Dell VxRail™ E560, E560F, and E560N

Technical Specifications

June 2023
Rev. 2

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

Date	Revision	Description of change
June 2023	2	Minor updates.
October 2021	1	Initial release.

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Introduction

Technical and environmental specifications are provided for the VxRail E560 Series system.

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 Technologies systems and software
- VMware virtualization products
- Data centers and infrastructure

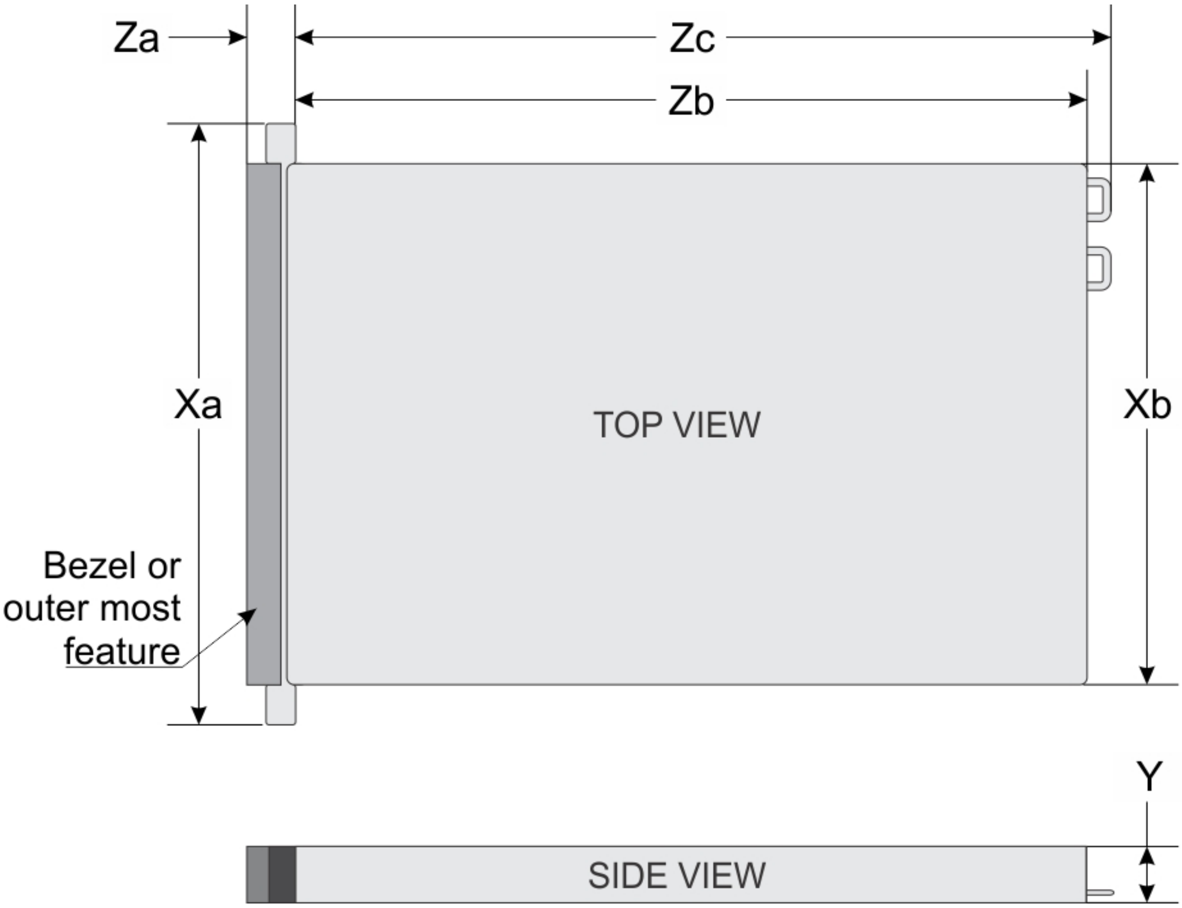
See the *Installation and Service Manual* for your VxRail for procedures to install your VxRail. See the VxRail Documentation Quick Reference List for a complete list of VxRail documents.

Technical specifications

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

Chassis dimensions

The following figure provides chassis dimensions:



The following table provides details of the dimensions of the VxRail:

VxRail	Xa	Xb	Y	Za (with bezel)	Za (w/o bezel)	Zb*	Zc
10 x 2.5 inches	482.0 mm (18.9 inches)	434.0 mm (17.08 inches)	42.8 mm (1.68 inches)	35.84 mm (1.41 inches)	22.0 mm (0.87 inches)	733.82 mm (29.61 inches)	772.67 mm (30.42 inches)

Chassis weight

System	Maximum weight (with all hard drives/SSDs)
VxRail E560	21.9 kg

System	Maximum weight (with all hard drives/SSDs)
	(48.28 lbs)

Processor specifications

The VxRail E560, E560F, and E560N supports the following processors:

- Up to two Intel Xeon Processor Scalable Family processors
- Up to two 2nd generation Intel Xeon Scalable processors

Power supply unit specifications

The VxRail E560, E560F, and E560N supports two AC or DC power supply units (PSUs).

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage
1100 W DC	Gold	4416 BTU/hr	50/60 Hz	–(48–60) V DC
1100 W Mixed Mode HVDC (for China and Japan only)	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC and 200–380 V DC
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging

If a VxRail with 1100 W AC or HVDC PSU operates from 100 to 120V, the power rating per PSU is derated to 1050 W.Heat dissipation is calculated using the PSU wattage rating.

This is designed to connect to the IT power systems with a phase to phase voltage not exceeding 240 V.

Battery specifications

The VxRail E560, E560F, and E560N supports CR 2032 3.0-V lithium coin cell battery.

Expansion bus specifications

The VxRail E560, E560F, and E560N supports PCI express (PCIe) generation 3 expansion cards, which must be available on the system board by using expansion card risers.

The following table provides information about the expansion card riser configuration for VxRail E560, E560F, and E560N:

Supported VxRail configurations	Riser configuration and supported risers	Slot description	PCIe slots (Height and length)	Processor connection
VxRail E560, E560F, and E560N	Riser configuration 2 (1A+2A)	Three x16 slots	Slot 1: x16 low profile, half length	Processor 1
			Slot 2: x16 low profile, half length	Processor 1
			Slot 3: x16 low profile, half length	Processor 2
	Riser configuration 4 (1A)	Two x16 slots	Slot 2: x16 low profile, half length	Processor 1

Memory specifications

The following table shows the memory specifications for the VxRail E560, E560F, and E560N:

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
			Minimum RAM	Maximum RAM	Minimum RAM	Maximum RAM
LRDIMM	Quad rank	64 GB	256 GB	768 GB	512 GB	1536 GB
LRDIMM	Quad rank	128 GB	512 GB	1.5 TB	1 TB	3 TB
RDIMM	Dual rank	16 GB	96 GB	192 GB	192 GB	384 GB
RDIMM	Dual rank	32 GB	192 GB	384 GB	384 GB	768 GB
RDIMM	Dual rank	64 GB	256 GB	768 GB	512 GB	1536 GB

NOTE:
- If your VxRail is running on Intel Xeon Scalable processors, use 64 GB LRDIMM.
- If your VxRail is running on 2nd generation Intel Xeon Scalable processors, use 64 GB RDIMM.

Storage controller specifications

The VxRail E560, E560F, and E560N supports the following internal storage controller cards: HBA330 and Boot Optimized Server Storage (BOSS-S1).

Hard drive specifications

The VxRail E560, E560F, and E560N supports NVMe, SAS, SATA, Nearline SAS hard drives or SSDs.

For the VxRail E560, E560F, and E560N, up to ten 2.5 inch, hot swappable NVMe, SAS, SAS/SATA SSD, or Nearline SAS hard drives are supported.

Ports and connectors specifications

The VxRail E560, E560F, and E560N supports USB ports, NIC ports, VGA ports, serial connector, and an IDSDM card that supports two internal dual SD module.

USB ports

The following table provides more information about the USB specifications:

VxRail	Front panel	Back panel	Internal
Ten hard drive	Two 4-pin, USB 2.0-compliant port	Two 9-pin, USB 3.0-compliant ports	One 9-pin, USB 3.0-compliant ports
	One 5-pin micro USB 2.0 management port	N/A	N/A

The micro USB 2.0-compliant port on the front panel can only be used as an iDRAC Direct or a management port.

NIC ports

The VxRail E560, E560F, and E560N supports four Network Interface Controller (NIC) ports on the back panel, which is available in one of the following NIC configurations:

- Four RJ45 ports that support 100 M, 1 G, and 10 Gbps
- Four SFP+ ports that support 10 Gbps

Serial port

The serial connector connects a serial device to the VxRail. The VxRail E560, E560F, and E560N supports one serial connector on the back panel, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant.

Video graphic array ports

The Video Graphic Array (VGA) port enables you to connect the VxRail to a VGA display. The VxRail E560, E560F, and E560N supports one 15-pin VGA port on the front and back of the VxRail.

Video specifications

The VxRail E560, E560F, and E560N supports integrated VGA controller with 4 MB SPI capacity.

The following table describes the supported video resolution options:

Resolution	Refresh rate (Hz)	Color depth (bits)
640 x 480	60, 70	8, 16, 32
800 x 600	60, 75, 85	8, 16, 32
1024 x 768	60, 75, 85	8, 16, 32
1152 x 864	60, 75, 85	8, 16, 32
1280 x 1024	60, 75	8, 16, 32
1440 x 900	60	8, 16, 32
1920 x 1200	60	8, 16, 32

Internal dual SD Module

The Internal Dual SD module (IDSDM) provides a redundant SD card solution. The IDSDM card offers the following feature:

- Dual card operation — Maintains a mirrored configuration by using SD cards in both the slots and provides redundancy.

ⓘ **NOTE:** The IDSDM on the VxRail appliance is pre-configured for appliance bare metal recovery. It is recommended not to change any settings.

Environmental specifications

For additional information about environmental measurements for specific appliance configurations, see Dell.com/environmental_datasheets.

The following table shows the optimal working temperature specifications:

Temperature	Specifications
Storage	–40 °C–65°C (–40 °F–149°F)
Continuous operation (for altitude less than 950 m or 3117 ft)	10 °C–35°C (50 °F–95°F) with no direct sunlight on the equipment. ⓘ **NOTE:** Maximum of 205 W, 28 core processor is supported in appliances. ⓘ **NOTE:** Certain configurations may have ambient temperature restrictions. For more information,, see the Ambient temperature limitations section.
Fresh air	For information about fresh air, see Expanded Operating Temperature section.

Temperature	Specifications
Maximum temperature gradient (operating and storage)	20°C/h (68°F/h)

The following table shows the relative humidity specification during operations and storage:

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

The following table shows the maximum vibration specifications during operations and storage:

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

The following table shows the maximum shock specifications during operations and storage:

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

The following table shows the maximum altitude specifications during operations and storage.

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

The following table shows the operating temperature de-rating specifications:

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

Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any equipment damage or failure from particulates and gaseous contamination. If the levels of particulates or gaseous pollution exceed the specified limitations and result in equipment damage or failure, you may need to rectify the environmental conditions. Re-mediation of environmental conditions is the responsibility of the customer.

Table 1. 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.

Table 1. Particulate contamination specifications (continued)

Particulate contamination	Specifications
	ⓘ **NOTE:** This condition applies only to data center environments. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor. ⓘ **NOTE:** Air entering the data center must have MERV11 or MERV13 filtration.
Conductive dust	Air must be free of conductive dust, zinc whiskers, or other conductive particles. ⓘ **NOTE:** This condition applies to data center and non-data center environments.
Corrosive dust	● Air must be free of corrosive dust. ● Residual dust present in the air must have a deliquescent point less than 60% relative humidity. ⓘ **NOTE:** This condition applies to data center and non-data center environments.

Table 2. Gaseous contamination specifications

Gaseous contamination	Specifications
Copper coupon corrosion rate	<300 Å/month per Class G1 as defined by ANSI/ ISA71.04-1985.
Silver coupon corrosion rate	<200 Å/month as defined by AHSRAE TC9.9.

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

Standard operating temperature

The standard operating temperature for altitude less than 950 meters or 3117 feet ranges from 10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment.

Expanded operating temperature

The following table shows expanded operating temperature specifications:

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

When operating in the expanded temperature range:

- The performance of the VxRail may be impacted.

- The ambient temperature warnings may be reported in the System event log.

Expanded operating temperature restrictions

- Do not perform a cold startup below 5°C.
- The operating temperature specified is for a maximum altitude of 3050 m (10,000 ft).
- Redundant power supply units are required.
- Non-Dell Technologies qualified peripheral cards and/or peripheral cards greater than 25 W are not supported.

Thermal restrictions

The following table lists the configurations required for efficient cooling:

Config	# of processor	Heatsink	Proc/DIMM blank	DIMM blanks	Max number of DIMM blanks	Fan
2.5 inch hard drives x 10	1	One 1U standard heat sink for CPU ≤ 165 W	Not required	Required for processor 1	11 blanks	Five standard fans
		One 1U 2-pipe heat sink for CPU=200/205 W	Required			Eight high performance fans
	2	Two 1U standard heat sink for CPU ≤ 165 W	Not required			Eight standard fans
		Two 1U 2-pipe heat sink for CPU=200/205 W		Required	22 blanks	Eight high performance fans

Ambient temperature limitations

The ambient temperature limit must be adhered to ensure proper cooling and to avoid excess processor throttling, which may impact performance.

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

Appliance	Front backplane	Processor Thermal Design Power	Processor Heat Sink	Fan Type	Ambient Restriction
VxRail E560, E560F, and E560N	10 x 2.5-inch SAS/ SATA hard drives	200 W, 205 W	2 pipe 1U high performance	High-performance fan	30°C