Dell EMC PowerEdge C6420

Installation and Service Manual

Regulatory Model: E43S Series
Regulatory Type: E43S001

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Dell EMC PowerEdge C6420 overview

The PowerEdge C6420 sled supports up to two Intel Xeon Scalable processors with 28 cores per processor. The sled also supports dedicated mezzanine, PCIe and Open Compute Project (OCP) adapters for expansion and connectivity.

NOTE: The Intel Xeon Scalable processor with fabric connector is also known as Native Omnipath.

Topics:

Supported configurations

The PowerEdge C6420 system supports the following configurations:

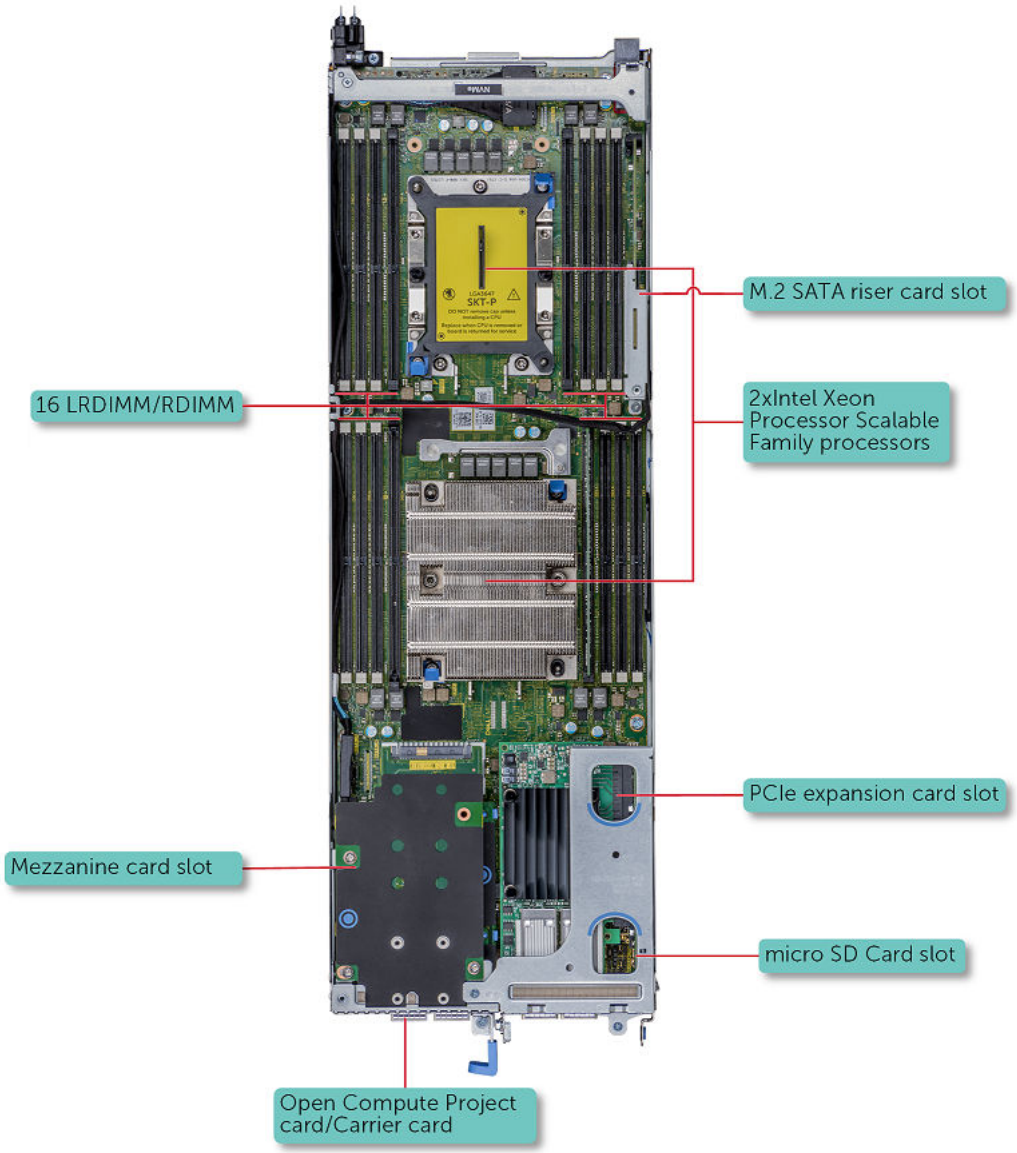


Figure 1. Supported configurations for PowerEdge C6420

Back view of the PowerEdge C6420 sled

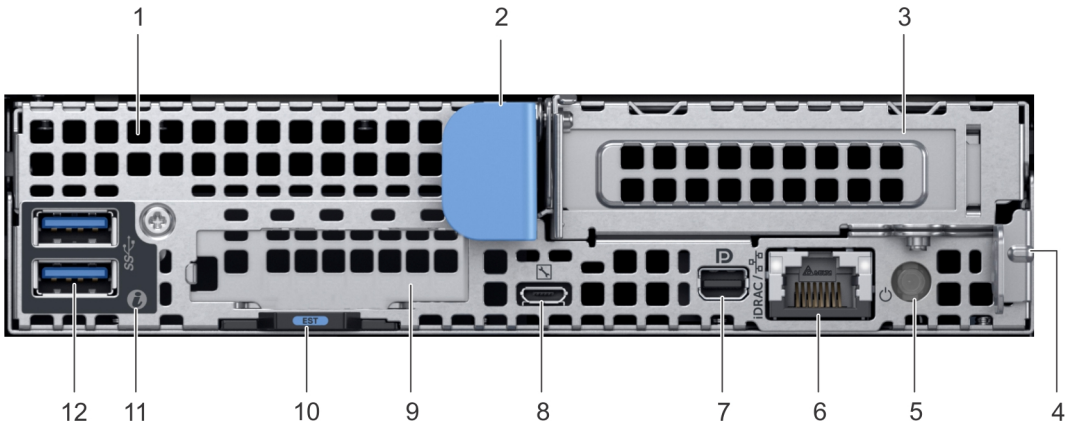


Figure 2. Back view of the PowerEdge C6420 sled

Table 1. Back panel features

Item	Indicator, button, or connector	Icon	Description
1	Mezzanine card slot	N/A	Enables you to connect mezzanine expansion cards. For more information, see the Technical specifications section.
2	Sled release handle	N/A	Enables you to remove the sled from the enclosure.
3	Low Profile PCIe card slot	N/A	Enables you to connect PCI Express expansion cards. For more information, see the Technical specifications section.
4	Sled release lock	N/A	Enables you to remove the sled from the enclosure.
5	Rear power button	N/A	Enables you to power on the sled while accessing it from the rear.
6	iDRAC or NIC port		Enables you to remotely access iDRAC. For more information, see the *Integrated Dell Remote Access Controller User's Guide* at **Dell.com/idracmanuals**
7	Mini display port		Enables you to connect a display device to the system. For more information, see the Technical specifications section.
8	iDRAC Direct micro USB port		Enables you to connect a portable device to the sled.

Item	Indicator, button, or connector	Icon	Description
9	OCP or OPA card slot	N/A	Enables you to connect Open Compute Project (OCP) or Omni-Path Architecture (OPA) expansion cards. For more information, see the Technical specifications section.
10	EST pull out tab	N/A	This tab has the unique Express Service Code, Service Tag, and MAC address labels.
11	System id indicator		The System Identification(ID) LED is available on the back of the system. Press the system ID button on the front of the enclosure to identify a system in a rack.
12	USB 3.0 port (2)		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.

Network ports indicator codes

Figure 3. LAN indicators on the QSFP carrier card

1 Link indicator

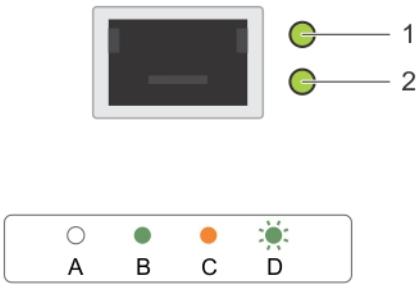


Figure 4. LAN indicators on the QSFP mezzanine card

1 Link indicator 2 Activity indicator

Table 2. QSFP port on mezzanine card indicator codes

Connection State	QSFP Upper green LED	QSFP Lower green LED
No link/Not Connected	Off	Off
InfiniBand Physical Link - No Logical Link	Green	Off
InfiniBand Logical Link - No Traffic	Green	Green
InfiniBand Logical Link - Traffic	Green	Blink
InfiniBand Physical Link Issue	Blink	Green
Ethernet Link - No Traffic	Green	Green
Ethernet - Traffic	Green	Blink

NOTE: The LED blink speed varies according to the traffic bandwidth.

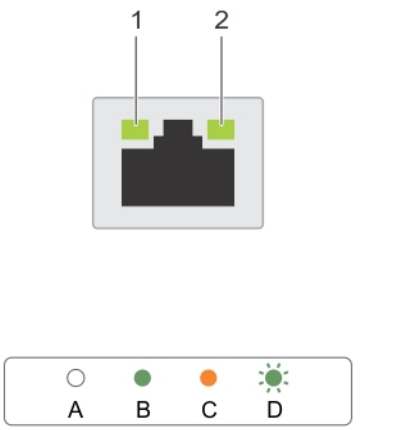


Figure 5. Ethernet port indicator codes

1 speed indicator 2 link and activity indicator

Table 3. Ethernet port indicator codes

Convention	Status	Condition
A	Link and activity indicators are off	The NIC is not connected to the network.
B	Link indicator is green	The NIC is connected to a valid network at its maximum port speed.
C	Link indicator is amber	The NIC is connected to a valid network at less than its maximum port speed.
D	Activity indicator is flashing green	Network data is being sent or received.

Sled to hard drive mapping

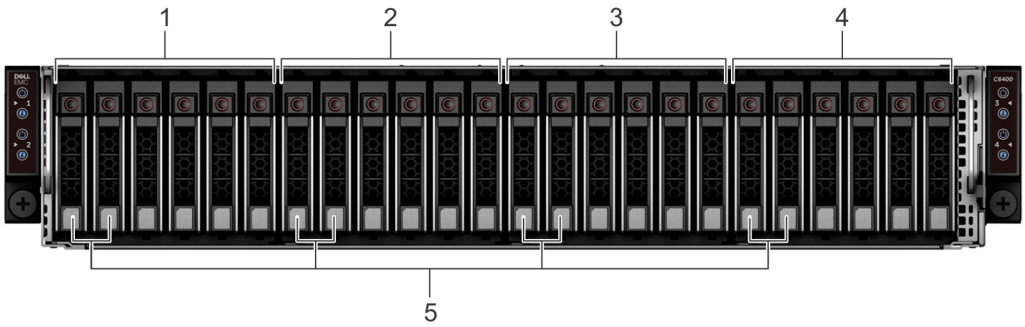


Figure 6. Sled to drive mapping for the enclosure with 24 x 2.5-inch drives

1	Drives 0–5 mapped to sled 1	2	Drives 6–11 mapped to sled 2
3	Drives 12–17 mapped to sled 3	4	Drives 18–23 mapped to sled 4
5	(Optional) NVMe hard drive location		

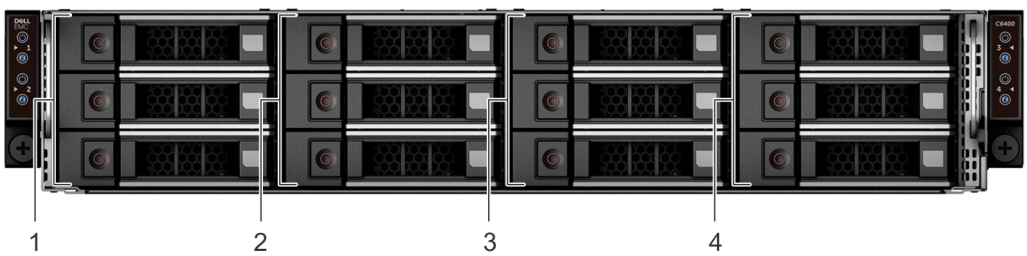


Figure 7. Sled to drive mapping for the enclosure with 12 x 3.5-inch drives

1	Drives 0–2 mapped to sled 1	2	Drives 3–5 mapped to sled 2
3	Drives 6–8 mapped to sled 3	4	Drives 9–11 mapped to sled 4

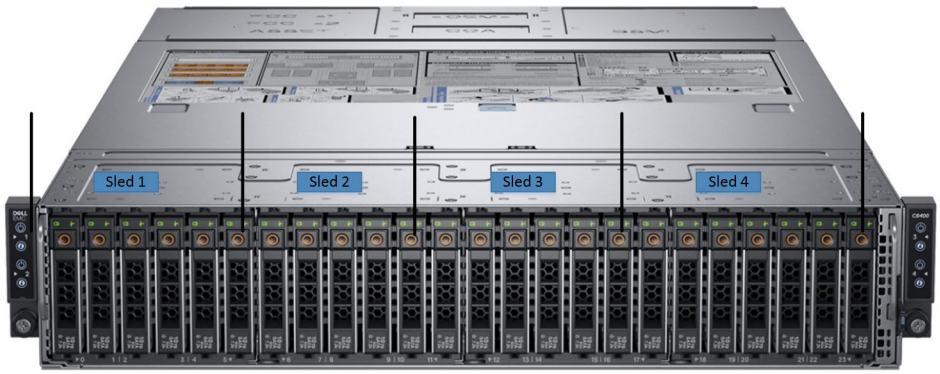
NOTE: The warranty of the drives are linked to the Service Tag of the corresponding sled.

Expander zoning

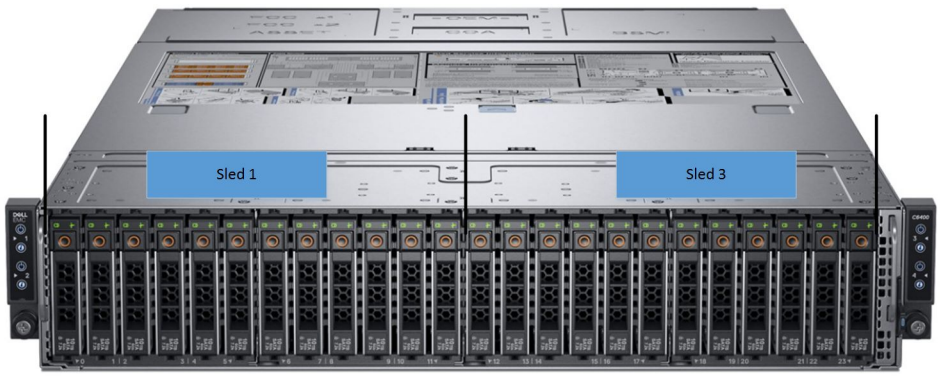
A SAS expander board allows higher, single-volume hard drive configurations. An integrated expander device expands each sleds hard drive footprint.

The Dell EMC PowerEdge C6400 enclosure allows four sleds to access a single expander controller at the same time. there are two zoning options available, they are:

- Up to 6 SAS/SATA device of each sled in Split Mode (6+6+6+6)



- Up to 12 SAS/SATA device of sled 1 and sled 3 in Zoning Mode (12+12)



NOTE:

- Install expander firmware 2.07 (X25-00) or later to support these configurations
- The expander mode works only with a PERC card, and is not supported by the onboard SATA controller.

Locating the Service Tag of your system

Your system is identified by a unique Express Service Code and Service Tag number. The Express Service Code and Service Tag are found on the back of the sled by pulling out the EST tag. This information is used by Dell to route support calls to the appropriate personnel.

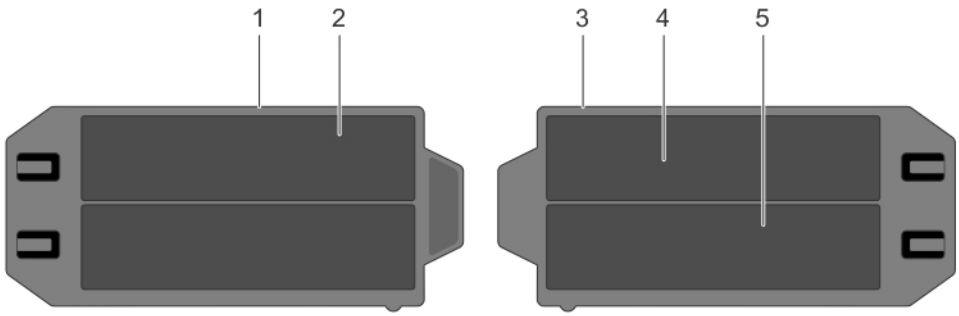


Figure 8. Locating the Service Tag of your system

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

System information label

System board information

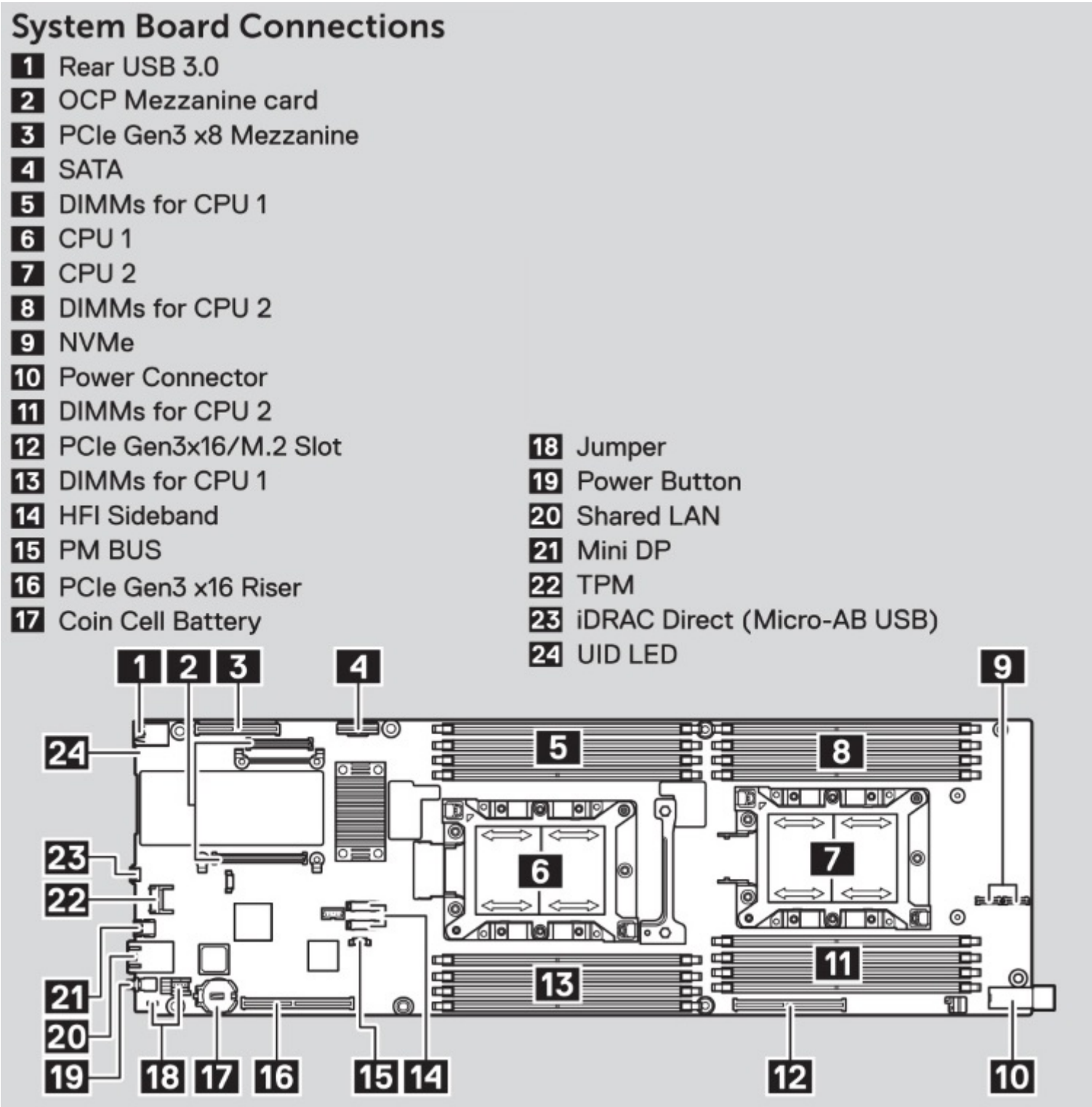


Figure 9. System board connections

Mechanical overview

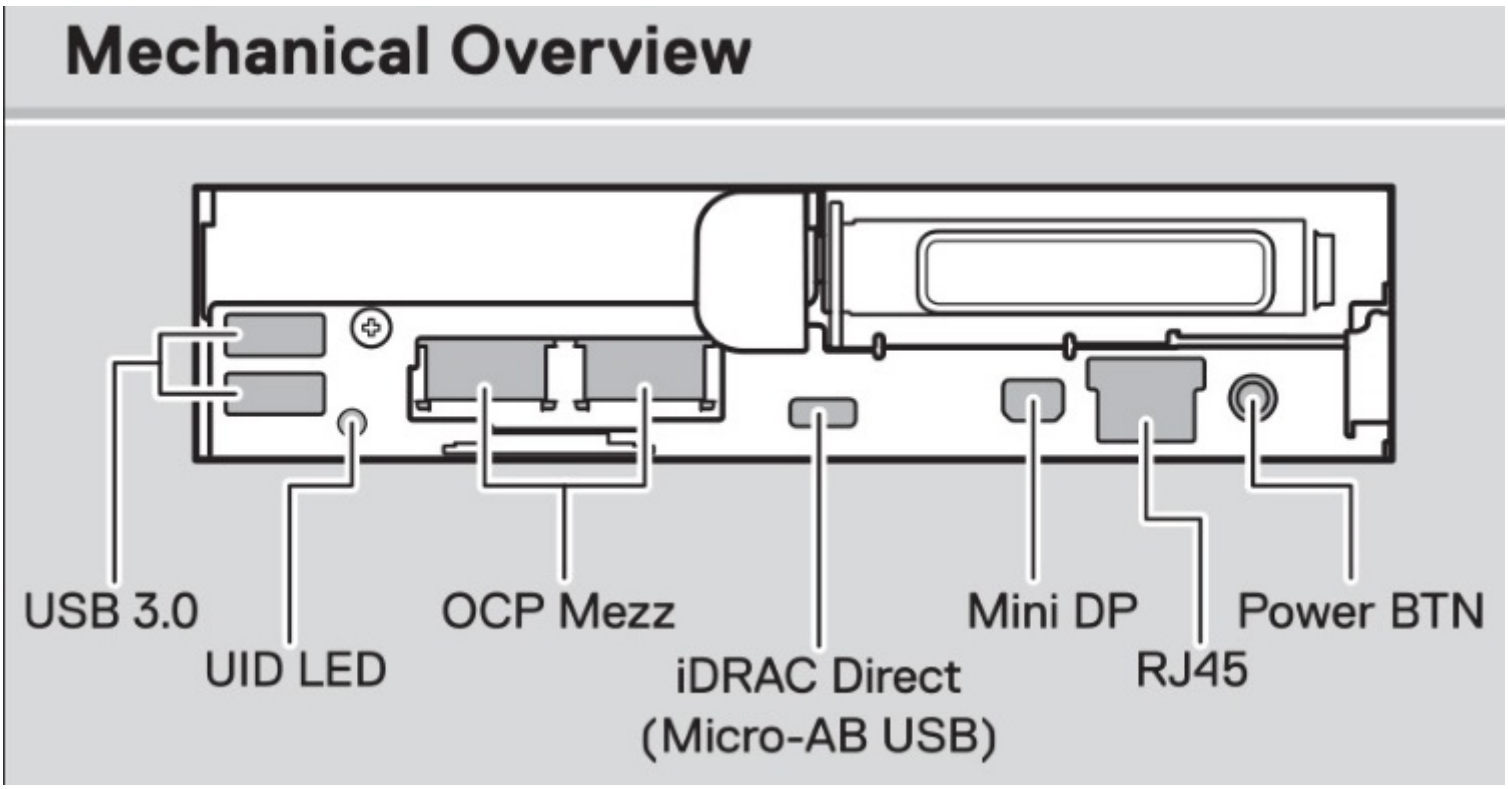
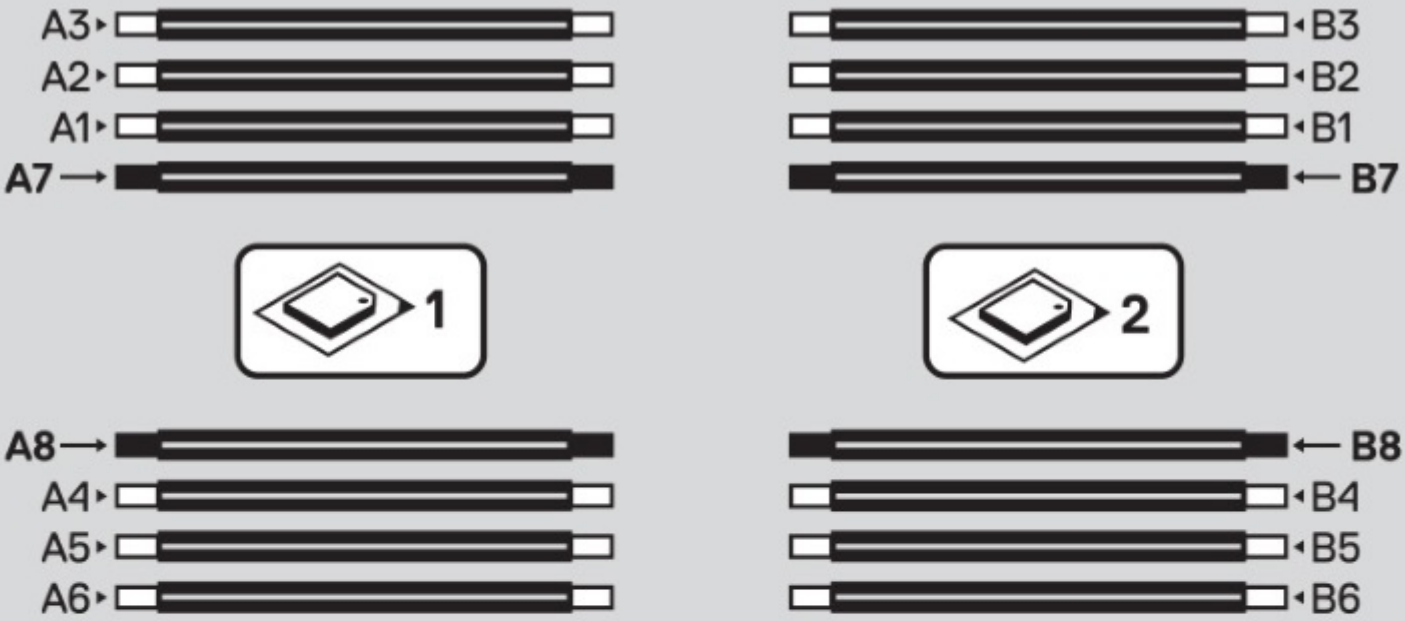


Figure 10. Mechanical overview

Memory information



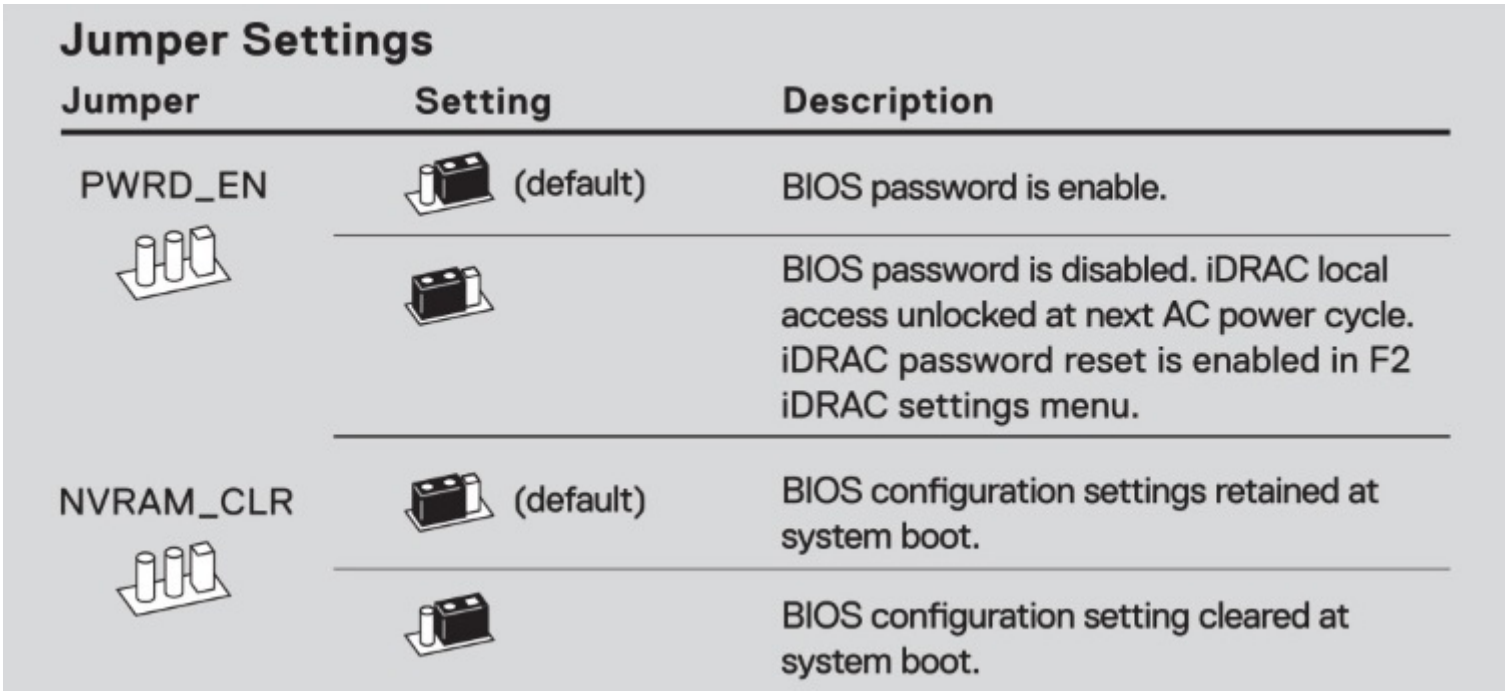
Memory Population

Configuration	Sequence
Memory-Optimized	1,2,3,4,5,6,7,8
Mirroring	(1,2,3,4,5,6)

Memory Sparing details are documented in the *Installation and Service Manual.*

Figure 11. Memory information

Jumper settings



Jumper Settings

Jumper	Setting	Description
PWRD_EN	(default)	BIOS password is enable.
		BIOS password is disabled. iDRAC local access unlocked at next AC power cycle. iDRAC password reset is enabled in F2 iDRAC settings menu.
NVRAM_CLR	(default)	BIOS configuration settings retained at system boot.
		BIOS configuration setting cleared at system boot.

Figure 12. Jumper settings

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Documentation resources

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

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

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

    NOTE: To locate the product name and model, see the front of your system.

  c On the Product Support page, click **Manuals & documents**.
- Using search engines:
  – Type the name and version of the document in the search box.

Table 4. Additional documentation resources for your system

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

Task	Document	Location
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	**Dell.com/poweredgemanuals**
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	**Dell.com/openmanagemanuals** > OpenManage Server Administrator
	For information about installing, using, and troubleshooting Dell OpenManage Essentials, see the Dell OpenManage Essentials User's Guide.	**Dell.com/openmanagemanuals** > OpenManage Essentials
	For information about installing and using Dell SupportAssist, see the Dell EMC SupportAssist Enterprise User's Guide.	**Dell.com/serviceabilitytools**
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	**Dell.com/openmanagemanuals**
Working with the Dell PowerEdge RAID controllers	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	**Dell.com/storagecontrollermanuals**
Understanding event and error messages	For information about the event and error messages generated by the system firmware and agents that monitor system components, see the Error Code Lookup.	**Dell.com/qrl**
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	**Dell.com/poweredgemanuals**

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Technical specifications

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

Topics:

Dimensions of the Dell EMC PowerEdge C6420 sled

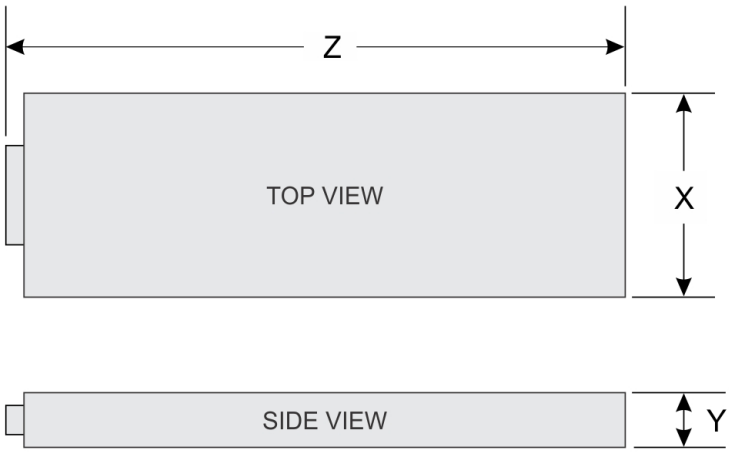

Figure 13. Dimensions of the PowerEdge C6420 sled

Table 5. Dimensions of the PowerEdge C6420 sled

X	Y	Z
174.4 mm (6.86 inches)	40.5 mm (1.59 inches)	574.5 mm (22.61 inches)

Chassis weight

Table 6. Chassis weight of the enclosure with the sleds

System	Maximum weight (with all sleds and drives)
12 x 3.5-inch hard drive systems	43.62 Kg (96.16 lb)
24 x 2.5-inch hard drive systems	41.46 Kg (91.40 lb)
No backplane systems	34.56 Kg (76.19 lb)

Processor specifications

The Dell EMC PowerEdge C6420 sled supports up to two Intel Xeon Scalable processor in each of the four independent sleds. Each processor supports up to 28 cores.

NOTE: The fabric processor must be installed in the processor 2 socket in a mixed configuration of fabric and non-fabric processors.

Supported operating systems

The Dell EMC PowerEdge C6420 supports the following operating systems:

- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- Microsoft Windows Server with Hyper-V
- Canonical Ubuntu LTS
- VMware ESXi
- Citrix XenServer

NOTE: For more information about the specific versions and additions, see https://www.dell.com/support/home/drivers/supportedos/poweredge-c6420

System battery

The PowerEdge C6420 sled uses a CR 2032 3V replaceable lithium coin cell battery.

NOTE: There is a system battery in each of the sleds.

Expansion bus specifications

The Dell EMC PowerEdge C6420 sled supports four Generation 3 capable PCIe slots.

Table 7. Expansion bus specifications

PCIe Slots	Description	Form factor
x8 Mezz PCIe riser	Slot 1: x8 PCIe Gen3 from processor 1	Custom form factor
x8+x8 OCP Mezz riser	Slot 2: x8 PCIe Gen3 from processor 1 Slot 3: x8 PCIe Gen3 from processor 1	Standard Open Compute Project (OCP) form factor
x16 PCIe main riser	Slot 4: x16 PCIe Gen3 processor 1	Standard Low Profile PCIe form factor

PCIe Slots	Description	Form factor
x16 buried PCIe riser	Slot 5: x16 PCIe Gen3 from processor 2	Custom form factor

NOTE: M.2 SATA riser is supported on the buried riser.

Memory specifications

Table 8. Memory specifications

Memory module sockets	DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
				Minimum RAM	Maximum RAM	Minimum RAM	Maximum RAM
Sixteen 288-pins	LRDIMM	Quad rank	64 GB	64 GB	512 GB	128 GB	1024 GB
		Octal rank	128 GB	128 GB	1024 GB	256 GB	2048 GB
	RDIMM	Single rank	8 GB	8 GB	64 GB	16 GB	128 GB
		Dual rank	16 GB	16 GB	128 GB	32 GB	256 GB
			32 GB	32 GB	256 GB	64 GB	512 GB
			64 GB	64 GB	512 GB	128 GB	1024 GB

Drives and storage specifications

The Dell EMC PowerEdge C6420 sled supports SAS and SATA Drives and Solid State Drives (SSDs).

Table 9. Supported drive options for the PowerEdge C6420 sled

Maximum number of drives in the enclosure	Maximum number of drives assigned per sled
12 x 3.5-inch drive systems	Three SAS or SATA Drives and SSDs per sled
24 x 2.5-inch drive systems	Six SAS or SATA Drives and SSDs per sled
24 x 2.5-inch drive systems with NVMe	The NVMe backplane supports either of these configurations: • Two NVMe drives and four SAS or SATA Drives and SSDs per sled • Six SAS or SATA Drives and SSDs per sled
M.2 SATA drive (optional)	The supported capacity of the M.2 SATA card is up to 240 GB **NOTE: The M.2 SATA card can be installed on the x8 (slot 1) mezzanine riser or the x16 riser slot (slot 5).**
microSD card (optional) for boot (up to 64 GB)	One on each PCIe riser of each sled

Table 10. Supported RAID options with M.2 SATA drives

Options	Single M.2 SATA drive without RAID	Dual M.2 SATA drives with hardware RAID
Hardware RAID	No	Yes
RAID Mode	N/A	RAID 1

Options	Single M.2 SATA drive without RAID	Dual M.2 SATA drives with hardware RAID
Number of drives supported	1	2
Supported processors	processor 1	processor 1 and processor 2

Video specifications

The Dell EMC PowerEdge C6420 sled supports a Matrox G200 integrated graphics card with 16 MB RAM.

Table 11. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	up to 24
1280 x 800	60	up to 24
1280 x 1024	60	up to 24
1360 x 768	60	up to 24
1440 x 900	60	up to 24

Environmental specifications

The sections below contains information about the environmental specifications of the system.

NOTE: For additional information about environmental certifications, please refer to the Product Environmental Datasheet located with the Manuals & Documents on Dell.com/poweredgemanuals

Standard operating temperature specifications

NOTE:

1 Not available: Indicates that the configuration is not offered by Dell EMC.

2 Not supported: Indicates that the configuration is not thermally supported.

NOTE: All components including the DIMMs, communication cards, M.2 SATA, and PERC cards can be supported with sufficient thermal margin if the ambient temperature is equal to or below to the maximum continuous operating temperature listed in these tables except for the Mellanox DP LP card and Intel Rush Creek card.

Table 12. Standard operating temperature specifications

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

NOTE: Some configurations require a lower ambient temperature. For more information, see the following tables.

Table 13. Maximum continuous operating temperature for nonfabric dual processor configuration

TDP Watts	Processor model	Heat sink model	Max memory/ processor	3.5-inch chassis			2.5-inch chassis						No-BP Chassis
				12x Drives	8x Drives	4x Drives	24x Drives	20x Drives	16x Drives	12x Drives	8x Drives	4x Drives	N/A
205 W	8280	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8	Not Supported (2°C)	Not Supported (10°C)	Not Supported (11°C)	Not Supported(19°C)	20	21	21	21	21	30
	8280L	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8					20	21	21	21	21	30
	8280M	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8					20	21	21	21	21	30
	8270	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8					20	21	21	21	21	30
	8268	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8					20	21	21	21	21	30
200 W	6254	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8	Not Supported(6°C)	Not Supported(14°C)	Not Supported(15°C)	20	21	22	22	22	22	30
165 W	8276	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	Not Supported(11°C)	Not Supported(18°C)	Not Supported(19°C)	30	30	30	30	30	35	35
	8276L	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8				30	30	30	30	30	35	35
	8276M	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8				30	30	30	30	30	35	35
	8260	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8				30	30	30	30	30	35	35

TDP Watts	Processor model	Heat sink model	Max memory/ processor	3.5-inch chassis			2.5-inch chassis						No-BP Chassis
				12x Drives	8x Drives	4x Drives	24x Drives	20x Drives	16x Drives	12x Drives	8x Drives	4x Drives	N/A
	8260L	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8				30	30	30	30	30	35	35
	8260M	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8				30	30	30	30	30	35	35
	8260C	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8				30	30	30	30	30	35	35
150 W	6252	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	Not Supported(14 °C)	21	23	30	30	30	30	30	35	35
	6248	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8		21	23	30	30	30	30	30	35	35
	6240	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8		21	23	30	30	30	30	30	35	35
	6242	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8		21	23	30	30	30	30	30	35	35
	6244	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8		21	23	30	30	30	30	30	35	35
	6240C	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8		21	23	30	30	30	30	30	35	35
125 W	6230	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	25	30	30	30	30	35	35	35	35	35
	5220	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	25	30	30	30	30	35	35	35	35	35

TDP Watts	Processor model	Heat sink model	Max memory/ processor	3.5-inch chassis			2.5-inch chassis						No-BP Chassis
				12x Drives	8x Drives	4x Drives	24x Drives	20x Drives	16x Drives	12x Drives	8x Drives	4x Drives	N/A
	5218	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	25	30	30	30	30	35	35	35	35	35
	5218B	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	25	30	30	30	30	35	35	35	35	35
	8253	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	25	30	30	30	30	35	35	35	35	35
	6238T	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	25	30	30	30	30	35	35	35	35	35
	6230N	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	25	30	30	30	30	35	35	35	35	35
115 W	5217	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8	25	30	30	30	30	35	35	35	35	35
105 W	5218T	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8	30	35	35	35	35	35	35	35	35	35
	5218N	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8	30	35	35	35	35	35	35	35	35	35
	5222	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8	30	35	35	35	35	35	35	35	35	35
	8256	CPU1: FMM2M | CPU2: V2DRD	CPU1: 6 | CPU2: 8	30	35	35	35	35	35	35	35	35	35
100 W	4216	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	30	35	35	35	35	35	35	35	35	35

TDP Watts	Processor model	Heat sink model	Max memory/ processor	3.5-inch chassis			2.5-inch chassis						No-BP Chassis
				12x Drives	8x Drives	4x Drives	24x Drives	20x Drives	16x Drives	12x Drives	8x Drives	4x Drives	N/A
85 W	5215	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	5215M	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	5215L	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	4215	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	4214	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	4214C	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	4210	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	4208	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
	3204	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35
70 W	4209T	CPU1: JYKMM | CPU2: V2DRD	CPU1: 8 | CPU2: 8	35	35	35	35	35	35	35	35	35	35

Table 14. Maximum continuous operating temperature for non-fabric single processor configuration

TDP Watts	Processor model	Heat sink model	Max memory/ processor	3.5-inch chassis			2.5-inch chassis						No-BP Chassis
				12x Drives	8x Drives	4x Drives	24x Drives	20x Drives	16x Drives	12x Drives	8x Drives	4x Drives	N/A
205W	8280	CPU1: FMM2M	CPU1: 6	30	30	30	35	35	35	35	35	35	35
	8280L	CPU1: FMM2M	CPU1: 6	30	30	30	35	35	35	35	35	35	35
	8280M	CPU1: FMM2M	CPU1: 6	30	30	30	35	35	35	35	35	35	35
	8270	CPU1: FMM2M	CPU1: 6	30	30	30	35	35	35	35	35	35	35
	8268	CPU1: FMM2M	CPU1: 6	30	30	30	35	35	35	35	35	35	35
200 W	6254	CPU1: FMM2M	CPU1: 6	30	30	30	35	35	35	35	35	35	35
165 W	6212U	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	8276	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	8276L	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	8276M	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	8260	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	8260L	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	8260M	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	8260C	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
150 W	6210U	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	6252	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	6248	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	6240	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35

TDP Watts	Processor model	Heat sink model	Max memory/ processor	3.5-inch chassis			2.5-inch chassis						No-BP Chassis
				12x Drives	8x Drives	4x Drives	24x Drives	20x Drives	16x Drives	12x Drives	8x Drives	4x Drives	N/A
	6242	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
	6244	CPU1: FMM2M	CPU1: 6	30	35	35	35	35	35	35	35	35	35
	6240C	CPU1: FMM2M	CPU1: 6	30	35	35	35	35	35	35	35	35	35
125W	6230	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	5220	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	5218	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	5218B	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	8253	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	6238T	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	6230N	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
115 W	5217	CPU1: FMM2M	CPU1: 6	30	35	35	35	35	35	35	35	35	35
105 W	5218T	CPU1: FMM2M	CPU1: 6	30	35	35	35	35	35	35	35	35	35
	5218N	CPU1: FMM2M	CPU1: 6	30	35	35	35	35	35	35	35	35	35
	5222	CPU1: FMM2M	CPU1: 6	30	35	35	35	35	35	35	35	35	35
	8256	CPU1: FMM2M	CPU1: 6	30	35	35	35	35	35	35	35	35	35
100 W	4216	CPU1: JYKMM	CPU1: 8	30	35	35	35	35	35	35	35	35	35
85 W	5215	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	5215M	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	5215L	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35

TDP Watts	Processor model	Heat sink model	Max memory/ processor	3.5-inch chassis			2.5-inch chassis						No-BP Chassis
				12x Drives	8x Drives	4x Drives	24x Drives	20x Drives	16x Drives	12x Drives	8x Drives	4x Drives	N/A
	4215	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	4214	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	4214C	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	4210	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	4208	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
	3204	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35
70 W	4209T	CPU1: JYKMM	CPU1: 8	35	35	35	35	35	35	35	35	35	35

Table 15. Configuration Restrictions with Mellanox Navi Dual Port Card with Active (Optical) connectivity

TDP Watts	3.5-inch chassis			2.5-inch chassis				No-BP Chassis
	12x HDDs	8x HDDs	4x HDDs	24x HDDs	16x HDDs	8x HDDs	4x HDDs	N/A
205 W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	23
200 W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	23
173 W	Not supported	Not supported	Not supported	Not supported	Not supported	24	24	28
165 W	Not supported	Not supported	Not supported	24	25	25	26	29
160 W	Not supported	Not supported	Not supported	24	25	26	26	30
150 W	Not supported	Not supported	Not supported	26	27	28	28	31
140 W	Not supported	23	25	28	29	29	30	33
135 W	Not supported	24	25	29	30	30	31	33
130 W	Not supported	24	26	30	31	31	31	34
125 W	20	25	27	30	31	32	32	35

TDP Watts	3.5-inch chassis			2.5-inch chassis				No-BP Chassis
	12x HDDs	8x HDDs	4x HDDs	24x HDDs	16x HDDs	8x HDDs	4x HDDs	N/A
115 W	21	27	28	32	33	34	34	>35
113 W	21	27	28	32	33	34	34	>35
105 W	22	28	30	34	35	>35	>35	>35
85 W	23	32	33	>35	>35	>35	>35	>35
70 W	25	34	>35	>35	>35	>35	>35	>35

Table 16. Configuration Restrictions with Intel Rush Creek

TDP Watts	3.5-inch chassis			2.5-inch chassis				No-BP Chassis
	12x HDDs	8x HDDs	4x HDDs	24x HDDs	16x HDDs	8x HDDs	4x HDDs	N/A
205 W	Not supported	Not supported	Not supported	Not supported	Not supported	20	20	23
200 W	Not supported	Not supported	Not supported	Not supported	Not supported	21	21	24
173 W	Not supported	Not supported	Not supported	20	20	23	24	28
165 W	Not supported	Not supported	Not supported	22	22	24	25	29
160 W	Not supported	Not supported	Not supported	22	22	24	26	29
150 W	Not supported	Not supported	Not supported	24	24	26	27	30
140 W	Not supported	Not supported	Not supported	26	26	27	28	31
135 W	Not supported	Not supported	20	26	26	28	29	32
130 W	Not supported	Not supported	20	27	27	29	29	33
125 W	Not supported	Not supported	21	28	28	30	30	33
115W	Not supported	21	23	29	31	31	32	34
105 W	20	23	24	30	33	33	34	>35
85 W	24	26	27	34	>35	>35	>35	>35
70 W	25	28	29	>35	>35	>35	>35	>35

Table 17. Configuration Restrictions with Intel NVMe SSD AIC P4800X

TDP Watts	3.5-inch chassis			2.5-inch chassis				No-BP Chassis
	12x HDDs	8x HDDs	4x HDDs	24x HDDs	16x HDDs	8x HDDs	4x HDDs	N/A
205 W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
200 W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
173 W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	20
165 W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	20
160 W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	25
150 W	Not supported	Not supported	Not supported	Not supported	20	20	20	25
140 W	Not supported	Not supported	Not supported	20	20	20	20	25
135 W	Not supported	Not supported	Not supported	20	20	20	20	25
130 W	Not supported	Not supported	Not supported	20	20	20	20	25
125 W	Not supported	Not supported	Not supported	20	25	25	25	30
115 W	Not supported	Not supported	Not supported	25	25	25	25	30
105 W	Not supported	Not supported	Not supported	25	25	25	25	30
85 W	Not supported	Not supported	Not supported	30	30	30	30	>35
70 W	Not supported	Not supported	Not supported	>35	>35	>35	>35	>35

Expanded operating temperature specifications

Table 18. Expanded operating temperature

Expanded operating temperature	Specifications
Continuous operation	5°C–40°C at 5% to 85% RH with maximum 29°C dew point.

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

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

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

Operating temperature derating specifications

Table 19. Operating temperature

Operating temperature derating	Specifications
≤ 35°C (95°F)	Maximum temperature is reduced by 1°C/300 m (1°F/547 ft) above 950 meters (3,117 ft)
35°C–40°C (95°F–104°F)	Maximum temperature is reduced by 1°C/175 m (1°F/319 ft) above 950 meters (3,117 ft)
≥ 45°C (113°F)	Maximum temperature is reduced by 1°C/125 m (1°F/228 ft) above 950 meters (3,117 ft)

Relative humidity specifications

Table 20. Relative humidity specifications

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

Temperature specifications

Table 21. Temperature specifications

Temperature	Specifications
Storage	–40°C–65°C (–40°F-149°F)
Continuous operation (for altitude less than 950 m or 3117 ft)	10°C–35°C (50°F-95°F) with no direct sunlight on the equipment.
Fresh air	For information about fresh air, see Expanded Operating Temperature section.
Maximum temperature gradient (operating and storage)	20°C/h (68°F/h)

NOTE: Some configurations require a lower ambient temperature for more information, see the Standard operating temperature specifications.

Particulate and gaseous contamination specifications

Table 22. Particulate contamination specifications

Particulate contamination	Specifications
Air filtration	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit.

NOTE: This condition applies only to data center environments. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor.

NOTE: Air entering the data center must have MERV11 or MERV13 filtration.

Conductive dust	Air must be free of conductive dust, zinc whiskers, or other conductive particles.

NOTE: This condition applies to data center and non-data center environments.

Corrosive dust	Air must be free of corrosive dust.

Residual dust present in the air must have a deliquescent point less than 60% relative humidity.

NOTE: This condition applies to data center and non-data center environments.

Table 23. Gaseous contamination specifications

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

Gaseous contamination	Specifications

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

Maximum vibration specifications

Table 24. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26 Grms at 5 Hz to 350 Hz (all operation orientations).
Storage	1.88 Grms at 10 Hz to 500 Hz for 15 min (all six sides tested).

Maximum shock specifications

Table 25. Maximum shock specifications

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

Maximum altitude specifications

Table 26. Maximum altitude specifications

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

Fresh Air Operation

Fresh Air operation restrictions

- Processors with a TDP greater than 105 W are not supported
- Support for processors of 85 W and below without PERC restrictions
- 3.5-inch drive configuration is not supported
- 114-mm heat sink is required for the processor in CPU1 socket
- Kerby-flat OCP is not supported

- M.2 card on DCS Mezzanine slot is not supported.
- NVMe SSD is not supported
- AEP DIMM and LRDIMM are not supported
- PCIe cards greater than 25 W are not supported
- H730 PERC and H330 support for 105-W processors
- No PERC restrictions for 85 W and lesser TDP processors

4

Initial system setup and configuration

Setting up your system

Perform the following steps to set up your system:

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

iDRAC configuration

The Integrated Dell Remote Access Controller (iDRAC) is designed to make system administrators more productive and improve the overall availability of Dell systems. iDRAC alerts administrators about system issues and enables them to perform remote system management. This 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.

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

This option is set to **DHCP** by Default. You can set up the IP address by using one of the following interfaces:

Interfaces	Document/Section
iDRAC Settings utility	*Dell Integrated Dell Remote Access Controller User's Guide* at **Dell.com/poweredgemanuals**
Dell Deployment Toolkit	*Dell Deployment Toolkit User's Guide* at **Dell.com/openmanagemanuals** > OpenManage Deployment Toolkit
Dell Lifecycle Controller	*Dell Lifecycle Controller User's Guide* at **Dell.com/poweredgemanuals**
iDRAC Direct and Quick Sync 2 (optional)	See *Dell Integrated Dell Remote Access Controller User's Guide* at **Dell.com/poweredgemanuals**

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

Log in to iDRAC

You can log in to iDRAC as:

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

The default user name and password are `root` and `calvin`.

NOTE: You must have the iDRAC credentials to log in to iDRAC.

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

NOTE: The Intel Quick Assist Technology (QAT) on the Dell EMC PowerEdge C6420 is supported with chipset integration and is enabled through an optional license. The license files are enabled on the sleds through iDRAC.

For more information about drivers, documentation, and white papers on the Intel QAT, see *https://01.org/intel-quickassist-technology*.

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

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

Options to install the operating system

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

Table 27. Resources to install the operating system

Resources	Location
iDRAC	**Dell.com/idracmanuals**
Lifecycle Controller	**Dell.com/idracmanuals** > Lifecycle Controller
OpenManage Deployment Toolkit	**Dell.com/openmanagemanuals** > OpenManage Deployment Toolkit
Dell certified VMware ESXi	**Dell.com/virtualizationsolutions**
Installation and How-to videos for supported operating systems on PowerEdge systems	Supported Operating Systems for Dell EMC PowerEdge systems

Methods to download firmware and drivers

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

Table 28. Firmware and drivers

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

Downloading drivers and firmware

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

Prerequisite

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

Steps

1 Go to Dell.com/support/home.

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

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

3 Click **Drivers & Downloads**.

The drivers that are applicable to your system are displayed.

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

5

Pre-operating system management applications

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

Topics:

Options to manage the pre-operating system applications

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

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

System Setup

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

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

You can access system setup by one of the following:

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

Viewing System Setup

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

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

```
F2 = System Setup
```

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

System Setup details

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

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

System BIOS

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

Viewing System BIOS

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

> **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.**

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

System BIOS Settings details

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

Option	Description
System Information	Provides information about the system such as the system model name, BIOS version, and Service Tag.
Memory Settings	Provides information and options related to the installed memory.
Processor Settings	Provides information and options related to the processor such as speed and cache size.
SATA Settings	Provides options to enable or disable the integrated SATA controller and ports.
NVMe Settings	Provides options to change the NVMe settings. If the system contains the NVMe drives that you want to configure in a RAID array, you must set both this field and the **Embedded SATA** field on the **SATA Settings** menu to **RAID** mode. You might also need to change the **Boot Mode** setting to **UEFI**. Otherwise, you should set this field to **Non-RAID** mode.
Boot Settings	Provides options to specify the Boot mode (BIOS or UEFI). Enables you to modify UEFI and BIOS boot settings.

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

System Information

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

Viewing System Information

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **System Information**.

System Information details

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

Option	Description
System Model Name	Specifies the system model name.
System BIOS Version	Specifies the BIOS version installed on the system.
System Management Engine Version	Specifies the current version of the Management Engine firmware.
System Service Tag	Specifies the system Service Tag.

Option	Description
System Manufacturer	Specifies the name of the system manufacturer.
System Manufacturer Contact Information	Specifies the contact information of the system manufacturer.
System CPLD Version	Specifies the current version of the system complex programmable logic device (CPLD) firmware.
UEFI Compliance Version	Specifies the UEFI compliance level of the system firmware.

Memory Settings

You can use the **Memory Settings** screen to view all the memory settings and enable or disable specific memory functions, such as system memory testing and node interleaving.

Viewing Memory Settings

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

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

   ```
   F2 = System Setup
   ```

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

Memory Settings details

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

Option	Description
System Memory Size	Specifies the memory size in the system.
System Memory Type	Specifies the type of memory installed in the system.
System Memory Speed	Specifies the system memory speed.
System Memory Voltage	Specifies the system memory voltage.
Video Memory	Specifies the amount of video memory.
System Memory Testing	Specifies whether the system memory tests are run during system boot. Options are **Enabled** and **Disabled**. This option is set to **Disabled** by default.
Memory Operating Mode	Specifies the memory operating mode. The options available are **Optimizer Mode**, **Single Rank Spare Mode**, **Multi Rank Spare Mode**, **Mirror Mode**, and **Dell Fault Resilient Mode**. This option is set to **Optimizer Mode** by default.

Option	Description
	NOTE: The Memory Operating Mode option can have different default and available options based on the memory configuration of your system.
	NOTE: The Dell Fault Resilient Mode option establishes an area of memory that is fault resilient. This mode can be used by an operating system that supports the feature to load critical applications or enables the operating system kernel to maximize system availability.
Current State of Memory Operating Mode	Specifies the current state of the memory operating mode.
Node Interleaving	Specifies if Non-Uniform Memory Architecture (NUMA) is supported. If this field is set to **Enabled**, memory interleaving is supported if a symmetric memory configuration is installed. If this field is set to **Disabled**, the system supports NUMA (asymmetric) memory configurations. This option is set to **Disabled** by default.
ADDDC Setting	Enables or disables **ADDDC Setting** feature. This field enables you to set the **ADDDC Setting** to either **X8** or **Enabled**. This option is set to **Enabled** by default.
Opportunistic Self-Refresh	Enables or disables opportunistic self-refresh feature. This option is set to **Disabled** by default.

Processor Settings

You can use the **Processor Settings** screen to view the processor settings and perform specific functions such as enabling virtualization technology, hardware prefetcher, logical processor idling, and opportunistic self-refresh.

Viewing Processor Settings

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

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

   ```
   F2 = System Setup
   ```

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

Processor Settings details

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

Option	Description
Logical Processor	Enables or disables the logical processors and displays the number of logical processors. If this option is set to **Enabled**, the BIOS displays all the logical processors. If this option is set to **Disabled**, the BIOS displays only one logical processor per core. This option is set to **Enabled** by default.
Virtualization Technology	Enables or disables the virtualization technology for the processor. This option is set to **Enabled** by default.
Adjacent Cache Line Prefetch	Optimizes the system for applications that need high utilization of sequential memory access. This option is set to **Enabled** by default. You can disable this option for applications that need high utilization of random memory access.

Option	Description
Hardware Prefetcher	Enables or disables the hardware prefetcher. This option is set to **Enabled** by default.
Software Prefetcher	Enables or disables the software prefetcher. This option is set to **Enabled** by default.
DCU Streamer Prefetcher	Enables or disables the Data Cache Unit (DCU) streamer prefetcher. This option is set to **Enabled** by default.
DCU IP Prefetcher	Enables or disables the Data Cache Unit (DCU) IP prefetcher. This option is set to **Enabled** by default.
Sub NUMA Cluster	Enables or disables the Sub NUMA Cluster. This option is set to **Disabled** by default.
UPI Prefetch	Enables you to get the memory read started early on DDR bus. The Ultra Path Interconnect (UPI) Rx path will spawn the speculative memory read to Integrated Memory Controller (iMC) directly. This option is set to **Enabled** by default.
Logical Processor Idling	Enables you to improve the energy efficiency of a system. It uses the operating system core parking algorithm and parks some of the logical processors in the system which in turn allows the corresponding processor cores to transition into a lower power idle state. This option can only be enabled if the operating system supports it. It is set to **Disabled** by default.
Configurable TDP	Enables you to configure the TDP level. The available options are **Nominal**, **Level 1**, and **Level 2**. This option is set to **Nominal** by default. **NOTE: This option is only available on certain stock keeping units (SKUs) of the processors.**
SST-Performance Profile	Enables you to reconfigure the processor using Speed Select Technology.
x2APIC Mode	Enables or disables the x2APIC mode. This option is set to **Disabled** by default.
Dell Controlled Turbo	Controls the turbo engagement. . This option is set to **Disabled** by default. **NOTE: Depending on the number of installed processors, there might be up to two processor listings.**
Dell AVX Scaling Technology	Enables you to configure the Dell AVX scaling technology. This option is set to **0** by default.
Number of Cores per Processor	Controls the number of enabled cores in each processor. This option is set to **All** by default.
Processor Core Speed	Specifies the maximum core frequency of the processor.
Processor n	**NOTE: Depending on the number of processors, there might be up to two processors listed.** The following settings are displayed for each processor installed in the system:

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

SATA Settings

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

Viewing SATA Settings

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **SATA Settings**.

SATA Settings details

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

Option	Description
Embedded SATA	Enables the embedded SATA option to be set to **AHCI Mode**, or **RAID Mode**. This option is set to **AHCI Mode** by default.
Security Freeze Lock	Enables you to send **Security Freeze Lock** command to the embedded SATA drives during POST. This option is applicable only for AHCI mode. This option is set to **Enabled** by default.
Write Cache	Enables or disables the command for the embedded SATA drives during POST. This option is set to **Disabled** by default.
Port n	Enables you to set the drive type of the selected device. For **AHCI Mode** or **RAID Mode**, BIOS support is always enabled.

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

NVMe Settings

The NVMe settings enable you to set the NVMe drives to either **RAID** mode or **Non-RAID** mode.

NOTE: To configure these drives as RAID drives, you must set the NVMe drives and the Embedded SATA option in the SATA Settings menu to RAID mode. If not, you must set this field to Non-RAID mode.

Viewing NVMe Settings

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **NVMe Settings**.

NVMe Settings details

The NVMe Settings screen details are explained as follows:

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

Boot Settings

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

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

  NOTE: You must use only the UEFI boot mode in order to boot from NVMe drives.
- **BIOS**: The **BIOS Boot Mode** is the legacy boot mode. It is maintained for backward compatibility.

Viewing Boot Settings

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **Boot Settings**.

Boot Settings details

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

Option	Description
Boot Mode	Enables you to set the boot mode of the system. **CAUTION: Switching the boot mode may prevent the system from booting if the operating system is not installed in the same boot mode.** If the operating system supports **UEFI**, you can set this option to **UEFI**. Setting this field to **BIOS** enables compatibility with non-UEFI operating systems. This option is set to **UEFI** by default. **NOTE: Setting this field to UEFI disables the BIOS Boot Settings menu.**
Boot Sequence Retry	Enables or disables the **Boot Sequence Retry** feature. If this option is set to **Enabled** and the system fails to boot, the system re-attempts the boot sequence after 30 seconds. This option is set to **Enabled** by default.
Hard-Disk Failover	Specifies the drive that is booted in the event of a drive failure. The devices are selected in the **Hard-Disk Drive Sequence** on the **Boot Option Setting** menu. When this option is set to **Disabled**, only the first drive in the list is attempted to boot. When this option is set to **Enabled**, all drives are attempted to boot in the order selected in the **Hard-Disk Drive Sequence**. This option is not enabled for **UEFI Boot Mode**. This option is set to **Disabled** by default.
BIOS Boot Settings	Enables or disables BIOS boot options. **NOTE: This option is enabled only if the boot mode is BIOS.**
Generic USB Boot	Enables or disables the USB boot option. This option is set to **Disabled** by default.
Hard-disk Drive Placeholder	Enables or disables the Hard-disk drive placeholder option. This option is set to **Disabled** by default.
UEFI Boot Settings	Enables or disables UEFI Boot options. The UEFI options include **PXE** boot devices. **NOTE: This option is enabled only if the boot mode is UEFI.**
UEFI Boot Sequence	Enables you to change the boot device order.
Boot Options Enable/Disable	Enables you to select the enabled or disabled boot devices.

Choosing system boot mode

The BIOS boot mode (the default), is the standard BIOS-level boot interface.

NOTE: The system also supports the UEFI boot 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 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. 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**.

Steps

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

2 Click **UEFI/BIOS Boot Sequence**

> **NOTE: Use the arrow keys to select a boot device, and use the plus (+) and minus (-) sign keys to move the device down or up in the order.**

3 Click **Exit**, and then click **Yes** to save the settings on exit.

Network Settings

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

> **NOTE: BIOS does not control network settings in the BIOS mode. For the BIOS boot mode, the optional Boot ROM of the network controllers handles the network settings.**

Viewing Network Settings

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **Network Settings**.

Network Settings screen details

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

Option	Description

UEFI PXE Settings

Options	Description
PXE Device n (n = 1 to 4)	Enables or disables the device. When enabled, a UEFI PXE boot option is created for the device.

PXE Device n Settings(n = 1 to 4)

Enables you to control the configuration of the PXE device.

Table 29. PXE Device n Settings screen details

Option	Description
Interface	Specifies the NIC interface used for this PXE device.
Protocol	Enables you to select protocol **IPv4** or **IPv6**. This is set to **IPv4** by default.
VLAN	Enables or Disable **VLAN**. This is set to **Disabled** by default.
VLAN ID	This is set to **1**.

Option	Description
	Option / **Description**
	VLAN Priority — This is set to **0**.
UEFI HTTP Settings	Options / Description
	HTTP Device (n = 1 to 4) — Enables or disables the device. When enabled, a UEFI HTTP boot option is created for the device.
HTTP Device n Settings (n = 1 to 4)	Enables you to control the configuration of the HTTP device.
UEFI iSCSI Settings	Enables you to control the configuration of the iSCSI device.

Table 30. UEFI iSCSI Settings screen details

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

Integrated Devices

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

Viewing Integrated Devices

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

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

```
F2 = System Setup
```

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

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

Integrated Devices details

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

Option	Description
User Accessible USB Ports	Enables or disables the USB ports. Selecting **All Ports Off** disables all USB ports. The USB keyboard and mouse operate during boot process in certain operating systems. After the boot process is complete, the USB keyboard and mouse do not work if the ports are disabled. This option is set to **All Ports On** by default.
Internal SD Card Port	Enables or disables the internal SD Card port on the PCIe riser. This option is set to **On** or **Off**. This option is set to **On** by default.
iDRAC Direct USB Port	The iDRAC Direct USB port is managed by iDRAC exclusively with no host visibility. This option is set to **ON** or **OFF**. When set to **OFF**, iDRAC does not detect any USB devices installed in this managed port. This option is set to **On** by default.
Embedded NIC1	Enables or disables the Embedded NIC1 port. The option is set to **Enabled** by default.
I/OAT DMA Engine	Enables or disables the I/O Acceleration Technology (I/OAT) option. I/OAT is a set of DMA features designed to accelerate network traffic and lower CPU utilization. Enable only if the hardware and software support the feature.This option is set to **Disabled** by default.
Embedded Video Controller	Enables or disables the use of Embedded Video Controller as the primary display. When set to **Enabled**, the Embedded Video Controller is used as the primary display even if add-in graphic cards are installed. When set to **Disabled**, an add-in graphics card is 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 is disabled before the operating system boots. This option is set to **Enabled** by default. **NOTE: When there are multiple add-in graphic cards installed in the system, the first card discovered during PCI enumeration is selected as the primary video. You might have to re-arrange the cards in the slots in order to control which card is the primary video.**
Current State of Embedded Video Controller	Displays the current state of the embedded video controller. The **Current State of Embedded Video Controller** option is a read-only field. If the Embedded Video Controller is the only display capability in the system (that is, no add-in graphics card is installed), then the Embedded Video Controller is automatically used as the primary display even if the **Embedded Video Controller** setting is set to **Enabled**.
SR-IOV Global Enable	Enables or disables the BIOS configuration of Single Root I/O Virtualization (SR-IOV) devices. This option is set to **Enabled** by default.
OS Watchdog Timer	If your system stops responding, this watchdog timer aids in the recovery of your operating system. When this option is set to **Enabled**, the operating system initializes the timer. When this option is set to **Disabled** (the default), the timer does not have any effect on the system.
Memory Mapped I/O above 4 GB	Enables or disables the support for the PCIe devices that need large amounts of memory. Enable this option only for 64-bit operating systems. This option is set to **Enabled** by default.
Memory Mapped I/O Base	When set to 12 TB, the system will map MMIO base to 12 TB. MMIO base default is 56 TB. The default value must not be changed, unless addressing a known issue. Enable this feature for an OS that requires 44 bit PCIe addressing.
Slot Disablement	Enables or disables the available PCIe slots on your system. The slot disablement feature controls the configuration of the PCIe cards installed in the specified slot. Slots must be disabled only when the installed peripheral card prevents booting into the operating system or causes delays in system startup. If the slot is disabled, both the Option ROM and UEFI drivers are disabled. Only slots that are present on the system are available for control.

Table 31. Slot Disablement

Option	Description
Slot 1	Enables or disables or only the boot driver is disabled for the PCIe slot 1. This option is set to **Enabled** by default.
Slot 3	Enables or disables or only the boot driver is disabled for the PCIe slot 3. This option is set to **Enabled** by default.

Option	Description
Slot 4	Enables or disables or only the boot driver is disabled for the PCIe slot 4. This option is set to **Enabled** by default.
Slot 5	Enables or disables or only the boot driver is disabled for the PCIe slot 5. This option is set to **Enabled** by default.

Serial Communication

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

Viewing Serial Communication

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **Serial Communication**.

Serial Communication details

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

Option	Description
Serial Port Address	Enables you to set the port address for serial device. This field sets the serial port address to either **COM1** or **COM2** (COM1=0x3F8, COM2=0x2F8). **NOTE: You can use only Serial Device 2 for the Serial Over LAN (SOL) feature. To use console redirection by SOL, configure the same port address for console redirection and the serial device.** **NOTE: Every time the system boots, the BIOS syncs the serial MUX setting 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.**
Failsafe Baud Rate	Specifies the failsafe baud rate for console redirection. The BIOS attempts to determine the baud rate automatically. This failsafe baud rate is used only if the attempt fails, and the value must not be changed. This option is set to **115200** by default.
Remote Terminal Type	Enables you to set the remote console terminal type. This option is set to **VT100/VT220** by default.
Redirection After Boot	Enables or disables the BIOS console redirection when the operating system is loaded. This option is set to **Enabled** by default.

System Profile Settings

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

Viewing System Profile Settings

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **System Profile Settings**.

System Profile Settings details

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

Option	Description
System Profile	Sets the system profile. If you set the System Profile option to a mode other than **Custom**, the BIOS automatically sets the rest of the options. You can only change the rest of the options if the mode is set to **Custom**.This option is set to **Performance Per Watt (DAPC)** by default. DAPC is Dell Active Power Controller.Other options include **Performance Per Watt (OS)**, **Performance**, and **Workstation Performance**. **NOTE: All the parameters on the system profile setting screen are available only when the System Profile option is set to Custom.**
CPU Power Management	Sets the CPU power management. This option is set to **System DBPM (DAPC)** by default. DBPM is Demand-Based Power Management. Other options include **OS DBPM**, and **Maximum Performance**.
Memory Frequency	Sets the speed of the system memory. You can select **Maximum Performance**, **Maximum Reliability**, or a specific speed. This option is set to **Maximum Performance** by default.
Turbo Boost	Enables or disables the processor to operate in the turbo boost mode. This option is set to **Enabled** by default.
C1E	Enables or disables the processor to switch to a minimum performance state when it is idle. This option is set to **Enabled** by default.
C States	Enables or disables the processor to operate in all available power states. This option is set to **Enabled** by default.
Write Data CRC	Enables or disables the Write Data CRC. This option is set to **Disabled** by default.
Memory Patrol Scrub	Sets the memory patrol scrub frequency. This option is set to **Standard** by default.
Memory Refresh Rate	Sets the memory refresh rate to either 1x or 2x. This option is set to **1x** by default.
Uncore Frequency	Enables you to select the **Processor Uncore Frequency** option.**Dynamic mode** enables the processor to optimize power resources across cores and uncores during runtime. The optimization of the uncore frequency to either save power or optimize performance is influenced by the setting of the **Energy Efficiency Policy** option.
Energy Efficient Policy	Enables you to select the **Energy Efficient Policy** option.

Option	Description
	The CPU uses the setting to manipulate the internal behavior of the processor and determines whether to target higher performance or better power savings. This option is set to **Balanced Performance** by default.
Number of Turbo Boost Enabled Cores for Processor 1	**NOTE: If there are two processors installed in the system, you will see an entry for Number of Turbo Boost Enabled Cores for Processor 2.** Controls the number of turbo boost enabled cores for Processor 1. The maximum number of cores is enabled by default.
Monitor/Mwait	Enables the Monitor/Mwait instructions in the processor. This option is set to **Enabled** for all system profiles, except **Custom** by default. **NOTE: This option can be disabled only if the C States option in the Custom mode is set to disabled.** **NOTE: When C States is set to Enabled in the Custom mode, changing the Monitor/Mwait setting does not impact the system power or performance.**
CPU Interconnect Bus Link Power Management	Enables or disables the CPU Interconnect Bus Link Power Management. This option is set to **Enabled** by default.
PCI ASPM L1 Link Power Management	Enables or disables the PCI ASPM L1 Link Power Management. This option is set to **Enabled** by default.

System Security

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

Viewing System Security

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

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

   ```
   F2 = System Setup
   ```

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

System Security Settings details

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

Option	Description
CPU AES-NI	Improves the speed of applications by performing encryption and decryption by using the Advanced Encryption Standard Instruction Set (AES-NI). This option is set to **Enabled** by default.
System Password	Enables you to set the system password. This option is read-only if the password jumper is not installed in the system.

Option	Description
Setup Password	Enables you to set the system setup password. This option is read-only if the password jumper is not installed in the system.
Password Status	Enables you to lock the system password. This option is set to **Unlocked** by default.
TPM Security	**NOTE: The TPM menu is available only when the TPM module is installed.** Enables you to control the reporting mode of the TPM. The **TPM Security** option is set to **Off** by default. You can only modify the TPM Status TPM Activation, and the Intel TXT fields if the **TPM Status** field is set to either **On with Pre-boot Measurements** or **On without Pre-boot Measurements**.
TPM Information	Enables you to change the operational state of the TPM. This option is set to **No Change** by default.
TPM Status	Specifies the TPM status.
TPM Command	Controls the Trusted Platform Module (TPM). When set to **None**, no command is sent to the TPM. When set to **Activate**, the TPM is enabled and activated. When set to **Deactivate**, the TPM is disabled and deactivated. When set to **Clear**, all the contents of the TPM are cleared. This option is set to **None** by default. **CAUTION: Clearing the TPM results in the loss of all keys in the TPM. The loss of TPM keys may affect booting to the operating system.** This field is read-only when **TPM Security** is set to **Off**. The action requires an additional reboot before it can take effect.
Intel(R) TXT	Enables you to set the Intel Trusted Execution Technology (TXT) option. To enable the **Intel TXT** option, virtualization technology and TPM Security must be enabled with Pre-boot measurements. This option is set to **Off** by default.
Power Button	Enables you to set the power button on the front of the system. This option is set to **Enabled** by default.
AC Power Recovery	Sets how the system behaves after AC power is restored to the system. This option is set to **Last** by default.
AC Power Recovery Delay	Enables you to set the time that the system should take to power up after AC power is restored to the system. This option is set to **Immediate** by default.
User Defined Delay (60 s to 600 s)	Enables you to set the **User Defined Delay** option when the **User Defined** option for **AC Power Recovery Delay** is selected.
UEFI Variable Access	Provides varying degrees of securing UEFI variables. When set to **Standard** (the default), UEFI variables are accessible in the operating system per the UEFI specification. When set to **Controlled**, selected UEFI variables are protected in the environment, and new UEFI boot entries are forced to be at the end of the current boot order.
In-Band Manageability Interface	When set to **Disabled**, this setting will hide the Management Engine's (ME), HECI devices, and the system's IPMI devices from the operating system. This prevents the operating system from changing the ME power capping settings, and blocks access to all in-band management tools. All management should be managed through out-of-band. This option is set to **Enabled** by default. **NOTE: BIOS update requires HECI devices to be operational and DUP updates require IPMI interface to be operational. This setting needs to be set to Enabled to avoid updating errors.**
Secure Boot	Enables Secure Boot, where the BIOS authenticates each pre-boot image by using the certificates in the Secure Boot Policy. Secure Boot is set to **Disabled** by default.
Secure Boot Policy	When Secure Boot policy is set to **Standard**, the BIOS uses the system manufacturer key and certificates to authenticate pre-boot images. When Secure Boot policy is set to **Custom**, the BIOS uses the user-defined key and certificates. Secure Boot policy is set to **Standard** by default.
Secure Boot Mode	Enables you to configure how the BIOS uses the Secure Boot Policy Objects (PK, KEK, db, dbx). If the current mode is set to **Deployed Mode**, the available options are **User Mode** and **Deployed Mode**. If the current mode is set to **User Mode**, the available options are **User Mode**, **Audit Mode**, and **Deployed Mode**.

Option	Description
	Options / **Description**
	User Mode — In **User Mode**, PK must be installed, and BIOS performs signature verification on programmatic attempts to update policy objects. BIOS allows unauthenticated programmatic transitions between modes.
	Audit Mode — In **Audit mode**, PK is not present. BIOS does not authenticate programmatic updates to the policy objects, and transitions between modes. **Audit Mode** is useful for programmatically determining a working set of policy objects. BIOS performs signature verification on pre-boot images and logs the results in the image Execution Information Table, but approves the images whether they pass or fail verification.
	Deployed Mode — **Deployed Mode** is the most secure mode. In **Deployed Mode**, PK must be installed and the BIOS performs signature verification on programmatic attempts to update policy objects. **Deployed Mode** restricts the programmatic mode transitions.
Secure Boot Policy Summary	Specifies the list of certificates and hashes that secure boot uses to authenticate images.
Secure Boot Custom Policy Settings	Configures the Secure Boot Custom Policy. To enable this option, set the **Secure Boot Policy** to **Custom**.

Creating a system and setup password

Prerequisite

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

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

Steps

1. To enter System Setup, press F2 immediately after turning on or rebooting your system.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security**.
3. On the **System Security** screen, verify that **Password Status** is set to **Unlocked**.
4. In the **System Password** field, type your system password, and press Enter or Tab.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - The password can contain the numbers 0 through 9.
   - Only the following special characters are allowed: space, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

   A message prompts you to reenter the system password.
5. Reenter the system password, and click **OK**.
6. In the **Setup Password** field, type your setup password and press Enter or Tab.

A message prompts you to reenter the setup password.

7 Reenter the setup password, and click **OK**.

8 Press Esc to return to the System BIOS screen. Press Esc again.

A message prompts you to save the changes.

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

Using your system password to secure the system

About this task

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

Steps

1 Power on or reboot your system.

2 Type the system password and press Enter.

Next step

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

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

Deleting or changing system and setup password

Prerequisite

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, change 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.

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.

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 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 details 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

In the **Redundant OS Control** screen you can set the redundant OS information. This enables you to set up a physical recovery disk on the system.

Viewing Redundant OS Control

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **Redundant OS Control**.

Redundant OS Control screen details

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

Option	Description
Redundant OS Location	Enables you to select a backup disk from the following devices: · **None** · **SATA Ports** **NOTE: RAID configurations and NVMe cards not are included as BIOS does not have the ability to distinguish between individual drives in those configurations.**
Redundant OS State	**NOTE: This option is disabled if Redundant OS Location is set to None.** When set to **Visible**, the backup disk is visible to the boot list and OS. When set to **Hidden**, the backup disk is disabled and is not visible to the boot list and OS. This option is set to **Visible** by default. **NOTE: BIOS will disable the device in hardware, so it cannot be accessed by the OS.**

Option	Description
Redundant OS Boot	**NOTE: This option is disabled if Redundant OS Location is set to None or if Redundant OS State is set to Hidden.** When set to **Enabled**, BIOS boots to the device specified in **Redundant OS Location**. When set to **Disabled**, BIOS preserves the current boot list settings. This option is set to **Disabled** by default.

Miscellaneous Settings

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

Viewing Miscellaneous Settings

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

1 Power on, or restart your system.

2 Press F2 immediately after you see the following message:

```
F2 = System Setup
```

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

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

4 On the **System BIOS** screen, click **Miscellaneous Settings**.

Miscellaneous Settings details

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

Option	Description
System Time	Enables you to set the time on the system.
System Date	Enables you to set the date on the system.
Asset Tag	Specifies the asset tag and enables you to modify it for security and tracking purposes.
Keyboard NumLock	Enables you to set whether the system should boot with the NumLock enabled or disabled. This option is set to **On** by default. **NOTE: This option does not apply to 84-key keyboards.**
F1/F2 Prompt on Error	Enables or disables the F1/F2 prompt on error. This option is set to **Enabled** by default. The F1/F2 prompt also includes keyboard errors.
Load Legacy Video Option ROM	Enables you to determine whether the system BIOS loads the legacy video (INT 10H) option ROM from the video controller. Selecting **Enabled** in the operating system does not support UEFI video output standards. This field is available only for UEFI boot mode. You cannot set the option to **Enabled** if **UEFI Secure Boot** mode is enabled. This option is set to **Disabled** by default.
Dell Wyse P25/P45 BIOS Access	Enables or disables the Dell Wyse P25/P45 BIOS Access. This option is set to **Enabled** by default.
Power Cycle Request	Enables or disables the Power Cycle Request. This option is set to **None** by default.

iDRAC Settings utility

The iDRAC settings utility is an interface to set up and configure the iDRAC parameters by using UEFI. You can enable or disable various iDRAC parameters by using the iDRAC settings utility.

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

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

Device Settings

Device Settings enables you to configure the below device parameters:

- Controller Configuration Utility
- Embedded NIC Port1-X Configuration
- NICs in slotX, Port1-X Configuration
- BOSS Card configuration

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 can be started during the boot sequence and can function 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 **Dell.com/poweredgemanuals**.

Boot Manager

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

Viewing Boot Manager

About this task

To enter Boot Manager:

Steps

1 Power on, or restart your system.

2 Press F11 when you see the following message:

```
F11 = Boot Manager
```

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

Boot Manager main menu

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

One-shot UEFI boot menu

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

System Utilities

System Utilities contains the following utilities that can be launched:

- Launch Diagnostics
- BIOS Update File Explorer
- Reboot System

PXE boot

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

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

6

Installing and removing enclosure components

Safety instructions

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

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

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

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

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

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

Before working inside your system

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Power off the system, including all attached peripherals.
2 Disconnect the system from the electrical outlet and disconnect the peripherals.
3 Remove the sled from the enclosure.
4 Remove the system cover.

After working inside your system

Prerequisite

Follow the safety guidelines listed in Safety instructions.

Steps

1 Install the system cover.
2 Install the sled into the enclosure.
3 Reconnect the peripherals and connect the system to the electrical outlet.
4 Power on the attached peripherals and then turn on the system.

Recommended tools

You need the following tools to perform the removal and installation procedures:

- Phillips #1 screwdriver

- Phillips #2 screwdriver
- 1/4 inch flat head screwdriver
- #4 nut driver
- Torx #T30 screwdriver
- Wrist grounding strap
- ESD mat

Dell EMC PowerEdge C6420 sled

Sled Installation Guidelines

NOTE: Ensure to install a sled blank in all the empty slots. Operating the enclosure without a blank results in overheating.

NOTE: For optimized thermal operation, ensure to follow the sled population sequence mentioned below:

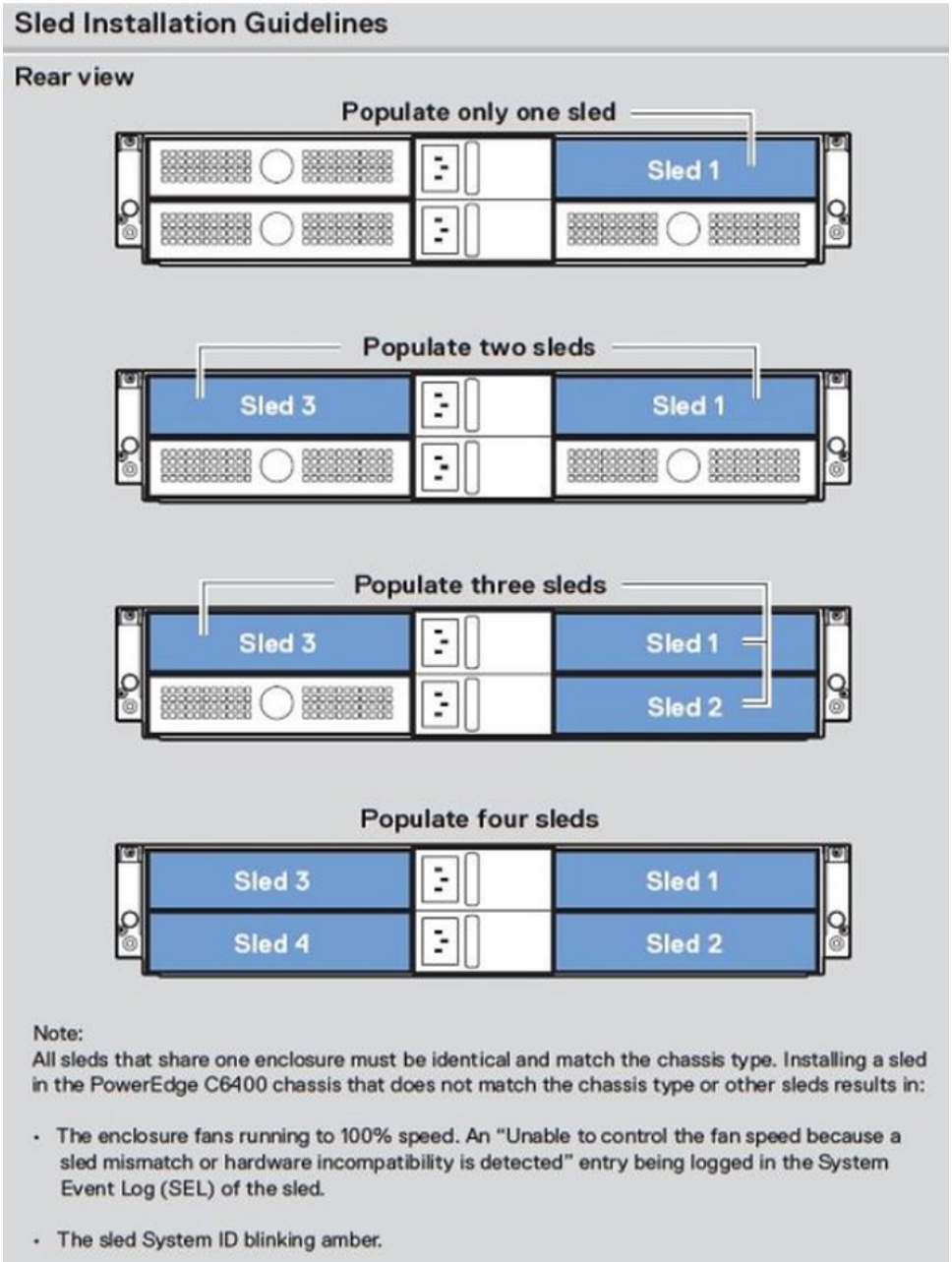

Figure 14. Sled Installation Guidelines

Removing a sled

Prerequisites

1 Follow the safety guidelines listed in Safety Instructions.

NOTE: For optimized thermal performance, see Sled installation guidelines.

NOTE: The procedure to remove a sled blank or a sled are the same.

Step

Press the retaining latch and using the sled pull handle, slide the sled out of the enclosure horizontally.

CAUTION: Ensure that the sled is supported with both hands while it is being slid out.

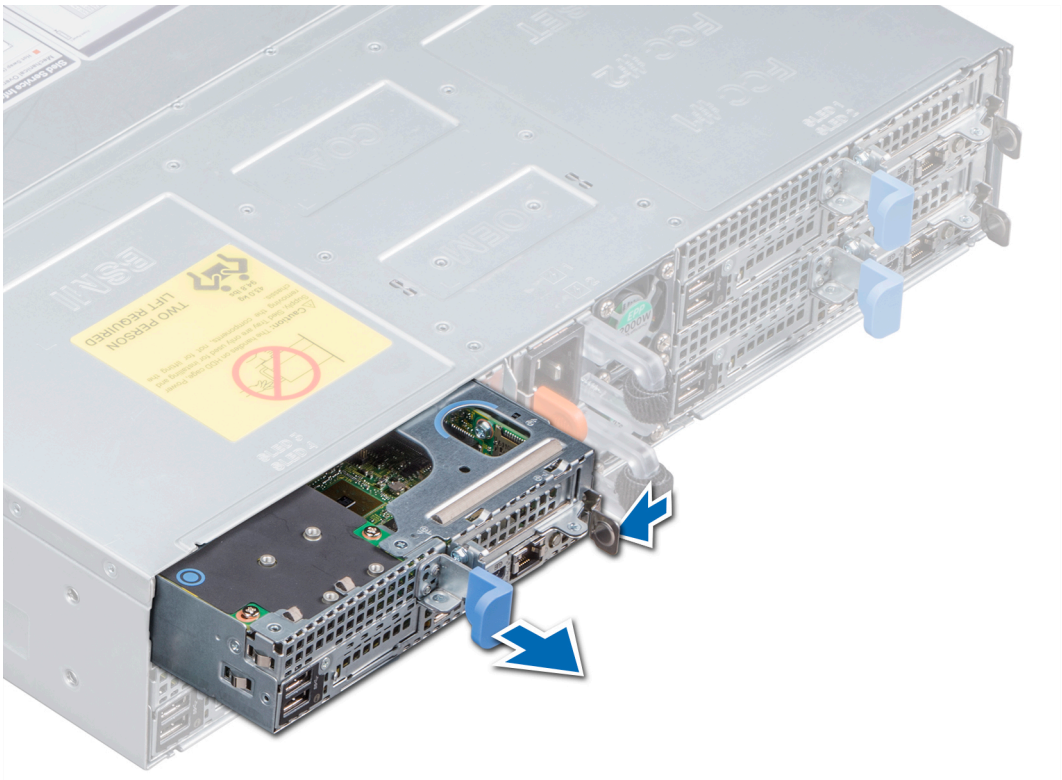

Figure 15. Removing a sled

CAUTION: If you are permanently removing the sled, install a sled blank promptly. Operating the enclosure without a blank, for an extended time can result in overheating.

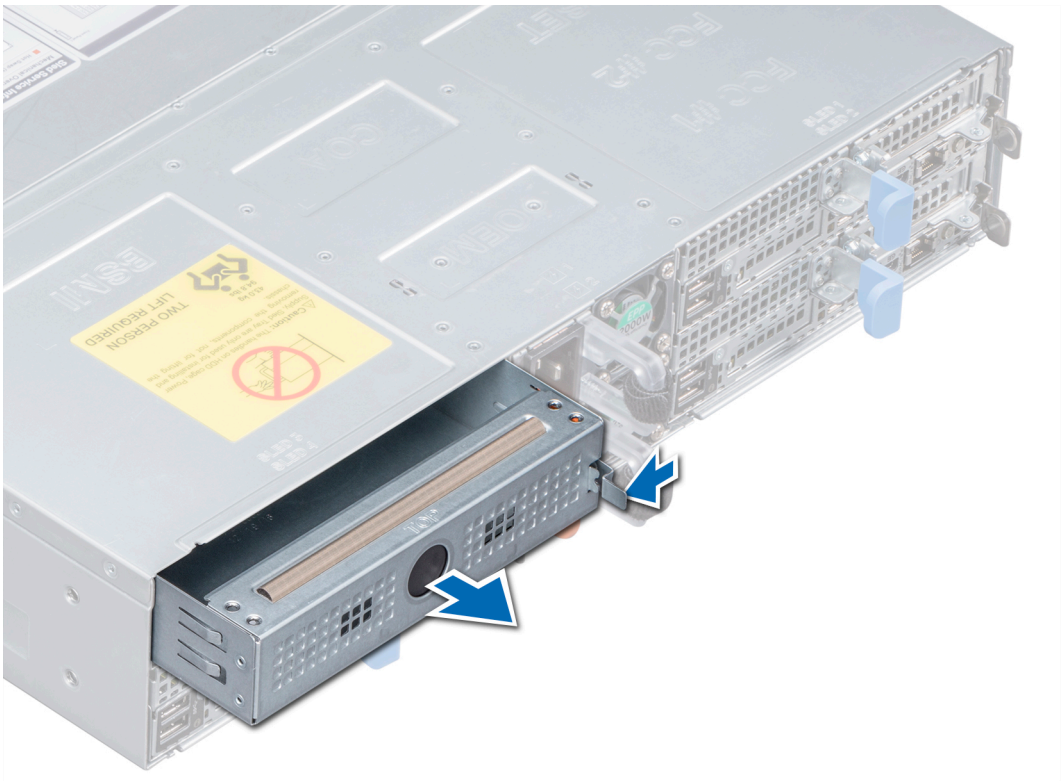

Figure 16. Removing a sled blank

Next step

1 Install the sled or Install a sled blank.

Installing a sled

Prerequisite

1 Follow the safety guidelines listed in Safety Instructions.

NOTE: For optimized thermal performance, see Sled installation guidelines.

Step

Slide the sled into the enclosure horizontally, ensuring that the sled is supported from beneath until it locks into place.

NOTE: To avoid any damages to the pins on the sled, do not force the sled into the enclosure.

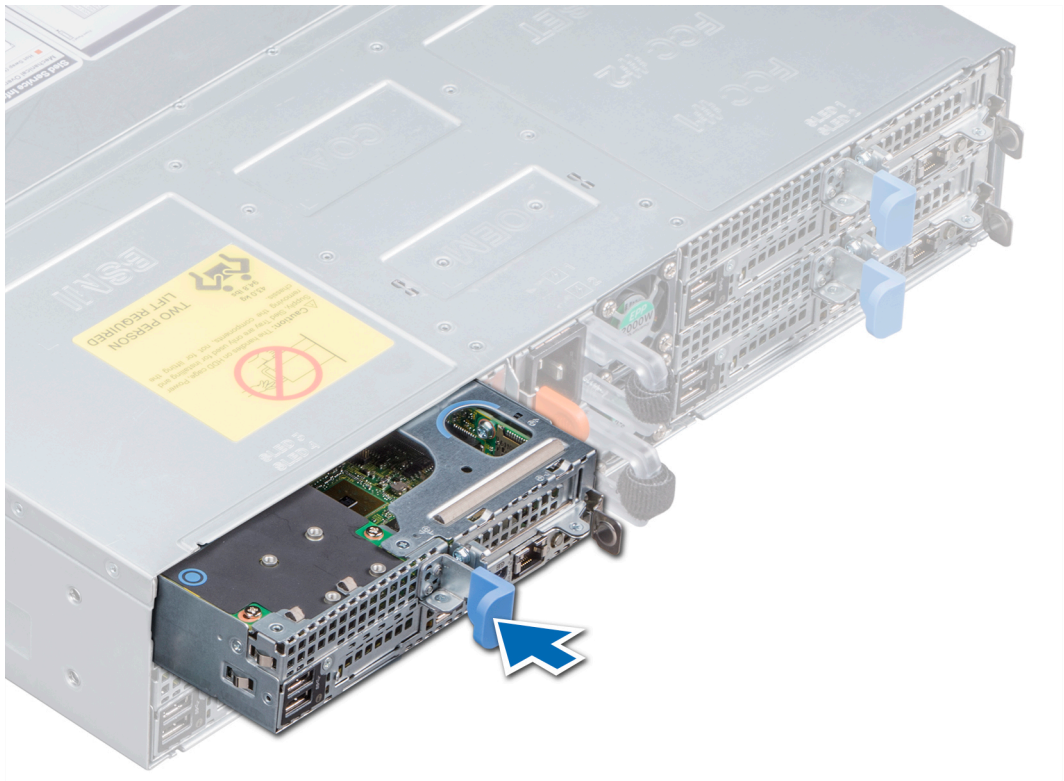

Figure 17. Installing a sled

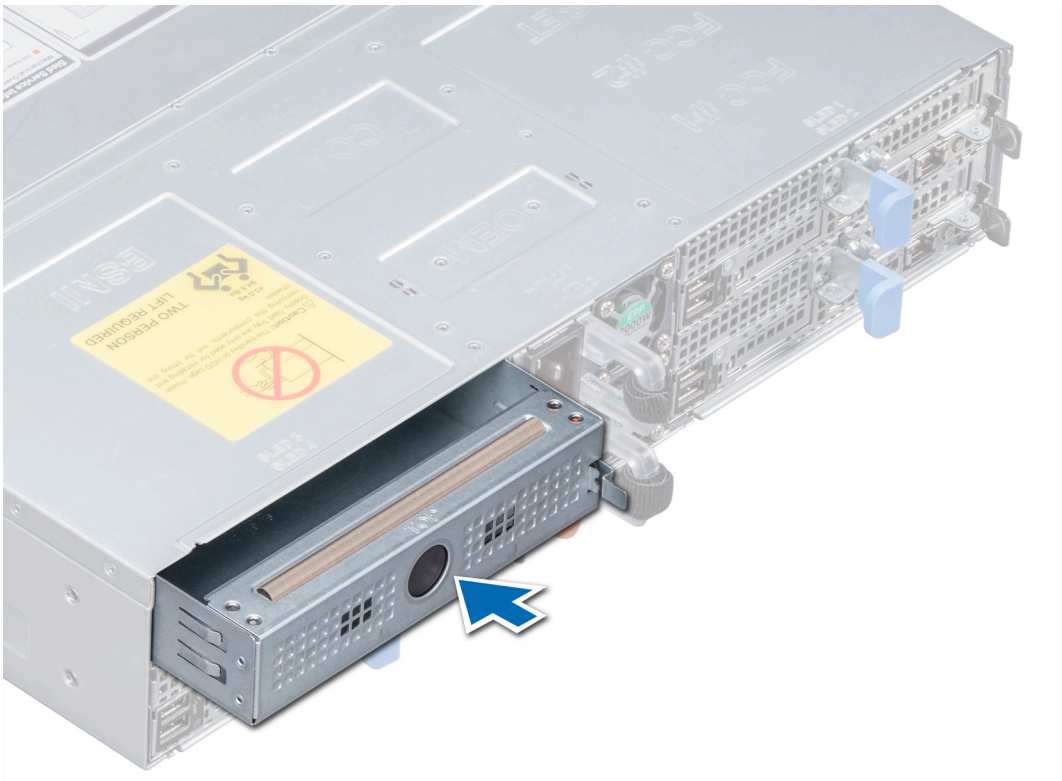

Figure 18. Installing a sled blank

PERC battery

Removing the PERC battery

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the sled from the enclosure.
4 If applicable, disconnect the battery cable from the PERC card.

CAUTION: Do not hold the battery cable and lift the battery out.

Step

Holding the cable end of the battery, lift the battery out of the air shroud.

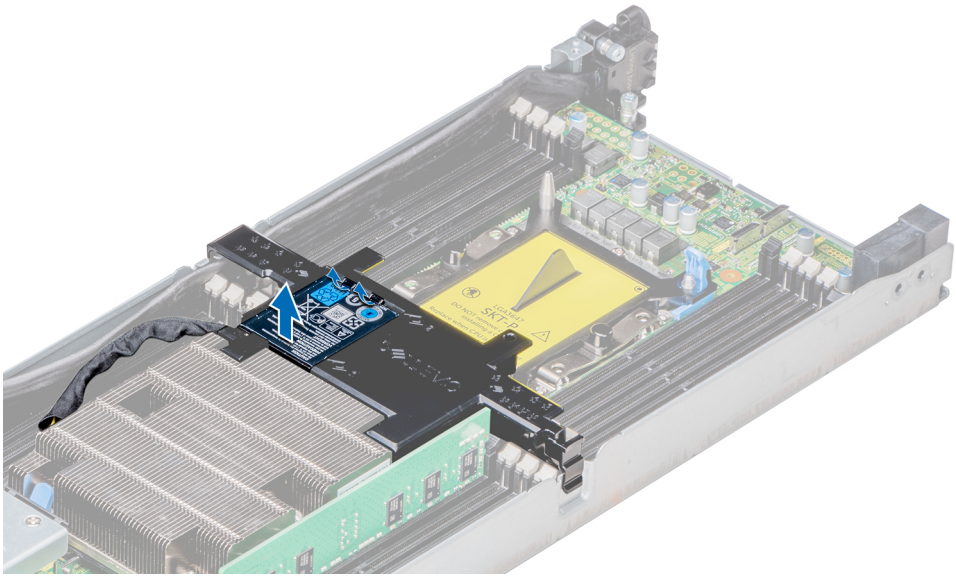

Figure 19. Removing the PERC battery

Next step

1 Install the PERC battery.

Installing the PERC battery

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in After working inside your enclosure.
3 Install the sled from the enclosure.
4 If applicable, connect the battery cable from the PERC card.

Steps

1 Align and insert the non cable end of the PERC battery into the battery slot on the air shroud.
2 Press the battery until it locks into place.

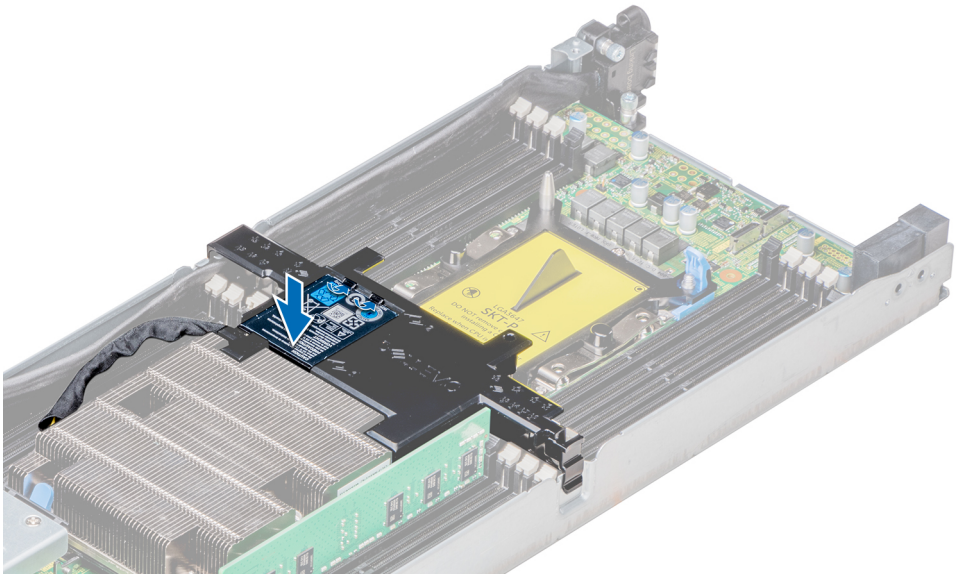

Figure 20. Installing the PERC battery

Next steps

1 If disconnected, connect the battery cable to the PERC card.
2 Follow the procedure listed in After working inside your enclosure.

Air shroud

Removing the air shroud

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 If applicable, disconnect the battery cable from the PERC card.

Steps

1 Press the clip on the air shroud to release the shroud from the sled.
2 Remove the shroud by rotating the shroud and releasing the hinge from the slot on the system.

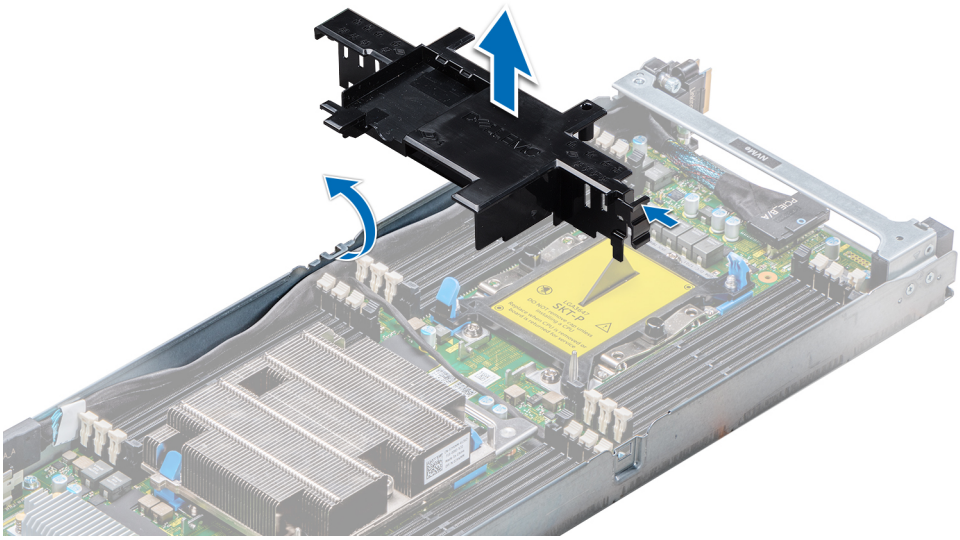

Figure 21. Removing the air shroud

Next step

1 Install the air shroud.

Installing the air shroud

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Insert the air shroud into the sled, aligning the shroud hinge with slot on the sled.

NOTE: Ensure that both the SATA cables are routed through the air shroud cable guide slot behind the air shroud latches.

NOTE: Ensure that neither of the cables are pinched or pressed under the air shroud.

2 Press the air shroud until the locks click into place.

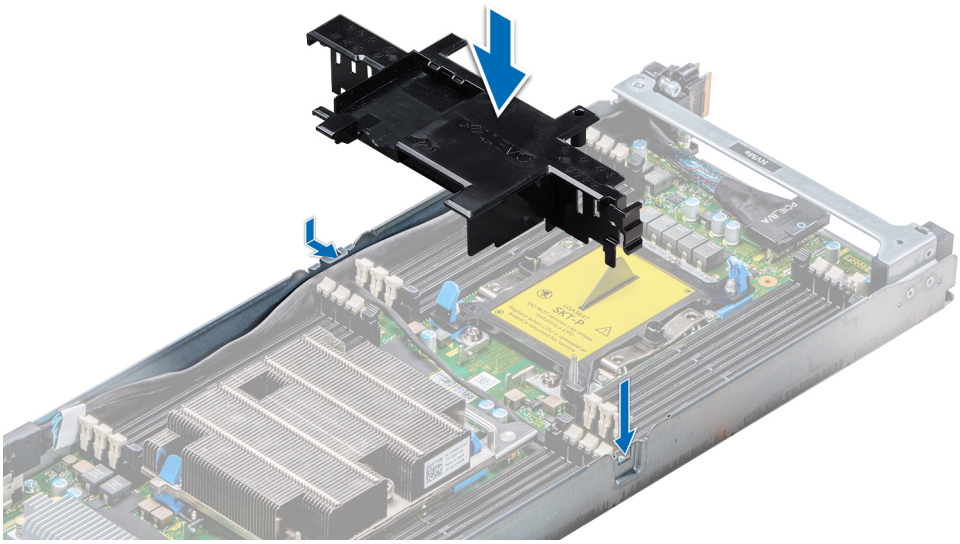

Figure 22. Installing the air shroud

Next steps

1 If disconnected, connect the battery cable to the PERC card.
2 Follow the procedure listed in After working inside your enclosure.

System memory

System memory guidelines

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

Your system contains 16 memory sockets split into two sets of 8 sockets, one set per processor. Each 8-socket set is organized into channels. In each channel, the release tabs of the first socket are marked white, the second socket black.

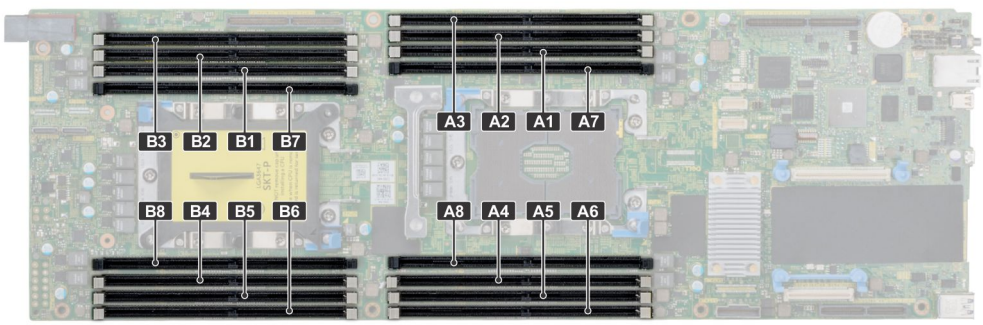

Figure 23. Memory socket locations

Memory channels are organized as follows:

Table 32. Memory channels

Processor	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
Processor 1	Slots A1 and A7	Slots A2	Slots A3	Slots A8 and A4	Slots A5	Slots A6
Processor 2	Slots B1 and B7	Slots B2	Slots B3	Slots B8 and B4	Slots B5	Slots B6

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.

The memory bus may operate at frequency can be 2933 MT/s, 2666 MT/s, 2400 MT/s, or 2133 MT/s depending on the following factors:

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

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

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

- All DIMMs must be DDR4.
- RDIMMs and LRDIMMs must not be mixed.
- 64 GB LRDIMMs that are DDP (Dual Die Package) LRDIMMs must not be mixed with 128 GB LRDIMMs that are TSV (Through Silicon Via/3DS) LRDIMMs.
- x4 and x8 DRAM based memory modules can be mixed.
- Up to two RDIMMs can be populated per channel regardless of rank count.
- Up to two LRDIMMs can be populated per channel regardless of rank count.
- A maximum of two different ranked DIMMs can be populated in a channel regardless of rank count.
- If memory modules with different speeds are installed, they will operate at the speed of the slowest installed memory module(s).
- Populate memory module sockets only if a processor is installed.
  - For single-processor systems, sockets A1 to A8 are available.
  - For dual-processor systems, sockets A1 to A8 and sockets B1 to B8 are available.
- Populate all the sockets with white release tabs first, followed by the black release tabs.
- When mixing memory modules with different capacities, populate the sockets with memory modules with the highest capacity first.
  For example, if you want to mix 8 GB and 16 GB memory modules, populate 16 GB memory modules in the sockets with white release tabs and 8 GB memory modules in the sockets with black release tabs.
- Memory modules of different capacities can be mixed provided other memory population rules are followed.
  For example, 8 GB and 16 GB memory modules can be mixed.
- 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.
- Mixing of more than two memory module capacities in a system is not supported.
- Unbalanced memory configurations will result in a performance loss so always populate memory channels identically with identical DIMMs for best performance.
- Populate six identical memory modules per processor (one DIMM per channel) at a time to maximize performance.
- To ensure proper system cooling, memory module blanks must be installed in memory sockets that are not occupied.

DIMM population update for Performance Optimized mode with quantity of 4 and 8 DIMMs per processor.

- When the DIMM quantity is 4 per processor, the population is slot 1, 2, 4, 5.
- When the DIMM quantity is 8 per processor, the population is slot 1, 2, 3, 4, 5, 6, 7, 8.

Mode-specific guidelines

The configurations allowed depend on the memory mode selected in the System BIOS.

Table 33. Memory operating modes

Memory Operating Mode	Description
Optimizer Mode	The **Optimizer Mode** if enabled, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.
Mirror Mode	The **Mirror Mode** if enabled, the system maintains two identical copies of data in memory, and the total available system memory is one half of the total installed physical memory. Half of the installed memory is used to mirror the active memory modules. This feature provides maximum reliability and enables the system to continue running even during a catastrophic memory failure by switching over to the mirrored copy. The installation guidelines to enable Mirror Mode require that the memory modules be identical in size, speed, and technology, and they must be populated in sets of 6 per processor.
Single Rank Spare Mode	**Single Rank Spare Mode** allocates one rank per channel as a spare. If excessive correctable errors occur in a rank or channel, while the operating system is running, they are moved to the spare area to prevent errors from causing an uncorrectable failure. Requires two or more ranks to be populated in each channel.
Multi Rank Spare Mode	**Multi Rank Spare Mode** allocates two ranks per channel as a spare. If excessive correctable errors occur in a rank or channel, while the operating system is running, they are moved to the spare area to prevent errors from causing an uncorrectable failure. Requires three or more ranks to be populated in each channel. With single rank memory sparing enabled, the system memory available to the operating system is reduced by one rank per channel. For example, in a dual-processor configuration with sixteen 16 GB single-rank memory modules, the available system memory is: 3/4 (ranks/channel) × 16 (memory modules) × 16 GB = 192 GB, and not 16 (memory modules) × 16 GB = 256 GB. For multi rank sparing, the multiplier changes to 1/2 (ranks/channel). **NOTE: To use memory sparing, this feature must be enabled in the BIOS menu of System Setup.** **NOTE: Memory sparing does not offer protection against a multi-bit uncorrectable error.**
Dell Fault Resilient Mode	The **Dell Fault Resilient Mode** if enabled, the BIOS creates an area of memory that is fault resilient. This mode can be used by an OS that supports the feature to load critical applications or enables the OS kernel to maximize system availability.

Optimizer Mode

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

- Dual processor: Populate the slots in round robin sequence starting with processor 1.

  NOTE: Processor 1 and processor 2 population should match.

Table 34. Memory population rules

Processor	Configuration	Memory population	Memory population information
Single processor	Optimizer (Independent channel) population order	1, 2, 4, 5	Odd amount of DIMMs per processor allowed.
	Mirror population order	{1, 2, 3, 4, 5, 6}	Mirroring is supported with 6 DIMMs per processor
	Single rank sparing population order	1, 2, 3, 4, 5, 6, 7, 8	Populate in this order, odd amount per processor allowed. Requires two ranks or more per channel.
	Multi rank sparing population order	1, 2, 3, 4, 5, 6, 7, 8	Populate in this order, odd amount per processor allowed. Requires three ranks or more per channel.
	Fault resilient population order	{1, 2, 3, 4, 5, 6}	Supported with 6 DIMMs per processor.
Dual processor (Start with processor1. processor1 and processor 2 population should match)	Optimized (Independent channel) population order	A{1}, B{1}, A{2}, B{2}, A{4}, B{4}, A{5}, B{5}	Odd amount of DIMMs per processor allowed.
	Mirroring population order	A{1,2,3,4,5,6}, B{1,2,3,4,5,6}	Mirroring is supported with 6 DIMMs per processor.
	Single rank sparing population order	A{1}, B{1}, A{2}, B{2}, A{3}, B{3} ...	Populate in this order, odd amount per processor allowed. Requires two ranks or more per channel.
	Multi rank spare population order	A{1}, B{1}, A{2}, B{2}, A{3}, B{3} ...	Populate in this order, odd amount per processor allowed. Requires three ranks or more per channel.
	Fault resilient population order	A{1,2,3,4,5,6}, B{1,2,3,4,5,6}	Supported with 6 DIMMs per processor.

Removing a memory module

The procedure for removing a DIMM module and an NVDIMM-N module is identical.

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.

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

CAUTION: To prevent data loss and potential damage to your system, ensure that your system, LEDs on system, LEDs on NVDIMM-N and LEDs on NVDIMM-N battery are turned off before removing the NVDIMM-N battery.

3 Remove the air shroud.

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

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

Steps

1 Locate the appropriate memory module socket.

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

2 Push the ejectors outward on both ends of the memory module socket to release the memory module from the socket.

3 Lift and remove the memory module from the system.

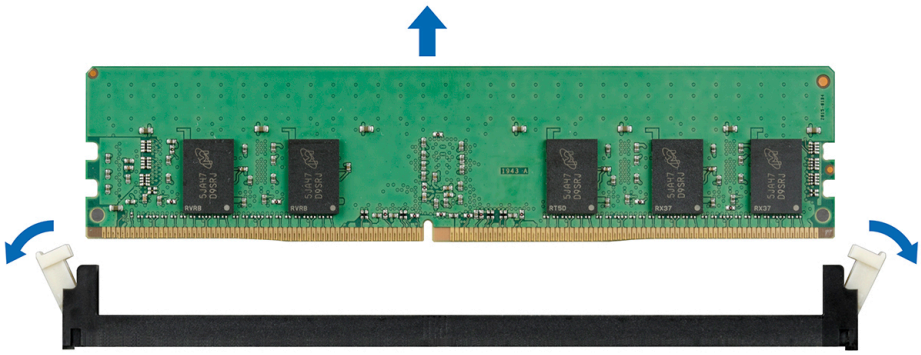

Figure 24. Removing a memory module

Next step

1 Install the memory module.

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

Installing a memory module

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Locate the appropriate memory module socket.

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

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

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

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

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

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

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

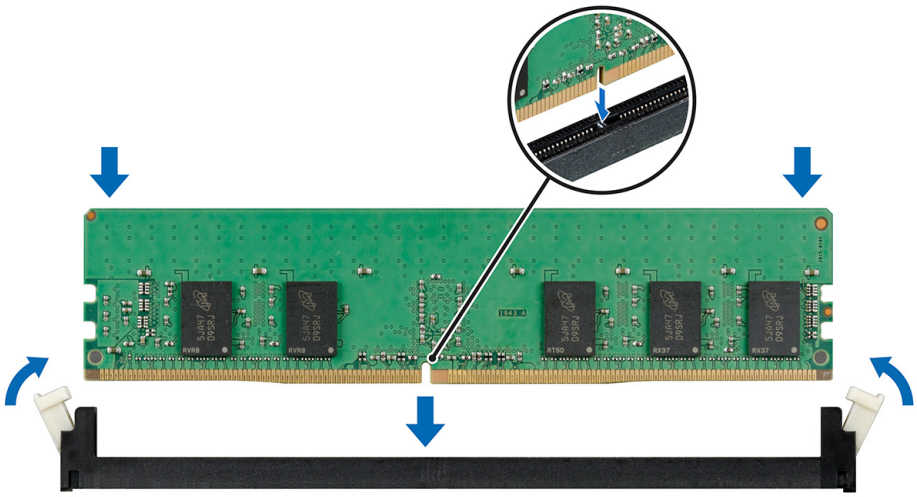

Figure 25. Installing a memory module

Next steps

1 Install the air shroud.

2 Follow the procedure listed in After working inside your enclosure.

3 To verify if the memory module has been installed properly, press F2 and navigate to **System Setup Main Menu > System BIOS > Memory Settings**. In the **Memory Settings** screen, the System Memory Size must reflect the updated capacity of the installed memory.

4 If the value is incorrect, one or more of the memory modules may not be installed properly. Ensure that the memory module is firmly seated in the memory module socket.

5 Run the system memory test in system diagnostics.

Support bracket

Removing the support bracket

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.

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

Step

Using the Phillips #1 screwdriver, remove the screws that secure the support bracket and lift the bracket away from the sled.

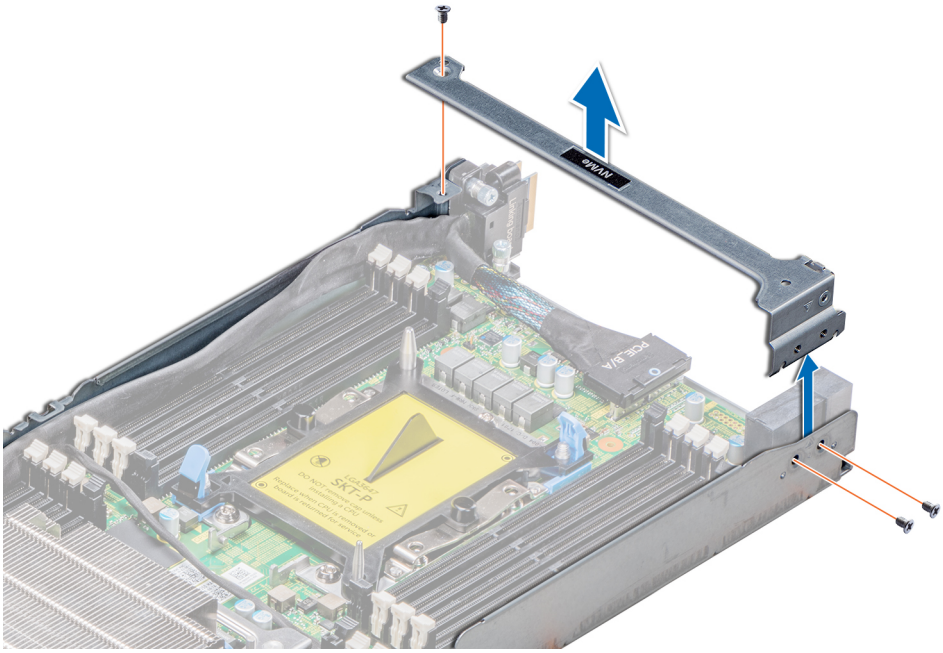

Figure 26. Removing the support bracket

Next step

1 Install the support bracket.

Installing the support bracket

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Place the support bracket in the sled.

2 Using a Phillips #1 screwdriver, replace the screws to secure the bracket in place.

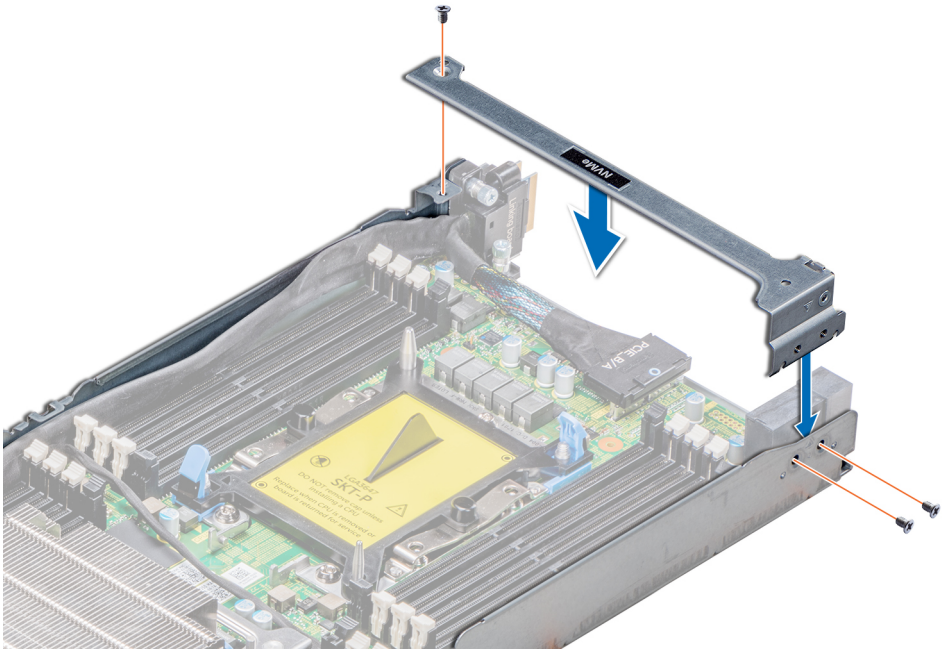

Figure 27. Installing the support bracket

Next steps

1 Install the sled into the enclosure.
2 Follow the procedure listed in After working inside your enclosure.

Linking board and PCIe cable

Removing the linking board and PCIe cables

Prerequisites

NOTE: Observe the routing of the cable as you remove it from the sled. Route the cable properly when you replace it to prevent the cable from being pinched or crimped.

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

Steps

1 Press the release clip on the PCIe_A cable connector to disconnect the cable. See the System board connector for more information.
2 Press the release clip on the PCIe_B cable connector to disconnect the cable. See the System board connector for more information.
3 If connected, disconnect the SATA cable from the x16 M.2 riser.
4 Using the Phillips #1 screwdriver, loosen the captive screws on the linking board and lift the board up along with the cables.

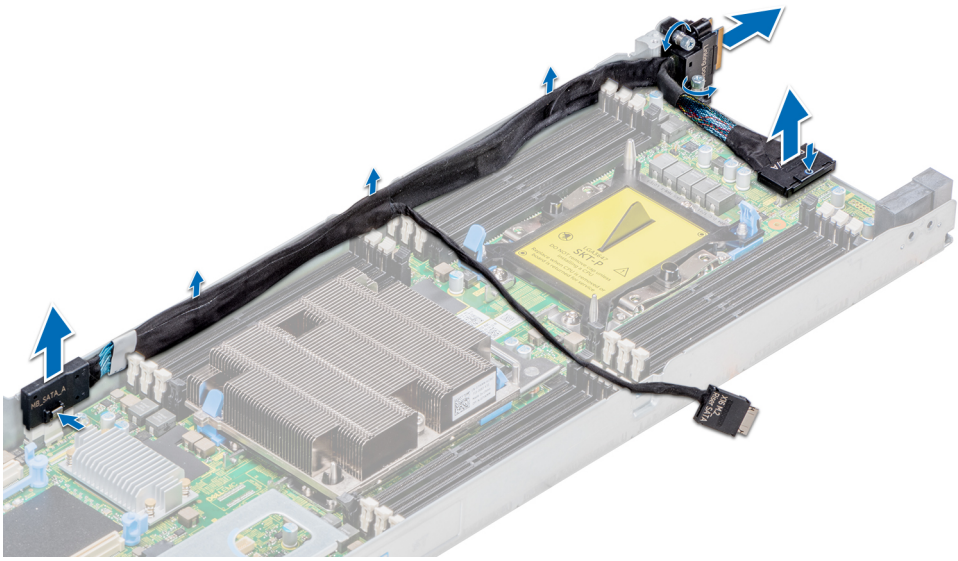

Figure 28. Removing the linking board and SATA cable

Next step

1 Install the linking board and PCIe cables.

Installing the linking board and PCIe cables

Prerequisite

NOTE: Observe the routing of the cable as you remove it from the sled. Route the cable properly when you replace it to prevent the cable from being pinched or crimped.

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Insert the PCIe_A connector into the connector on the system board, press the connector until it locks into place.
2 Insert and press the PCIe_B connector into the connector on the system board, press the connector until it locks into place.
3 If disconnected, reconnect the SATA cable to the x16 M.2 riser.
4 Using the Phillips #1 screwdriver, tighten the captive screws on the linking board to secure the board to the sled.

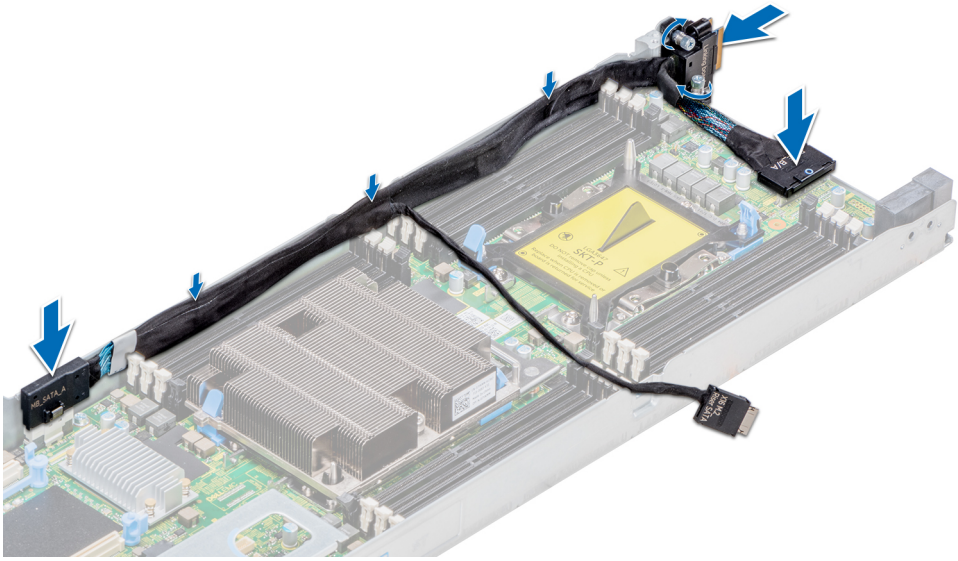

Figure 29. Installing the linking board and SATA cable

Next steps

1 Install the support bracket.
2 Install the air shroud.
3 Follow the procedure listed in After working inside your enclosure.

Processor and heat sink module

CAUTION: This is a Field Replaceable Unit (FRU). Removal and installation procedures must be performed only by Dell certified service technicians.

NOTE: In a sled which has been configured with mixed CPUs – a fabric processor installed in the CPU2 socket and a non-fabric processor installed in the CPU1 socket, you must connect the external Omnipath link cables to Port 2 on the OCP carrier card.

Use the following procedure when:

- Removing and installing a heat sink
- Replacing a processor

Table 35. Supported heat sinks

Heat sink	Dimensions	Design
CPU 1, standard heat sink	Length =108 mm (4.25 inches), Width =88 mm (3.46 inches), Height =24.8 mm (0.97 inches)	2 heat pipes
CPU 1, extended heat sink	Length =108 mm (4.25 inches), Width =96 mm (3.77 inches), Height =24.8 mm (0.97 inches)	2 heat pipes
CPU 2, standard heat sink	Length =108 mm (4.25 inches), Width =88 mm (3.46 inches), Height =24.8 mm (0.97 inches)	3 heat pipes

Removing a processor and heat sink module

Prerequisites

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

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in After working inside your enclosure.
3 Remove the sled from the enclosure.
4 Remove the air shroud.
5 If installed, disconnect the fabric cable from the fabric processor.

NOTE: The process to remove a processor heat sink module (PHM) is identical for a fabric and a nonfabric processor.

Steps

1 Using a Torx #T30 screwdriver, loosen the screws on the heat sink in the order mentioned below:
   a Loosen the first screw three turns.
   b Loosen the second screw completely.
   c Return to the first screw and loosen it completely.
2 Pushing both blue retention clips simultaneously, lift the PHM processor and heat sink module
3 Set the PHM aside with the processor side facing up.

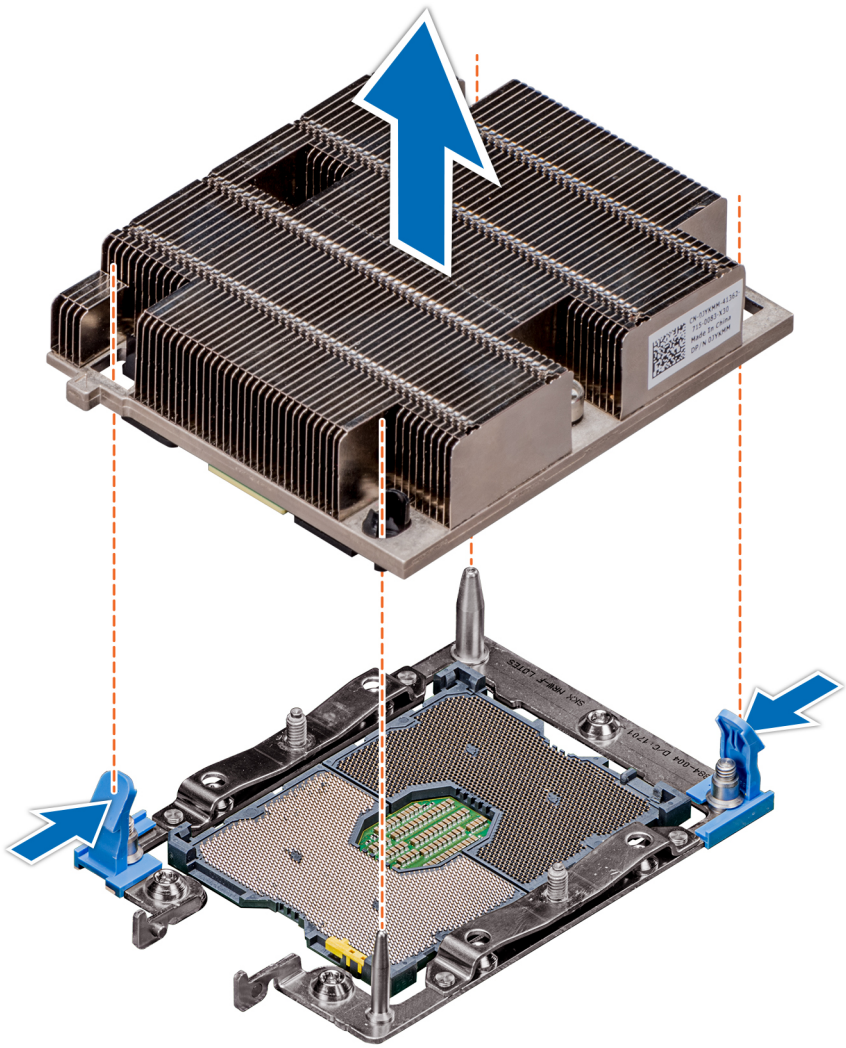

Figure 30. Removing the processor and heat sink module

Next step

1 Install the processor and heat sink module.

Installing a processor and heat sink module

Prerequisites

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

1 Follow the safety guidelines listed in Safety instructions..
2 If installed, remove the CPU dust cover.

Steps

1 Align the pin 1 indicator of the heat sink to the system board and then place the processor and heat sink module (PHM) on the processor socket.

CAUTION: To avoid damaging the fins on the heat sink, do not press down on the heat sink fins.

NOTE: Ensure that the PHM is held parallel to the system board to prevent damaging the components.

2 Push the blue retention clips inward to allow the heat sink to drop into place.

3 Using the Torx #T30 screwdriver, tighten the screws on the heat sink in the order below:

a Partially tighten the first screw (approximately 3 turns).

b Tighten the second screw completely.

c Return to the first screw and tighten it completely.

If the PHM slips off the blue retention clips when the screws are partially tightened, follow these steps to secure the PHM:

a Loosen both the heat sink screws completely.

b Lower the PHM on to the blue retention clips, following the procedure described in step 2.

c Secure the PHM to the system board, following the replacement instructions listed in this step above. 4.

NOTE: The processor and heat sink module retention screws should not be tightened to more than 0.13 kgf-m (1.35 N.m or 12 in-lbf).

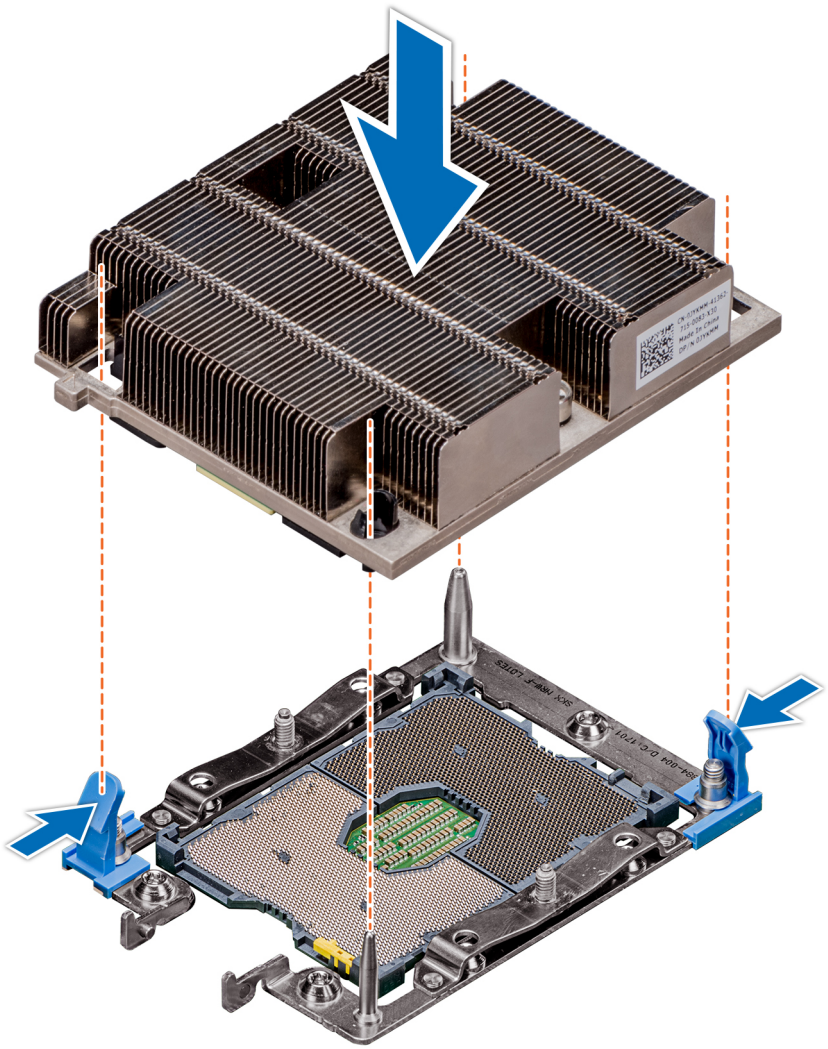

Figure 31. Installing a processor and heat sink module

Next steps

1 Install the air shroud.
2 Connect the fabric cable to the fabric processor.
3 Follow the procedure listed in After working inside your enclosure.

Removing the fabric processor from the processor heat sink module

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.

NOTE: This procedure is only for replacing a heat sink or a processor. This procedure should not be followed while replacing a system board.

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the air shroud.
4 Remove the fabric cable from the processor.
5 Remove the processor and heat sink module.

Steps

1 Place the heat sink with the processor contact side facing up.
2 Insert the flat blade screwdriver into the release slot and twist (do not pry) the screwdriver to break the seal created by the thermal paste.
3 Push the retaining clips on the processor bracket to unlock the bracket from the heat sink.
4 Lift the bracket and the processor away from the heat sink, and place the processor side down on the processor tray.
5 Flex the outer edges of the bracket close to the fabric connector to release the bracket from the processor.

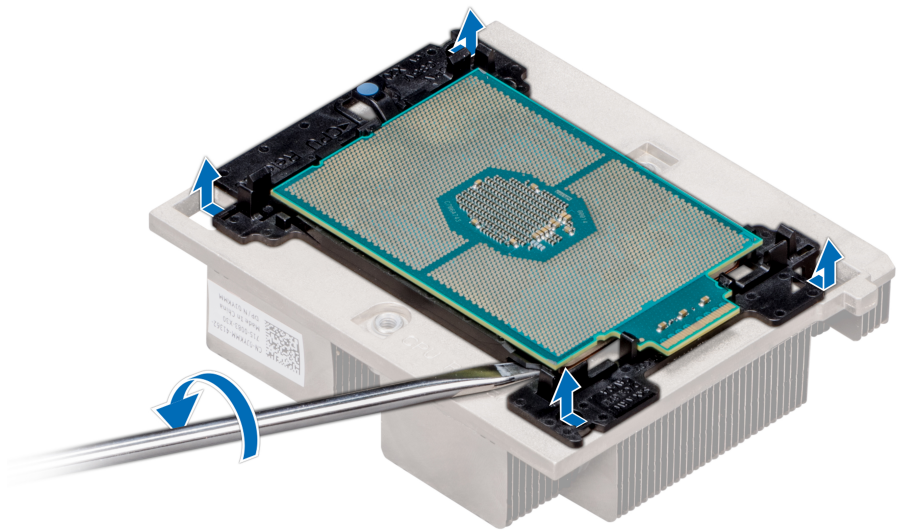

Figure 32. Loosening the processor bracket

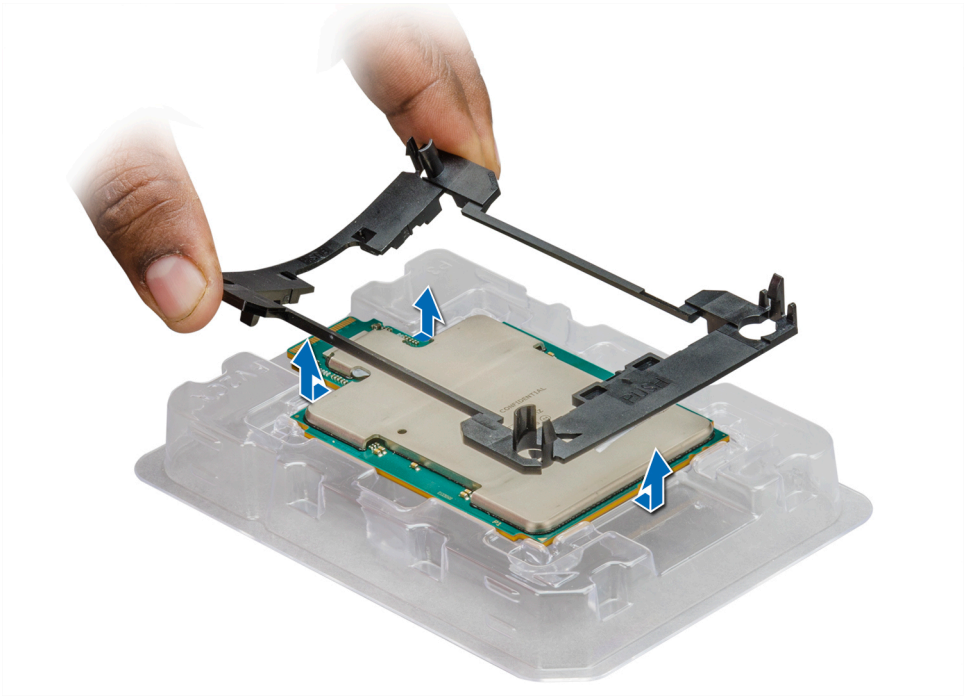

Figure 33. Removing the processor bracket

Next step

1 Install the fabric processor into the processor heat sink module.

Installing the fabric processor into the processor heat sink module

Prerequisite

NOTE: In a sled which has been configured with mixed CPUs – a fabric processor installed in the CPU2 socket and a non-fabric processor installed in the CPU1 socket, you must connect the external Omnipath link cables to Port 2 on the OCP carrier card.

Follow the safety guidelines listed in Safety instructions.

Steps

1 Ensure that the processor is in the CPU tray.

NOTE: Ensure that pin 1 indicator on the CPU tray is aligned with the pin 1 indicator on the processor.

2 Flex the outer edges of the bracket around the processor, close to the fabric connector, ensuring that the processor is locked into the clips on the bracket.

3 Press the other end of the bracket to ensure that the clip is locked on to the processor.

NOTE: Ensure that the pin 1 indicator on the bracket is aligned with the pin 1 indicator on the processor before placing the bracket on the processor.

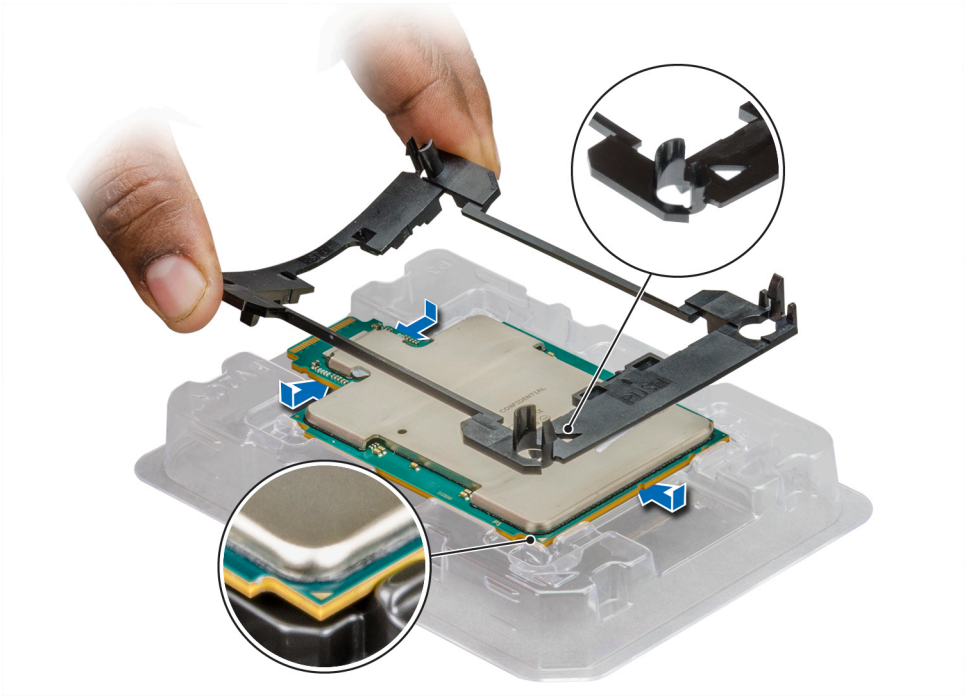

Figure 34. Installing the processor bracket

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

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

5 Use the thermal grease syringe included with your processor kit to apply the grease in a quadrilateral design on the top of the processor.

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

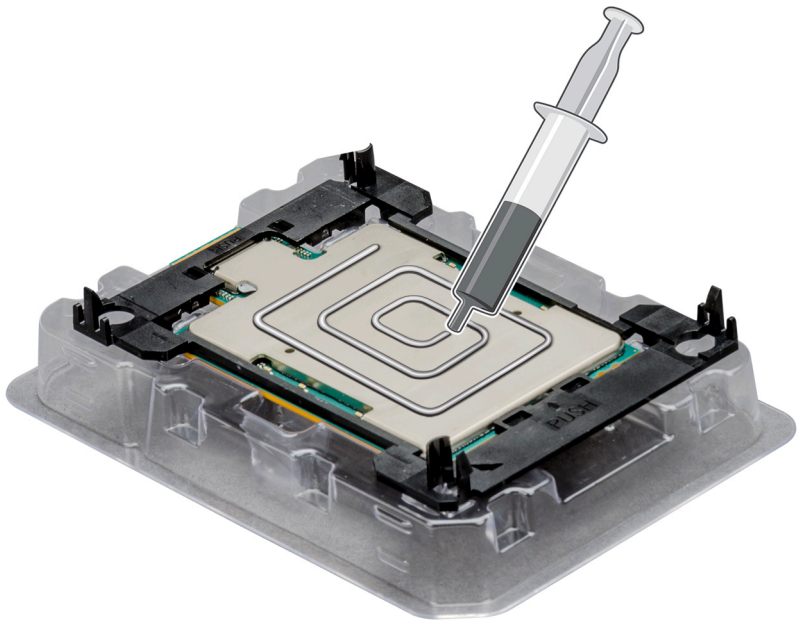

Figure 35. Applying thermal grease on top of the processor

6 Place the heat sink on the processor and push down until the bracket locks onto the heat sink.

NOTE:

- Ensure that the two guide pin holes on the bracket match the guide holes on the heat sink.
- Ensure that the pin 1 indicator on the heat sink is aligned with the pin 1 indicator on the bracket before placing the heat sink on the processor and bracket.

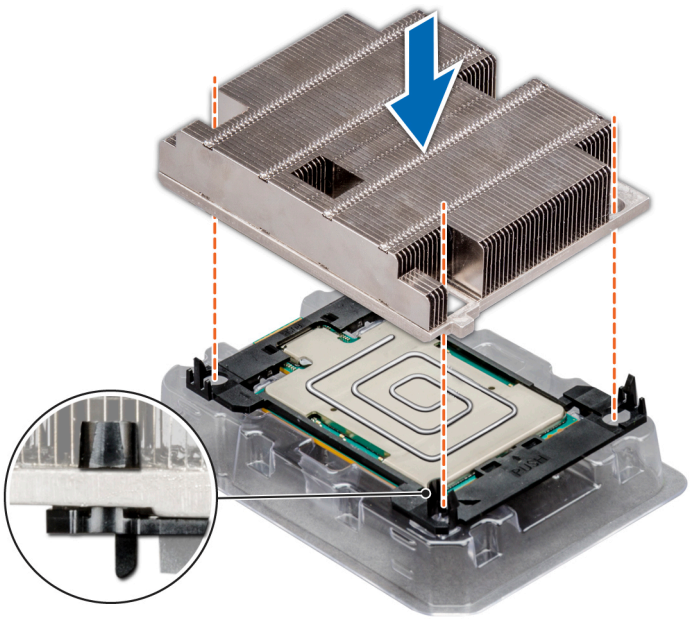

Figure 36. Installing the heat sink onto the processor

Next steps

1 Install the processor and heat sink module.
2 Follow the procedure listed in After working inside your enclosure.

Removing the non-fabric processor from the processor and heat sink module

Prerequisites

NOTE: Only remove the processor from the processor and heat sink module if you are replacing the processor or heat sink. This procedure is not required when replacing a system board.

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

Steps

1 Place the heat sink with the processor side facing up.
2 Insert a flat blade screwdriver into the release slot marked with a yellow label. Twist (do not pry) the screwdriver to break the thermal paste seal.
3 Push the retaining clips on the processor bracket to unlock the bracket from the heat sink.

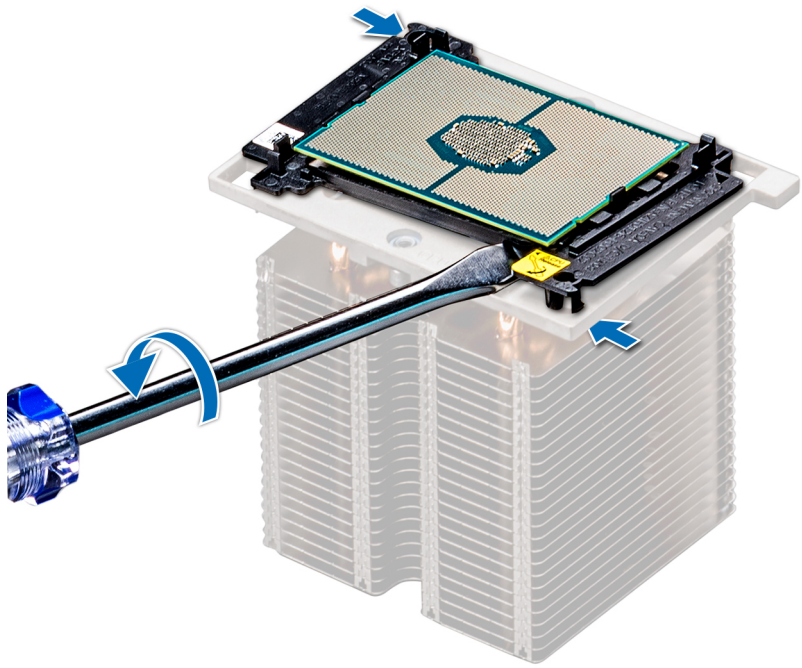

Figure 37. Loosening the processor bracket

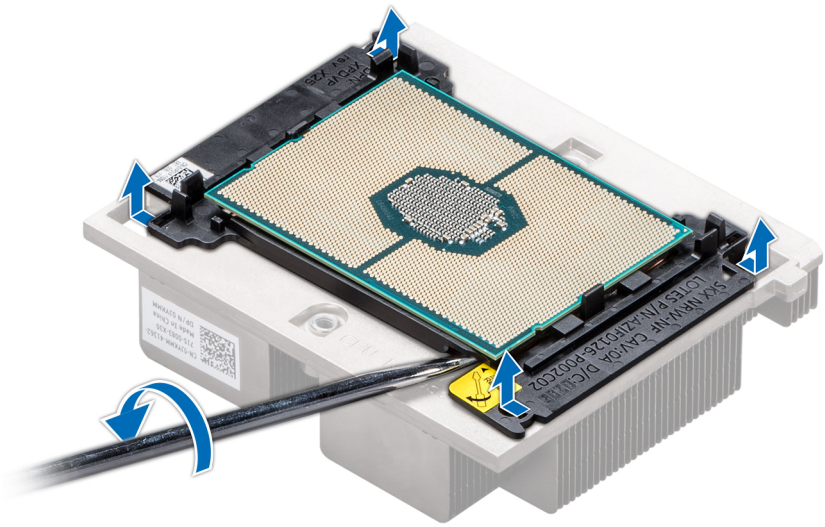

Figure 38. Loosening the processor bracket

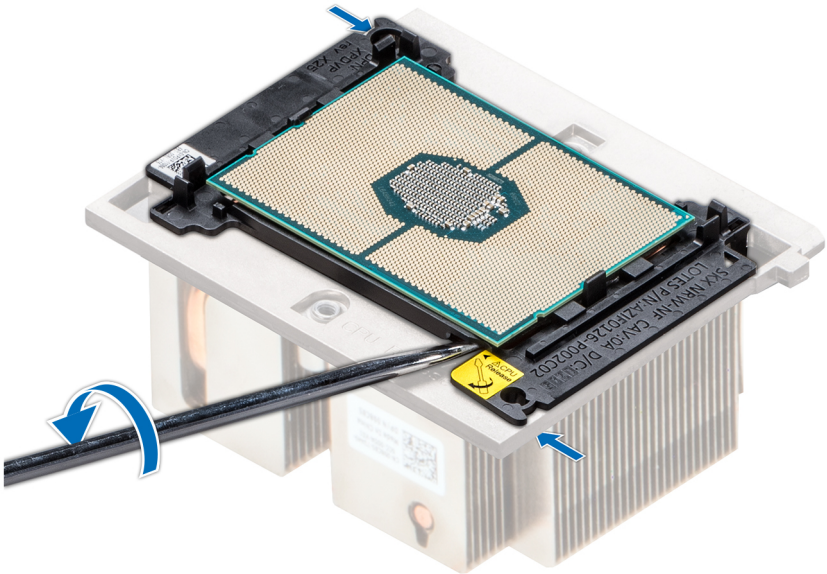

Figure 39. Loosening the processor bracket

4 Lift the bracket and the processor away from the heat sink, and place the processor connector side down on the processor tray.

5 Flex the outer edges of the bracket to release the bracket from the processor.

NOTE: Ensure that the processor and the bracket are placed in the tray after you remove the heat sink.

Figure 40. Removing the processor bracket

Next steps

1 Install the processor into the processor and heat sink module..
2 Install the non-fabric processor into the processor and heat sink module.

Installing the non-fabric processor into a processor and heat sink module

Prerequisite

NOTE: In a sled which has been configured with mixed CPUs – a fabric processor installed in the CPU2 socket and a non-fabric processor installed in the CPU1 socket, you must connect the external Omnipath link cables to Port 2 on the OCP carrier card.

Follow the safety guidelines listed in Safety instructions.

Steps

1 Place the processor in the processor tray.

NOTE: Ensure that the pin 1 indicator on the processor tray is aligned with the pin 1 indicator on the processor.

2 Flex the outer edges of the bracket around the processor ensuring that the processor is locked into the clips on the bracket.

NOTE: Ensure that the pin 1 indicator on the bracket is aligned with the pin 1 indicator on the processor before placing the bracket on the processor.

NOTE: Ensure that the processor and the bracket are placed in the tray before you install the heat sink.

Figure 41. Installing the processor bracket

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

4 Use the thermal grease syringe included with your processor kit to apply the grease in a quadrilateral design on the top of the processor.

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

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

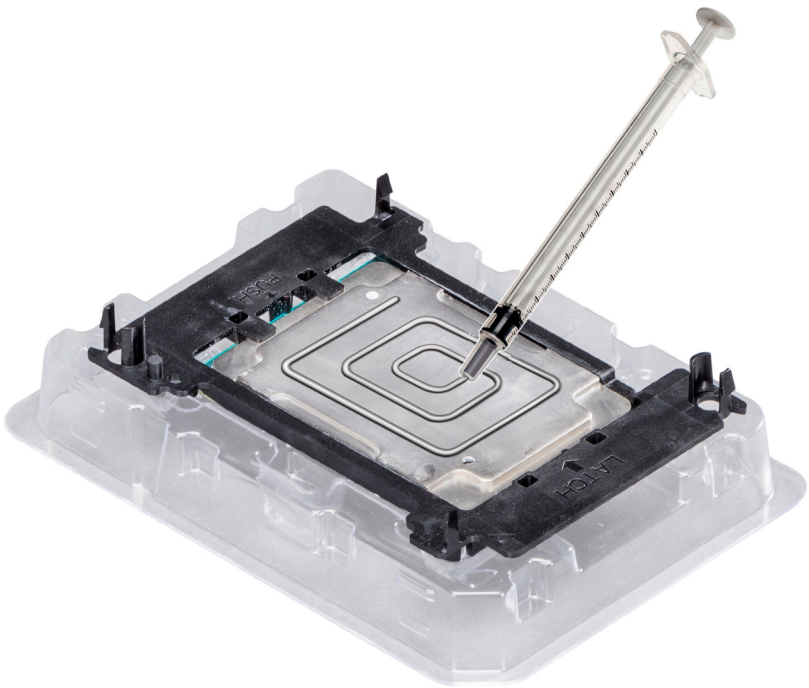

Figure 42. Applying thermal grease on top of the processor

5 Place the heat sink on the processor and push down on the base of the heat sink until the bracket locks onto the heat sink.

NOTE:

- Ensure that the two guide pin holes on the bracket match the guide holes on the heat sink.
- Do not press on the heat sink fins.
- Ensure that the pin 1 indicator on the heat sink is aligned with the pin 1 indicator on the bracket before placing the heat sink onto the processor and bracket.

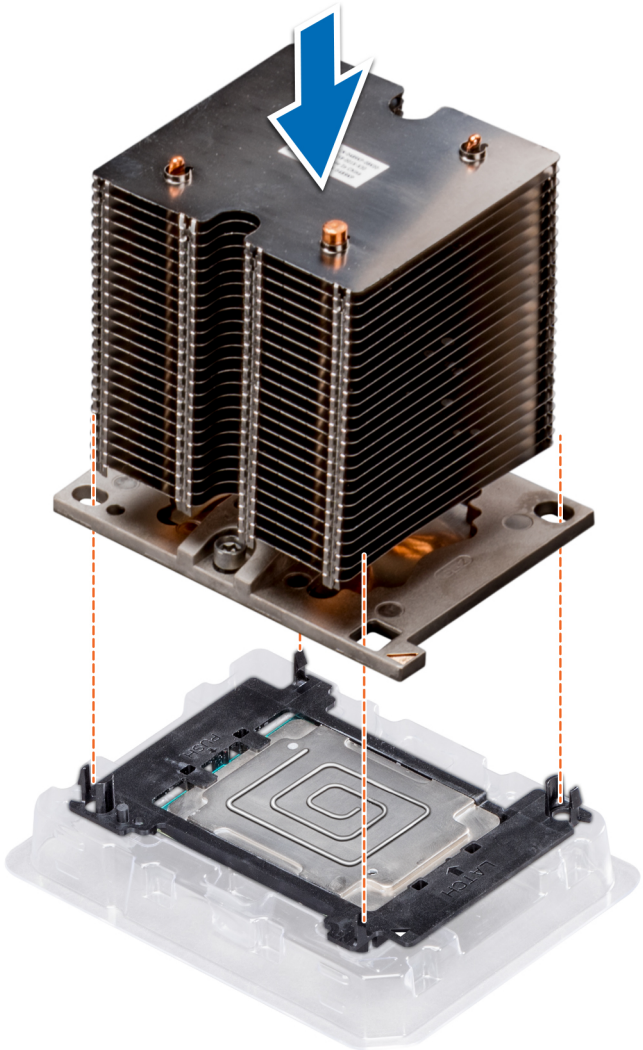

Figure 43. Installing the heat sink onto the processor

Next steps

1 Install the processor and heat sink module.
2 Install the air shroud.
3 Follow the procedure listed in After working inside your enclosure.

Removing the fabric and sideband cables

Prerequisites

NOTE: The procedure to remove the carrier card is similar to removing an OCP card.

NOTE: Route the fabric cable for CPU 2 under the heat sink of CPU1.

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

Steps

1 Pull the blue pull tab on the locking bar up to release the connector from the lock on the processor base plate.
2 To disengage and release the fabric connector, pull the connector away from the processor.
3 Pressing the connector clips, release the side band cable from the connector and lift the cable away.

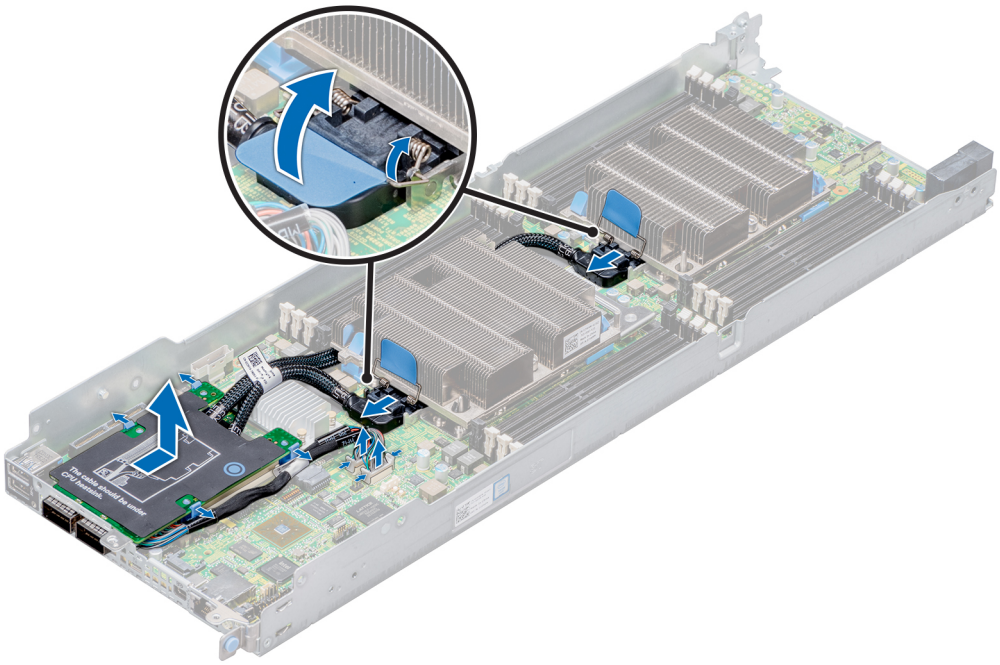

Figure 44. Removing the fabric and sideband cables

Next step

1 Install the fabric and sideband cables.

Installing the fabric and sideband cables

Prerequisites

NOTE: In a sled which has been configured with mixed CPUs – a fabric processor installed in the CPU2 socket and a non-fabric processor installed in the CPU1 socket, you must connect the external Omnipath link cables to Port 2 on the OCP carrier card.

NOTE: The procedure to install the carrier card is similar to installing an OCP card.

NOTE: Route the fabric cable for CPU2 under the heat sink of CPU1.

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Align the notches on the fabric connector with the guide pins on the processor base plate.
2 Push the connector toward the processor, until the connector is engaged with the edge connector on the processor.
3 Push the locking bar down to secure the fabric connector in place.
4 Insert the side band cable into the respective connector, and press down to lock the connector.

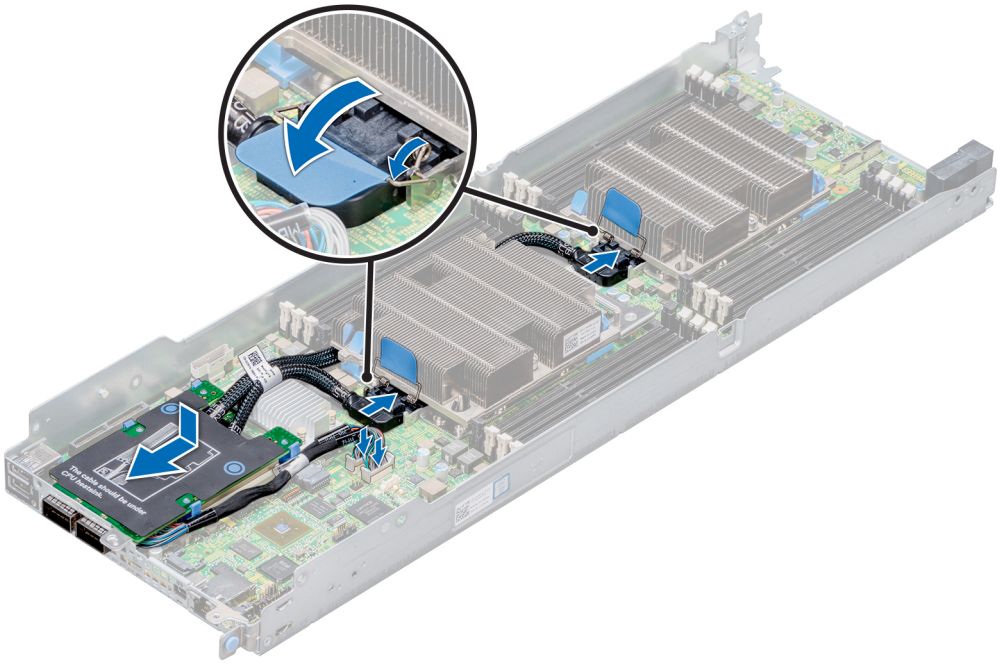

Figure 45. Installing the fabric and sideband cables

Next steps

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

Expansion cards

NOTE: A missing or an unsupported expansion card riser logs an System Event Log (SEL) event. This does not prevent your system from powering on and no BIOS, POST messages or F1 or F2 pause is displayed.

PCIe slot priority

Table 36. Supported expansion options

Riser	Slot number	Form Factor	Controlling processor	Slot's Electrical Bandwidth/Physical Connector	Power
LP PCIE Slot (Slot 4)	1	Low profile	Processor 1 SKL/SKL-F/CLX	PCIe Gen3 x16 (x16 connector)	75 W
Storage Slot (DCS Mezz Slot) (Slot 1)	1	Mezzanine	Processor 1 SKL/SKL-F/CLX	PCIe Gen3 x8 (Through Bridge Board)	25 W
OCP Mezz Slot (Slot 3)	1	Mezzanine	Processor 1 SKL/CLX	PCIe Gen3 x16	25 W
OCP Mezz Slot (Slot 3)	1	Mezzanine	Processor 1 SKL-F	OCP MEZZ occupied by SKL-F QSFP carrier card	25 W

NOTE: For the expansion bus specification see the Expansion bus specifications.

Table 37. Supported expansion cards

Card type	Form factor	Link width	Slot priority	Maximum number of cards
Intel-Kerby Flat mezzanine network card	Mezzanine	x8	3	1
Broadcom 25G SFP network card	Mezzanine	x8	3	1
H730P Mini controller card	Mezzanine	x8	1	1
H330 SAS controller adapter	Mezzanine	x8	1	1
HBA330 MINI controller adapter	Mezzanine	x8	1	1
12-GB SAS LPF HBA controller adapter	LP	x8	4	1
PM1725 1.6 HHHL NVME controller card	LP	x8	4	1
PM1725A 3.2 HHHL NVME controller card	LP	x8	4	1
PM1725A 6.4 HHHL NVME controller card	LP	x8	4	1
Mellanox dual port EDR PCIE network card	LP	x16	4	1
Mellanox 100G dual port QSF network card	LP	x16	4	1
Mellanox single port EDR PCIE network card	LP	x16	4	1
Mellanox single port FDR PCIE network card	LP	x8	4	1

Card type	Form factor	Link width	Slot priority	Maximum number of cards
Intel X16 OPA network card	LP	x16	4	1
Mellanox 100G dual port QSF network card	LP	x16	4	1
Intel 40G dual port QSFP network card	LP	x8	4	1
Intel 10G Base-T dual port network card	LP	x4	4	1
Intel 10GBTV2 network card	LP	x4	4	1
57414 25G dual port PCIE network card	LP	x8	4	1
Intel 10G dual port FVL SFP+ network card	LP	x8	4	1
57402 10G dual port PCIE network card	LP	x8	4	1
57406 10G dual port PCIE network card	LP	x8	4	1
QLogic 25G dual port SFP network card	LP	x8	4	1
Mellanox 25G dual port SFP network card	LP	x8	4	1
Mellanox 10G dual port SFP network card	LP	x8	4	1
Mellanox 40G dual port QSF network card	LP	x8	4	1
SF80X 10G dual port network card	LP	x8	4	1
Intel 10G Base-T quad port network card	LP	x8	4	1
Intel 1-GB dual port V3 network card	LP	x4	4	1
Intel 10G dual port SFP+ V2 network card	LP	x8	4	1
Broadcom 1G dual port network card	LP	x1	4	1
QLogic 10G dual port network card	LP	x8	4	1
QLogic 10G dual port V2 network card	LP	x8	4	1
QLogic 10G dual port SFP network card	LP	x8	4	1
QLogic 10G dual port SFP V2 network card	LP	x8	4	1
QLogic 25G quad port network card	LP	x8	4	1
QLogic 25G dual port SFP network card	LP	x8	4	1
QLogic dual port SFP V2 network card	LP	x8	4	1
BOSS card	LP	x8	5	1
Intel 25G dual port SFP network card	LP	x8	4	1
Mellanox single port PCIE network card	LP	x8	4	1
SATA X8 M.2 card	N/A			X8 PCIe Adapter (PCIe Bus Reserve for ESI)
SATA X16 M.2 card	N/A			X16 PCIe Adapter (PCIe Bus Reserve for ESI)
Intel 60-W FPGA card	LP	x16	4	1

Card type	Form factor	Link width	Slot priority	Maximum number of cards
Intel 70-W FPGA card	LP	x16	4	1
PM1725B 1.6 HHHL NVME card	LP	x8	4	1
PM1725B 3.2 HHHL NVME card	LP	x8	4	1
PM1725B 6.4 HHHL NVME card	LP	x8	4	1
P4800X 750GB HHHL PCIE card	LP	x8	4	1

Removing the expansion card riser assembly

Prerequisites

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

1 Follow the safety guidelines listed in Safety instructions.

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

Steps

1 Remove the screws that secure the expansion card riser assembly.

2 Lift the expansion card riser assembly out of the sled.

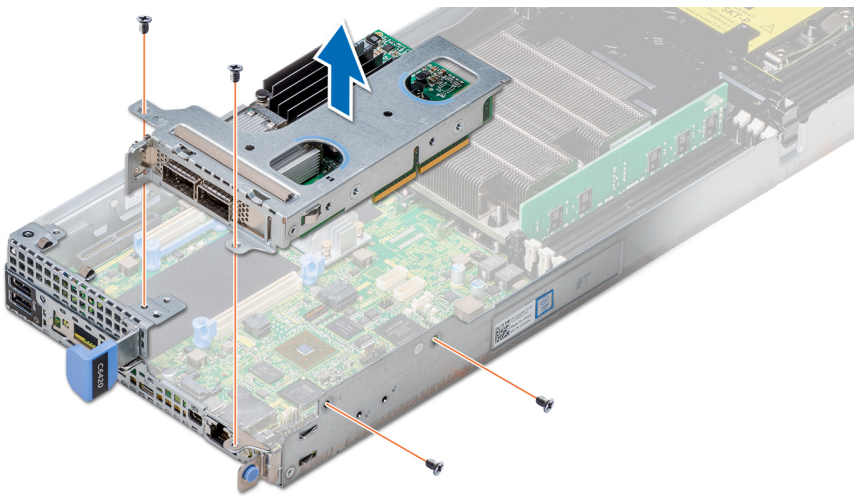

Figure 46. Removing the expansion card riser assembly

Next step

1 Install the expansion card riser assembly.

Installing the expansion card riser assembly

Prerequisite

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

1 Follow the safety guidelines listed in Safety instructions..

Steps

1 Place the expansion card assembly into the system board assembly.
2 Align the riser card connector with the connector on the system board, and press the expansion card riser assembly into place.
3 Using the Phillips #2 screwdriver, tighten the screws that secure the expansion card riser assembly.

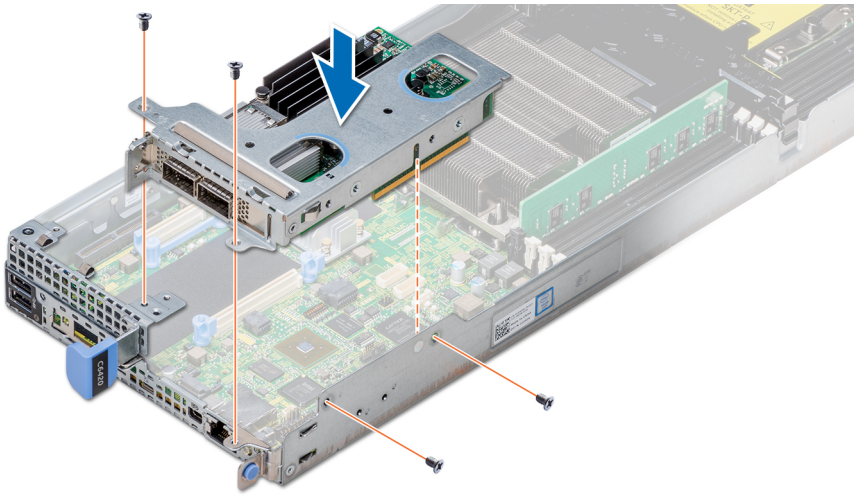

Figure 47. Installing the expansion card riser assembly

Next step

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

Removing an expansion card

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the expansion card riser assembly.

Steps

1 Remove the screw that secures the expansion card to the assembly.
2 Hold the expansion card by its edges, and carefully remove it from the riser card.

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

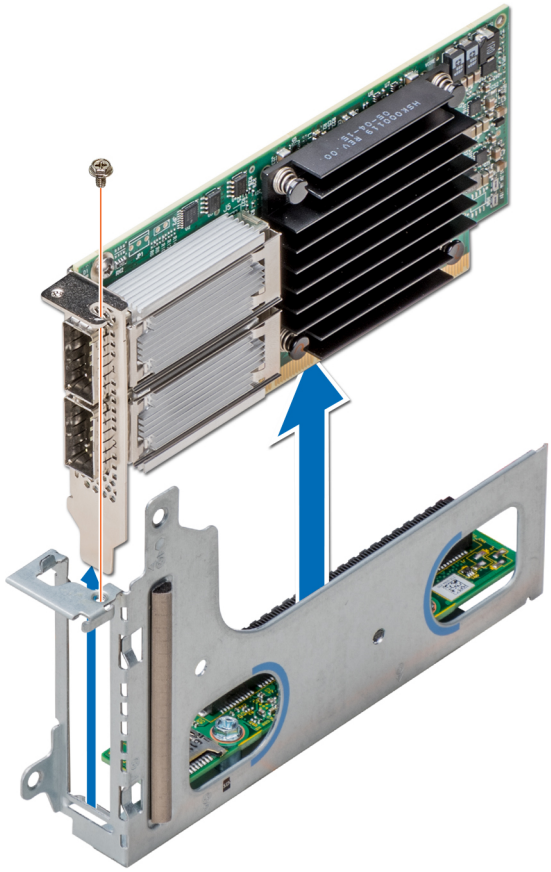

Figure 48. Removing an expansion card

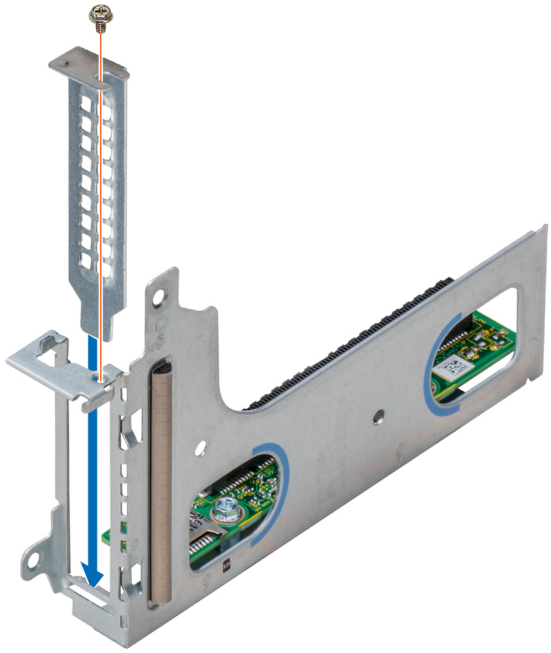

Figure 49. Installing the expansion card filler bracket

Next step

Install the expansion card or install the expansion card filler bracket.

Installing an expansion card

Prerequisites

CAUTION: Expansion cards can only be installed in the slots on the expansion card riser. Do not attempt to install expansion cards directly into the riser connector on the system board.

1 Follow the safety guidelines listed in Safety instructions.

2 Unpack the expansion card and prepare it for installation. For instructions, see the documentation accompanying the card.

Steps

1 If installed, remove the filler bracket by performing the following steps:

a Remove the screw that secures the filler bracket.

b Hold the filler bracket by its edges, and carefully remove it from the riser card.

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

2 Holding the card by its edges, position the card so that the card edge connector aligns with the connector on the riser card.

3 Insert the card edge connector and push the card firmly into the riser card until the card is fully seated.

4 Replace the screw that secures the expansion card.

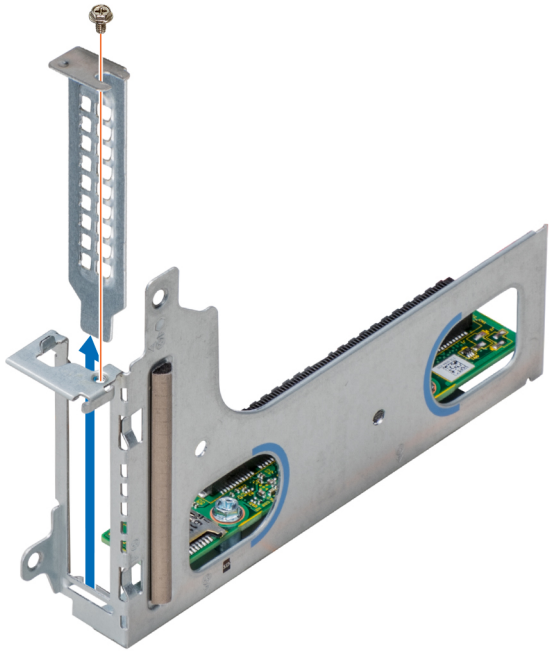

Figure 50. Removing the expansion card filler bracket

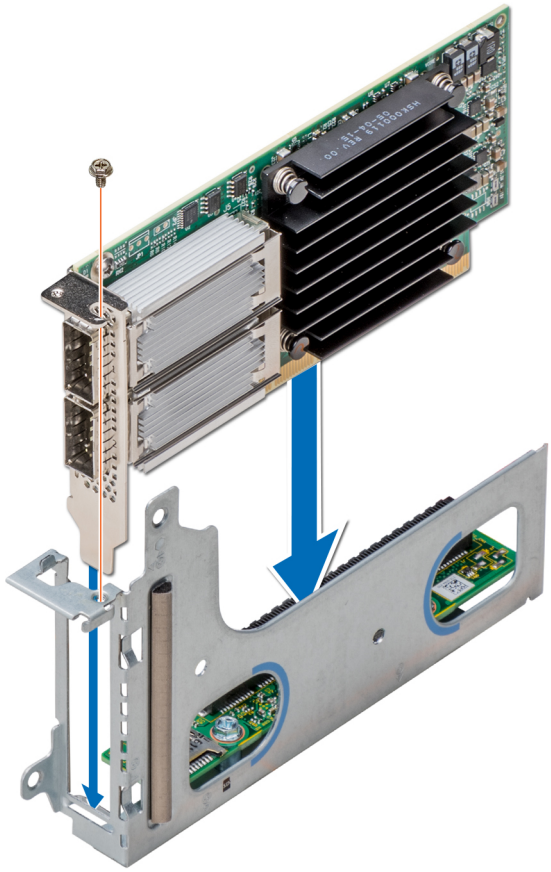

Figure 51. Installing an expansion card

Next steps

1 Install the expansion card riser assembly.
2 Follow the procedure listed in After working inside your enclosure.

Removing the riser card

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the expansion card riser assembly.
4 If installed, remove the expansion card.

Steps

1 Using the Phillips #2 screwdriver, remove the screws that secure the riser card to the expansion card bracket.
2 Lift the riser card away from the expansion card bracket.

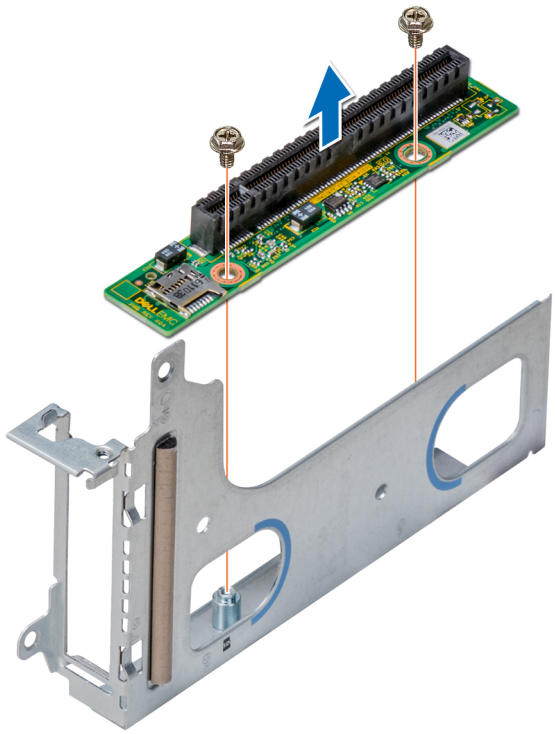

Figure 52. Removing the riser card

Next step

1 Install the riser card.

Installing the riser card

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Place the riser card into the expansion card bracket.

2 Using the Phillips #2 screwdriver, tighten the screws that secure the riser card to the expansion card bracket.

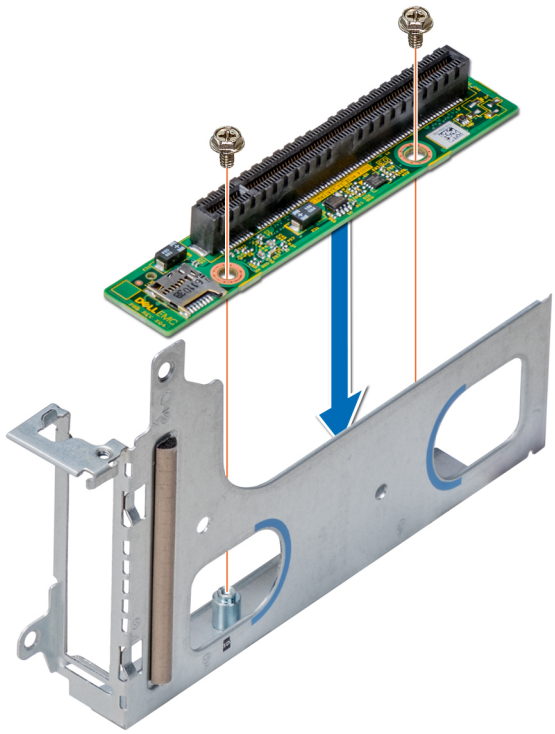

Figure 53. Installing the riser card

Next steps

1 If removed, install the expansion card.
2 Install the expansion card riser assembly.
3 Follow the procedure listed in After working inside your enclosure.

Removing the M.2 SATA x16 riser

Prerequisites

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

Steps

1 Using the Phillips #1 screwdriver, loosen the screw that secures the riser to the sled.
2 Lift the riser up to disengage the riser from the connector on the system board.
3 Disconnect the data cable from the riser.

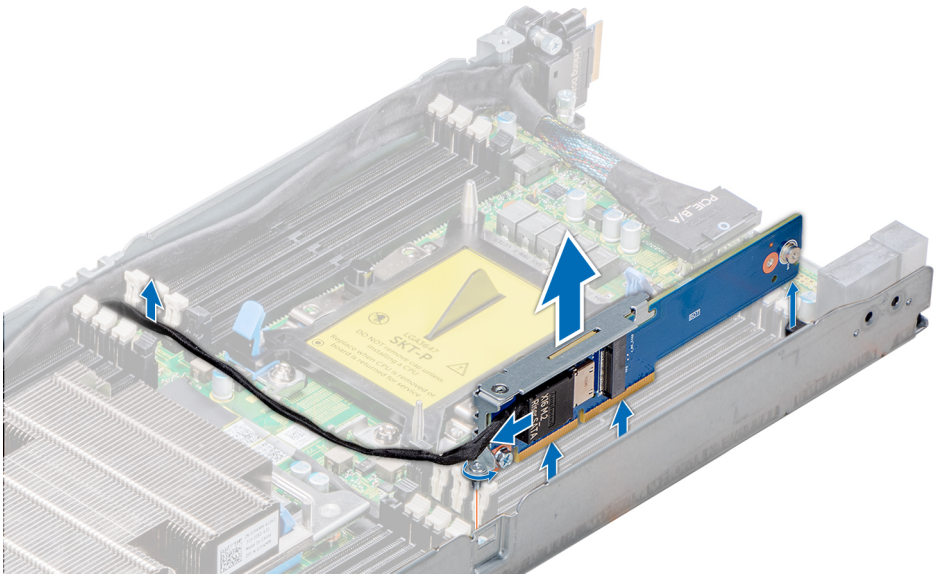

Figure 54. Removing the M.2 SATA x16 riser

Next step

1 Install the M.2 SATA x16 riser.

Installing the M.2 SATA x16 riser

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Connect the data cable to the riser.
2 Insert the keyed end of the M.2 SATA riser into the lock on the system board.
3 Align and insert the edge connector into the connector on the system board.
4 Using the Phillips #2 screwdriver, tighten the screw to secure the riser to the sled.

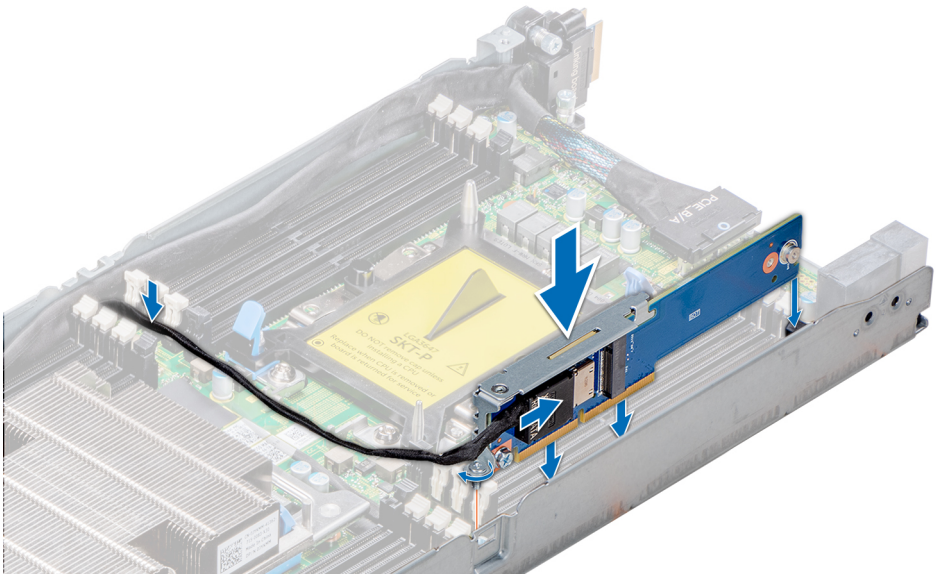

Figure 55. Installing the M.2 SATA x16 riser

Next step

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

Removing the M.2 SATA card

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 If applicable, remove the expansion card riser assembly.
4 Remove the M.2 x16 riser or install the M.2 SATA x8 mezzanine card.

NOTE: The procedure to remove the M.2 SATA x8 mezzanine card is similar to removing a mezzanine card.

Steps

1 Using the Phillips #1 screwdriver, unscrew the screw that secures the M.2 card to the board.
2 Pull the card out of the connector and lift the card away.

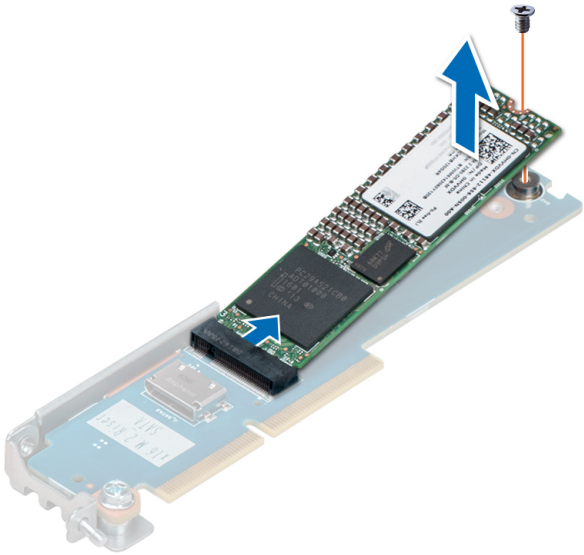

Figure 56. Removing the M.2 SATA card from the M.2 SATA x16 riser

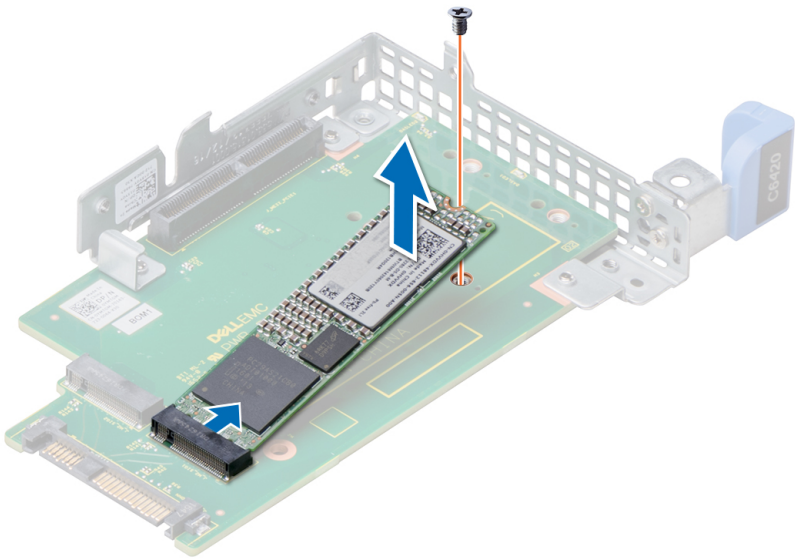

Figure 57. Removing the M.2 SATA card from the x8 mezzanine card

Next step

1 Install the M.2 SATA card

.

Installing the M.2 SATA card

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Insert the edge connector of the M.2 SATA card into the connector on the board, and push the card in.

2 Using the Phillips #1 screwdriver, secure the card in place.

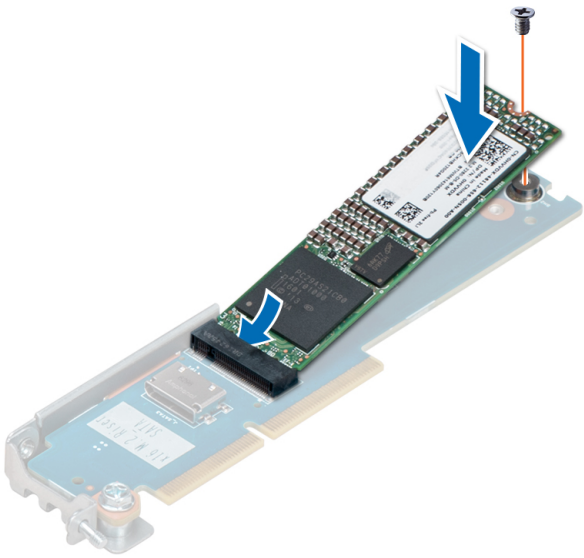

Figure 58. Installing the M.2 SATA card on the SATA x16 riser

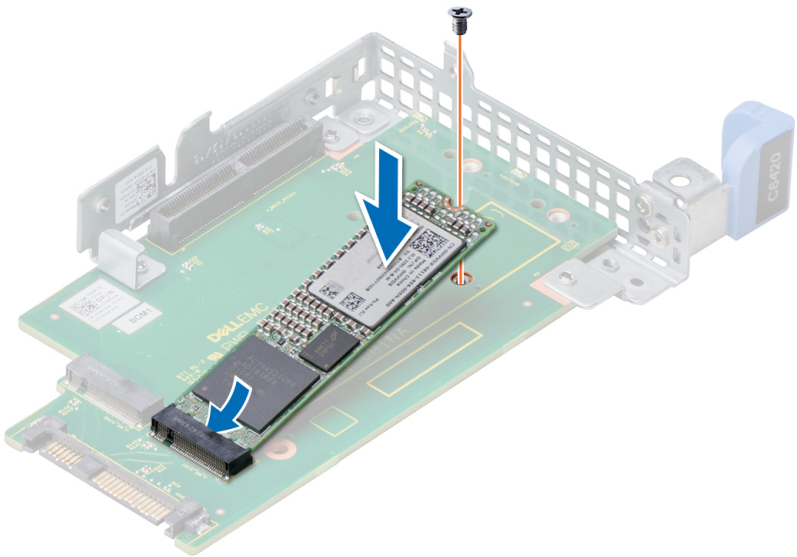

Figure 59. Installing the M.2 SATA card on the SATA x8 mezzanine card

Next steps

1 If removed, install the expansion card riser assembly.

2 Install the M.2 x16 riser or install the M.2 SATA x8 mezzanine card.

NOTE: The procedure to install the M.2 SATA x8 mezzanine card is similar to installing a mezzanine card.

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

M.2 SSD module

The BOSS card is a simple RAID solution card designed specifically for booting a server's operating system. The card supports up to two 6 Gbps M.2 SATA drives. The BOSS adapter card has a x8 connector using PCIe gen 2.0 x2 lanes, available only in the low-profile and half-height form factor.

Removing the M.2 SATA x16 riser

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the sled from the enclosure.

Steps

1 Using the Phillips #1 screwdriver, loosen the screw that secures the riser to the sled.
2 Lift the riser up to disengage the riser from the connector on the system board.
3 Disconnect the data cable from the riser.

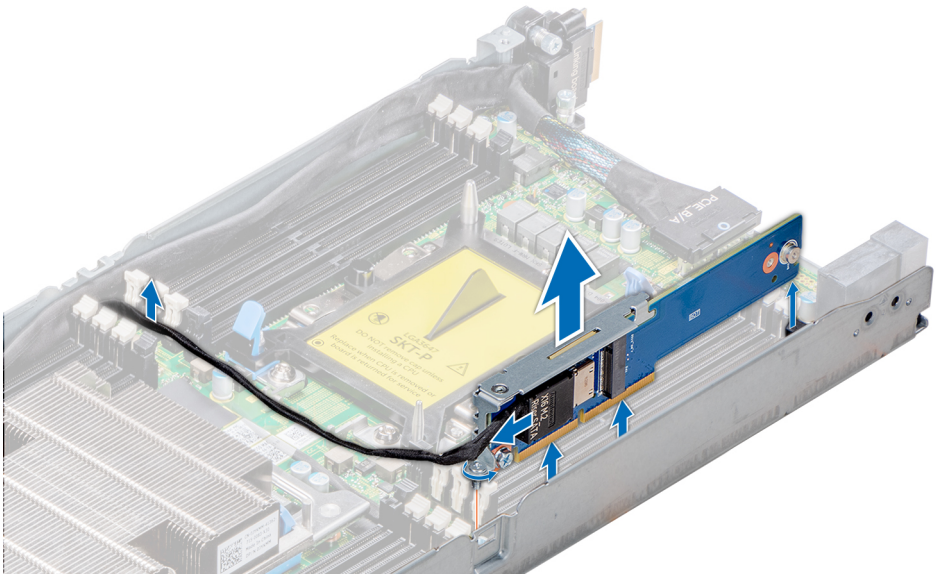

Figure 60. Removing the M.2 SATA x16 riser

Next step

Install the M.2 SATA x16 riser.

Installing the M.2 SATA x16 riser

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Connect the data cable to the riser.
2 Insert the keyed end of the M.2 SATA riser into the lock on the system board.
3 Align and insert the edge connector into the connector on the system board.
4 Using the Phillips #2 screwdriver, tighten the screw to secure the riser to the sled.

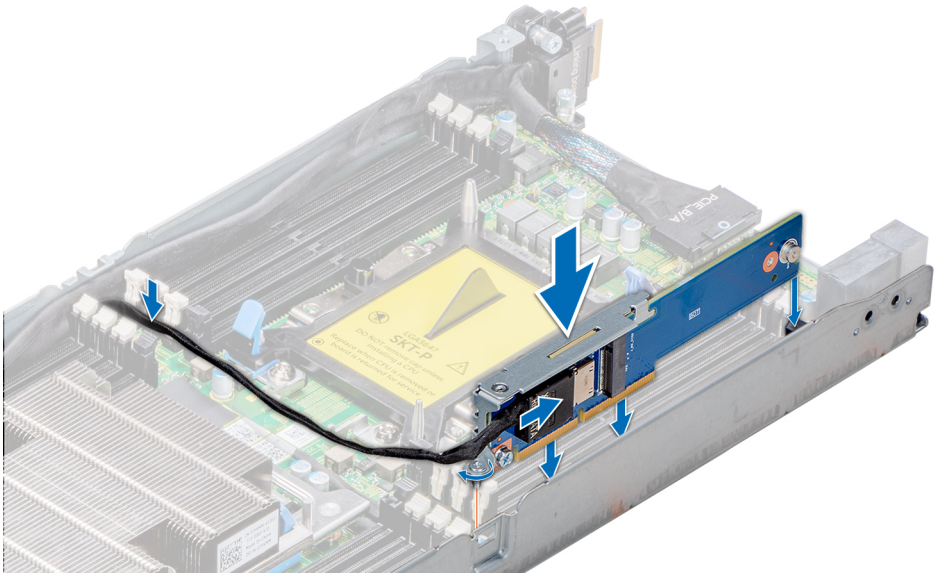

Figure 61. Installing the M.2 SATA x16 riser

Next steps

1 Install the sled into the enclosure.
2 Follow the procedure listed in After working inside your enclosure.

Removing the M.2 SATA card

Prerequisites

1 Follow the safety guidelines listed in Safety instructions..
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the sled from the enclosure.
4 If applicable, remove the expansion card riser assembly.
5 Remove the M.2 x16 riser or the M.2 SATA x8 mezzanine card.

NOTE: The procedure to remove the M.2 SATA x8 mezzanine card is similar to removing a mezzanine card.

Steps

1 Using the Phillips #1 screwdriver, unscrew the screw that secures the M.2 card to the board.
2 Pull the card out of the connector and lift the card away.

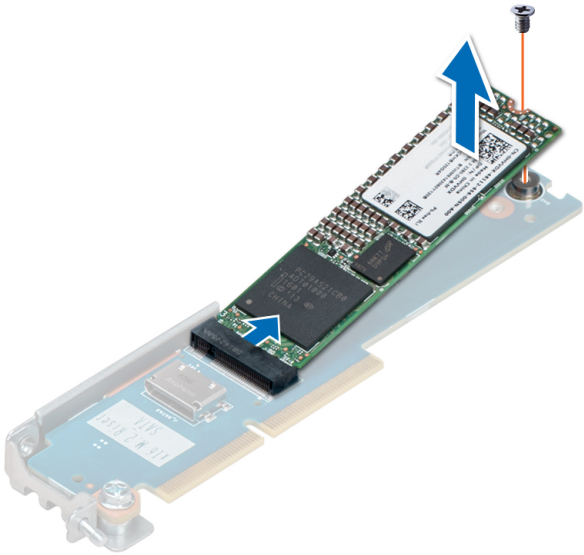

Figure 62. Removing the M.2 SATA card from the M.2 SATA x16 riser

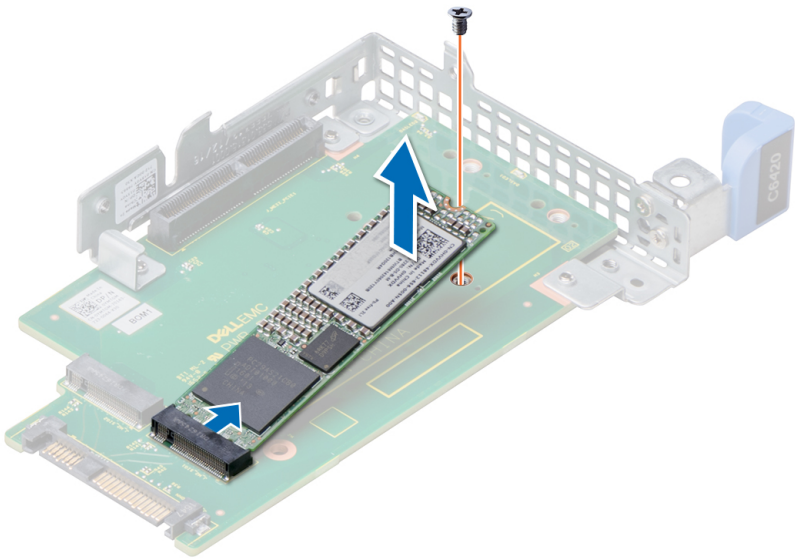

Figure 63. Removing the M.2 SATA card from the x8 mezzanine card

Next step

Install the M.2 SATA card.

Installing the M.2 SATA card

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Insert the edge connector of the M.2 SATA card into the connector on the board, and push the card in.

2 Using the Phillips #1 screwdriver, secure the card in place.

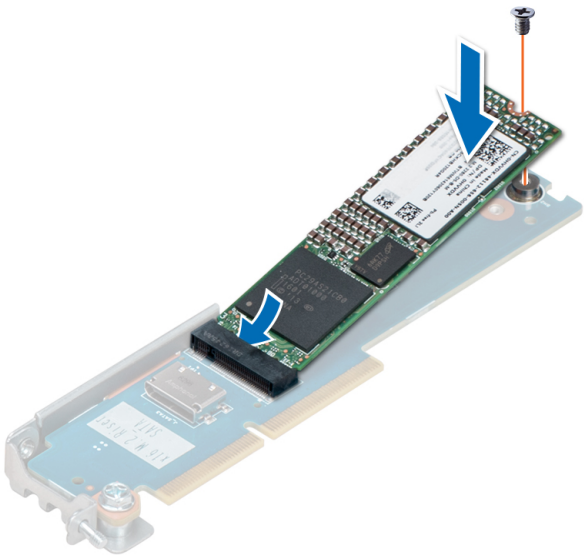

Figure 64. Installing the M.2 SATA card on the SATA x16 riser

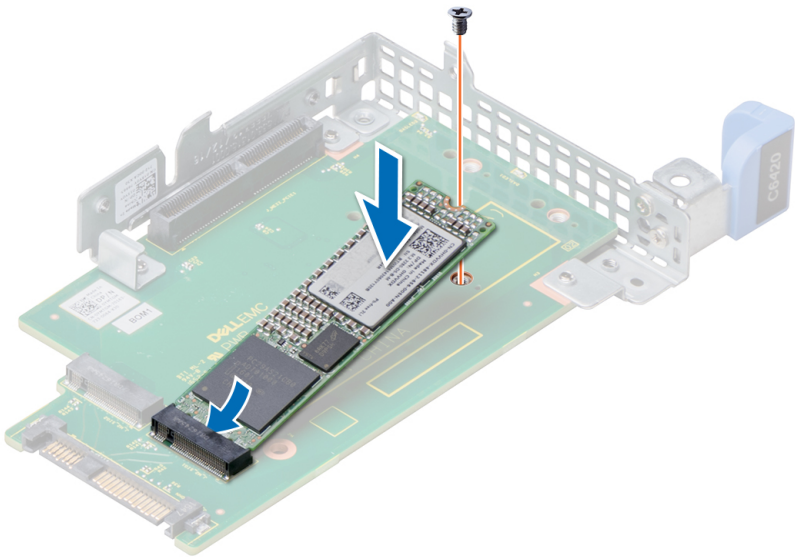

Figure 65. Installing the M.2 SATA card on the SATA x8 mezzanine card

Next steps

1 If removed, install the expansion card riser assembly.

2 Install the M.2 x16 riser or the M.2 SATA x8 mezzanine card.

NOTE: The procedure to install the M.2 SATA x8 mezzanine card is similar to removing a mezzanine card.

3 Install the sled into the enclosure.

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

Mezzanine and OCP cards

Removing a mezzanine card

Prerequisites

NOTE: The procedure to remove the mezzanine blank is similar to the removal of a mezzanine card.

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the expansion card riser assembly.

Steps

1 Remove the screws that secure the mezzanine card to the sled.
2 Lift the mezzanine card out of the sled.

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

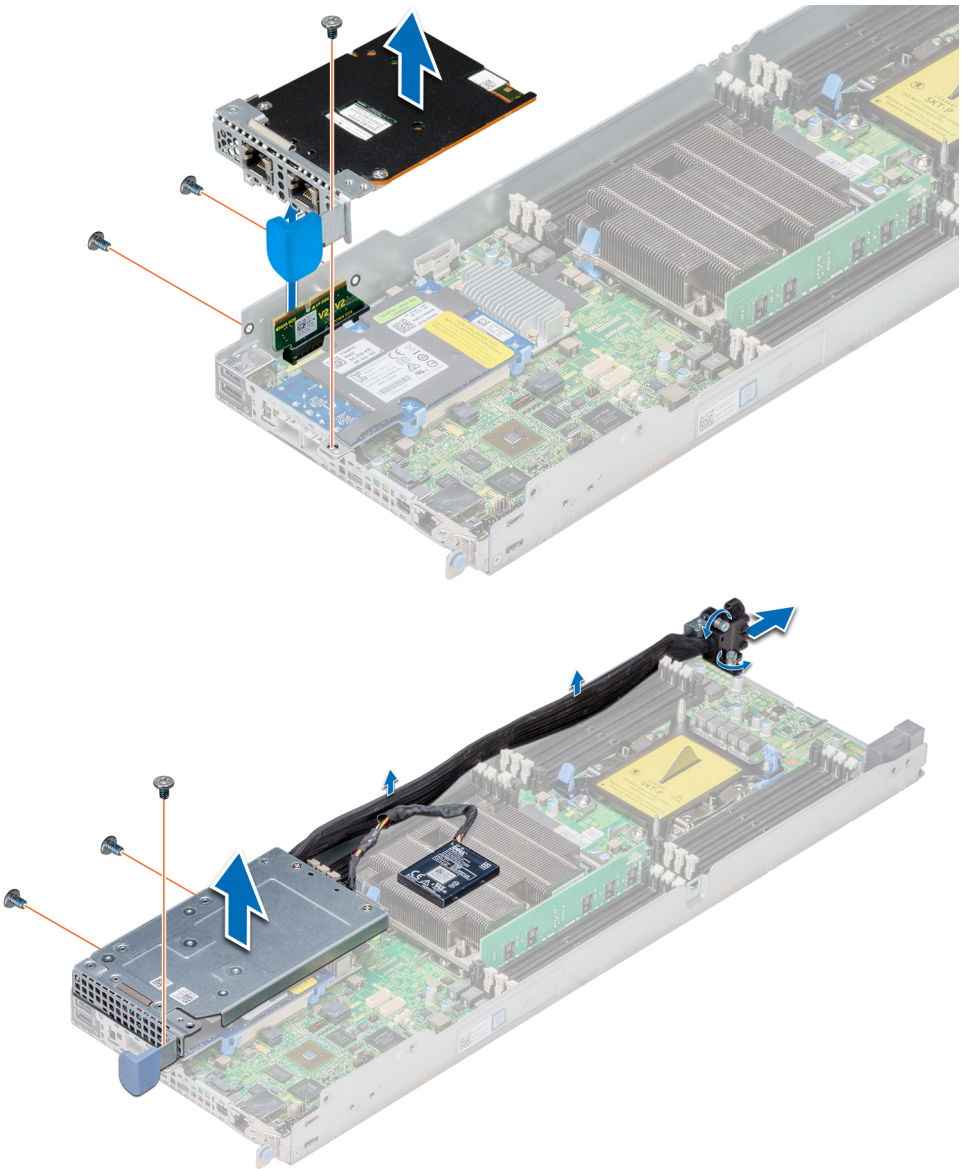

Figure 66. Removing a mezzanine card

Next step

1 Install the mezzanine card or install the mezzanine card filler bracket.

Installing a mezzanine card

Prerequisite

NOTE: The procedure to install the mezzanine blank is similar to the removal of a mezzanine card.

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Attach and secure the mezzanine card bracket to the mezzanine card.

2 Holding the card by its edges, position the card so that the card edge connector aligns with the connector of the bridge board on the system board.

3 Insert the card edge connector and push the card firmly until the card is fully seated on the bridge board.

4 Using the Phillips #2 screwdriver, secure the mezzanine card and bracket assembly to the sled using screws.

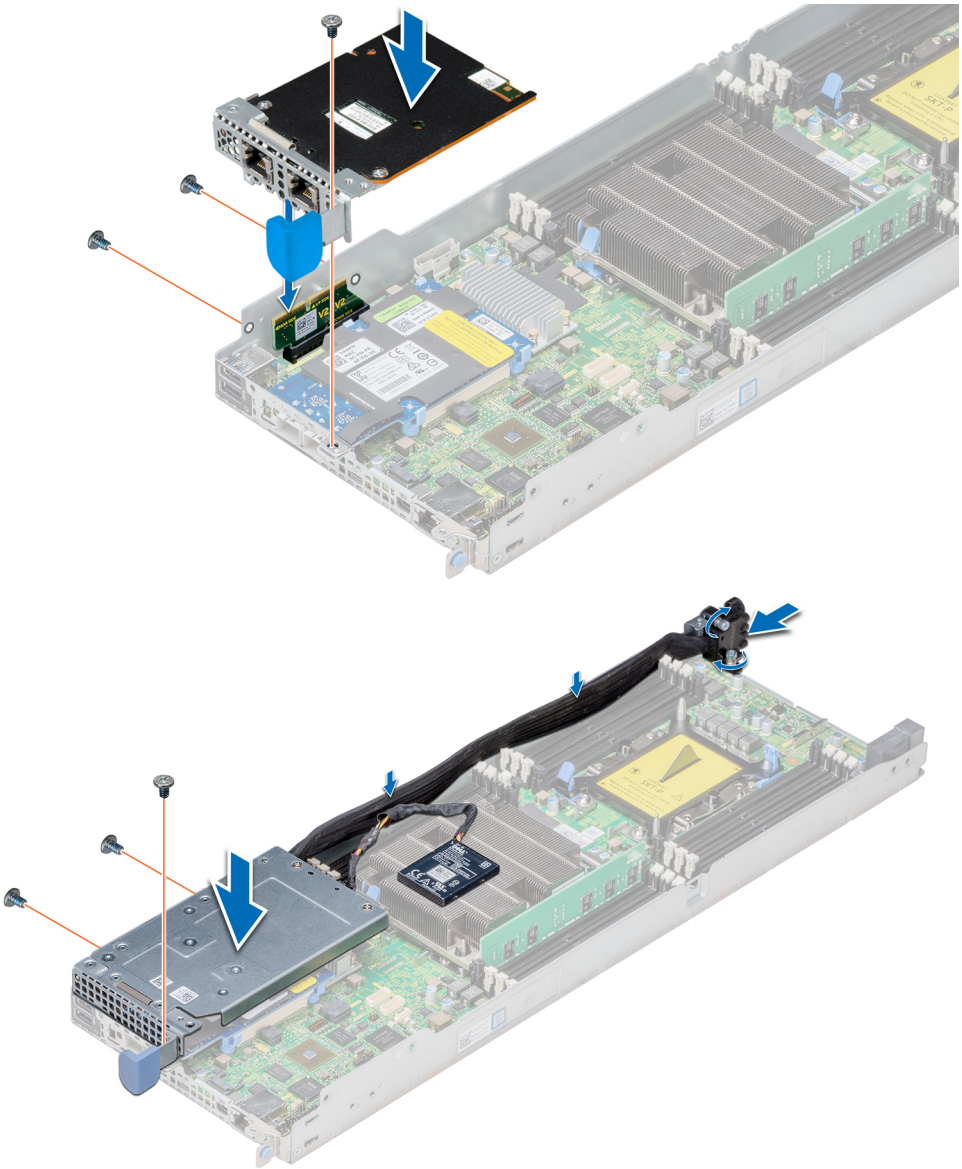

Figure 67. Installing a mezzanine card

Next steps

1 Install the mezzanine card or install the mezzanine card filler bracket.

2 Install the expansion card riser assembly

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

Removing the mezzanine card bridge board

Prerequisites

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the expansion card riser assembly
4 Remove the mezzanine card.

Step

Pull the mezzanine card bridge board away from the mezzanine card slot on the system board.

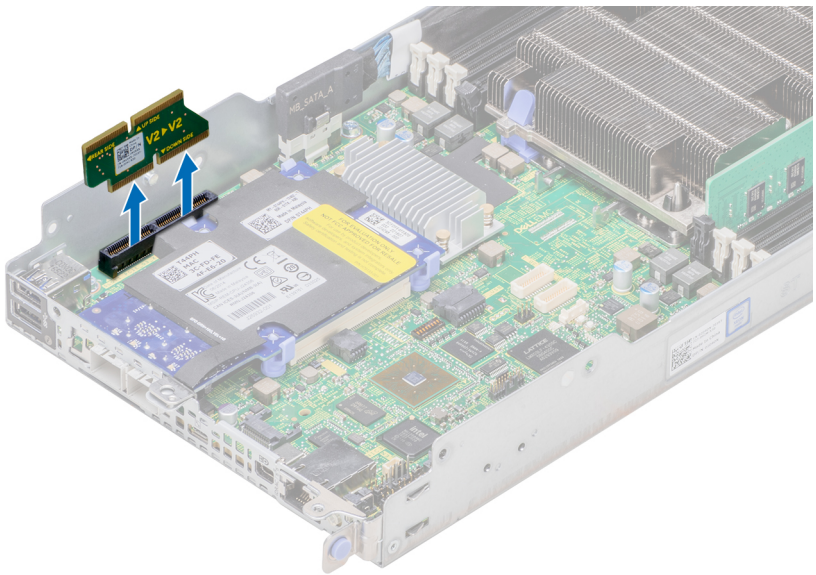

Figure 68. Removing the mezzanine card bridge board

Next step

1 Install the mezzanine card board bridge.

Installing the mezzanine card bridge board

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Step

Insert the mezzanine card bridge board into the mezzanine slot on the system board.

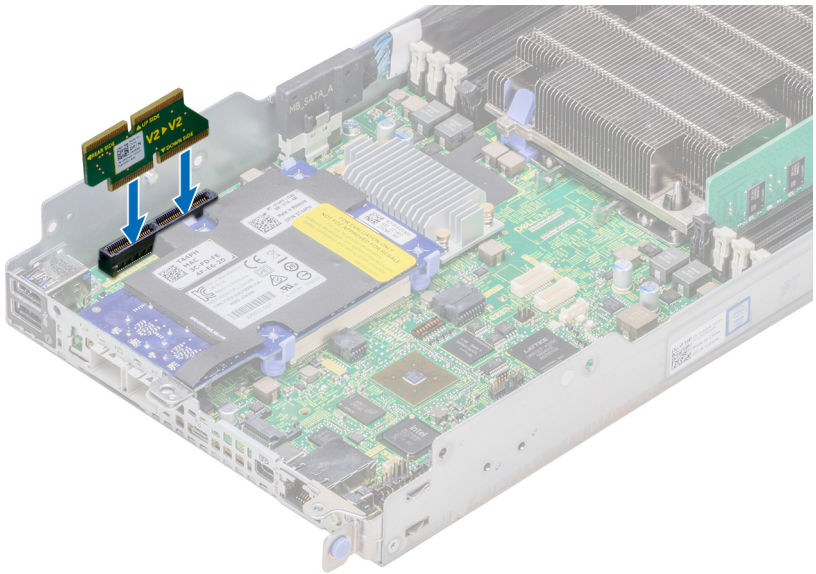

Figure 69. Installing the mezzanine card bridge board

Next steps

1 Install the mezzanine card.
2 Install the expansion card riser assembly.
3 Follow the procedure listed in After working inside your enclosure.

Removing the OCP card

Prerequisites

NOTE: The procedure to remove the mezzanine blank is similar to the removal of a mezzanine card.

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the mezzanine card.

Steps

1 Push the blue retention clips away on one side and release the Open Compute Project (OCP) card.
Repeat step 1 to release the card from the clips on the other side.
2 Slide the card toward the front of the sled to disengage the connectors from the chassis and lift the card up.

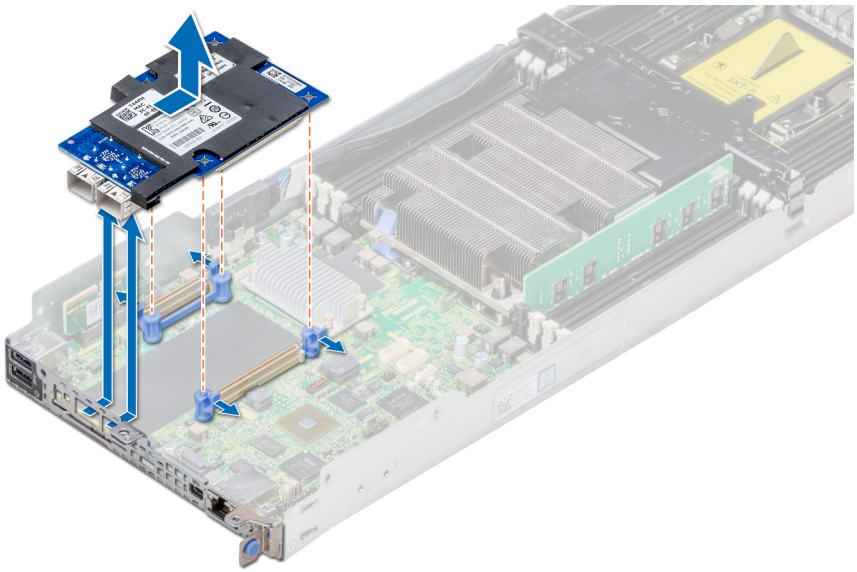

Figure 70. Removing the OCP card

Next step

1 Install the OCP card.

Installing the OCP card

Prerequisite

1 Follow the safety guidelines listed in Safety instructions.

Steps

1 Insert the Open Compute Project (OCP) card into the sled, aligning the connector on the card with the connector in the system board.
2 You must also align the holes on the card with the guide pins on the blue retention clips.
3 Push down to lock the card in place.

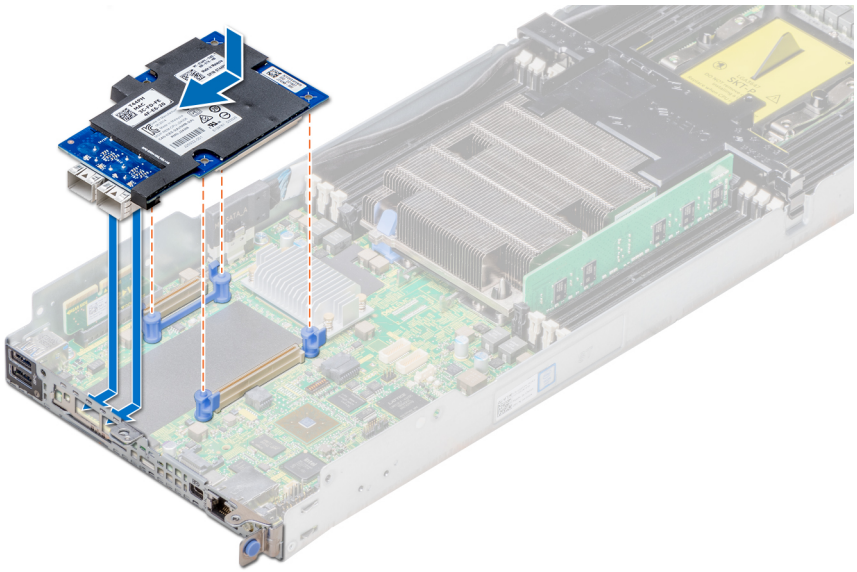

Figure 71. Installing the OCP card

Next steps

1 Install the mezzanine card.
2 Follow the procedure listed in After working inside your enclosure.

System battery

Replacing system battery

Prerequisites

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

NOTE: Battery is a Field Replaceable Unit (FRU). Only Dell certified service technicians must remove or install system battery.

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the expansion card riser assembly.

Steps

1 Locate the battery socket. For more information, see the System board connectors section.
2 Insert a plastic scribe at the negative side of the battery connector and lever the battery up, lift the battery out of the socket.

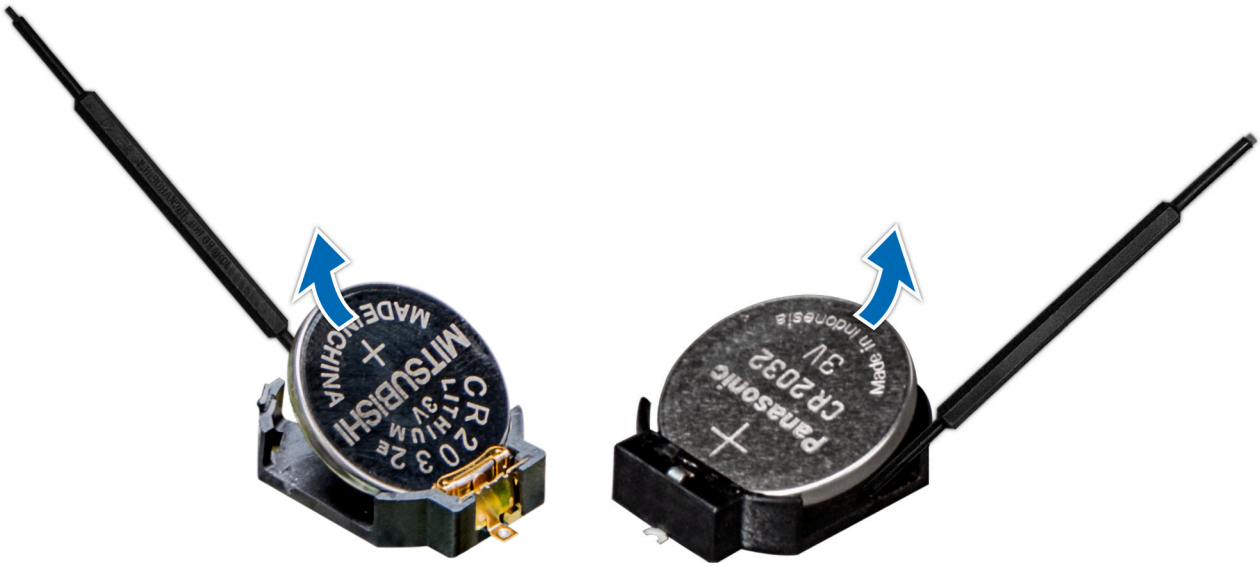

Figure 72. Removing system battery

Next step

1 Install the system battery.

Installing the system battery

Prerequisites

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

NOTE: Battery is a Field Replaceable Unit (FRU). Removal and installation procedures are to be performed only by Dell certified service technicians.

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

Steps

1 Locate the battery socket. For more information, see the System board connectors section.
2 Hold the battery with the "+" facing up and slide it under the securing tabs.
3 Press the battery into the connector until it snaps into place.

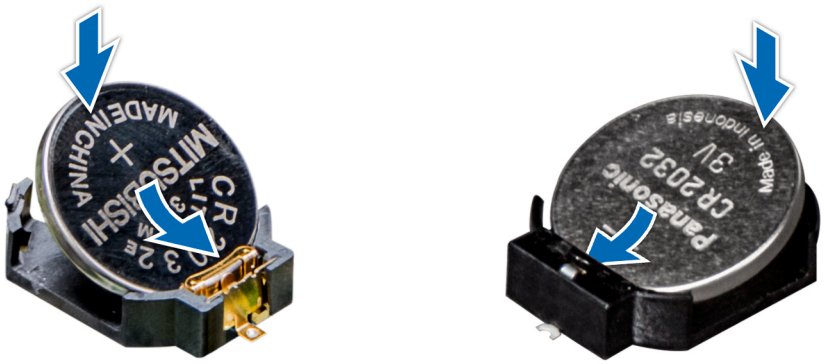

Figure 73. Installing the system battery

Next steps

1 If removed, install the expansion card riser.
2 Follow the procedure listed in After working inside your enclosure.
3 While booting, press F2 to enter System Setup and ensure that the battery is operating properly.
4 Enter the correct time and date in the System Setup **Time** and **Date** fields.
5 Exit System Setup.

System board

Removing the system board

Prerequisites

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

CAUTION: To avoid damage to the system board, ensure that the system board does not touch the side walls of the sled chassis, while sliding the system board into the sled.

1 Follow the safety guidelines listed in Safety instructions.
2 Follow the procedure listed in Before working inside your enclosure.
3 Remove the sled from the chassis.
4 Remove the air shroud.
5 Remove the expansion card risers.
6 Remove the processor heat sink module.
7 Remove the memory modules.
8 If installed, remove OCP card.
9 If installed, remove the mezzanine card.
10 Remove the linking board
11 Disconnect all the cables from the system board.
12 Keep the Phillips #1 screwdriver and #4 nut driver ready.

Steps

1 Remove the screws that secure the system board to the sled assembly.

CAUTION: Do not lift the system board by holding a memory module slot, any other connector, or component.

2 Hold the system board by the edges, and lift the system board away from the sled.

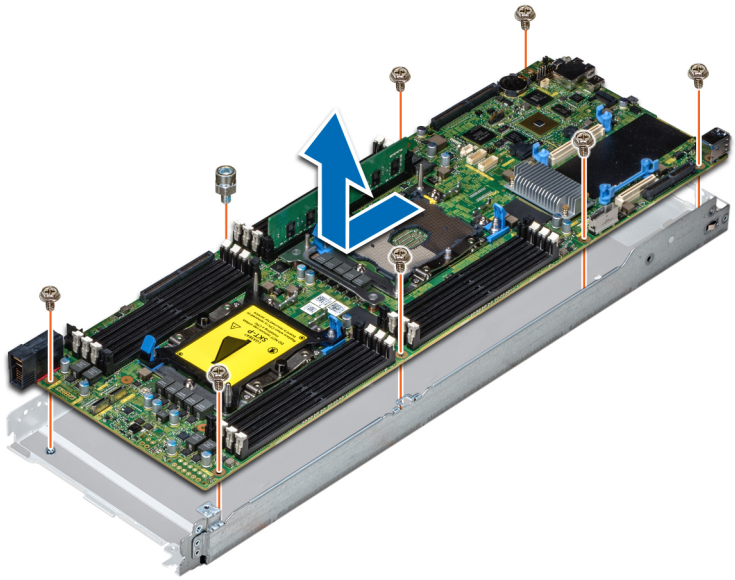

Figure 74. Removing the system board

Next step

1 Install the system board.

Installing system board

Prerequisite

Follow the safety guidelines listed in Safety instructions

CAUTION: To avoid damage to the system board, ensure that the system board does not touch the side walls of the sled chassis, while sliding the system board into the sled.

Steps

1 Holding the system board by the edges, slide the system board into the sled.

2 Install the screws that secure the system board to the sled.

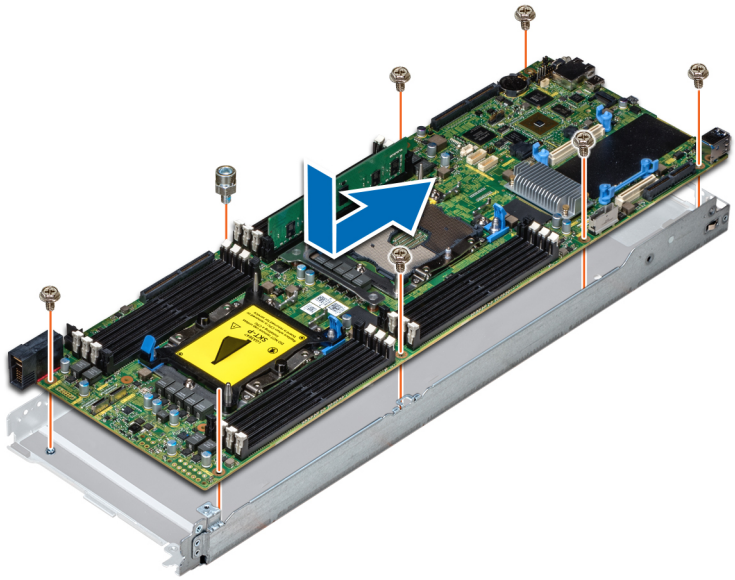

Figure 75. Installing system board

Next steps

1 If not installed, install the Trusted Platform Module (TPM). For information about how to install the TPM, see the Installing the Trusted Platform Module section. For more information about the TPM, see the Trusted Platform Module section.

> **NOTE: The TPM plug-in module that is once installed is attached to the system board and cannot be removed. In the event of a system board replacement, a TPM plug-in module is provided along with the system board for all systems that have a TPM.**

2 Replace the following components:

a Air shroud

b Expansion card risers

c Processor heat sink module

d Memory modules

e OCP card

f Mezzanine card

g Linking board

3 Reconnect all cables to the system board.

> **NOTE: Ensure that the cables inside the system are routed along the chassis wall and secured using the cable securing bracket.**

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

5 Ensure that you:

a Use the Easy Restore feature to restore the Service Tag. For more information, see the Restoring the Service Tag by using the Easy Restore feature section.

b If the Service Tag is not backed up in the backup flash device, enter the Service Tag manually. For more information, see the Restoring the Service Tag by using the Easy Restore feature section.

c Update the BIOS and iDRAC versions.

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

6 Import your new or existing iDRAC Enterprise license.

For more information, see iDRAC User's Guide, at **Dell.com/idracmanuals**.

Restoring the Service Tag by using the Easy Restore feature

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

1 Turn on the system.

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

2 Perform one of the following steps:

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

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

3 Perform one of the following steps:

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

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

4 Perform one of the following steps:

- Press **Y** to restore the system configuration data.
- Press **N** to use the default configuration settings.

After the restore process is complete, the system restarts.

Entering the system Service Tag by using System Setup

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

1 Turn on the system.
2 Press F2 to enter System Setup.
3 Click **Service Tag Settings**.
4 Enter the Service Tag.

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

5 Click **OK**.
6 Import your new or existing iDRAC Enterprise license.

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

Trusted Platform Module

Upgrading the Trusted Platform Module

Prerequisites

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

NOTE:

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

About this task

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

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

Removing the TPM

1 Locate the TPM connector on the system board.
2 Press to hold the module down and remove the screw using the security Torx 8-bit shipped with the TPM module.
3 Slide the TPM module out from its connector.
4 Push the plastic rivet away from the TPM connector and rotate it 90° counterclockwise to release it from the system board.
5 Pull the plastic rivet out of its slot on the system board.

Installing the TPM

Steps

1 To install the TPM, align the edge connectors on the TPM with the slot on the TPM connector.
2 Insert the TPM into the TPM connector such that the plastic rivet aligns with the slot on the system board.
3 Press the plastic rivet until the rivet snaps into place.

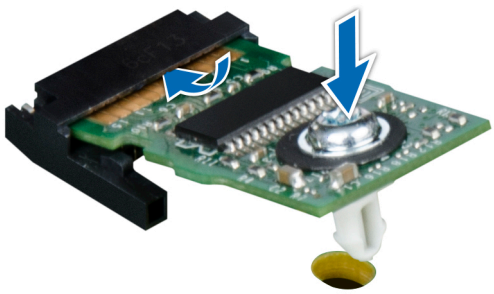

Figure 76. Installing the TPM

4 Replace the screw that secures the TPM to the system board.

Next steps

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

Initializing TPM for BitLocker users

Initialize the TPM.

For more information, see initializing the TPM for Intel TXT users.

The **TPM Status** changes to **Enabled, Activated**.

Initializing the TPM 1.2 for TXT users

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
3. From the **TPM Security** option, select **On with Pre-boot Measurements**.
4. From the **TPM Command** option, select **Activate**.
5. Save the settings.
6. Restart your system.
7. Enter **System Setup** again.
8. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
9. From the **Intel TXT** option, select **On**.

Initializing the TPM 2.0 for TXT users

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
3. From the **TPM Security** option, select **On**.
4. Save the settings.
5. Restart your system.
6. Enter **System Setup** again.
7. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
8. Select the **TPM Advanced Settings** option.
9. From the **TPM2 Algorithm Selection** option, select **SHA256**, then go back to **System Security Settings** screen.
10. On the **System Security Settings** screen, from the **Intel TXT** option, select **On**.
11. Save the settings.
12. Restart your system.

7

Using system diagnostics

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

Dell Embedded System Diagnostics

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

The Embedded System Diagnostics provides a set of options for particular device groups or devices allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

Running the Embedded System Diagnostics from Boot Manager

Run the Embedded System Diagnostics (ePSA) if your system does not boot.

1. When the system is booting, press F11.
2. Use the up arrow and down arrow keys to select **System Utilities** > **Launch Diagnostics**.
3. Alternatively, when the system is booting, press F10, select **Hardware Diagnostics** > **Run Hardware Diagnostics**.
   The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

Running the Embedded System Diagnostics from the Dell Lifecycle Controller

1. As the system boots, press F10.
2. Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.
   The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

System diagnostic controls

Menu	Description
Configuration	Displays the configuration and status information of all detected devices.
Results	Displays the results of all tests that are run.
System health	Provides the current overview of the system performance.
Event log	Displays a time-stamped log of the results of all tests run on the system. This is displayed if at least one event description is recorded.

8

Jumpers and connectors

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

Topics:

System board jumper settings

For information on resetting the password jumper to disable a password, see the Disabling a forgotten password section.

Table 38. System board jumper settings

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

System board connectors

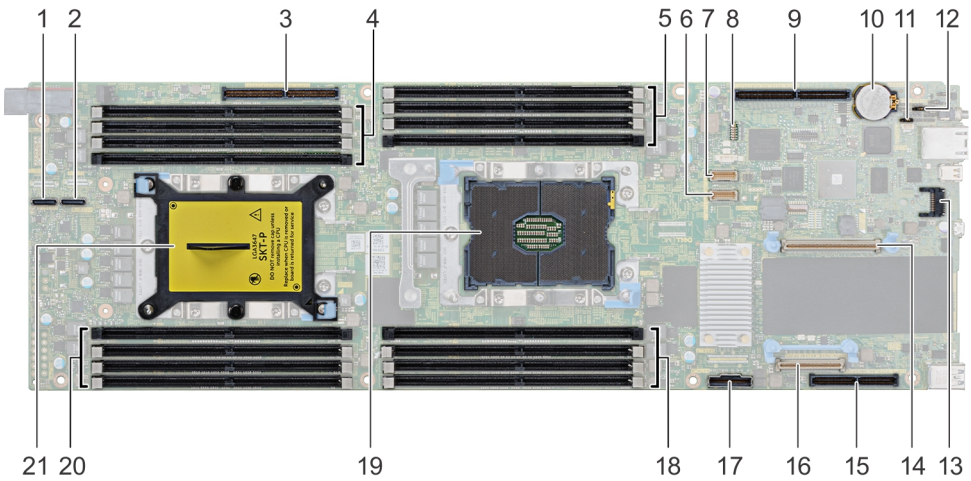

Figure 77. PowerEdge C6420 system board connectors

Table 39. System Board Connectors and Description

Item	Connector	Description
1	PCIe B	NVMe B connector
2	PCIe A	NVMe A connector
3	PCIe Slot 5	Slot 5: x16 PCIe Gen3 from CPU 2
4	DIMM sockets (4)	DIMM B8, DIMM B4, DIMM B5, DIMM B6
5	DIMM sockets (4)	DIMM A8, DIMM A4, DIMM A5, DIMM A6
6	HFI_SB_1	Side band cable 1 for OCP
7	HFI_SB_2	Side band cable 2 for OCP
8	LEDs (7)	System board diagnostic LED indicators
9	PCIe Slot 4	Slot 4: x16 PCIe Gen3 CPU 1
10	Batt	System battery
11	PWDCLR	Password clear jumper
12	NVRAMCLR	NVRAM clear jumper
13	PCIe Slot 3	Slot 3: x8 PCIe Gen3 from CPU 1
14	TPM	TPM connector
15	PCIe Slot 1	Slot 1: x8 PCIe Gen3 from CPU 1
16	PCIe Slot 2	Slot 2: x8 PCIe Gen3 from CPU 1
17	SATA_A	SATA cable connector
18	DIMM sockets (4)	DIMM A7, DIMM A1, DIMM A2, DIMM A3
19	CPU 1	CPU socket 1

Item	Connector	Description
20	DIMM sockets (4)	DIMM B7, DIMM B1, DIMM B2, DIMM B3
21	CPU 2	CPU socket 2 (with a dust cover)

Disabling forgotten password

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

Prerequisite

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

Steps

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

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

   NOTE: If you assign a new system and/or setup password with the jumper on pins 4 and 6, the system disables the new password(s) the next time it boots.
5. Reconnect the system to its electrical outlet and power on the system, including any attached peripherals.
6. Power off the system, including any attached peripherals, and disconnect the system from the electrical outlet.
7. Remove the system cover.
8. Move the jumper on the system board jumper from pins 4 and 6 to pins 2 and 4.
9. Install the system cover.
10. Reconnect the system to its electrical outlet and power on the system, including any attached peripherals.
11. Assign a new system and/or setup password.

9

Getting help

Topics:

- Contacting Dell EMC
- Documentation feedback
- Accessing system information by using QRL
- Receiving automated support with SupportAssist
- Recycling or End-of-Life service information

Contacting Dell EMC

Dell EMC provides several online and telephone based support and service options. If you do not have an active internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell EMC product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell EMC for sales, technical assistance, or customer service issues:

1 Go to **Dell.com/support/home**.
2 Select your country from the drop-down menu on the lower right corner of the page.
3 For customized support:
   a Enter your system Service Tag in the **Enter your Service Tag** field.
   b Click **Submit**.
   The support page that lists the various support categories is displayed.
4 For general support:
   a Select your product category.
   b Select your product segment.
   c Select your product.
   The support page that lists the various support categories is displayed.
5 For contact details of Dell EMC Global Technical Support:
   a Click **Global Technical Support**.
   b The **Contact Technical Support** page is displayed with details to call, chat, or e-mail the Dell EMC Global Technical Support team.

Documentation feedback

You can rate the documentation or write your feedback on any of our Dell EMC documentation pages and click **Send Feedback** to send your feedback.

Accessing system information by using QRL

You can use the Quick Resource Locator (QRL) located on the information tag in the front of the C6420, to access the information about the Dell EMC PowerEdge C6420.

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

The QRL includes the following information about your system:

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

Steps

1 Go to **Dell.com/qrl** and navigate to your specific product or

2 Use your smartphone or tablet to scan the model-specific Quick Resource (QR) code on your system or in the Quick Resource Locator section.

Quick Resource Locator for C6400 and C6420 systems

Figure 78. Quick Resource Locator for PowerEdge C6400 and C6420 systems

Receiving automated support with SupportAssist

Dell EMC SupportAssist is an optional Dell EMC Services offering that automates technical support for your Dell EMC server, storage, and networking devices. By installing and setting up a SupportAssist application in your IT environment, you can receive the following benefits:

- **Automated issue detection** — SupportAssist monitors your Dell EMC devices and automatically detects hardware issues, both proactively and predictively.
- **Automated case creation** — When an issue is detected, SupportAssist automatically opens a support case with Dell EMC Technical Support.
- **Automated diagnostic collection** — SupportAssist automatically collects system state information from your devices and uploads it securely to Dell EMC. This information is used by Dell EMC Technical Support to troubleshoot the issue.
- **Proactive contact** — A Dell EMC Technical Support agent contacts you about the support case and helps you resolve the issue.

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

Recycling or End-of-Life service information

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