

# Initial system setup and configuration

This section describes the tasks for initial setup and configuration of the Dell system. The section also provides general steps to set up the system and the reference guides for detailed information.

## Topics:

- [Setting up the system](#)
- [iDRAC configuration](#)
- [Resources to install operating system](#)

## Setting up the system

Perform the following steps to set up the system:

### Steps

1. Unpack the system.
2. 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/poweredgemanuals](http://www.dell.com/poweredgemanuals).
3. Connect the peripherals to the system and the system to the electrical outlet.
4. Power on the system.

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

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

## iDRAC configuration

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

### Options to set up iDRAC IP address

To enable communication between your system and iDRAC, you must first configure the network settings based on your network infrastructure. The network settings option is set to **DHCP**, by default.

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

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

**Table 6. Interfaces to set up iDRAC IP address**

Interface	Documentation links
iDRAC Settings utility	<i>Integrated Dell Remote Access Controller User's Guide</i> at <a href="https://www.dell.com/idracmanuals">https://www.dell.com/idracmanuals</a> or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> , go to <a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> .

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

Interface	Documentation links
	<p><b>i</b> <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <a href="https://www.dell.com/support/article/sln000178115">https://www.dell.com/support/article/sln000178115</a>.</p>
iDRAC Direct	<p><i>Integrated Dell Remote Access Controller User's Guide</i> at <a href="https://www.dell.com/idracmanuals">https://www.dell.com/idracmanuals</a> or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i>, go to <a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a> &gt; <b>Product Support</b> page of your system &gt; <b>Documentation</b>.</p> <p><b>i</b> <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <a href="https://www.dell.com/support/article/sln000178115">https://www.dell.com/support/article/sln000178115</a>.</p>
Lifecycle Controller	<p><i>Dell Lifecycle Controller User's Guide</i> at <a href="https://www.dell.com/idracmanuals">https://www.dell.com/idracmanuals</a> or for system specific <i>Dell Lifecycle Controller User's Guide</i>, go to <a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a> &gt; <b>Product Support</b> page of your system &gt; <b>Documentation</b>.</p> <p><b>i</b> <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <a href="https://www.dell.com/support/article/sln000178115">https://www.dell.com/support/article/sln000178115</a>.</p>

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

## Options to log in to iDRAC

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

You can log in to iDRAC as:

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

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

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

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

**i** **NOTE:** To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <https://www.dell.com/support/article/sln000178115>.

You can also access iDRAC using command-line protocol - RACADM. For more information, see the *Integrated Dell Remote Access Controller RACADM CLI Guide* available at <https://www.dell.com/idracmanuals>.

You can also access iDRAC using automation tool - Redfish API. For more information, see the *Integrated Dell Remote Access Controller User's Guide Redfish API Guide* available at <https://developer.dell.com>.

## Resources to install operating system

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

**Table 7. Resources to install the operating system**

Resource	Documentation links
iDRAC	<i>Integrated Dell Remote Access Controller User's Guide</i> at <a href="https://www.dell.com/idracmanuals">https://www.dell.com/idracmanuals</a> or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> , go to <a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> .  <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at <a href="https://www.dell.com/support/article/sln000178115">https://www.dell.com/support/article/sln000178115</a> .
Lifecycle Controller	<i>Dell Lifecycle Controller User's Guide</i> at <a href="https://www.dell.com/idracmanuals">https://www.dell.com/idracmanuals</a> or for system specific <i>Dell Lifecycle Controller User's Guide</i> , go to <a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> . Dell recommends using Lifecycle Controller to install the OS, since all required drivers are installed on the system.  <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at <a href="https://www.dell.com/support/article/sln000178115">https://www.dell.com/support/article/sln000178115</a> .
Dell certified VMware ESXi	<a href="http://www.dell.com/virtualizationsolutions">www.dell.com/virtualizationsolutions</a>

 **NOTE:** For more information about installation and how-to videos for operating systems supported on PowerEdge systems, see [Supported Operating Systems for Dell PowerEdge systems](#).

## Options to download drivers and firmware

You can download firmware from the Dell support site. For information about downloading firmware, see the [Downloading drivers and firmware](#) section.

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

**Table 8. Options to download firmware**

Option	Documentation link
Using Integrated Dell Remote Access Controller Lifecycle Controller (iDRAC with LC)	<a href="http://www.dell.com/idracmanuals">www.dell.com/idracmanuals</a>
Using Dell Repository Manager (DRM)	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > Repository Manager
Using Dell Server Update Utility (SUU)	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > Server Update Utility
Using iDRAC virtual media	<a href="http://www.dell.com/idracmanuals">www.dell.com/idracmanuals</a>

## Options to download and install OS drivers

You can choose any one of the following options to download and install OS drivers. For information about how to download or install OS drivers, see the documentation links provided in the table below.

**Table 9. Options to download and install OS drivers**

Option	Documentation
Dell support site	<a href="#">Downloading drivers and firmware</a> section.
iDRAC virtual media	<i>Integrated Dell Remote Access Controller User's Guide</i> at <a href="https://www.dell.com/idracmanuals">https://www.dell.com/idracmanuals</a> or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> ,

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

Option	Documentation
	go to <a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a> > <b>Product Support</b> page of your system > <b>Documentation</b> .  <b>NOTE:</b> To determine the most recent iDRAC release for your platform and for latest documentation version, see <a href="https://www.dell.com/support/article/sln000178115">https://www.dell.com/support/article/sln000178115</a> .

## Downloading drivers and firmware

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

### Prerequisites

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

### Steps

1. Go to [www.dell.com/support/drivers](http://www.dell.com/support/drivers).
2. Enter the Service Tag of the system in the **Enter a Dell Service Tag, Dell Product ID or Model** field, and then press Enter.  
 **NOTE:** If you do not have the Service Tag, click **Browse all products**, and navigate to your product.
3. On the displayed product page, click **Drivers & Downloads**.  
On the **Drivers & Downloads** page, all drivers that are applicable to the system are displayed.
4. Download the drivers to a USB drive, CD, or DVD.

# Pre-operating system management applications

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

## Options to manage the pre-operating system applications

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

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

### Topics:

- [System Setup](#)
- [Dell Lifecycle Controller](#)
- [Boot Manager](#)
- [PXE boot](#)

## 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
<b>System BIOS</b>	Enables you to configure the BIOS settings.
<b>iDRAC Settings</b>	Enables you to configure the iDRAC settings. The iDRAC settings utility is an interface to set up and configure the iDRAC parameters by using UEFI (Unified Extensible Firmware Interface). You can enable or disable various iDRAC parameters by using the iDRAC settings utility. For more information about this utility, see <i>Integrated Dell Remote Access Controller User's Guide</i> at <a href="http://www.dell.com/poweredgemanuals">www.dell.com/poweredgemanuals</a> .
<b>Device Settings</b>	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
<b>System Information</b>	Provides information about the system such as the system model name, BIOS version, and Service Tag.
<b>Memory Settings</b>	Specifies information and options related to the installed memory.
<b>Processor Settings</b>	Specifies information and options related to the processor such as speed and cache size.
<b>SATA Settings</b>	Specifies options to enable or disable the integrated SATA controller and ports.
<b>NVMe Settings</b>	Specifies options to change the NVMe settings. If the system contains the NVMe drives that you want to configure in a RAID array, you must set both this field and the <b>Embedded SATA</b> field on the <b>SATA Settings</b> menu to <b>RAID</b> mode. You might also need to change the <b>Boot Mode</b> setting to <b>UEFI</b> . Otherwise, you should set this field to <b>Non-RAID</b> mode.
<b>Boot Settings</b>	Specifies options to specify the Boot mode (BIOS or UEFI). Enables you to modify UEFI and BIOS boot settings.
<b>Network Settings</b>	Specifies options to manage the UEFI network settings and boot protocols.  Legacy network settings are managed from the <b>Device Settings</b> menu.   <b>NOTE:</b> Network Settings are not supported in BIOS boot mode.
<b>Integrated Devices</b>	Specifies options to manage integrated device controllers and ports, specifies related features, and options.
<b>Serial Communication</b>	Specifies options to manage the serial ports, its related features, and options.
<b>System Profile Settings</b>	Specifies options to change the processor power management settings, memory frequency.
<b>System Security</b>	Specifies options to configure the system security settings, such as system password, setup password, Trusted Platform Module (TPM) security, and UEFI secure boot. It also manages the power button on the system.
<b>Redundant OS Control</b>	Sets the redundant OS information for redundant OS control.
<b>Miscellaneous Settings</b>	Specifies options to change the system date and time.

## System Information

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

**Table 12. System Information details**

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

**Table 12. System Information details (continued)**

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

## Memory Settings

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

**Table 13. Memory Settings details**

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

## 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 14. Processor Settings details**

Option	Description
<b>Logical Processor</b>	Each processor core supports up to two logical processors. If this option is set to <b>Enabled</b> , the BIOS displays all the logical processors. If this option is set to <b>Disabled</b> , the BIOS displays only one logical processor per core. This option is set to <b>Enabled</b> by default.
<b>Virtualization Technology</b>	Enables or disables the virtualization technology for the processor. This option is set to <b>Enabled</b> by default.

**Table 14. Processor Settings details (continued)**

Option	Description
<b>IOMMU Support</b>	Enable or Disable IOMMU support. It is required to create IVRS ACPI table. This option is set to <b>Enabled</b> by default.
<b>Kernel DMA Protection</b>	When this option is set to Enabled, using IOMMU, BIOS, and the Operating System will enable direct memory access protection for DMA capable peripheral devices. Enable <b>IOMMU Support</b> to use this option. This option is set to <b>Disabled</b> by default. When set to Enabled by using Virtualization Technology, BIOS and Operating System will enable direct memory access protection for DMA capable peripheral devices. Enable Virtualization Technology to use this option.
<b>L1 Stream HW Prefetcher</b>	Enables or disables the L1 stream hardware prefetcher. This option is set to <b>Enabled</b> by default.
<b>L2 Stream HW Prefetcher</b>	Enables or disables the L2 stream hardware prefetcher. This option is set to <b>Enabled</b> by default.
<b>L1 Stride Prefetcher</b>	Enables or disables the L1 stride prefetcher. This option is set to <b>Enabled</b> by default, as it optimizes overall workload.  <b>NOTE:</b> This option is only available for 4th Generation AMD EPYC processors.
<b>L1 Region Prefetcher</b>	Enables or disables the L1 region prefetcher. This option is set to <b>Enabled</b> by default, as it optimizes overall workload.  <b>NOTE:</b> This option is only available for 4th Generation AMD EPYC processors.
<b>L2 Up Down Prefetcher</b>	Enables or disables the L2 up down prefetcher. This option is set to <b>Enabled</b> by default, as it optimizes overall workload.  <b>NOTE:</b> This option is only available for 4th Generation AMD EPYC processors.
<b>MADT Core Enumeration</b>	Specifies the MADT Core Enumeration. This option is set to <b>Linear</b> by default.
<b>NUMA Nodes Per Socket</b>	Specifies the number of NUMA nodes per socket. This option is set to <b>1</b> by default.
<b>L3 cache as NUMA Domain</b>	Enables or disables the L3 cache as NUMA Domain. This option is set to <b>Disabled</b> by default.
<b>Secure Memory Encryption</b>	Enables or disables the AMD secure encryption features such as <b>SME</b> and <b>Secure Encrypted Virtualization (SEV)</b> . It also determines if other secure encryption features such as <b>TSME</b> and <b>SEV-SNP</b> can be enabled. This option is set to <b>Disabled</b> by default.  <b>NOTE:</b> This option is only available for 4th Generation AMD EPYC processors.
<b>Minimum SEV non-ES ASID</b>	Determines the number of Secure Encrypted Virtualization ES and non-ES available Address Space IDs. This option is set to <b>1</b> by default.
<b>Transparent Secure Memory Encryption</b>	Enables or disables the <b>TSME</b> . <b>TSME</b> is always-on memory encryption that does not require OS or hypervisor support. This option is set to <b>Disabled</b> by default. <ul style="list-style-type: none"> <li>● If the OS supports <b>SME</b>, do not enable this field.</li> <li>● If the hypervisor supports <b>SEV</b>, do not enable this field.</li> </ul> Enabling <b>TSME</b> affects the system memory performance.

**Table 14. Processor Settings details (continued)**

Option	Description
<b>Configurable TDP</b>	Allows the reconfiguration of the processor Thermal Design Power (TDP) levels based on the power and thermal delivery capabilities of the system. TDP refers to the maximum amount of power the cooling system is required to dissipate. This option is set to <b>Maximum</b> by default. <b>i</b> <b>NOTE:</b> This option is only available on certain SKUs of the processors, and the number of alternative levels varies as well.
<b>x2APIC Mode</b>	Enables or disables x2APIC mode. This option is set to <b>Enabled</b> by default. <b>i</b> <b>NOTE:</b> For two CPU 64 cores configuration, x2APIC mode is not switchable if 256 threads are enabled (BIOS settings: All CCD, cores, and logical processors enabled).
<b>Number of CCDs per Processor</b>	Controls the number of enabled CCDs in each processor. This option is set to <b>All</b> by default.
<b>Number of Cores per CCD</b>	Specifies the number of cores per CCD. This option is set to <b>All</b> by default.
<b>Processor Core Speed</b>	Specifies the maximum core frequency of the processor.
<b>Processor Bus Speed</b>	Displays the bus speed of the processor(s).
<b>Processor n</b>	<b>i</b> <b>NOTE:</b> 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 15. Processor n details**

Option	Description
<b>Family-Model-Stepping</b>	Specifies the family, model, and stepping of the processor as defined by AMD.
<b>Brand</b>	Specifies the brand name.
<b>Level 2 Cache</b>	Specifies the total L2 cache.
<b>Level 3 Cache</b>	Specifies the total L3 cache.
<b>Number of Cores</b>	Specifies the number of cores per processor.
<b>Microcode</b>	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 16. SATA Settings details**

Option	Description
<b>Embedded SATA</b>	Enables the embedded SATA option to be set to <b>Off</b> , <b>AHCI mode</b> , or <b>RAID modes</b> . This option is set to <b>AHCI Mode</b> by default. <b>i</b> <b>NOTE:</b> 1. You might also need to change the Boot Mode setting to UEFI. Otherwise, you should set the field to Non-RAID mode.

**Table 16. SATA Settings details (continued)**

Option	Description
	2. No ESXi and Ubuntu OS support under RAID mode.
<b>Security Freeze Lock</b>	Sends <b>Security Freeze Lock</b> command to the embedded SATA drives during POST. This option is applicable only for AHCI Mode. This option is set to <b>Enabled</b> by default.
<b>Write Cache</b>	Enables or disables the command for the embedded SATA drives during POST. This option is set to <b>Disabled</b> by default.

## NVMe Settings

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

**Table 17. NVMe Settings details**

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

## Boot Settings

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

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

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

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

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

**Table 18. Boot Settings details**

Option	Description
<b>Boot Mode</b>	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 <b>UEFI</b> by default.  <b>CAUTION: Switching the boot mode may prevent the system from booting if the operating system is not installed in the same boot mode.</b> <i>i</i> <b>NOTE:</b> Setting this field to UEFI disables the <b>BIOS Boot Settings</b> menu.

**Table 18. Boot Settings details (continued)**

Option	Description						
<b>Boot Sequence Retry</b>	Enables or disables the <b>Boot Sequence Retry</b> feature. If this option is set to <b>Enabled</b> and the system fails to boot, the system re-attempts the boot sequence after 30 seconds. This option is set to <b>Enabled</b> by default.						
<b>Hard Disk Failover</b>	Enables or disables the Hard-disk failover. This option is set to <b>Disabled</b> by default.						
<b>Generic USB Boot</b>	Enables or disables the generic USB boot placeholder. This option is set to <b>Disabled</b> by default.						
<b>Hard-disk Drive Placeholder</b>	Enables or disables the Hard-disk drive placeholder. This option is set to <b>Disabled</b> by default.						
<b>Clean all SysPrep variables and order</b>	When set to <b>None</b> , BIOS will do nothing. When set to <b>Yes</b> , BIOS will delete variables of SysPrep #### and SysPrepOrder this option is a onetime option, will reset to none when deleting variables. This setting is only available in <b>UEFI Boot Mode</b> . This option is set to <b>None</b> by default.						
<b>UEFI Boot Settings</b>	<p>Specifies the UEFI boot sequence. Enables or disables UEFI Boot options.</p> <p><b>NOTE:</b> This option controls the UEFI boot order. The first option in the list will be attempted first.</p> <p><b>Table 19. UEFI Boot Settings</b></p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>UEFI Boot Sequence</b></td> <td>Enables you to change the boot device order.</td> </tr> <tr> <td><b>Boot Option Enable/Disable</b></td> <td>Enables you to select the enabled or disabled boot devices</td> </tr> </tbody> </table>	Option	Description	<b>UEFI Boot Sequence</b>	Enables you to change the boot device order.	<b>Boot Option Enable/Disable</b>	Enables you to select the enabled or disabled boot devices
Option	Description						
<b>UEFI Boot Sequence</b>	Enables you to change the boot device order.						
<b>Boot Option Enable/Disable</b>	Enables you to select the enabled or disabled boot devices						

## Choosing system boot mode

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

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

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

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

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

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

**NOTE:** For the latest information about supported operating systems, go to [www.dell.com/ossupport](http://www.dell.com/ossupport).

## Changing boot order

### About this task

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

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

### Steps

- On the **System Setup Main Menu** screen, click **System BIOS > Boot Settings > UEFI Boot Settings > UEFI Boot Sequence**.

- 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.
- 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](https://www.amd.com).

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

**Table 20. Network Settings details**

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

**Table 21. PXE Device n Settings details**

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

**Table 22. HTTP Device n Settings details**

Option	Description
<b>Interface</b>	Specifies NIC interface used for the HTTP device.
<b>Protocol</b>	Specifies Protocol used for HTTP device. This option is set to <b>IPv4</b> or <b>IPv6</b> . This option is set to <b>IPv4</b> by default.  The following options will be available when Protocol is set as IPv6:  <b>Auto Configuration:</b> IPv6 Auto Configuration Enable/Disabled for this HTTP Device.  <b>IPv6 Address:</b> IPv6 Unicast address for this HTTP Device.

**Table 22. HTTP Device n Settings details (continued)**

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

**Table 23. UEFI ISCSI Settings screen details**

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

**Table 24. ISCSI Device1 Settings screen details**

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

**Table 25. UEFI NVMe-oF Settings screen details**

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

## 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 26. Integrated Devices details**

Option	Description
<b>User Accessible USB Ports</b>	<p>Configures the user accessible USB ports. Selecting <b>Only Back Ports On</b> disables the front USB ports; selecting <b>All Ports Off</b> disables all front and back USB ports; selecting <b>All Ports Off (Dynamic)</b> disables all front and back USB ports during POST. This option is set to <b>All Ports On</b> by default. When user accessible USB ports is set to <b>All Ports Off (Dynamic)</b> the <b>Enable Front Ports Only</b> option is enabled.</p> <ul style="list-style-type: none"> <li>• <b>Enable Front Ports Only:</b> Enables or disables the front USB ports during the OS runtime.</li> </ul> <p>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.</p>
<b>Internal USB Port</b>	<p>Enables or disables the <b>Internal USB Port</b>. This option is set to <b>On</b> or <b>Off</b>. This option is set to <b>On</b> by default.</p>
<b>iDRAC Direct USB Port</b>	<p>The iDRAC Direct USB port is managed by iDRAC exclusively with no host visibility. This option is set to <b>ON</b> or <b>OFF</b>. When set to <b>OFF</b>, iDRAC does not detect any USB devices installed in this managed port. This option is set to <b>On</b> by default. Enables or disables the integrated RAID controller. When set to <b>Disabled</b>, the device is not visible to the operating system(OS). Enables or disables the integrated RAID controller. When set to <b>Disabled</b>, the device is not visible to the operating system(OS).</p>
<b>Integrated RAID Controller</b>	<p>Enables or disables the integrated RAID controller. When set to <b>Disabled</b>, the device is not visible to the operating system(OS).</p>
<b>Embedded NIC1 and NIC2</b>	<p>Enables or disables the <b>Embedded NIC1 and NIC2</b> options. If set to <b>Disabled (OS)</b>, the NIC may still be available for shared network access by the embedded management controller. Configure the <b>Embedded NIC1 and NIC2</b> option by using the NIC management utilities of the system.</p>
<b>Embedded Video Controller</b>	<p>Enables or disables the use of Embedded Video Controller as the primary display. When set to <b>Enabled</b>, the Embedded Video Controller will be the primary display even if add-in graphic cards are installed. When set to <b>Disabled</b>, an add-in graphics card will be used as the primary display. BIOS will output displays to both the primary add-in video and the embedded video during POST and pre-boot environment. The embedded video will then be disabled right before the operating system boots. This option is set to <b>Enabled</b> by default.</p> <p><b>i NOTE:</b> When there are multiple add-in graphic cards installed in the system, the first card discovered during PCI enumeration is selected as the primary video. You might have to re-arrange the cards in the slots in order to control which card is the primary video.</p>
<b>Current State of Embedded Video Controller</b>	<p>Displays the current state of the embedded video controller. The <b>Current State of Embedded Video Controller</b> option is a read-only field. If the Embedded Video Controller is the only display capability in the system (that is, no add-in graphics card is installed), then the Embedded Video Controller is automatically used as the primary display even if the <b>Embedded Video Controller</b> setting is set to <b>Disabled</b>.</p>
<b>SR-IOV Global Enable</b>	<p>Enables or disables the BIOS configuration of Single Root I/O Virtualization (SR-IOV) devices. This option is set to <b>Enabled</b> by default.</p>
<b>OS Watchdog Timer</b>	<p>If your system stops responding, this watchdog timer aids in the recovery of your operating system. When this option is set to <b>Enabled</b>, the operating</p>

**Table 26. Integrated Devices details (continued)**

Option	Description
	system initializes the timer. When this option is set to <b>Disabled</b> (the default), the timer does not have any effect on the system.
<b>Memory Mapped I/O Limit</b>	Controls where MMIO is mapped. The <b>1 TB</b> option is designed for specific OS which cannot support MMIO over 1 TB. This option is set to <b>8 TB</b> by default. The default option is the maximum address that the system supports and recommended in most cases.
<b>Slot Disablement</b>	Enables or disables the available PCIe slots on your system. The slot disablement feature controls the configuration of the PCIe cards installed in the specified slot. Slots must be disabled only when the installed peripheral card prevents booting into the operating system or causes delays in system startup. If the slot is disabled, both the Option ROM and UEFI drivers are disabled. Only slots that are present on the system will be available for control. <b>Slot n:</b> Enables or disables or only the boot driver is disabled for the PCIe slot n. This option is set to <b>Enabled</b> by default.
<b>Slot Bifurcation</b>	<b>Slot Discovery Bifurcation Settings</b> allows <b>Platform Default Bifurcation</b> and <b>Manual bifurcation Control</b> . The default is set to <b>Platform Default Bifurcation</b> . The slot bifurcation field is accessible when set to <b>Manual bifurcation Control</b> and is grayed out when set to <b>Platform Default Bifurcation</b> .  <b>NOTE:</b> This option is only available for 4 <sup>th</sup> Generation AMD EPYC processors.

## Serial Communication

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

**Table 27. Serial Communication details**

Option	Description
<b>Serial Communication</b>	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 <b>Auto</b> by default.
<b>Serial Port Address</b>	Enables you to set the port address for serial devices.  <b>NOTE:</b> You can use only Serial Device 2 for the Serial Over LAN (SOL) feature. To use console redirection by SOL, configure the same port address for console redirection and the serial device.  <b>NOTE:</b> Every time the system boots, the BIOS syncs the serial MUX setting that is saved in iDRAC. The serial MUX setting can independently be changed in iDRAC. Loading the BIOS default settings from within the BIOS setup utility may not always revert the serial MUX setting to the default setting of Serial Device 1.
<b>External Serial Connector</b>	Enables you to associate the External Serial Connector to <b>Serial Device 1</b> , <b>Serial Device 2</b> , or the <b>Remote Access Device</b> by using this option. This option is set to <b>Serial Device 1</b> by default.  <b>NOTE:</b> Only Serial Device 2 can be used for Serial Over LAN (SOL). To use console redirection by SOL, configure the same port address for console redirection and the serial device.  <b>NOTE:</b> Every time the system boots, the BIOS syncs the serial MUX setting saved in iDRAC. The serial MUX setting can independently be changed in iDRAC. Loading the BIOS default settings from within the BIOS

**Table 27. Serial Communication details (continued)**

Option	Description
	setup utility may not always revert this setting to the default setting of Serial Device 1.
<b>Failsafe Baud Rate</b>	Specifies the failsafe baud rate for console redirection. The BIOS attempts to determine the baud rate automatically. This failsafe baud rate is used only if the attempt fails, and the value must not be changed. This option is set to <b>115200</b> by default.
<b>Remote Terminal Type</b>	Sets the remote console terminal type. This option is set to <b>VT100/VT220</b> by default.
<b>Redirection After Boot</b>	Enables or disables the BIOS console redirection when the operating system is loaded. This option is set to <b>Enabled</b> 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 28. System Profile Settings details**

Option	Description
<b>System Profile</b>	<p>Sets the system profile. If you set the System Profile option to a mode other than <b>Custom</b>, the BIOS automatically sets the rest of the options. You can only change the rest of the options if the mode is set to <b>Custom</b>. This option is set to <b>Performance Per Watt (OS)</b> by default. Other options include <b>Performance</b> and <b>Custom</b>.</p> <p> <b>NOTE:</b> All the parameters on the system profile setting screen are available only when the <b>System Profile</b> option is set to <b>Custom</b>.</p>
<b>CPU Power Management</b>	Sets the CPU power management. This option is set to <b>Max Performance</b> by default. Other option includes <b>System DBPM (DAPC), OS DBPM</b> .
<b>Memory Frequency</b>	Sets the speed of the system memory. You can select <b>Maximum Performance</b> or a specific speed. This option is set to <b>Maximum Performance</b> by default.
<b>Turbo Boost</b>	Enables or disables the processor to operate in the turbo boost mode. This option is set to <b>Enabled</b> by default.
<b>C-States</b>	Enables or disables the processor to operate in all available power states. C States allow the processor to enter lower power states when idle. When set to <b>Enabled</b> (operating system controlled) or when set to <b>Autonomous</b> (if hardware controlled is supported), the processor can operate in all available Power States to save power, but may increase memory latency and frequency jitter. This option is set to <b>Enabled</b> by default.
<b>Write Data CRC</b>	When set to <b>Enabled</b> , DDR5 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 <b>Custom</b> . This option is set to <b>Disabled</b> by default.
<b>Memory Patrol Scrub</b>	Sets the memory patrol scrub mode. This option is set to <b>Standard</b> by default.
<b>Memory Refresh Rate</b>	Sets the memory refresh rate to either 1x or 2x. This option is set to <b>1x</b> by default.
<b>Workload Profile</b>	Allows optimization of performance based on the workload type. The <b>Workload Profile</b> setting is not a <b>state</b> . Setting a Workload Profile is a one-time action that in turns modifies various BIOS settings to be optimized for the requested workload type. This option is set to <b>Not Configured</b> by default.

**Table 28. System Profile Settings details (continued)**

Option	Description
<b>PCI ASPM L1 Link Power Management</b>	Enables or disables the PCI ASPM L1 Link Power Management. This option is set to <b>Enabled</b> by default.
<b>Determinism Slider</b>	Set the system determinism by <b>Power Determinism</b> or <b>Performance Determinism</b> . This option is set to <b>Performance Determinism</b> by default.
<b>Power Profile Select</b>	<b>High performance Mode(default):</b> Favors core performance. All DF P-States are available in this mode and the default DF P-State and DLWM algorithms are active. <b>Efficiency Mode:</b> Configures the system for power efficiency. Limits boost frequency available to cores and restricts DF P-States available in the system. <b>Maximum IO Performance Mode:</b> Sets up Date Fabric to maximize I/O sub-system performance.
<b>PCIe Speed PMM Control</b>	Reduce link speed when devices are idle. This option is set to <b>Auto</b> by default.
<b>EQ Bypass To Highest Rate</b>	Controls the ability to advertise Equalization Bypass to Highest Rate Support in TSxs sent prior to LinkUp=1r. This option is set to <b>Disabled</b> by default.
<b>DF PState Frequency Optimizer</b>	<b>Disabled:</b> Disabled the DP P-state CCLK effective frequency optimizer. <b>Enabled:</b> Enables the DP P-state CCLK effective frequency optimizer. This option is set to <b>Enabled</b> by default.
<b>DF PState Latency Optimizer</b>	<b>Disabled:</b> Disables the DP P-state latency optimizer. <b>Enabled:</b> Enables the DF P-state latency optimizer. This option is set to <b>Enabled</b> by default.
<b>DF CState</b>	This field enables(0xF)/disables(0x0) DF Cstate. This option is set to <b>Enabled</b> by default.
<b>Host System Management Port(HSMP)Support</b>	This value controls Host System Management Port (HSMP) interface to provide OS-level software with access to system management functions using a set of mail box registers. This option is set to <b>Enabled</b> by default.
<b>Boost FMax</b>	Boost Fmax. This option is set to <b>0 - Auto</b> by default.
<b>Algorithm Performance Boost Disable (ApbDis)</b>	Enables or disables the Algorithm Performance Boost Disable (ApbDis). This option is set to <b>Disabled</b> by default.
<b>Dynamic Link Width Management (DLWM)</b>	Reduces the xGMI link width between sockets from x16 to x8 (default), when no traffic is detected on the link. This option is set to <b>Unforced</b> by default.

## Creating a system and setup password

### Prerequisites

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

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

### Steps

1. To enter System Setup, press F2 immediately after turning on or rebooting your system.
2. On the **System Setup Main Menu** screen, click **System BIOS > System Security**.
3. On the **System Security** screen, verify that **Password Status** is set to **Unlocked**.
4. In the **System Password** field, type your system password, and press Enter or Tab.  
Use the following guidelines to assign the system password:
  - A password can have up to 32 characters.
A message prompts you to reenter the system password.
5. Reenter the system password, and click **OK**.
6. In the **Setup Password** field, type your setup password and press Enter or Tab.  
A message prompts you to reenter the setup password.
7. Reenter the setup password, and click **OK**.
8. Press Esc to return to the System BIOS screen. Press Esc again.

A message prompts you to save the changes.

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

## Using your system password to secure your system

### About this task

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

### Steps

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

### Next steps

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

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

## Deleting or changing system and setup password

### Prerequisites

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

### Steps

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

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

## Operating with setup password enabled

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

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

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

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

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

- If **System Password** is not set to **Enabled** and is not locked through the **Password Status** option, you can assign a system password. For more information, see the System Security Settings screen section.
  - You cannot disable or change an existing system password.
- NOTE:** You can use the password status option with the setup password option to protect the system password from unauthorized changes.

## Redundant OS Control

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

**Table 29. Redundant OS Control details**

Option	Description
<b>Redundant OS Location</b>	Enables you to select a backup disk from the following devices: <ul style="list-style-type: none"> <li>• <b>None</b></li> <li>• <b>Internal M.2 Drives</b></li> </ul>
<b>Redundant OS State</b>	<p><b>NOTE:</b> This option is disabled if <b>Redundant OS Location</b> is set to <b>None</b>.</p> <p>When set to <b>Visible</b>, the backup disk is visible to the boot list and OS. When set to <b>Hidden</b>, the backup disk is disabled and is not visible to the boot list and OS. This option is set to <b>Visible</b> by default.</p> <p><b>NOTE:</b> BIOS disables the device in hardware, so it is not accessed by the OS.</p>
<b>Redundant OS Boot</b>	<p><b>NOTE:</b> This option is disabled if <b>Redundant OS Location</b> is set to <b>None</b> or if <b>Redundant OS State</b> is set to <b>Hidden</b>.</p> <p>When set to <b>Enabled</b>, BIOS boots to the device specified in <b>Redundant OS Location</b>. When set to <b>Disabled</b>, BIOS preserves the current boot list settings. This option is set to <b>Enabled</b> by default.</p>

## Miscellaneous Settings

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

**Table 30. Miscellaneous Settings details**

Option	Description
<b>System Time</b>	Enables you to set the time on the system.
<b>System Date</b>	Enables you to set the date on the system.
<b>Time Zone</b>	Times offset from UTC.
<b>Daylight Savings Time</b>	Enables or disables the Daylight Savings Time option. This option is set to <b>Disabled</b> by default.
<b>Asset Tag</b>	Specifies the asset tag and enables you to modify it for security and tracking purposes.
<b>Keyboard NumLock</b>	Enables you to set whether the system boots with the NumLock enabled or disabled. This option is set to <b>On</b> by default. <p><b>NOTE:</b> This option does not apply to 84-key keyboards.</p>
<b>F1/F2 Prompt on Error</b>	Enables or disables the F1/F2 prompt on error. This option is set to <b>Enabled</b> by default. The F1/F2 prompt also includes keyboard errors.
<b>Load Legacy Video Option ROM</b>	Enables or disables the Load Legacy Video Option ROM option. This option is set to <b>Disabled</b> by default.

**Table 30. Miscellaneous Settings details (continued)**

Option	Description
<b>Dell Wyse P25/P45 BIOS Access</b>	Enables or disables the Dell Wyse P25/P45 BIOS Access. This option is set to <b>Enabled</b> by default.
<b>Power Cycle Request</b>	Enables or disables the Power Cycle Request. This option is set to <b>None</b> by default.

## iDRAC Settings 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 <https://www.dell.com/idracmanuals>.

## Device Settings

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

## Dell Lifecycle Controller

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

## Embedded system management

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

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

For more information about setting up the Dell Lifecycle Controller, configuring hardware and firmware, and deploying the operating system, see the Dell Lifecycle Controller documentation at <https://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 31. Boot Manager details**

Option	Description
<b>Continue Normal Boot</b>	The system attempts to boot to devices starting with the first item in the boot order. If the boot attempt fails, the system continues with the next item in the boot order until the boot is successful or no more boot options are found.
<b>One-shot UEFI Boot Menu</b>	Enables you to access boot menu, where you can select a one-time boot device to boot from.
<b>Launch System Setup</b>	Enables you to access System Setup.
<b>Launch Lifecycle Controller</b>	Exits the Boot Manager and invokes the Dell Lifecycle Controller program.

**Table 31. Boot Manager details (continued)**

Option	Description
<b>System Utilities</b>	Enables you to launch System Utilities menu such as Launch Diagnostics, BIOS update File Explorer, Reboot System.

## PXE boot

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

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

# Minimum to POST and system management configuration validation

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

## Topics:

- [Minimum configuration to POST](#)
- [Configuration validation](#)

## Minimum configuration to POST

The components listed below are the minimum configuration to POST:

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

## Configuration validation

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

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

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

**Table 32. Configuration validation error**

Error	Description	Possible cause and recommendations	Example
Config Error	A configuration element within the closest match contains something that is unexpected and does not match any Dell qualified configuration.	Wrong configuration	Config Error: Backplane cable CTRS_SRC_SA1 and BP-DST_SA1
		The element reported in HWC8010 errors are assembled incorrectly. Verify element (cable, risers, etc) placement in the system.	Config Error : SL Cable PLANAR_SL7 and CTRL_DST_PA1
Config Missing	iDRAC found a configuration element missing within the closest match detected.	Missing or damaged cable, device, or part	Config Missing: Float card front PERC/HBAadapter PERC/HBA
		Missing element or cable is reported in HWC8010 error logs. Install the missing element (cable, risers, etc).	Config Missing : SL cable PLANAR_SL8 and CTRL_DST_PA1

**Table 32. Configuration validation error (continued)**

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

## Error messages

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

**Table 33. Error message HWC8010**

Error code	HWC8010
Message	The System Configuration Check operation resulted in the following issue involving the indicated component type
Arguments	Riser, floating card (fPERClike BOSS), backplane, processor, cable, or other components
Detailed Description	The issue identified in the message is observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: <ol style="list-style-type: none"> <li>1. Disconnect the input power.</li> <li>2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.</li> </ol>
Category	System Health (HWC = Hardware Config)
Severity	Critical
Trap/EventID	2329

**Table 34. Error message HWC8011**

Error code	HWC8011
Message	The System Configuration Check operation resulted in multiple issues involving the indicated component type
Arguments	Riser, floating card (fPERClike BOSS), backplane, processor, cable, or other components
Detailed Description	Multiple issues are observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: <ol style="list-style-type: none"> <li>1. Disconnect the input power.</li> <li>2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.</li> </ol>
Category	System Health (HWC = Hardware Config)
Severity	Critical

# Installing and removing system components

## Topics:

- Safety instructions
- Before working inside your system
- After working inside your system
- Recommended tools
- Optional front bezel
- System cover
- Drive backplane cover
- Air shroud
- Cooling fan
- Drives
- Drive backplane
- Side wall brackets
- Cable routing
- PERC module
- System memory
- Processor and heat sink
- Expansion cards and expansion card risers
- Optional serial COM port
- BOSS-N1 module
- System battery
- Optional internal USB card
- Intrusion switch module
- Optional OCP card
- Power supply unit
- Trusted Platform Module
- System board
- LOM card and rear I/O board
- RIO card
- Tube clip
- Control panel

## 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 turned on may expose you to a risk of electric shock..

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

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

- i** **NOTE:** It is recommended that you always use an antistatic mat and antistatic strap while working on components inside the system.
- i** **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 <https://www.dell.com/idracmanuals>
- i** **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 <https://www.dell.com/idracmanuals>
- i** **NOTE:** For detailed information on cabling the PERC 11 cards, see the system-specific owner's manual at Installation and Service Manual available at <https://www.dell.com/poweredgemanuals>

## Before working inside your system

### Prerequisites

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

### Steps

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

## After working inside your system

### Prerequisites

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

### Steps

1. Replace the system cover.
2. If applicable, install the system into the rack.  
For more information, see the *Rail Installation Guide* relevant to your rail solutions at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals).
3. Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.

## Recommended tools

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

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

- Needle-nose pliers

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

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

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

**i** **NOTE:** For information about DC PSU cabling instructions, go to <https://www.dell.com/poweredgemanuals> > **Rack Servers** > XC Core XC7625 > **Select This Product** > **Documentation** > **Manuals and Documents** > *Cabling instructions for – 48 – 60 V DC power supply.*

## Optional front bezel

### Removing the front bezel

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

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Keep the bezel key handy.

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

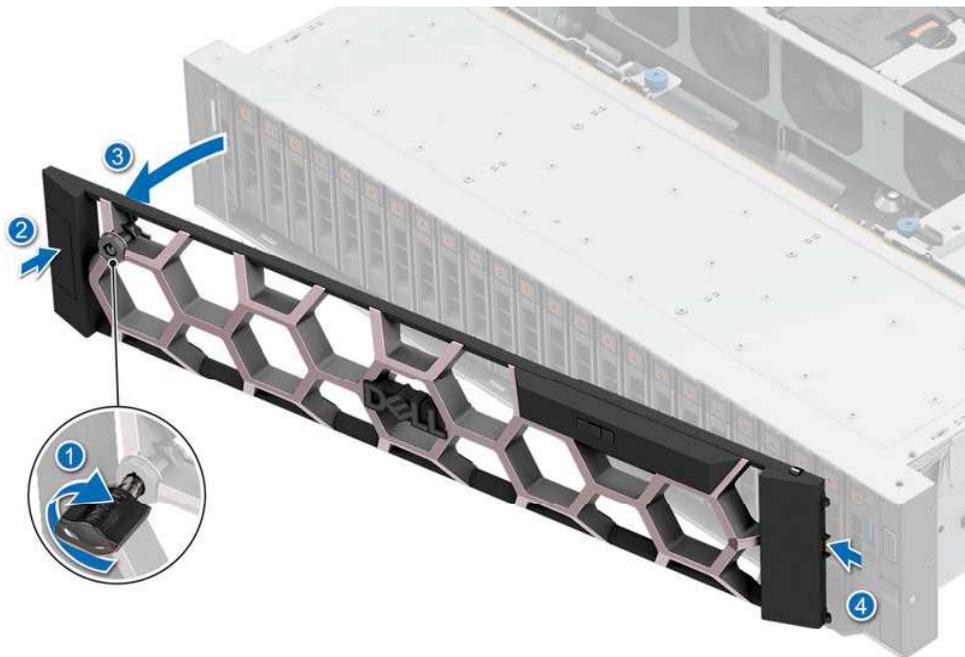


Figure 16. Removing the front bezel

## Installing the front bezel

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

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Locate and remove the bezel key.

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

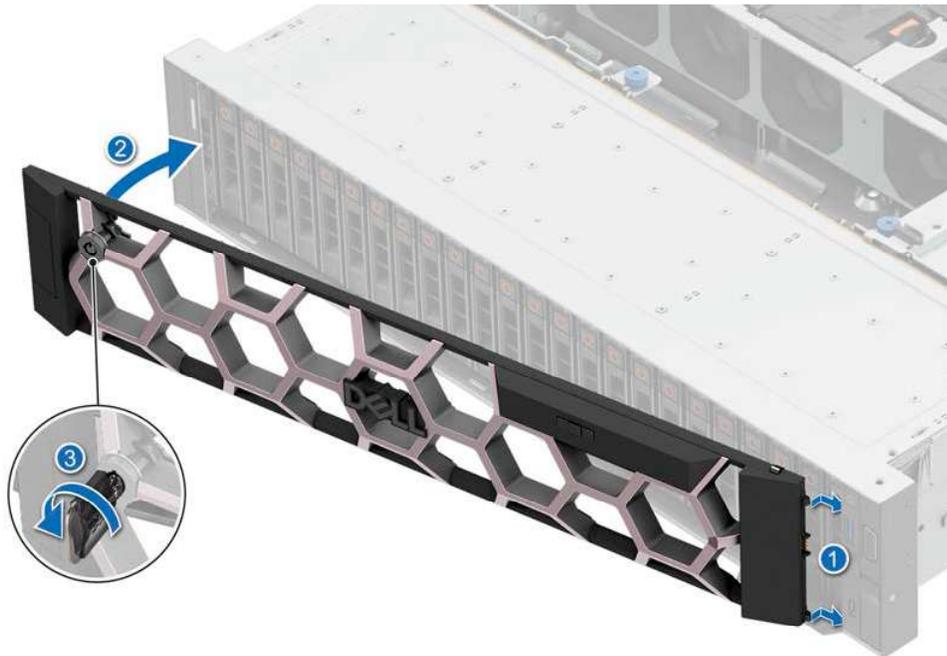


Figure 17. Installing the front bezel

## System cover

### Removing the system cover

#### Prerequisites

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

#### Steps

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



Figure 18. Removing the system cover

## Installing the system cover

### Prerequisites

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

### Steps

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



Figure 19. Installing the system cover

## Drive backplane cover

### Removing the drive backplane cover

#### Prerequisites

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

#### Steps

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

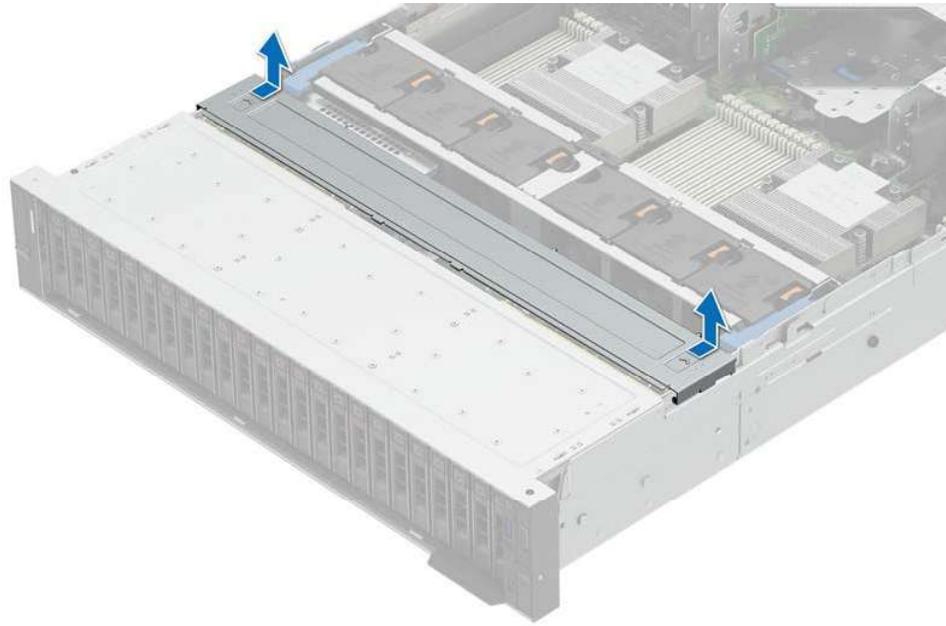


Figure 20. Removing the drive backplane cover

## Installing the drive backplane cover

### Prerequisites

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

### Steps

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

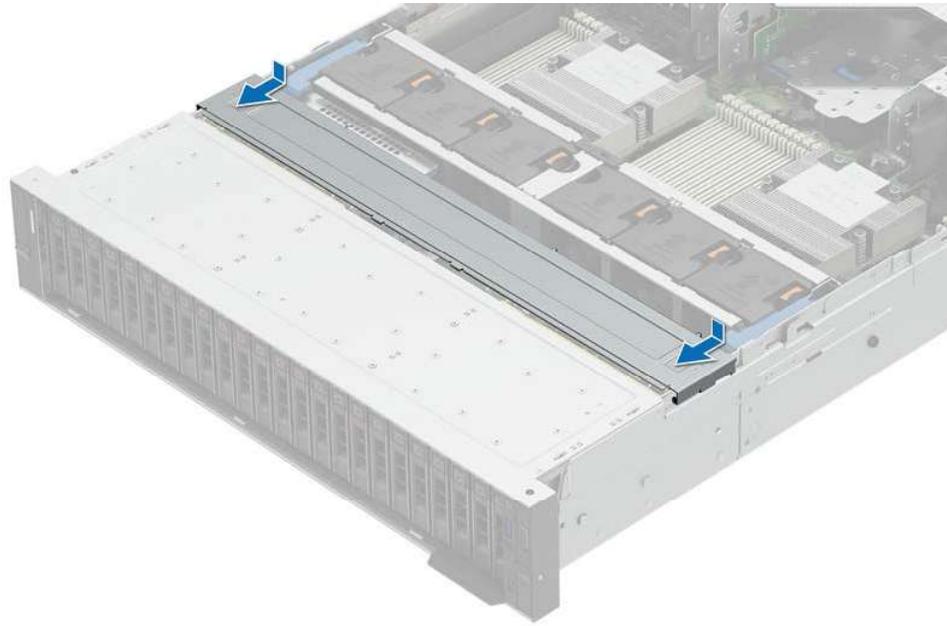


Figure 21. Installing the drive backplane cover

# Air shroud

## Removing the air shroud

### Prerequisites

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

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

### Steps

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

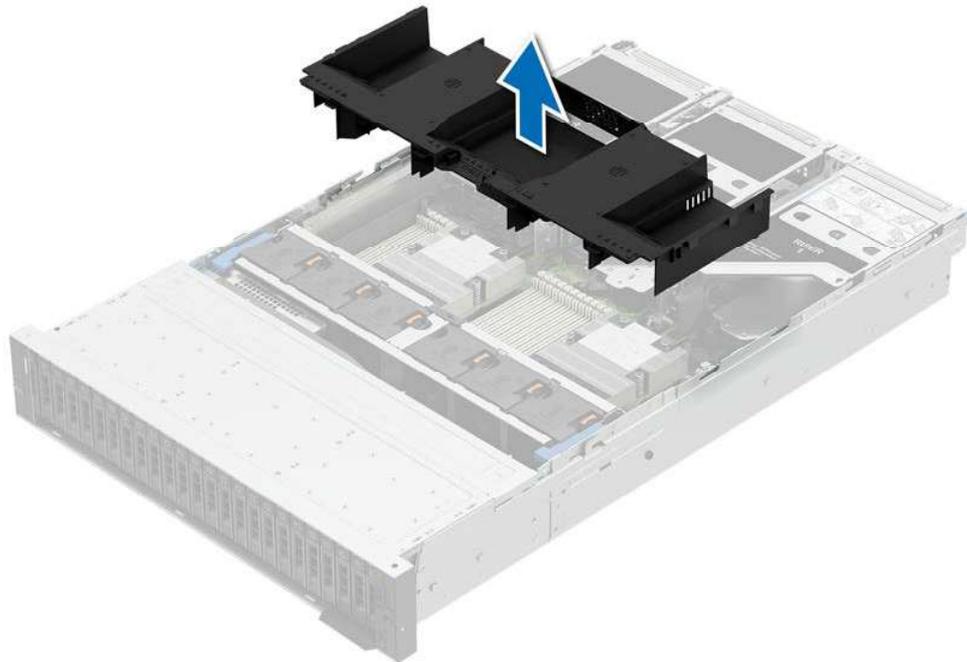


Figure 22. Removing the air shroud

## Installing the air shroud

### Prerequisites

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

### Steps

1. Align the slot on the air shroud with the standoff on the system.

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

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

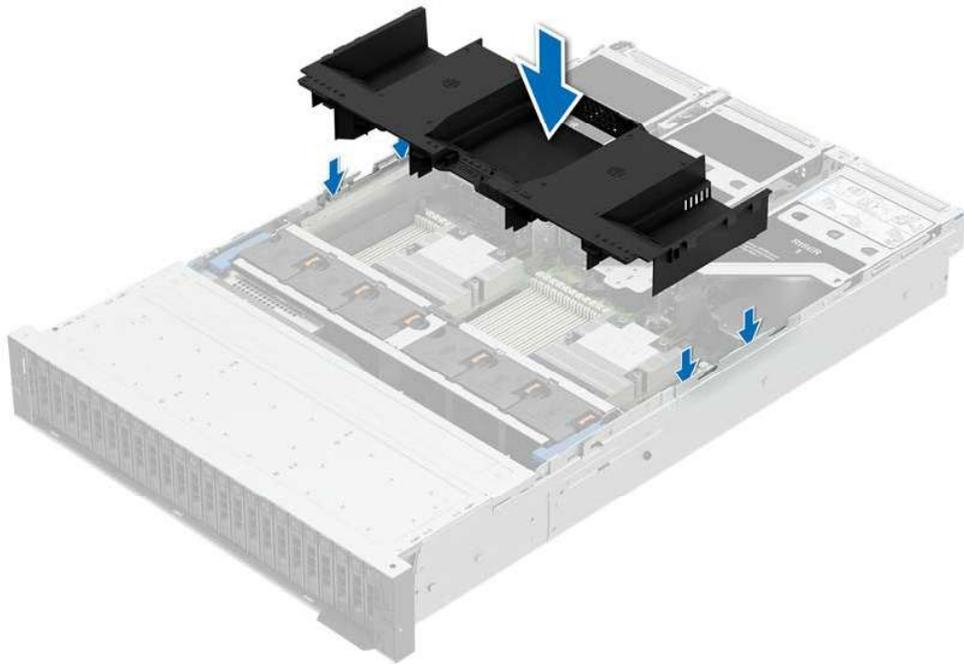


Figure 23. Installing the air shroud

## Removing the GPU air shroud top cover

### Prerequisites

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

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

### Steps

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

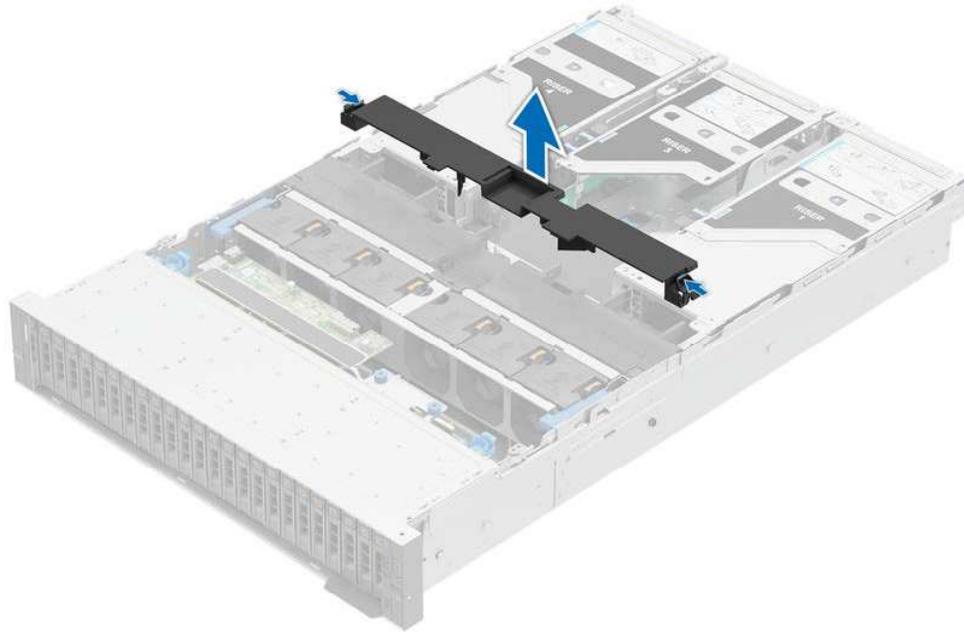


Figure 24. Removing the GPU air shroud top cover

## Installing the GPU air shroud top cover

### Prerequisites

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

### Steps

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

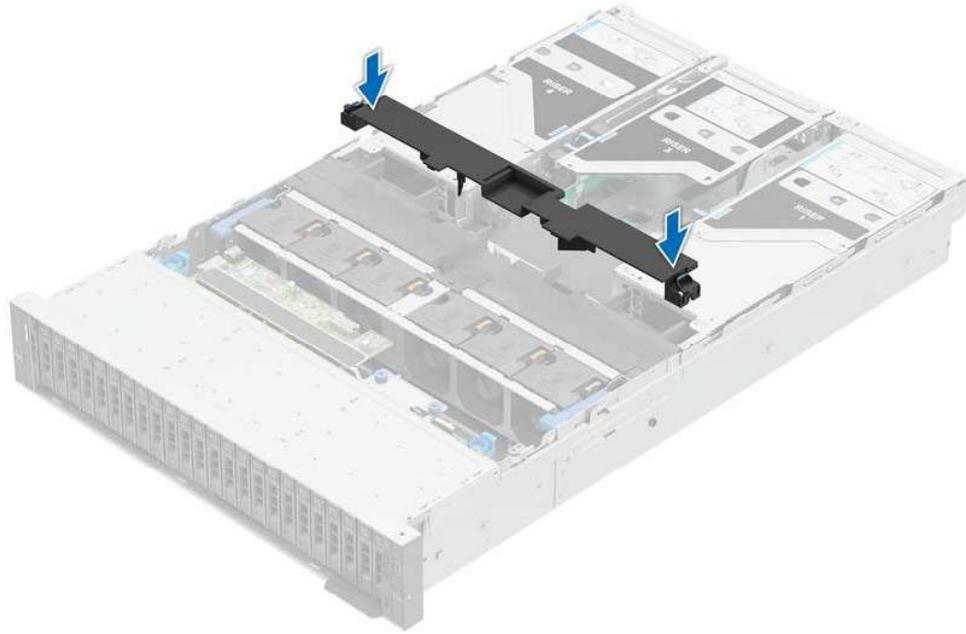


Figure 25. Installing the GPU air shroud top cover

## Removing the GPU air shroud filler

### Prerequisites

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

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

3. Remove the GPU air shroud top cover.

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

### Steps

Hold and lift the filler from the GPU air shroud.

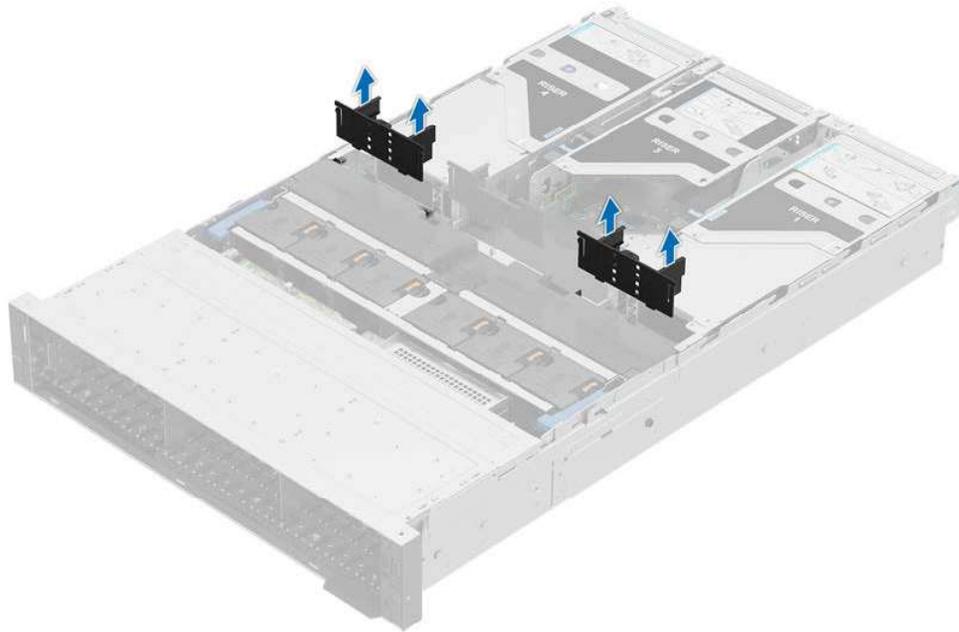


Figure 26. Removing the GPU air shroud filler

## Installing the GPU air shroud filler

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the GPU air shroud top cover](#).
4. If required, [remove the full length expansion card risers](#).

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

### Steps

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

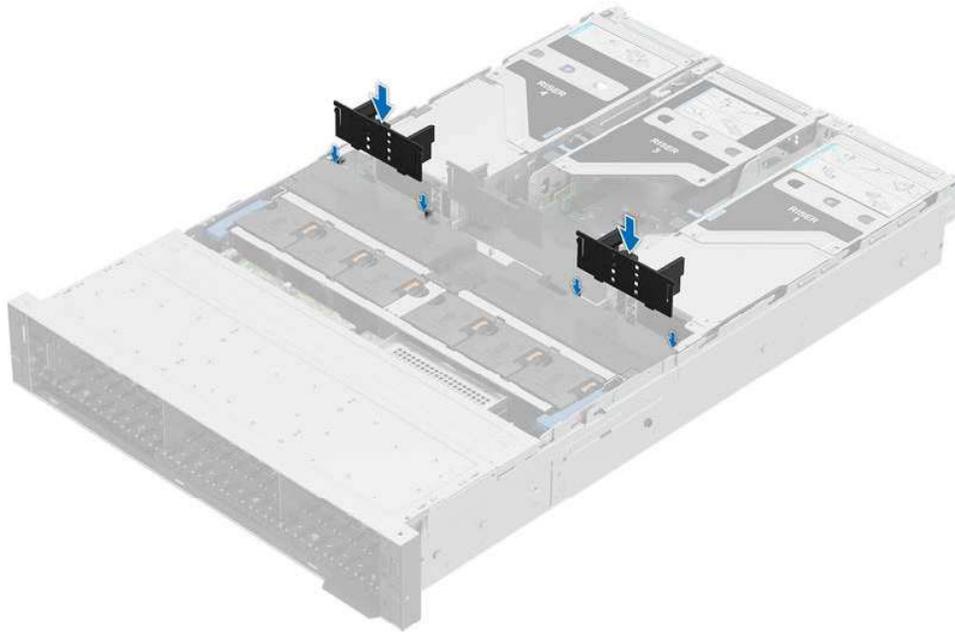


Figure 27. Installing the GPU air shroud filler

## Removing the GPU air shroud

### Prerequisites

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

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the GPU air shroud top cover](#).
4. [Remove the full length expansion card risers](#).

### Steps

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

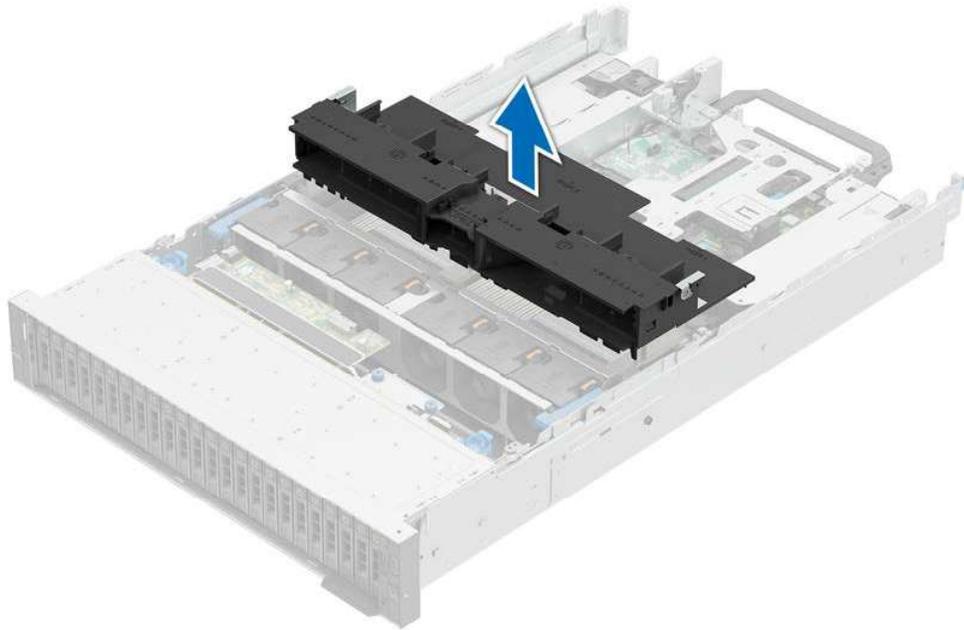


Figure 28. Removing the GPU air shroud

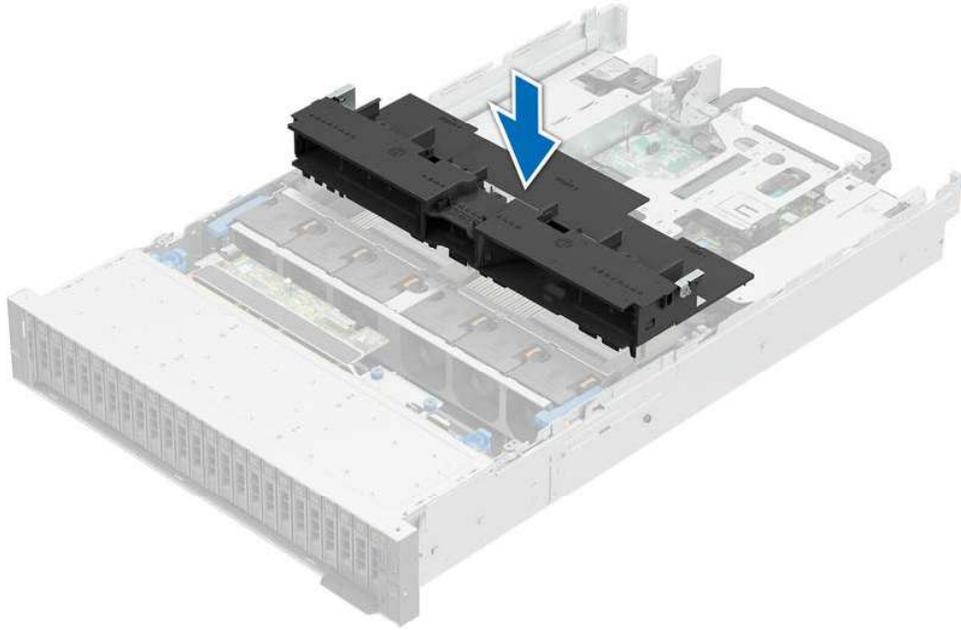
## Installing the GPU air shroud

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the GPU air shroud top cover](#).
4. [Remove the full length expansion card risers](#).

### Steps

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



**Figure 29. Installing the GPU air shroud**

#### **Next steps**

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

## **Cooling fan**

### **Removing the cooling fan cage assembly**

#### **Prerequisites**

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. If installed, [remove the air shroud](#) or [remove the GPU air shroud](#).

#### **Steps**

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

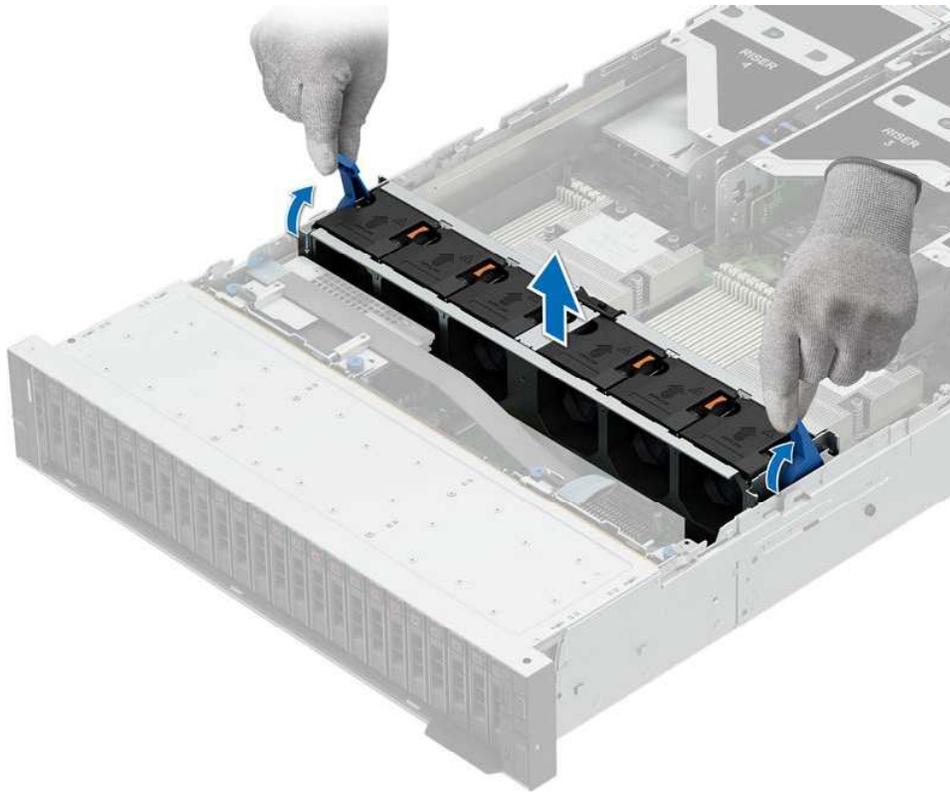


Figure 30. Removing the cooling fan cage assembly

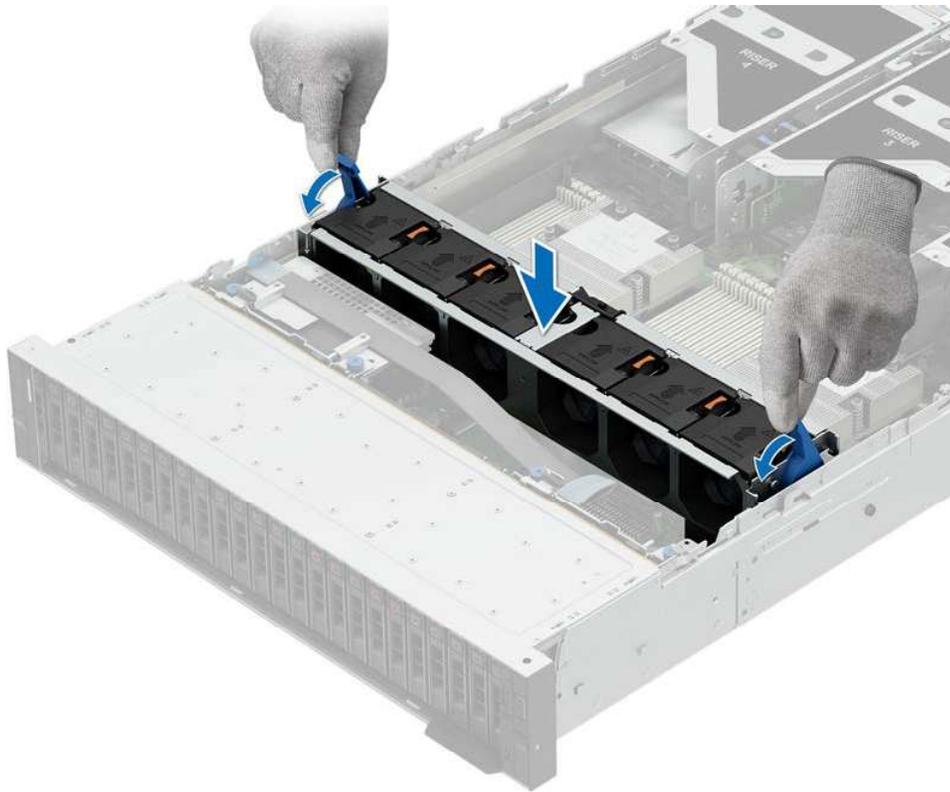
## Installing the cooling fan cage assembly

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).  
**CAUTION:** Ensure that the cables inside the system are correctly installed and retained by the cable retention bracket before installing the cooling fan cage assembly. Incorrectly installed cables may get damaged.
2. Follow the procedure listed in [Before working inside your system](#).
3. If installed, [remove the air shroud](#) or [remove the GPU air shroud](#).

### Steps

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



**Figure 31. Installing the cooling fan cage assembly**

#### Next steps

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

## Removing a cooling fan

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. If installed, [remove the air shroud](#) or [remove the GPU air shroud](#).

#### Steps

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

**NOTE:** The procedure to remove high-performance (silver grade), or high-performance (gold grade) fan is same.

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

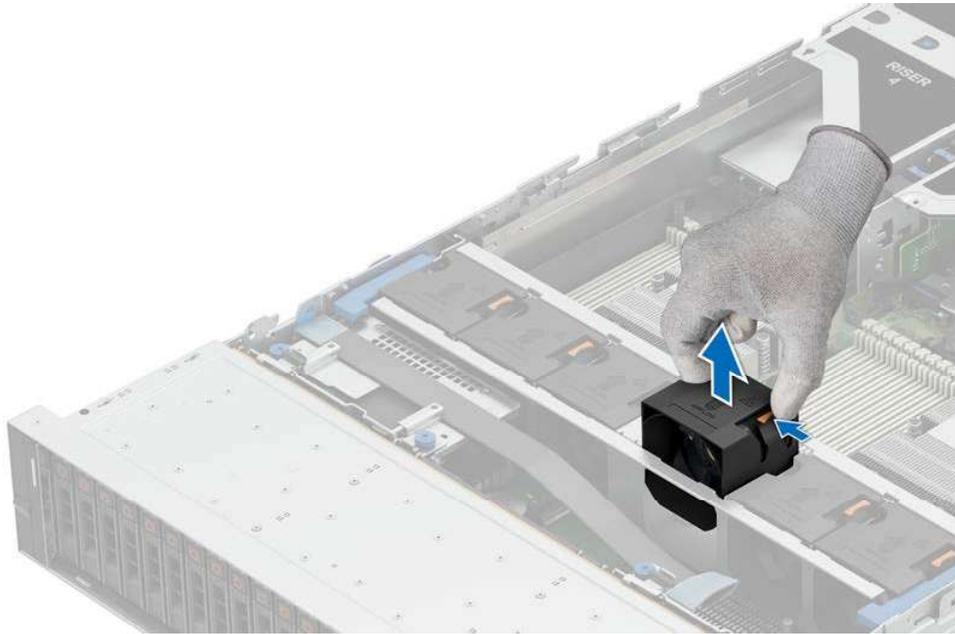


Figure 32. Removing a cooling fan

## Installing a cooling fan

### Prerequisites

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

### Steps

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

 **NOTE:** The procedure to install high-performance (silver grade), or high-performance (gold grade) fan is same.

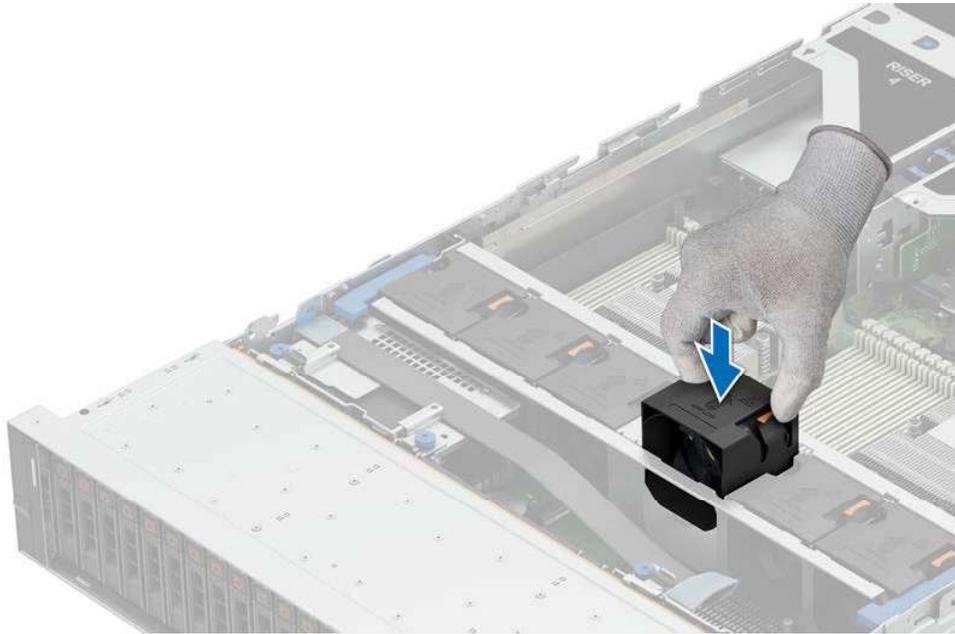


Figure 33. Installing a cooling fan

## Drives

### Removing a drive blank

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).

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

#### Steps

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



Figure 34. Removing a drive blank

## Installing a drive blank

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).

### Steps

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

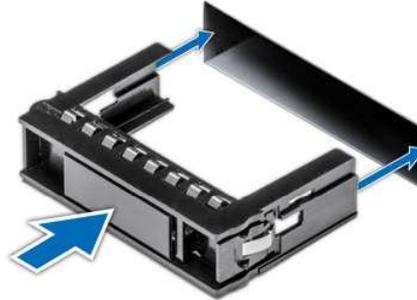


Figure 35. Installing a drive blank

## Removing the drive carrier

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).
3. Using the management software, prepare the drive for removal.

**NOTE:** 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. For more information about the drives installation or uninstallation requirements, see the operating system's user guide.

### 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 36. Removing a drive carrier

## Installing the drive carrier

### Prerequisites

- CAUTION:** Before removing or installing a drive while the system is running, see the documentation for the storage controller card to ensure that the host adapter is configured correctly to support drive removal and insertion.
  - CAUTION:** Combining SAS and SATA drives in the same RAID volume is not supported.
  - CAUTION:** When installing a drive, ensure that the adjacent drives are fully installed. Inserting a drive carrier and attempting to lock its handle next to a partially installed carrier can damage the partially installed carrier's shield spring and make it unusable.
  - CAUTION:** To prevent data loss, ensure that your operating system supports hot-swap drive installation. See the documentation supplied with your operating system.
  - NOTE:** When a replacement hot swappable drive is installed while the system is powered on, the drive automatically begins to rebuild. Ensure that the replacement drive is blank. Any data on the replacement drive is immediately lost once 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 in to 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 37. Installing a drive carrier

## Removing the drive from the drive carrier

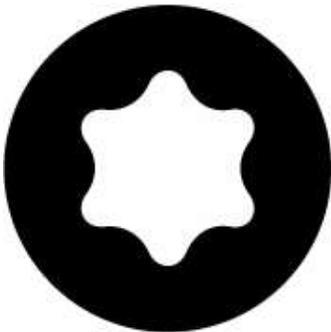
### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).

### Steps

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

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



2. Lift the drive out of the drive carrier.



Figure 38. Removing the drive from the drive carrier

## Installing the drive into the drive carrier

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).
3. [Remove the drive blank](#).

### Steps

1. Insert the drive into the drive carrier with the drive connector facing towards the rear of the carrier.
2. Align the screw holes on the drive with the 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 lbf-in.

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





Figure 39. Installing a drive into the drive carrier

## Identify a fault drive

Due to the replacement of sg\_ses with PERCCLI on the CVM, the drive failure indicator will now blink in green instead of amber on HBAs, such as the HBA 355. There is no other functional change.

## Drive backplane

### Drive backplane

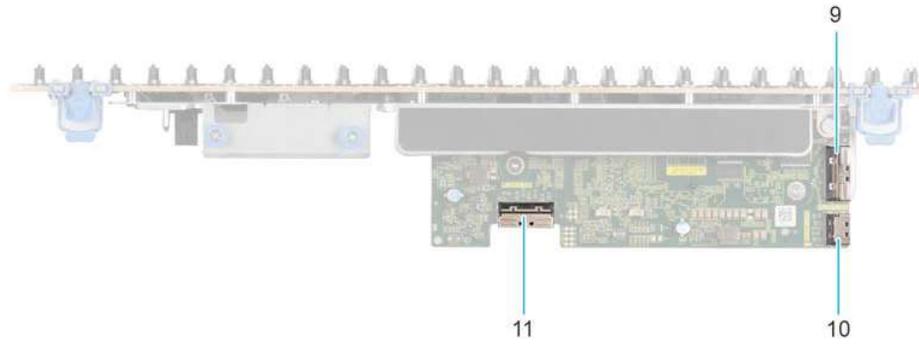
Depending on your system configuration, the drive backplanes that are supported are listed here:

Table 35. Supported backplane options

System	Supported hard drives options
XC Core XC7625	2.5-inch (x 24) SAS or SATA



Figure 40. 24 x 2.5-inch drive backplane (front view)



**Figure 41. 24 x 2.5-inch drive backplane (top view)**

- |                                     |  |
|-------------------------------------|--|
| 1. BP_CTRL                          | 2. BP_PWR_1 (backplane power and signal cable to system board) |
| 3. BP_DST_PA1 (PCIe/NVMe connector) | 4. BP_PWR_2 (backplane power and signal cable to system board) |
| 5. BP_DST_PB1 (PCIe/NVMe connector) | 6. BP_PWR_CTRL   |
| 7. BP_DST_PA2 (PCIe/NVMe connector) | 8. BP_DST_PB2 (PCIe/NVMe connector)                            |
| 9. BP_DST_SB1                       | 10. BP_SRC_SA2   |
| 11. BP_DST_SA1                      |  |

## Removing the drive backplane

### Prerequisites

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

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

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

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the backplane cover](#).
4. If installed, [remove the air shroud](#) or [remove the GPU air shroud](#).
5. [Remove all the drives](#).
6. [Remove the cooling fan cage assembly](#).
7. Observe and disconnect the drive backplane cables from the connector on the system board and backplane.

**NOTE:** Refer [cable routing](#) topic for more information.

### Steps

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

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

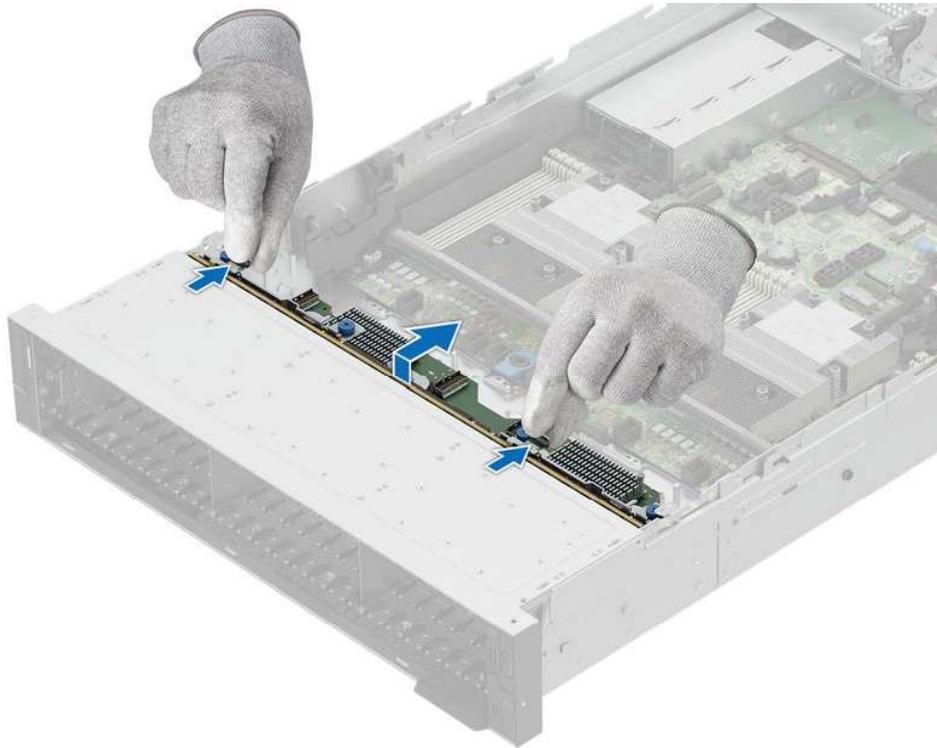


Figure 42. Removing the drive backplane

## Installing the drive backplane

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the backplane cover](#).
4. If installed, [remove the air shroud](#) or [remove the GPU air shroud](#).
5. [Remove all the drives](#).
6. [Remove the cooling fan cage assembly](#).
7. Observe and disconnect the drive backplane cables from the connector on the system board and backplane.
  - NOTE:** Refer [cable routing](#) topic for more information.
  - NOTE:** To avoid damaging the backplane, ensure to move the control panel cables from the cable routing clips before removing the backplane.
  - NOTE:** Route the cable properly when you replace it to prevent the cable from being pinched or crimped.

### Steps

1. Use the guides on the system as guides to align the slots on the backplane.
2. Insert the backplane into the guides and lower the backplane until the blue release tabs clicks into place.
3. Route the cables properly through the cable guide and connect the cables to the connector on the system board.

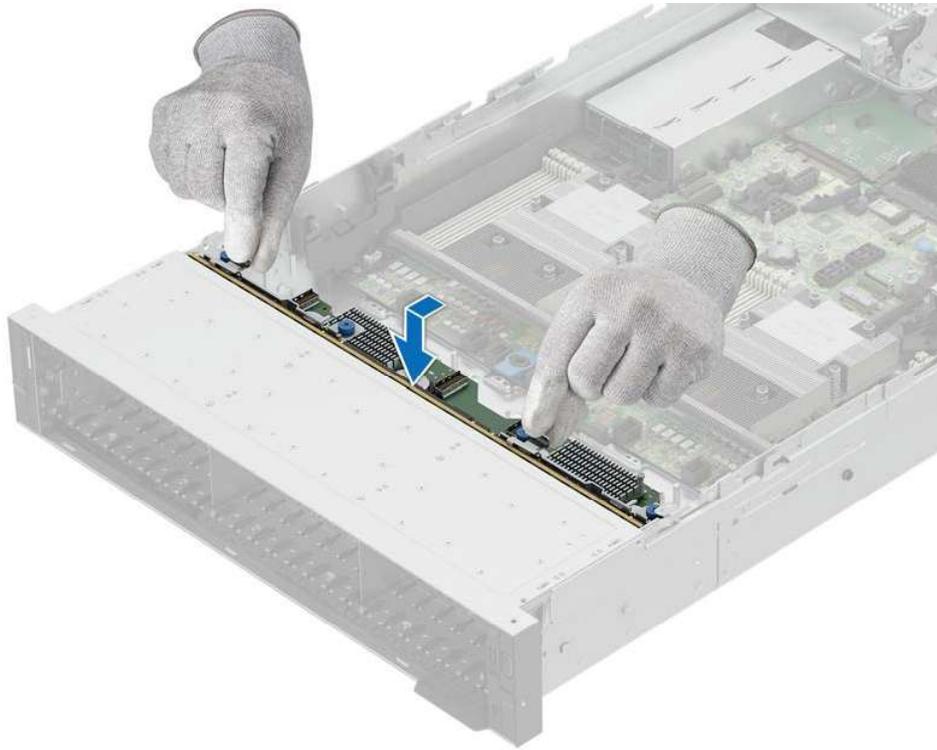


Figure 43. Installing the drive backplane

## Side wall brackets

### Removing the side wall bracket

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the backplane cover](#).
4. If installed, [remove the air shroud](#).
5. [Remove the cooling fan assembly](#).

**i** **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. Press the tab to release the side wall bracket cover.  
**i** **NOTE:** Unroute the cables to release them from the side wall bracket.
2. Release the bracket from the chassis, and lift it away from the system.

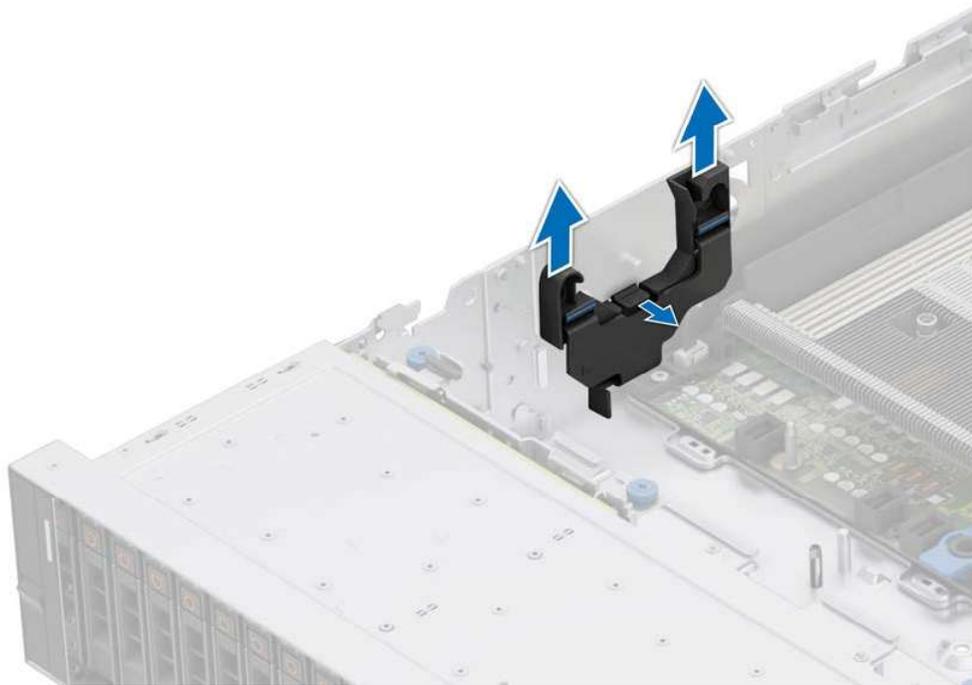


Figure 44. Removing the left side wall bracket

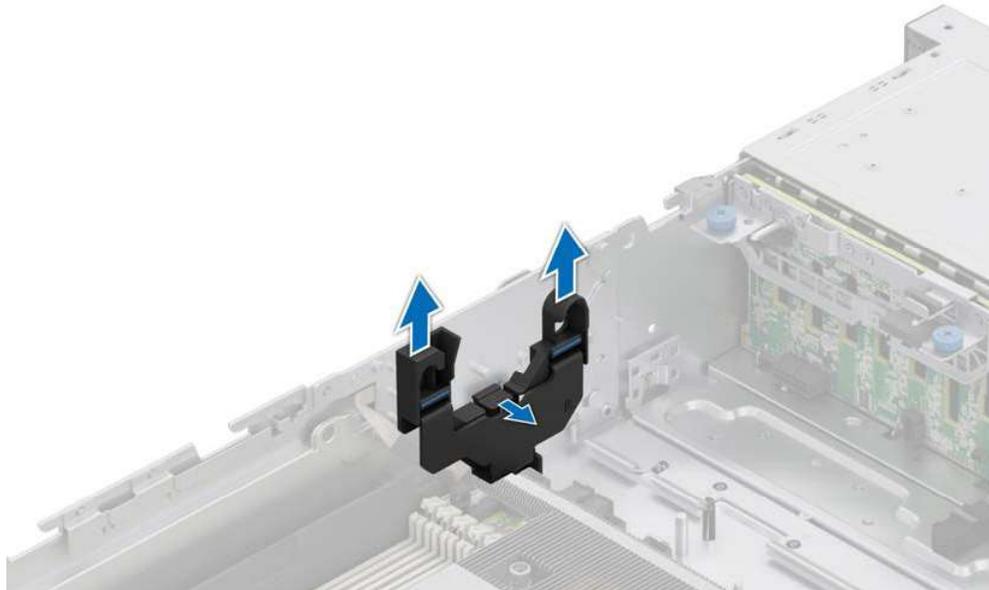


Figure 45. Removing the right side wall bracket

## Installing the side wall bracket

### Prerequisites

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

4. If installed, [remove the air shroud](#).

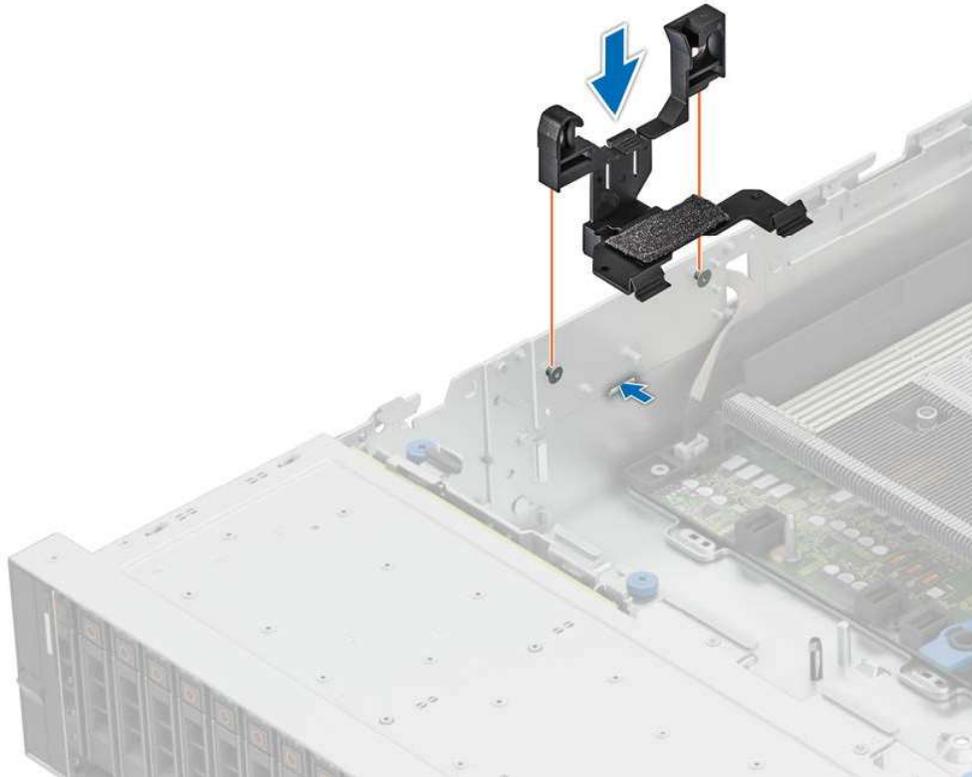
**i** **NOTE:** Ensure that you note the routing of the cables as you remove them from the system board. Route the cable properly when you replace it to prevent the cable from being pinched or crimped.

### Steps

1. Align the side wall bracket with the tabs on the chassis.
2. Press the side wall bracket with your thumbs until the bracket firmly clicks into place.

**i** **NOTE:** Route the cables through the side wall bracket.

3. Close the side wall bracket cover with your thumbs until the cover firmly clicks into place.



**Figure 46. Installing the left side wall bracket**

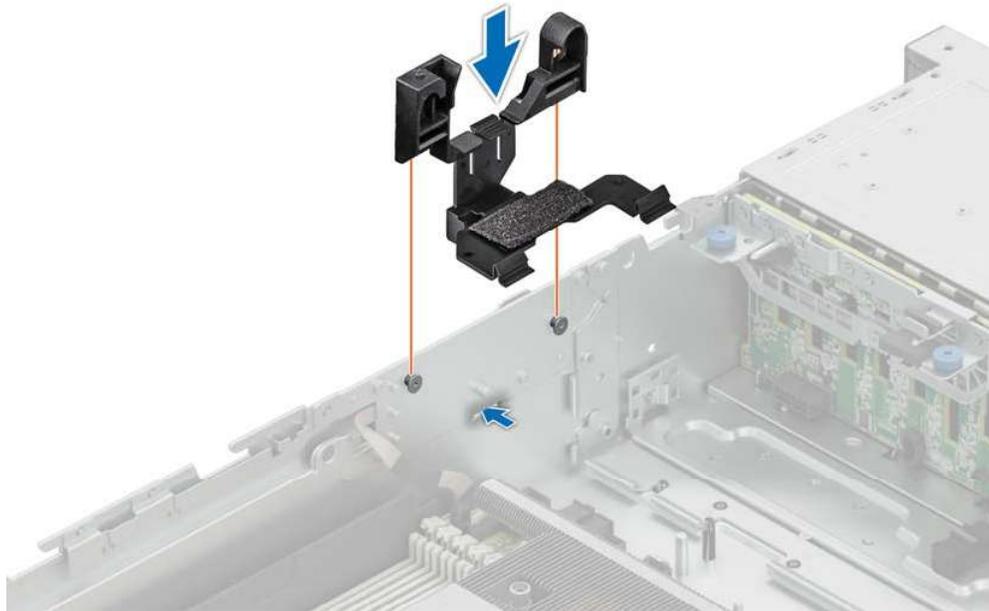


Figure 47. Installing the right side wall bracket

## Cable routing

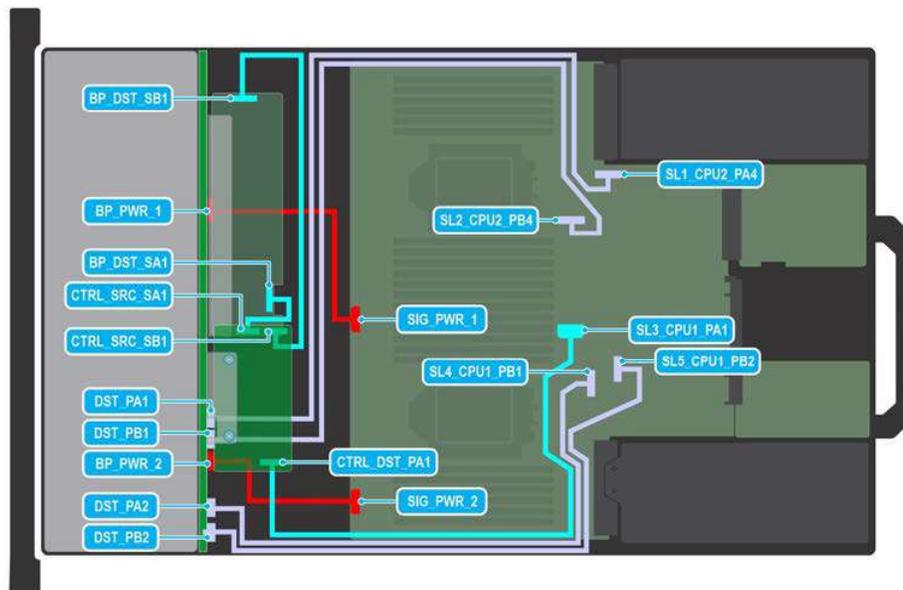


Figure 48. C7-3: 24 x 2.5-inch SAS4/SATA w/ 8 x Uni (w/ FPERC11)

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

**Table 36. 24 x 2.5-inch SAS4/SATA w/ 8 x Uni (w/ FPERC11)**

Order	From	To
1	SL1_CPU2_PA4 (signal connector on system board)	DST_PA1 (backplane signal connector)
2	SL2_CPU2_PB4 (signal connector on system board)	DST_PB1 (backplane signal connector)
3	SIG_PWR_1 (system board power connector)	BP_PWR_1 (backplane power connector)
4	SL3_CPU1_PA1 (signal connector on system board)	CTRL_DST_PA1 (fPERC input connector)
5	CTRL_SRC_SB1 (fPERC controller connector)	BP_DST_SB1 (backplane expander signal connector)
6	CTRL_SRC_SA1 (fPERC controller connector)	BP_DST_SA1 (backplane expander signal connector)
7	SL4_CPU1_PB1 (signal connector on system board)	DST_PA2 (backplane signal connector)
8	SL5_CPU1_PB2 (signal connector on system board)	DST_PB2 (backplane signal connector)
9	SIG_PWR_2 (system board power connector)	BP_PWR_2 (backplane power connector)

## PERC module

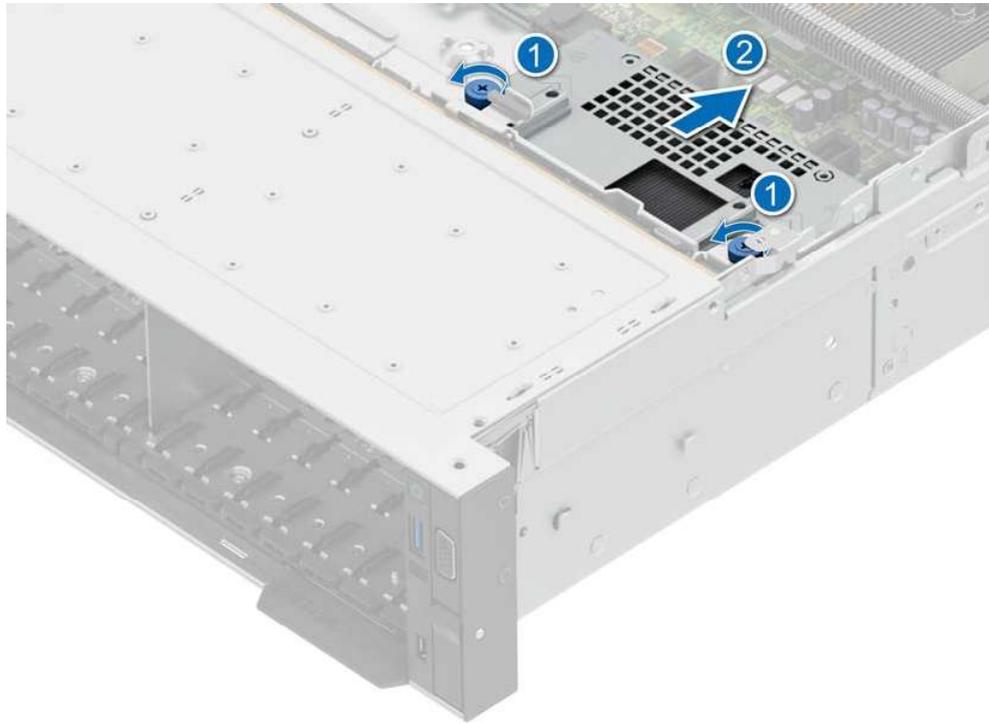
### Removing the front mounting front PERC module

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [remove the backplane cover](#).
4. If installed, [remove the air shroud](#).
5. Disconnect all the cables, observe the cable routing.

#### Steps

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



**Figure 49. Removing the front mounting front PERC module**

## Installing the front mounting front PERC module

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the backplane cover](#).
4. If installed, [remove the air shroud](#).
5. Route the cable properly to prevent the cable from being pinched or crimped.

### Steps

1. Align the front PERC module at an angle until the tray touches the slot in the system.
2. Slide and press the front PERC module connector with the connector on the drive backplane until firmly seated.
3. Using a Phillips #2 screwdriver, tighten the captive screws on the front PERC module.

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

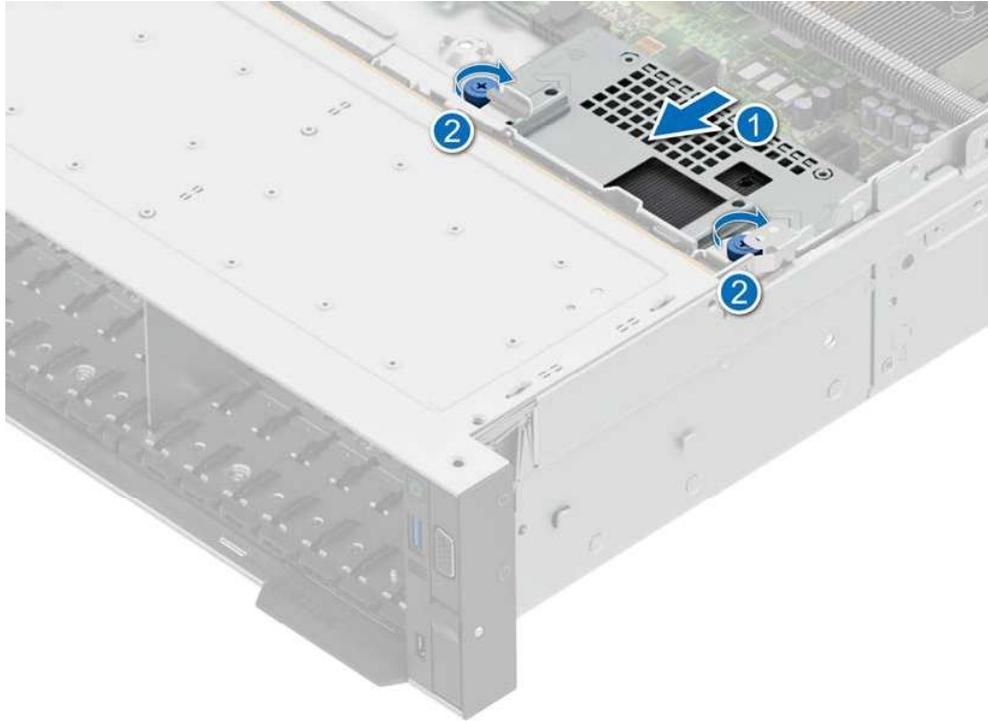


Figure 50. Installing the front mounting front PERC module

## Removing the adapter PERC module

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. If required, [remove the air shroud](#) or [remove the GPU air shroud](#).
4. If required, [remove the drive backplane cover](#).
5. [Remove the cooling fan cage assembly](#).
6. [Remove the expansion card riser](#).
7. Disconnect all the cables from the Adapter PERC card, observe the cable routing.

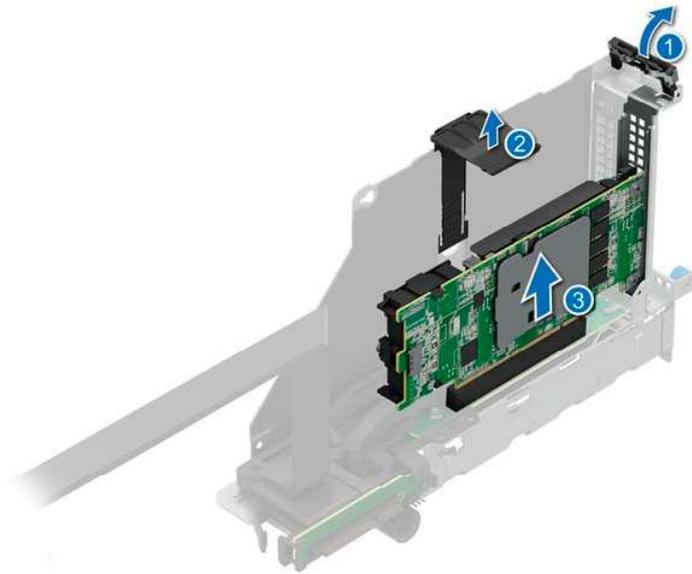
 **NOTE:** Refer [cable routing](#) topic for more information.

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

### Steps

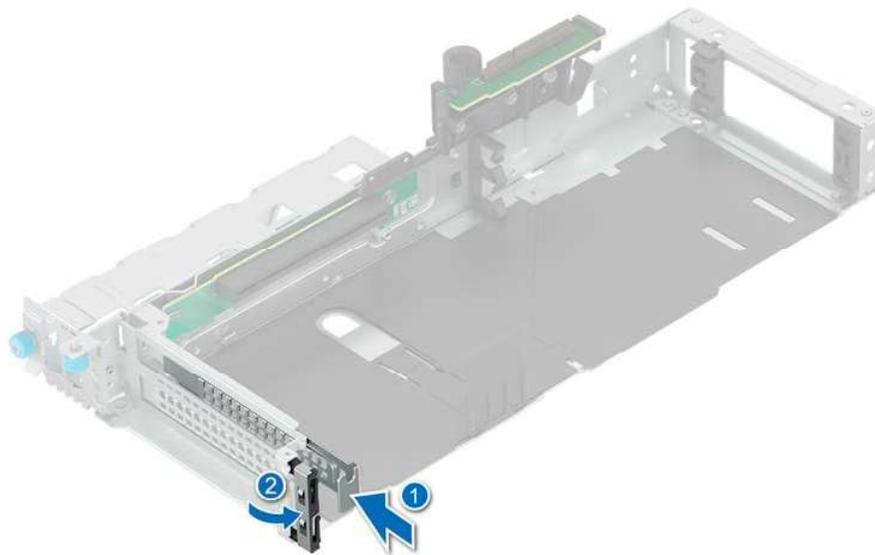
1. Tilt the expansion card retention latch lock to open.
2. Pull the card holder before removing the card from the riser.
3. Hold the Adapter PERC module by the edges, and pull the module from the expansion card connector on the riser.

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



**Figure 51. Removing the Adapter PERC module**

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



**Figure 52. Installing the filler bracket**

## Installing the adapter PERC module

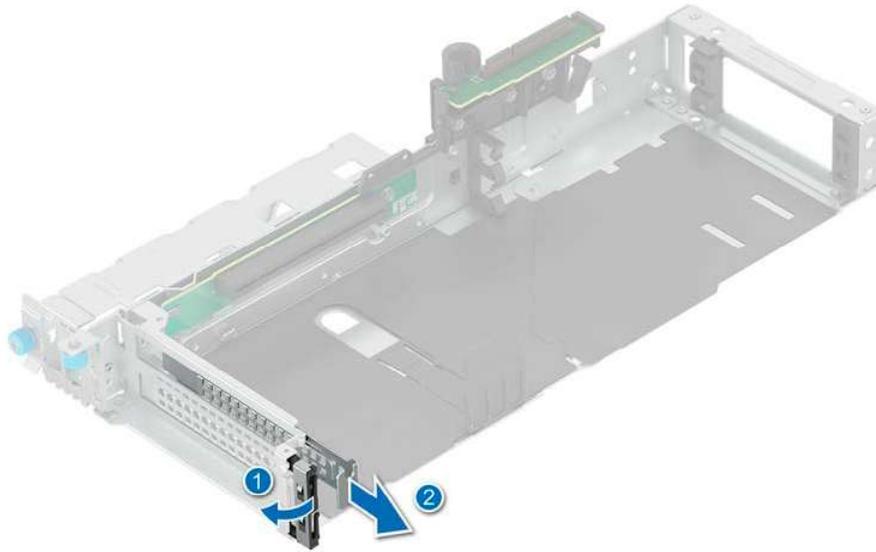
### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. If required, [remove the air shroud](#) or [remove the GPU air shroud](#).
4. If required, [remove the drive backplane cover](#).

5. Remove the cooling fan cage assembly.
6. Remove the expansion card riser.
7. Disconnect all the cables from the adapter PERC card, observe the cable routing.  
**i** **NOTE:** Refer [cable routing](#) topic for more information.
8. If a new APERC module has to be installed, unpack it and prepare the module for installation.  
**i** **NOTE:** For instructions, see the documentation accompanying the card.  
**i** **NOTE:** APERC module must be installed only in expansion card riser 1 or riser 2.

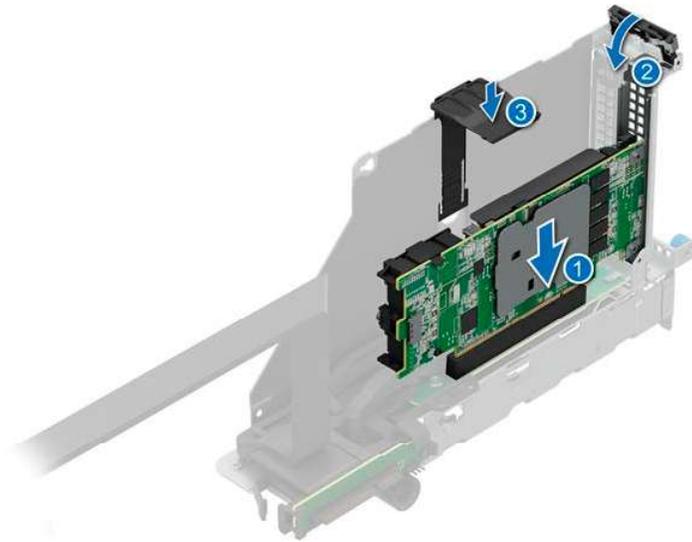
### Steps

1. Pull and lift up the expansion card retention latch lock to open.
2. If installed, remove the filler bracket.  
**i** **NOTE:** Store the filler bracket for future use. Filler brackets must be installed in empty expansion card slots to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.



**Figure 53. Removing the filler bracket**

3. Hold the Adapter PERC module by the edges, and align the module edge connector with the expansion card connector on the riser.
4. Insert the module into the expansion card connector until firmly seated.
5. Close the expansion card retention latch.
6. Push the card holder to hold the module in the riser.  
**i** **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.



**Figure 54. Installing the Adapter PERC module**

#### **Next steps**

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

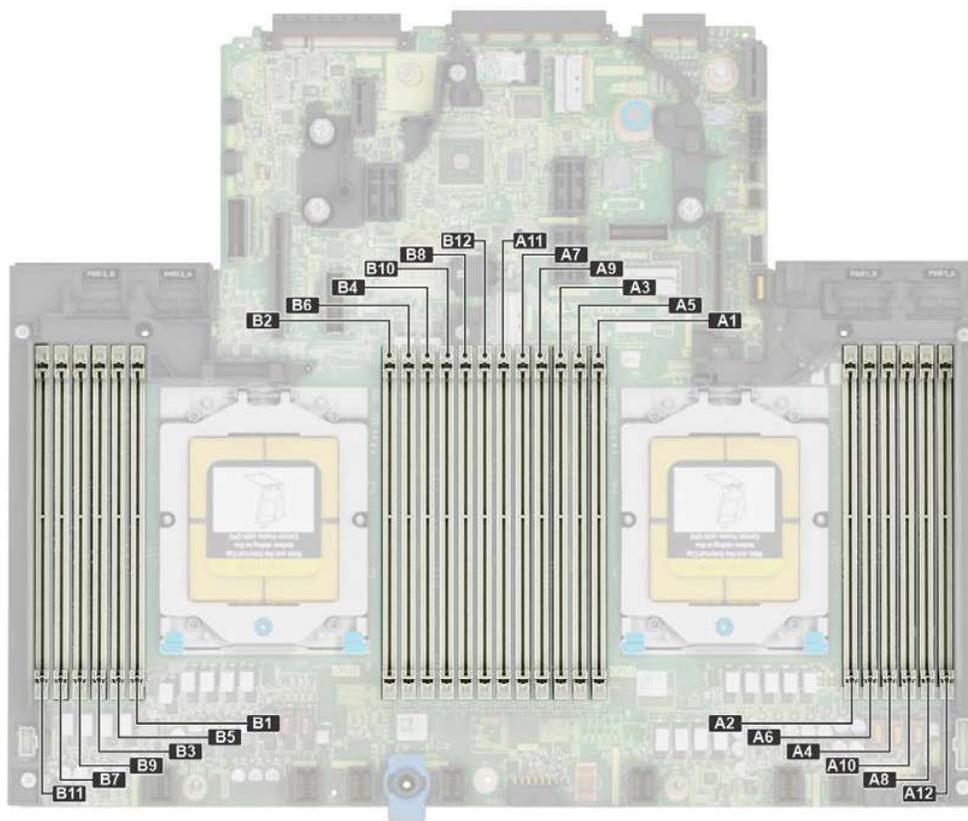
**i** **NOTE:** See [cable routing](#) for more information.

## **System memory**

### **System memory guidelines**

The XC Core XC7625 system supports DDR5 registered DIMMs (RDIMMs).

Your system memory is organized into twelve channels per processor (one memory sockets per channel), 12 memory sockets per processor and 24 memory sockets per system.



**Figure 55. Memory channels**

Memory channels are organized as follows:

**Table 37. Memory channels**

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F
Processor 1	Slot A1	Slot A5	Slot A3	Slot A9	Slot A7	Slot A11
Processor 2	Slot B1	Slot B5	Slot B3	Slot B9	Slot B7	Slot B11

**Table 38. Memory channels**

Processor	Channel G	Channel H	Channel I	Channel J	Channel K	Channel L
Processor 1	Slot A2	Slot A6	Slot A4	Slot A10	Slot A8	Slot A12
Processor 2	Slot B2	Slot B6	Slot B4	Slot B10	Slot B8	Slot B12

**Table 39. Supported memory matrix**

DIMM type	Rank	Capacity	DIMM and speed	Operating Speed on AMD EPYC™ processor
				1 DIMM per channel (DPC)
RDIMM	1 R	16 GB	DDR5, 4800 MT/s	4800 MT/s
	2 R	32 GB, 64 GB	DDR5, 4800 MT/s	4800 MT/s
	4 R	128 GB	DDR5, 4800 MT/s	4800 MT/s
	8 R	256 GB	DDR5, 4800 MT/s	4800 MT/s

**i** **NOTE:** DDR4 memory is not supported.

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

## General memory module installation guidelines

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

The memory bus operate at speeds up to 4800 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

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

The system supports 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 DDR5.
- Mixing different DIMM capacities is not supported.
- Mixing module types within a memory channel is not supported. All DIMMs populated must be RDIMM.
- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory module(s).
- Mixing different widths (x4 & x8) is not supported.
- Populate memory module sockets only if a processor is installed.
  - For single-processor systems, sockets A1 to A12 are available.
  - For dual-processor systems, sockets A1 to A12 and sockets B1 to B12 are available.
  - In Optimizer Mode, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

**Table 40. Memory population rules**

Processor	Memory population	Memory population information
Dual processor (Start with processor1. Processor 1 and processor 2 population should match)	A{1}, B{1}, A{2}, B{2}, A{3}, B{3}, A{4}, B{4}, A{5}, B{5}, A{6}, B{6}, A{7}, B{7}, A{8}, B{8}, A{9}, B{9}, A{10}, B{10}, A{11}, B{11}, A{12}, B{12}	1,2,4,6,8,10 and 12 DIMM per processor allowed.

- 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.
- Persistent memory will not be supported on Genoa based platforms.
- For best performance, populate all memory channels equally (12 DIMMs per CPU) using identical DIMMs.
- Unbalanced or odd memory configuration results in a performance loss and system may not identify the memory modules being installed, so always populate memory channels identically with equal DIMMs for best performance.
- Minimum recommended configuration is to populate 2, 4, 6, 8, 10, 12 equal memory modules per processor.
- Populate twelve equal memory modules per processor (one DIMM per channel) at a time to maximize performance.

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

## Removing a memory module

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. If installed, [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. Handle the memory modules by the card edges and avoid touching the components or metallic contacts on the memory module.

### Steps

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

3. Lift the memory module away from the system.

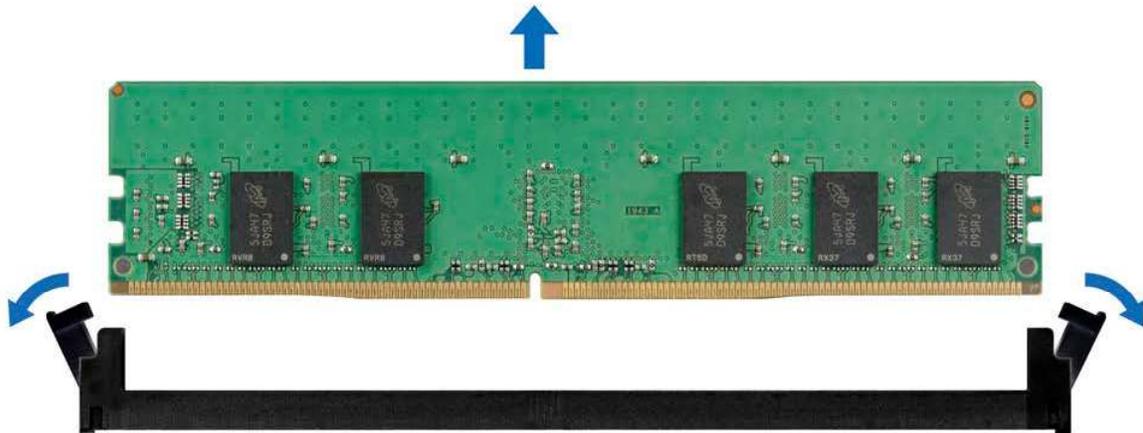


Figure 56. Removing a memory module

## Installing a memory module

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. If installed, [remove the air shroud](#).
4. If installed, remove a memory module blank.

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

**NOTE:** Retain the removed memory module blank(s) for future use.

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

### Steps

1. Locate the appropriate memory module socket.

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

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

**NOTE:** Ensure the memory socket ejectors are fully open.

**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.

**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.

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

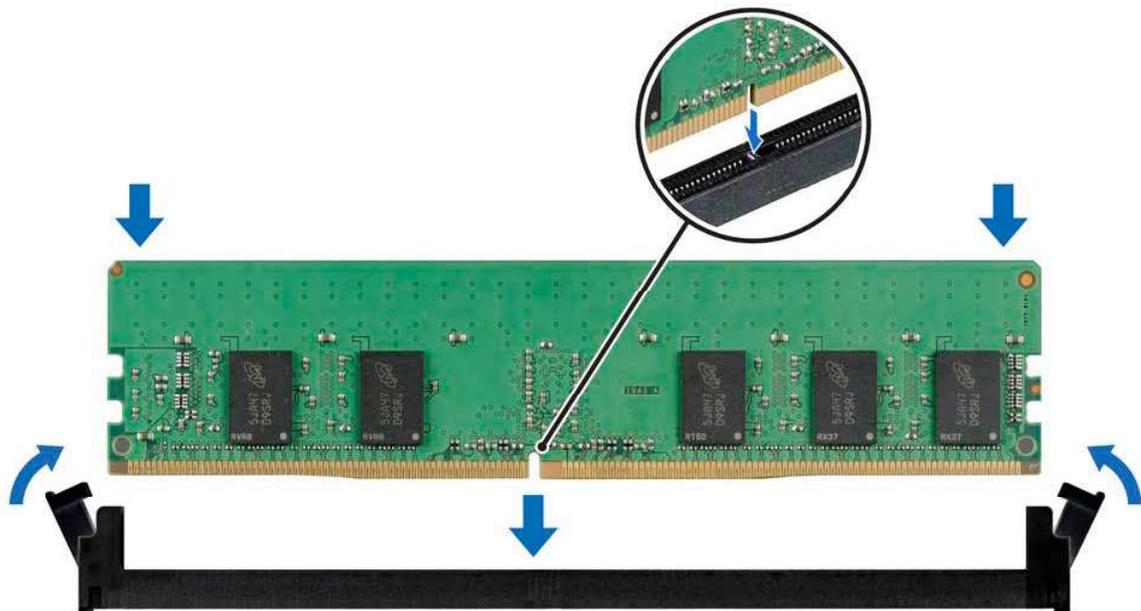


Figure 57. Installing a memory module

## Processor and heat sink

### Removing a heat sink

#### Prerequisites

- Follow the safety guidelines listed in the [Safety instructions](#).
- Follow the procedure listed in the [Before working inside your system](#).
- If installed, [remove the air shroud](#).

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

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

## Steps

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

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

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

2. Lift the heat sink from the system.

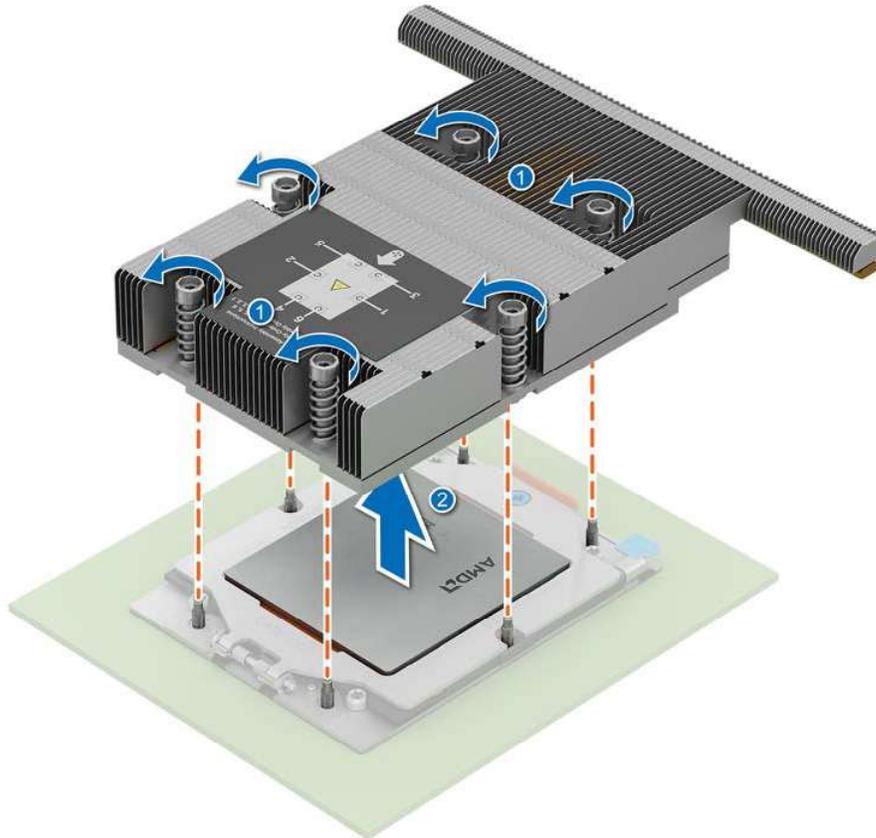


Figure 58. Removing a heat sink

## Removing the processor

### Prerequisites

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

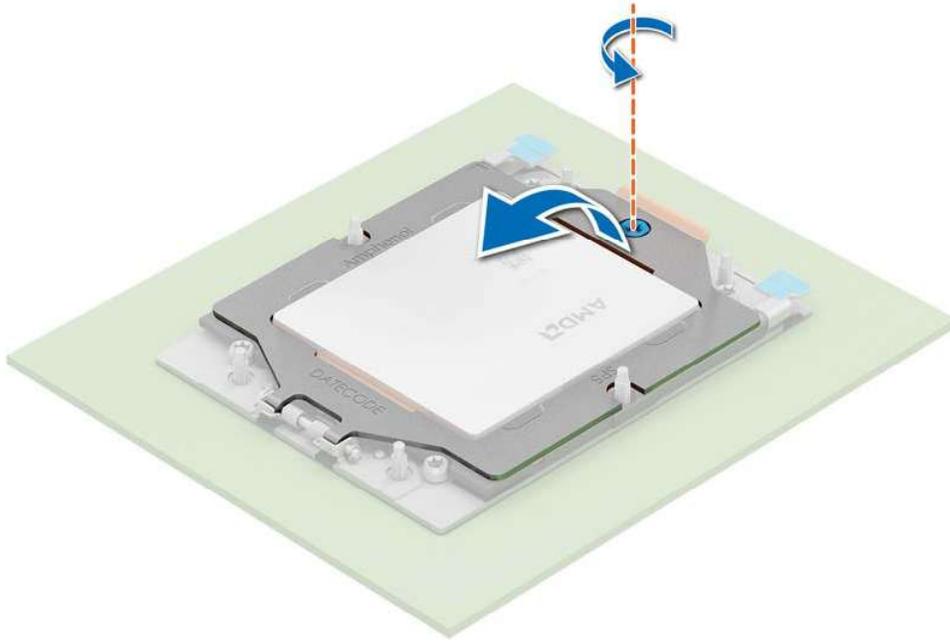
1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the heat sink](#).

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

## Steps

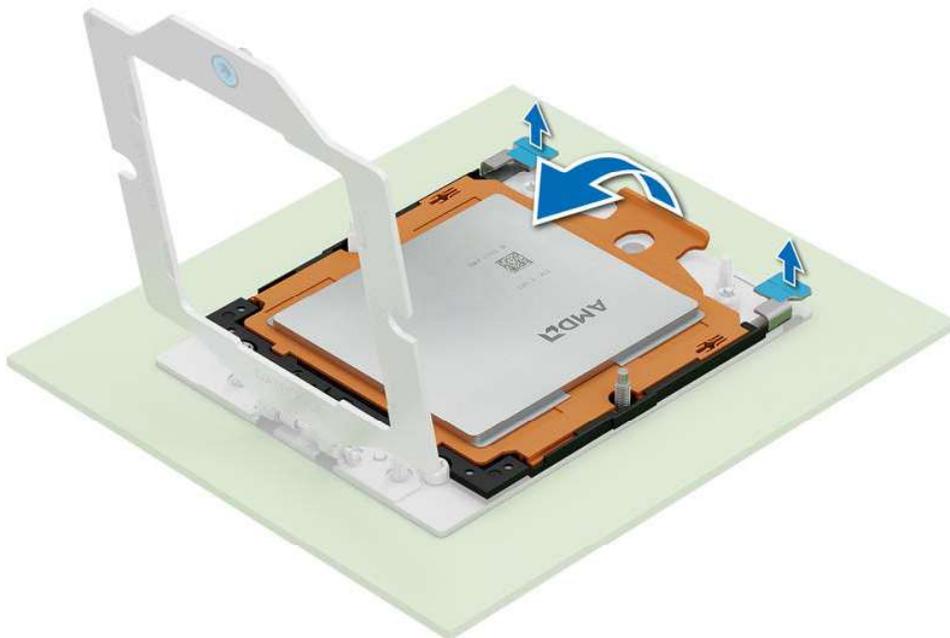
1. Using a Torx #T20 screwdriver, loosen the middle screw to release the retention frame. Hold and lift the retention frame upwards and rotate it slightly past the vertical position(105 degrees).

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



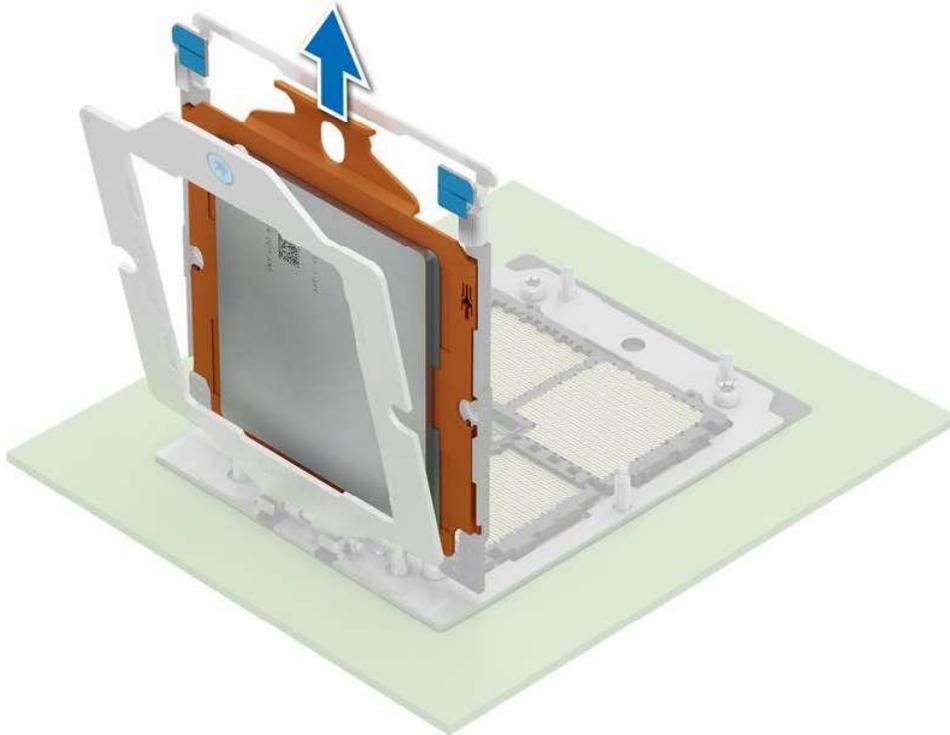
**Figure 59. Removing screws on the retention frame**

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



**Figure 60. Lifting the rail frame**

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



**Figure 61. Removing the carrier frame**

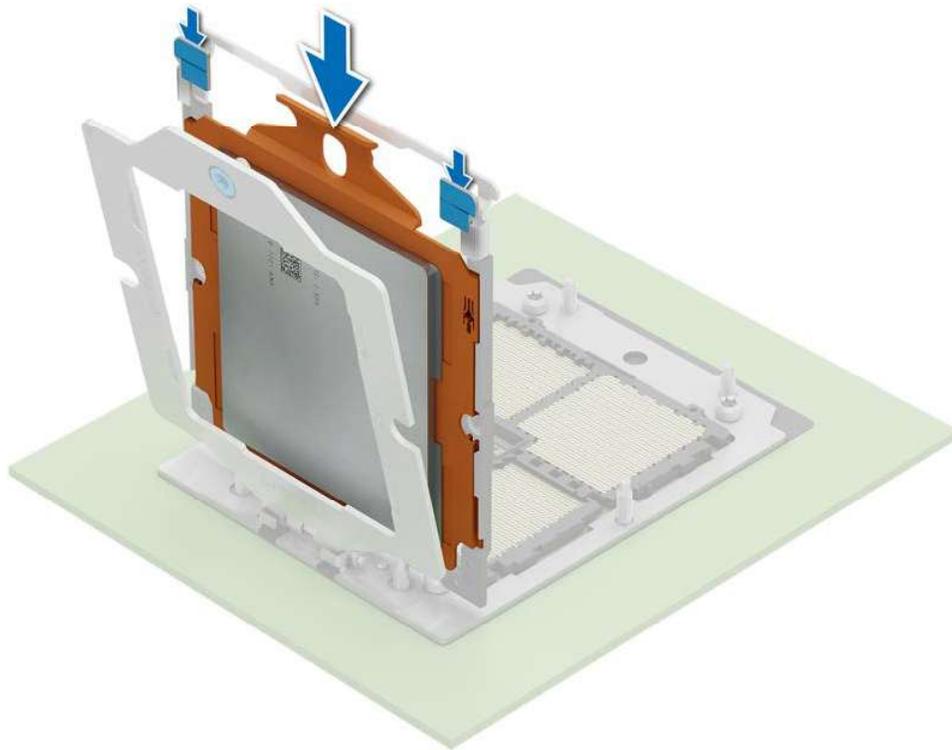
## Installing the processor

### Prerequisites

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

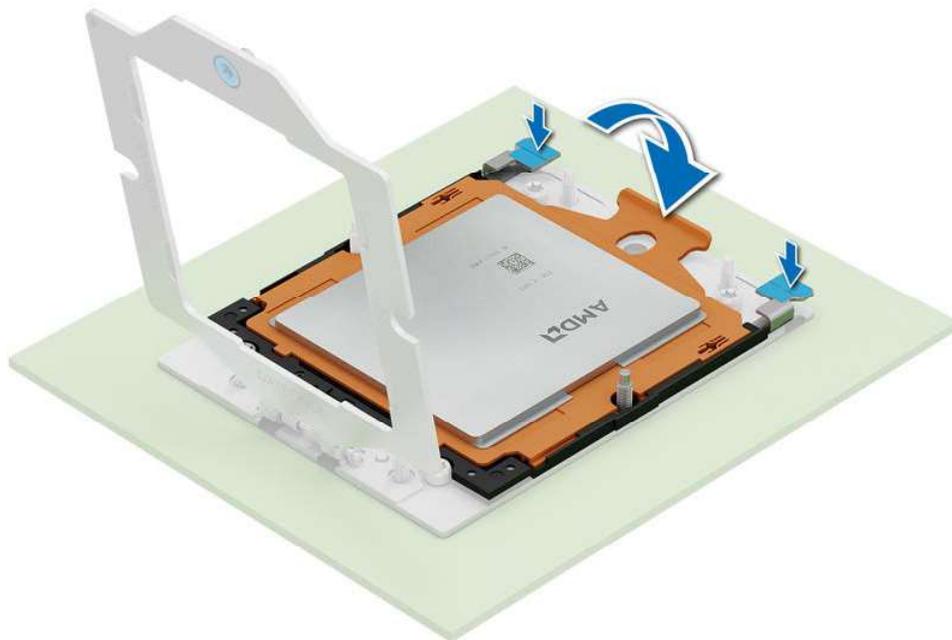
### Steps

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



**Figure 62. Placing the carrier frame into the rail frame**

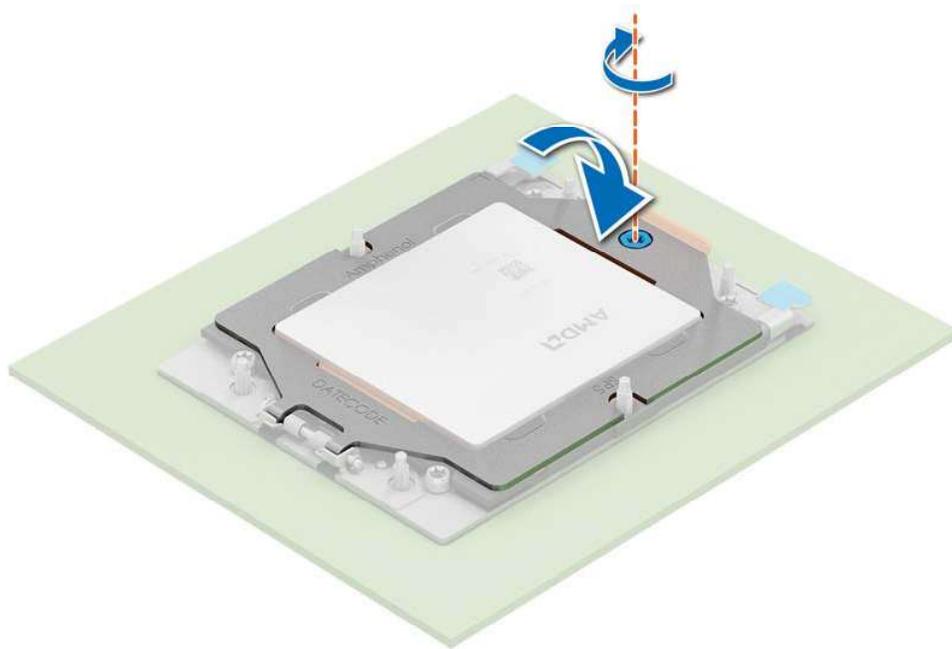
2. Holding both of blue tabs to push the rail frame down until the blue latches lock into place.



**Figure 63. Closing the rail frame**

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

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



**Figure 64. Securing the retention frame**

## Installing the heat sink

### Prerequisites

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

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

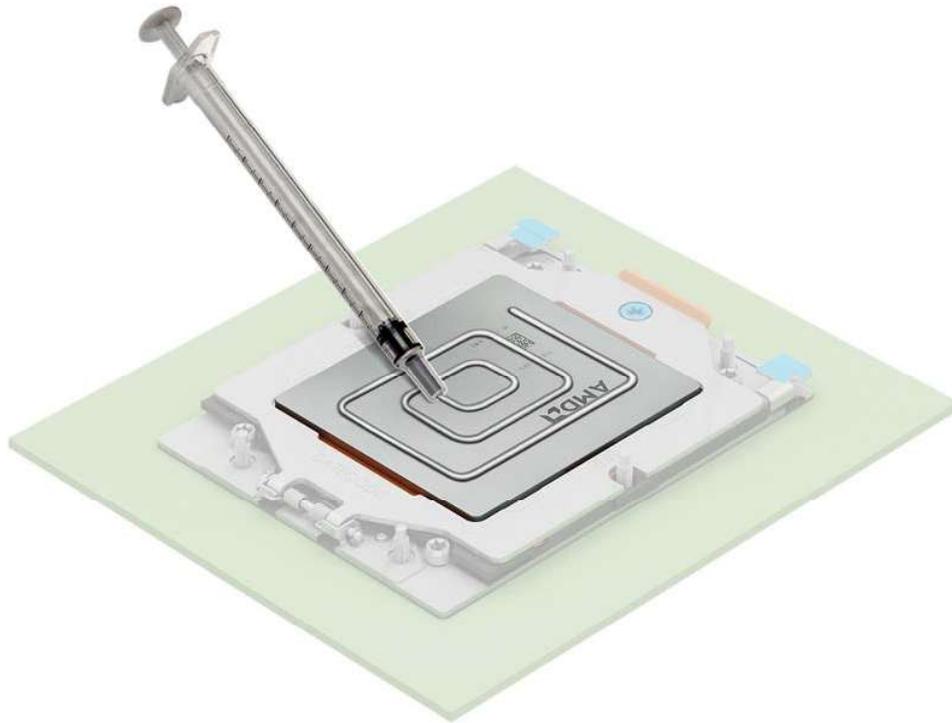
**NOTE:** The procedure to install standard and L-type heat sink is similar.

### Steps

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

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

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



**Figure 65. Applying thermal grease**

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

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

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

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

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

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

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

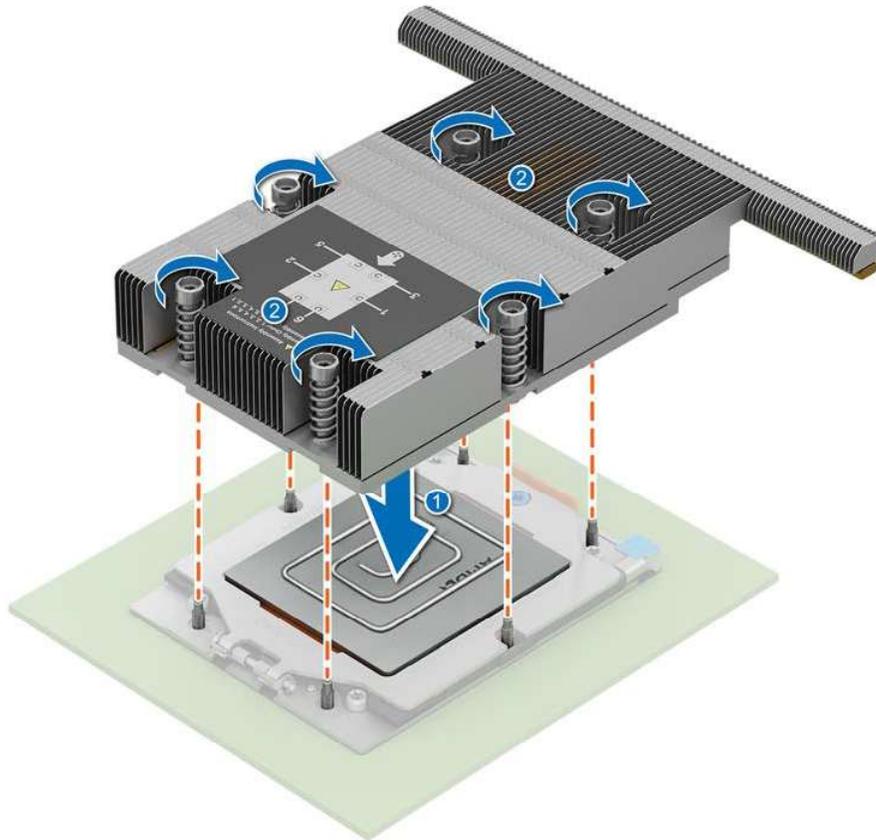


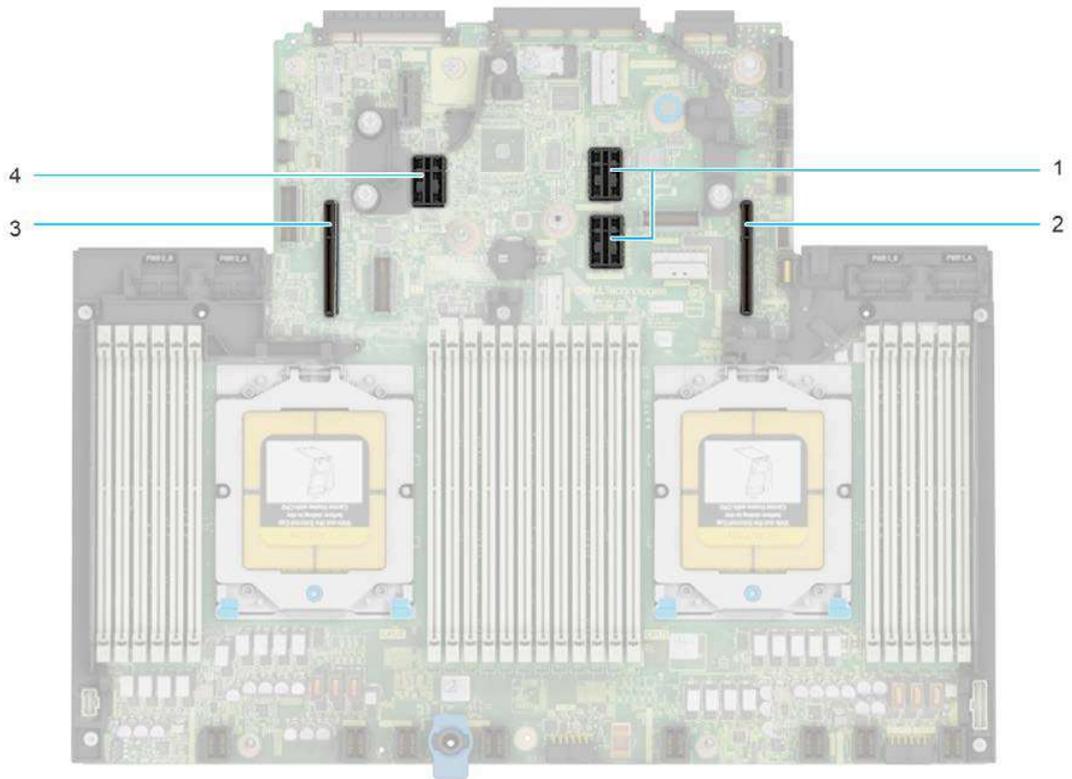
Figure 66. Installing the heat sink

## Expansion cards and expansion card risers

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

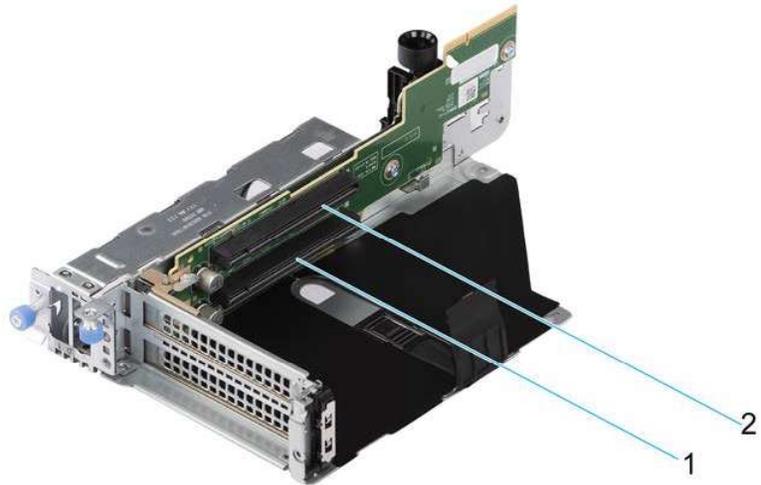
## Expansion card installation guidelines

The following table describes the supported expansion cards:



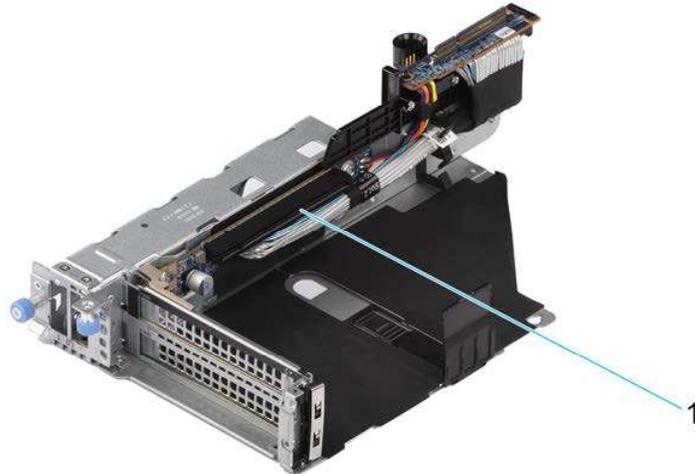
**Figure 67. Expansion card riser slot connectors**

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



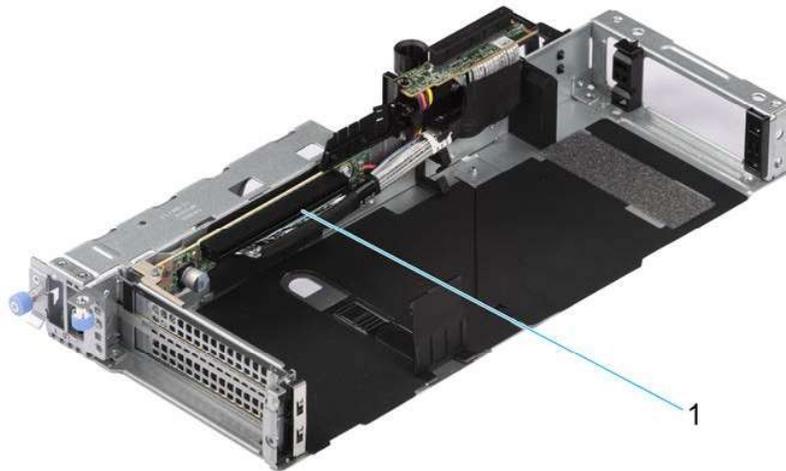
**Figure 68. Riser 1B**

1. Slot 1
2. Slot 2



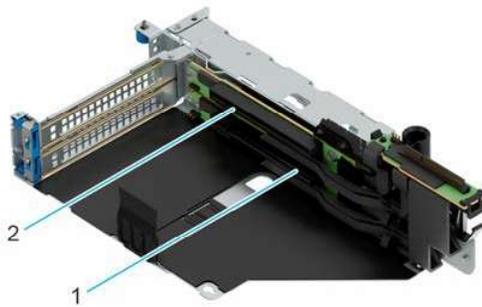
**Figure 69. Riser 1P HL**

1. Slot 2



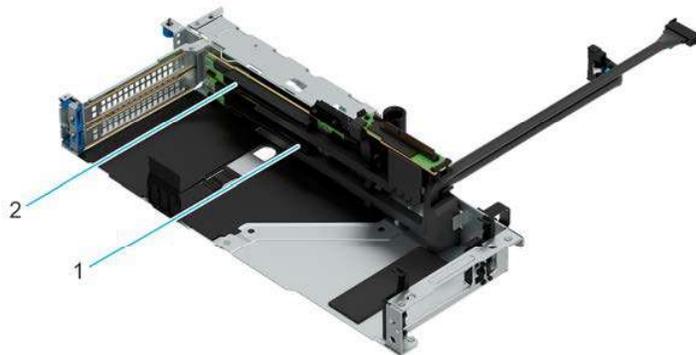
**Figure 70. Riser 1P FL**

- 1. Slot 2



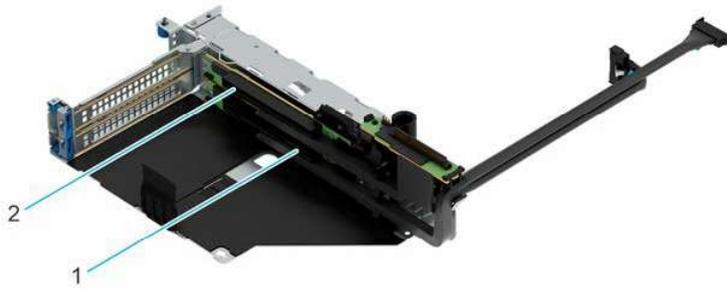
**Figure 71. Riser 1Q**

- 1. Slot 1
- 2. Slot 2



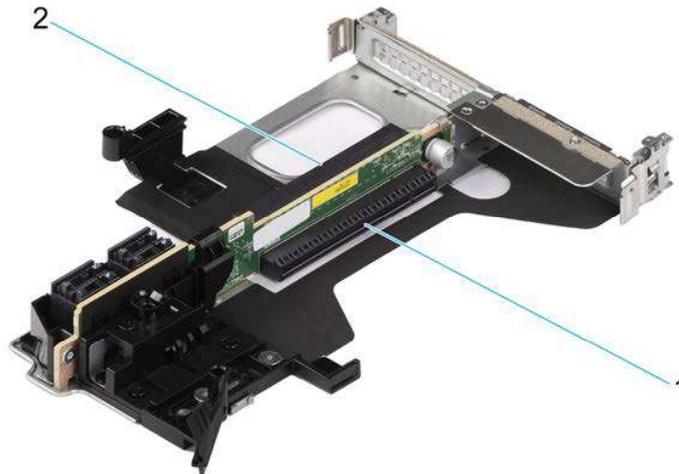
**Figure 72. Riser 1S FL**

- 1. Slot 1
- 2. Slot 2



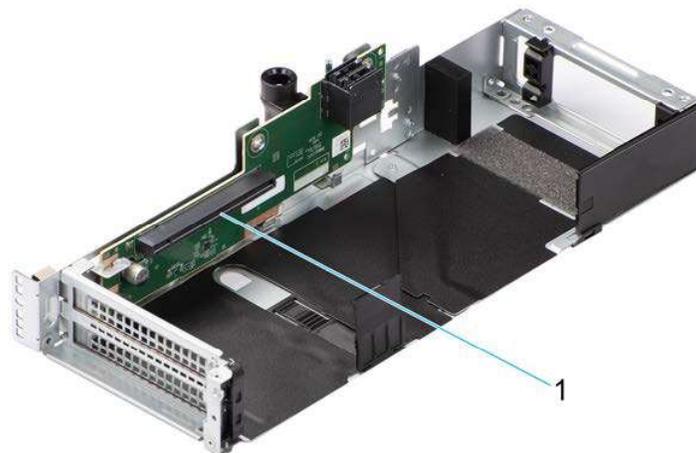
**Figure 73. Riser 1S HL**

- 1. Slot 1
- 2. Slot 2



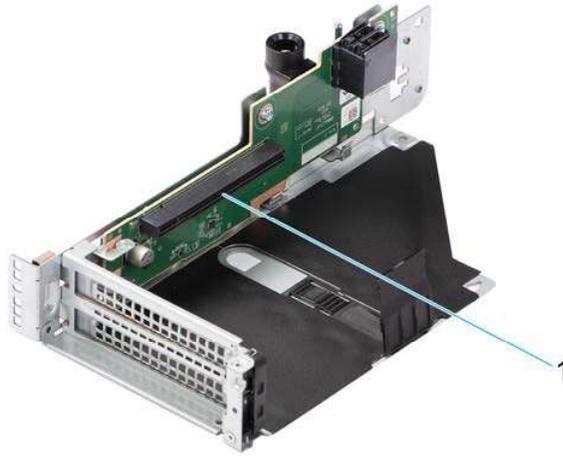
**Figure 74. Riser 2A**

- 1. Slot 6
- 2. Slot 3



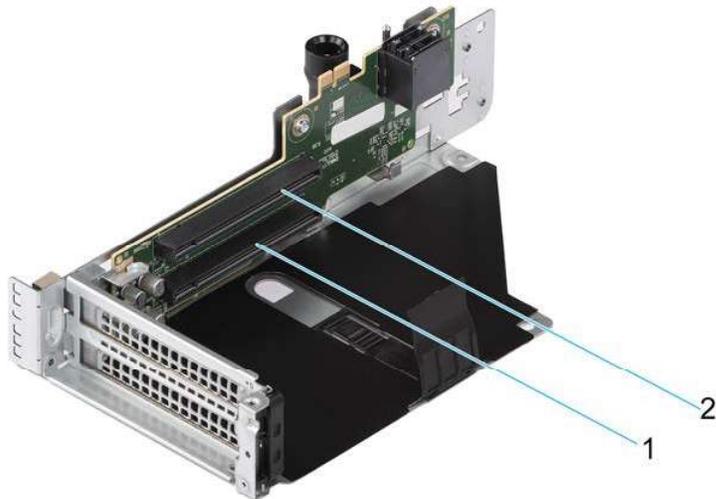
**Figure 75. Riser 3A FL**

- 1. Slot 5



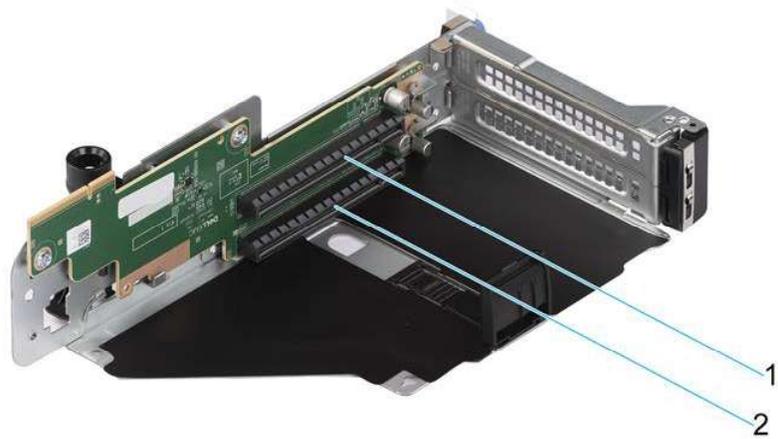
**Figure 76. Riser 3A HL**

- 1. Slot 5



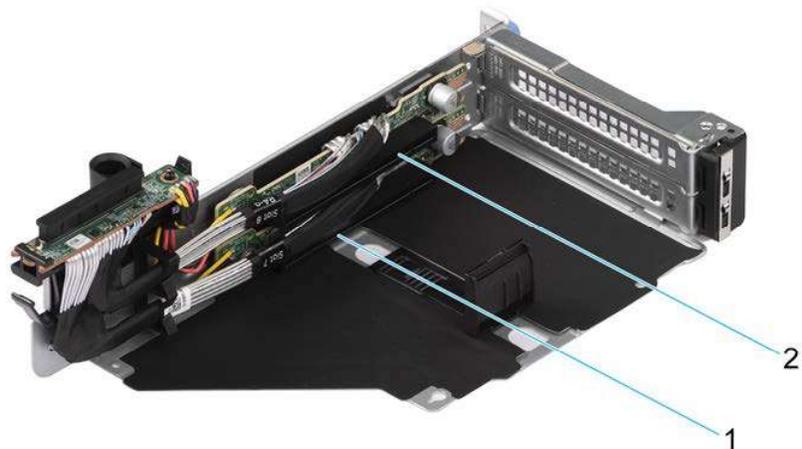
**Figure 77. Riser 3B**

- 1. Slot 4
- 2. Slot 5



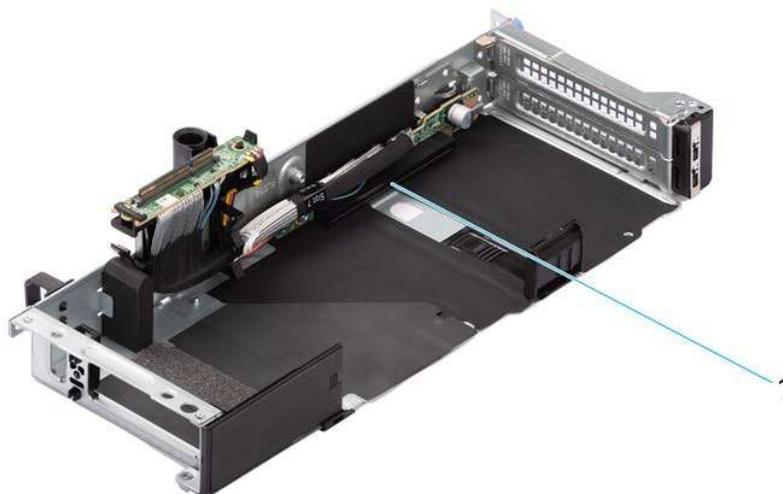
**Figure 78. Riser 4B**

- 1. Slot 8
- 2. Slot 7



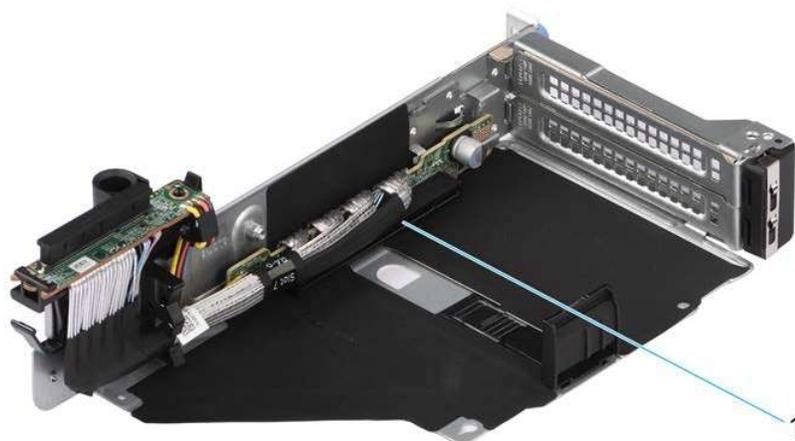
**Figure 79. Riser 4Q**

- 1. Slot 7
- 2. Slot 8



**Figure 80. Riser 4P FL**

1. Slot 7



**Figure 81. Riser 4P HL**

1. Slot 7

**i** **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 41. Expansion card riser configurations**

Expansion card riser	PCIe slots	Processor connection	Height	Length	Slot width
Riser 1B	Slot 1	Processor 1	Full Height	Half Length	x8
	Slot 2				
Riser 1P	Slot 2	Processor 1	Full Height	Half Length / Full Length	x16
Riser 1Q	Slot 1	Processor 1	Full Height	Half Length	x8
	Slot 2				

**Table 41. Expansion card riser configurations (continued)**

Expansion card riser	PCIe slots	Processor connection	Height	Length	Slot width
Riser 1S	Slot 1	Processor 1	Full Height	Half Length / Full Length	x16
	Slot 2				
Riser 2A	Slot 3	Processor 1	Low Profile	Half Length	x16
	Slot 6	Processor 2			
Riser 3A	Slot 5	Processor 2	Full Height	Half Length / Full Length	x16
Riser 3B	Slot 4	Processor 2	Full Height	Half Length	x8
	Slot 5				
Riser 4B	Slot 7	Processor 2	Full Height	Half Length	x8
	Slot 8				
Riser 4Q	Slot 7	Processor 2	Full Height	Half Length	x8
	Slot 8				
Riser 4P	Slot 7	Processor 2	Full Height	Half Length / Full Length	x16

**Table 42. PCIe Riser Configs**

Config #	RSR Configuration	# of CPUs	PERC type supported	Rear Storage Possible	x8 CPU 1	x16 CPU 1	x8 CPU 2	x16 CPU 2
3	R1Q + R2A + R3B + R4Q	2	Front PERC / Adaptor PERC	No	2	1	4	1
4	R1P + R2A + R3B + R4P	2	Front PERC / Adaptor PERC	No	0	2	2	2

**i** **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 43. Config0. No RSR**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (LOM Card)	Integrated slot	1
Intel (OCP: 25 Gb)	Integrated slot	1
Mellanox (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 10 Gb)	Integrated slot	1
Intel (OCP: 10 Gb)	Integrated slot	1
Broadcom (OCP: 10 Gb)	Integrated slot	1
Broadcom (OCP: 1 Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1

**Table 43. Config0. No RSR (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Broadcom (OCP: 1 Gb)	Integrated slot	1
FOXCONN (BOSS)	Integrated slot	1
FOXCONN (BOSS)	Integrated slot	1

**Table 44. Config1. R1B+R4B**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	8	1
NVIDIA (GPU A2, FH)	1,2,7,8	4
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
External Adapter HBA465E, LP/FH	1,2,7,8	4
External Adapter H965e, LP/FH	1,2,7,8	4
Inventec (LOM Card)	Integrated slot	1
Intel (NIC: 100Gb, FH)	1,2,7,8	4
Intel (NIC: 25 Gb, FH)	1,2,7,8	4
Mellanox (NIC: 25 Gb, FH)	1,2,7,8	4
Broadcom (NIC: 25 Gb, FH)	1,2,7,8	4
Broadcom (HBA: FC64, FH)	1,2,7,8	4
Broadcom (HBA: FC32, FH)	1,2,7,8	4
Marvell (HBA: FC32, FH)	1,2,7,8	4
Broadcom (NIC: 10 Gb, FH)	1,2,7,8	4
Intel (NIC: 10 Gb, FH)	1,2,7,8	4
Intel (NIC: 1 Gb, FH)	1,2,7,8	4
Broadcom (NIC: 1 Gb, FH)	1,2,7,8	4
Intel (OCP: 25 Gb)	Integrated slot	1
Mellanox (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 10 Gb)	Integrated slot	1
Intel (OCP: 10 Gb)	Integrated slot	1
Broadcom (OCP: 10 Gb)	Integrated slot	1
Broadcom (OCP: 1 Gb)	Integrated slot	1
Intel (OCP: 1 Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 45. Config2. R1B+R2A+R3B+R4B**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4,8	1
NVIDIA (GPU A2, FH)	1,2,4,5,7,8	6
FOXCONN (FPERC H965)	Integrated slot	2

**Table 45. Config2. R1B+R2A+R3B+R4B (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
FOXCONN (FPERC H755N)	Integrated slot	2
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (APERC H965, LP/FH)	3	1
FOXCONN (APERC H755, LP/FH)	1,2,3	1
FOXCONN (APERC H355, LP/FH)	1,2,3	1
FOXCONN (APERC HBA355I, LP/FH)	1,2,3	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	1,2,3,4,5,6,7,8	8
External Adapter H965e, LP/FH	1,2,3,4,5,6,7,8	8
Inventec (LOM Card)	Integrated slot	1
Broadcom (NIC: 100 Gb, LP)	3,6	2
Intel (NIC: 100 Gb, FH)	1,2,4,5,7,8	6
Intel (NIC: 100 Gb, LP)	3,6	2
Mellanox (NIC: 100 Gb, LP)	3	1
Intel (NIC: 25 Gb, FH)	1,2,4,5,7,8	6
Intel (NIC: 25 Gb, LP)	3,6	2
Mellanox (NIC: 25 Gb, FH)	1,2,4,5,7,8	6
Mellanox (NIC: 25 Gb, LP)	3,6	2
Broadcom (NIC: 25 Gb, LP)	3,6	2
Broadcom (NIC: 25 Gb, FH)	1,2,4,5,7,8	6
Broadcom (HBA: FC64, FH)	1,2,4,5,7,8	6
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	1,2,4,5,7,8	6
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	1,2,4,5,7,8	6
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10 Gb, FH)	1,2,4,5,7,8	6
Broadcom (NIC: 10 Gb, LP)	3,6	2
Intel (NIC: 10 Gb, FH)	1,2,4,5,7,8	6
Intel (NIC: 10 Gb, LP)	3,6	2
Intel (NIC: 1 Gb, LP)	3,6	2
Intel (NIC: 1 Gb, FH)	1,2,4,5,7,8	6
Broadcom (NIC: 1 Gb, FH)	1,2,4,5,7,8	6
Broadcom (NIC: 1 Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2

**Table 45. Config2. R1B+R2A+R3B+R4B (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25 Gb)	Integrated slot	1
Mellanox (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 10 Gb)	Integrated slot	1
Intel (OCP: 10 Gb)	Integrated slot	1
Broadcom (OCP: 1 Gb)	Integrated slot	1
Intel (OCP: 1 Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 46. Config3. R1Q+R2A+R3B+R4Q**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4,8	1
NVIDIA (GPU A2, FH)	1,2,4,5,7,8	6
FOXCONN (FPERC H965)	Integrated slot	2
FOXCONN (FPERC H755N)	Integrated slot	2
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (APERC H965, LP/FH)	3	1
FOXCONN (APERC H755, LP/FH)	1,2,3	1
FOXCONN (APERC H355, LP/FH)	1,2,3	1
FOXCONN (APERC HBA355I, LP/FH)	1,2,3	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	1,2,3,4,5,6,7,8	8
External Adapter H965e, LP/FH	1,2,3,4,5,6,7,8	8
Inventec (LOM Card)	Integrated slot	1
Inventec (Paige Card)	Integrated slot	1
Inventec (Melody Card)	Integrated slot	1
Intel (SmartNIC: 100 Gb, FH)	7	1
Mellanox (SmartNIC: 25 Gb, FH)	7	1
Intel (SmartNIC: 25 Gb, FH)	7	1
Mellanox (NIC: 400 Gb, LP)	3,6	2
Broadcom (NIC: 100 Gb, LP)	3,6	2
Intel (NIC: 100 Gb, FH)	1,2,4,5,7,8	6
Intel (NIC: 100 Gb, LP)	3,6	2
Mellanox (NIC: 100 Gb, LP)	3	1

**Table 46. Config3. R1Q+R2A+R3B+R4Q (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Intel (NIC: 25 Gb, FH)	1,2,4,5,7,8	6
Intel (NIC: 25 Gb, LP)	3,6	2
Mellanox (NIC: 25 Gb, FH)	1,2,4,5,7,8	6
Mellanox (NIC: 25 Gb, LP)	3,6	2
Broadcom (NIC: 25 Gb, LP)	3,6	2
Broadcom (NIC: 25 Gb, FH)	1,2,4,5,7,8	6
Broadcom (HBA: FC64, FH)	1,2,4,5,7,8	6
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	1,2,4,5,7,8	6
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	1,2,4,5,7,8	6
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10 Gb, FH)	1,2,4,5,7,8	6
Broadcom (NIC: 10 Gb, LP)	3,6	2
Intel (NIC: 10 Gb, FH)	1,2,4,5,7,8	6
Intel (NIC: 10 Gb, LP)	3,6	2
Intel (NIC: 1 Gb, LP)	3,6	2
Intel (NIC: 1 Gb, FH)	1,2,4,5,7,8	6
Broadcom (NIC: 1 Gb, FH)	1,2,4,5,7,8	6
Broadcom (NIC: 1 Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25 Gb)	Integrated slot	1
Mellanox (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 25 Gb)	Integrated slot	1
Broadcom (OCP: 10 Gb)	Integrated slot	1
Intel (OCP: 10 Gb)	Integrated slot	1
Broadcom (OCP: 1 Gb)	Integrated slot	1
Intel (OCP: 1 Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 47. Config4-1. R1P+R2A+R3B+R4P(HL)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4	1
NVIDIA (GPU A2, FH)	2,4,5,7	4
FOXCONN (FPERC H965)	Integrated slot	2
FOXCONN (FPERC H755N)	Integrated slot	2
FOXCONN (FPERC H755)	Integrated slot	1

**Table 47. Config4-1. R1P+R2A+R3B+R4P(HL) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (APERC H965, LP/FH)	3	1
FOXCONN (APERC H755, LP/FH)	2,3	1
FOXCONN (APERC H355, LP/FH)	2,3	1
FOXCONN (APERC HBA355I, LP/FH)	2,3	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	2,3,4,5,6,7	6
External Adapter H965e, LP/FH	2,3,4,5,6,7	6
Inventec (LOM Card)	Integrated slot	1
Inventec (Paige Card)	Integrated slot	1
Inventec (Melody Card)	Integrated slot	1
Pesandro (SmartNIC: 100Gb, FH)	2,7	2
Intel (SmartNIC: 100Gb, FH)	2,7	2
Mellanox (SmartNIC: 100Gb, FH)	2,7	2
Pesandro (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (SmartNIC: 25Gb, FH)	2,7	2
Intel (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (NIC: 400Gb, FH)	2,7	2
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, FH)	2,7	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	2,4,5,7	4
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, FH)	2,7	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	2,4,5,7	4
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	2,4,5,7	4
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	2,7	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	2,4,5,7	4
Broadcom (HBA: FC64, FH)	2,4,5,7	4
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	2,4,5,7	4
Broadcom (HBA: FC32, LP)	3,6	2

**Table 47. Config4-1. R1P+R2A+R3B+R4P(HL) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Marvell (HBA: FC32, FH)	2,4,5,7	4
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	2,4,5,7	4
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	2,4,5,7	4
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	2,4,5,7	4
Broadcom (NIC: 1Gb, FH)	2,4,5,7	4
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, FH)	2,7	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, FH)	2,7	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 48. Config4-2. R1P+R2A+R3B+R4P(FL)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4	1
NVIDIA (GPU A40, FH)	2,7	2
NVIDIA (GPU A100, FH)	2,7	2
NVIDIA (GPU A800, FH)	2,7	2
NVIDIA (GPU A30, FH)	2,7	2
NVIDIA (GPU A16, FH)	2,7	2
AMD (GPU MI210, FH)	2,7	2
NVIDIA (GPU A2, FH)	2,4,5,7	4
FOXCONN (FPERC H965)	Integrated slot	2
FOXCONN (FPERC H755N)	Integrated slot	2
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1

**Table 48. Config4-2. R1P+R2A+R3B+R4P(FL) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
FOXCONN (APERC H965, LP/FH)	3	1
FOXCONN (APERC H755, LP/FH)	2,3	1
FOXCONN (APERC H355, LP/FH)	2,3	1
FOXCONN (APERC HBA355I, LP/FH)	2,3	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	2,3,4,5,6,7	6
External Adapter H965e, LP/FH	2,3,4,5,6,7	6
Inventec (LOM Card)	Integrated slot	1
Inventec (Paige Card)	Integrated slot	1
Inventec (Melody Card)	Integrated slot	1
Pesandro (SmartNIC: 100Gb, FH)	2,7	2
Intel (SmartNIC: 100Gb, FH)	2,7	2
Mellanox (SmartNIC: 100Gb, FH)	2,7	2
Pesandro (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (SmartNIC: 25Gb, FH)	2,7	2
Intel (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (NIC: 400Gb, FH)	2,7	2
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, FH)	2,7	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	2,4,5,7	4
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, FH)	2,7	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	2,4,5,7	4
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	2,4,5,7	4
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	2,7	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	2,4,5,7	4
Broadcom (HBA: FC64, FH)	2,4,5,7	4
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	2,4,5,7	4
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	2,4,5,7	4
Marvell (HBA: FC32, LP)	3,6	2

**Table 48. Config4-2. R1P+R2A+R3B+R4P(FL) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Broadcom (NIC: 10Gb, FH)	2,4,5,7	4
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	2,4,5,7	4
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	2,4,5,7	4
Broadcom (NIC: 1Gb, FH)	2,4,5,7	4
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, FH)	2,7	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, FH)	2,7	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 49. Config5-1. R1S+R2A+R3A+R4P(HL)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
NVIDIA (GPU A2, FH)	1,2,5,7	4
FOXCONN (FPERC H965)	Integrated slot	2
FOXCONN (FPERC H755N)	Integrated slot	2
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	1,2,3,5,6,7	6
External Adapter H965e, LP/FH	1,2,3,5,6,7	6
Inventec (LOM Card)	Integrated slot	1
Inventec (Paige Card)	Integrated slot	1
Inventec (Melody Card)	Integrated slot	1
Pesandro (SmartNIC: 100Gb, FH)	2,7	2
Intel (SmartNIC: 100Gb, FH)	2,7	2
Mellanox (SmartNIC: 100Gb, FH)	2,7	2

**Table 49. Config5-1. R1S+R2A+R3A+R4P(HL) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Pesandro (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (SmartNIC: 25Gb, FH)	2,7	2
Intel (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (NIC: 400Gb, FH)	1,2,5,7	4
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, FH)	1,2,5,7	4
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	1,2,5,7	4
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, FH)	1,2,5,7	4
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	1,2,5,7	4
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	1,2,5,7	4
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	1,2,5,7	4
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (HBA: FC64, FH)	1,2,5,7	4
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	1,2,5,7	4
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	1,2,5,7	4
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	1,2,5,7	4
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	1,2,5,7	4
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	1,2,5,7	4
Broadcom (NIC: 1Gb, FH)	1,2,5,7	4
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, FH)	1,2,5,7	4
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, FH)	1,2,5,7	4
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1

**Table 49. Config5-1. R1S+R2A+R3A+R4P(HL) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 50. Config5-2. R1S+R2A+R3A+R4P(FL)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
NVIDIA (GPU A40, FH)	7	1
NVIDIA (GPU A100, FH)	7	1
NVIDIA (GPU A800, FH)	7	1
NVIDIA (GPU A30, FH)	7	1
NVIDIA (GPU A16, FH)	7	1
AMD (GPU MI210, FH)	7	1
NVIDIA (GPU A2, FH)	1,2,5,7	4
FOXCONN (FPERC H965)	Integrated slot	2
FOXCONN (FPERC H755N)	Integrated slot	2
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	1,2,3,5,6,7	6
External Adapter H965e, LP/FH	1,2,3,5,6,7	6
Inventec (LOM Card)	Integrated slot	1
Inventec (Paige Card)	Integrated slot	1
Inventec (Melody Card)	Integrated slot	1
Pesandro (SmartNIC: 100Gb, FH)	2,7	2
Intel (SmartNIC: 100Gb, FH)	2,7	2
Mellanox (SmartNIC: 100Gb, FH)	2,7	2
Pesandro (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (SmartNIC: 25Gb, FH)	2,7	2
Intel (SmartNIC: 25Gb, FH)	2,7	2
Mellanox (NIC: 400Gb, FH)	1,2,5,7	4
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, FH)	1,2,5,7	4
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	1,2,5,7	4

**Table 50. Config5-2. R1S+R2A+R3A+R4P(FL) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, FH)	1,2,5,7	4
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	1,2,5,7	4
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	1,2,5,7	4
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	1,2,5,7	4
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (HBA: FC64, FH)	1,2,5,7	4
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	1,2,5,7	4
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	1,2,5,7	4
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	1,2,5,7	4
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	1,2,5,7	4
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	1,2,5,7	4
Broadcom (NIC: 1Gb, FH)	1,2,5,7	4
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, FH)	1,2,5,7	4
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, FH)	1,2,5,7	4
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 51. Config6. R2A+R4Q**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	8	1

**Table 51. Config6. R2A+R4Q (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
NVIDIA (GPU A2, FH)	7,8	2
FOXCONN (FPERC H965)	Integrated slot	2
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (APERC H965, LP)	3	1
FOXCONN (APERC H755, LP)	2,3	1
FOXCONN (APERC H355, LP)	2,3	1
FOXCONN (APERC HBA355I, LP)	2,3	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	3,6,7,8	4
External Adapter H965e, LP/FH	3,6,7,8	4
Inventec (LOM Card)	Integrated slot	1
Inventec (Paige Card)	Integrated slot	1
Inventec (Melody Card)	Integrated slot	1
Intel (SmartNIC: 100Gb, FH)	7	1
Mellanox (SmartNIC: 25Gb, FH)	7	1
Intel (SmartNIC: 25Gb, FH)	7	1
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	7,8	2
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	7,8	2
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	7,8	2
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	7,8	2
Broadcom (HBA: FC64, FH)	7,8	2
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	7,8	2
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	7,8	2
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	7,8	2
Broadcom (NIC: 10Gb, LP)	3,6	2

**Table 51. Config6. R2A+R4Q (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Intel (NIC: 10Gb, FH)	7,8	2
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	7,8	2
Broadcom (NIC: 1Gb, FH)	7,8	2
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 52. Config7. R1Q+R2A+R4Q**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	8	1
NVIDIA (GPU A2, FH)	1,2,7,8	4
FOXCONN (FPERC H965)	Integrated slot	1
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (APERC H965, LP)	3	1
FOXCONN (APERC H755, LP/FH)	1,2,3	1
FOXCONN (APERC H355, LP/FH)	1,2,3	1
FOXCONN (APERC HBA355I, LP/FH)	1,2,3	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	1,2,3,6,7,8	6
External Adapter H965e, LP/FH	1,2,3,6,7,8	6
Inventec (LOM Card)	Integrated slot	1
Inventec (Paige Card)	Integrated slot	1
Inventec (Melody Card)	Integrated slot	1
Intel (SmartNIC: 100Gb, FH)	7	1
Mellanox (SmartNIC: 25Gb, FH)	7	1

**Table 52. Config7. R1Q+R2A+R4Q (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Intel (SmartNIC: 25Gb, FH)	7	1
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	1,2,7,8	4
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	1,2,7,8	4
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	1,2,7,8	4
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	1,2,7,8	4
Broadcom (HBA: FC64, FH)	1,2,7,8	4
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	1,2,7,8	4
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	1,2,7,8	4
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	1,2,7,8	4
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	1,2,7,8	4
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	1,2,7,8	4
Broadcom (NIC: 1Gb, FH)	1,2,7,8	4
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 53. Config8. R2A+R3B+R1\_R4 Paddle**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4	1
NVIDIA (GPU A2, FH)	4,5	2
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	3,4,5,6	4
External Adapter H965e, LP/FH	3,4,5,6	4
Inventec (LOM Card)	Integrated slot	1
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	4,5	2
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	4,5	2
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	4,5	2
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	4,5	2
Broadcom (HBA: FC64, FH)	4,5	2
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	4,5	2
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	4,5	2
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	4,5	2
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	4,5	2
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1

**Table 53. Config8. R2A+R3B+R1\_R4 Paddle (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 54. Config9. R1B+R2A (1CPU Min Con)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
NVIDIA (GPU A2, FH)	1,2	2
FOXCONN (APERC H355, LP/FH)	1,2,3	1
FOXCONN (External Adapter HBA355E, LP)	3	1
External Adapter HBA465E, LP/FH	1,2,3	3
External Adapter H965e, LP/FH	1,2,3	3
Inventec (LOM Card)	Integrated slot	1
Mellanox (NIC: 400Gb, LP)	3	1
Broadcom (NIC: 100Gb, LP)	3	1
Intel (NIC: 100Gb, FH)	1,2	2
Intel (NIC: 100Gb, LP)	3	1
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	1,2	2
Intel (NIC: 25Gb, LP)	3	1
Mellanox (NIC: 25Gb, FH)	1,2	2
Mellanox (NIC: 25Gb, LP)	3	1
Broadcom (NIC: 25Gb, LP)	3	1
Broadcom (NIC: 25Gb, FH)	1,2	2
Broadcom (HBA: FC64, FH)	1,2	2
Broadcom (HBA: FC64, LP)	3	1
Broadcom (HBA: FC32, FH)	1,2	2
Broadcom (HBA: FC32, LP)	3	1
Marvell (HBA: FC32, FH)	1,2	2
Marvell (HBA: FC32, LP)	3	1
Broadcom (NIC: 10Gb, FH)	1,2	2
Broadcom (NIC: 10Gb, LP)	3	1
Intel (NIC: 10Gb, FH)	1,2	2
Intel (NIC: 10Gb, LP)	3	1
Intel (NIC: 1Gb, LP)	3	1
Intel (NIC: 1Gb, FH)	1,2	2
Broadcom (NIC: 1Gb, FH)	1,2	2

**Table 54. Config9. R1B+R2A (1CPU Min Con) (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Broadcom (NIC: 1Gb, LP)	3	1
Mellanox (NIC: NDR200, LP)	3	1
Mellanox (NIC: HDRV, LP)	3	1
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 55. Config10. R2A+R3B**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4	1
NVIDIA (GPU A2, FH)	4,5	2
FOXCONN (FPERC H965)	Integrated slot	1
FOXCONN (FPERC H755)	Integrated slot	1
FOXCONN (FPERC H355)	Integrated slot	1
FOXCONN (FPERC HBA355I)	Integrated slot	1
FOXCONN (APERC H755, LP/FH)	3	1
FOXCONN (APERC H355, LP/FH)	3	1
FOXCONN (APERC HBA355I, LP/FH)	3	1
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	3,4,5,6	4
External Adapter H965e, LP/FH	3,4,5,6	4
Inventec (LOM Card)	Integrated slot	1
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	4,5	2
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	4,5	2
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	4,5	2
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, LP)	3,6	2

**Table 55. Config10. R2A+R3B (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Broadcom (NIC: 25Gb, FH)	4,5	2
Broadcom (HBA: FC64, FH)	4,5	2
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	4,5	2
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	4,5	2
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	4,5	2
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	4,5	2
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 56. Config11. R2A+R3B+E3 R1\_R4 Paddle**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4	1
NVIDIA (GPU A2, FH)	4,5	2
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	3,4,5,6	4
External Adapter H965e, LP/FH	3,4,5,6	4
Inventec (LOM Card)	Integrated slot	1
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	4,5	2

**Table 56. Config11. R2A+R3B+E3 R1\_R4 Paddle (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	4,5	2
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	4,5	2
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	4,5	2
Broadcom (HBA: FC64, FH)	4,5	2
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	4,5	2
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	4,5	2
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	4,5	2
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	4,5	2
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 57. Config12. R2A+R3B+E3 G5x4 Paddle**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4	1
NVIDIA (GPU A2, FH)	4,5	2

**Table 57. Config12. R2A+R3B+E3 G5x4 Paddle (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	3,4,5,6	4
External Adapter H965e, LP/FH	3,4,5,6	4
Inventec (LOM Card)	Integrated slot	1
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	4,5	2
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	4,5	2
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	4,5	2
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	4,5	2
Broadcom (HBA: FC64, FH)	4,5	2
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	4,5	2
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	4,5	2
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	4,5	2
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	4,5	2
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1

**Table 57. Config12. R2A+R3B+E3 G5x4 Paddle (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

**Table 58. Config13. R2A+R3B+E3\_SCM Paddle**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Inventec (Serial, FH)	4	1
NVIDIA (GPU A2, FH)	4,5	2
FOXCONN (External Adapter HBA355E, LP)	3,6	2
External Adapter HBA465E, LP/FH	3,4,5,6	4
External Adapter H965e, LP/FH	3,4,5,6	4
Inventec (LOM Card)	Integrated slot	1
Mellanox (NIC: 400Gb, LP)	3,6	2
Broadcom (NIC: 100Gb, LP)	3,6	2
Intel (NIC: 100Gb, FH)	4,5	2
Intel (NIC: 100Gb, LP)	3,6	2
Mellanox (NIC: 100Gb, LP)	3	1
Intel (NIC: 25Gb, FH)	4,5	2
Intel (NIC: 25Gb, LP)	3,6	2
Mellanox (NIC: 25Gb, FH)	4,5	2
Mellanox (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, LP)	3,6	2
Broadcom (NIC: 25Gb, FH)	4,5	2
Broadcom (HBA: FC64, FH)	4,5	2
Broadcom (HBA: FC64, LP)	3,6	2
Broadcom (HBA: FC32, FH)	4,5	2
Broadcom (HBA: FC32, LP)	3,6	2
Marvell (HBA: FC32, FH)	4,5	2
Marvell (HBA: FC32, LP)	3,6	2
Broadcom (NIC: 10Gb, FH)	4,5	2
Broadcom (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 10Gb, FH)	4,5	2
Intel (NIC: 10Gb, LP)	3,6	2
Intel (NIC: 1Gb, LP)	3,6	2
Intel (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, FH)	4,5	2
Broadcom (NIC: 1Gb, LP)	3,6	2
Mellanox (NIC: NDR200, LP)	3,6	2

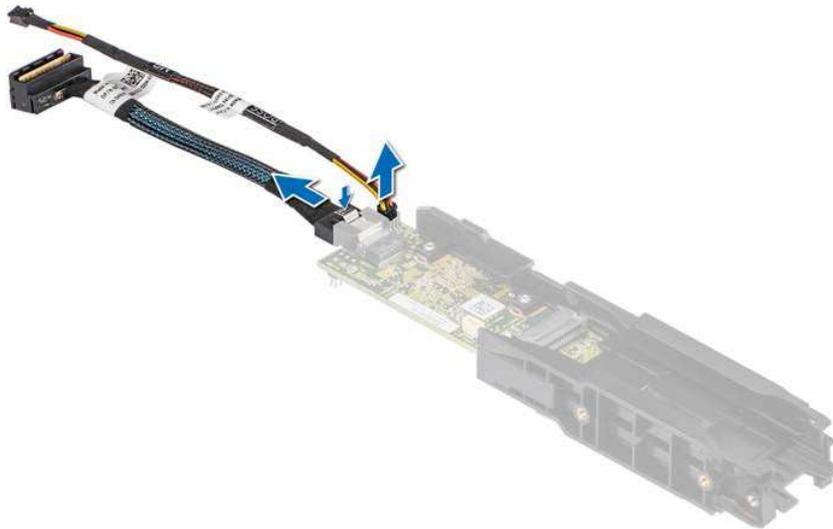
**Table 58. Config13. R2A+R3B+E3\_SCM Paddle (continued)**

CARD TYPE	SLOT PRIORITY	MAXIMUM NUMBER OF CARDS
Mellanox (NIC: HDRV, LP)	3,6	2
Intel (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 1Gb)	Integrated slot	1
Intel (OCP: 1Gb)	Integrated slot	1
FOXCONN (BOSS-N1)	Integrated slot	1

## Removing the expansion card risers

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3.  **NOTE:** If BOSS N1 module is installed, ensure to disconnect the BOSS N1 power cable and Signal cable before removing the Riser 1 cage.



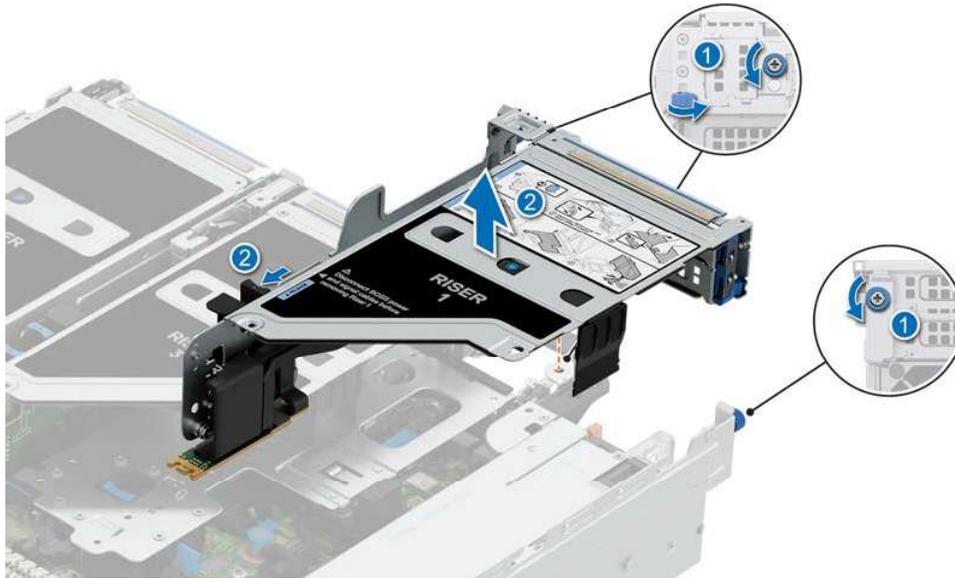
**Figure 82. Removing the BOSS power cable and BOSS signal cable from the BOSS N1 controller card module**

4. Disconnect any cables that are connected to the expansion card.

### Steps

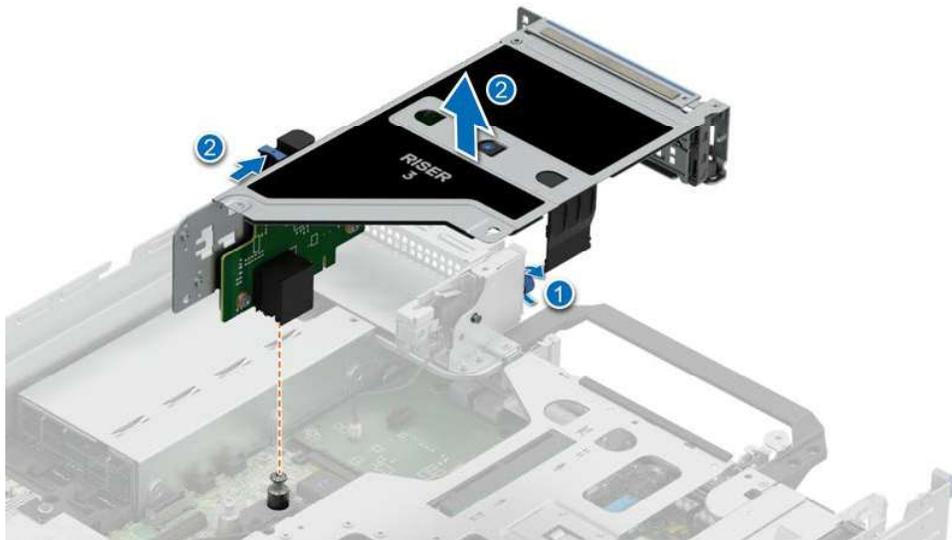
1. For Riser 1, loosen the captive screws on the riser.
  - a. Press the blue release tab and holding the edges lift the expansion card riser from the riser connector on the system board.

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



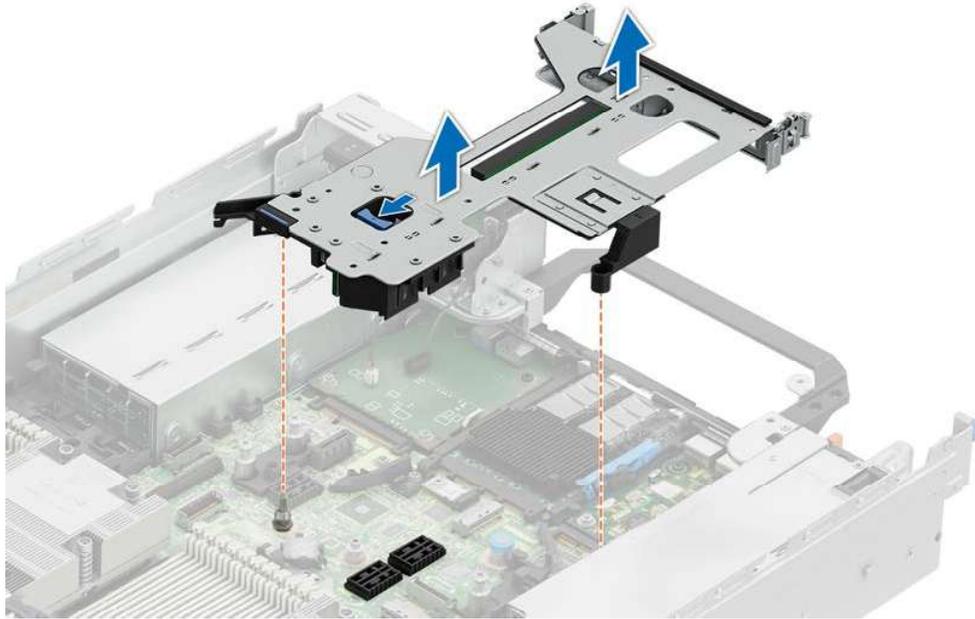
**Figure 83. Removing the expansion card riser (Riser 1)**

2. For Riser 3, loosen the captive screw, and then press the blue release tab and holding the edges lift the expansion card riser from the riser connector on the system board.



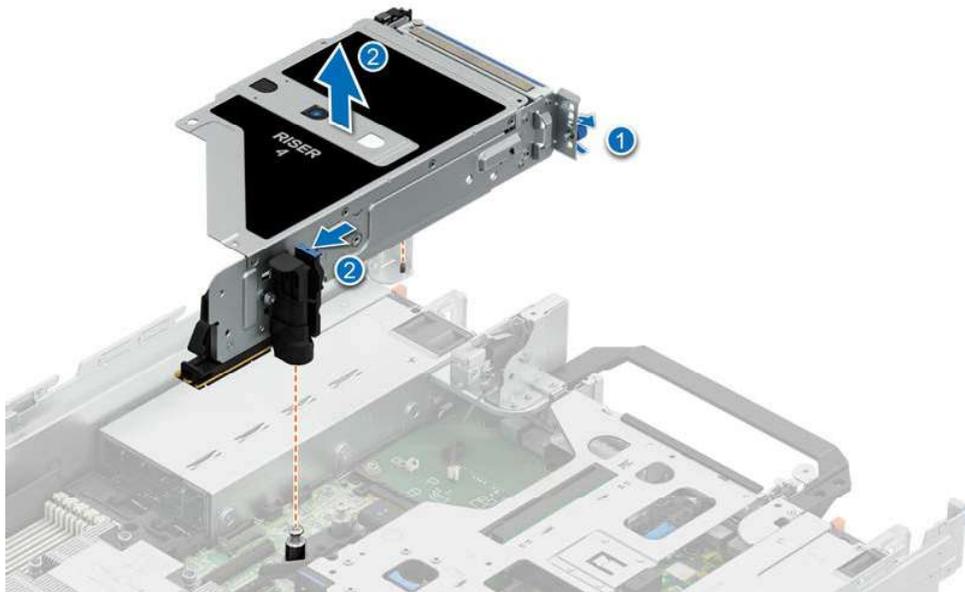
**Figure 84. Removing the expansion card riser (Riser 3)**

3. For Riser 2, press the blue button on the riser and holding the touch points (two strips on one side; one strip on the other side) lift the expansion card riser from the riser connector on the system board.



**Figure 85. Removing the expansion card riser (Riser 2)**

4. For Riser 4, loosen the captive screw on the riser, and then press the blue release tab on the riser, and holding the touch point lift the expansion card riser from the riser connector on the system board.



**Figure 86. Removing the expansion card riser (Riser 4)**

## Installing the expansion card risers

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. If removed, [install the expansion cards into the expansion card risers](#).