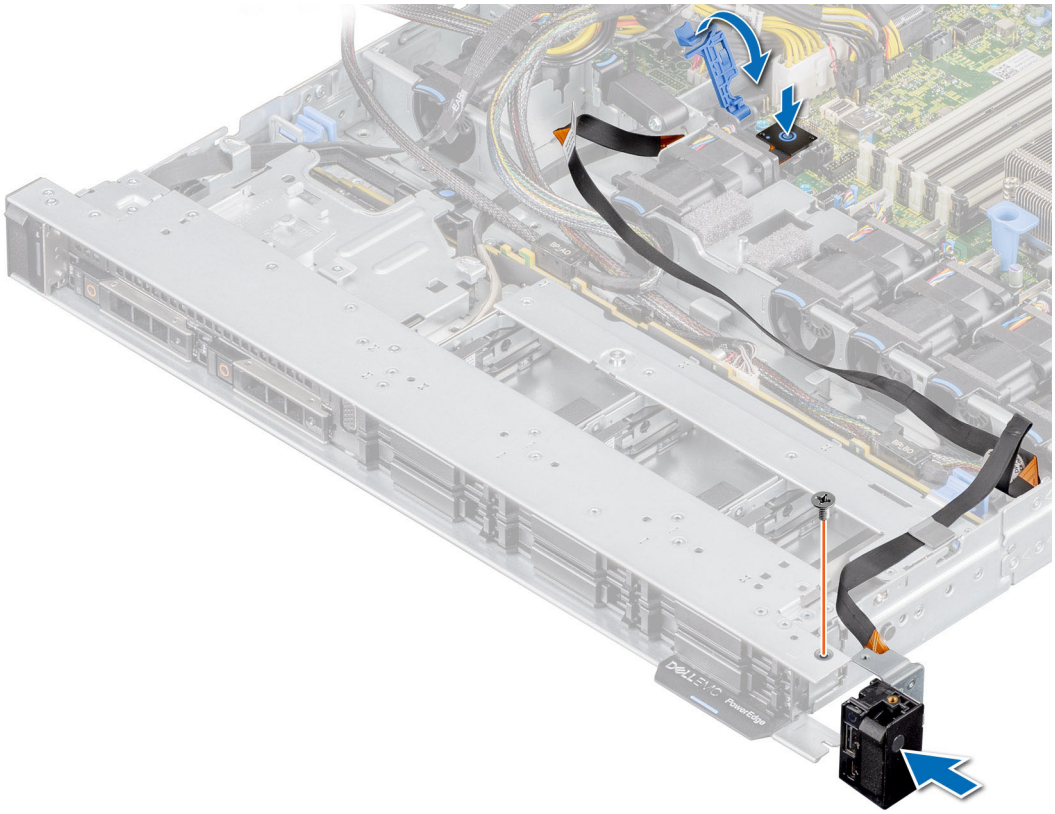


Figure 95. Installing the right control panel

Next steps

1. Replace the air shroud.
2. Install the backplane cover
3. Close and secure the cable guiding latch.
4. Follow the procedure listed in the After working inside your system.

7

Jumpers and connectors

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

Topics:

System board connectors

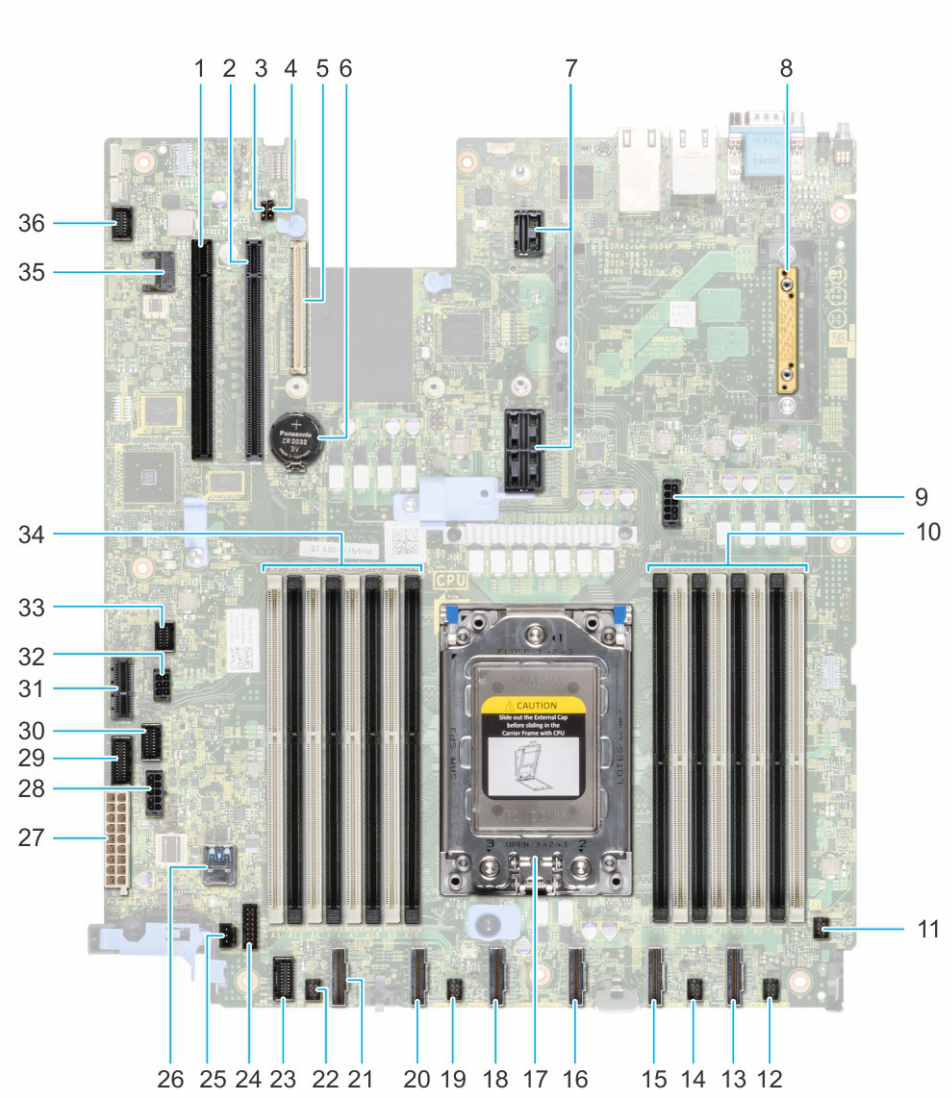


Figure 96. System board connectors

1. PCI card Slot 5
2. PCI card Slot 4
3. PWRD_EN (Jumpers)
4. NVRAM_CLR (Jumpers)
5. LOM riser card
6. Battery
7. Riser slot 1A/Riser slot 1B
8. Mini PERC
9. System power 3
10. DIMMS for processor
11. Fan 6
12. Fan 5
13. SATA_A/PCIE_A
14. Fan 4
15. PCIE-B
16. SATA_B/PCIE_C
17. Processor
18. PCIE-D
19. Fan 3
20. PCIE-E
21. PCIE-F
22. Fan 2
23. Left control panel
24. Front backplane signal 1
25. Intrusion switch
26. Internal USB 3.0
27. System power 1
28. System power 2
29. PIB signal 2
30. PIB signal 1
31. IDSDM
32. Rear backplane/ ODD power

33. Front backplane signal 0
34. DIMMS for processor
35. TPM
36. Front video

System board jumper settings

For information about resetting the password jumper to disable a password, see the Disable a forgotten password section.

Table 53. System board jumper settings

Jumper	Setting	Description
PWRD_EN		The BIOS password feature is enabled.
		The BIOS password feature is disabled. The BIOS password is now disabled and you are not allowed to set a new password.
NVRAM_CLR		The BIOS configuration settings are retained at system boot.
		The BIOS configuration settings are cleared at system boot.

Table 54. System board jumper settings

Jumper	Setting	Pin number	Description
NVRAM_CLR		2, 3	The BIOS configuration settings are retained at system boot.
		1, 2	The BIOS configuration settings are cleared at system boot.
PWRD_EN		1, 2	The BIOS password feature is enabled.
		2, 3	The BIOS password feature is disabled. iDRAC local access is unlocked at next AC power cycle. iDRAC password reset is enabled in F2 iDRAC settings menu.

CAUTION: Be careful when changing the BIOS settings. The BIOS interface is designed for advanced users. Any change in the setting could prevent your system from starting correctly and you might have potential loss of data.

Disable a forgotten password

The software security features of the system include a system password and a setup password. The password jumper enables or disables password features and clears any passwords currently in use.

Prerequisites

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

Steps

1. Power off the system, and all the attached peripherals, and disconnect the system from the electrical outlet.
2. Remove the system cover.
3. Move the jumper on the system board from pins 2 and 4 to pins 4 and 6.
4. Move the jumper on the system board from pins 1 and 2 to pins 2 and 3.
5. Replace the system cover.

   NOTE: The existing passwords are not disabled (erased) until the system boots with the jumper on pins 4 and 6. However, before you assign a new system and/or setup password, you must move the jumper back to pins 2 and 4.

   NOTE: The existing passwords are not disabled (erased) until the system boots with the jumper on pins 2 and 3. However, before you assign a new system and/or setup password, you must move the jumper back to pins 1 and 2.

   NOTE: If you assign a new system and/or setup password with the jumper on pins 4 and 6, the system disables the new password(s) the next time it boots.

   NOTE: If you assign a new system and/or setup password with the jumper on pins 2 and 3, the system disables one or more new passwords the next time it boots.

6. Reconnect the system and all the attached peripherals.
7. Power off the system.
8. Remove the system cover.
9. Move the jumper on the system board from pins 4 and 6 to pins 2 and 4.
10. Move the jumper on the system board from pins 2 and 3 to pins 1 and 2.
11. Replace the system cover.
12. Reconnect the system to the electrical outlet and power on the system, and all the attached peripherals.
13. Assign a new system and/or setup password.

8

Technical specifications

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

Topics:

Chassis dimensions

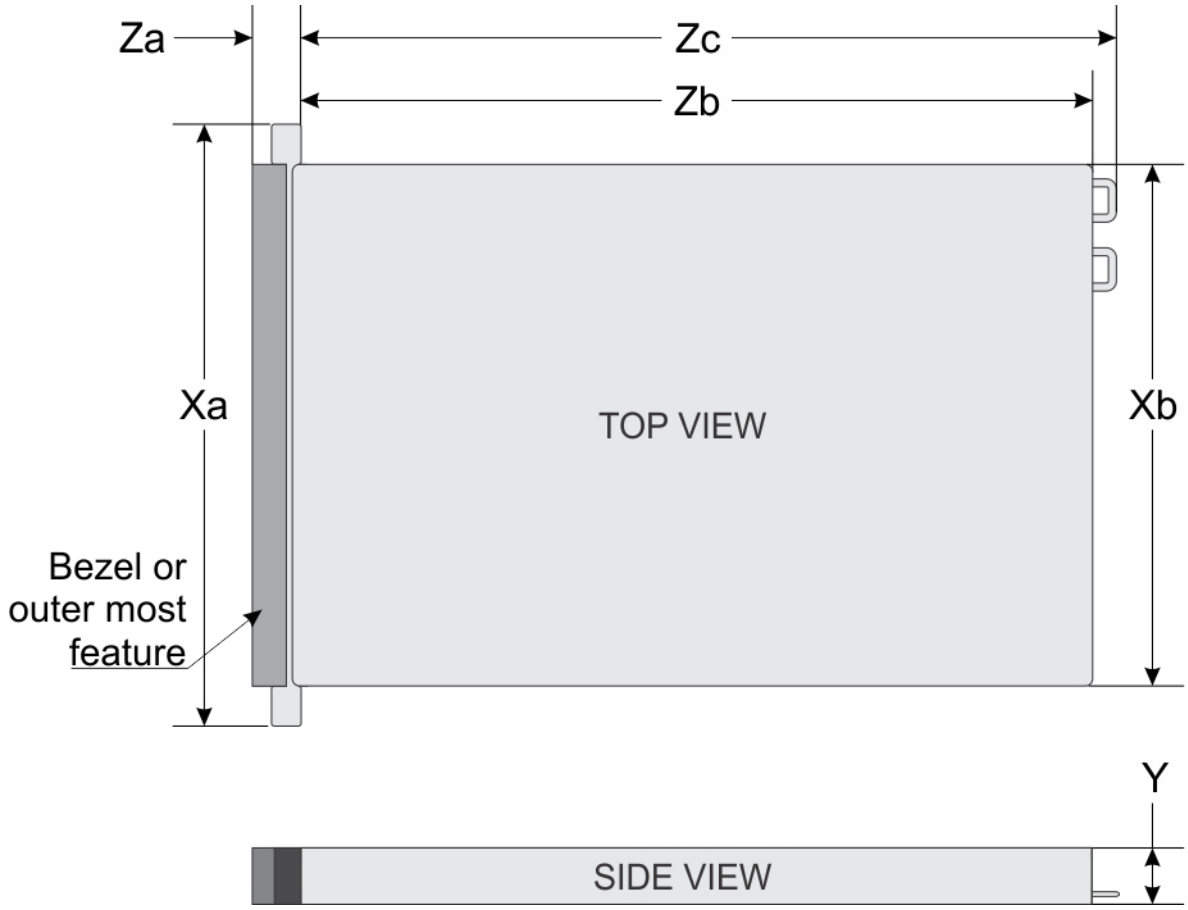


Figure 97. Chassis dimensions

Table 55. Dell EMCXC Core XC6515 chassis dimensions

System configurations	Xa	Xb	Y	Za	Zb*	Zc
8 x 2.5-inches	482.0 mm (18.97 inches)	434.0 mm (17.08 inches)	42.8 mm (1.68 inches)	With bezel: 35.84 mm (1.4 inches) Without bezel: 22.0 mm (0.87 inches)	606.47 mm (23.87 inches)	641.85 mm (25.26 inches)

NOTE: * Zb goes to the nominal rear wall external surface where the motherboard I/O connectors reside.

System weight

Table 56. Dell EMC XC Core XC6515 system weight

System configuration	Maximum weight (with all drives)
8 x 2.5-inch configuration	15.6 kg (34.39 lb)

Processor specifications

Table 57. PowerEdge R6515 processor specifications

Supported processor	Number of processors supported
AMD EYPC 7002 series processor	One

PSU specifications

Table 58. PowerEdge R6515 PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	Current
550 W AC	Platinum	2107 BTU/hr	50/60 Hz	100-240 V AC,autoranging	7.4 A - 3.7 A

NOTE: This system is also designed to connect to the IT power systems with a phase-to-phase voltage not exceeding 230 V.

NOTE: For certain premium configurations with high power consumption, system PSU might stay with 2+0 mode only, 1+1 redundant mode is not available.

NOTE: When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Dell Energy Smart Solution Advisor available at **Dell.com/ESSA**.

Supported operating systems

The PowerEdge R6515 supports the following operating systems:

- Nutanix AHV
- VMware ESXi

For more information about the specific versions and additions, see https://www.dell.com/support/home/Drivers/SupportedOS/poweredge-r6515https://www.dell.com/support/home/Drivers/SupportedOS/poweredge-r6525https://www.dell.com/support/home/Drivers/SupportedOS/poweredge-r7515https://www.dell.com/support/home/Drivers/SupportedOS/poweredge-c6525.

Cooling fans specifications

The XC Core XC6515 system supports both the Standard fan (STD fan) and High-Performance fan (HPR fan) and requires all six fans to be installed.

NOTE: Mixing of STD and HPR fans is not supported.

NOTE: The STD and HPR fans installation depends on the system configuration. For more information about the fan support configuration or matrix, see Thermal restriction matrix.

System battery specifications

The XC Core XC6515 system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion card riser specifications

The XC Core XC6515 system supports up to two PCI express (PCIe) expansion cards:

Table 59. Expansion card slots supported on the system board

PCIe slot	Riser	PCIe slot height	PCIe slot length	Slot width
Slot 2	Riser 1A	Low-profile	Half-length	x16 (Gen 3)
Slot 3	Riser 2	Low-profile	Half-length	x16 (Gen 4)

Memory specifications

The Dell EMC XC Core XC6515 system supports the following memory specifications for optimized operation.

Table 60. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Minimum RAM	Maximum RAM
RDIMM	Dual rank	16 GB	16 GB	256 GB
		32 GB	32 GB	512 GB
		64 GB	64 GB	1 TB

Table 61. Memory module sockets

Memory module sockets	Speed
Sixteen 288-pin	3200 MT/s, 2933 MT/s, 2666 MT/s

Storage controller specifications

The Dell EMC XC Core XC6515 supports the following controller cards:

Table 62. Dell EMC XC Core XC6515 system controller cards

Internal controllers
• HBA330 • Boot Optimized Storage Subsystem (BOSS-S1): HWRAID 2 x M.2 SSDs

Drives

The XC Core XC6515 system supports

- Up to 8 x 2.5-inch (SAS, SATA or SSD) front accessible drives in slot 0 to 7

USB ports specifications

Table 63. Dell EMCXC Core XC6515 system USB specifications

Front		Rear		Internal	
USB port type	No. of ports	USB port type	No. of ports	USB port type	No. of ports
USB 2.0-compliant port	One	USB 3.0-compliant ports	Two	Internal USB 3.0-compliant port	One

Table 63. Dell EMCXC Core XC6515 system USB specifications (continued)

Front		Rear		Internal	
USB port type	**No. of ports**	**USB port type**	**No. of ports**	**USB port type**	**No. of ports**
Micro USB 2.0-compliant port for iDRAC Direct	One				

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

LOM riser card specifications

The XC Core XC6515 system supports up to two 10/100/1000 Mbps Network Interface Controller (NIC) ports that are located on the back panel. The system also supports LAN on Motherboard (LOM) on an optional riser card.

You can install one LOM riser card. The supported LOM riser options are:

- 2 x 10Gb Base-T
- 2 x 10Gb SFP+
- 2 x 25Gb SFP+

NOTE:

- You can install up to two PCIe add-on NIC cards.
- For information about Linux network performance settings, see the *Linux Network Tuning Guide for AMD EPYC Processor Based Servers* white paper at AMD.com

Serial connector specifications

The Dell EMCXC Core XC6515 system supports one serial connector on the back panel, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant.

VGA ports specifications

The XC Core XC6515 system supports two 15-pin VGA ports one each on the front and back panels.

IDSDM

The XC Core XC6515 system supports Internal Dual SD module (IDSDM) with the below storage capacity:

- 32 GB
- 64 GB

NOTE: One IDSDM card slot is dedicated for redundancy.

NOTE: Use Dell EMC branded microSD cards that are associated with the IDSDM configured systems.

Video specifications

The Dell EMCXC Core XC6515 system supports integrated Matrox G200eR2 graphics controller with 16 MB of video frame buffer.

Table 64. Supported front video resolution options

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

Table 65. Supported rear video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

Environmental specifications

NOTE: For additional information about environmental certifications, refer to the *Product Environmental Datasheet* located with the Manuals & Documents on https://www.dell.com/support.

Operational climatic range category A2

Table 66. Operational climatic range category A2

Allowable continuous operations	
Temperature ranges for altitude ≤900 meters (≤2,953 feet)	10 to 35°C (50 to 95°F) with no direct sunlight on the platform
Humidity percent ranges (Non-condensing at all times)	8% RH with -12°C minimum dew point to 80% RH with 21°C (69.8°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/300 meters (1.8°F/984 feet) above 900 meters (2,953 feet)

Operational climatic range category A3

Table 67. Operational climatic range category A3

Allowable continuous operations	
Temperature ranges for altitude ≤900 meters (≤2,953 ft)	5°C- 40°C (41°F-104°F) with no direct sunlight on the platform

Table 67. Operational climatic range category A3 (continued)

Allowable continuous operations	
Humidity percent ranges (Noncondensing at all times)	8% RH with -12°C minimum dew point to 85% RH with 24°C (75.2°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/175 meters (1.8°F/574 feet) above 900 meters (2,953 feet)

Operational climatic range category A4

Table 68. Operational climatic range category A4

Allowable continuous operations	
Temperature ranges for altitude ≤ 900 meters (≤2953 feet)	5 to 45°C (41 to 113°F) with no direct sunlight on the platform
Humidity percent ranges (Non-condensing at all times)	8% RH with -12°C minimum dew point to 90% RH with 24°C (75.2°F) maximum dew point
Operational altitude derating	Maximum temperature is reduced by 1°C/125 meters (1.8°F/410 feet) above 900 meters (2,953 feet)

Thermal restriction for ASHRAE A4 environment (UI)

- CPU TDP equal or greater than 155 W are not supported.
- 128 GB or greater capacity LRDIMMs are not supported.
- Redundant power supply configuration is required.
- Non-Dell qualified peripheral cards greater than Tier 5 are not supported.
- GPU card is not supported.
- OCP is not supported.
- H730/H740 Mini-PERC is not supported.
- PCIe SSD is not supported.

Shared requirements across all categories

Table 69. Shared requirements across all categories

Allowable operations	
Maximum temperature gradient (applies to both operation and nonoperation)	20°C in an hour* (36°F in an hour) and 5°C in 15 minutes (9°F in 15 minutes), 5°C in an hour* (9°F in an hour) for tape hardware
Nonoperational temperature limits	-40°C-65°C (-40°F-149°F)
Nonoperational humidity limits	5% to 95% RH with 27°C (80.6°F) maximum dew point
Maximum nonoperational altitude	12,000 meters (39,370 feet)
Maximum operational altitude	3,048 meters (10,000 feet)

*: Per ASHRAE thermal guidelines, these are not instantaneous rates of temperature change.

Table 70. Temperature specifications

Temperature	Specifications
Storage	-40–65°C (-40–149°F)
Continuous operation (for altitude less than 950 m or 3117 ft)	10–35°C (50–95°F) with no direct sunlight on the equipment

Table 70. Temperature specifications (continued)

Temperature	Specifications
Fresh air	For information about fresh air, see the Expanded operating temperature section.
Maximum temperature gradient (operating and storage)	20°C/h (68°F/h)

Table 71. Relative humidity specifications

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

Table 72. Maximum vibration specifications

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

Table 73. Maximum shock pulse specifications

Maximum shock pulse	Specifications
Operating	24 run shock pulses in the positive and negative x, y, and z axis of 6 G for up to 11 ms. (4 pulse on each side of the system)
Storage	Six consecutively run shock pulses in the positive and negative x, y, and z axis (one pulse on each side of the system) of 71 G for up to 2 ms.

Table 74. Maximum altitude specifications

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

Table 75. Operating temperature derating specifications

Operating temperature derating	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).
35–40°C (95–104°F)	Maximum temperature is reduced by 1°C/175 m (1°F/319 ft), above 950 m (3,117 ft).
40–45°C (104–113°F)	Maximum temperature is reduced by 1°C/125 m (1°F/228 ft), above 950 m (3,117 ft).

Standard operating temperature

Table 76. Standard operating temperature specifications

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

Expanded operating temperature

Table 77. Expanded operating temperature specifications

Expanded operating temperature	Specifications
Continuous operation	5°C–40°C at 5% to 85% RH with 29°C dew point. **NOTE:** Outside the standard operating temperature (10°C–35°C), the system can operate continuously in temperatures as low as 5°C and as high as 40°C. For temperatures 35°C– 40°C, derate maximum allowable temperature by 1°C per 175 m (1°F per 319 ft) above 950 m (3,1171 ft).
≤ 1% of annual operating hours	-5°C–45°C at 5% to 90% RH with 29°C dew point. **NOTE:** Outside the standard operating temperature (10°C–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 40°C– 45°C, derate maximum allowable temperature by 1°C per 125 m (1°F per 228 ft) above 950 m (3.117 ft).

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

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

Expanded operating temperature restrictions

Thermal Restriction for ASHRAE A4 Environment (UI)

- CPU TDP equal or greater than 155 W are not supported within A4.
- 128GB or greater capacity LRDIMMs are not supported within A4.
- Redundant power supply configuration is required.
- Non-Dell qualified peripheral cards greater than Tier 5 are not supported.
- GPU card is not supported within A4.
- OCP is not supported within A4.
- H730/H740 Mini-PERC is not supported with A4.
- PCIe SSD is not supported within A4.

Thermal Restriction for ASHRAE A3 Environment (UI)

- CPU TDP equal or greater than 180 W are not supported within A3.
- 128GB or greater capacity LRDIMMs are not supported within A3.
- Redundant power supply configuration is required.
- Non-Dell qualified peripheral cards greater than 25 W are not supported.
- GPU card is not supported within A3.
- OCP is not supported within A3.
- PCIe SSD is not supported within A3.

Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any damages to the IT equipment and/or, or both failure from particulate and gaseous contamination. If the levels of particulate or gaseous pollution exceed the specified limitations and results in equipment damage or failure, you must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 78. Particulate contamination specifications

Particulate contamination	Specifications
Air filtration	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit. **NOTE:** This condition applies to data center environments only. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor. **NOTE:** Air entering the data center must have MERV11 or MERV13 filtration. **NOTE:** Air filtering can also be accomplished by filtering room air with MERV8 filter per ANSI/ASHARE Standard 127.
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. **NOTE:** Common sources of conductive dust include manufacturing processes, and zinc whiskers from the plating on the bottom of raised floor tiles.
Corrosive dust	• Air must be free of corrosive dust. • Residual dust present in the air must have a deliquescent point less than 60% relative humidity. **NOTE:** This condition applies to data center and non-data center environments.

Table 79. 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.

Thermal restriction matrix

Table 80. Thermal restriction matrix for processor and fans

Configuration		8 x 2.5-inch
Processor TDP	**Processor cTDP Max**	
120 W	150 W	STD fan STD heat sink
155 W	180 W	STD fan STD heat sink
180 W	200 W	STD fan HPR heat sink

Table 80. Thermal restriction matrix for processor and fans (continued)

Configuration		8 x 2.5-inch
Processor TDP	**Processor cTDP Max**	
200 W	200 W	STD fan HPR heat sink
225 W	240 W	HPR fan HPR heat sink
280 W	280 W	HPR fan HPR HSK with DIMM Blank

NOTE: To ensure proper cooling in the system with 280 W processor, memory module blank should be installed in the memory sockets that are not populated.

NOTE: For 280 W processor, maximum supported ambient temperature is 30°C.

Table 81. Thermal restriction matrix for T4 GPGPU

Riser configurations	Configuration type and ambient temperature support		
	8 x 2.5-inch drives		
	2 LP		
	Ambient = 30°C		
Slot 2	HPR fan		
Slot 3	HPR fan		

Table 82. Label reference

Label	Description
STD	Standard
HPR	High performance
HSK	Heat sink
LP	Low profile

Thermal restriction for ASHRAE A3/Fresh air environment

NOTE: XC Core XC6515 does not support.

- Processor TDP equal or greater than 180 W are not supported.
- 128 GB or greater capacity LRDIMMs are not supported.
- Redundant power supply configuration is required, but PSU failure is not supported
- Non-Dell qualified peripheral cards greater than 25 W are not supported.
- GPU card is not supported.
- PCIe SSD is not supported.

Other thermal restrictions

1. SolarFlare, Mellanox CX4/CX5/CX6, P4800 AIC can only support up to 35°C ambient.
2. HPR fan is required with 128 GB LRDIMM.
3. T4 GPGPU is not supported with 128 GB LRDIMM.

9

System diagnostics and indicator codes

The following sections contain information about the chassis LEDs and indicator codes for the XC Core XC6515 system.

Topics:

System diagnostics and indicator codes

The diagnostic indicators on the system front panel display system status during system startup.

The following sections contain information about the chassis LEDs and indicator codes for the Dell EMC XC Core XC6515 system.

Status LED indicators

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

Figure 98. Status LED indicators

Table 83. 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).

Table 83. Status LED indicators and descriptions (continued)

Icon	Description	Condition	Corrective action
			• If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air shroud, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed. If the problem persists, see the Getting help section.
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU. If the problem persists, see the Getting help section.
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module. If the problem persists, see the Getting help section.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card. If the problem persists, see the Getting help section. **NOTE:** For more information about the supported PCIe cards, see the Expansion card installation guidelines section.

System health and system ID indicator codes

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

Figure 99. System health and system ID indicator

Table 84. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system health and system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system health and system ID button to switch to system health mode.
Solid amber	Indicates that the system is in fail-safe mode. If the problem persists, see the Getting help section.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log for specific error messages. For information about the event and error messages

Table 84. System health and system ID indicator codes (continued)

System health and system ID indicator code	Condition
	generated by the system firmware and agents that monitor system components, go to qrl.dell.com > **Look Up** > **Error Code**, type the error code, and then click **Look it up**.

iDRAC Direct LED indicator codes

The iDRAC Direct LED indicator lights up to indicate that the port is connected and is being used as a part of the iDRAC subsystem.

You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 feet (0.91 meters). Performance could be affected by cable quality. The following table describes iDRAC Direct activity when the iDRAC Direct port is active:

Table 85. iDRAC Direct LED indicator codes

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

LCD panel

The LCD panel provides system information, status, and error messages to indicate if the system is functioning correctly or requires attention. The LCD panel is used to configure or view the iDRAC IP address of the system. For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > **Look Up** > **Error Code**, type the error code, and then click **Look it up**..

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

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

- The LCD backlight is white during normal operating conditions.
- If there is an issue, the LCD backlight turns amber and displays an error code followed by descriptive text.

  NOTE: If the system is connected to a power source and an error is detected, the LCD turns amber regardless of whether the system is powered on or off.
- When the system powers off and there are no errors, the LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to power it on.
- If the LCD panel stops responding, remove the bezel and reinstall it.

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

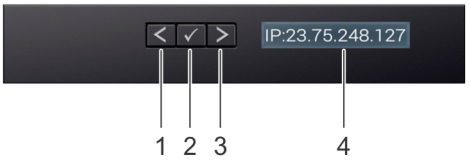


Figure 100. LCD panel features

Table 86. LCD panel features

Item	Button or display	Description
1	Left	Moves the cursor back in one-step increments.
2	Select	Selects the menu item that is highlighted by the cursor.
3	Right	Moves the cursor forward in one-step increments. During message scrolling: • Press and hold the right button to increase scrolling speed. • Release the button to stop. **NOTE:** The display stops scrolling when the button is released. After 45 seconds of inactivity, the display starts scrolling.
4	LCD display	Displays the system information, status, and error messages or iDRAC IP address.

Viewing Home screen

The **Home** screen displays user-configurable information about the system. This screen is displayed during normal system operation when there are no status messages or errors. When the system turns off and there are no errors, LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to turn it on.

Steps

1. To view the **Home** screen, press one of the three navigation buttons (Select, Left, or Right).
2. To navigate to the **Home** screen from another menu, complete the following steps:
   a. Press and hold the navigation button till the up arrow is displayed.
   b. Navigate to the **Home** icon using the up arrow .
   c. Select the **Home** icon.
   d. On the **Home** screen, press the **Select** button to enter the main menu.

Setup menu

NOTE: When you select an option in the Setup menu, you must confirm the option before proceeding to the next action.

Table 87. Setup menu

Option	Description
iDRAC	Select **DHCP** or **Static IP** to configure the network mode. If **Static IP** is selected, the available fields are **IP**, **Subnet (Sub)**, and **Gateway (Gtw)**. Select **Setup DNS** to enable DNS and to view domain addresses. Two separate DNS entries are available.
Set error	Select **SEL** to view LCD error messages in a format that matches the IPMI description in the SEL. This enables you to match an LCD message with an SEL entry. Select **Simple** to view LCD error messages in a simplified user-friendly description. For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > **Look Up** > **Error Code**, type the error code, and then click **Look it up**..
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.

Table 88. View menu

Option	Description
iDRAC IP	Displays the **IPv4** or **IPv6** addresses for iDRAC9. Addresses include **DNS** (**Primary** and **Secondary**), **Gateway**, **IP**, and **Subnet** (IPv6 does not have Subnet).
MAC	Displays the MAC addresses for **iDRAC**, **iSCSI**, or **Network** devices.
Name	Displays the name of the **Host**, **Model**, or **User String** for the system.
Number	Displays the **Asset tag** or the **Service tag** for the system.
Power	Displays the power output of the system in BTU/hr or Watts. The display format can be configured in the **Set home** submenu of the **Setup** menu.
Temperature	Displays the temperature of the system in Celsius or Fahrenheit. The display format can be configured in the **Set home** submenu of the **Setup** menu.

NIC indicator codes

Each NIC on the back of the system has indicators that provide information about the activity and link status. The activity LED indicator indicates if data is flowing through the NIC, and the link LED indicator indicates the speed of the connected network.

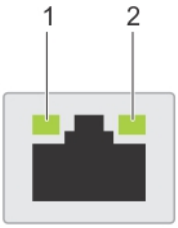


Figure 101. NIC indicator codes

1. Link LED indicator
2. Activity LED indicator

Table 89. NIC indicator codes

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

Power supply unit indicator codes

AC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator. The indicator shows if power is present or if a power fault has occurred.

Figure 102. AC PSU status indicator

1. AC PSU status indicator/handle

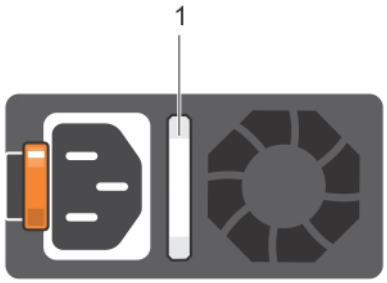


Figure 103. AC PSU status indicator

1. AC PSU status indicator/handle

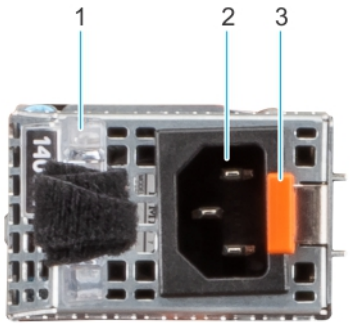


Figure 104. AC PSU status indicator

1. AC PSU handle
2. Socket
3. Release latch

Table 90. AC PSU status indicator codes

Power indicator codes	Condition
Green	Indicates that a valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates an issue with the PSU.
Not powered on	Indicates that the power is not connected to the PSU.
Blinking green	Indicates that the firmware of the PSU is being updated. **CAUTION: Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs do not function.**

Table 90. AC PSU status indicator codes (continued)

Power indicator codes	Condition
Blinking green and powers off	When hot-plugging a PSU, it blinks green five times at a rate of 4 Hz and powers off. This indicates a PSU mismatch due to efficiency, feature set, health status, or supported voltage. **CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to power on the system.** **CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power.** **CAUTION: When correcting a PSU mismatch, replace the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and an unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must power off the system.** **CAUTION: AC PSUs support both 240 V and 120 V input voltages with the exception of Titanium PSUs, which support only 240 V. When two identical PSUs receive different input voltages, they can output different wattages, and trigger a mismatch.**

Table 91. DC PSU status indicator codes

Power indicator codes	Condition
Green	Indicates that a valid power source is connected to the PSU, and the PSU is operational.
Blinking amber	Indicates an issue with the PSU.
Not powered on	Indicates that the power is not connected to the PSU.
Blinking green	When hot-plugging a PSU, it blinks green five times at a rate of 4 Hz and powers off. This indicates a PSU mismatch due to efficiency, feature set, health status, or supported voltage. **CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition, or failure to power on the system.** **CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power.** **CAUTION: When correcting a PSU mismatch, replace the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and an unexpected system shutdown. To change from a High Output configuration to a Low Output configuration or conversely, you must power off the system.** **CAUTION: Combining AC and DC PSUs is not supported.**

Drive indicator codes

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

Figure 105. Drive indicators on the drive and the mid drive tray backplane

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

Figure 106. Drive indicators

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

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

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

Table 92. Drive indicator codes

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

Table 92. Drive indicator codes (continued)

Drive status indicator code	Condition
Solid green	Indicates that the drive is online.
Blinks green for three seconds, amber for three seconds, and then powers off after six seconds	Indicates that the rebuild has stopped.

Using system diagnostics

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

System board diagnostic LED indicators

The system board LED indicators provide status of the system when it is powered on, which help identify POST and hardware issues.

For information about the different LED indicator sequences and description, see the interactive **LED pattern decoder tool** - https://internal.software/blink/.

Table 93. LED status

○	**LED Off**
●	**LED on**
B	**Blinking LED**
*	**LED Off : PFAULT**
	LED Blink : FAILSAFE Timeout
	LED On : FAILSAFE Strike Out

Table 94. Power-up LED sequence

Power-Up Sequence							
LED7	**LED6**	**LED5**	**LED4**	**LED3**	**LED2**	**LED1**	**Description**
○	○	○	○	○	○	●	2.5V_AUX EN. Waiting for 2.5V_AUX PG
○	○	○	○	○	●	○	1.8V_AUX EN. Waiting for 1.8V_AUX PG
○	○	○	○	○	●	●	5V SW EN. CKMNG EN. Waiting for 5V SW PG
○	○	○	○	●	○	○	V_PVNN EN. Waiting for V_PVNN PG
○	○	○	○	●	○	●	1.05V SW EN. Waiting for 1.05V SW PG
○	○	○	○	●	●	○	V_VSBM EN. Waiting for V_VSBM PG
○	○	○	○	●	●	●	V_VSB11 EN. Waiting for V_VSB11 PG
○	○	○	●	○	○	●	Waiting for PCH_SLP_SUS_N. PCH_RSMRST_N still asserted
○	○	○	●	○	●	○	Config check. Waiting for BMC to boot. PCH_RSMRST_N de-asserted
○	○	○	●	○	●	●	Waiting for PWR button
○	○	○	●	●	○	○	12V EN. Waiting for PSU* PG
○	○	○	●	●	●	●	3.3V_AB EN. Waiting for 3.3V A+B PG
○	○	●	○	○	○	○	BP VRs EN. Waiting for BP* PG

Table 94. Power-up LED sequence (continued)

○	○	●	○	○	○	●	MEM VPP EN. Waiting for MEM VPP PGs
○	○	●	○	○	●	○	MEM VDDQ EN. Waiting for MEM VDDQ PGs
○	○	●	○	○	●	●	MEM VTT EN. Waiting for MEM VTT PGs
○	○	●	○	●	○	○	CPU* VCCIO and PCIe clocks EN. Waiting for CPU VCCIO PGs
○	○	●	○	●	○	●	CPU* VCORE/VSA EN. Waiting for CPU* VCORE+VSA PGs
○	○	●	○	●	●	○	Waiting for NDC PG
○	○	●	○	●	●	●	Waiting for PCH PROCPWRGD
○	○	●	●	○	○	○	CPU* PG Asserted. SYS PWRGOOD Asserted
●	●	●	●	●	●	●	RUN State
○	○	●	●	○	●	○	PLTRST_N Asserted
○	○	●	●	○	●	●	CPU & MEM VR's Shutdown
○	○	●	●	●	○	○	MAIN Rails Shutdown (7 seconds)

Table 95. NvDIMM LED sequence

NvDIMM							
LED7	**LED6**	**LED5**	**LED4**	**LED3**	**LED2**	**LED1**	**Description**
●	●	●	●	●	●	●	RUN State – System operating normally
●	○	○	○	●	○	○	System powered down, NVsave in progress
●	○	○	●	●	○	●	NVsave complete. Asserting EMMC_PWROFF_NOTIFY_N to BMC
○	○	○	○	○	○	○	V_12V_SW powered down. System in G3, waiting for AC power

Table 96. System board LED sequence

Error							
LED7	**LED6**	**LED5**	**LED4**	**LED3**	**LED2**	**LED1**	**Description**
B	○	○	○	○	○	B	Config Error: CPU1 present? DIMMs OK? Install DBG JMPR1 to bypass
B	B	○	○	○	B	B	CPU IERR
○	●	●	●	●	●	○	CPU COMBINED MCERR
B	B	B	B	B	B	B	Thermal Issue on CPU* or MEM
B	○	B	B	B	○	B	Internal VR Issue on CPU*
B	○	○	●	○	○	B	AUX Power Failsafe

Table 97. Pfault or failsafe errors LED sequence

Pfault or Failsafe Errors							
LED7	**LED6**	**LED5**	**LED4**	**LED3**	**LED2**	**LED1**	**Description**
*	B	○	○	○	○	○	12V Failure
*	B	○	○	○	○	●	5V BP0 Failure
*	B	○	○	○	●	○	5V BP1 Failure
*	B	○	○	○	●	●	5V BP2 Failure
*	B	○	○	●	○	○	3.3V A Failure
*	B	○	○	●	○	●	3.3V B Failure

Table 97. Pfault or failsafe errors LED sequence (continued)

*	B	○	○	●	●	○	5V SW Failure
*	B	○	○	●	●	●	1.05V SW Failure
*	B	○	●	○	○	○	CPU1 VCORE Failure
*	B	○	●	○	○	●	CPU2 VCORE Failure
*	B	○	●	○	●	○	CPU1 VCCIO Failure
*	B	○	●	○	●	●	CPU2 VCCIO Failure
*	B	○	●	●	○	○	CPU1 VSA Failure
*	B	○	●	●	○	●	CPU2 VSA Failure
*	B	○	●	●	●	○	CPU1 MEM012 VTT Failure
*	B	○	●	●	●	●	CPU1 MEM345 VTT Failure
*	B	●	●	○	○	○	CPU2 MEM012 VTT Failure
*	B	●	○	○	○	●	CPU2 MEM345 VTT Failure
*	B	●	○	○	●	○	CPU1 MEM012 VPP Failure
*	B	●	○	○	●	●	CPU1 MEM345 VPP Failure
*	B	●	○	●	○	○	CPU2 MEM012 VPP Failure
*	B	●	○	●	○	●	CPU2 MEM345 VPP Failure
*	B	●	○	●	●	○	CPU1 MEM012 VDDQ Failure
*	B	●	○	●	●	●	CPU1 MEM345 VDDQ Failure
*	B	●	○	○	○	○	CPU2 MEM012 VDDQ Failure
*	B	●	●	○	○	●	CPU2 MEM345 VDDQ Failure
*	B	●	●	○	●	○	V_PVNN SW Failure
*	B	●	●	○	●	●	1.8V SW Failure
*	B	●	●	●	○	○	V_VSB11 SW Failure
*	B	●	●	●	○	●	V_VSBM SW Failure
*	B	●	●	●	●	○	NDC Failure
*	B	●	●	●	●	●	2.5V SW Failure

Enhanced Preboot System Assessment

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

Dell Embedded system diagnostics

NOTE: The Dell Embedded System Diagnostics is also known as Enhanced Preboot System Assessment (ePSA) diagnostics.

The embedded system diagnostics provides options for particular device groups or devices that allow you to:

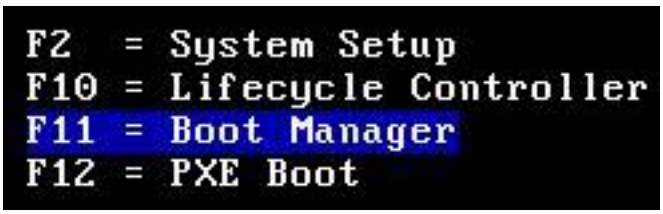
- Run tests automatically or in an interactive mode.
- Repeat tests
- Display or save test results.
- Introduce more test options for extra information about the failed devices, run a thorough test.

- View status messages that inform you if tests are completed successfully.
- View error messages that inform you of issues encountered during testing.

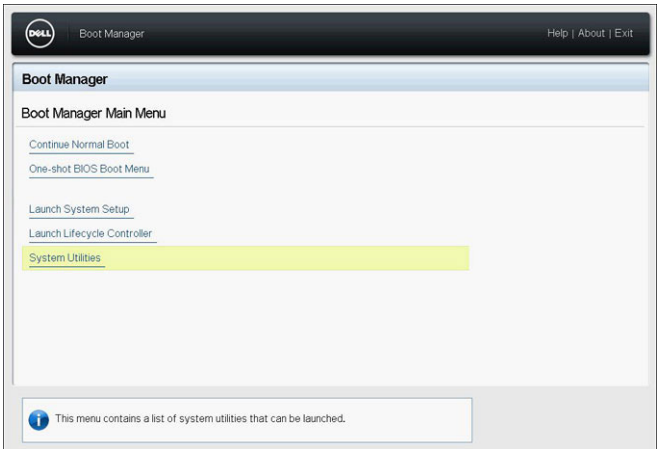
Running the Embedded system diagnostics from Boot Manager

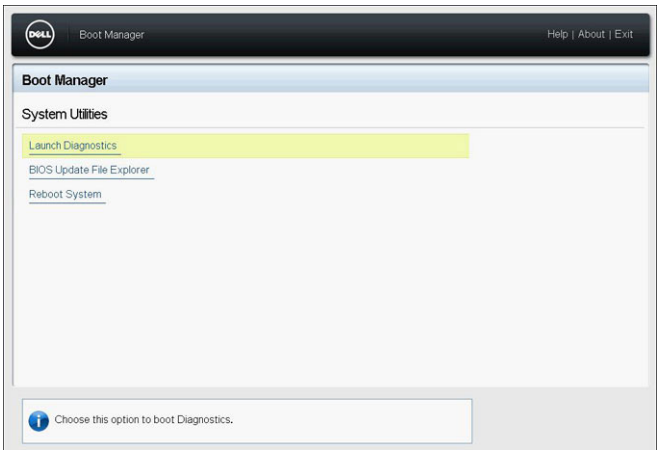
To run the embedded system diagnostics from Boot Manager:

1. As the system boots, press <F11>.

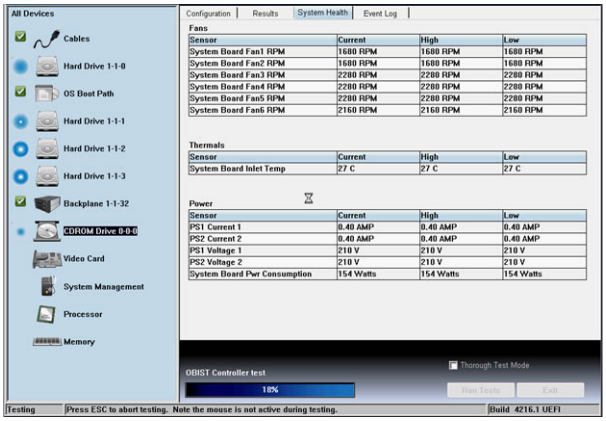


2. Using the arrow keys select **System Utilities** → **Launch Diagnostics**.





3. Wait while the Quick Tests automatically run.

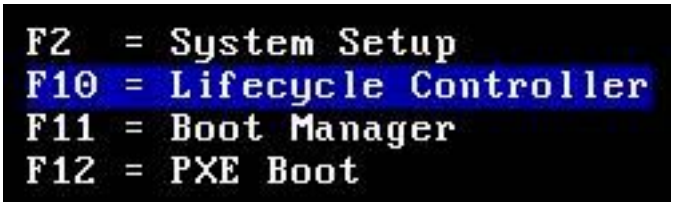


4. Once the tests have been completed, you can view the results and additional information about the **Results** tab, the **System Health** tab, the **Configuration** tab, and the **Event Log** tab.
5. Close the **Embedded System Diagnostics** utility.
6. To leave the diagnostics, click **Exit.**
7. Click **OK** when prompted, and the system reboots.

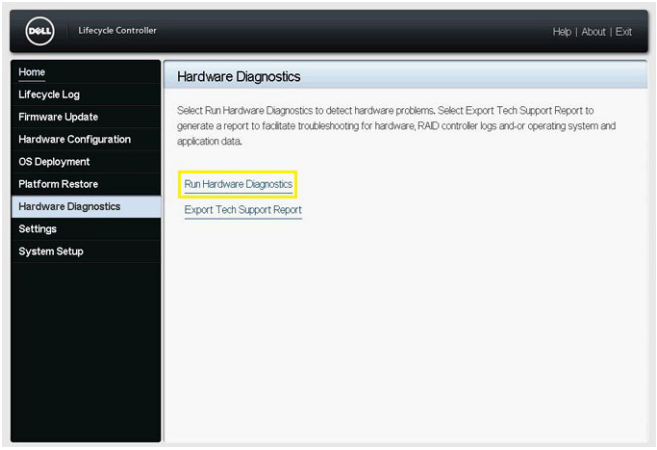
Running the Embedded System Diagnostics from the Dell Lifecycle Controller

To run the embedded system diagnostics from the Dell Lifecycle Controller:

1. As the system boots, press **F10**.



2. Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.



10

Getting help

Topics:

Recycling or End-of-Life service information

Take back and recycling services are offered for this product in certain countries. If you want to dispose of system components, visit www.dell.com/recyclingworldwide and select the relevant country.

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:

Steps

1. Go to www.dell.com/support/home
2. Select your country from the drop-down menu on the lower right corner of the page.
3. For customized support:
   a. Enter 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.

Receiving automated support with SupportAssist

Dell EMC SupportAssist is an optional Dell EMC Services offering that automates technical support for your Dell EMC 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 EMC 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 EMC Technical Support.

- **Automated diagnostic collection** — SupportAssist automatically collects system state information from your devices and uploads it securely to Dell EMC. This information is used by Dell EMC Technical Support to troubleshoot the issue.
- **Proactive contact** — A Dell EMC Technical Support agent contacts you about the support case and helps you resolve the issue.

The available benefits vary depending on the Dell EMC Service entitlement purchased for your device. For more information about SupportAssist, go to www.dell.com/supportassist.

Accessing system information by using QRL

You can use the Quick Resource Locator (QRL) located on the information tag in the front of the XC XR2, to access the information about the Dell EMC XC XR2.

Prerequisites

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

The QRL includes the following information about your system:

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

Steps

1. Go to www.dell.com/qrl and navigate to your specific product or
2. Use your smartphone or tablet to scan the model-specific Quick Resource (QR) code on your system or in the Quick Resource Locator section.

11

Documentation resources

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

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

- From the Dell EMC support site:
  1. Click the documentation link that is provided in the Location column in the table.
  2. Click the required product or product version.

     NOTE: To locate the product name and model, see the front of your system.
  3. On the Product Support page, click **Manuals & documents**.
- Using search engines:
  - Type the name and version of the document in the search box.

Table 98. Additional documentation resources for your system

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

Table 98. Additional documentation resources for your system (continued)

Task	Document	Location
	For information about installing the operating system, see the operating system documentation.	www.dell.com/operatingsystemmanuals
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	www.dell.com/support/drivers
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	www.dell.com/poweredgemanuals
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	www.dell.com/openmanagemanuals > OpenManage Server Administrator
	For information about installing, using, and troubleshooting Dell OpenManage Enterprise, see the Dell OpenManage Enterprise User's Guide.	www.dell.com/openmanagemanuals
	For information about installing and using Dell SupportAssist, see the Dell EMC SupportAssist Enterprise User's Guide.	https://www.dell.com/serviceabilitytools
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	www.dell.com/openmanagemanuals
Working with the Dell PowerEdge RAID controllers	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	www.dell.com/storagecontrollermanuals
Understanding event and error messages	For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > **Look Up** > **Error Code**, type the error code, and then click **Look it up**.	www.dell.com/qrl
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	www.dell.com/poweredgemanuals