Dell VxRail VP-760 and VS-760

Hardware Requirements and Specifications

December 2024
Rev. 6

DELL Technologies

Notes, cautions, and warnings

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

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

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

Contents

Revision history

Table 1. Revision history

Date	Revision	Description of change
December 2024	6	Removed support for 256 GB RDIMM with 5600 MT/s.
July 2024	5	Added features for VxRail 8.0.230 and 8.0.240, including support for VxRail VS-760.
April 2024	4	Minor updates.
December 2023	3	Added features for VxRail 8.0.120.
August 2023	2	Minor updates and corrections.
August 2023	1	Initial release.

1

Introduction

This document provides an overview about the system, diagnostic tools, and guidelines describing high-level operations.

The target audience for this document includes customers, field personnel, and partners who want to operate and maintain a VxRail. This document is designed for people familiar with:

- Dell systems and software
- VMware virtualization products
- Data center appliances and infrastructure

For the most up-to-date list of VxRail documentation, see the VxRail Documentation Quick Reference List.

Dell Technologies Support

Create a Support account to access support resources for your VxRail. Link your Support account with VxRail Manager to access resources without a separate login.

If you already have an account, register your VxRail to access the available resources. You can link your Online Support account with VxRail Manager and access support resources without having to log in separately.

Register for a Dell Technologies Support account

Create a Support account to obtain VxRail documentation and software updates.

If you already have an account, link your Support account with VxRail Manager and access resources without having to log in separately.

After you register, you can:

- Access or download the SolVe Desktop application for customized procedures to replace hardware components and upgrade software components.
- Link your Support account with VxRail Manager to access resources.

For information about how to access a Support account or to upgrade an existing account, see KB 21768.

1. Go to Dell Technologies Support.
2. Click **Create an Account** and follow the steps to create an account.
   It may take approximately 48 hours to receive a confirmation of account creation.

Support resources

Support resources are available for your VxRail.

Use the following resources to obtain support for your VxRail:

- In the VMware vSphere Web Client, select **VxRail**. Use the **Support** functions on the **VxRail Dashboard**.
- Go to Dell Technologies Support.

Use SolVe Online for VxRail procedures

To avoid potential data loss, always use *SolVe Online for VxRail* to generate procedures before you replace any hardware components or upgrade software.

CAUTION: If you do not use *SolVe Online for VxRail* to generate procedures to replace hardware components or perform software upgrades, data loss may occur for VxRail.

You must have a Dell Technologies Support account to use SolVe Online for VxRail.

Locate your VxRail serial number

If you contact Dell Technologies Support for your VxRail, provide the VxRail serial number, also known as the Product Serial Number Tag (PSNT).

Identify the VxRail serial number in VMware vSphere Web Client or locate the serial number that is printed on the physical VxRail.

Locate your VxRail serial number in VxRail Manager

The PSNT is the VxRail serial number in VxRail Manager.

1. On the VMware vSphere Web Client, select the Inventory icon.
2. Select the VxRail cluster and click the **Monitor** tab.
3. Expand **VxRail**, and click **Physical View** to view the serial number.

Locate your physical VxRail serial number

Locate the serial number on your VxRail.

1. On the upper right corner of the VxRail chassis, locate the luggage tag.
2. Pull out the blue-tabbed luggage tag.
3. Locate the serial number label on the pull-out tag.

   The Product Serial Number Tag (PSNT) is the 14-digit number that is on the front edge of the luggage tag.

Access VxRail content using the QRL

Use the Service Tag or QRL code on the Dell QRL site to access VxRail information for VxRail 15G, and later models.

If your VxRail has a QRL that is added to the luggage tag, you can use this tag to obtain factory configuration and warranty information. You can also enter the Service Tag to access information.

1. On the VxRail luggage tag, locate the QRL or Service Tag.

Figure 1. QRL code

2. Using the camera on your phone or laptop, use the QRL code on the Service Tag to access information specific to your VxRail. You can also go to qrl.dell.com to enter the Service Tag information.

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Overview

The 16G VxRail platforms provide enhanced processor, memory, and PCIe capabilities.

The VxRail VP-760 includes All Flash, Hybrid, and All NVMe storage variants. It is a 2U server that supports:

- Up to two fourth-generation Intel Xeon scalable processors, with up to 56 cores
- Up to two fifth-generation Intel Xeon scalable processors with up to 64 cores
- Up to 16 DIMM slots per processor
- Two redundant AC or DC power supply units
- The following drive configurations:
  - Up to 24 x 2.5-inch drives.
  - Up to 24 x 2.5-inch drives with 4 x 2.5-inch (rear) SAS, SATA, or NVMe SSD drives.
- The following GPU configurations:
  - Up to six single-wide GPUs
  - Up to two double-wide GPUs

The VxRail VS-760 is a 2U server with Hybrid storage variant that supports:

- Up to two fourth-generation Intel Xeon scalable processors, with up to 56 cores
- Up to 16 DIMM slots per processor
- Two redundant AC or DC power supply units
- Up to 12 x 3.5-inch SAS HDD drives with 4 x 2.5-inch (rear) SAS or NVMe SSD drives.

Do not install GPUs, network cards, or other PCIe devices on your system that Dell Technologies has not tested or validated.

CAUTION: The use of unauthorized or unapproved hardware can damage your system and invalidate the system warranty.

For information about how to hot swap an NVMe PCIe SSD U.2 device, see Dell Express Flash NVMe PCIe User's Guide.

In this document, **drives** indicates all instances of SAS, SATA, and NVMe drives unless specified otherwise.

Front view of the system

This section provides a description of the indicators, buttons, and connectivity options available on the front side of VxRail VP-760 and VxRail VS-760.

Figure 2. Front view of VxRail VP-760 with 24 x 2.5-inch drive system

Figure 3. Front view of VxRail VS-760 with 12 x 3.5-inch drive system

Table 2. Features that are available on the front of the system

Item	Ports, panels, and slots	Description of ports, panels, and slots
1	Left control panel	It includes the system health, system ID, and the status LED indicators.
2	Drive	It allows you to install drives that are supported on your system. For drive slot numbers, see System information labels.
3	Right control panel	It includes the power button, VGA port, USB port, iDRAC Direct (Micro-AB USB) port, and the iDRAC Direct status LED. panel
4	Information tag	A slide-out label panel that contains the Service Tag, NIC, MAC address, and other system information. The Information tag contains the iDRAC secure default password for systems that have the secure default access to iDRAC.

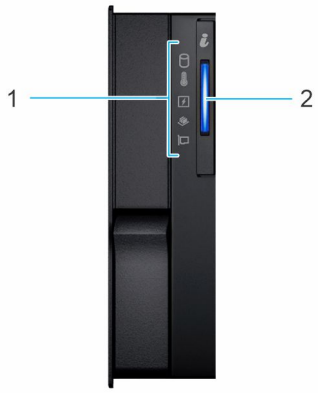

Figure 4. Left control panel

Table 3. Indicators that are found on the left control panel

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

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

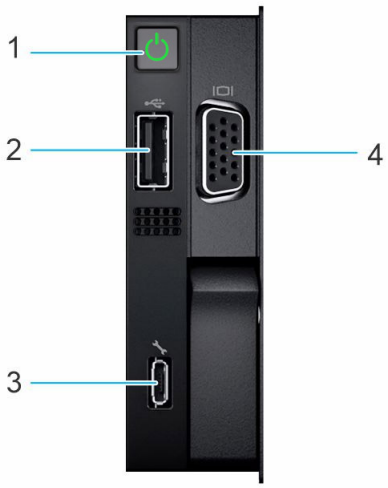

Figure 5. Right control panel

Table 4. Overview of the buttons and ports on the right control panel

Item	Port or button	Icon	Description
1	Power button		It indicates if the system is powered on or off. Press the power button to manually power on or off the system. Press the power button to gracefully shutdown an ACPI-compliant operating system.
2	USB 2.0 port		The USB port is 4-pin, 2.0-compliant, and allows you to connect USB devices to the system.
3	iDRAC Direct (Micro-AB USB) port		The iDRAC Direct (Micro-AB USB) port provides access to the iDRAC direct Micro-AB USB features. For more information, see the Integrated Dell Remote Access Controller User's Guide. Use a USB to micro USB (type AB) cable to configure iDRAC Direct to your laptop or tablet. **NOTE:** The cable length should not exceed 0.91 m (3 ft). The use of a cable that exceeds 0.91 m (3 ft) may affect performance.
4	VGA port		Use this port to connect a display device to the system.

For more information about ports, panels, and slots, see Technical specifications.

Rear view of the system

This section provides an overview of the connectivity options available on the rear side of VxRail.

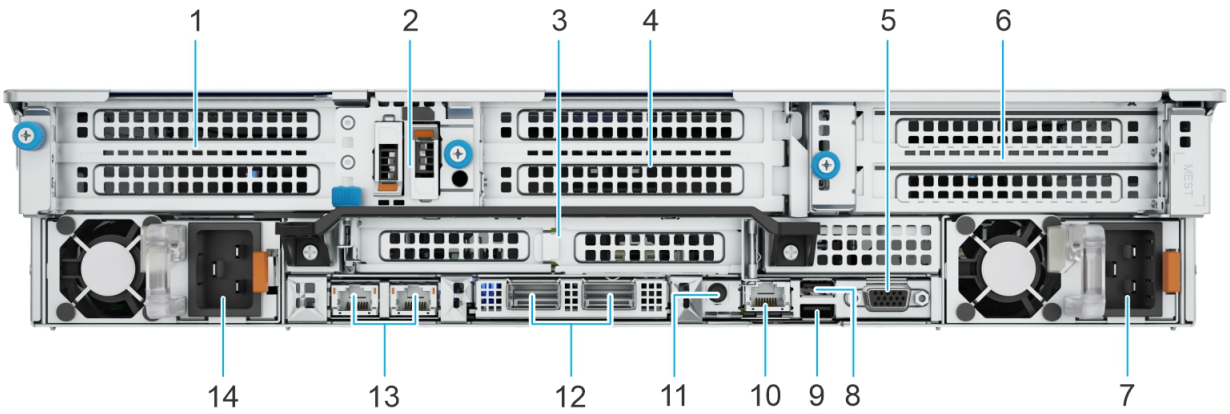

Figure 6. Rear view of VxRail VP-760

Table 5. Rear view

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1 and slot 2)	N/A	It allows you to connect PCI Express expansion cards.
2	BOSS module	N/A	BOSS module is used for internal system boot.
3	PCIe expansion card riser 2 (slot 3 and slot 6)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
4	PCIe expansion card riser 3 (slot 4 and slot 5)	N/A	It allows you to connect PCI Express expansion cards.
5	VGA port		Use this port to connect a display device to the system.
6	PCIe expansion card riser 4 (slot 7 and slot 8)	N/A	It allows you to connect PCI Express expansion cards.
7	Power supply unit 2 (PSU2)		It is the secondary PSU of the system.
8	USB 2.0 port		4-pin, 2.0-compliant port to connect USB devices to the system.
9	USB 3.0 port		9-pin and 3.0-compliant port to connect USB devices to the system.
10	Dedicated iDRAC9 Ethernet port		This port allows you to remotely access iDRAC. For more information, see Integrated Dell Remote Access Controller User's Guide.
11	System Identification (ID) button		Press the button on the front or back of the system to identify a system in a rack, to reset the iDRAC, or to access the BIOS using the Step-through mode. When pressed, the System ID LED on the back panel blinks until either the front button is pressed, or the rear button is pressed again. You can also press the button to switch between **On** or **Off** mode. If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the **BIOS progress** mode. To reset the iDRAC, press and hold the **System ID** button for more than 15 seconds. If this option is disabled, you can enable it by pressing **F2** during the system boot process, and entering the **iDRAC Setup** page.
12	OCP NIC card (optional)	N/A	The NIC ports are integrated on the OCP card which is connected to the system board. The OCP NIC card supports OCP 3.0.
13	NIC ports (optional)		The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
14	Power supply unit 1 (PSU1)		PSU1 is the primary PSU of the system.

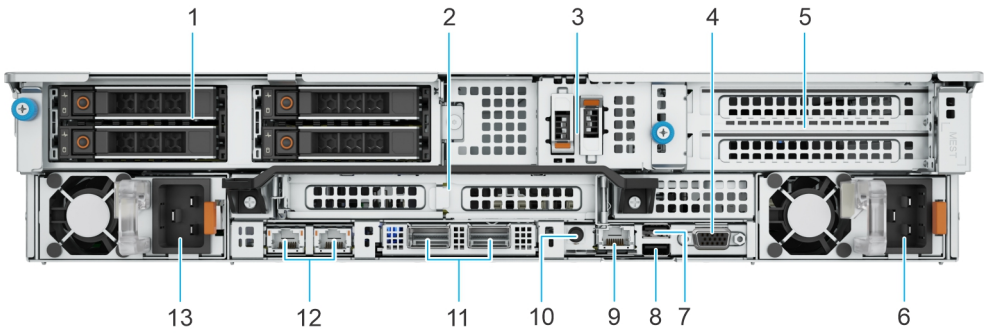

Figure 7. Rear view of VxRail VP-760 and VxRail VS-760 with 4 x 2.5-inch rear drive module

Table 6. Rear view of the system with 4 x 2.5-inch rear drive module

Item	Ports, panels, or slots	Icon	Description
1	Rear drive module	N/A	It allows you to install the supported rear drives.
2	PCIe expansion card riser 2 (slot 3 and slot 6)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
3	BOSS module	N/A	BOSS module is used for internal system boot.
4	VGA port		It allows you to connect a display device to the system.
5	PCIe expansion card riser 4 (slot 7 and slot 8)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
6	Power supply unit 2 (PSU2)	2	PSU2 is the secondary PSU of the system.
7	USB 2.0 port		4-pin, 2.0-compliant port to connect USB devices to the system.
8	USB 3.0 port		9-pin and 3.0-compliant port to connect USB devices to the system.
9	Dedicated iDRAC9 Ethernet port		This port allows you to remotely access iDRAC. For more information, see Integrated Dell Remote Access Controller User's Guide.
10	System Identification (ID) button		Press the button on the front or back of the system to identify a system in a rack, to reset the iDRAC, or to access the BIOS using the Step-through mode. When pressed, the System ID LED on the back panel blinks until either the front button is pressed, or the rear button is pressed again. You can also press the button to switch between **On** or **Off** mode. If the server stops responding during POST, press and hold the **System ID** button for more than five seconds to enter the **BIOS progress mode**. To reset the iDRAC, press and hold the **System ID** button for more than 15 seconds. If this option is disabled, you can enable it by pressing **F2** during the system boot process, and entering the **iDRAC Setup** page.
11	OCP NIC card (optional)	N/A	The NIC ports are integrated on the OCP card which is connected to the system board. The OCP NIC card supports OCP 3.0.
12	NIC ports (optional)		The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
13	Power supply unit 1 (PSU1)	1	PSU1 is the primary PSU of the system.

For more information about ports, panels, and slots, see Technical specifications.

Inside the system

This section provides an overview of the internal components of the system.

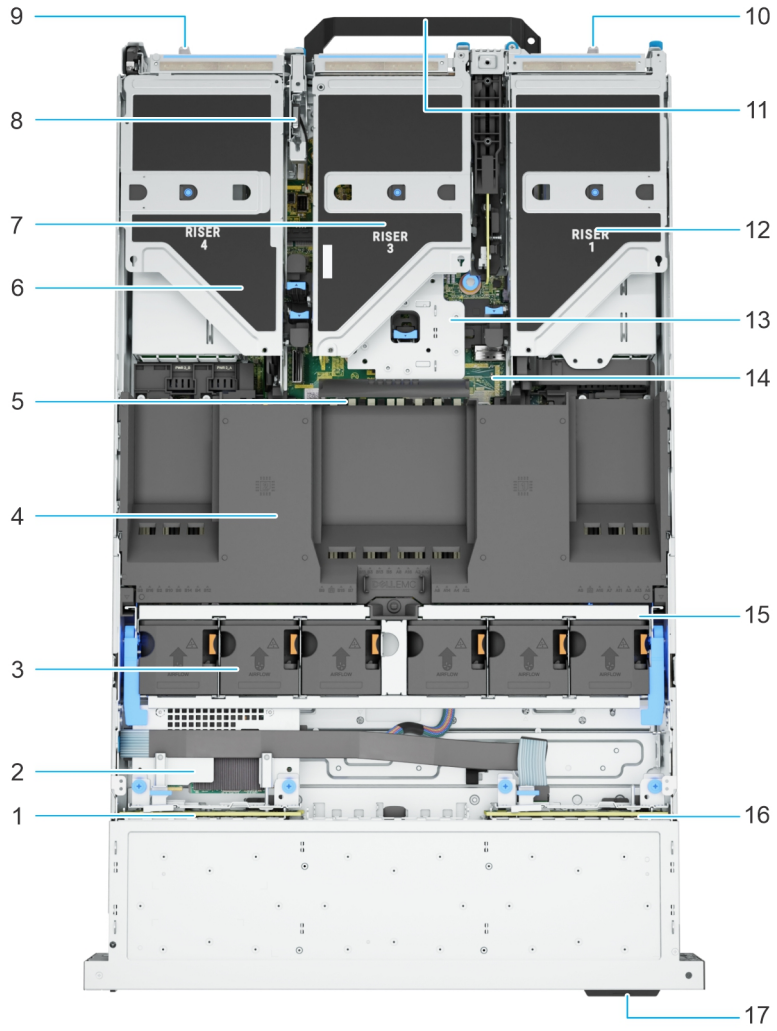

Figure 8. Components inside the system

Table 7. Description of the components inside the system

Item	Description
1	Backplane
2	Rear mounting front PERC module
3	Cooling fans
4	Air shroud
5	Memory DIMM sockets
6	Expansion riser 4
7	Expansion riser 3
8	Intrusion switch module
9	Power supply unit (PSU2)
10	Power supply unit (PSU1)

Table 7. Description of the components inside the system (continued)

Item	Description
11	Rear handle
12	Expansion riser 1
13	Expansion riser 2
14	System board
15	Cooling fan cage assembly
16	Backplane
17	Express Service Tag

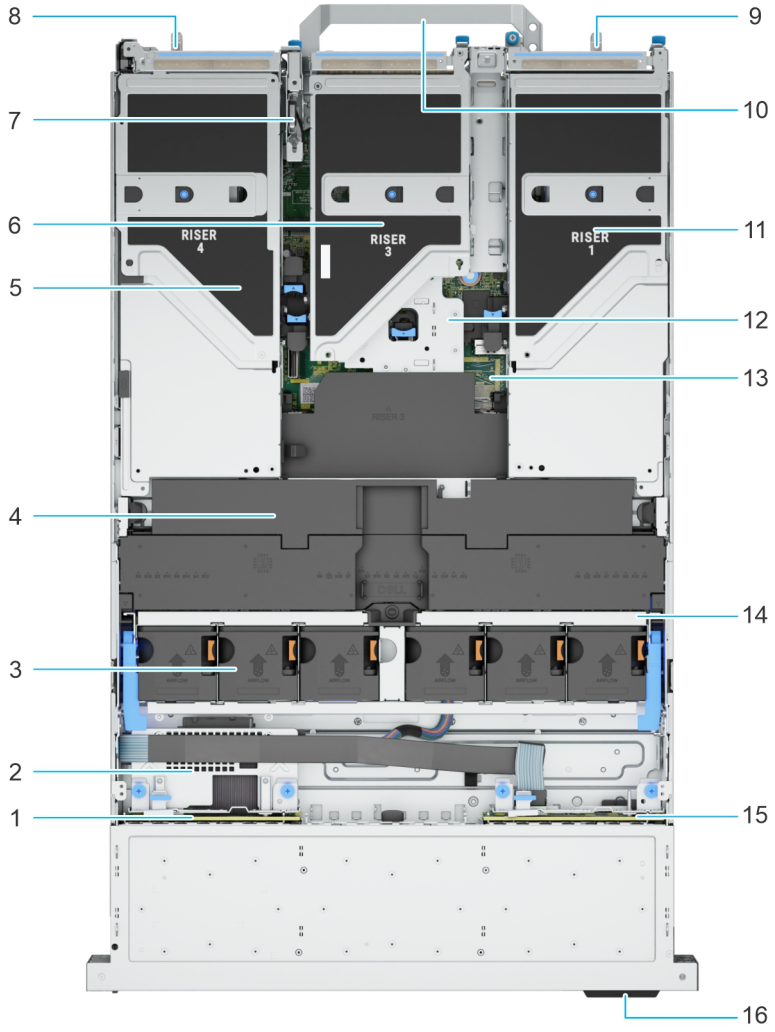

Figure 9. Components inside the system with full-length risers and GPU shroud

Table 8. Description of the components inside the system with full-length risers and GPU shroud

Item	Description
1	Backplane
2	Rear mounting front PERC module
3	Cooling fans

Table 8. Description of the components inside the system with full-length risers and GPU shroud (continued)

Item	Description
4	GPU air shroud
5	Expansion riser 4
6	Expansion riser 3
7	Intrusion switch module
8	Power supply unit (PSU2)
9	Power supply unit (PSU1)
10	Rear handle
11	Expansion riser 1
12	Expansion riser 2
13	System board
14	Cooling fan cage assembly
15	Backplane
16	Express Service Tag

System information labels

You can find the system information labels at the back of the system cover.

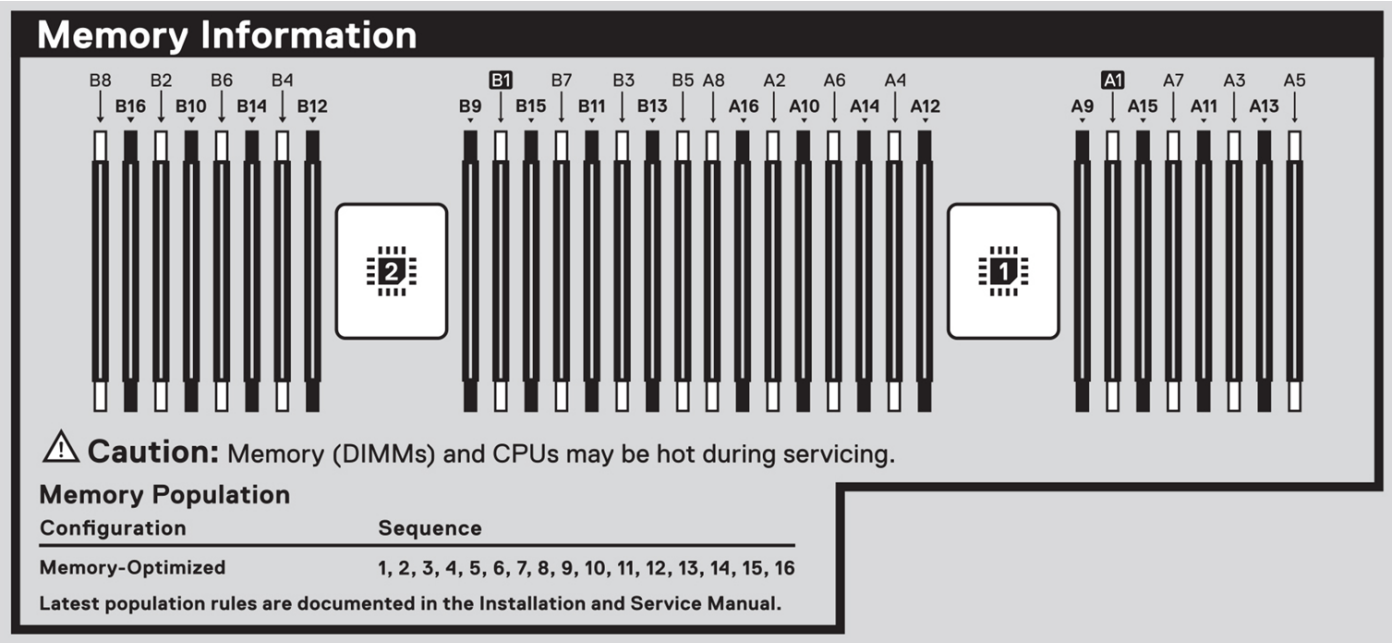

Figure 10. Memory information label

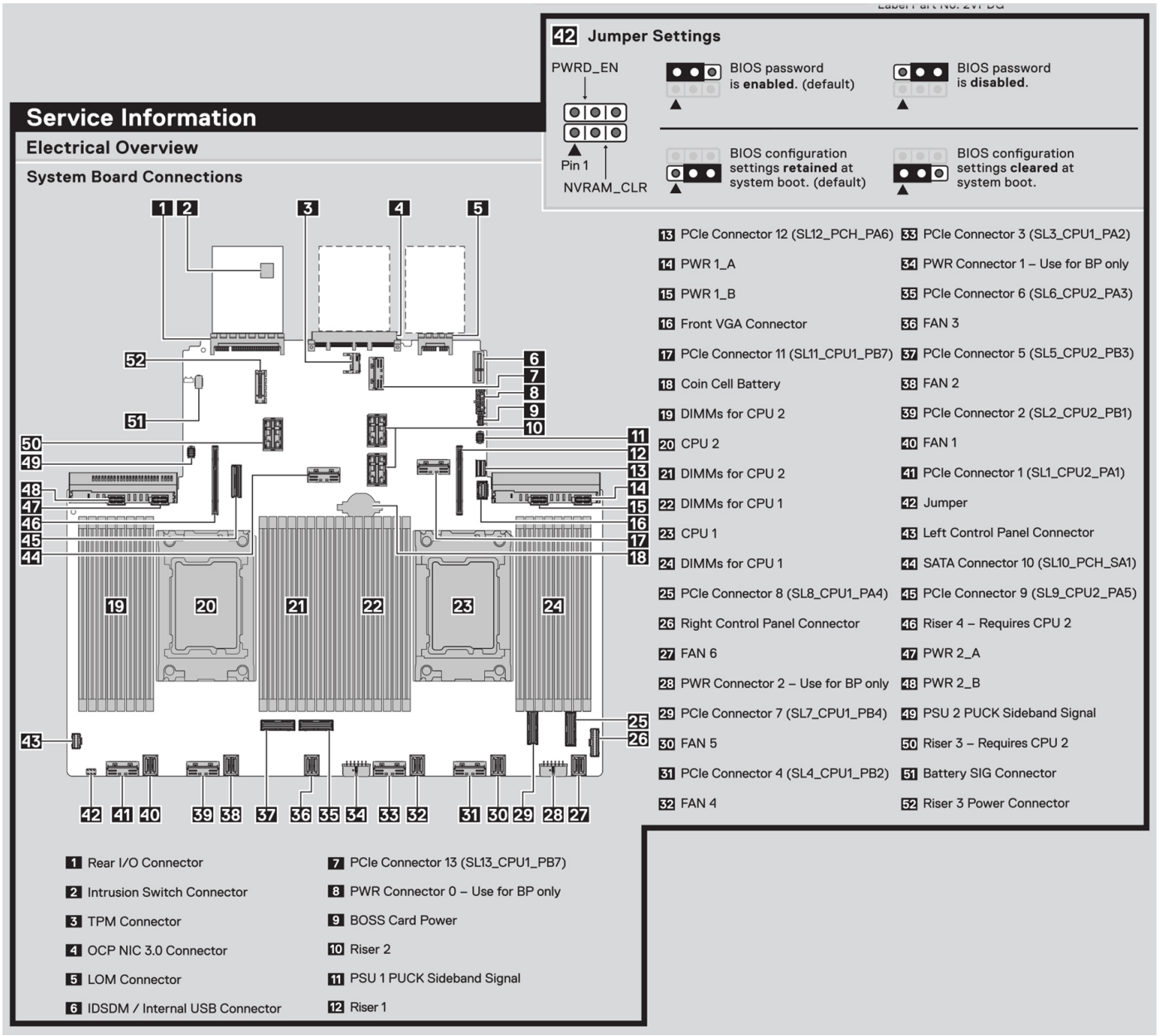

Figure 11. Electrical overview label

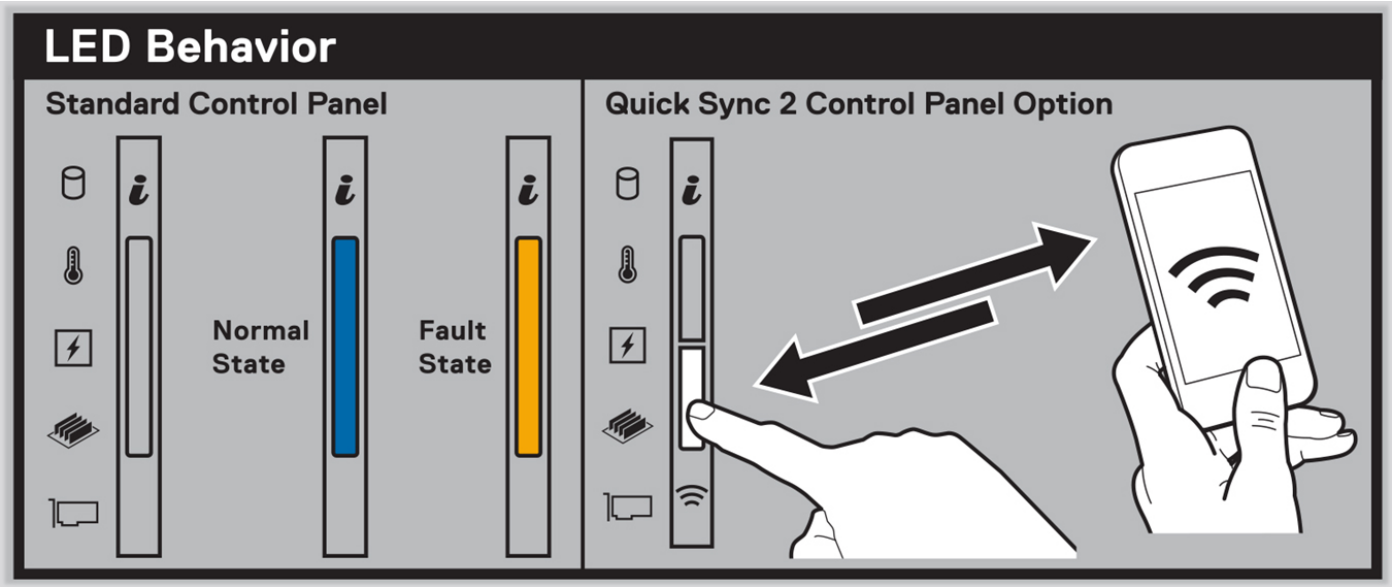

Figure 12. LED behavior label

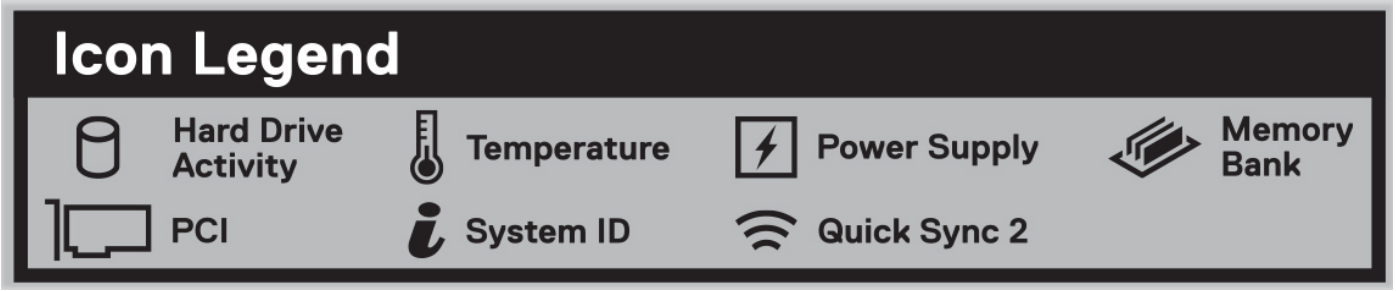

Figure 13. Icon legend label

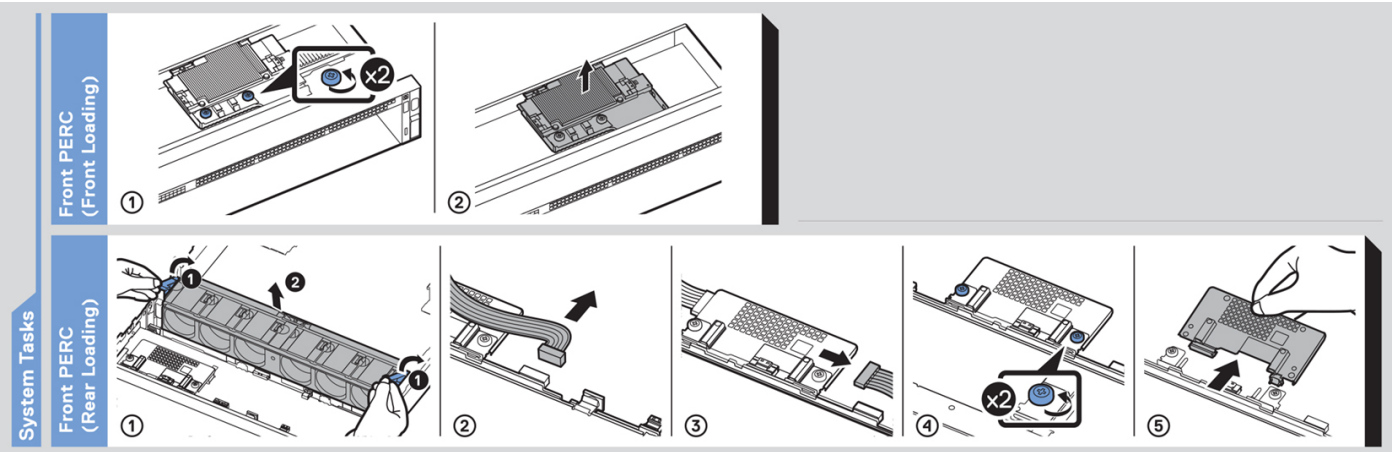

Figure 14. System tasks label

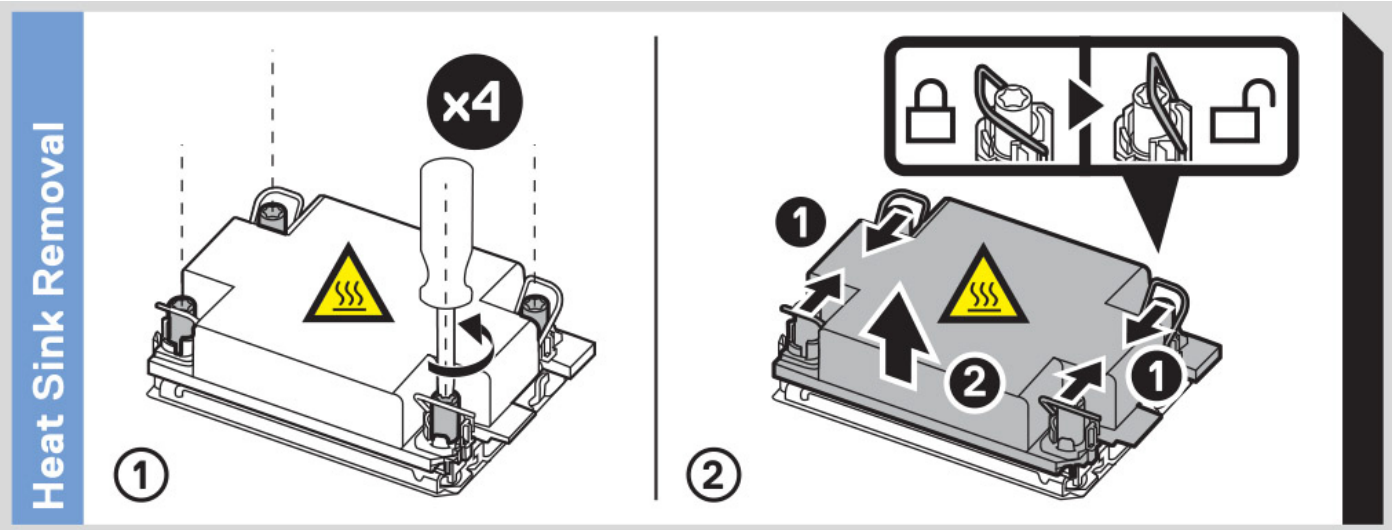

Figure 15. Heat sink label

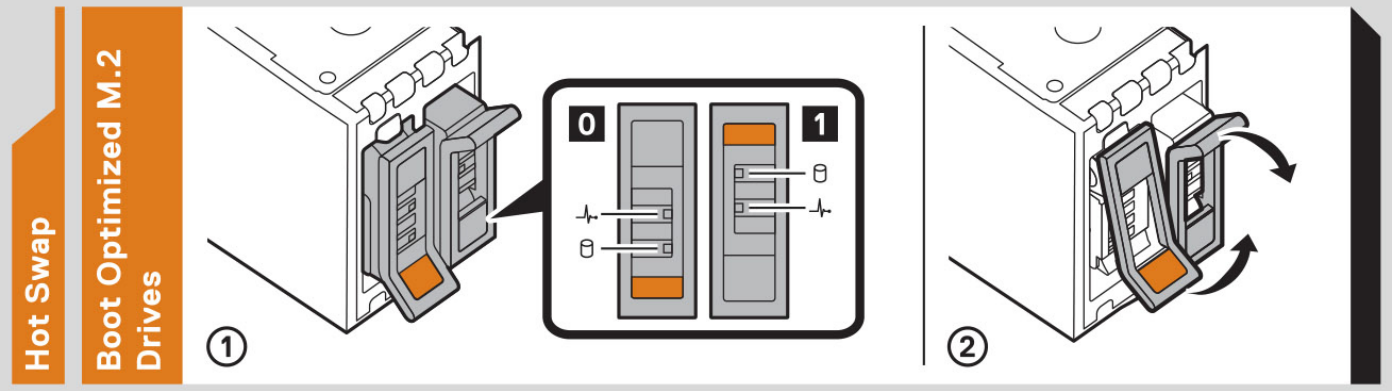

Figure 16. BOSS-N1 label

Figure 17. Caution label

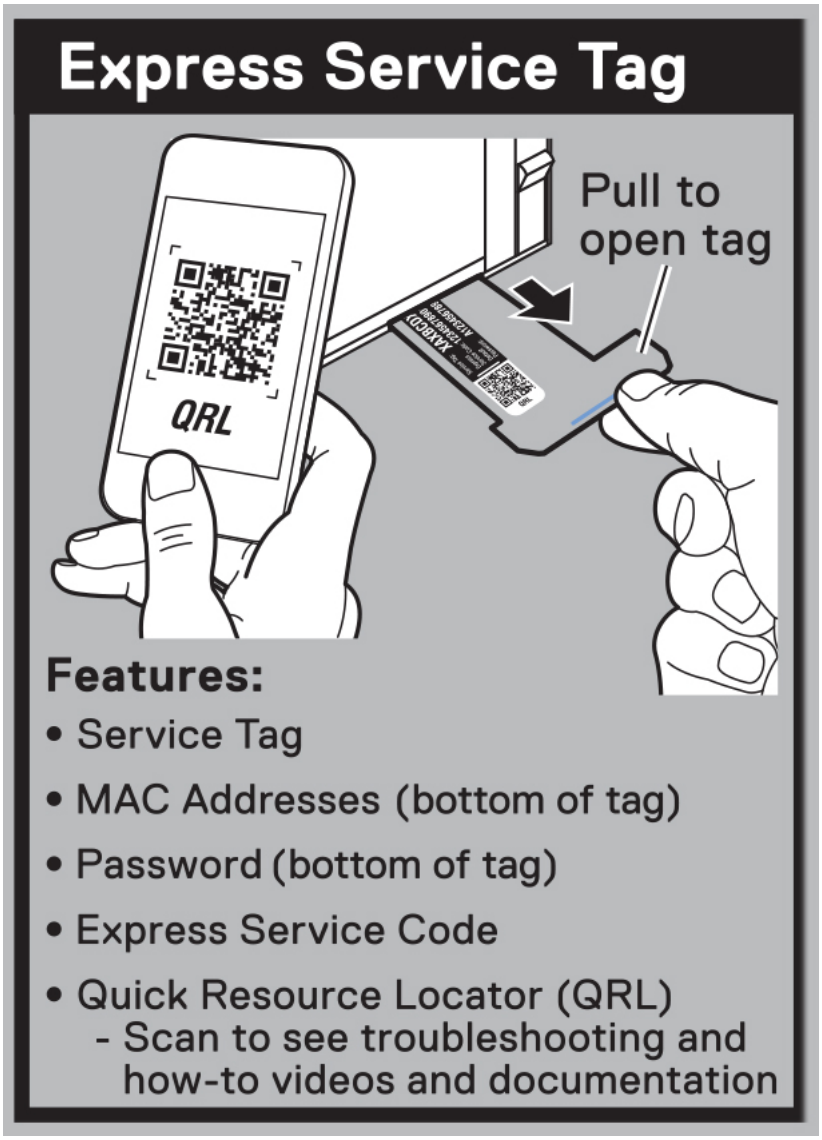

Figure 18. Express service tag label

Rail sizing and rack compatibility matrix

For specific information about the rail solutions compatible with your system, see Dell Enterprise Systems Rail Sizing and Rack Compatibility Matrix.

The matrix provides the following information:

- Details about rail types and their functions
- Rail adjustability range for various types of rack mounting flanges
- Rail depth with and without cable management accessories
- Types of racks that are supported for various types of rack mounting flanges

3

Technical specifications

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

Chassis physical design

This section provides an overview of the chassis dimensions and weight limitations of VxRail VP-760 and VxRail VS-760.

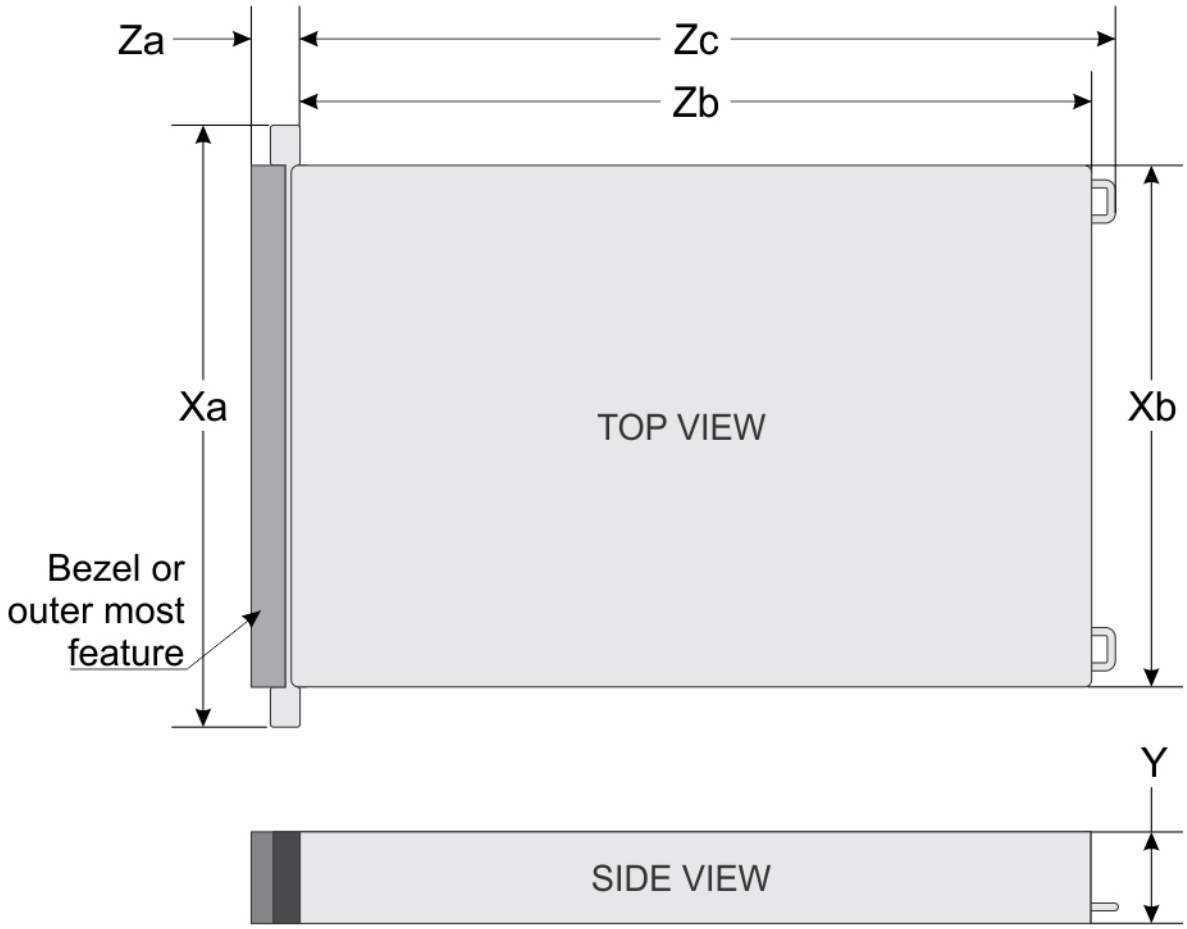

Figure 19. Chassis dimensions

Table 9. Chassis dimensions

Xa	Xb	Y	Za	Zb	Zc
482.0 mm (18.97 in)	434.0 mm (17.08 in)	86.8 mm (3.41 in)	35.84 mm (1.41 in) with bezel 22.0 mm (0.86 in) without bezel	700.7 mm (27.58 in) Ear to rear wall Zb is the nominal rear wall external surface where the system board I/O connectors reside.	736.29 mm (28.98 in) Ear to PSU handle

Table 10. Maximum weight limitations

System configuration	Maximum weight (with all drives/SSDs)
A server with fully populated drives	36.1 kg (79.58 lbs)
A server with no installed PSU or drives	25.1 kg (55.33 lbs)

Processor specifications

The VxRail VP-760 supports up to two fourth-generation or fifth-generation Intel Xeon scalable processors.

The VxRail VS-760 supports up to two fourth-generation Intel Xeon scalable processors.

PSU specifications

The VxRail VP-760 and VxRail VS-760 supports up to two AC or DC PSUs.

Table 11. PSU specifications

PSU	Class	Heat dissipation (max BTU/hr)	Frequency (Hz)	Voltage	AC			
					High line wattage 200 VAC–240 VAC	Low line wattage 100 VAC–120 VAC	DC	Current (Amps)
1100 W mixed mode	Titanium	4100	50/60	100—240 VAC	1100 W	1050 W	N/A	12—6.3
	N/A	4100	N/A	240 VDC	N/A	N/A	1100 W	5.2
1400 W mixed mode	Platinum	5250	50/60	100—240 VAC	1400 W	1050 W	N/A	12—8
	N/A	5250	N/A	240 VDC	N/A	N/A	1400 W	6.6
1800 W mixed mode	Titanium	6750	50/60	200—240 VAC	1800 W	N/A	N/A	10
	N/A	6750	N/A	240 VDC	N/A	N/A	1800 W	8.2
2400 W mixed mode	Platinum	9000	50/60	100—240 VAC	2400 W	1400 W	N/A	16—13.5
	N/A	9000	N/A	240 VDC	N/A	N/A	2400 W	11.2
2800 W mixed mode	Titanium	10500	50/60	200—240 VAC	2800 W	N/A	N/A	15.6
	N/A	10500	N/A	240 VDC	N/A	N/A	2800 W	13.6
1100 W LVDC	N/A	4265	N/A	-48 VDC to -60 VDC	N/A	N/A	1100 W	27

Heat dissipation is calculated using the PSU wattage rating.

When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption using the Enterprise Infrastructure Planning Tool.

NOTE: If AC 2400 W PSUs operate at low line 100-120 VAC, the power rating per PSU is degraded to 1400 W. If AC 1400 W or 1100 W PSUs operates at low line 100-120 VAC, the power rating per PSU is degraded to 1050 W.

Figure 20. PSU power cord connectors

Table 12. PSU power cables list

Form factor	Output	Power cord
Redundant 60 mm (2.36 in)	1100 W AC	C13
	1100 W -48 LVDC	C13
	1400 W AC	C13
	1800 W AC	C15
Redundant 86 mm (3.39 in)	2400 W AC	C19
	2800 W AC	C21

C19 power cable combined with C20 to C21 jumper power cable can be used to adapt a 2800 W PSU.

C13 power cable combined with C14 to C15 jumper power cable can be used to adapt an 1800 W PSU.

Supported operating systems

For information about the supported operating systems, see Server Operating Systems.

Cooling fan specifications

The VxRail VP-760 and VxRail VS-760 requires various cooling components that are based on processor TDP, storage modules, rear drives, GPU, and persistent memory to maintain optimum thermal performance.

The VxRail VP-760 and VxRail VS-760 uses air cooling option that supports up to six standard (STD), High-Performance Silver (HPR) grade, or High-Performance Gold (VHP) grade cooling fans.

Table 13. Cooling fan specifications

Fan type	Abbreviation	Label color	Label image
Standard fans	STD	No label	
High-Performance Silver fans	HPR	Silver	
High-Performance Gold fans	VHP	Gold	

See Thermal restriction matrix for required fan support with air-cooled configurations.

System battery specifications

The VxRail VP-760 and VxRail VS-760 uses one CR 2032 3.0 V Lithium coin-cell battery.

Expansion card riser specifications

The VxRail VP-760 and VxRail VS-760 supports up to eight PCI express (PCIe) slots (six full-length slots and two low profile slots) on the system board.

Table 14. Supported expansion card slots on the system board

PCIe slot	With regular shroud	With GPU shroud	R1P	R1Q	R1R	R2A	R3A	R3B	R4P	R4Q	R4R
Slot 1	Full height Half length	Full height Full length	-	x8 (Gen5)	x16	-	-	-	-	-	-
Slot 2	Full height Half length	Full height Full length	x16 (Gen5) (Double width GPU)	x8 (Gen5)	x16 (Gen5)	-	-	-	-	-	-
Slot 3	Low profile Half length	Low profile Half length	-	-	-	x16	-	-	-	-	-
Slot 4	Full height Half length	Full height Half length	-	-	-	-	-	x8	-	-	-
Slot 5	Full height Half length	Full height Full length	-	-	-	-	x16	x8	-	-	-
Slot 6	Low profile Half length	Low profile Half length	-	-	-	x16	-	-	-	-	-
Slot 7	Full height Half length	Full height Full length	-	-	-	-	-	-	x16 (Gen5) (Double width GPU)	x8 (Gen5)	-
Slot 8	Full height Half length	Full height Half length	-	-	-	-	-	-	-	x8 (Gen5)	x8 (Gen5)

Memory specifications

The VxRail VP-760 and VxRail VS-760 supports several memory specifications for optimized operation.

The following table provides the supported memory specifications for fourth-generation Intel Xeon Scalable processors:

Table 15. Memory specifications for fourth-generation Intel Xeon Scalable processors

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
			Minimum system capacity	Maximum system capacity	Minimum system capacity	Maximum system capacity
DDR5 RDIMM	Single rank	16 GB	16 GB	256 GB	32 GB	512 GB
	Dual rank	32 GB	32 GB	512 GB	64 GB	1 TB
	Dual rank	64 GB	64 GB	1 TB	128 GB	2 TB
	Quad rank	128 GB	128 GB	2 TB	256 GB	4 TB
	Octa rank	256 GB [a]	256 GB	4 TB	512 GB	8 TB

a. 256 GB RDIMM is supported with VP-760 only.

The VxRail VP-760 and VxRail VS-760 with fourth-generation Intel Xeon Scalable processors supports 32 (288-pin) memory module sockets at 4800 MT/s.

The following table provides the supported memory specifications for fifth-generation Intel Xeon Scalable processors:

Table 16. Memory specifications for fifth-generation Intel Xeon Scalable processors

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
			Minimum system capacity	Maximum system capacity	Minimum system capacity	Maximum system capacity
DDR5 RDIMM	Single rank	16 GB	16 GB	256 GB	32 GB	512 GB
	Dual rank	32 GB	32 GB	512 GB	64 GB	1 TB
	Dual rank	64 GB	64 GB	1 TB	128 GB	2 TB
	Dual rank	96 GB	96 GB	1.5 TB	192 GB	3 TB
	Quad rank	128 GB	128 GB	2 TB	256 GB	4 TB
	Octa rank	256 GB[a]	256 GB	4 TB	512 GB	8 TB

a. 256 GB RDIMM with fifth-generation Intel Xeon Scalable processors supported with VP-760 only.

The VxRail VP-760 with fifth-generation Intel Xeon Scalable processors supports 32(288-pin) memory module sockets at 5600 MT/s. It supports 256 GB RDIMM at 4800 MT/s only.

DDR4 memories are not supported.

Memory DIMM slots are not hot pluggable.

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

Storage controller specifications

The VxRail VP-760 and VxRail VS-760 system supports the following controller cards.

- Internal boot:
  - BOSS-N1: HWRAID 2 x M.2 NVMe SSDs
  - USB
- SAS HBA: HBA355i

- Internal controller: PERC H755 (supported with VP-760 only)

Drives

VxRail VP-760 supports the following drive configurations:

- Up to 24 2.5-inch hot-swappable SAS, SATA, or NVMe drives.
- Up to 24 2.5-inch in the front and four 2.5-inch at the rear hot-swappable SAS, SATA, or NVMe drives.

For more information about how to hot swap NVMe PCIe SSD U.2 device, see the Dell Express Flash NVMe PCIe SSD User's Guide.

VxRail VP-760 with 24 x 2.5-inch drives with GPU supports the following disk group configurations:

- One disk group with one cache drive and up to five capacity drives.
- One disk group with one cache drive and up to seven capacity drives.
- Two disk groups with two cache drives and up to 10 capacity drives.
- Two disk groups with two cache drives and up to 14 capacity drives.
- Three disk groups with three cache drives and up to 15 capacity drives.
- Three disk groups with three cache drives and up to 21 capacity drives.
- Four disk groups with four cache drives and up to 20 capacity drives.

VxRail VP-760 with 24 x 2.5-inch (front) and 4 x 2.5-inch (rear) drives support the following disk group configurations:

- One disk group with one cache drive and up to six capacity drives.
- Two disk groups with two cache drives and up to 12 capacity drives.
- Three disk groups with three cache drives and up to 18 capacity drives.
- Four disk groups with four cache drives and up to 24 capacity drives.

VxRail VP-760 vSAN ESA (Express Storage Architecture) with 24 x 2.5-inch drives support:

- Up to 24 mixed use NVMe drives.
- A minimum of four drives.

VxRail VS-760 with 12 x 3.5-inch (front) and 4 x 2.5-inch (rear) drives support the following disk group configurations:

- One disk group with one cache drive and up to six capacity drives.
- Two disk groups with two cache drives and up to 12 capacity drives.
- Three disk groups with three cache drives and up to nine capacity drives.
- Four disk groups with four cache drives and up to 12 capacity drives.

Ports and connector specifications

This section describes the port and connector specifications for the VxRail VP-760 and VxRail VS-760.

Table 17. USB specifications

Front		Rear		Internal (optional)	
USB port type	**No. of ports**	**USB port type**	**No. of ports**	**USB port type**	**No. of ports**
USB 2.0-compliant port	One	USB 2.0-compliant port	One	Internal USB 3.0-compliant port	One
iDRAC Direct port (Micro-AB USB 2.0-compliant port)	One	USB 3.0-compliant port	One		

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

The VxRail VP-760 and VxRail VS-760 supports up to two NIC ports embedded on the LOM card, and up to four ports integrated on the OCP card.

Table 18. NIC port specifications

Feature	Specifications
LOM card (required)	Two 1 GbE
OCP card (OCP 3.0) (optional)	• Two 10 GbE • Four 10 GbE • Two 25 GbE • Four 25 GbE

The VxRail VP-760 and VxRail VS-760 supports the installation of a LOM card, an OCP card, or both.

NOTE: The system board supports an OCP PCIe with a width of x8. If you install an OCP PCIe with a width of x16, it is downgraded to x8 width.

The VxRail VP-760 and VxRail VS-760 supports the following:

- One optional data terminal equipment (DTE) 9-pin serial connector card that is 16550-compliant. The optional serial connector card is installed similar to an expansion card filler bracket.
- DB-15 VGA port on front panel and on rear I/O board.

Video specifications

The VxRail VP-760 and VxRail VS-760 supports an integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 19. Video specifications

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

Environmental specifications

This section provides the physical and environmental specifications for the VxRail VP-760 and VxRail VS-760.

For additional information about environmental certifications, see the Product Environmental Datasheet.

Table 20. Continuous operation specifications for ASHRAE A2

Temperature	Specifications
Temperature range for altitudes <= 900 m (<= 2953 ft)	10–35°C (50–95°F) with no direct sunlight on the equipment
Humidity percent range (non-condensing always)	8% RH with -12°C (10.4°F) minimum dew point up to 80% RH with 21°C (69.8°F) maximum dew point

Table 20. Continuous operation specifications for ASHRAE A2 (continued)

Temperature	Specifications
Operational altitude de-rating	Maximum temperature is reduced by 1°C/300 m (1.8°F/984 ft) above 900 m (2953 ft).

Table 21. Common environmental specifications for ASHRAE A2

Temperature	Specifications
Maximum temperature gradient (applies to both operation and non-operation)	20°C in an hour* (36°F in an hour) and 5°C in 15 minutes (9°F in 15 minutes), 5°C in an hour* (9°F in an hour) for tape hardware
Non-operational temperature limits	-40°C to 65°C (-40°F to 149°F)
Non-operational humidity limits	5% to 95% RH with 27°C (80.6°F) maximum dew point
Maximum non-operational altitude	12,000 meters (39,370 ft)
Maximum operational altitude	3,050 meters (10,006 ft)

*Per ASHRAE thermal guidelines for tape hardware are not instantaneous rates of temperature change.

Table 22. Maximum vibration specifications

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

Table 23. Maximum shock pulse specifications

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

Particulate and gaseous contamination specifications

When the levels of particulate or gaseous pollution exceed the specified limitations and result in equipment damage or failure, you must rectify the environmental conditions. The customer is responsible for the remediation of environmental conditions. To avoid damage to equipment or failure due to particulate or gaseous contamination, consider the limitations that are specified in the following tables:

Table 24. 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. This condition applies to data center environments only. Air filtration requirements do not apply to IT equipment designed to be used outside a data center in environments such as an office or factory floor. 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. 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. This condition applies to data center and non-data center environments.

Table 24. Particulate contamination specifications (continued)

Particulate contamination	Specifications
Walk-Up Edge Data Center or Cabinet (sealed, closed loop environment)	Filtration is not required for cabinets that are opened six times or less per year. Class 8 per ISO 1466-1 filtration as defined above is required otherwise. In environments commonly above ISA-71 Class G1 or that may have known challenges, special filters may be required.

Table 25. Gaseous contamination specifications

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

Thermal restriction matrix

The information available here describes the thermal restrictions of VxRail VP-760 and VxRail VS-760.

Table 26. Label reference

Label	Description
STD	Standard
HPR (Silver)	High-Performance Silver (HPR Silver) fan
HPR (Gold)	High-Performance Gold (HPR Gold) fan
HSK	Heat sink
LP	Low profile
FH	Full height
DPC	DIMM per channel

Table 27. Processor and heat sink matrix

Heat sink	Processor TDP
STD HSK	≤ 165 W (supporting only 2.5-inch drives and non-GPU configuration).
2U HPR HSK	125 W-250 W (supports 3.5-inch drives and non-GPU configuration)
	165 W–350 W (supporting 2.5-inch drives and non-GPU configuration).
L-type HSK	Supports all GPU and FPGA configurations

All GPU/FGPA cards require 1U L-type HSK and GPU shroud.

The critical component in that configuration determines the ambient temperature of the configuration. For example, if the processor supports an ambient temperature of 35°C (95°F), the DIMM is 35°C (95°F), and the GPU is 30°C (86°F), the combined configuration can only support 30°C (86°F).

Thermal restriction matrix for fourth-generation Intel Xeon Scalable processors

Table 28. Thermal restriction matrix for VxRail VP-760 air-cooled configuration

Configuration				24 x 2.5-inch SAS		24 x 2.5-inch NVMe	Ambient temperature
Rear storage				No rear drives	2.5-inch rear drives with rear fan	No rear drives	
CPU TDP/cTDP		Cores	T-Case maximum center (°C)	Fan			
5415+	150 W [1]	8	78	STD fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
4410Y		12	78				
5416S		16	78				
5418N	165 W [1]	24	84	STD fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
4416+		20	82				
6426Y	185 W [1]	16	72	STD fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
5418Y		24	80				
6428N		32	85				
6434	205 W [1]	8	96	STD fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
5420+		28	84				
6438Y+		32	76				
6438M		32	84				
6438N		32	84				
6442Y	225 W [1]	24	79	STD fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
6448Y		32	79				
6444Y	270 W [2]	16	75	HPR SLVR fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
8462Y+	300 W [2]	32	81	HPR SLVR fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
6454S	270 W [2]	32	71	HPR SLVR fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
6430		32	71				
8471N	300 W [2]	52	76	HPR SLVR fan	HPR SLVR fan	HPR GOLD fan	35°C (95°F)
8470N		52	76				
8460Y+		40	75				
8452Y		36	75				

NOTE: The platform supports Maximum (MAX) and Mainstream (MS) system boards.

- [1] supports MS system board (CPU TDP < 250 W).
- [2] supports MAX system board (CPU TDP => 250 W).

For more information, see System board jumpers and connectors section.

NOTE: *Supported ambient temperature is 30°C (86°F).

Table 29. Thermal restriction matrix for VxRail VS-760 air cooled configuration

Configuration				12 x 3.5-inch	Ambient temperature
Rear storage				2.5-inch rear drives with rear fan	
CPU TDP/cTDP		Cores	T-Case max center (°C)	HPR GOLD fan 70%^	
3408U	125 W[1]	8	79	HPR GOLD	35°C (95°F)
5415+	150 W[1]	8	78	HPR GOLD	35°C (95°F)
4410Y		12	78		
5416S		16	78		
5418N	165 W[1]	24	84	HPR GOLD	35°C (95°F)
5411N		24	84		
4416+		20	82		
6426Y	185 W[1]	16	72	HPR GOLD	35°C (95°F)
5418Y		24	80		
5412U		24	80		
6428N		32	85		
6421N		32	85		
6434	205 W[1]	8	96	HPR GOLD	35°C (95°F)
5420+		28	84		
6438Y+		32	76		
6438M		32	84		
6438N		32	84		
6442Y	225 W[1]	24	79	HPR GOLD*	35°C (95°F)
6448Y		32	79		
6414U	250 W[2]	32	76	HPR GOLD*	35°C (95°F)

NOTE: The platform supports Maximum (MAX) and Mainstream (MS) system boards.

- [1] supports MS system board (CPU TDP < 250 W)
- [2] supports MAX system board (CPU TDP = 250 W)

For more information, see System board jumpers and connectors section.

NOTE: ^The fan speed in the 3.5-inch chassis is limited to 70% due to the drive dynamic profile.

NOTE: *Supported ambient temperature is 30°C (86°F).

Table 30. Thermal restriction matrix for memory with air-cooled configuration (non-GPU)

Configuration		24 x 2.5-inch SAS		24 x 2.5-inch NVMe
Rear storage		No rear drives	2.5-inch rear drives with rear fan	No rear drives
DIMM Configuration	2DPC/ Power	STD fan (CPU TDP <= 250 W)	HPR SLVR fan (CPU TDP up to 350 W)	HPR GOLD fan (CPU TDP up to 350 W)
256 GB RDIMM	12.7 W	30°C (86°F)	35°C (95°F)	35°C (95°F)
128 GB RDIMM	8.9 W	30°C (86°F)	35°C (95°F)	35°C (95°F)

Table 30. Thermal restriction matrix for memory with air-cooled configuration (non-GPU) (continued)

Configuration		24 x 2.5-inch SAS		24 x 2.5-inch NVMe
Rear storage		No rear drives	2.5-inch rear drives with rear fan	No rear drives
DIMM Configuration	2DPC/ Power	STD fan (CPU TDP <= 250 W)	HPR SLVR fan (CPU TDP up to 350 W)	HPR GOLD fan (CPU TDP up to 350 W)
64 GB RDIMM	6.9 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
32 GB RDIMM	4.1 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
16 GB RDIMM	3 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
DIMM Configuration	2DPC/ Power	HPR SLVR fan (CPU TDP up to 350 W)		HPR GOLD fan (CPU TDP up to 350 W)
256 GB RDIMM	12.7 W	35°C (95°F)	35°C (95°F)	Not supported
128 GB RDIMM	8.9 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
64 GB RDIMM	6.9 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
32 GB RDIMM	4.1 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
16 GB RDIMM	3 W	35°C (95°F)	35°C (95°F)	35°C (95°F)

Table 31. Thermal restriction matrix for GPU configurations

Configuration				24 x 2.5-inch SAS	24 x 2.5-inch NVMe
Rear storage				No rear drives	No rear drives
CPU TDP/cTDP		Cores	T-Case maximum center (°C)	HPR GOLD fan with 1U HPR L-Type HSK	
5415+	150 W [1]	8	78	35°C (95°F)	35°C (95°F)
4410Y		12	78		
5416S		16	78		
5418N	165 W [1]	24	84	35°C (95°F)	35°C (95°F)
4416+		20	82		
6426Y	185 W [1]	16	72	35°C (95°F)	35°C (95°F)
5418Y		24	80		
6428N		32	85		
6434	205 W [1]	8	96	35°C (95°F)	30°C (86°F)
5420+		28	84		
6438Y+		32	76		
6438M		32	84		
6438N		32	84		
6442Y	225 W [1]	24	79	35°C (95°F)	35°C (95°F)
6448Y		32	79		
6444Y	270 W [2]	32	75	35°C (95°F)	35°C (95°F)
8462Y+	300 W [2]	32	81	30°C (86°F)	30°C (86°F)
6454S	270 W [2]	32	71	30°C (86°F)	30°C (86°F)
6430		32	71		
8471N	300 W [2]	52	76	30°C (86°F)	30°C (86°F)

Table 31. Thermal restriction matrix for GPU configurations (continued)

Configuration				24 x 2.5-inch SAS	24 x 2.5-inch NVMe
Rear storage				No rear drives	No rear drives
CPU TDP/cTDP		Cores	T-Case maximum center (°C)	HPR GOLD fan with 1U HPR L-Type HSK	
8470N		52	76		
8460Y+		40	75		
8452Y		36	75		

NOTE: The platform supports Maximum (MAX) and Mainstream (MS) system boards.

- [1] supports MS system board (CPU TDP < 250 W).
- [2] supports MAX system board (CPU TDP => 250 W).

For more information, see System board jumpers and connectors section.

NOTE: *Supported ambient temperature is 30°C (86°F).

NOTE: GPU configuration supports only high-performance Gold (HPR Gold) fan.

Table 32. Thermal restriction matrix with Optimized Ecological upgrade for air-cooled configuration

Configuration				24 x 2.5-inch SAS		24 x 2.5-inch NVMe	Ambient temperature
Rear storage				No rear drives	2.5-inch rear drives with rear fan	No rear drives	
CPU TDP/cTDP		Cores	T-Case maximum center (°C)	Fan/HSK			
5415+	150 W	8	78	STD fan/2U HPR	HPR SLVR fan/2U HPR	HPR GOLD fan/ STD	35°C (95°F)
4410Y		12	78				
5416S		16	78				
5418N	165 W	24	84	STD fan/2U HPR	HPR SLVR fan/2U HPR	HPR GOLD fan/ STD	35°C (95°F)
4416+		20	82				

Table 33. Thermal restriction matrix for memory for air-cooled configuration (GPU)

Configuration		24 x 2.5-inch SAS*	24 x 2.5-inch NVMe*
DIMM Configuration	2DPC/Power	HPR GOLD fan with 1U HPR L-Type HSK	
128 GB RDIMM	8.9 W	35°C (95°F)	35°C (95°F)
64 GB RDIMM	6.9 W	35°C (95°F)	35°C (95°F)
32 GB RDIMM	4.1 W	35°C (95°F)	35°C (95°F)
16 GB RDIMM	3 W	35°C (95°F)	35°C (95°F)

NOTE: *In 24 x 2.5-inch SAS/NVMe configuration, for CPU TDP 270 W - 300 W and specific Low Temperature-case CPUs supported ambient temperature is 30°C (86°F).

Thermal restriction matrix for fifth-generation Intel Xeon Scalable processors

Table 34. Thermal restriction matrix for air cooled configuration

Configuration				24 x 2.5-inch SAS		24 x 2.5-inch NVMe	Ambient temperature
Rear storage				No rear drives	2.5-inch rear drives with rear fan	No rear drives	
CPU TDP/cTDP		Cores	T-Case max center (°C)	Fan			
4509Y	125 W[1]	8	84	STD	HPR SLVR	HPR GOLD	35°C (95°F)
4510	150 W[1]	12	84	STD	HPR SLVR	HPR GOLD	35°C (95°F)
4514Y		16	79				
5512U	185 W[1]	28	89	STD	HPR SLVR	HPR GOLD	35°C (95°F)
6534	195 W[1]	8	64	STD	HPR SLVR	HPR GOLD	35°C (95°F)
6526Y		16	82				
6542Y	250 W[1]	24	83	STD	HPR SLVR	HPR GOLD	35°C (95°F)
6548Y+		32	83				
6548N		32	83				
8562Y+	300 W [2]	32	81	HPR SLVR	HPR SLVR	HPR GOLD	35°C (95°F)
8558U	300 W [2]	48	78	HPR SLVR	HPR SLVR	HPR GOLD	35°C (95°F)
8568Y+	350 W [2]	48	81	HPR SLVR	HPR SLVR fan	HPR GOLD*	35°C (95°F)
8580		60	81				
8592+		64	81				

NOTE: The platform supports Maximum (MAX) and Mainstream (MS) system boards.

- [1] supports MS system board (CPU TDP < 250 W)
- [2] supports MAX system board (CPU TDP ≥ 250 W)

For more information, see System board jumpers and connectors section.

NOTE: *Supported ambient temperature is 30°C (86°F).

Table 35. Thermal restriction matrix for memory with air cooled configuration (non-GPU)

Configuration		24 x 2.5-inch SAS		24 x 2.5-inch NVMe
Rear storage		No rear drives	2.5-inch rear drives with rear fan	No rear drives
DIMM Configuration	2DPC/Power	STD fan (CPU TDP <= 250 W)	HPR SLVR fan (CPU TDP up to 350 W)	HPR GOLD fan (CPU TDP up to 350 W)
256 GB RDIMM*	12.7 W	30°C (86°F)	35°C (95°F)	35°C (95°F)
128 GB RDIMM	8.9 W	30°C (86°F)	35°C (95°F)	35°C (95°F)
96 GB RDIMM	8.3 W	30°C (86°F)	35°C (95°F)	35°C (95°F)
64 GB RDIMM	6.9 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
32 GB RDIMM	4.1 W	35°C (95°F)	35°C (95°F)	35°C (95°F)

Table 35. Thermal restriction matrix for memory with air cooled configuration (non-GPU) (continued)

Configuration		24 x 2.5-inch SAS		24 x 2.5-inch NVMe
Rear storage		No rear drives	2.5-inch rear drives with rear fan	No rear drives
DIMM Configuration	2DPC/Power	STD fan (CPU TDP <= 250 W)	HPR SLVR fan (CPU TDP up to 350 W)	HPR GOLD fan (CPU TDP up to 350 W)
16 GB RDIMM	3 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
DIMM Configuration	**2DPC/Power**	**HPR SLVR fan (CPU TDP up to 350 W)**		**HPR GOLD fan (CPU TDP up to 350 W)**
256 GB RDIMM*	12.7 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
128 GB RDIMM	8.9 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
96 GB RDIMM	8.3 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
64 GB RDIMM	6.9 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
32 GB RDIMM	4.1 W	35°C (95°F)	35°C (95°F)	35°C (95°F)
16 GB RDIMM	3 W	35°C (95°F)	35°C (95°F)	35°C (95°F)

NOTE: *256 GB RDIMM is supported with VP-760 only.

Table 36. Supported ambient temperature for processors with GPU

Configuration				24 x 2.5-inch SAS	24 x 2.5-inch NVMe
Rear storage				No rear drives	No rear drives
CPU TDP/cTDP		Cores	T-Case max center (°C)	Support HPR GOLD fan with 1U HPR L-Type HSK	
4509Y	125 W[1]	8	84	35°C	35°C
4510	150 W[1]	12	84	35°C	35°C
4514Y		16	79		
5512U	185 W[1]	28	89	35°C	35°C
6534	195 W[1]	8	64	35°C	35°C
6526Y		16	82		
6542Y	250 W[1]	24	83	35°C	35°C
6548Y+		32	83		
6548N		32	83		
8562Y+	300 W [2]	32	81	30°C	30°C
8558U	300 W [2]	48	78	30°C	30°C
8568Y+	350 W [2]	48	81	Not supported	Not supported
8580		60	81		
8592+		64	81		

NOTE: The platform supports Maximum (MAX) and Mainstream (MS) system boards.

- [1] supports MS system board (CPU TDP < 250 W)
- [2] supports MAX system board (CPU TDP ≥ 250 W)

For more information, see System board jumpers and connectors section.

NOTE: *Supported ambient temperature is 30°C (86°F).

Table 37. Thermal restriction matrix for memory with air cooled configuration (GPU)

Configuration		24 x 2.5-inch SAS	24 x 2.5-inch NVMe
DIMM Configuration	**2DPC/Power**	**HPR GOLD fan with 1U HPR L-Type HSK**	
128 GB RDIMM	8.9 W	35°C (95°F)	35°C (95°F)
96 GB RDIMM	8.3 W	35°C (95°F)	35°C (95°F)
64 GB RDIMM	6.9 W	35°C (95°F)	35°C (95°F)
32 GB RDIMM	4.1 W	35°C (95°F)	35°C (95°F)
16 GB RDIMM	3 W	35°C (95°F)	35°C (95°F)

Common thermal restrictions for both fourth-generation and fifth-generation Intel Scalable processors

Table 38. Thermal restriction matrix of the supported GPU

Configuration	24 x 2.5-inch SAS	24 x 2.5-inch NVMe
Rear storage	**No rear drives**	**No rear drives**
GPU	**HPR GOLD fan with 1U HPR L-Type HSK**	
A40 (Max 2)	30°C (86°F)	30°C (86°F)
A16 (Max 2)	35°C (95°F)	35°C (95°F)
A30 (Max 2)	35°C (95°F)	35°C (95°F)
A2 (Max 6)	35°C (95°F)	35°C (95°F)
H100 (Max 2)	35°C (95°F)	35°C (95°F)
L4 (Max 4)	35°C (95°F)	35°C (95°F)
L40 (Max 2)	35°C (95°F)	35°C (95°F)
L40S (Max 2)	35°C (95°F)	35°C (95°F)

4

Initial setup and configuration

To install and deploy VxRail, you can purchase deployment services from Dell Technologies or select the VxRail self-deployment option (no installation services).

If you are using VxRail deployment services from Dell Technologies, do not rack the VxRail or connect power. Contact your Dell Technologies account team or reseller to arrange for deployment by Dell Technologies certified technicians.

Self-deployment

For self-deployment guidance and preparatory instructions, see KB 187954. You must have extensive network experience, understanding of VxRail infrastructure planning, and deployment knowledge to perform a VxRail self-deployment. Go to the VxRail Configuration Portal to perform self-deployment.

Contact your sales representative for Dell Technologies Services if you are:

- Uncertain you can complete the end-to-end deployment process.
- Unable to complete the deployment.

During the VxRail deployment, iDRAC creates a **vxadmin** or **PTAdmin** account. This account provides hardware information to the **VxRail Manager** and is required for the **VxRail Manager** and the cluster to function properly.

Do not modify or delete the **vxadmin** or **PTAdmin** account.

CAUTION: If the vxadmin or PTAdmin account is modified or deleted, VxRail Manager and the cluster may not function properly.

Set up the system

To set up the system, perform the following steps.

1. Unpack the system.
2. Install the system into the rack.

   For more information, see Dell PowerEdge manuals that is relevant to your rail and cable management solution.
3. Connect the peripherals to the system and the system to the electrical outlet.
4. Power on the system.

   For more information about setting up the system, see the *Getting Started Guide* that is included with your system. You can also go to Dell Technologies support and search for your product.

iDRAC configuration

The Integrated Dell Remote Access Controller (iDRAC) allows administrators to be more productive and improve the overall availability of Dell products. iDRAC alerts administrators to issues, perform remote management, and reduce the need for physical access.

You can log in to iDRAC as the following users:

- iDRAC user
- Microsoft Active Directory user
- LDAP user

If secure default access to iDRAC is used, the iDRAC secure default password is available on the back of the appliance Information tag. If you have not opted for secure default access to iDRAC, then the default username and password are `root` and `calvin`. You can also log in by using Dell SSO or Smart Card.

The following prerequisites are required to log in to iDRAC:

- You must have iDRAC credentials.
- Change the default username and password after setting up the iDRAC IP address.

The iDRAC IP address is preconfigured for DHCP. You can change to a static IP address by logging into iDRAC.

- To access iDRAC, connect the network cable to the Ethernet connector 1 on the system board.
- Change the default username and password after setting up the iDRAC IP address.

Options to set up iDRAC IP address

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

By default, the **Network settings** option is set to **DHCP**. For static IP configuration, you must request the settings at the time of purchase.

To set up the iDRAC IP address, use one of the interfaces in the following table.

Table 39. Interfaces to set up iDRAC IP address

Interface	Documentation links
iDRAC Settings utility	From the Browse All Products widget, select the iDRAC software that you are using from the **Remote Enterprise Systems Management** column. From the **Documentation** section, locate the *Integrated Dell Remote Access Controller User's Guide*. You can also go to Dell Support and search for your specific product. To determine the most recent iDRAC release for your platform and for the latest documentation version, see KB 000178115.
OpenManage Deployment Toolkit	From the Browse All Products widget, select **OpenManage Deployment Toolkit** from the Enterprise Systems Management column, then select the appropriate version. In the **Documentation** section, select the *Dell OpenManage Deployment Toolkit User's Guide*.
iDRAC Direct	From the Browse All Products widget, select the iDRAC software that you are using from the **Remote Enterprise Systems Management** column. From the **Documentation** section, locate the *Integrated Dell Remote Access Controller User's Guide*. You can also go to Dell Support and search for your specific product. To determine the most recent iDRAC release for your platform and for the latest documentation version, see KB 000178115.
Lifecycle Controller	From the Browse All Products widget, select the Lifecycle Controller software that you are using from the **Remote Enterprise Systems Management** column. From the **Documentation** section, locate the *Dell Lifecycle Controller User's Guide*. You can go to Dell Support and search for your specific product in the **Identify your product** box.

To access iDRAC, use one of the following:

- Connect the Ethernet cable to the iDRAC dedicated network port.
- Use the iDRAC Direct port by using a micro USB (type AB) cable.

If you have opted for a system in which shared LOM mode has been enabled, you can access iDRAC through the shared LOM mode.

5

Pre-operating system management applications

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

Dell Technologies optimizes your VxRail with the settings during installation and configuration. Do not change any basic settings or features set by Dell Technologies to ensure best performance.

CAUTION: Performance may be impacted if settings and features configured by Dell Technologies are changed.

Manage the pre-operating system applications

VxRail contains options to manage the pre-operating system applications.

The following options are available:

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

Set up the system

Using the **System Setup** option, configure the BIOS settings, iDRAC settings, and device settings of your VxRail.

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

- User interface: To access go to iDRAC Dashboard, click **Configurations** > **BIOS Settings**.
- Text browser: To enable the text browser, use the Console Redirection.

To view **System Setup**, power on the system, press F2, and click **System Setup Main Menu**. If the operating system begins to load before you press F2, wait for the system to finish booting, and then restart the system and try again.

The following table describes the options on the **System Setup Main Menu** screen.

Table 40. Options on the System Setup Main Menu screen

Option	Description
System BIOS	To configure the BIOS settings.
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.
Device Settings	To configure device settings for devices such as storage controllers or network cards.
Service Tag Settings	To configure the System Service Tag.

System BIOS

In the BIOS, access **System BIOS** to view the available options.

1. To view the **System BIOS** screen, power on the system and press F2.
2. Click **System Setup Main Menu** and then **System BIOS**.

The following table provides the details of the options that are available in the **System BIOS**:

Table 41. Options on the System BIOS screen

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

System information

In the BIOS, access **System Information** to view several details.

1. To view the **System Information** screen, power on the system and press **F2**.
2. Click **System Setup Main Menu**, **System BIOS**, and then **System Information**.

Table 42. System information details

Option	Description
System Model Name	It provides the system model name.
System BIOS Version	It specifies the BIOS version that is installed on the system.
System Management Engine Version	It displays the current version of the Management Engine firmware.
System Service Tag	It provides the system Service Tag information.
System Manufacturer	It specifies the name of the system manufacturer.
System Manufacturer Contact Information	It provides the contact information of the system manufacturer.

Table 42. System information details (continued)

Option	Description
System CPLD Version	It displays the current version of the system Complex Programmable Logic Device (CPLD) firmware.
UEFI Compliance Version	It specifies the UEFI compliance level of the system firmware.

Memory settings

In the BIOS, access **Memory Settings** to view details.

1. To view the **Memory Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **Memory Settings**.

Table 43. Memory Settings details

Option	Description
System Memory Size	It specifies the size of the system memory.
System Memory Type	It specifies the type of memory that is installed in the system.
System Memory Speed	It specifies the speed of the system memory.
Video Memory	It specifies the size of the video memory.
System Memory Testing	It allows you to control whether the system memory tests are run during system boot. The two options available are **Enabled** and **Disabled**. By default, this option is set to **Disabled**.
Memory Operating Mode	By default, this option is set to **Optimizer Mode**. The **Fault Resilient Mode** and **NUMA Fault Resilient Mode** options are available for support when the **Advanced RAS capability** processor is installed on the system.
Current State of Memory Operating Mode	It specifies the current state of the memory operating mode.
Fault Resilient Mode Memory Size (%)	This option allows you to define the percent of total memory size that the fault resilient mode uses, when in **Memory Operating Mode**. If the **Fault Resilient Mode** option is not selected, it is unavailable and not used by Fault Resilient Mode.
Node Interleaving	It enables or disables the Node interleaving option. It specifies if the 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 the field is set to **Disabled**, the system supports NUMA (asymmetric) memory configurations. This option is set to **Enabled** by default.
ADDDC Settings	When the Adaptive Double DRAM Device Correction (ADDDC) option is enabled, failing DRAMs are dynamically mapped out. When set to **Enabled**, this option impacts the system performance under certain workloads. This feature is applicable for x4 DIMMs only. By default, this option is set to **Enabled**.
Memory Training	When the option is set to **Fast** and the memory configuration is not changed, the system uses previously saved memory training parameters to train the memory subsystems. System boot time is also reduced. If the memory configuration is changed, the **Retrain at Next boot** is automatically enabled, forces a single full memory training step, and then returns to **Fast** afterward. When the option is set to **Retrain at Next boot**, the system performs the one-time full memory training step at the next power on, and slows the boot time on the next boot. When the option is set to **Enabled**, the system performs the force full memory training steps every time the system powers on. This option also slows the boot process each time.

Table 43. Memory Settings details (continued)

Option	Description
Memory Map Out	This option controls the DIMM slots on the system. This option is set to **Enabled** by default. It allows you to disable system installed DIMMs.
Correctable Error Logging	It enables or disables correctable error logging. By default, this option is set to **Disabled**.
DIMM Self-Healing (Post Package Repair) on Uncorrectable Memory Error	It enables or disables Post Packing Repair (PPR) on uncorrectable memory error. By default, this option is set to **Enabled**.

Processor settings

Access processor settings.

1. To view the **Processor Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **Processor Settings**.

Table 44. Processor settings details

Option	Description
Logical Processor	Each processor core supports up to two logical processors. If this option is set to **Enabled**, the BIOS displays all the logical processors. If this option is set to **Disabled**, the BIOS displays only one logical processor per core. This option is set to **Enabled** by default.
CPU Interconnect Speed	It allows you to govern the frequency of the communication links among the processors in the system. **NOTE:** The standard and basic bin processors support lower link frequencies. The options available are **Maximum data rate**, **16.0 GT/s**, **14.4 GT/s**, and **12.8 GT/s**. By default, this option is set to **Maximum data rate**. The maximum data rate indicates that the BIOS runs the communication links at the maximum frequency that the processors support. You can also select specific frequencies that the processors support, which can vary. For the best performance, you should select **Maximum data rate**. Any reduction in the communication link frequency affects the performance of non-local memory access and cache coherency traffic. In addition, it can slow access to non-local I/O devices from a particular processor. If power-saving considerations outweigh performance, reduce the frequency of the processor communication links. Before reducing the frequency, you must localize the memory and I/O access to the nearest NUMA node to minimize the impact to system performance.
Virtualization Technology	It enables or disables the virtualization technology for the processor. By default, this option is set to **Enabled**.
Directory Mode	It enables or disables the directory mode. This option is set to **Enabled** by default.
Kernel DMA Protection	By default, this option is set to **Disabled**. When the option is set to **Enabled**, the BIOS and operating system use virtualization technology to enable direct memory access protection for DMA-capable peripheral devices.
Adjacent Cache Line Prefetch	It 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.
Hardware Prefetcher	It enables or disables the hardware prefetcher. This option is set to **Enabled** by default.
DCU Streamer Prefetcher	It enables or disables the DCU streamer prefetcher. This option is set to **Enabled** by default.
DCU IP Prefetcher	It enables or disables the DCU IP prefetcher. This option is set to **Enabled** by default.
Sub NUMA Cluster	It enables or disables the Sub-NUMA Cluster. This option is set to **Disabled** by default.

Table 44. Processor settings details (continued)

Option	Description
MADT Core Enumeration	It specifies the MADT Core Enumeration. This option is set to default in **Round Robin**. Linear option supports industry core enumeration whereas, Round Robin option supports Dell optimized core enumeration.
UMA Based Clustering	This field is read-only and shows as **Quadrant** when the Sub NUMA Cluster is disabled, or displays as **Disabled**, when the Sub NUMA Cluster is either 2-way or 4-way.
UPI Prefetch	It enables you to get the memory read started early on the DDR bus. The Ultra Path Interconnect (UPI) Rx path spawns the speculative memory that is read to the Integrated Memory Controller (iMC) directly. This option is set to **Enabled** by default.
XPT Prefetch	This option is set to **Enabled** by default.
LLC Prefetch	It enables or disables the LLC Prefetch on all threads. This option is set to **Enabled** by default.
Dead Line LLC Alloc	It enables or disables the Dead Line LLC Alloc. This option is set to **Enabled** by default. You can enable this option to enter the dead lines in LLC or disable the option to not enter the dead lines in LLC.
Directory AtoS	It enables or disables the Directory AtoS. AtoS optimization reduces remote read latencies for repeat read accesses without intervening writes. This option is set to **Disabled** by default.
AVX P1	It enables you to reconfigure the processor TDP levels during POST based on the power and thermal delivery capabilities of the system. TDP verifies the maximum heat that the cooling system must dissipate. This option is set to **Normal** by default. **NOTE:** This option is only available on certain processor SKUs.
Intel SST-BF	It enables Intel SST-BF. This option is displayed if Performance Per Watt (operating system) or Custom (when OSPM is enabled) system profiles are selected. This option is set to **Disabled** by default.
Intel SST-CP	It enables Intel SST-CP. This option displays if **Performance Per Watt (operating system)** or **Custom (when OSPM is enabled)** system profiles are selected. This option is displayed and selectable for each system profile mode. This option is set to **Disabled** by default. **NOTE:** This option is hidden if the processor installed does not support SST capabilities.
x2APIC Mode	It enables or disables x2APIC mode. This option is set to **Enabled** by default. **NOTE:** For two processors with a 64 core configuration, x2APIC mode is not switchable if 256 threads are enabled (BIOS settings: All CCD, cores, and logical processors are enabled).
AVX ICCP Pre-Grant License	It enables or disables the AVX ICCP Pre-Grant License. This option is set to **Disabled** by default.

Table 45. Options for Dell Controlled Turbo Settings

Option	Description
Dell Controlled Turbo Settings	It controls the turbo engagement. Enable this option only when System Profile is set to **Performance** or **Custom**, and CPU Power Management is set to **Performance**. This item can be selected for each system profile mode. 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	It enables you to configure the Dell AVX scaling technology. This option is set to **0** by default. Enter the value from **0** to **12** bins. When the Dell-controlled Turbo feature is enabled, the value that is entered decreases the Dell AVX Scaling Technology frequency.
Optimizer Mode	It enables or disables the CPU performance. When this option is set to **Auto**, set the CPU Power Management to Max Performance. When set to **Enabled**, enables the CPU

Table 45. Options for Dell Controlled Turbo Settings (continued)

Option	Description
	Power Management settings. When set to **Disabled**, the CPU Power Management option is disabled. This option is set to **Auto** by default.
Number of cores per Processor	It controls the number of enabled cores in each processor. This option is set to **All** by default.
CPU Physical Address Limit	It limits the CPU physical address to 46 bits to support older Hyper-V. When enabled, TME-MT is automatically disabled. By default, this option is set to **Enabled**.
AMP Prefetch	This option enables one of the Mid-Level Cache (MLC) AMP hardware Prefetcher. This option is set to **Disabled** by default.
Homeless Prefetch	This option allows the L1 (DCU) to prefetch, when the FB is full. Auto maps to hardware default setting. This option is set to **Auto** by default.
Uncore Frequency RAPL	This setting controls whether the Running Average Power Limit (RAPL) balancer is enabled or not. If enabled, it activates the uncore power budgeting. This option is set to Enabled by default.
Processor Core Speed	It specifies the maximum core frequency of the processor.
Processor Bus Speed	It specifies the bus speed of the processor. **NOTE:** The processor bus speed option displays only when both processors are installed.
Local Machine Check Exception	It enables or disables the local machine check exception. This exception is an extension of the MCA Recovery mechanism. This exception provides the capability to deliver Uncorrected Recoverable (UCR) Software Recoverable Action Required (SRAR) errors to one or more specific logical processor threads that receive corrupted data. When enabled, the UCR SRAR Machine Check Exception is delivered only to the affected thread instead of the system. This feature supports operating system recovery for cases of multiple recoverable faults that are detected close, which would otherwise result in a fatal machine check event. The feature is available only on Advanced RAS processors. This option is set to **Disabled** by default.
CPU Crash Log Support	This field controls the Intel CPU Crash Log feature for collection of previous crash data from shared SRAM of out-of-band Management Service Module at post reset. By default, this option is set to **Disabled**.
Processor n	Depending on the number of processors, there might be up to **n** processors listed.

Table 46. Processor n details

Option	Description
Family-Model-Stepping	It describes the family, model, and steppings of the processor as defined by Intel.
Brand	It specifies the brand name.
Level 2 Cache	It lists the total L2 cache.
Level 3 Cache	It provides the total L3 cache.
Number of Cores	It specifies the number of cores per processor.
Microcode	It displays the processor microcode version.

SATA settings

In the BIOS, access **SATA Settings** to view details.

1. To view the **SATA Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **SATA Settings**.

Table 47. SATA settings

Option	Description
Embedded SATA	It sets the embedded SATA option to **Off**, **AHCI mode**, or **RAID modes**. By default, this option is set to **AHCI Mode**. **NOTE:** Change the **Boot Mode** setting to **UEFI** when necessary. Otherwise, set the field to **Non-RAID** mode. In the **RAID** mode, the ESXi and Ubuntu operating systems are not supported.
Security Freeze Lock	Sends **Security Freeze Lock** command to the embedded SATA drives during POST. This option is applicable only for AHCI Mode. By default, this option is set to **Enabled**.
Write Cache	It enables or disables the command for the embedded SATA drives during POST. This option is applicable only for AHCI Mode. This option is set to **Disabled** by default.
Port n	This option sets the drive type of the selected device. For **AHCI Mode**, BIOS support is always enabled.

Table 48. Port n

Options	Descriptions
Model	Drive model of the selected device.
Drive Type	Type of drive that is attached to the SATA port.
Capacity	Describes the total capacity of the drive. This field is undefined for removable media devices such as optical drives.

NVMe settings

In the BIOS, access **NVMe Settings** to view details.

1. To view the **NVMe Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **NVMe Settings**.

Table 49. NVMe settings

Option	Description
NVMe Mode	It enables or disables the boot mode. By default, this option is set to **Non-RAID** mode.
BIOS NVMe Driver	It sets the drive type to boot the NVMe driver. The available options are **Dell Qualified Drives** and **All Drives**. By default, this option is set to **Dell Qualified Drives**.

Boot settings

You can use the **Boot Settings** screen to set the boot mode to either **UEFI** or **BIOS**. You can also specify the boot order. The **Boot Settings** support only **UEFI** mode.

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 (for example, UEFI Secure Boot).
- Faster boot time

Use UEFI boot mode only to boot from NVMe drives.

BIOS: The **BIOS** boot mode is the legacy boot mode that is maintained for backward compatibility.

1. To view the **Boot Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **Boot Settings**.

Table 50. Boot setting details

Option	Description
Boot Mode	This option allows you to set the boot mode of the system. If the operating system supports UEFI, you can set this option to UEFI. Setting this field to BIOS allows compatibility with non-UEFI operating systems. This option is set to **UEFI** by default. **CAUTION: Switching the boot mode may prevent the system from booting when the operating system is not installed in the same boot mode.** **NOTE:** Setting this field to UEFI disables the **BIOS Boot Settings** menu.
Boot Sequence Retry	It enables or disables the Boot sequence retry feature, or resets the system. When this option is set to **Enabled** and the system fails to boot, the system repeats the boot sequence after 30 seconds. When this option is set to **Reset** and the system fails to boot, the system reboots immediately. This option is set to **Enabled** by default.
Generic USB Boot	It enables or disables the generic USB boot placeholder. This option is set to **Disabled** by default.
Hard-disk Drive Placeholder	It enables or disables the Hard-disk drive placeholder. This option is set to **Disabled** by default.
Clean all Sysprep and SysPrepOrder variables	When this option is set to **None**, the BIOS does nothing. When set to **Yes**, the BIOS deletes the `SysPrep ####` and `SysPrepOrder` variables. Once removal of the variables is complete, the options reset to **None**. This setting is only available in **UEFI Boot Mode** and is set to **None** by default.
UEFI Boot Settings	It specifies the UEFI boot sequence. It enables or disables the UEFI boot options. **NOTE:** This option controls the UEFI boot order. The first option in the list is attempted first.

Choose system boot mode

System Setup enables you to specify the boot mode for installing your operating system. UEFI boot mode (the default) is an enhanced 64-bit boot interface. When you have configured your system to boot to UEFI mode, it replaces the system BIOS.

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

   CAUTION: If the operating system is not installed in the same boot mode, switching the boot mode may prevent the system from booting.

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

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

   For the latest information about supported operating systems, see Server operating systems.

Change the boot order

To boot from a USB drive or an optical drive, you must change the boot order.

If you already have the **BIOS** set for **Boot Mode**, the following instructions may vary. Changing the drive boot sequence is only supported in BIOS boot mode.

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

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

Network settings

In the BIOS, you can access **Network Settings** to view details. Network settings are not supported in BIOS boot mode.

1. To view the **Network Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **Network Settings**.

Table 51. Network setting options

Option	Description
UEFI PXE Settings	It controls the configuration of the UEFI PXE device.
Number of PXE Devices	It specifies the number of PXE devices. This option is set to **4** by default.
PXE Device n (n = 1 to 4)	This option 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)	It controls the configuration of the PXE device.
UEFI HTTP Settings	It controls the configuration of the UEFI HTTP device.
HTTP Device n (n = 1 to 4)	This option 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)	It controls the configuration of the HTTP device.
UEFI iSCSI Settings	It controls the configuration of the iSCSI device.
iSCSI Initiator Name	It specifies the name of the iSCSI initiator in IQN format.
iSCSI Device1	This option enables or disables the iSCSI device. When disabled, a UEFI boot option is created for the iSCSI device automatically. This option is set to **Disabled** by default.
iSCSI Device1 Settings	It controls the configuration of the iSCSI device.
UEFI NVMe-oF Settings	It controls the configuration of the NVMe-oF devices.
NVMe-oF	This option enables or disables the NVMe-oF feature. When enabled, it allows you to configure the host and target parameters that are needed for fabric connection. This option is set to **Disabled** by default.
NVMe-oF Host NQN	This field specifies the name of the NVMe-oF host NQN. Input is allowed using the following format: `nqn.yyyy-mm.<Reserved Domain Name>:<Unique String>`. Leave this field empty if you intend to use the system-generated value with the `nqn.1988-11.com.dell:<Model name>.<Model number>.<Service Tag>` format.
NVMe-oF Host Id	This field specifies a 16-byte value of the NVMe-oF host identifier that uniquely identifies this host with the controller in the NVM subsystem. The input that is allowed is a hexadecimal-encoded string that uses the `00112233-4455-6677-8899-aabbccddeeff` format. To use the system-generated value, leave the field empty. **NOTE:** A value of all **FFFFFFFF-FFFF-FFFF-FFFF-FFFFFFFFFFFF** is not allowed.
Host Security Key Path	This field specifies the Host security key path.
NVMe-oF SubSystem Settings	This field controls the parameters for the NVMe-oF subsystem n connections.

Integrated devices

In the BIOS, access **Integrated Devices** to view details.

1. To view the **Integrated Devices** screen, power on the system and press F2.

2. Click **System Setup Main Menu**, **System BIOS**, and then **Integrated Devices**.

Table 52. Integrated Devices details

Option	Description
User Accessible USB Ports	It configures the user accessible USB ports. Select **Only Back Ports On** to disable the front USB ports. Select **All Ports Off** to disable all front and back USB ports. Select **All Ports Off (Dynamic)** to disable all front and back USB ports during POST. You can enable or disable the front ports dynamically by authorized user without resetting the system. This option is set to **All Ports On** by default.
	The USB keyboard and mouse still function in certain USB ports during the boot process, depending on the selection. After the boot process is complete, the USB ports will be enabled or disabled as per the setting.
iDRAC Direct USB Port	iDRAC exclusively manages the iDRAC Direct USB port with no host visibility. You can set this option to **ON** or **OFF**. When set to **OFF**, iDRAC does not detect any USB devices that are installed in this managed port. This option is set to **On** by default.
Integrated Network Card1	It enables or disables the integrated network card. When this option is set to **Disabled**, the card is not available to the operating system. **NOTE:** If set to Disabled (operating system), the Integrated NICs might still be available for shared network access by iDRAC.
Embedded NIC1 and NIC2	It enables or disables the operating system interface of the Embedded NIC1 and NIC2 controller. If set to **Disabled (OS)**, the NIC may still be available for shared network access by the embedded management controller. Configure the **Embedded NIC1 and NIC2** option by using the NIC management utilities of the system. This option is set to **Enabled** by default.
I/OAT DMA Engine	It enables or disables the I/O Acceleration Technology (I/OAT) option. I/OAT are DMA features that accelerate network traffic and lower CPU utilization. Enable this option only if the hardware and software support the feature. By default, this option is set to **Disabled**.
Embedded Video Controller	It enables or disables the use of Embedded Video Controller as the primary display. When set to **Enabled**, the Embedded Video Controller is 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. The BIOS output displays to both the primary add-in video and the embedded video during the POST and preboot environment. The embedded video is disabled right before the operating system boots. This option is set to **Enabled** by default. **NOTE:** When multiple add-in graphics cards are installed in the system, the first card that is discovered during the PCI enumeration is set as the primary video. To control which card is recognized as is the primary video card, rearrange the cards in the slots.
I/O Snoop HoldOff Response	It selects the number of cycles PCI I/O can withhold snoop requests from the CPU, to allow time to complete its own write to LLC. This setting can help improve performance on workloads where throughput and latency are critical. The options available are **256 Cycles**, **512 Cycles**, **1K Cycles**, **2K Cycles**, **4K Cycles**, **8K Cycles**, **16K Cycles**, **32K Cycles**, **64K Cycles** and **128K Cycles**. This option is set to **2K Cycles** by default.
Current State of Embedded Video Controller	It 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 option in the system and no other add-in graphics cards are installed, the Embedded Video Controller is automatically used as the primary display even if the **Embedded Video Controller** setting is set to **Disabled**.
SR-IOV Global Enable	It enables or disables the BIOS configuration of Single Root I/O Virtualization (SR-IOV) devices. This option is set to **Disabled** by default.
OS Watchdog Timer	If your system stops responding, this watchdog timer aids in the recovery of your operating system. When this option is set to **Enabled**, the operating system

Table 52. Integrated Devices details (continued)

Option	Description
	initializes the timer. When this option is set to **Disabled** (the default), the timer does affect on the system.
Empty Slot Unhide	It enables or disables the root ports of all the empty slots that are accessible to the BIOS and operating system. This option is set to **Disabled** by default.
Slot Disablement	It enables or disables the available PCIe slots on your system. The slot disablement feature controls the configuration of the PCIe cards that are installed in the specified slot. Slots must be disabled only when the installed peripheral card prevents booting into the operating system or causes delays in system startup. If the slot is disabled, both the Option ROM and UEFI drivers are disabled. Only slots that are present on the system are available for control. When this option is set to boot driver disabled, both the **Option ROM** and **UEFI driver** from the slot do not run during POST. The system does not boot from the card, and the preboot services are not available. However, the card is available to the operating system. **Slot n**: Enables or disables or only the boot driver is disabled for the PCIe slot n. This option is set to **Enabled** by default.
Slot Bifurcation	**Auto Discovery Bifurcation Settings** allows **Platform Default Bifurcation**, **Auto Discovery of Bifurcation**, and **Manual bifurcation Control**.
	This option is set to **Platform Default Bifurcation** by default. The slot bifurcation field is accessible when set to **Manual bifurcation Control** and is unavailable when set to **Platform Default Bifurcation** and **Auto Discovery of Bifurcation**. **NOTE:** The slot bifurcation supports on PCIe slot only, does not support slot types from Paddle card to Riser and Slimline connector to Riser.

Serial communications

The serial port is optional in VxRail. The Serial Communication option is applicable only if the serial COM port is installed in the system.

1. To view the **Serial Communication** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **Serial Communication**.

Table 53. Serial communication details

Option	Description
Serial Communication	It enables the serial communication options. Selects serial communication devices (Serial Device 1 and Serial Device 2) in the BIOS. You can also enable the BIOS console redirection and specify the port address. The options available for System without serial COM port (DB9) are **On without Console Redirection**, **On with Console Redirection**, **Off**. By default, this option is set to **On without Console Redirection**.
Serial Port Address	It enables you to set the port address for serial devices. This option is set to either **COM1** or **COM2** for the serial device **(COM1=0x3F8,COM2=0x2F8)** and set to **COM1** by default. **NOTE:** For the Serial Over LAN (SOL) feature, you can only use Serial Device 2. To use console redirection by SOL, configure the same port address for console redirection and the serial device. **NOTE:** Every time the system boots, the BIOS syncs the serial MUX setting that is saved in iDRAC. The serial MUX setting can be independently changed in iDRAC. Loading the BIOS default settings from within the BIOS setup utility may not always revert the serial MUX setting to the default setting of Serial Device 1.
External Serial Connector	This option allows you to associate the External Serial Connector to **Serial Device 1**, **Serial Device 2**, or the **Remote Access Device**. This option is set to **Serial Device 1** by default.

Table 53. Serial communication details (continued)

Option	Description
	NOTE: Only Serial Device 2 can be used for Serial Over LAN (SOL). To use console redirection by SOL, configure the same port address for console redirection and the serial device. **NOTE:** Every time the system boots, the BIOS syncs the serial MUX setting that is saved in iDRAC. The serial MUX setting can be independently changed in iDRAC. Loading the BIOS default settings from within the BIOS setup utility may not always revert this setting to the default setting of Serial Device 1.
Failsafe Baud Rate	It 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	It sets the remote console terminal type. This option is set to **VT100/VT220** by default.
Redirection After Boot	It enables or disables the BIOS console redirection when the operating system is loaded. This option is set to **Enabled** by default.

System profile settings

In the BIOS, access **System Profile Settings** to view details.

1. To view the **System Profile Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **System Profile Settings**.

Table 54. System profile settings

Option	Description
System Profile	It sets the system profile. Setting the **System Profile** option to a mode other than **Performance Per Watt (DAPC)**, has the BIOS automatically set 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. Other options include **Custom**, **Performance**, **Performance Per Watt (OS)**, 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	It sets the CPU power management. This option is set to **System DBPM (DAPC)** by default. Other options include **Maximum Performance**, **OS DBPM**.
Memory Frequency	It 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	It enables or disables the processor to operate in the turbo boost mode. This option is set to **Enabled** by default.
Energy Efficient Turbo	Energy-Efficient Turbo (EET) is a mode of operation where the processor core frequency is adjusted within the turbo range based on the workload. This option is set to **Enabled** by default.
C1E	It 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	It enables or disables the processor to operate in all available power states. C States allow the processor to enter lower power states when idle. When set to **Enabled** (operating system controlled), or **Autonomous** (if hardware control is supported), the processor operates in all available Power States to save power. The **Enabled** and **Autonomous** settings may increase memory latency and frequency jitter. This option is set to **Enabled** by default.
Memory Patrol Scrub	It sets the memory patrol scrub mode. This option is set to **Standard** by default.
Memory Refresh Rate	It sets the memory refresh rate to either 1x or 2x. This option is set to **1x** by default.

Table 54. System profile settings (continued)

Option	Description
Uncore Frequency	It enables you to select the **Uncore Frequency** option. **Dynamic mode** enables the processor to optimize power resources across cores and uncores during runtime. The **Energy Efficiency Policy** option influences the optimization of the uncore frequency to either save power, or to optimize the performance.
Energy Efficient Policy	It enables you to select the **Energy Efficient Policy** option. 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.
Monitor/Mwait	It 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 when System Profile is set to **Custom**. **NOTE:** When the C States option is set to **Enabled** in the **Custom** mode, changing the **Monitor/Mwait** setting does not impact the system power or performance.
Workload Profile	This option allows the user to specify the targeted workload of a server and allows performance optimization that is based on the workload type. This option is set to **Not Configured** by default.
CPU Interconnect Bus Link Power Management	It enables or disables the CPU Interconnect Bus Link Power Management. This option is set to **Enabled** by default.
PCI ASPM L1 Link Power Management	It enables or disables the PCI **ASPM L1 Link Power Management**. This option is set to **Enabled** by default.

System security

In the BIOS, access **System Security** to view details.

1. To view the **System Security** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **System Security**.

Table 55. System security details

Option	Description
CPU AES-NI	It 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	It sets the system password. This option is read-only if the password jumper is not installed in the system.
Setup Password	It sets the setup password. This option is read-only if the password jumper is not installed in the system.
Password Status	It locks the system password. This option is set to **Unlocked** by default.
TPM Information	It indicates the type of Trusted Platform Module, if present.

Table 56. TPM 2.0 security information

TPM information	Description
TPM Security	**NOTE:** The TPM menu is available only when the TPM module is installed. It allows you to control the reporting mode of the TPM. When set to **Off**, the presence of the TPM is not reported to the operating system. When set to **On**, the presence of the TPM is reported to the operating system. The **TPM Security** option is set to **Off** by default.
	When TPM 2.0 is installed, the **TPM Security** option is set to **On** or **Off**. This option is set to **Off** by default.

Table 56. TPM 2.0 security information (continued)

TPM information	Description
TPM Information	It indicates the type of Trusted Platform Module, if present.
TPM Firmware	It indicates the firmware version of the TPM.
TPM Hierarchy	It enables, disables, or clears the storage and endorsement hierarchies. When set to **Enabled**, the storage and endorsement hierarchies can be used.
	When set to **Disabled**, the storage and endorsement hierarchies cannot be used.
	When set to **Clear**, the storage and endorsement hierarchies are cleared of any values, and then reset to **Enabled**.
TPM Advanced Settings	It specifies TPM Advanced Settings details.

Table 57. System security details

Option	Description
Intel TXT	It enables you to set the Intel Trusted Execution Technology (TXT) option. Virtualization technology and TPM Security must be enabled with Preboot measurements to enable the **Intel TXT** option. This option is set to **Off** by default. It is set **On** for Secure Launch (Firmware Protection) support on Windows 2022.
Memory Encryption	It enables or disables the Intel Total Memory Encryption (TME) and Multitenant (Intel TME-MT). When the option is set to **Disabled**, BIOS disables both TME and MK-TME technology. When the option is set to **Single Key**, the BIOS enables the TME technology. When the option is set to **Multiple Keys**, BIOS enables the TME-MT technology. This option is set to **Disabled** by default. This setting can be enabled only if the CPU Physical Address Limit is disabled.
TME Encryption Bypass	It allows the option to bypass the Intel Total Memory Encryption. This option is set to **Disabled** by default.
Intel SGX	It enables you to set the Intel Software Guard Extension (SGX) option. To enable the **Intel SGX** option, the processor: ● Must be SGX capable. ● Memory population must be compatible (minimum x8 identical DIMM1 to DIMM8 per CPU socket). ● Do not support persistent memory configuration. ● Memory operating mode must be set to **Optimizer mode**. ● Memory encryption must be enabled. ● Node interleaving must be disabled. When this option is set to **Off**, BIOS disables the SGX technology. When this option is set to **On**, the BIOS enables the SGX technology. This option is set to **Off** by default.
Power Button	It enables or disables the power button on the front of the system. This option is set to **Enabled** by default.
AC Power Recovery	It sets how the system behaves after AC power is restored to the system. This option is set to **Last** by default. **NOTE:** The host system will not power on until the **iDRAC Root of Trust** (RoT) function is completed. The host power-on delays by 90 seconds after the AC power is applied.
AC Power Recovery Delay	It sets the time delay for the system to power on after AC power is restored to the system. This option is set to **Immediate** by default. When this option is set to **Immediate**, there is no delay for power-up. When this option is set to **Random**, the system creates a random delay for power-up. When this option is set to **User Defined**, the system delay time is manually to power on.
User Defined Delay (120 s to 600 s)	It sets the **User Defined Delay** option when the **User Defined** option for **AC Power Recovery Delay** is selected. The AC recovery time adds approximately 50 seconds to the iDRAC root of trust time.
UEFI Variable Access	This option provides various degrees of securing UEFI variables. When set to **Standard** (the default), UEFI variables are accessible in the operating system per the UEFI specification. When

Table 57. System security details (continued)

Option	Description
	set to **Controlled**, selected UEFI variables are protected in the environment. New UEFI boot entries are placed at the end of the current boot order.
In-Band Manageability Interface	When set to **Disabled**, the Management Engine (ME), HECI devices, and the system IPMI devices are hidden from the operating system. Hiding the ME and the devices from the operating system prevents changes to the ME power capping settings, and blocks access to all in-band management tools. All managements should be managed through out-of-band. This option is set to **Enabled** by default. **NOTE:** The BIOS update requires HECI devices to be operational, and DUP updates require IPMI interface to be operational. Set this setting to **Enabled** to avoid updating errors.
SMM Security Mitigation	It enables or disables the UEFI SMM security mitigation protections. It is set to **Disabled** by default.
Secure Boot	It enables Secure Boot, where the BIOS authenticates each preboot image by using the certificates in the Secure Boot Policy. Secure Boot is set to **Disabled** by default.
Secure Boot Policy	When the Secure Boot policy is set to **Standard**, the BIOS uses the system manufacturer key and certificates to authenticate preboot images. When the Secure Boot policy is set to **Custom**, the BIOS uses the user-defined key and certificates. The secure Boot policy is set to **Standard** by default.
Secure Boot Mode	It configures how the BIOS uses the Secure Boot Policy Objects, such as PK, KEK, db, or 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**.
	Below are the details of different boot modes available in the **Secure Boot Mode** option. • **User Mode**: In **User Mode**, PK must be installed, and BIOS performs signature verification on programmatic attempts to update policy objects. The BIOS allows unauthenticated programmatic transitions between modes. • **Audit Mode**: In **Audit Mode**, PK is not present. BIOS does not authenticate programmatic update to the policy objects and transitions between modes. The BIOS performs a signature verification on preboot images. The results are logged in the image Execution Information Table, but runs the images whether they pass or fail verification. **Audit Mode** is useful for programmatic determination of a working set of policy objects. • **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	It specifies the list of certificates and hashes that secure boot uses to authenticate images.
Secure Boot Custom Policy Settings	It configures the Secure Boot Custom Policy. To enable this option, set the Secure Boot Policy to **Custom** option.

Create a system and setup password

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.

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.

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** and then **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**.
   A password can have up to 32 characters.
5. Reenter the system password, and click **OK**.

6. In the **Setup Password** field, type your setup password and press **Enter** or **Tab**.
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.

   Password protection does not take effect until the system reboots.

Secure your system

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

1. Power on or reboot your system.
2. Enter the system password and press **Enter**.

When **Password Status** is set to **Locked**, enter 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 displays until the correct password is entered.

Delete or change system and setup passwords

If the **Password Status** is set to **Locked**, you cannot delete or change an existing system or setup password.

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

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

Enable or disable Setup Password

You can use the password status option with the **Setup Password** option to protect the system password from unauthorized changes.

1. 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.
   ```

   Even after you power off and restart the system, the error message is displayed until the correct password is typed.
2. 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** screen section.

   You cannot disable or change an existing system password.

Redundant operating system control

1. To access the **Redundant OS Control**, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **Redundant OS Control**.

Table 58. Redundant operating system control details

Option	Description
Redundant OS Location	It enables you to select a backup disk from the following devices: • **None** • **IDSDM** • **SATA Ports in AHCI mode** • **BOSS PCIe Cards (Internal M.2 Drives)** • **Internal USB** **NOTE:** RAID configurations and NVMe cards are not included, as the BIOS is not able to distinguish between individual drives in those configurations. • **Internal SD card**
Redundant OS State	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 operating system. When set to **Hidden**, the backup disk is disabled and is not visible to the boot list and the operating system. This option is set to **Visible** by default. BIOS disables the device in hardware, and is not accessible by the operating system.
Redundant OS Boot	This option is disabled if **Redundant OS Location** is set to **None** or if **Redundant OS State** is set to **Hidden**. When set to **Visible**, the backup disk is visible to the boot list and operating system. When set to **Hidden**, the backup disk is disabled and is not visible to the boot list and the operating system. This option is set to **Visible** by default. BIOS disables the device in hardware, and is not accessible by the operating system.

Access miscellaneous settings

In the BIOS, access **Miscellaneous Settings** to view details.

1. To view the **Miscellaneous Settings** screen, power on the system and press F2.
2. Click **System Setup Main Menu**, **System BIOS**, and then **Miscellaneous Settings**.

   The following table describes the options available for miscellaneous settings:

Table 59. Miscellaneous Settings details

Option	Description
System Time	This option allows you to set the time on the system.
System Date	Use this option to set the date on the system.
Time Zone	This option allows you to select required Time Zone.
Daylight Savings Time	This option allows you to enable or disable Daylight Savings Time. This option is set to **Disabled** by default.
Asset Tag	Provides the asset tag information and allows you to modify the tag information for security and tracking purposes.
Keyboard NumLock	Use this option to set whether the system boots with the NumLock enabled or disabled. This option is set to **On** by default. This option does not apply to 84-key keyboards.
F1/F2 Prompt on Error	Allows you to enable or disable the F1/F2 prompt on error. The F1/F2 prompt also includes keyboard errors. This option is set to **Enabled** by default.
Load Legacy Video Option ROM	This option determines whether the system BIOS loads the legacy video (INT 10 h) option ROM from the video controller. This option is set to **Disabled** by default. This option cannot be set to Enabled, when the Boot mode is UEFI and Secure Boot is enabled.

Table 59. Miscellaneous Settings details (continued)

Option	Description
Dell Wyse P25/P45 BIOS Access	Provides the option to enable or disable the Dell Wyse P25/P45 BIOS Access. This option is set to **Enabled** by default.
Power Cycle Request	Use this option to enable or disable the Power Cycle Request. This option is set to **None** by default.

iDRAC settings

The iDRAC settings are 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.

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

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

Device settings

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

Service Tag settings

The **Service Tag Settings** enables you to configure the system Service Tag.

Dell Lifecycle Controller

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

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

NOTE: Certain platform configurations may not support the full set of features of 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 on the Dell Technologies Support Site.

Boot Manager

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

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

The following table describes the available boot manager options:

Table 60. Options on the Boot Manager screen

Option	Description
Continue Normal Boot	The system attempts to boot to devices starting with the first item in the boot order. If the boot attempt fails, the system goes to the next item in the boot order until the boot is successful, or no more boot options are found.
One-shot Boot Menu	Enables you to access the 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.

Table 60. Options on the Boot Manager screen (continued)

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

PXE boot

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

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

6

Configuration information

This section outlines the minimum system configuration necessary to run power-on self-test (POST). It also describes the system management configuration validation.

The components that are listed below are the minimum configuration to POST:

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

Configuration validation

When the system is powered on, information about the following is obtained from the CPLD, and backplane memory maps and analyzed:

- Installed cables
- Risers
- Backplanes
- Power supplies
- Floating card (fPERC, adapter PERC , BOSS)
- Processor

This information forms a unique configuration. iDRAC maintains qualified configurations that are stored in a table. iDRAC compares the new configuration to the configurations in the table.

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

Table 61. Configuration validation error

Error	Description	Possible causes and recommendations	Example
`Config Error`	A configuration element within the closest match contains something that is unexpected and does not match any Dell qualified configuration.	Wrong configuration	`Config Error: Backplane cable CTRS_SRC_SA1 and BP-DST_SA1`
		The elements that are reported in HWC8010 errors indicate that an element is incorrectly assembled. Check the placement of the element, such as the cable or riser, in the system.	`Config Error : SL Cable PLANAR_SL7 and CTRL_DST_PA1`
`Config Missing`	iDRAC found a configuration element missing within the closest match detected.	A missing or damaged cable, device, or part	`Config Missing: Float card front PERC/HBA adapter PERC/HBA`
		A missing element or cable is reported in HWC8010 error logs. Install the missing element, such as the cable or riser.	`Config Missing : SL cable PLANAR_SL8 and CTRL_DST_PA1`
`Comm Error`	A configuration element is not responding to iDRAC using the management interface while running an inventory check.	System management sideband communication	`Comm Error: Backplane 2`

Table 61. Configuration validation error (continued)

Error	Description	Possible causes and recommendations	Example
		Unplug AC Power, reseat the element, and replace the element if the problem persists.	

Error messages

The error messages that are displayed on the screen during POST or captured in the system event log (SEL), or LifeCycle (LC) log.

Table 62. Error message HWC8010

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

Table 63. Error message HWC8011

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

7

Component replacement guidelines

You can add or replace hardware components on your VxRail such as solid state drives (SSDs), power supply units (PSUs), system memory.

See the table Supported hardware components to know the components that you can replace. In addition to these components, there are some hardware components that require you to contact the Dell Technologies support to arrange for repair or replacement.

Before you proceed with the replacement, go to SolVe and generate the replacement procedure of the component that you want to replace. For more information about how to use SolVe, see Using SolVe Online for VxRail procedures.

To ensure optimal performance, follow the guidelines that are mentioned in this section before installing or replacing any component in your VxRail.

Use SolVe Online for VxRail procedures

To avoid potential data loss, always use *SolVe Online for VxRail* to generate procedures before you replace any hardware components or upgrade software.

CAUTION: If you do not use *SolVe Online for VxRail* to generate procedures to replace hardware components or perform software upgrades, data loss may occur for VxRail.

You must have a Dell Technologies Support account to use SolVe Online for VxRail.

Supported hardware components

See *SolVe Online for VxRail* for hardware-specific information.

Table 64. FRU and CRU components

Hardware Components	Customer Replaceable Unit (CRU)	Field Replaceable Unit (FRU)
BOSS-N1	Yes	No
PCIe Network Interface Cards	Yes	No
Power Supply Unit	Yes	No
Processor	No	Yes
SSD (NVMe)	Yes	No
SSD (SAS or SATA)	Yes	No
Integrated Storage Controller Card (HBA355i)	Yes	No
GPU	Yes	No
Air Shroud	Yes	No
Cooling Fan	Yes	No
System Board	No	Yes
System Memory	Yes	No
System Battery	Yes	No
Backplane	Yes	No

NOTE: The components that are mentioned in the table are a non-exhaustive list.

System memory guidelines

The VxRail VP-760 and VxRail VS-760 supports DDR5 registered DIMMs (RDIMMs).

Your system memory is organized into eight channels per processor (two memory sockets per channel), 16 memory sockets per processor and 32 memory sockets per system.

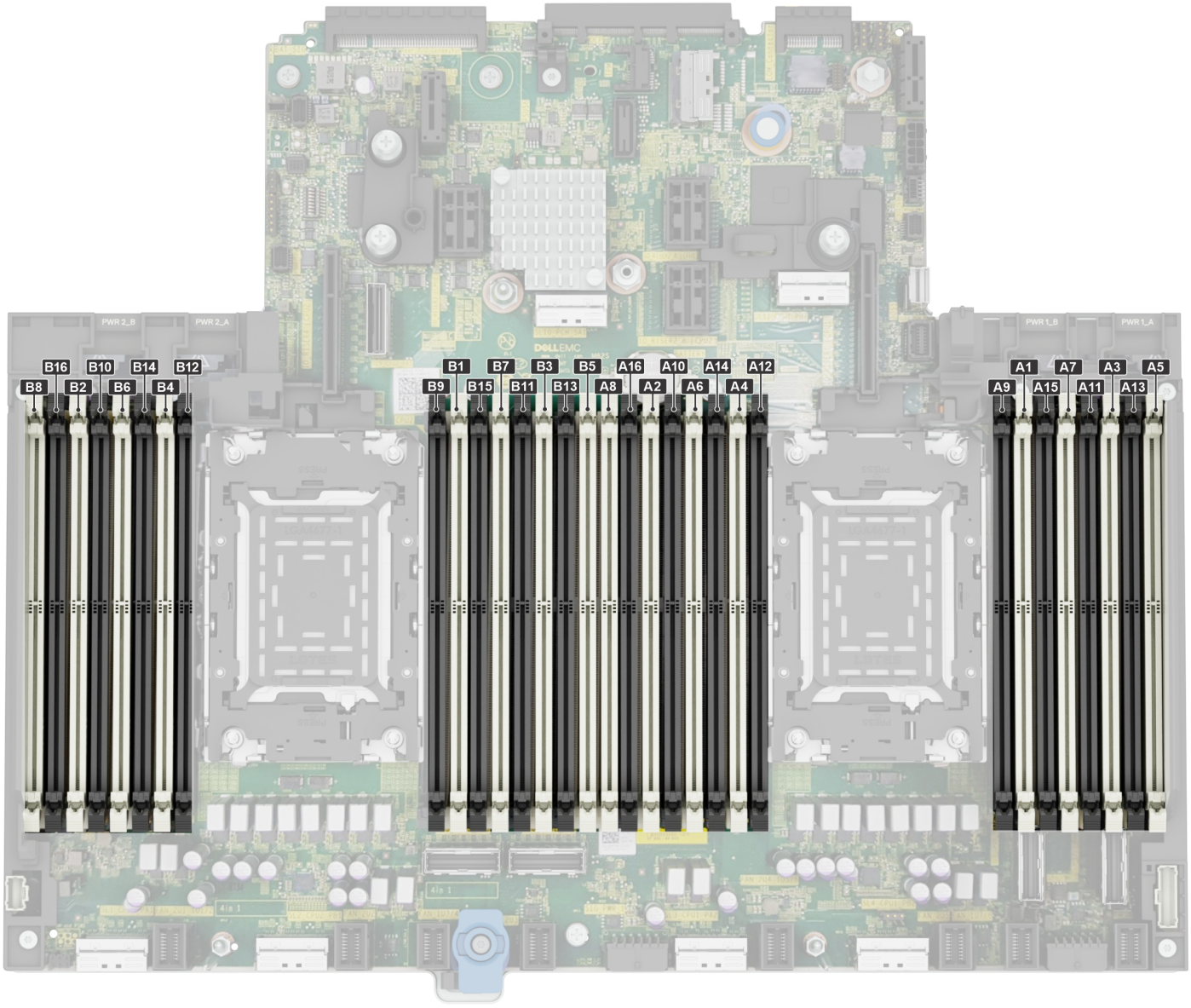

Figure 21. Memory channels

The following table describes how the memory channels are organized:

Table 65. Memory channels

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
Processor 1	Slots A1 and A9	Slots A7 and A15	Slots A3 and A11	Slots A5 and A13	Slots A4 and A12	Slots A6 and A14	Slots A2 and A10	Slots A8 and A16

Table 65. Memory channels (continued)

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
Processor 2	Slots B1 and B9	Slots B7 and B15	Slots B3 and B11	Slots B5 and B13	Slots B4 and B12	Slots B6 and B14	Slots B2 and B10	Slots B8 and B16

The following table describes the supported memory matrix:

Table 66. Supported memory matrix

DIMM type	Rank	Capacity	DIMM rated voltage and speed	Operating Speed	
				1 DIMM per channel (DPC)	2 DIMMs per channel (DPC)
RDIMM	1 R	16 GB	DDR5 (1.1 V), 4800 MT/s	4800 MT/s	4400 MT/s
	2 R	32 GB, 64 GB	DDR5 (1.1 V), 4800 MT/s	4800 MT/s	4400 MT/s
	4 R	128 GB	DDR5 (1.1 V), 4800 MT/s	4800 MT/s	4400 MT/s
	8 R	256 GB	DDR5 (1.1 V), 4800 MT/s	4800 MT/s	4400 MT/s
	1 R	16 GB	DDR5 (1.1 V), 5600 MT/s	5600 MT/s	4400 MT/s
	2 R	32 GB, 64 GB, 96 GB	DDR5 (1.1 V), 5600 MT/s	5600 MT/s	4400 MT/s
	4 R	128 GB	DDR5 (1.1 V), 5600 MT/s	5600 MT/s	4400 MT/s

NOTE: 256 GB RDIMM with 4800 MT/s is supported with VP-760 only.

NOTE: 5600 MT/s RDIMMs are applicable for fifth-generation Intel Xeon Scalable processors only.

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

General memory module installation guidelines

To ensure optimal performance of your system, observe the following general guidelines when configuring your system memory. If your system memory configuration fails 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 speeds of 5600 MT/s or 4800 MT/s depending on the following factors:

- Selected system profile. For example, Performance, Performance Per Watt Optimized (OS), or Custom (can be run at high speed or lower).
- Maximum supported DIMM speed of the processors.
- Maximum supported speed of the DIMMs.

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

NOTE: Fault Resilient Memory supports only eight and sixteen DIMMs per processor.

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 DDR5.
- All DDR5 DIMMs must be in the same speed per processor socket.
- Mixing of DIMMs is not allowed.

- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory module.
- Populate memory module sockets only if a processor is installed.
  - For single-processor systems, sockets A1 to A16 are available.
  - For dual-processor systems, sockets A1 to A16 and sockets B1 to B16 are available.
  - A minimum of one DIMM must be populated for each installed processor.
- In **Optimizer Mode**, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

Table 67. Memory population information

Processor	Memory population	Memory population information
Single processor	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}, A{9}, A{10}, A{11}, A{12}, A{13}, A{14}, A{15}, A{16}	1, 2, 4, 6, 8, 12 or 16 DIMMs are allowed.
Dual processor (Start with processor1. Processor 1 and processor 2 population should match)	A{1}, B{1}, A{2}, B{2}, A{3}, B{3}, A{4}, B{4}, A{5}, B{5}, A{6}, B{6}, A{7}, B{7} A{8}, B{8}, A{9}, B{9}, A{10}, B{10}, A{11}, B{11}, A{12}, B{12}, A{13}, B{13}, A{14}, B{14}, A{15}, B{15}, A{16}, B{16}	2, 4, 8, 12, 16, 24 or 32 DIMMs are supported per system.

- Populate all the sockets with white release tabs first, followed by the sockets with black release tabs.
- Unbalanced or odd memory configurations result in a performance loss, and the system may not identify the memory modules being installed. Always populate memory channels identically with equal DIMMs for the best performance.
- Supported RDIMM configurations are 1, 2, 4, 6, 8, 12, or 16 DIMMs per processor.

Expansion card installation guidelines

The following figure shows the expansion card slot connectors on the VxRail VP-760 and VxRail VS-760 system board:

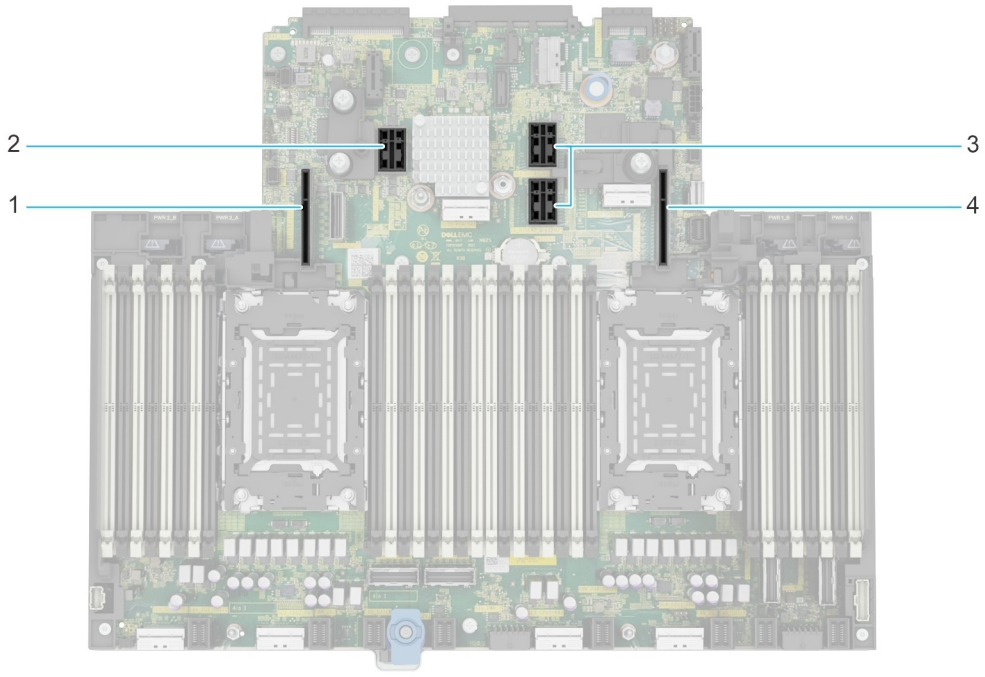

Figure 22. Expansion card slot connectors

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

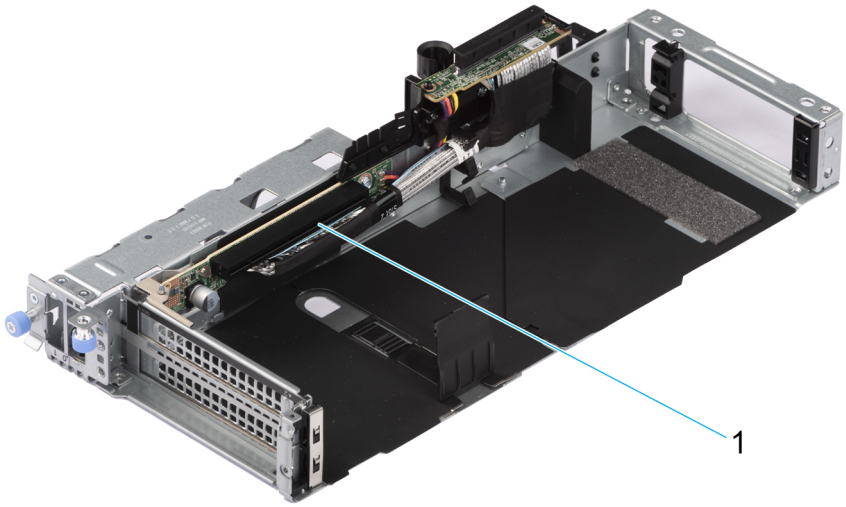

Figure 23. Riser 1P - Full length (FL)

1. Slot 2

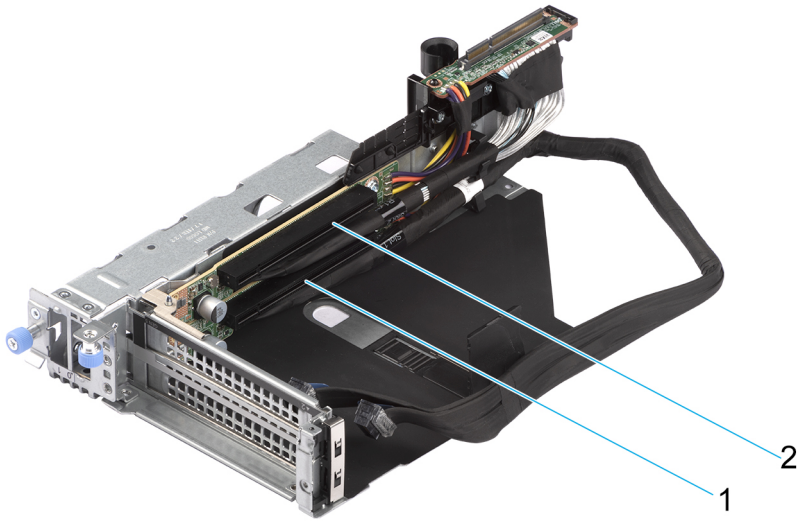

Figure 24. Riser 1R

1. Slot 1
2. Slot 2

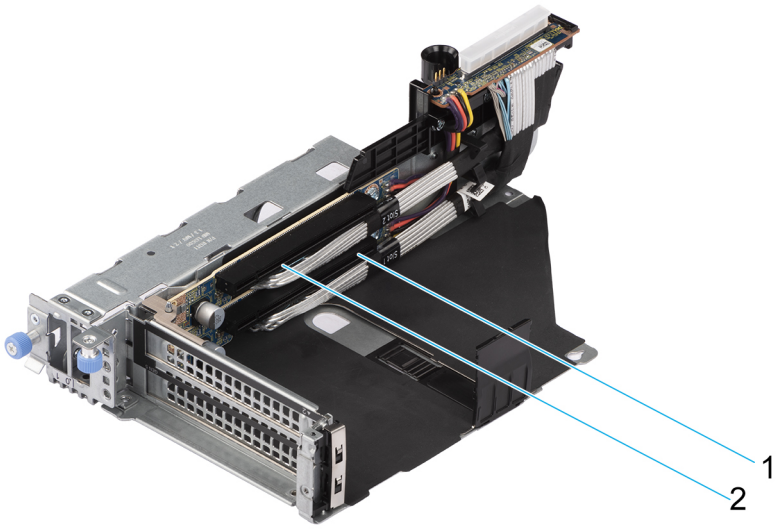

Figure 25. Riser 1Q

1. Slot 1
2. Slot 2

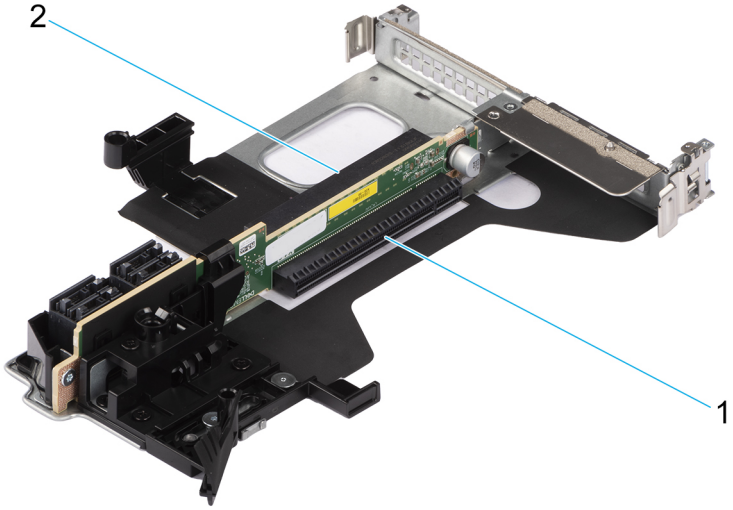

Figure 26. Riser 2A

1. Slot 6
2. Slot 3

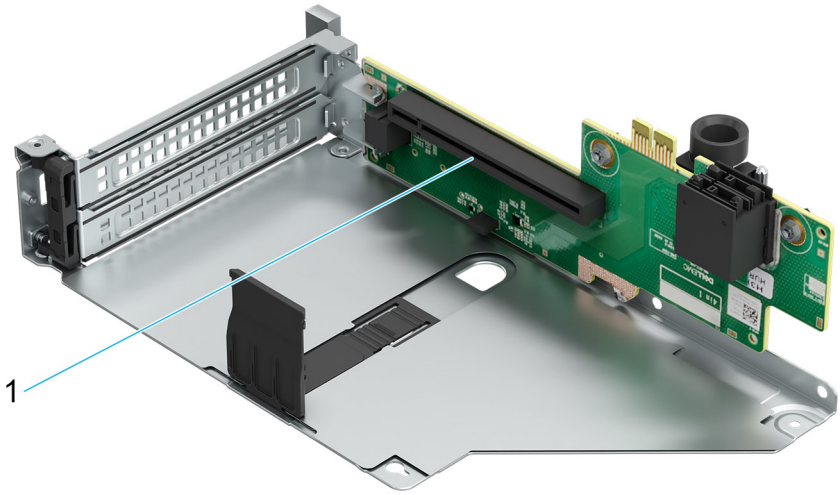

Figure 27. Riser 3A

1. Slot 5

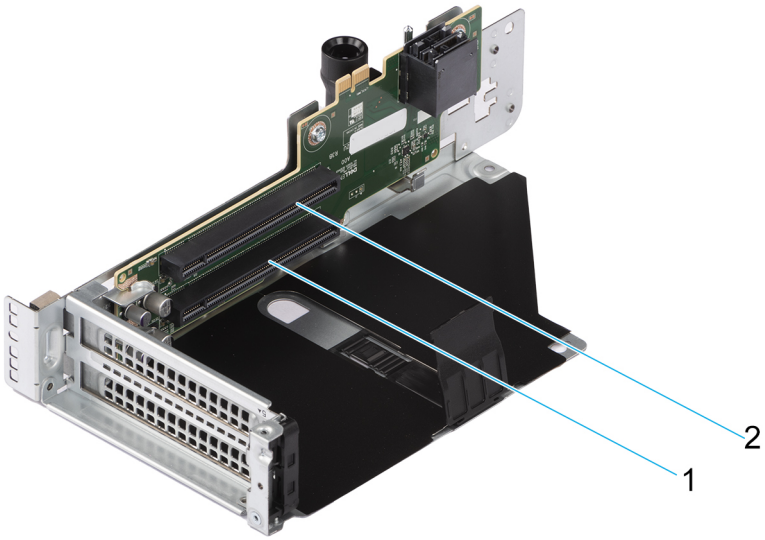

Figure 28. Riser 3B

1. Slot 4
2. Slot 5

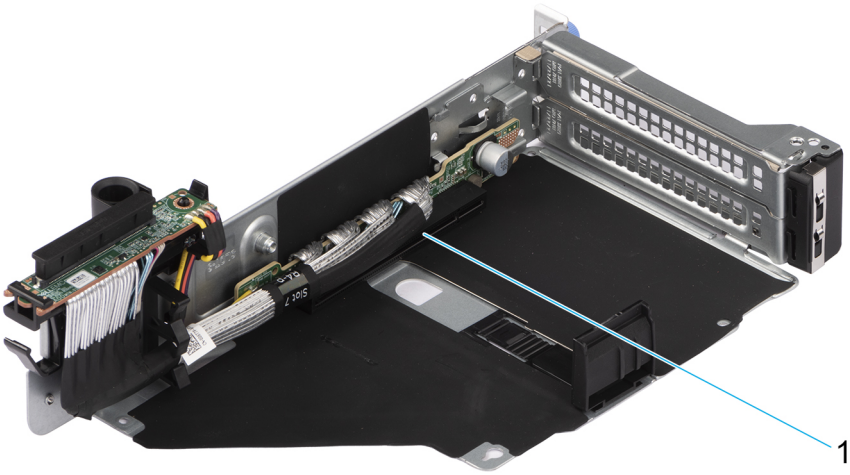

Figure 29. Riser 4P

1. Slot 7

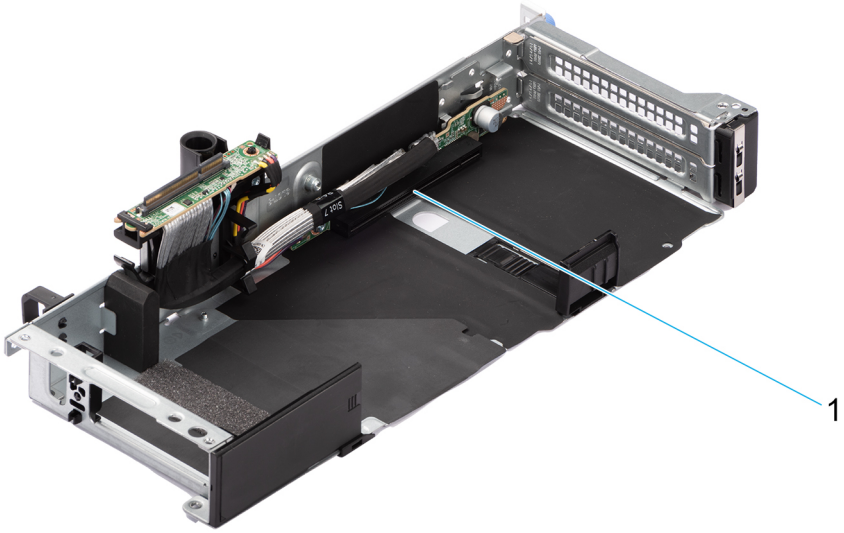

Figure 30. Riser 4P - Full length (FL)

1. Slot 7

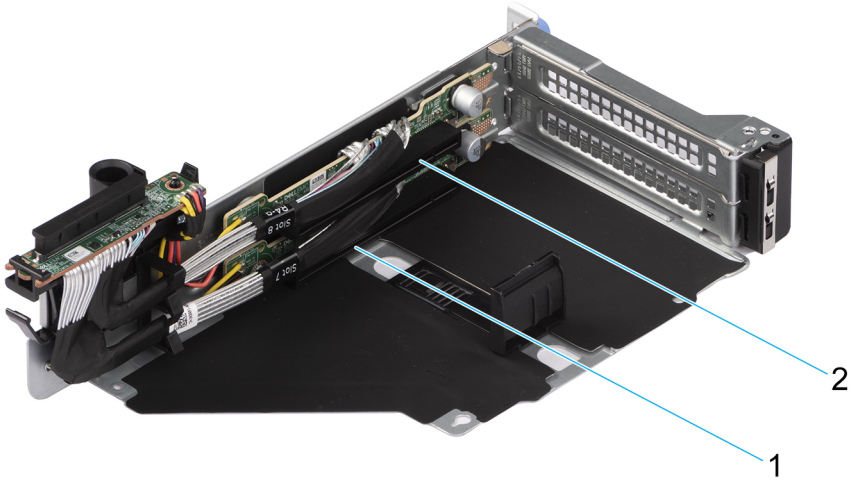

Figure 31. Riser 4Q

1. Slot 7
2. Slot 8

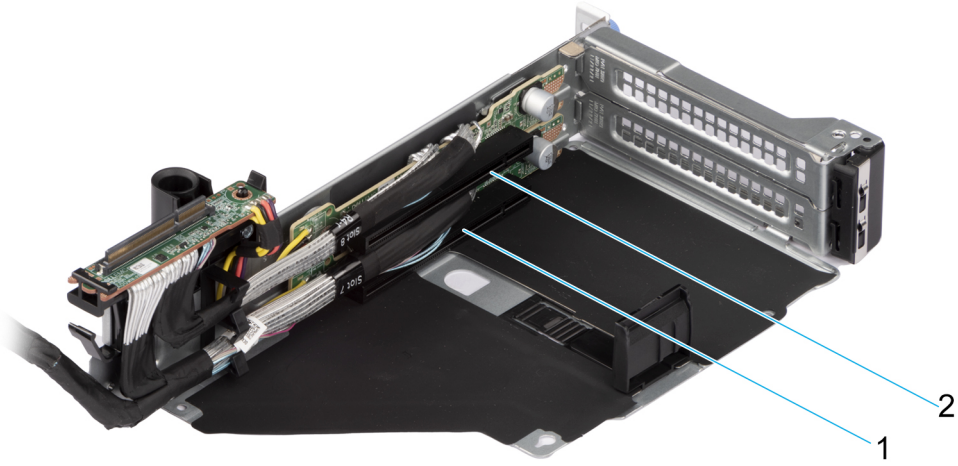

Figure 32. Riser 4R

1. Slot 7
2. Slot 8

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

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

Table 68. Expansion card riser configurations

Configurations	Expansion card risers	PCIe slots	Form factor	Controlling processor	Electrical bandwidth or physical connector of the slot
Config2. 4 x8 FH (Gen5) + 2x 8FH + 2 x16 LP	R1Q	1	Full height	Processor 1	PCIe Gen5 x8 (x16 connector)
		2	Full height	Processor 1	PCIe Gen5 x8 (x16 connector)
	R2A	3	Low profile	Processor 1	PCIe Gen4 x16 (x16 connector)

Table 68. Expansion card riser configurations (continued)

Configurations	Expansion card risers	PCIe slots	Form factor	Controlling processor	Electrical bandwidth or physical connector of the slot
		6	Low profile	Processor 2	PCIe Gen4 x16 (x16 connector)
	R3B	4	Full height	Processor 2	PCIe Gen4 x8 (x16 connector)
		5	Full height	Processor 2	PCIe Gen4 x8 (x16 connector)
	R4Q	7	Full height	Processor 2	PCIe Gen5 x8 (x16 connector)
		8	Full height	Processor 2	PCIe Gen5 x8 (x16 connector)
Config3-2. 2 x16 LP + 2 x8 FH + 2 x16 DW (Gen5)	R1P	2	Full height (DW)	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2A	3	Low profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low profile	Processor 2	PCIe Gen4 x16 (x16 connector)
	R3B	4	Full height	Processor 2	PCIe Gen4 x8 (x16 connector)
		5	Full height	Processor 2	PCIe Gen4 x8 (x16 connector)
	R4P	7	Full height (DW)	Processor 2	PCIe Gen5 x16 (x16 connector)
Config5-1. 2 x16 LP + 2 x16 FH + 2x16 FH (Gen5)	R1R	1	Full height	Processor 1	PCIe Gen4 x16 (x16 connector)
		2	Full height	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2A	3	Low profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low profile	Processor 2	PCIe Gen4 x16 (x16 connector)
	R3A	5	Full height	Processor 2	PCIe Gen4 x16 (x16 connector)
	R4P	7	Full height	Processor 2	PCIe Gen5 x16 (x16 connector)
Config6. 2 x16 LP + 2 x8 FH (Gen5)	R2A	3	Low profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low profile	Processor 2	PCIe Gen4 x16 (x16 connector)
	R4Q	7	Full height	Processor 2	PCIe Gen5 x8 (x16 connector)
		8	Full height	Processor 2	PCIe Gen5 x8 (x16 connector)
Config9. 3 x8 FH (Gen5) + 1 x16 LP	R1Q	1	Full height	Processor 1	PCIe Gen5 x8 (x16 connector)
		2	Full height	Processor 1	PCIe Gen5 x8 (x16 connector)
	R2A	3	Low profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4R	7	Full height	Processor 1	PCIe Gen5 x8 (x16 connector)
Config10-2. 1 x16 DW (Gen5) + 2 x16 LP + 1 x8 FH (Gen5) +1 x16 FH (Gen5)	R1P	2	Full height (DW)	Processor 1	PCIe Gen5 x16 (x16 connector)
	R2A	3	Low profile	Processor 1	PCIe Gen4 x16 (x16 connector)
		6	Low profile	Processor 1	PCIe Gen4 x16 (x16 connector)
	R4R	7	Full height	Processor 1	PCIe Gen5 x8 (x16 connector)
Config13. 1 x16 LP (Gen5)	R2A	3	Low profile	Processor 1	PCIe Gen5 x16 (x16 connector)

VxRail VP-760 supports the following riser configurations:

- Configuration 2: R1Q+R2A+R3B+R4Q
- Configuration 3-2: R1P+R2A+R3B+R4P (FL)
- Configuration 5-1: R1R+R2A+R3A+R4P (HL)
- Configuration 6: R2A+R4Q

- Configuration 9: R1Q+R2A+R4R
- Configuration 10-2: R1P+R2A+R4R (FL)

VxRail VS-760 supports the following riser configurations:

- Configuration 6: R2A+R4Q
- Configuration 13: R2A

Table 69. Configuration 2: R1Q+R2A+R3B+R4Q

Card type	Slot priority	Maximum number of cards
Inventec (VGA)	8, 4	1
Inventec (Serial)	8, 4	1
Inventec (LOM Card)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Foxconn (BOSS)	Integrated slot	1
Foxconn (Front PERC11 H755)	Integrated slot	1
Foxconn (Front PERC11 HBA355i)	Integrated slot	1
NVIDIA (GPU A2)	7, 8, 4, 5, 1, 2	6
Mellanox (NIC: 100Gb)	6, 3	2
Broadcom (NIC: 100Gb)	6, 3	2
Intel (NIC: 100Gb)	6, 3	2
Mellanox (NIC: 25Gb)	5, 4, 7, 2, 1, 8	6
Mellanox (NIC: 25Gb)	6, 3	2
Intel (NIC: 25Gb)	5, 4, 7, 1, 2, 8	6
Intel (NIC: 25Gb)	6, 3	2
Intel (NIC: 25Gb)	5, 4, 7, 1, 2	5
Broadcom (Emulex) (HBA: FC64)	5, 4, 7, 1, 2, 8	6
Broadcom (Emulex) (HBA: FC64)	6, 3	2
Broadcom (Emulex) (HBA: FC32)	5, 4, 7, 1, 2, 8	6
Broadcom (Emulex) (HBA: FC32)	6, 3	2
Qlogic (Marvell) (HBA: FC32)	5, 4, 7, 1, 2, 8	6
Qlogic (Marvell) (HBA: FC32)	6, 3	2
Broadcom (NIC: 25Gb)	5, 4, 7, 1, 2, 8	6
Broadcom (NIC: 25Gb)	6, 3	2
Broadcom (NIC: 10Gb)	5, 4, 7, 1, 2, 8	6
Broadcom (NIC: 10Gb)	6, 3	2
Intel (NIC: 10Gb)	5, 4, 7, 2, 1, 8	6
Intel (NIC: 10Gb)	6, 3	2

Table 70. Configuration 3-2: R1P+R2A+R3B+R4P (FL)

Card type	Slot priority	Maximum number of cards
Inventec (VGA)	4	1
Inventec (Serial)	4	1
Inventec (LOM Card)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Foxconn (BOSS)	Integrated slot	1
Foxconn (Front PERC11 H755)	Integrated slot	1
Foxconn (Front PERC11 HBA355i)	Integrated slot	1
NVIDIA (GPU H100)	7, 2	2
NVIDIA (GPU L40S)	7, 2	2
NVIDIA (GPU L40)	7, 2	2
NVIDIA (GPU L4)	7, 2	2
NVIDIA (GPU A40)	7, 2	2
NVIDIA (GPU A30)	7, 2	2
NVIDIA (GPU A16)	7, 2	2
Mellanox (NIC: 100Gb)	7, 2	2
Mellanox (NIC: 100Gb)	6, 3	2
Broadcom (NIC: 100Gb)	6, 3	2
Broadcom (NIC: 100Gb)	7, 2	2
Intel (NIC: 100Gb)	6, 3	2
Intel (NIC: 100Gb)	7, 2	2
Intel (NIC: 25Gb)	7, 2	2
Broadcom (NIC: 25Gb)	7, 2	2
Mellanox (NIC: 25Gb)	5, 4, 7, 2	4
Mellanox (NIC: 25Gb)	6, 3	2
Intel (NIC: 25Gb)	5, 4, 7, 2	4
Intel (NIC: 25Gb)	6, 3	2
Broadcom (Emulex) (HBA: FC64)	5, 4, 7, 2	4
Broadcom (Emulex) (HBA: FC64)	6, 3	2
Broadcom (Emulex) (HBA: FC32)	5, 4, 7, 2	4
Broadcom (Emulex) (HBA: FC32)	6, 3	2
Qlogic (Marvell) (HBA: FC32)	5, 4, 7, 2	4
Qlogic (Marvell) (HBA: FC32)	6, 3	2
Broadcom (NIC: 25Gb)	5, 4, 7, 2	4

Table 70. Configuration 3-2: R1P+R2A+R3B+R4P (FL) (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (NIC: 25Gb)	6, 3	2
Broadcom (NIC: 10Gb)	5, 4, 7, 2	4
Broadcom (NIC: 10Gb)	6, 3	2
Broadcom (NIC: 10Gb)	5, 4, 7, 6, 3, 2	6
Intel (NIC: 10Gb)	5, 4, 7, 2	4
Intel (NIC: 10Gb)	6, 3	2

Table 71. Configuration 5-1: R1R+R2A+R3A+R4P (HL)

Card type	Slot priority	Maximum number of cards
Inventec (LOM card)	Integrated slot	1
Broadcom (OCP: 100Gb)	Integrated slot	1
Mellanox (OCP: 100Gb)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Foxconn (BOSS-N1)	Integrated slot	1
NVIDIA (GPU L4)	7, 5, 1, 2	4
Intel (GPU ATS-M)	7, 5, 1, 2	4
NVIDIA (GPU A2)	7, 5, 1, 2	4
Mellanox (FH NIC: 100Gb, 2P, Q56)	7, 5, 1, 2	4
Mellanox (LP NIC: 100Gb, 2P, Q56)	6, 3	2
Broadcom (FH NIC: 100Gb)	7, 5, 1, 2	4
Broadcom (LP NIC: 100Gb)	6, 3	2
Intel (FH NIC: 100Gb)	7, 5, 1, 2	4
Intel (LP NIC: 100Gb)	6, 3	2
Intel (FH, 2P, COMMs card: 100Gb)	7, 5, 1, 2	4
Intel (NIC: 25Gb)	7, 5, 1, 2	4
Intel (NIC: 25Gb)	7, 5, 1, 2	4
Broadcom (NIC: 25Gb)	7, 5, 1, 2	4
Intel (NIC: 25Gb)	6, 3	2
Mellanox (NIC: 25Gb)	7, 5, 1, 2	4
Mellanox (NIC: 25Gb)	6, 3	2

Table 71. Configuration 5-1: R1R+R2A+R3A+R4P (HL) (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 25Gb)	7, 5, 1, 2	4
Intel (NIC: 25Gb)	6, 3	2
Broadcom (Emulex) (HBA: FC64)	7, 5, 1, 2	4
Broadcom (Emulex) (HBA: FC64)	6, 3	2
Broadcom (Emulex) (HBA: FC32)	7, 5, 1, 2	4
Broadcom (Emulex) (HBA: FC32)	6, 3	2
Qlogic (Marvell) (HBA: FC32)	7, 5, 1, 2	4
Qlogic (Marvell) (HBA: FC32)	6, 3	2
Broadcom (NIC: 25Gb)	7, 5, 1, 2	4
Broadcom (NIC: 25Gb)	6, 3	2
Broadcom (NIC: 10Gb)	7, 5, 1, 2	4
Broadcom (NIC: 10Gb)	6, 3	2
Broadcom (NIC: 10Gb)	7, 5, 1, 2	4
Broadcom (NIC: 10Gb)	6, 3	2
Intel (NIC: 10Gb)	7, 5, 1, 2	4
Intel (NIC: 10Gb)	6, 3	2
Intel (NIC: 10Gb)	7, 5, 1, 2	4
Intel (NIC: 10Gb)	6, 3	2

Table 72. Configuration 6: R2A+R4Q

Card type	Slot priority	Maximum number of cards
Inventec (VGA)	8	1
Inventec (Serial)	8	1
Inventec (LOM Card)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Foxconn (BOSS)	Integrated slot	1
Foxconn (Front PERC11 H755)	Integrated slot	1
Foxconn (Front PERC11 HBA355i)	Integrated slot	1
Mellanox (NIC: 100Gb)	6, 3	2
Broadcom (NIC: 100Gb)	6, 3	2
Intel (NIC: 100Gb)	6, 3	2
Mellanox (NIC: 25Gb)	7, 8	2
Mellanox (NIC: 25Gb)	6, 3	2
Intel (NIC: 25Gb)	7, 8	2

Table 72. Configuration 6: R2A+R4Q (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 25Gb)	7	1
Intel (NIC: 25Gb)	6, 3	2
Broadcom (Emulex) (HBA: FC64)	7, 8	2
Broadcom (Emulex) (HBA: FC64)	6, 3	2
Broadcom (Emulex) (HBA: FC32)	7, 8	2
Broadcom (Emulex) (HBA: FC32)	6, 3	2
Qlogic (Marvell) (HBA: FC32)	7, 8	2
Qlogic (Marvell) (HBA: FC32)	6, 3	2
Broadcom (NIC: 25Gb)	7, 8	2
Broadcom (NIC: 25Gb)	6, 3	2
Broadcom (NIC: 10Gb)	7, 8	2
Broadcom (NIC: 10Gb)	6, 3	2
Broadcom (NIC: 10Gb)	7, 3, 6	3
Intel (NIC: 10Gb)	7, 8	2
Intel (NIC: 10Gb)	6, 3	2

Table 73. Configuration 9: R1Q+R2A+R4R

Card type	Slot priority	Maximum number of cards
Inventec (VGA)	8	1
Inventec (Serial)	8	1
Inventec (LOM Card)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Foxconn (BOSS)	Integrated slot	1
Foxconn (Front PERC11 H755)	Integrated slot	1
Foxconn (Front PERC11 HBA355i)	Integrated slot	1
NVIDIA (GPU A2)	7, 1, 2	3
Mellanox (NIC: 100Gb)	3	1
Broadcom (NIC: 100Gb)	3	1
Intel (NIC: 100Gb)	3	1
Mellanox (NIC: 25Gb)	7, 1, 2	3
Mellanox (NIC: 25Gb)	3	1
Intel (NIC: 25Gb)	7, 1, 2	3
Intel (NIC: 25Gb)	3	1
Broadcom (Emulex) (HBA: FC64)	7, 1, 2	3

Table 73. Configuration 9: R1Q+R2A+R4R (continued)

Card type	Slot priority	Maximum number of cards
Broadcom (Emulex) (HBA: FC64)	3	1
Broadcom (Emulex) (HBA: FC32)	7, 1, 2	3
Broadcom (Emulex) (HBA: FC32)	3	1
Qlogic (Marvell) (HBA: FC32)	7, 1, 2	3
Qlogic (Marvell) (HBA: FC32)	3	1
Broadcom (NIC: 25Gb)	7, 1, 2	3
Broadcom (NIC: 25Gb)	3	1
Broadcom (NIC: 10Gb)	7, 1, 2	3
Broadcom (NIC: 10Gb)	3	1
Broadcom (NIC: 10Gb)	7, 1, 3, 2	4
Intel (NIC: 10Gb)	7, 1, 2	3
Intel (NIC: 10Gb)	3	1

Table 74. Configuration 10-2: R1P+R2A+R4R (FL)

Card type	Slot priority	Maximum number of cards
Inventec (VGA)	8	1
Inventec (Serial)	8	1
Inventec (LOM Card)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Foxconn (BOSS)	Integrated slot	1
Foxconn (Front PERC11 H755)	Integrated slot	1
Foxconn (Front PERC11 HBA355i)	Integrated slot	1
NVIDIA (GPU H100)	2	1
NVIDIA (GPU L40S)	2	1
NVIDIA (GPU L40)	2	1
NVIDIA (GPU L4)	2	1
NVIDIA (GPU A40)	2	1
NVIDIA (GPU A30)	2	1
NVIDIA (GPU A16)	2	1
Mellanox (NIC: 100Gb)	2	1
Mellanox (NIC: 100Gb)	3	1
Broadcom (NIC: 100Gb)	3	1
Broadcom (NIC: 100Gb)	2	1
Intel (NIC: 100Gb)	3	1

Table 74. Configuration 10-2: R1P+R2A+R4R (FL) (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 100Gb)	2	1
Intel (NIC: 25Gb)	2	1
Broadcom (NIC: 25Gb)	2	1
Mellanox (NIC: 25Gb)	7, 2	2
Mellanox (NIC: 25Gb)	3	1
Intel (NIC: 25Gb)	7, 2	2
Intel (NIC: 25Gb)	3	1
Broadcom (Emulex) (HBA: FC64)	7, 2	2
Broadcom (Emulex) (HBA: FC64)	3	1
Broadcom (Emulex) (HBA: FC32)	7, 2	2
Broadcom (Emulex) (HBA: FC32)	3	1
Qlogic (Marvell) (HBA: FC32)	7, 2	2
Qlogic (Marvell) (HBA: FC32)	3	1
Broadcom (NIC: 25Gb)	7, 2	2
Broadcom (NIC: 25Gb)	3	1
Broadcom (NIC: 10Gb)	7, 2	2
Broadcom (NIC: 10Gb)	3	1
Broadcom (NIC: 10Gb)	7, 3, 2	3
Intel (NIC: 10Gb)	7, 2	2
Intel (NIC: 10Gb)	3	1

Table 75. Configuration 13: R2A

Card type	Slot priority	Maximum number of cards
Inventec (LOM Card)	Integrated slot	1
Intel (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 25Gb)	Integrated slot	1
Mellanox (OCP: 25Gb)	Integrated slot	1
Broadcom (OCP: 10Gb)	Integrated slot	1
Intel (OCP: 10Gb)	Integrated slot	1
Foxconn (BOSS-N1)	Integrated slot	1
Foxconn (Front PERC11 HBA355i)	3	1
NVIDIA (OCP: 100Gb)	Integrated slot	1
Broadcom (OCP: 100Gb)	Integrated slot	1

Drive backplane

This section provides an overview of the supported drive backplanes.

Depending on your VxRail model, it supports one of the following drive backplanes:

- VxRail VP-760 supports 24 x 2.5-inch SAS, SATA, or NVMe drive backplane.
- VxRail VS-760 supports a 12 x 3.5-inch SAS or SATA drive backplane.

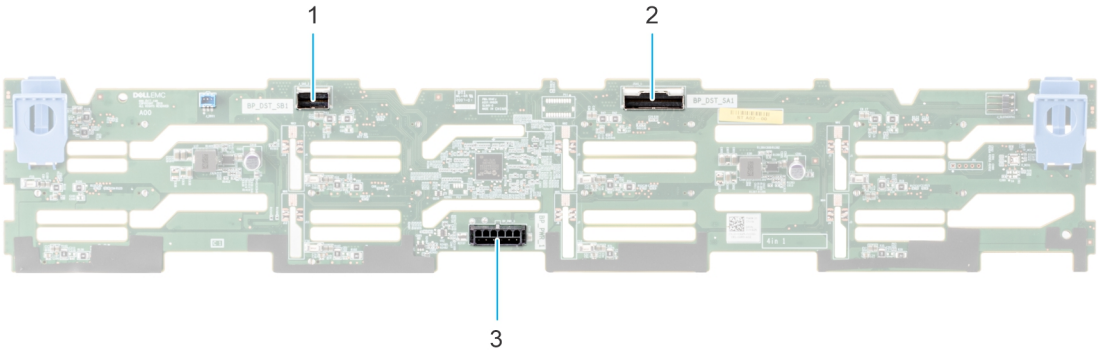

Figure 33. 12 x 3.5-inch drive backplane

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

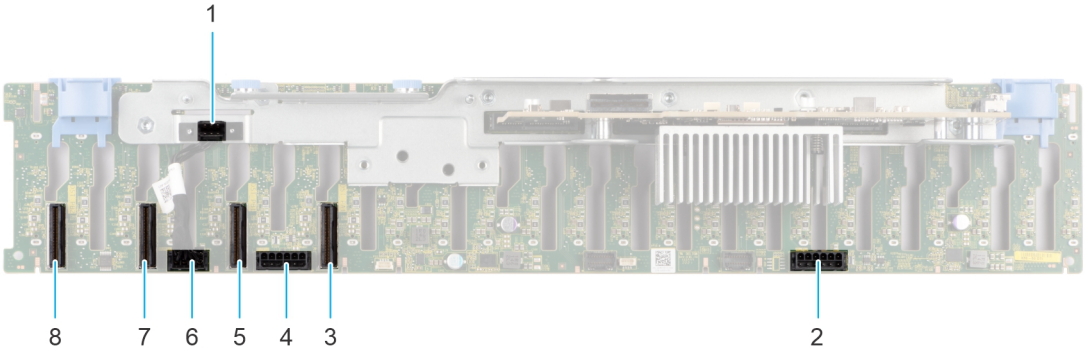

Figure 34. 24 x 2.5-inch drive backplane (front view)

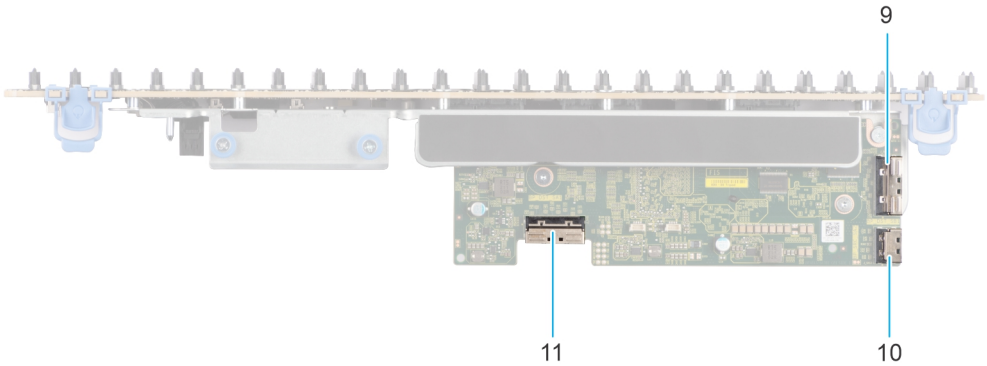

Figure 35. 24 x 2.5-inch drive backplane (top view)

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

8

Jumpers and connectors

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

System board jumpers and connectors

This section provides an overview of the system board jumpers and connectors of the VxRail VP-760 and VxRail VS-760.

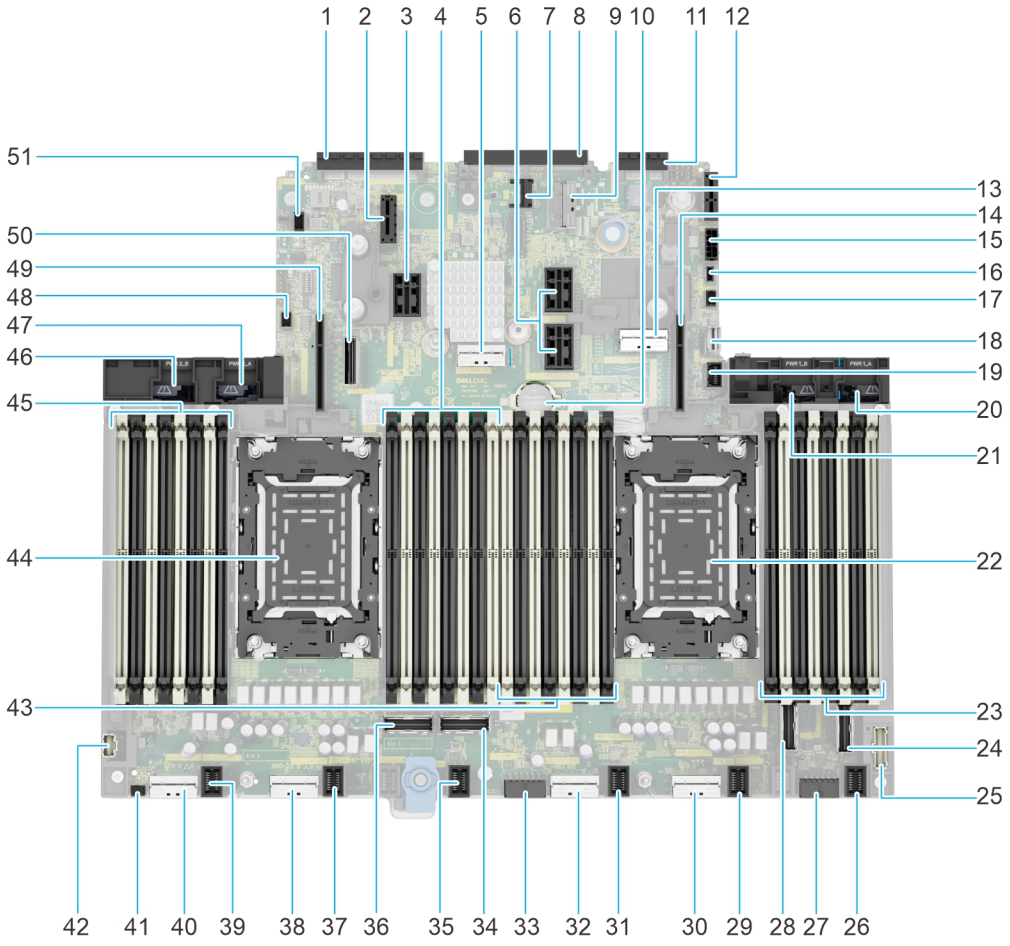

Figure 36. System board jumpers and connectors

Table 76. System board jumpers and connectors

Item	Connector	Description
1.	Rear_I/O_connector	Rear I/O connector
2.	J_R3_PCIE_PWR	Riser 3 power connector
3.	IO_RISER3 (CPU2)	Riser 3
4	B9, B1, B15, B7, B11, B3, B13, B5	DIMM for CPU 2 channels A, B, C, D

Table 76. System board jumpers and connectors (continued)

Item	Connector	Description
5.	SL10_PCH_SA1 [1]	SATA connector 10
6.	IO_RISER2_A (CPU1) and IO_RISER2_B (CPU2)	Riser 2
7.	TPM	TPM connector
8.	OCP	OCP NIC 3.0 connector
9.	SL13_CPU1_PB7	PCIe connector 13
10.	BATTERY	Coin cell battery
11.	LOM_Connector	LOM connector
12.	Internal USB	Internal USB connector
13.	SL11_CPU1_PB7	PCIe connector 11
14.	IO_RISER1 (CPU1)	Riser 1
15.	SIG_PWR_0	Power connector 0 - use for BP only
16.	BOSS_PWR	BOSS card power
17.	PSU1_SIG	PUCK sideband signal for Riser 1 GPU
18.	SL12_PCH_PA6	PCIe connector12
19.	FRONT_VIDEO	Front VGA
20.	PWR1_A	For power cable
21.	PWR1_B	For Riser 1 GPU power
22.	CPU 1	Processor 1
23.	A9, A1, A15, A7, A11, A3, A13, A5	DIMM for CPU 1 channels A, B, C, D
24.	SL8_CPU1_PA4	PCIe connector 8
25.	RGT_CP	Right control panel connector
26.	FAN_2U6	Fan 6 connector
27.	SIG_PWR_2	Power connector 2 - use for BP only
28.	SL7_CPU1_PB4	PCIe connector 7
29.	FAN_2U5	Fan 5 connector
30.	SL4_CPU1_PB2	PCIe connector 4
31.	FAN_2U4	Fan 4 connector
32.	SL3_CPU1_PA2	PCIe connector 3
33.	SIG_PWR_1	Power connector 2 - use for BP only
34.	SL6_CPU2_PA3	PCIe connector 6
35.	FAN_2U3	Fan 3 connector
36.	SL5_CPU2_PB3	PCIe connector 5
37.	FAN_2U2	Fan 2 connector
38.	SL2_CPU2_PB1	PCIe connector 2
39.	FAN_2U1	Fan 1 connector
40.	SL1_CPU2_PA1	PCIe connector 1
41.	PWRD_EN and NVRAM_CLR	Jumper

Table 76. System board jumpers and connectors (continued)

Item	Connector	Description
42.	LFT_CP	Left control panel connector
43.	A8, A16, A2, A10, A6, A14, A4, A12	DIMMs for CPU 1 channels H, G, F, E
44.	CPU 2	Processor 2
45.	B8, B16, B2, B10, B6, B14, B4, B12	DIMMs for CPU 2 channels H, G, F, E
46.	PWR2_B	For Riser 4 GPU power
47.	PWR2_A	For power cable
48.	PSU2_SIG	PUCK sideband signal for Riser 4 GPU
49.	IO_RISER4 (CPU2)	Riser 4
50.	SL9_CPU2_PA5 [1]	PCIe connector 9
51.	BAT_SIG	Battery signal connector

NOTE: The platform supports Maximum (MAX) and Mainstream (MS) system boards.

- [1] SL9_CPU2_PA5 and SL10_PCH_SA1 connectors are available only on MAX system board.
- MS system board supports CPU TDP < 250 W.
- MAX system board supports CPU TDP => 250 W.

System board jumper settings

For information about resetting the password jumper to disable a password, see Disable system and software password features.

Table 77. System board jumper settings

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

Use caution when changing the BIOS settings. The BIOS interface is designed for advanced users.

CAUTION: Changes to the settings could prevent your system from starting correctly and may result in data loss.

Disable system and software password features

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 existing passwords.

Only certified service technicians can perform many of the repairs. You should perform only troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team.

CAUTION: The warranty does not cover damage due to servicing that Dell has not authorized. Read and follow the safety instructions that are shipped with your product.

1. Power off the system and all the peripherals that are attached.
2. Disconnect the system power cable from the electrical outlet.
3. Disconnect all the peripherals that are attached to the system.
4. Remove the system cover.
5. Move the jumper on the system board from pins **2** and **4**, to pins **4** and **6**.

   NOTE: The existing passwords are not erased until the system boots with the jumper on pins **4** and **6**.

6. After moving the jumpers, replace the system cover.
7. Reconnect the peripherals, and connect the system to the electrical outlet.
8. Power on the system.
9. Power the system off.
10. Disconnect the system power cable from the electrical outlet.
11. Disconnect all the peripherals that are attached to the system.
12. Remove the system cover.
13. Move the jumper on the system board from pins **4** and **6**, to pins **2** and **4**.

    NOTE: If a new system or setup password is entered with the jumper remaining on pins **4** and **6**, the system disables the password the next time it boots.

14. After moving the jumpers, replace the system cover.
15. Reconnect the peripherals, and connect the system to the electrical outlet.
16. Power on the system.
17. When prompted, assign a new system or setup password.

9

System diagnostics and indicator codes

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

The following section contains information about the chassis LEDs, and the indicator codes for your VxRail.

Status LED indicators

The status LED indicators are located on the chassis, and they indicate the condition of the system. If any error occurs, the indicators turn solid amber in color.

The following figure and table describes the status LED indicators and their corrective actions:

Figure 37. Status LED indicators

Table 78. Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the system event log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air shroud, or back filler bracket have been removed. • The ambient temperature is too high. • External airflow is obstructed. If the problem persists, see Dell Technologies Support.
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the system event log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU. If the problem persists, see Dell Technologies Support.

Table 78. Status LED indicators and descriptions (continued)

Icon	Description	Condition	Corrective action
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the system event log or system messages for the location of the failed memory. Reseat the memory module. If the problem persists, see Dell Technologies Support.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card. If the problem persists, see Dell Technologies Support.

System health and system ID indicator codes

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

The following figure and table describes the system health and system ID indicator codes:

Figure 38. System health and system ID indicator

Table 79. System health and system ID indicator codes

System health and System ID indicator code	Description
Solid blue	The system is powered on, is healthy, and the system ID mode is not active. Press the **System health** and **System ID** button to switch to System ID mode.
Blinking blue	The System ID mode is active. Press the **System health** and **System ID** button to switch to System health mode.
Solid amber	The system is in Fail-safe mode. If the problem persists, see Dell Technologies Support.
Blinking amber	Indicates that the system is experiencing a fault. Check the System event log for specific error messages. For event and error message information, go to Quick

Table 79. System health and system ID indicator codes (continued)

System health and System ID indicator code	Description
	Resource Locator, click **Look Up**, **Error Code**. Enter the error code, and then click **Look it up**.

iDRAC Direct LED indicator codes

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

You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 0.91 m (3 ft). Cable quality can affect the performance.

The following table describes the iDRAC Direct LED indicator codes when the iDRAC Direct port is active:

Table 80. iDRAC Direct LED indicator codes

iDRAC Direct LED indicator code	Condition
Solid green for two seconds	The laptop or tablet is connected.
Blinking green (on for two seconds and off for two seconds)	The connected laptop or table is recognized.
LED Indicator off	The laptop or tablet is unplugged.

iDRAC Quick Sync 2 indicator codes

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

The following figure and table describes the conditions and corrective actions for the iDRAC Quick Sync 2 indicators:

Figure 39. iDRAC Quick Sync 2 indicator

Table 81. iDRAC Quick Sync 2 indicators and descriptions

iDRAC Quick Sync 2 indicator code	Condition	Corrective action
Off (default state)	Indicates that the iDRAC Quick Sync 2 feature is powered off. Press the iDRAC Quick Sync 2 button to power on the iDRAC Quick Sync 2 feature.	If the LED fails to power on, reseat the left control panel flex cable and check. If the problem persists, see Dell Technologies Support.
Solid white	Indicates that iDRAC Quick Sync 2 is ready to communicate. Press the iDRAC Quick Sync 2 button to power off.	If the LED fails to power off, restart the system. If the problem persists, see Dell Technologies Support.
Blinks white rapidly	Indicates data transfer activity.	If the indicator continues to blink indefinitely, see Dell Technologies Support.
Blinks white slowly	Indicates that the firmware update is in progress.	If the indicator continues to blink indefinitely, see Dell Technologies Support.

Table 81. iDRAC Quick Sync 2 indicators and descriptions (continued)

iDRAC Quick Sync 2 indicator code	Condition	Corrective action
Blinks white five times rapidly and then powers off	Indicates that the iDRAC Quick Sync 2 feature is disabled.	Check if the iDRAC Quick Sync 2 feature is disabled by iDRAC. If the problem persists, see Dell Technologies Support.
Solid amber	Indicates that the system is in fail-safe mode.	Restart the system. If the problem persists, see Dell Technologies Support.
Blinking amber	Indicates that the iDRAC Quick Sync 2 hardware is not responding properly.	Restart the system. If the problem persists, see Dell Technologies Support.

NIC indicator codes

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

The following figure and table describes the condition of each NIC indicator:

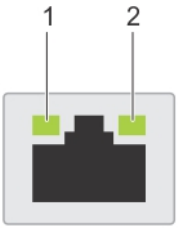

Figure 40. NIC indicator

1. Link LED indicator
2. Activity LED indicator

Table 82. NIC indicator codes

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

PSU indicator codes

AC and DC PSUs have an illuminated translucent handle that serves as an indicator. The indicator shows if power is present or if a power fault has occurred.

The following figure and table describes the conditions of the PSU indicators:

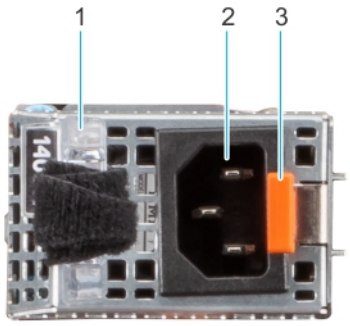

Figure 41. PSU

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

Table 83. PSU status indicator codes

Power indicator codes	Condition
Green	A valid power source is connected to the PSU, and the PSU is operational.
Blinking amber	An issue with the PSU.
Not powered on	Power is not connected to the PSU.
Blinking green	PSU firmware update is in process. Do not disconnect the power cable or unplug the PSU when updating firmware. **CAUTION: If the firmware update is interrupted, the PSUs do not function.**
Blinking green and powers off	When hot-plugging a PSU, it blinks green five times at a rate of 4 Hz and powers off. It indicates a PSU mismatch due to efficiency, feature set, health status, or supported voltage. If two PSUs are installed, verify that: ● Both PSUs have the same type of label. For example, Extended Power Performance (EPP) label. ● The PSUs are of the same type and have the same maximum output power. Do not mix PSUs from previous generations of PowerEdge servers, even if the PSUs have the same power rating. **CAUTION: Mixed PSUs may cause a PSU mismatch condition or failure to power on the system.** When correcting a PSU mismatch, replace the PSU with the blinking indicator. Do not swap the PSU to make a matched pair. **CAUTION: If the PSU is swapped, an erroneous condition may occur and cause an unexpected system shutdown.** To change from a high output configuration to a low output configuration or conversely, you must power off the system. AC PSUs support both 240 V and 120 V input voltages except for Titanium PSUs, which support only 240 V. **CAUTION: When two identical PSUs receive different input voltages, they can output different wattages and trigger a mismatch.**

Drive indicator codes

The LEDs on the drive carrier indicate the state of each drive.

Each drive carrier has two LEDs:

- An activity LED (green)

- A status LED (bicolor, green, and amber)

Whenever you access the drive, the activity LED blinks.

The following figure and table describes the condition of the drive indicators:

Figure 42. Drive indicators

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

If the drive is in the AHCI mode, the status LED indicator does not power on. Storage Spaces Direct manages the drive status indicator behavior. Not all drive status indicators may be used.

Table 84. Drive indicator codes

Drive status indicator code	Condition
Blinks green twice per second	An identified drive is preparing for removal.
Not powered on	The drive is ready for removal. **NOTE:** The drive status indicator remains off until all drives are initialized after the system is powered on. Drives are not ready for removal during this time.
Blinks green, amber, and then powers off	An unexpected drive failure has occurred.
Blinks amber four times per second	The drive has failed.
Blinks green slowly	The drive is rebuilding.
Solid green	The drive is online.
Blinks green for three seconds, amber for three seconds, and then powers off after six seconds.	The rebuild has stopped.

Use system diagnostics

If you experience an issue with the system, run the system diagnostics before contacting Dell for technical support. You can run system diagnostics is to test the system hardware without using additional equipment or risking data loss. If you are unable to fix the issue, support personnel use the diagnostics results to help you solve the issue.

Dell Embedded System Diagnostics

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

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

The Dell Embedded System Diagnostics provide a set of options for particular device groups or devices that allow you to:

- Run tests automatically or in an interactive mode.
- Repeat the 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 indicate the tests are completed successfully.
- View error messages that indicate issues that are encountered during testing.

The following test options are available:

- Run the Dell Embedded System Diagnostics from the Boot Manager. For more information, see Run the Dell Embedded System Diagnostics from Boot Manager.
- Run the Dell Embedded System Diagnostics from the Dell Lifecycle Controller. For more information, see Run the Dell Embedded System Diagnostics from the Dell Lifecycle Controller.

Run the Dell Embedded System Diagnostics from Boot Manager

If your system does not boot, run the Dell Embedded System Diagnostics (ePSA) from the Boot Manager.

1. During the boot process, press F11.
2. Use the up arrow and down arrow keys to select **System Utilities** > **Launch Diagnostics**.

Run the Dell Embedded System Diagnostics from the Dell Lifecycle Controller

If your system does not boot, run the Dell Embedded System Diagnostics (ePSA) from the Dell Lifecycle Controller.

1. During the boot cycle, press F10.
2. Select **Hardware Diagnostics** > **Run Hardware Diagnostics**.

The **ePSA Pre-boot System Assessment** window displays, lists the devices that are detected in the system, and then runs the diagnostic test on the detected devices.

System diagnostic controls

This section describes the details of the options available on the **System diagnostic controls** screen.

The following table describes the system diagnostic control details:

Table 85. 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.

System board diagnostic LED indicators

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

For information about the different LED indicator sequences and description, see the interactive **LED pattern decoder tool**: Blink.

Enhanced Preboot System Assessment

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

Dell Embedded System Diagnostics

The Embedded System Diagnostics, also known as Enhanced Preboot System Assessment (ePSA) diagnostics, provides a set of options for particular device groups or devices that allow you to:

- Run tests automatically or in an interactive mode.
- Repeat tests
- Display or save test results.
- Introduce more test options for extra information about the failed devices, run a thorough test.
- View status messages that inform you if tests are completed successfully.
- View error messages that inform you of issues encountered during testing.

The following test options are available:

- Run the Dell Embedded System Diagnostics from the Boot Manager
- Run the Embedded System Diagnostics from the Dell Lifecycle Controller

To run the Dell Embedded System Diagnostics from the Boot Manager, see the Run the Embedded System Diagnostics from Boot Manager section.

To run the Embedded System Diagnostics from the Dell Lifecycle Controller, see the Run the Embedded System Diagnostics from the Dell Lifecycle Controller section.

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Additional support

Dell offers recycle services and automated support with secure connect gateway.

Product take back and recycling services are offered for this product in certain countries. To dispose of system components, see How to Recycle.

Automated support with secure connect gateway

Secure connect gateway automates technical support for your Dell server, storage, and networking devices.

Secure connect gateway provides the following benefits:

- Automated issue detection: The secure connect gateway monitors your devices and automatically detects hardware issues, both proactively and predictively.
- Automated case creation: When an issue is detected, the secure connect gateway automatically opens a support case with Dell Technical Support.
- Automated diagnostic collection: Secure connect gateway automatically collects system state information from your devices and uploads it securely to Dell. Dell Technical Support uses this information to troubleshoot the issue.
- Proactive contact: A Dell Technical Support agent contacts you about the support case and helps you resolve the issue.

The benefits vary depending on the Dell Service entitlement that you purchased. For more information, see Secure Connect Gateway.