

Dell EMC PowerEdge XR11 and XR12

Technical Guide

Notes, cautions, and warnings

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

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

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

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System overview

The Dell™ PowerEdge™ XR11 and XR12 are Dell's latest rugged servers, designed to run complex workloads using highly scalable memory, I/O, and network options in locations constrained by space or environmental challenges.

The PowerEdge XR11 is a 1-socket, short-depth 1U rugged server.

The PowerEdge XR12 is a 1-socket, short-depth 2U rugged server.

The systems feature the 3rd Generation Intel Xeon Scalable Processor with up to 8 DIMMs, PCI Express® (PCIe) 4.0 enabled expansion slots, and a choice of network interface technologies to cover NIC. The PowerEdge XR11 and XR12 systems are unique platforms designed to optimize computing at the edge with performance in mind. The systems are well suited to operate at high temperatures in harsh or space-constrained environments, and are capable of handling demanding processing workloads and applications such as for the Telecom, Military and Defense industries, as well as, for the commercial sector.

Topics:

- [Key workloads](#)
- [New technologies](#)

Key workloads

There are a diverse set of applications that operate at the Edge and each of these applications has a different set of requirements.

- Retail Applications - Built with a minimum footprint and enterprise compute to optimize expensive retail space and deliver a targeted virtual experience, including video surveillance analytics, point of sale analytics and IoT device aggregation and analytics
- Telco / 5G - Compact and rugged design capable of supporting accelerators for remote private networks requiring AI/ML/DL type workloads. Use cases include MEC, CDN and VRAN
- Military - Reliable DC power in a hardened chassis to support mobile data centers deployed globally to collect and analyze reconnaissance data

New technologies

Table 1. New technologies featured on XR11 and XR12


Technology	Detailed description
3rd Generation Intel® Xeon Scalable Processor	<ul style="list-style-type: none"> • 10nm process technology • Maximum of 36 cores • Maximum of 3.5 GHz • Maximum of 64 lanes of PCI Express 4.0 links capable of 16 GT/s • Maximum TDP: 225 W Consult the Processor section for specific SKU details.  NOTE: TDP support will vary based on the maximum operating temperature.
3200 MT/s DDR4 Memory	<ul style="list-style-type: none"> • Up to 8 DDR4 channels with 1 DPC; 8 DIMMs in total • Speed up to 3200 MT/s (configuration-dependent) • Supports DDR4 ECC RDIMM (max: 64 GB) and DDR4 ECC LRDIMM (max: 128 GB)
Persistent Memory	128 GB Intel Optane DC Persistent Memory 200 Series support on two configurations: Number of DDR4 DIMMs plus number of Intel Optane Persistent Memory 200 Series DIMMs

Table 1. New technologies featured on XR11 and XR12 (continued)

Technology	Detailed description
	<ul style="list-style-type: none"> ● 4+4 ● 6+1
Chassis Orientation	<p>The XR11 and XR12 have two chassis options:</p> <ol style="list-style-type: none"> 1. Rear accessed chassis also called Normal Airflow (NAF) chassis, where power supplies and network cards are in the rear 2. Front accessed chassis also called Reverse Airflow (RAF) chassis, where power supplies and network cards are in the front <p>The location of the control panel changes with the chassis orientation.</p>
iDRAC9 w/ Lifecycle Controller	<p>The embedded systems management solution for Dell servers features hardware and firmware inventory and alerting, in-depth memory alerting, faster performance, a dedicated gigabit port and many more features.</p>
Power Supplies	<ul style="list-style-type: none"> ● 60 mm dimension (new PSU form factor for new generation of servers) ● Platinum 800 W (WRAC and MM 240 V) ● *1100 W -48 V DC ● *Platinum 1400 W (WRAC and MM 240 V) <p>i NOTE: *These PSUs are available in Reverse Airflow design for use in Front Accessed chassis configuration and in Normal Airflow for use in Rear Accessed configuration.</p>

System features

Table 2. System features of XR11 and XR12

Feature	XR11	XR12
Processor	1x 3rd Generation Intel® Xeon Scalable Processor	1x 3rd Generation Intel® Xeon Scalable Processor
Chipset	Intel Lewisburg PCH (Intel® C620 Series Chipset)	Intel Lewisburg PCH (Intel® C620 Series Chipset)
Memory	8x RDIMM, LRDIMM DDR4 with ECC Two Intel Optane Persistent Memory 200 series configurations: Number of DDR4 DIMMs plus number of Intel Optane Persistent Memory 200 series DIMMs <ul style="list-style-type: none"> • 4+4 • 6+1 	8x RDIMM, LRDIMM DDR4 with ECC Two Intel Optane Persistent Memory 200 series configurations: Number of DDR4 DIMMs plus number of Intel Optane Persistent Memory 200 series DIMMs <ul style="list-style-type: none"> • 4+4 • 6+1
Disk Drives	4x 2.5 - inch - 12 GB SAS, 6 GB SATA Up to 4x NVMe	6x 2.5-inch - 12 GB SAS, 6 GB SATA Up to 6x NVMe
Storage Controllers	<ul style="list-style-type: none"> • PERC 10.5: H345 (Adapter) • PERC 11: HBA355i (Adapter), H755 (Adapter) • External Adapters: H840; HBA355e • Software RAID: S150 • BOSS-S1 (RAID) 	<ul style="list-style-type: none"> • PERC 10.5: H345 (Adapter) • PERC 11: HBA355i (Adapter), H755 (Adapter) • External Adapters: H840; HBA355e • Software RAID: S150 • BOSS-S1 (RAID)
External Storage Supported	ME484, MD1420 and MD1400	ME484, MD1420 and MD1400
M.2 SSD	Up to 2x M.2 Boot Optimized Storage Subsystem (BOSS-S1)	Up to 2x M.2 Boot Optimized Storage Subsystem (BOSS-S1)
PCIe Slots	Two riser configuration options: <ul style="list-style-type: none"> • 3x PCIe Gen4 (one x8 PCIe Gen4 + two x16 PCIe Gen4) • 3x PCIe Gen4 (one x16 PCIe Gen4 + two x16 PCIe Gen4) 	Five riser configuration options: <ul style="list-style-type: none"> • 3x PCIe Gen4 (one x8 PCIe Gen4 + two x16 PCIe Gen4) • 3x PCIe Gen4 (one x16 PCIe Gen4 + two x16 PCIe Gen4) • 4x PCIe Gen 4 (three x8 PCIe Gen4 + one x16 PCIe Gen 4) • 4x PCIe Gen 4 (two x8 PCIe Gen 4 + two x16 PCIe Gen 4) • 5x PCIe Gen4 (five x8 PCIe Gen4)
Integrated LOM	4x 25 GbE SFP+ (Broadcom Thor)	4x 25 GbE SFP+ (Broadcom Thor)
Chassis Orientation	<p>XR11 has two chassis options:</p> <ol style="list-style-type: none"> 1. Rear Accessed chassis also called Normal Airflow (NAF) chassis where power supplies and network cards are in the rear. <p>NOTE: Network, Serial, VGA, Power supplies and PCIe Slots are accessible in the rear of the platform and the Hard Drives, Power button, Status LED, USB and Management port are in the front of the system.</p>	<p>XR12 has two chassis options:</p> <ol style="list-style-type: none"> 1. Rear Accessed chassis also called Normal Airflow (NAF) chassis where power supplies and network cards are in the rear. 2. Front Accessed chassis also called Reverse Airflow (RAF) chassis where power supplies and network cards are in the front. <p>NOTE: Network, Serial, VGA ports, Power supplies, Hard drives and PCIe Slots are accessible in the rear of the platform.</p>

Table 2. System features of XR11 and XR12 (continued)

Feature	XR11	XR12
	<p>2. Front Accessed chassis also called Reverse Airflow (RAF) chassis where power supplies and network cards are in the front.</p> <p>i NOTE: Power button, Network ports, Serial, VGA and PCIe Slots are accessible in the front of the platform and the Hard Drives and Status LED are in the rear of the system.</p> <p>The location of the control panel changes with the chassis orientation.</p>	<p>i NOTE: Network, Serial, VGA ports, Power supplies, Hard drives and PCIe Slots are accessible in the front of the platform.</p>
I/O Ports	<p>Rear Accessed/Normal Airflow (NAF) Chassis</p> <ul style="list-style-type: none"> ● Front: <ul style="list-style-type: none"> ○ one standard USB 2.0 port ○ one micro USB 2.0 port dedicated to iDRAC management ● Rear: <ul style="list-style-type: none"> ○ one standard USB 3.0 port ○ one standard USB 2.0 port ○ one Dedicated 1GbE ○ one Serial port ○ one VGA port ● Internal: one standard USB 3.0 port on Riser 1B 	<p>Rear Accessed/Normal Airflow (NAF) Chassis</p> <ul style="list-style-type: none"> ● Front: <ul style="list-style-type: none"> ○ one standard USB 2.0 port ○ one micro USB 2.0 port dedicated to iDRAC management ● Rear: <ul style="list-style-type: none"> ○ one standard USB 3.0 port ○ one standard USB 2.0 port ○ one Dedicated 1GbE ○ one Serial port ○ one VGA port ● Internal: one standard USB 3.0 port on Riser 1B
	<p>Front Accessed/Reverse Airflow (RAF) Chassis</p> <ul style="list-style-type: none"> ● Front: one standard USB 3.0 port, one standard USB 2.0 port, one micro USB 2.0 port dedicated to iDRAC management, one Dedicated 1GbE, one Serial port, one VGA port ● Internal: one standard USB 3.0 port on Riser 1B 	<p>Front Accessed/Reverse Airflow (RAF) Chassis</p> <ul style="list-style-type: none"> ● Front: one standard USB 3.0 port, two standard USB 2.0 ports, one micro USB 2.0 port dedicated to iDRAC management, one Dedicated 1GbE, one Serial port, one VGA port ● Internal: one standard USB 3.0 port on Riser 1B
Rack Height	1U	2U
Power Supplies	<p>800 W (WRAC and MM 240 V), *1400 W (WRAC and 240 V), *1100 W (-48 V DC)</p> <p>i NOTE: *These PSUs are also available in reverse airflow design to support Front Accessed chassis configurations.</p>	<p>800 W (WRAC and MM 240 V), *1400 W (WRAC and 240 V), *1100 W (-48 V DC)</p> <p>i NOTE: *These PSUs are also available in reverse airflow design to support Front Accessed chassis configurations.</p>
System Management	<ul style="list-style-type: none"> ● iDRAC9 ● Lifecycle Controller ● OpenManage ● OME Power Manager ● Digital License Key 	<ul style="list-style-type: none"> ● iDRAC9 ● Lifecycle Controller ● OpenManage ● OME Power Manager ● Digital License Key
Internal GPU	Up to 2x 70 W (SW/FH/HL)	Up to 2x 75 W/150 W (SW) and 2x 300 W (DW/FH/FL) based on riser configuration
Availability	<ul style="list-style-type: none"> ● Hot-plug Drives ● Redundant Cooling ● Hot-plug Redundant Power Supplies (1+1) 	<ul style="list-style-type: none"> ● Hot-plug Drives ● Redundant Cooling ● Hot-plug Redundant Power Supplies (1+1)

Chassis views and features

Topics:

- Chassis views

Chassis views

Front view of XR11 front accessed chassis

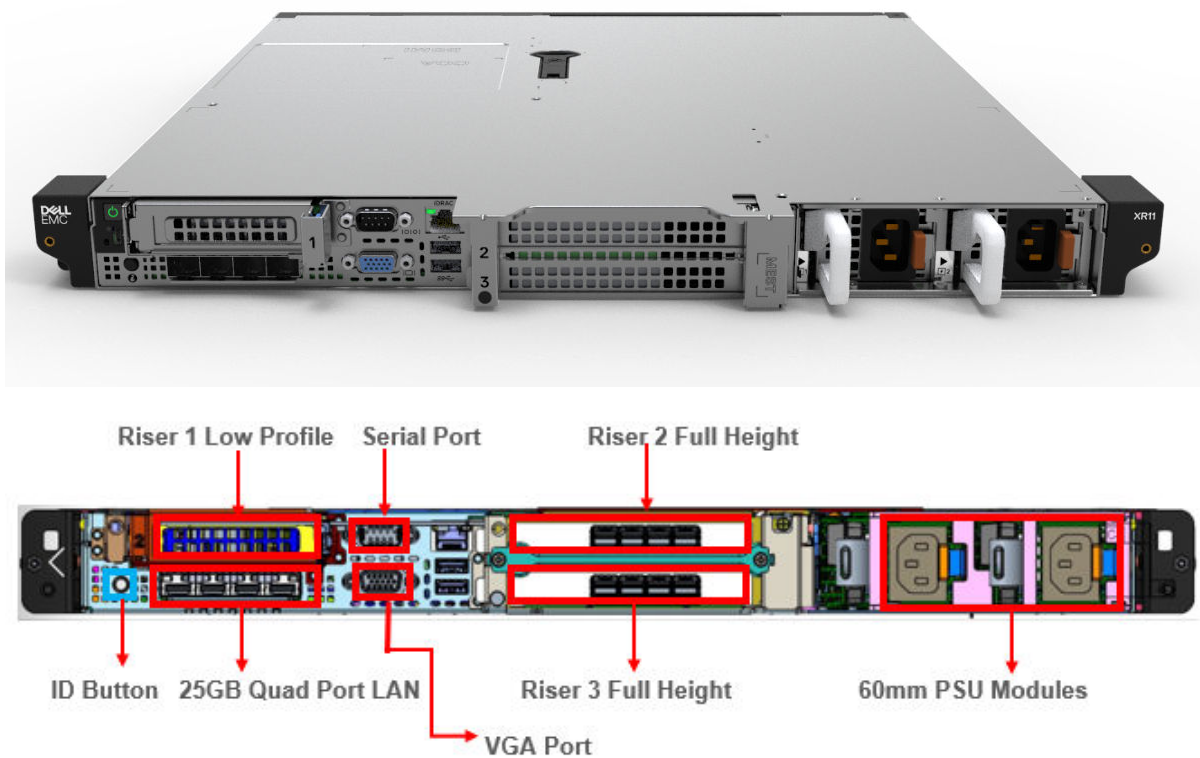


Figure 1. XR11 Front accessed chassis front views

Front view of XR11 rear accessed chassis



Figure 2. XR11 Rear accessed chassis front view, no bezel



Figure 3. XR11 Rear accessed chassis view with front bezel

Front view of XR12 front accessed chassis

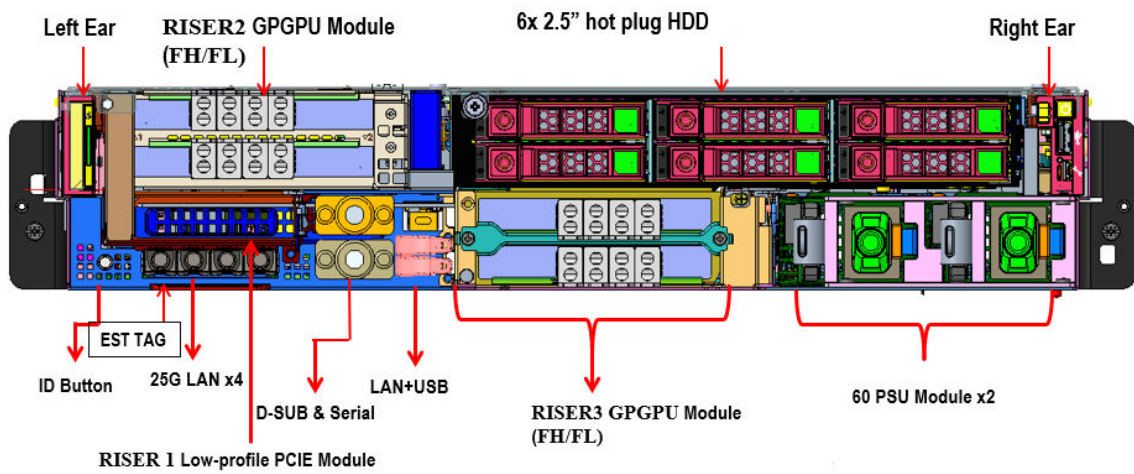


Figure 4. XR12 Front accessed chassis front views



Figure 5. XR12 Front accessed chassis, front-side view with filter bezel

Front view of XR12 rear accessed chassis

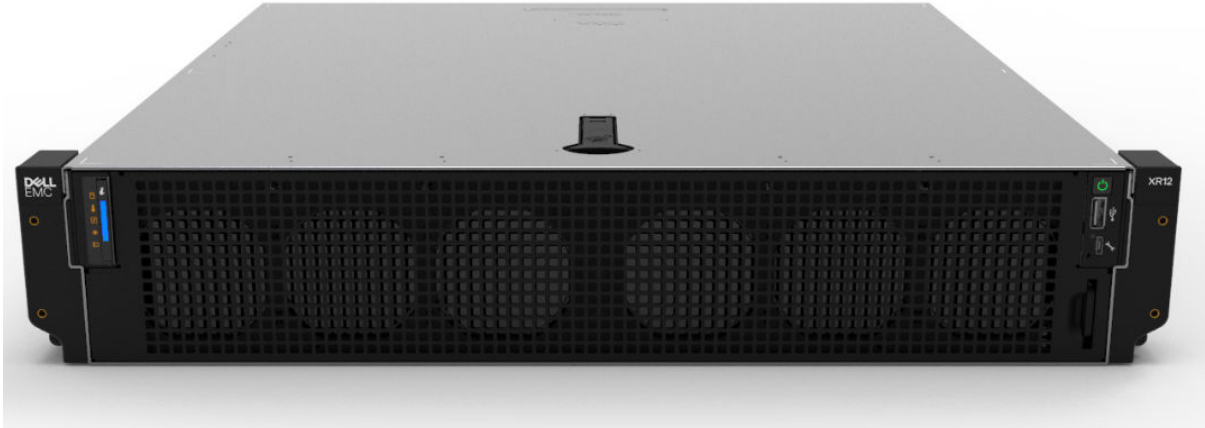


Figure 6. XR12 Rear accessed chassis front view, no bezel



Figure 7. XR12 Rear accessed chassis view with front bezel

Rear view of XR11 front accessed chassis



Figure 8. XR11 Front accessed chassis rear view

Rear view of XR11 rear accessed chassis

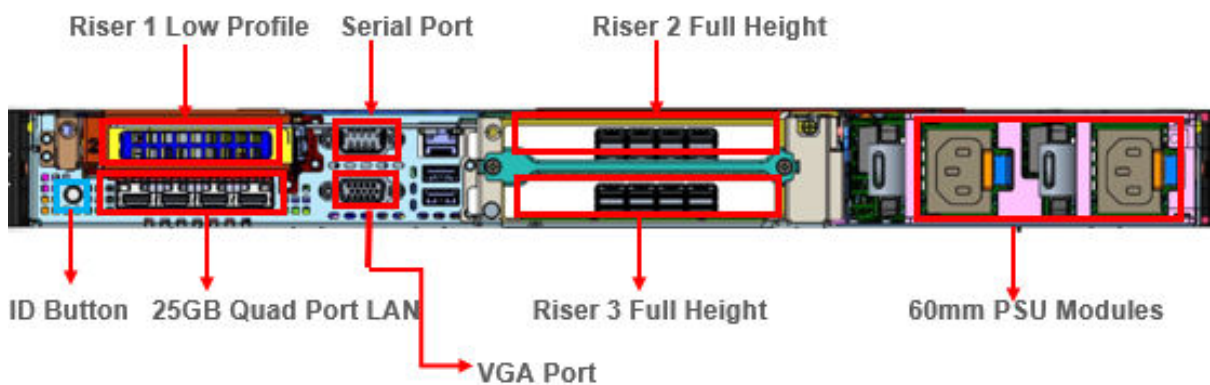
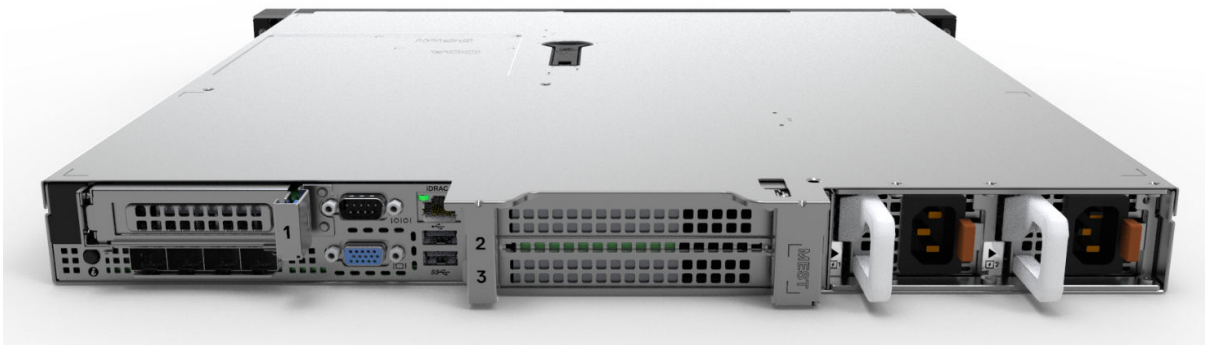


Figure 9. XR11 Rear accessed chassis rear views

Rear view of XR12 front accessed chassis



Figure 10. XR12 Front accessed chassis rear view

Rear view of XR12 rear accessed chassis

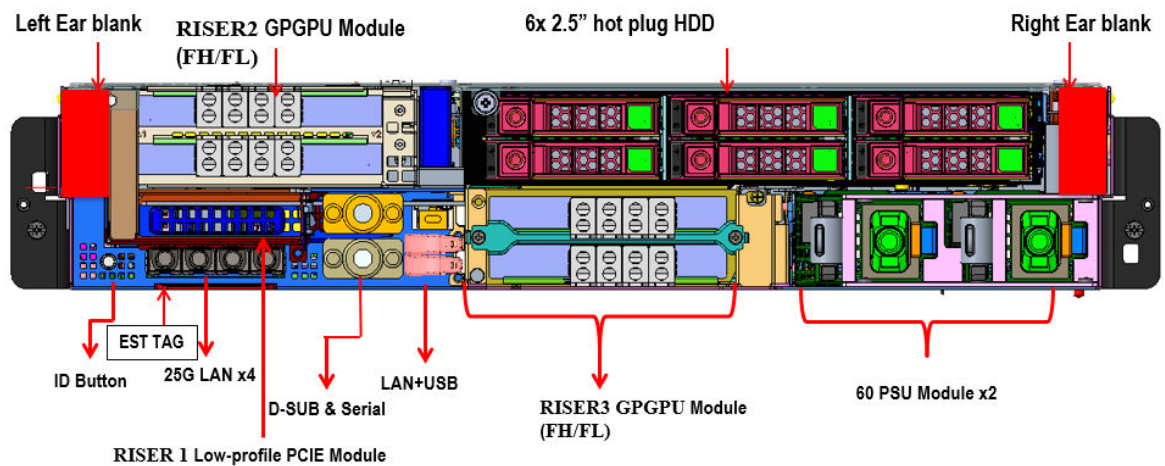


Figure 11. XR12 Rear accessed chassis rear views

Inside the XR11 front accessed chassis

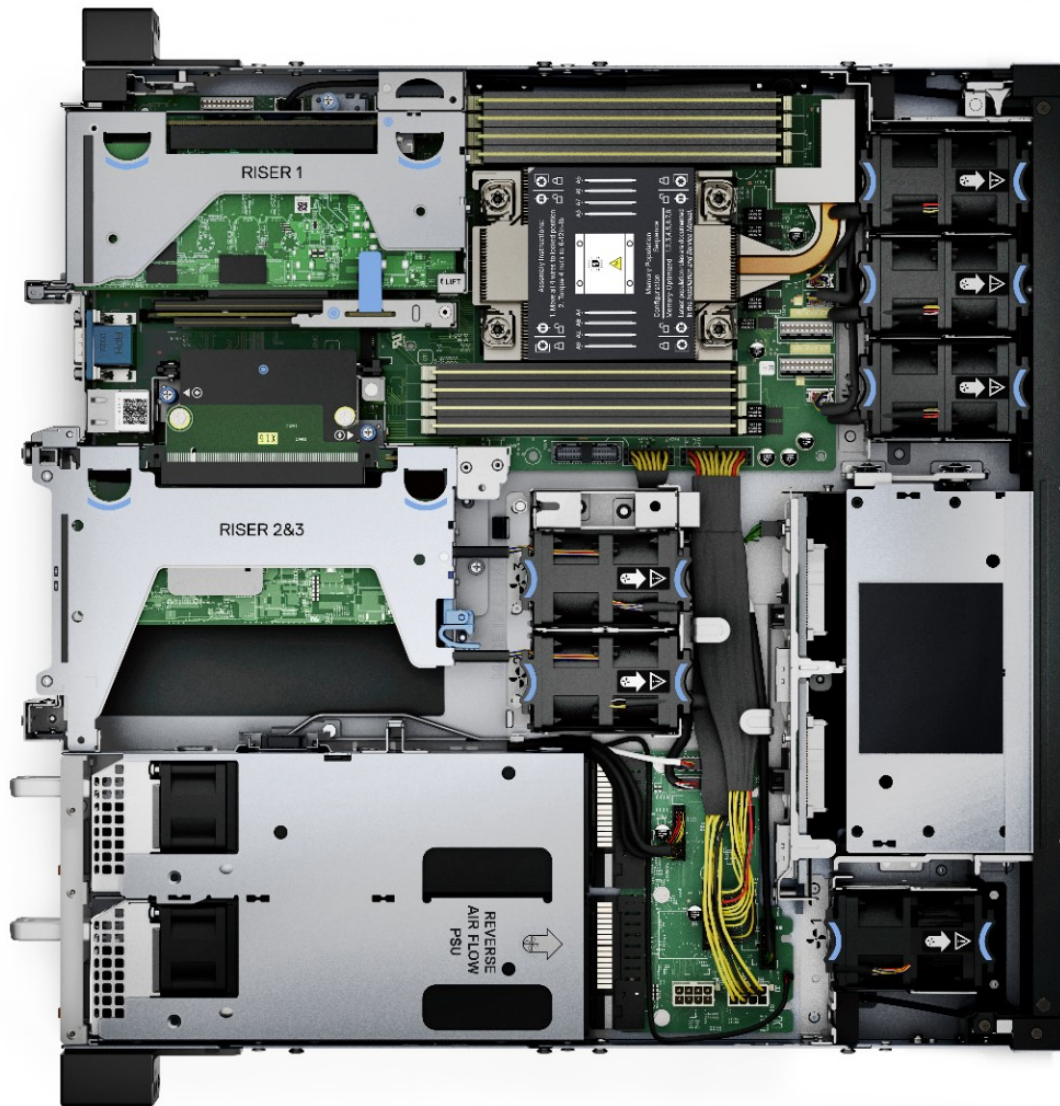


Figure 12. XR11 Front accessed chassis internal view (no bezel)

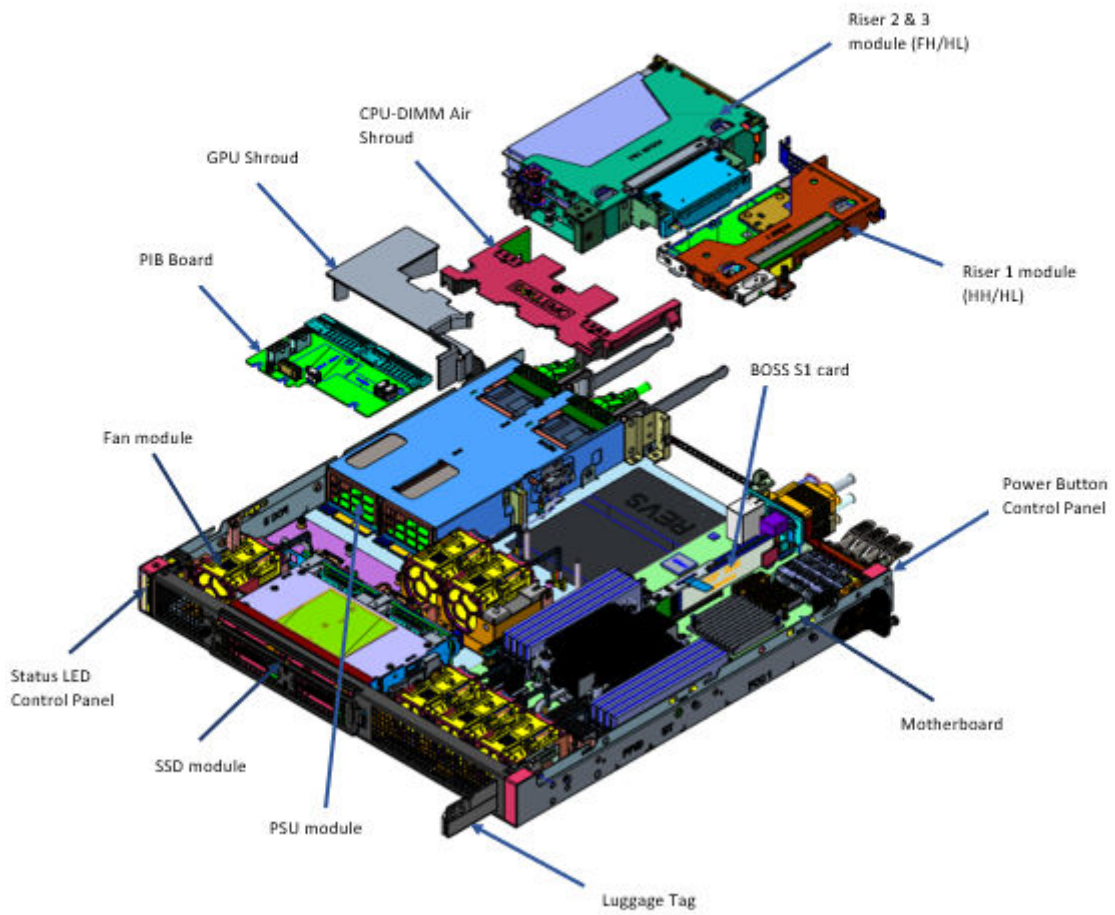


Figure 13. XR11 Front accessed chassis internal exploded view (rear to front)

Inside the XR11 rear accessed chassis

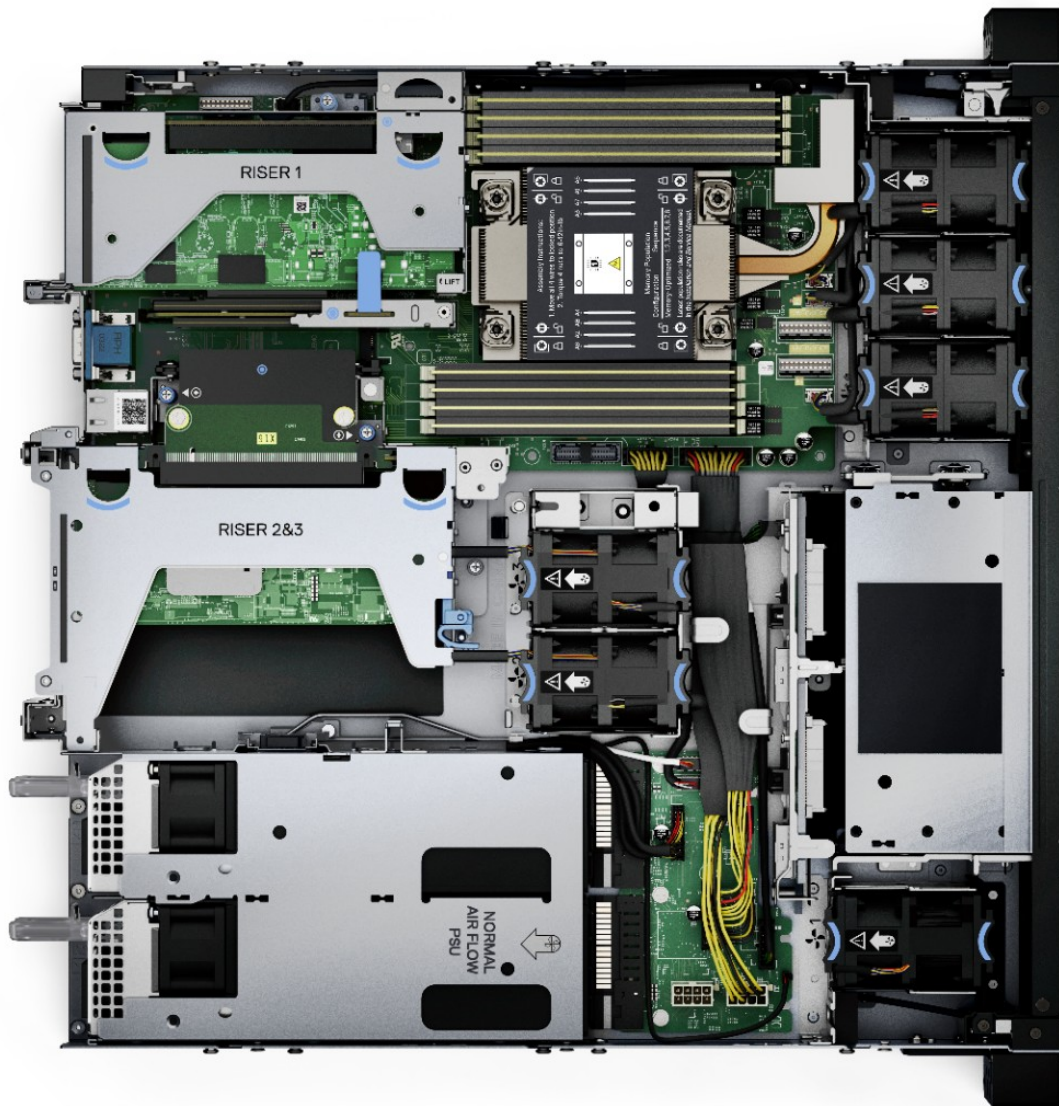


Figure 14. XR11 Rear accessed chassis internal view (no bezel)

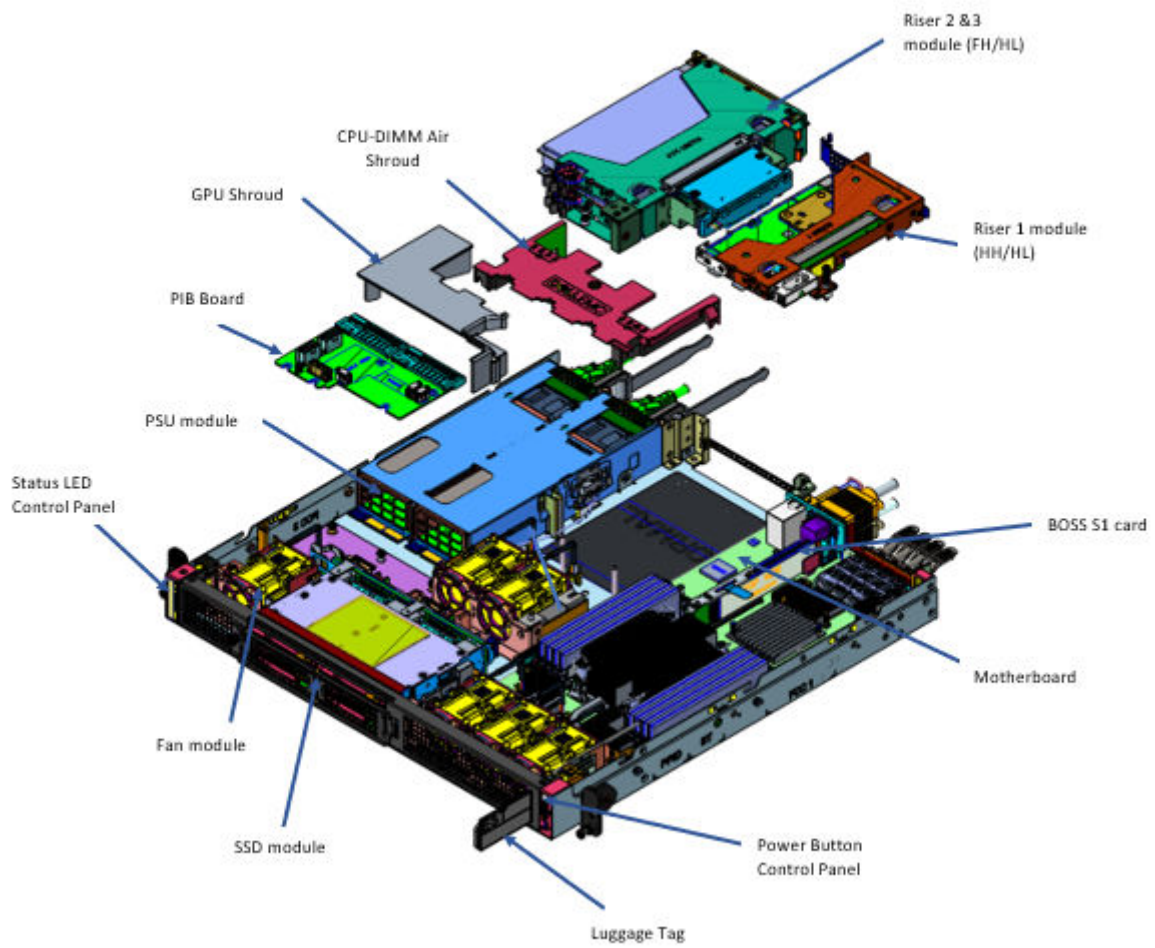


Figure 15. XR11 Rear accessed chassis internal exploded view (no bezel)

Inside the XR12 front accessed chassis

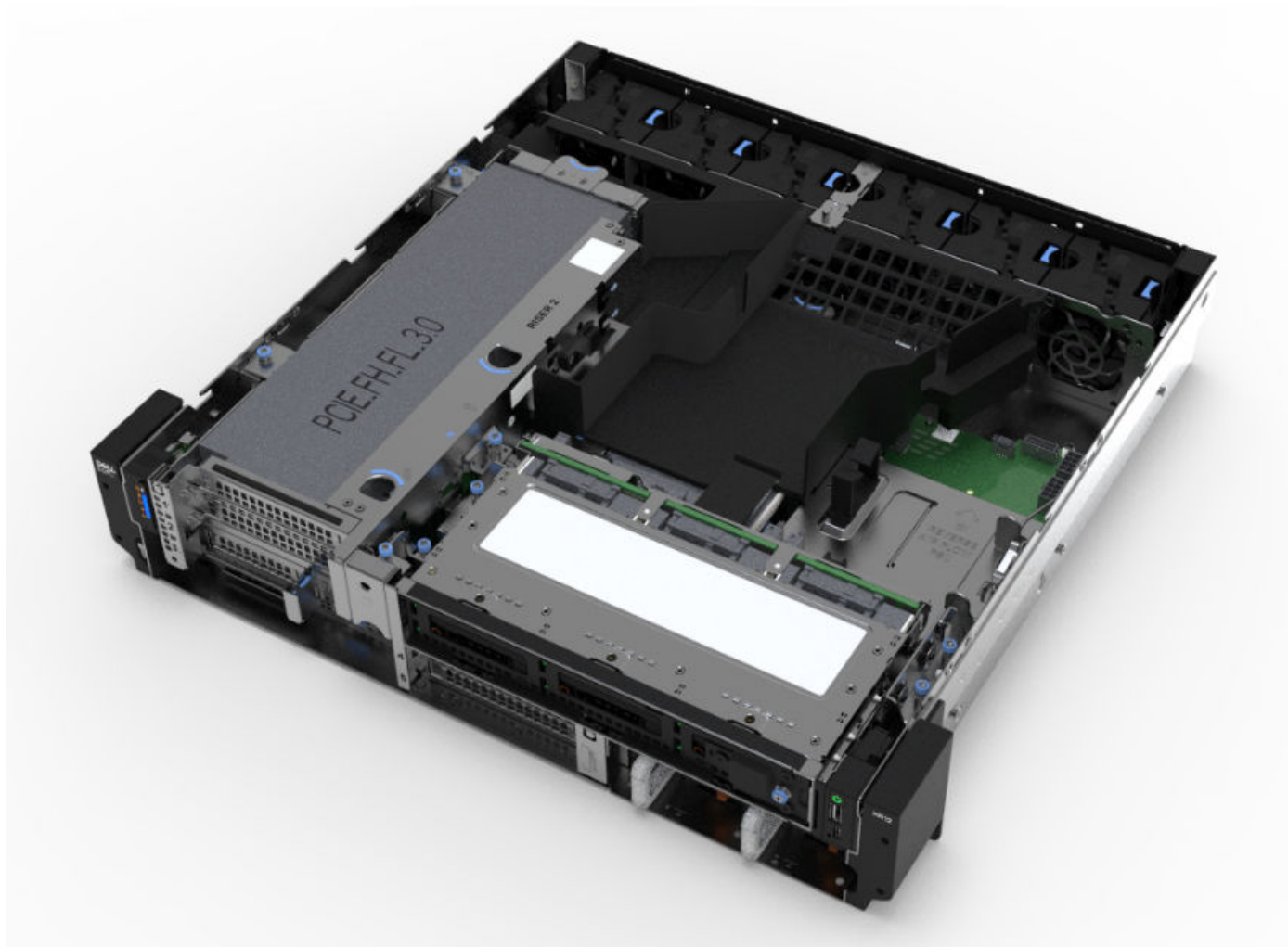


Figure 16. XR12 Front accessed chassis internal front view (no bezel)

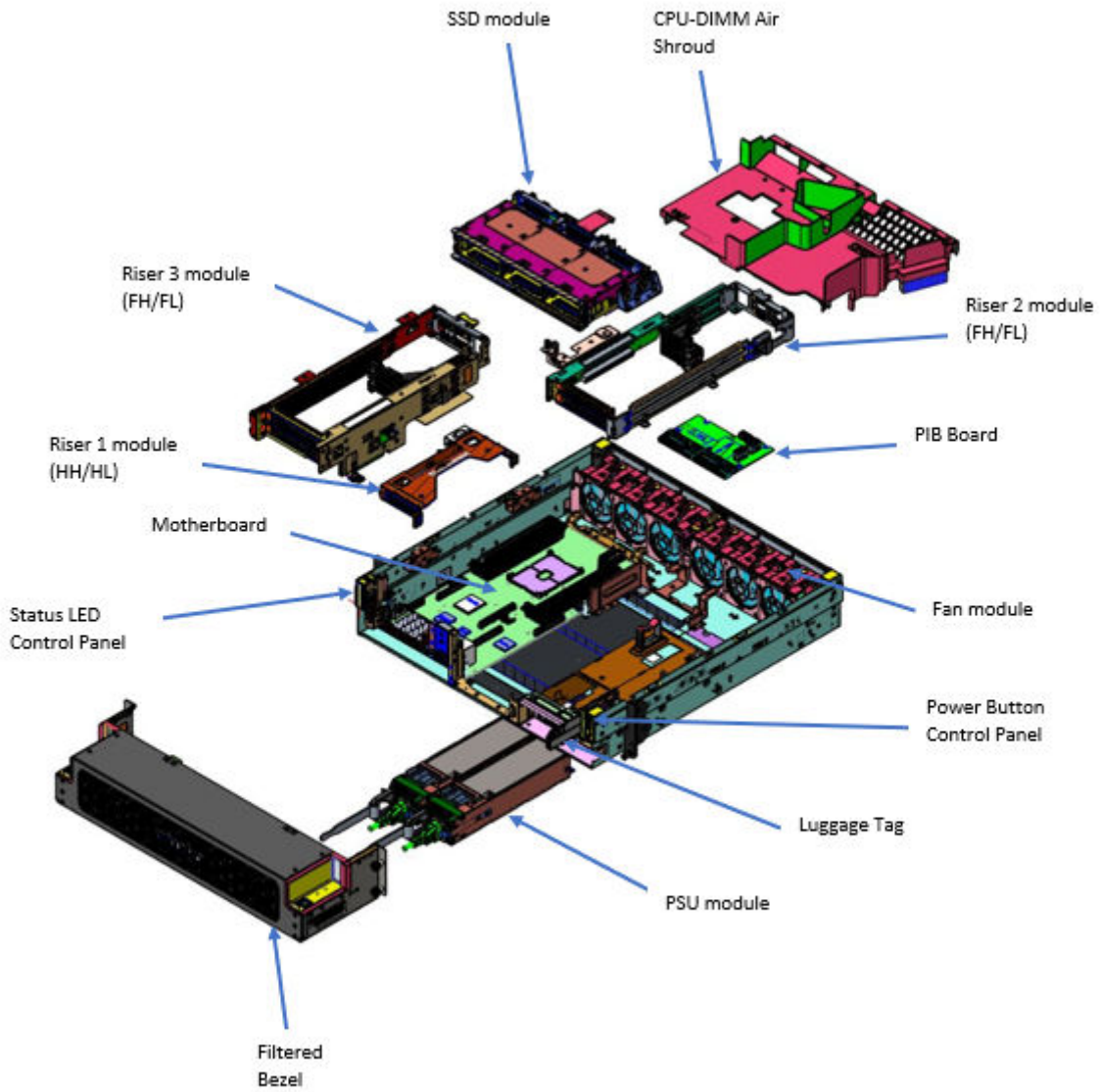


Figure 17. XR12 Front accessed chassis internal exploded view

Inside the XR12 rear accessed chassis



Figure 18. XR12 Rear accessed chassis internal view (no bezel, no shroud)

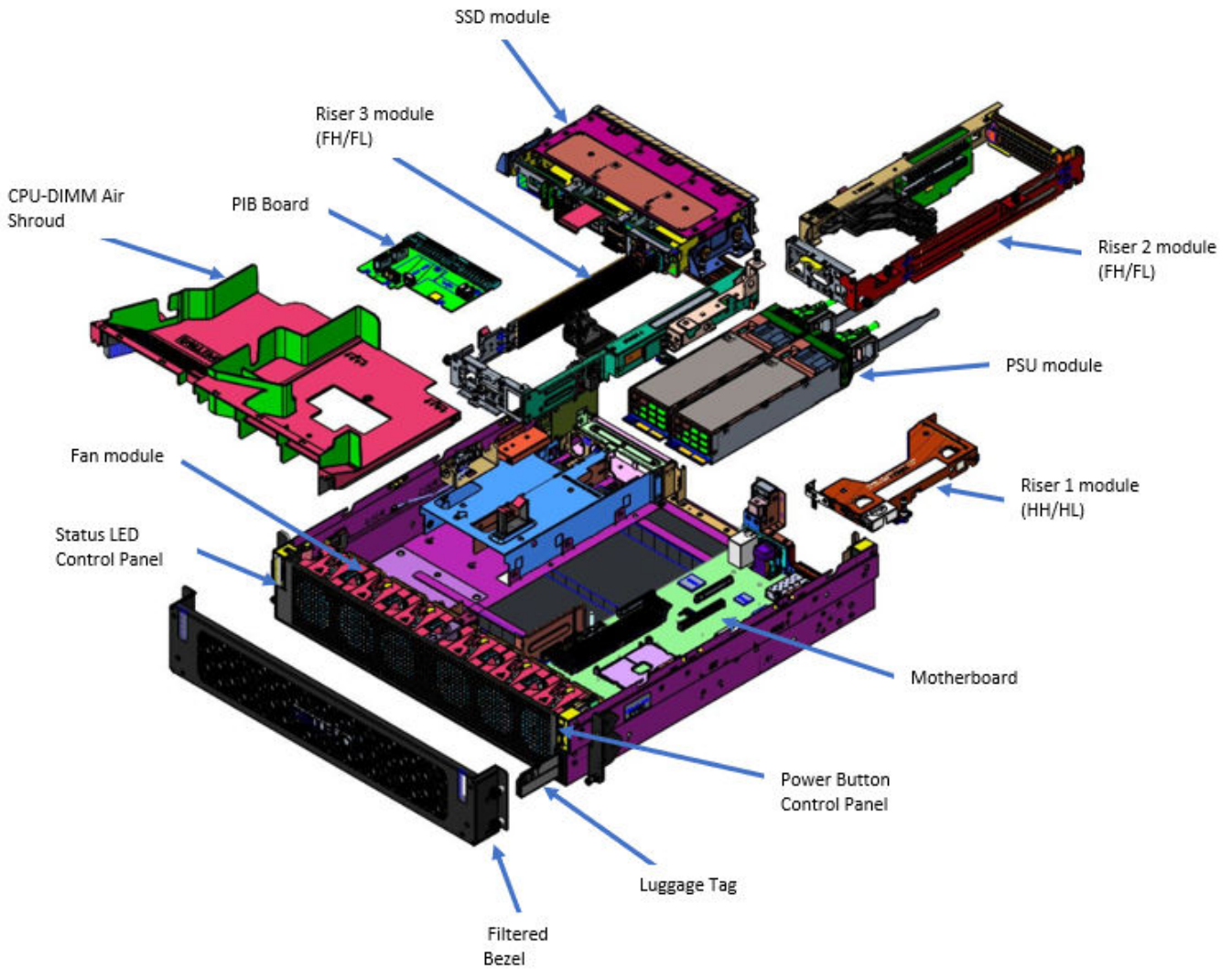


Figure 19. XR12 Rear accessed chassis internal exploded view

Quick Resource Locator (QRL)

There are two types of QRLs on the PowerEdge XR11 and XR12: a generic QRL and a QRL on the Express Service Tag (EST).

The generic QRL for XR11 and XR12 can be found on the System Information Labels (SILs), Getting Started Guide (GSG) and Installation and Service Manuals. It leads to a webpage with links to product information such as Setup and Service videos, iDRAC Manual, and other resources that apply to the platform.

The QRL on the EST for XR11 and XR12 is located on the information tag and is unique and specific to that service tag. It contains the service tag number of the system. The label and the QRL code within it are printed on demand at the L10 factories. The QRL on the EST also links to a webpage that shows the exact configuration as built for that customer, and the specific warranty purchased. It is one click away from the same content of generic information that applies to XR11 and XR12 that is available in the other QRL.



Figure 20. Generic QRL for XR11 on SIL



Figure 21. Generic QRL for XR12 on SIL

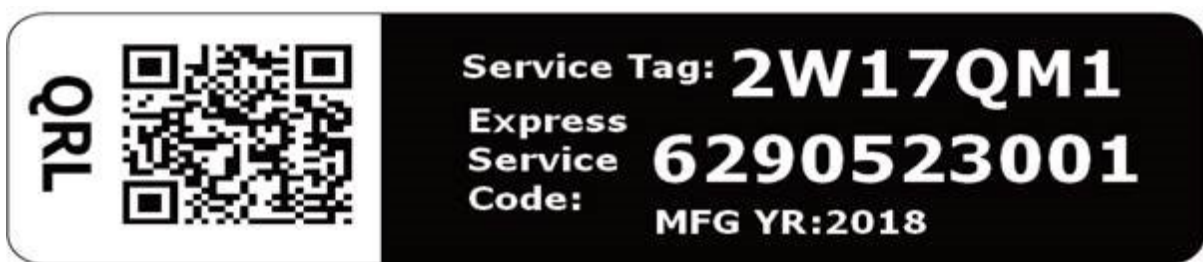
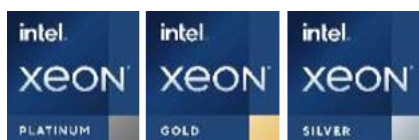


Figure 22. QRL on EST

Processor



Topics:

- [Processor features](#)
- [Supported processors for XR11 and XR12](#)

Processor features

The 3rd Generation Xeon Scalable Processors stack is the next generation data center processor offering with the latest features, increased performance, and incremental memory options. This latest generation Xeon Scalable processor will support usages from entry designs based on Intel Xeon Silver processors to advanced capabilities offered in new Intel Xeon Platinum processor.

The following lists the features and functions included in the upcoming 3rd Generation Intel Xeon Scalable Processor offering :

- More, Faster I/O with PCI Express 4 and up to 64 lanes (per socket) at 16 GT/s

Supported processors for XR11 and XR12

The table below details the list of processors that will be offered at launch. This list is subject to change based on Intel Roadmap and will be updated accordingly.

Table 3. Processor SKU stack

Proc	Clock Speed (GHz)	Cache (M)	Cores	Threads	Turbo	Memory Speed (MT/s)	Memory Capacity	Intel Mem Enabled	TDP	XR11	XR12
8351N	2.4	54	36	72	Turbo	2933	6TB	Y	225 W	Supported	Supported
6354	3	39	18	36	Turbo	3200	6TB	Y	205 W	Supported	Supported
6338 T	2.1	48	32	64	Turbo	3200	6TB	Y	165 W	Supported	Supported
6338 N	2.2	48	32	64	Turbo	2666	6TB	Y	185 W	Supported	Supported
6330 N	2.2	42	28	56	Turbo	2666	6TB	Y	165 W	Supported	Supported
6326	2.9	24	16	32	Turbo	3200	6TB	Y	185 W	Supported	Supported
6314U	2.3	48	32	64	Turbo	3200	6TB	Y	205 W	Supported	Supported
6312U	2.4	36	24	48	Turbo	3200	6TB	Y	185 W	Supported	Supported

Table 3. Processor SKU stack (continued)

Proc	Clock Speed (GHz)	Cache (M)	Cores	Threads	Turbo	Memory Speed (MT/s)	Memory Capacity	Intel Mem Enabled	TDP	XR11	XR12
5320 T	2.3	30	20	40	Turbo	2933	6TB	Y	150 W	Supported	Supported
5318Y	2.1	36	24	48	Turbo	2933	6TB	Y	165 W	Supported	Supported
5318N	2.1	36	24	48	Turbo	2666	6TB	Y	150 W	Supported	Supported
5317	3	18	12	24	Turbo	2933	6TB	Y	150 W	Supported	Supported
5315Y	3.2	12	8	16	Turbo	2933	6TB	Y	140 W	Supported	Supported
4316	2.3	30	20	40	Turbo	2666	6TB	N	150 W	Supported	Supported
4314	2.4	24	16	32	Turbo	2666	6TB	Y	135 W	Supported	Supported
4310	2.1	18	12	24	Turbo	2666	6TB	N	120 W	Supported	Supported
4310T	2.3	15	10	20	Turbo	2666	6TB	N	105 W	Supported	Supported
4309 Y	2.8	12	8	16	Turbo	2666	6TB	N	105 W	Supported	Supported

Memory subsystem

The PowerEdge XR11 and XR12 systems support up to 8 DIMMs, with up to 1024 GB of standard memory and speeds of up to 3200MT/s.

In addition, the PowerEdge XR11 and XR12 systems support Registered DIMMs (RDIMMs) and Load Reduced DIMMs (LRDIMMs) which use a buffer to reduce memory loading and provide greater density, allowing for the maximum platform memory capacity. Unbuffered DIMMs (UDIMMs) and 3DS DIMMs are not supported on both XR11 and XR12. The XR11 and XR12 systems support up to 128 GB of Intel Optane DC persistent memory 200 Series.

Topics:

- [Supported memory](#)

Supported memory

The table below lists the memory technologies supported by the platforms XR11 and XR12.

Table 4. Supported DDR4 memory technologies

Feature	XR11 and XR12 (DDR4)
DIMM Type	RDIMM
	LRDIMM
Transfer Speed	3200 MT/s
Voltage	1.2V (DDR4)

The table below lists the supported DDR4 DIMMs for the platforms XR11 and XR12.

Table 5. Memory speed

DIMM Type	DIMM Ranking	DIMM Capacity	DIMM Speed (MT/s)	Data width	DIMM Volts
RDIMM	1R	8 GB	3200	8	1.2 V
RDIMM	2R	16 GB	3200	8	1.2 V
RDIMM	2R	32 GB	3200	8	1.2 V
RDIMM	2R	64 GB	3200	4	1.2 V
LRDIMM	4R	128 GB	3200	4	1.2 V

Storage

Topics:

- Supported drives
- Internal storage configuration matrix for XR11
- Internal storage configuration matrix for XR12
- External storage

Supported drives

The XR11 and XR12 will support several types of drives in these technologies and form factors: 2.5-inch SATA solid-state drives (SSDs), 2.5-inch SAS SSDs and 2.5-inch NVMe SSDs. For a list of the specific drives supported on this platform, please refer to the [Drive And Platform Matrix](#).

Table 6. Supported drive specifications for XR11 and XR12

Form Factor	Type	Speed	Rotational Speed	Capacities
2.5-inch	SATA SSD	6 GB	N/A	240 GB, 480 GB, 960 GB, 1.92 TB, 3.84 TB
2.5-inch	SAS SSD	12 GB	N/A	400 GB, 800 GB, 960 GB, 1.6 TB, 1.92 TB, 3.84 TB, 7.68 TB, 15.36 TB
2.5-inch	NVMe	—	N/A	375 GB, 750 GB, 960 GB, 1 TB, 2 TB, 4 TB, 8 TB, 1.6 TB, 3.2 TB, 6.4 TB, 1.92 TB, 3.84 TB, 7.68 TB, 12.8 TB

NOTE: XR11 and XR12 will not support Pin 3 power disable for 12 GB SAS drives as is common in other server designs.

NOTE: XR11 and XR12 will not support NVMe drives with Riser 1A installed.

Internal storage configuration matrix for XR11

Table 7. Internal storage configuration matrix

Configuration	Chassis Orientation	Base Configuration Description	Backplane Description	Storage Controller(s)	Controller Form Factor	BOSS Enabled	Riser Configuration
1	Rear Access (NAF)	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SATA (only)	Onboard SATA	Onboard SATA	Y	C0/1: R1B+R2+R3
2	Rear Access (NAF)	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SAS/SATA	HBA355i	Adapter	Y	C0/1: R1B+R2+R3

Table 7. Internal storage configuration matrix (continued)

Configuration	Chassis Orientation	Base Configuration Description	Backplane Description	Storage Controller(s)	Controller Form Factor	BOSS Enabled	Riser Configuration
3	Rear Access (NAF)	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SAS/SATA	H755	Adapter	Y	C0/1: R1B+R2+R3
4	Rear Access (NAF)	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SAS/SATA	H345	Adapter	Y	C0/1: R1B+R2+R3
5	Rear Access (NAF)	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	x4 2.5 NVME (only)	S150	Direct Attach (SL)	Y	C0/1: R1B+R2+R3
6	Rear Access (NAF)	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	x4 2.5 NVME (only)	H755	Adapter	Y	C0/1: R1B+R2+R3
7	Front Access (RAF)	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SATA (only)	Onboard SATA	Onboard SATA	Y	C0/1: R1B+R2+R3 C2: R1A+R2+R3
8	Front Access (RAF)	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SAS/SATA	HBA355i	Adapter	Y	C0/1: R1B+R2+R3
9	Front Access (RAF)	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SAS/SATA	H755	Adapter	Y	C0/1: R1B+R2+R3
10	Front Access (RAF)	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	x4 2.5 SAS/SATA	H345	Adapter	Y	C0/1: R1B+R2+R3
11	Front Access (RAF)	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	x4 2.5 NVME (only)	S150	Direct Attach (SL)	Y	C0/1: R1B+R2+R3
12	Front Access (RAF)	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	x4 2.5 NVME (only)	H755	Adapter	Y	C0/1: R1B+R2+R3

For cable routing information on the different configurations, please refer to the cable matrix on this link: <https://www.delltechnologies.com/sales/en-us/auth/index.htm>.

Internal storage configuration matrix for XR12

Table 8. Internal storage configuration matrix

Configuration	Chassis Orientation	Base Configuration Description	Backplane Description	Storage Controller(s)	Controller Form Factor	BOSS Enabled	Riser Configuration
1	Front Access (RAF)	ASSY, CHAS, RAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SATA (only)	Onboard SATA	Onboard SATA	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A C3: R1A+R2A+R3A C4: R1A+R2B+R3A
2	Front Access (RAF)	ASSY, CHAS, RAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SAS/SATA	HBA355i	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A

Table 8. Internal storage configuration matrix (continued)

Configuration	Chassis Orientation	Base Configuration Description	Backplane Description	Storage Controller(s)	Controller Form Factor	BOSS Enabled	Riser Configuration
3	Front Access (RAF)	ASSY, CHAS, RAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SAS/SATA	H755	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
4	Front Access (RAF)	ASSY, CHAS, RAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SAS/SATA	H345	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
5	Front Access (RAF)	ASSY, CHAS, RAF, 6HD, 3PCI, 2U, XR12	x4 2.5 NVME + 2.5 SATA	S150 + Onboard SATA	Direct Attach (SL) + Onboard SATA	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
6	Front Access (RAF)	ASSY, CHAS, RAF, 6HD, 3PCI, 2U, XR12	x6 2.5 NVME (only)	H755	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
7	Rear Access (NAF)	ASSY, CHAS, NAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SATA (only)	Onboard SATA	Onboard SATA	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
8	Rear Access (NAF)	ASSY, CHAS, NAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SAS/SATA	HBA355i	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
9	Rear Access (NAF)	ASSY, CHAS, NAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SAS/SATA	H755	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
10	Rear Access (NAF)	ASSY, CHAS, NAF, 6HD, 3PCI, 2U, XR12	x6 2.5 SAS/SATA	H345	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
11	Rear Access (NAF)	ASSY, CHAS, NAF, 6HD, 3PCI, 2U, XR12	x4 2.5 NVME + 2.5 SATA	S150 + Onboard SATA	Direct Attach (SL) + Onboard SATA	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A
12	Rear Access (NAF)	ASSY, CHAS, NAF, 6HD, 3PCI, 2U, XR12	x6 2.5 NVME (only)	H755	Adapter	Y	C0: R1B+R2A+R3A C1: R1B+R2B+R3B C2: R1B+R2B+R3A

For cable routing information on the different configurations, please refer to the cable matrix on this link: <https://www.delltechnologies.com/sales/en-us/auth/index.htm>.

External storage

The XR11 and XR12 supports the external storage device types listed in the table below.

Table 9. Supported external storage devices for XR11 and XR12

Device Type	Description
External Tape	Supports connection to external USB tape products
NAS/IDM appliance software	Supports NAS software stack
JBOD	Supports connection to 12 Gbps SAS ME484, MD1420 and MD1400

Expansion cards and expansion card risers

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

Topics:

- Expansion cards and risers for the PowerEdge XR11 system
- Expansion cards and risers for the PowerEdge XR12 system

Expansion cards and risers for the PowerEdge XR11 system

This section provides information on different expansion cards and risers supported for the PowerEdge XR11 system.

Expansion card installation guidelines

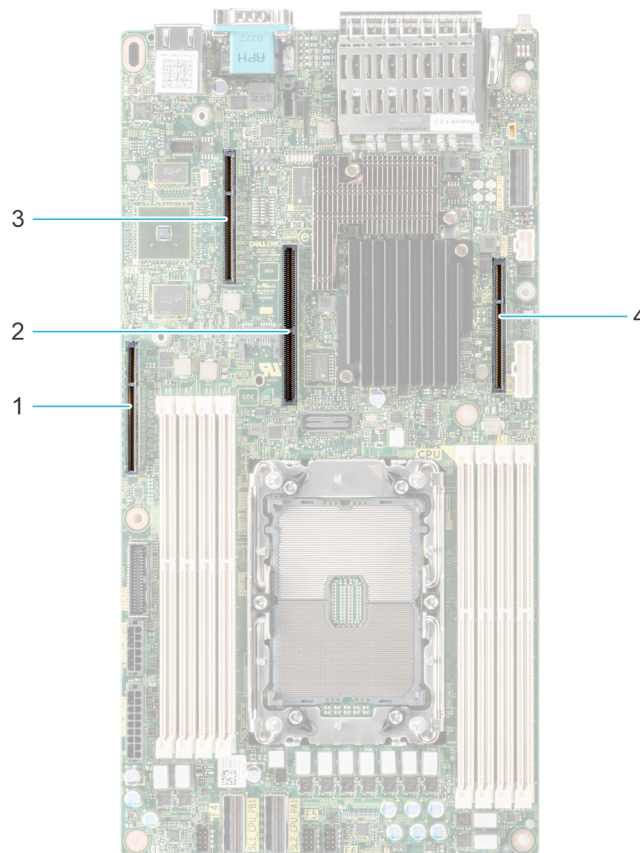


Figure 23. Expansion card slot connectors

1. IO_Riser3 (Riser 3 connector)

2. BOSS S1 card connector
3. IO_Riser2 (Riser 2 connector)
4. IO_Riser1 (Riser 1 connector)

The following table describes the expansion card riser configurations:

Table 10. Expansion card riser configurations

Configurations	Expansion card risers	PCIe Slots	Controlling processor	Height	Length	Slot width
Config0.	R1B+R2+R3 Rear Accessed configuration	1	Processor 1	Low profile	Half length	x8
		2		Full Height	Half length	x16
		3		Full Height	Half length	x16
Config1.	R1B+R2+R3 Front Accessed configuration	1	Processor 1	Low profile	Half length	x8
		2		Low profile	Half length	x16
		3		Full Height	Half length	x16

NOTE: Riser 2 and 3 are combined in one expansion card riser module.

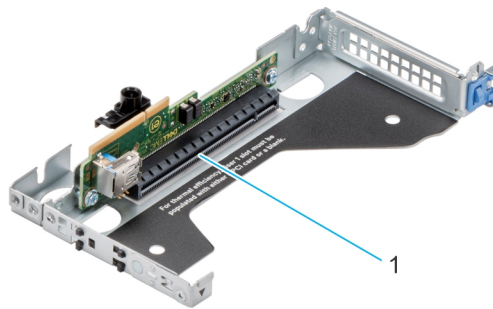


Figure 24. Riser 1

1. Slot 1, x8, LP-HL (Low Profile - Half Length)

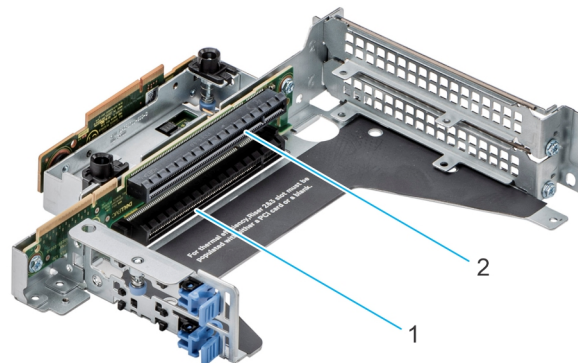


Figure 25. Riser 2 and 3

1. Slot 2, x16, FH-HL (Full Height - Half Length)
2. Slot 3, x16, FH-HL (Full Height - Half Length)

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 11. Configuration 0: R1B+R2+R3 for Rear Accessed configuration

Card type	Slot priority	Maximum number of cards
Internal PERC adapter (LP)	1	1
Dell External Adapter (FH)	3, 2	2
GPU (FH)	2, 3	2
Mellanox (NIC: 100Gb) (FH)	2, 3	2
Mellanox (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (LP)	1	1
Broadcom (NIC: 10Gb) (FH)	2, 3	2
Broadcom (NIC: 10Gb) (LP)	1	1
Broadcom (NIC: 1Gb) (FH)	3, 2	2
Broadcom (NIC: 1Gb) (LP)	1	1
Intel (NIC: 25Gb) (FH)	2, 3	2
Intel (NIC: 25Gb) (LP)	1	1
Intel (NIC: 10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb) (FH) (all others including V2 of 4 x10 SFP+ and 2 x10 SFP+ cards)	2, 3	2
Intel (NIC: 10Gb) (LP)	1	1
Intel (NIC: 1Gb) (FH)	3, 2	2
Intel (NIC: 1Gb) (LP)	1	1
Dell BOSS S1 card Module	Integrated slot	1

Table 12. Configuration 1: R1B+R2+R3 for Front Accessed configuration

Card type	Slot priority	Maximum number of cards
Internal PERC adapter (LP)	1	1
Dell External Adapter (FH)	3, 2	2
GPU (FH)	2, 3	2
Mellanox (NIC: 100Gb) (FH)	2, 3	2
Mellanox (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (LP)	1	1
Broadcom (NIC: 10Gb) (FH)	2, 3	2
Broadcom (NIC: 10Gb) (LP)	1	1
Broadcom (NIC: 1Gb) (FH)	3, 2	2
Broadcom (NIC: 1Gb) (LP)	1	1
Intel (NIC: 25Gb) (FH)	2, 3	2
Intel (NIC: 25Gb) (LP)	1	1
Intel (NIC: 10Gb SFP+) (FH)	2	1

Table 12. Configuration 1: R1B+R2+R3 for Front Accessed configuration (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb) (FH) (all others including V2 of 4 x10 SFP+ and 2 x10 SFP+ cards)	2, 3	2
Intel (NIC: 10Gb) (LP)	1	1
Intel (NIC: 1Gb) (FH)	3, 2	2
Intel (NIC: 1Gb) (LP)	1	1
Dell BOSS S1 card Module	Integrated slot	1

Expansion cards and risers for the PowerEdge XR12 system

This section provides information on different expansion cards and risers supported for the PowerEdge XR12 system.

Expansion card installation guidelines

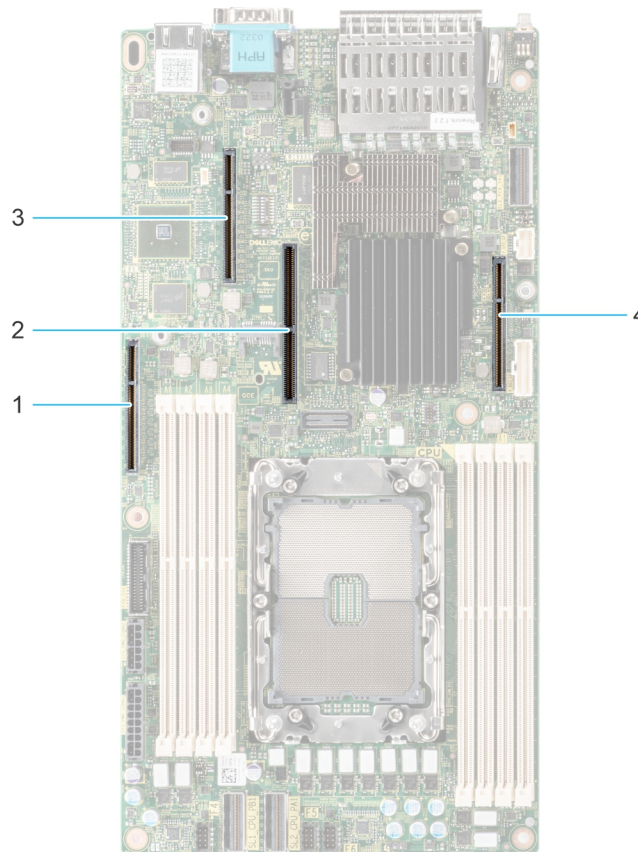


Figure 26. Expansion card slot connectors

- 1. IO_Riser3 (Riser 3 connector)
- 2. BOSS (M.2) card connector
- 3. IO_Riser2 (Riser 2 connector)
- 4. IO_Riser1 (Riser 1 connector)

The following table describes the expansion card riser configurations:

Configurations	Expansion card risers	PCIe Slots	Controlling processor	Height	Length	Slot width
Config0.	R1B+R2A+R3A Rear / Front Accessed configurations	3	Processor 1	Low profile	Half length	x8
		2		Full Height	Full length	x16
		4		Full Height	Full length	x16
Config1.	R1B+R2B+R3B Rear / Front Accessed configurations	3	Processor 1	Low profile	Half length	x8
		1, 2		Full Height	Full length	x8+x8
		4, 5		Full Height	Full length	x8+x8
Config2.	R1B+R2B+R3A Rear / Front Accessed configurations	3	Processor 1	Low profile	Half length	x8
		1, 2		Full Height	Full length	x8+x8
		4		Full Height	Full length	x16

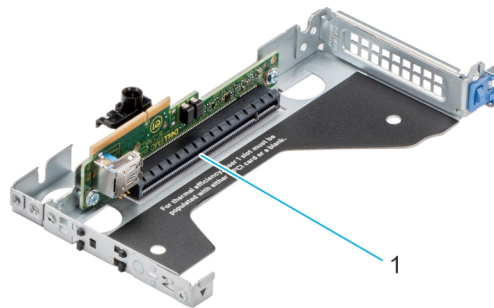


Figure 27. Riser 1

- 1. Riser 1, slot 3, x8, LP-HL

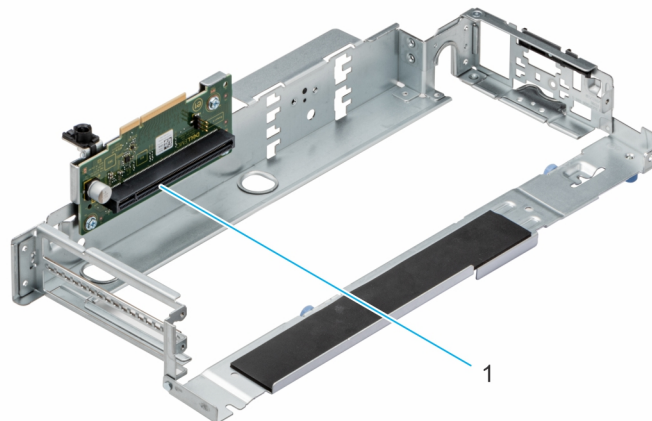


Figure 28. Riser 2A

- 1. Riser 2, slot 2, x16, FH-FL

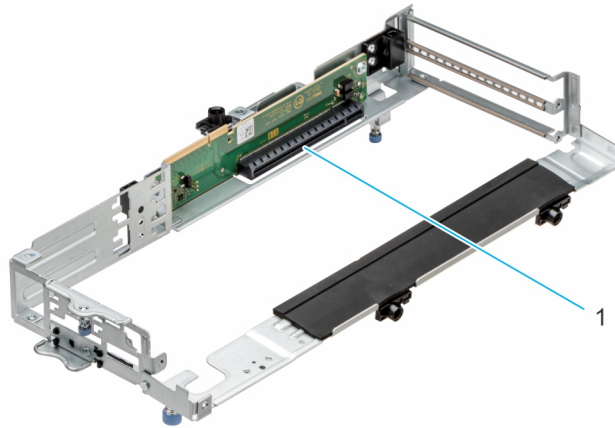


Figure 29. Riser 3A

1. Riser 3, slot 4, x16, FH-FL

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 13. Configuration 0: R1B+R2A+R3A for Rear / Front Accessed configurations

Card type	Slot priority	Maximum number of cards
Internal PERC adapter (LP)	3	1
Dell External Adapter (FH)	2, 4	2
GPU (FH)	4, 2	2
Mellanox (NIC: 100Gb) (FH)	4, 2	2
Mellanox (NIC: 25Gb) (FH)	4, 2	2
Broadcom (NIC: 25Gb) (FH)	4, 2	2
Broadcom (NIC: 25Gb) (LP)	3	1
Broadcom (NIC: 10Gb) (FH)	4, 2	2
Broadcom (NIC: 10Gb) (LP)	3	1
Broadcom (NIC: 1Gb) (FH)	4, 2	2
Broadcom (NIC: 1Gb) (LP)	3	1
Intel (NIC: 25Gb) (FH)	4, 2	2
Intel (NIC: 25Gb) (LP)	3	1
Intel (NIC: 4x10Gb SFP+) (FH)	2	1
Intel (NIC: 2x10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb) (FH) (all others including V2 of 4x10 and 2x10 SFP+ cards)	4, 2	2
Intel (NIC: 10Gb) (LP)	3	1
Intel (NIC: 1Gb) (FH)	4, 2	2
Intel (NIC: 1Gb) (LP)	3	1
Dell BOSS S1 card Module	Integrated slot	1

Table 14. Configuration 1: R1B+R2B+R3B Rear / Front Accessed configurations


Card type	Slot priority	Maximum number of cards
Internal PERC adapter (LP)	3	1
Dell External Adapter (FH)	1, 2, 4, 5	2
Broadcom (NIC: 25Gb) (FH)	4, 5, 2, 1	4
Broadcom (NIC: 25Gb) (LP)	3	1
Broadcom (NIC: 10Gb) (FH)	4, 5, 2, 1	4
Broadcom (NIC: 10Gb) (LP)	3	1
Broadcom (NIC: 1Gb) (FH)	4, 5, 2, 1	4
Broadcom (NIC: 1Gb) (LP)	3	1
Intel (NIC: 25Gb) (FH)	4, 5, 1, 2	4
Intel (NIC: 25Gb) (LP)	3	1
Intel (NIC: 4x10Gb SFP+) (FH)	1, 2	2
Intel (NIC: 2x10Gb SFP+) (FH)	1, 2	2
Intel (NIC: 10Gb) (FH) (all others including V2 of 4x10 and 2x10 SFP+ cards)	4, 5, 1, 2	4
Intel (NIC: 10Gb) (LP)	3	1
Intel (NIC: 1Gb) (FH)	4, 5, 1, 2	4
Intel (NIC: 1Gb) (LP)	3	1
Dell BOSS S1 card Module	Integrated slot	1

Table 15. Configuration 2: R1B+R2B+R3A for Rear / Front Accessed configuration

Card type	Slot priority	Maximum number of cards
Internal PERC adapter (LP)	3	1
Dell External Adapter (FH)	2, 1, 4	2
GPU (FH)	4	1
Mellanox (NIC: 100Gb) (FH)	4	1
Mellanox (NIC: 25Gb) (FH)	4	1
Broadcom (NIC: 25Gb) (FH)	4, 1, 2	3
Broadcom (NIC: 25Gb) (LP)	3	1
Broadcom (NIC: 10Gb) (FH)	4, 1, 2	3
Broadcom (NIC: 10Gb) (LP)	3	1
Broadcom (NIC: 1Gb) (FH)	4, 1, 2	3
Broadcom (NIC: 1Gb) (LP)	3	1
Intel (NIC: 25Gb) (FH)	4, 1, 2	3
Intel (NIC: 25Gb) (LP)	3	1
Intel (NIC: 4x10Gb SFP+) (FH)	1, 2	2
Intel (NIC: 2x10Gb SFP+) (FH)	1, 2	2

Table 15. Configuration 2: R1B+R2B+R3A for Rear / Front Accessed configuration (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 10Gb) (FH) (all others including V2 of 4x10 and 2x10 SFP+ cards)	4, 1, 2	3
Intel (NIC: 10Gb) (LP)	3	1
Intel (NIC: 1Gb) (FH)	4, 1, 2	3
Intel (NIC: 1Gb) (LP) 3 1	3	1
Dell BOSS S1 card Module	Integrated slot	1

 **CAUTION:** Do not install GPUs, network cards, or other PCIe devices on your system that are not validated and tested by Dell. Damage caused by unauthorized and invalidated hardware installation will null and void the system warranty.

 **WARNING:** Consumer-Grade GPU should not be installed or used in the Enterprise Server products.

Power, thermal, and acoustics

Topics:

- [Power for XR11 and XR12](#)
- [Thermal for XR11 and XR12](#)
- [Acoustics](#)

Power for XR11 and XR12

PowerEdge servers have an extensive collection of sensors that automatically track thermal activity, which helps regulate temperature thereby reducing server noise and power consumption.

The table below lists the tools and technologies Dell offers to lower power consumption and increase energy efficiency.

Table 16. Power tools and technologies

Feature	Description
Power Supply Units (PSU) portfolio	Dell's PSU portfolio includes intelligent features such as dynamically optimizing efficiency while maintaining availability and redundancy. Find additional information in the Power Supply Units section.
Tools for right sizing	Enterprise Infrastructure Planning Tool (EIPT) is a tool that can help you determine the most efficient configuration possible. With Dell's EIPT, you can calculate the power consumption of your hardware, power infrastructure, and storage at a given workload. Learn more at www.dell.com/calc .
Industry Compliance	Dell's servers are compliant with all relevant industry certifications and guidelines, including 80 PLUS, Climate Savers and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: <ul style="list-style-type: none"> • Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5% • More accurate reporting of power • Better performance under a power cap
Power capping	Use Dell's systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
Systems Management	iDRAC9 Datacenter provides server- level management that monitors, reports, and controls power consumption at the processor, memory and system level. Dell OpenManage Power Center delivers group power management at the rack, row, and data center level for servers, power distribution units, and uninterruptible power supplies.
Active power management	Intel Node Manager is an embedded technology that provides individual server-level power reporting and power limiting functionality. Dell offers a complete power management solution comprised of Intel Node Manager accessed through Dell iDRAC9 Datacenter and OpenManage Power Center that allows policy-based management of power and thermals at the individual server, rack, and data center level. Hot spare reduces power consumption of redundant power supplies. Thermal control off a speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption. Idle power enables Dell servers to run as efficiently when idle as when at full workload.
Fresh Air cooling	Please refer to the section ASHRAE A3/A4/Rugged support restriction .
Rack infrastructure	Dell offers some of the industry's highest- efficiency power infrastructure solutions, including: <ul style="list-style-type: none"> • Power distribution units (PDUs).

Table 16. Power tools and technologies (continued)

Feature	Description
	<ul style="list-style-type: none"> Uninterruptible power supplies (UPSs). Energy Smart containment rack enclosures. Find additional information at: https://www.delltechnologies.com/en-us/servers/power-and-cooling.htm .

Thermal for XR11 and XR12

PowerEdge servers have an extensive collection of sensors that automatically track thermal activity, which helps regulate temperature thereby reducing server noise and power consumption.

Thermal management of the platform helps delivers high performance for the right amount of cooling to components at the lowest fan speeds across a wide range of ambient temperatures from 10°C to 35°C (50°F to 86°F) and to extended ambient temperature ranges (see [Environmental Specifications](#)). The benefits to you are lower fan power consumption (lower server system power and data center power consumption) and greater acoustical versatility.

Acoustics

Acoustical design for XR11 and XR12

The acoustical design of the platform includes the following features:

Dell EMC PowerEdge delivers sound quality and smooth transient response in addition to sound power levels and sound pressure levels oriented to deployment environments. Sound quality describes how disturbing or pleasing a person finds a sound, as a function of a variety of psychoacoustical metrics and thresholds. Tone prominence is one such metric. Transient response refers to how sound changes with time. Sound power level, sound pressure level, and loudness refer to amplitude of sound. A reference for comparison to sound pressure levels and loudness for familiar noise sources is given in below table. A more extensive description of Dell EMC PowerEdge acoustical design and metrics is available in the white paper, “[Dell Enterprise Acoustics](#)”.

Table 17. Acoustical reference points and output comparisons

Value measured at your ears		Equivalent familiar noise experience
LpA (dBA, re 20 µPa)	Loudness, sones	
90	80	Loud concert
75	40	Data center, vacuum cleaner, voice must be elevated to be heard
60	10	Conversation levels
45	4	Whispering, open office layout, normal living room
35	2	Quiet office
30	1	Quiet library
20	0	Recording studio

PowerEdge acoustics

Dell EMC PowerEdge XR11 and XR12 is a rack-mount server appropriate for general use space (Category 3) and unattended data center environment (Category 5).

The table below shows the acoustical performance of the XR11 and XR12 for various configurations and acoustical categories.

Table 18. Acoustical performance of XR11 and XR12 NAF configurations

XR11 and XR12 NAF Configuration	Minimum	Typical	Maximum
Acoustical Category	Category 3	Category 3	Category 5
Processor	1x 105 W	1x 150 W	1x 225 W
Memory	1x 8 GB RDIMM	2x 16 GB RDIMM	4x 32 GB RDIMM; 4x 128 GB Intel Optane Persistent Memory 200 series DIMM
Storage Front	1x 240 GB SSD	4x 480 GB SSD	4x 7.68 TB NVMe
Storage AUX2	None	None	BOSS-S1 2x 480 GB M.2
PCIe Cards	None	1x DP 25G	1x H755; 1x DP 25G; 1x T4
PSU	1x 800 W	2x 800 W	2x 1400 W

Table 19. Acoustical performance of XR11 and XR12 RAF configurations

XR11 and XR12 RAF Configuration	Minimum	Typical	Maximum
Acoustical Category	Category 3	Category 3	Category 5
Processor	1x 105 W	1x 150 W	1x 225 W
Memory	1x 8 GB RDIMM	2x 16 GB RDIMM	4x 32 GB LRDIMM; 4x 128 GB Intel Optane Persistent Memory 200 series DIMM
Storage Front	1x 240 GB SSD	4x 480 GB SSD	4x 7.68 TB NVMe
Storage AUX2	None	BOSS-S1 2x 480 GB M.2	BOSS-S1 2x 480 GB M.2
PCIe Cards	None	1x DP 25G	1x H755; 1x DP 25G; 1x T4
PSU	1x 1400 W	2x 1400 W	2x 1400 W

Rack, rails, and cable management

Key factors in selecting the proper rails include:

- Identifying the type of rack in which they will be installed
- The spacing between the front and rear mounting flanges of the rack
- The type and location of any equipment mounted in the back of the rack such as power distribution units (PDUs), and the overall depth of the rack

Reference the Dell EMC Enterprise Systems Rail Sizing and Rack Compatibility Matrix link below for the following information:

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

https://i.dell.com/sites/csdocuments/Business_solutions_engineering-Docs_Documents/en/rail-rack-matrix.pdf.

Topics:

- [Rails information](#)
- [Cable Management Arm](#)
- [Strain Relief Bar](#)

Rails information

The PowerEdge XR11 and XR12 only supports sliding rails. Due to the short depth of the XR11 and XR12, new sliding rails with shorter minimum extension have been created.

NOTE: No other rails are compatible with the XR11 and XR12 system.

The sliding rails shown in below image Installing the system in Stab-in sliding rails allow the system to be fully extended out of the rack for service and are available with the optional cable management arm (CMA) and optional strain relief bar (SRB). There are 2 types of sliding rails available for the PowerEdge XR11 and XR12 as listed below:

- 2-post / 4-post rack mounting – traditional datacenter rack types with post-to-post depth range 18.5-inch – 29.5-inch [470 mm – 750 mm].
- Transit case mounting for mobility – The rugged MIL 910E performance is only certified in the Pelican DE2412-05/24/05 transit case.

The PowerEdge XR11 and XR12 sliding rails are stab-in style. A "stab-in" design means that the inner (chassis) rail members must first be attached to the sides of the system and then inserted into the outer (cabinet) members installed in the rack. 2U systems require a two-person lift.

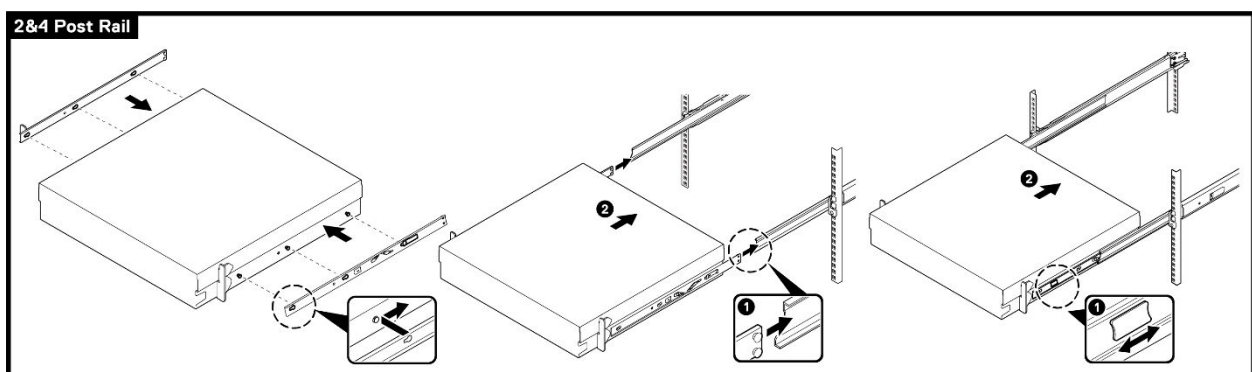


Figure 30. Installing the system in stab-in sliding rails

Dell PowerEdge XR11 and XR12 sliding rails overview:

- Support for tool-less installation in 19-inch EIA-310-E compliant square or unthreaded round hole racks including all generations of Dell racks. Also supports tooling installation in threaded round hole racks.
- Supports Stab-in installation of the chassis to the rails.
- Support full extension of the system out of the rack to allow serviceability of key internal components.
- Supports for optional cable management arm (CMA) and strain relief bar (SRB).

Sliding rails in 2-post rack

The sliding rails for XR11 and XR12 provide support for 2-post racks with 19-inch EIA-310-E compliant square, round, or threaded round mounting holes. Adapter brackets and screws (included in the rail kit) are necessary to mount the XR11 and XR12 into 2-post racks either in flush-mount or center-mount positions.

NOTE: Two-post racks are not supported in the rugged environment.

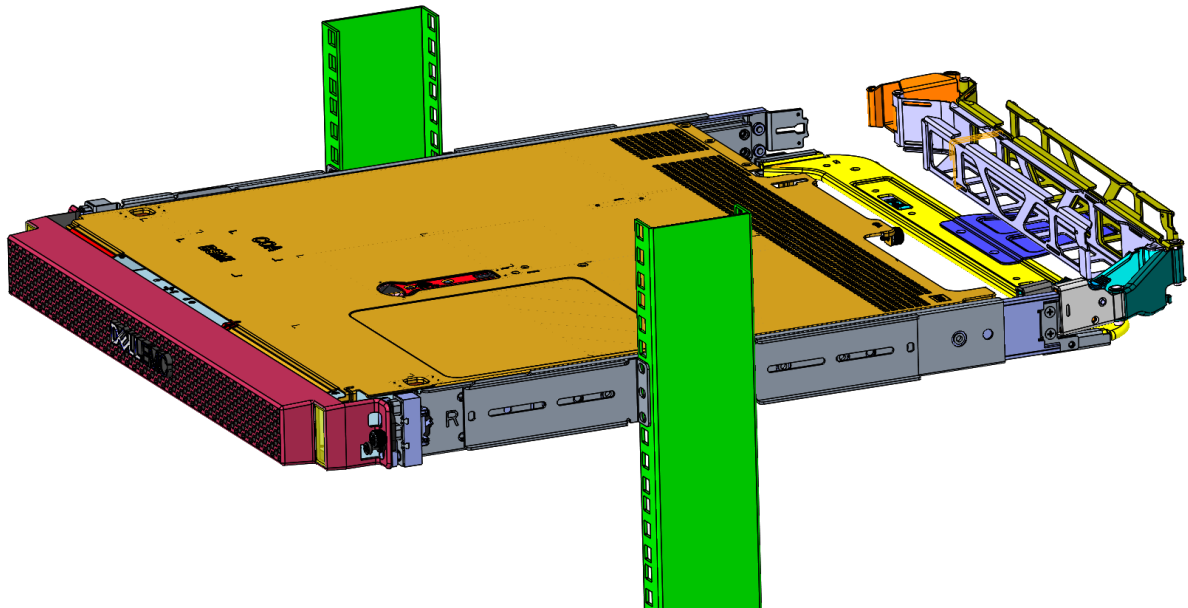


Figure 31. XR11 Mounted in sliding rails in 2-post center-mount configuration

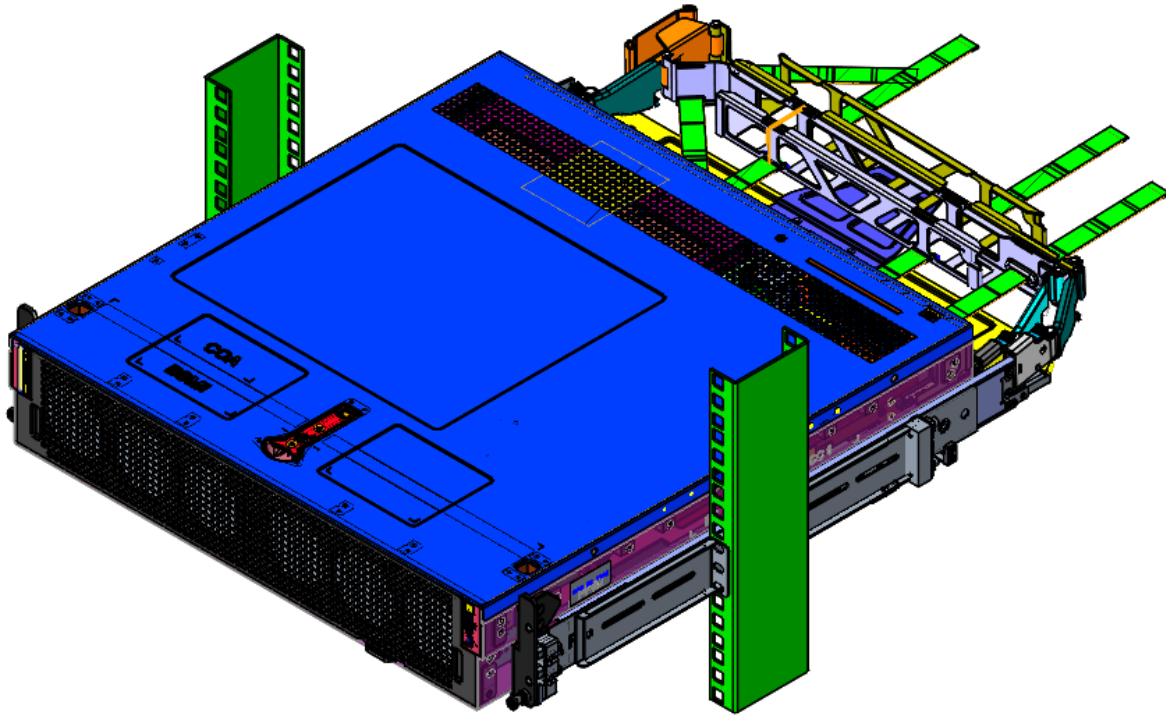


Figure 32. XR12 Mounted in sliding rails in 2-post center-mount configuration

Sliding rails in 4-post rack

The sliding rails for XR11 and XR12 provide tool-less support for 4-post racks with 19-inch EIA-310-E compliant square or unthreaded round mounting holes including all generations of Dell racks when the post-to-post rack depth is between 18.5-inch – 29.5-inch [470 mm – 750 mm]. There are additional screws included in the rail kit to tightly secure the rails to the 4-post rack if desired.

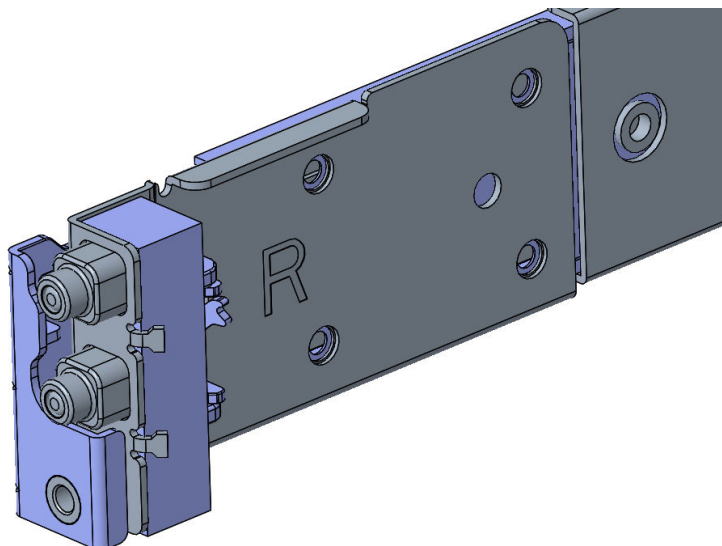


Figure 33. XR11 and XR12 stab-in sliding rail mounting interface for 4-post round or square hole racks

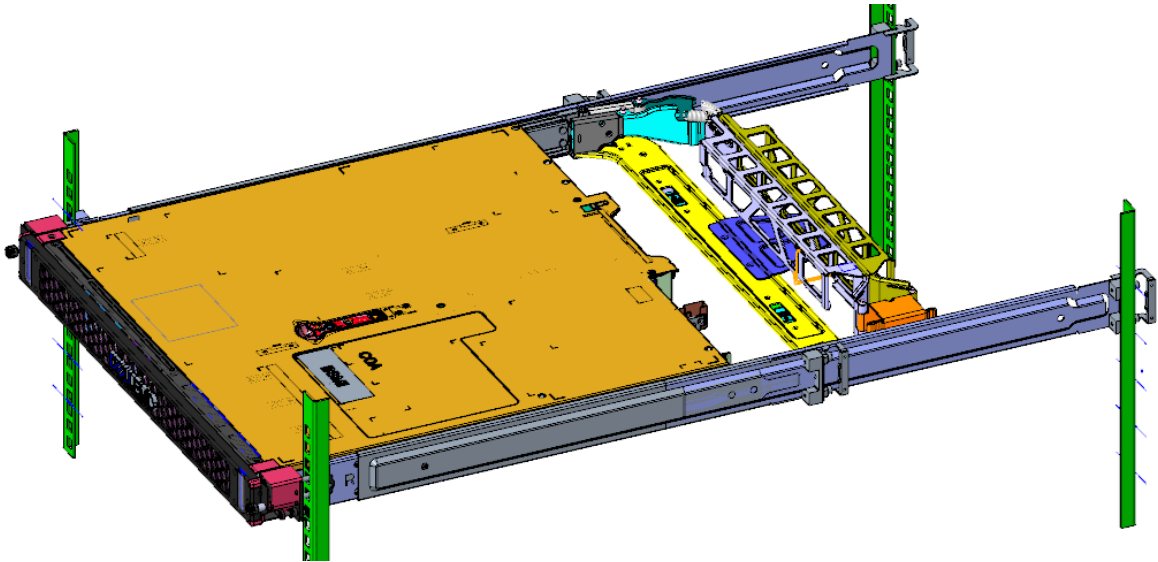


Figure 34. XR11 mounted in sliding rails with the CMA in 4-post rack

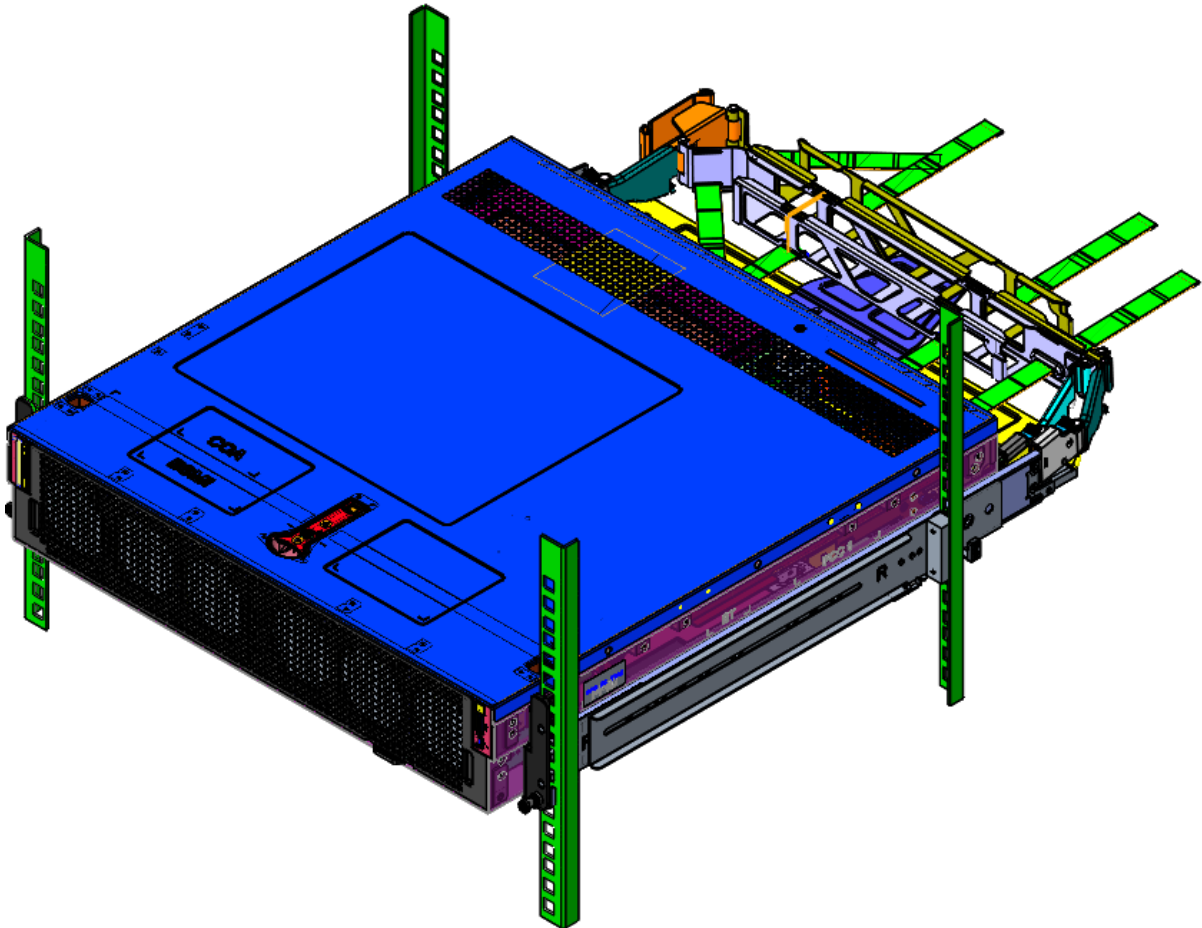


Figure 35. XR12 mounted in sliding rails with the CMA in 4-post rack

Sliding rails in Pelican transit case

For transit cases, a specific type of rail has been designed. It is orderable from Dell and is compatible with the Pelican DE2412-05/24/05 transit case. Dell only certifies XR11 and XR12 compliance for MIL 901E performance in this Pelican case.

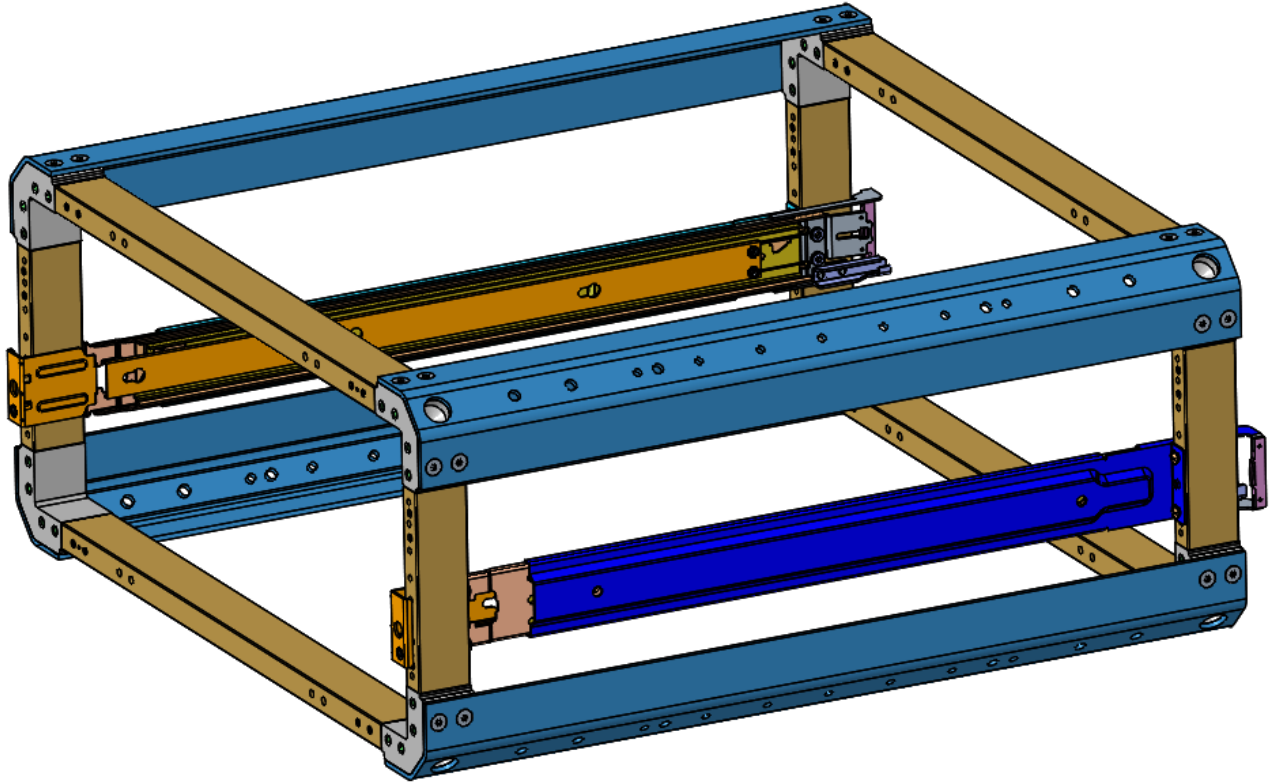


Figure 36. XR11 and XR12 Transit case rails in Pelican case frame

Cable Management Arm

The optional cable management arm (CMA) for the XR11 and XR12 organizes and secures the cords and cables exiting the back of the server and unfolds to allow the server to extend out of the rack without having to detach the cables. Some key features of the CMA include:

- Large U-shaped baskets to support dense cable loads
- Open vent pattern for optimal airflow
- Can be mounted on either side by simply swinging the spring-loaded brackets from one side to the other
- Utilizes hook-and-loop straps rather than plastic tie wraps to eliminate the risk of cable damage during cycling
- Includes a low-profile fixed tray to both support and retain the CMA in its fully closed position
- Both the CMA and the tray mount without the use of tools via simple and intuitive snap-in designs

The CMA can be mounted to either side of the sliding rails without the use of tools or the need for conversion, but it is recommended that it be mounted on the side opposite to the power supplies to allow easier access to the power supplies for service or replacement.

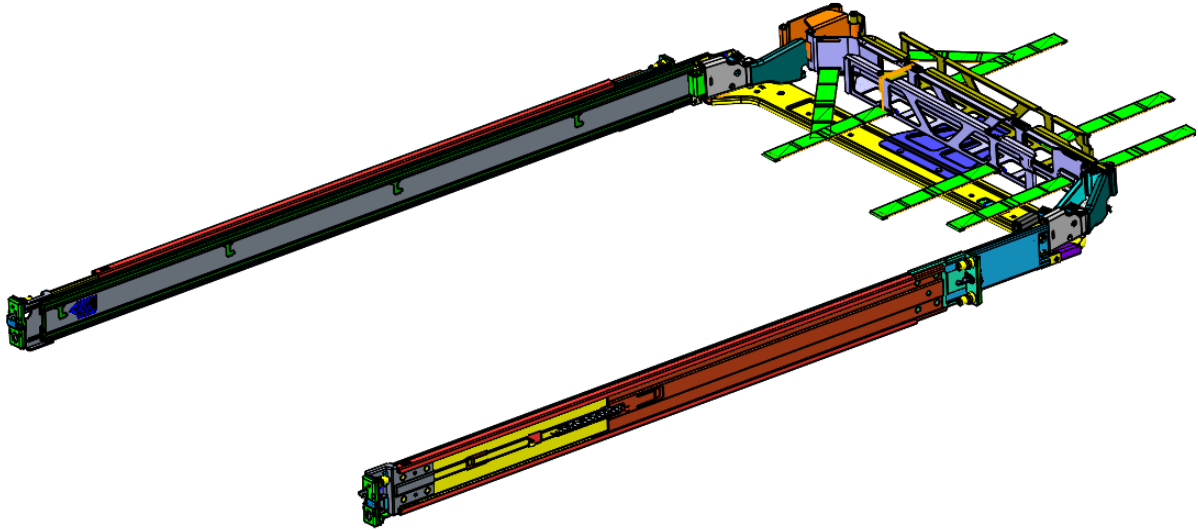


Figure 37. Sliding rails with optional CMA

Strain Relief Bar

The optional strain relief bar (SRB) for the XR11 and XR12 organizes and secures cables exiting the back of the server.

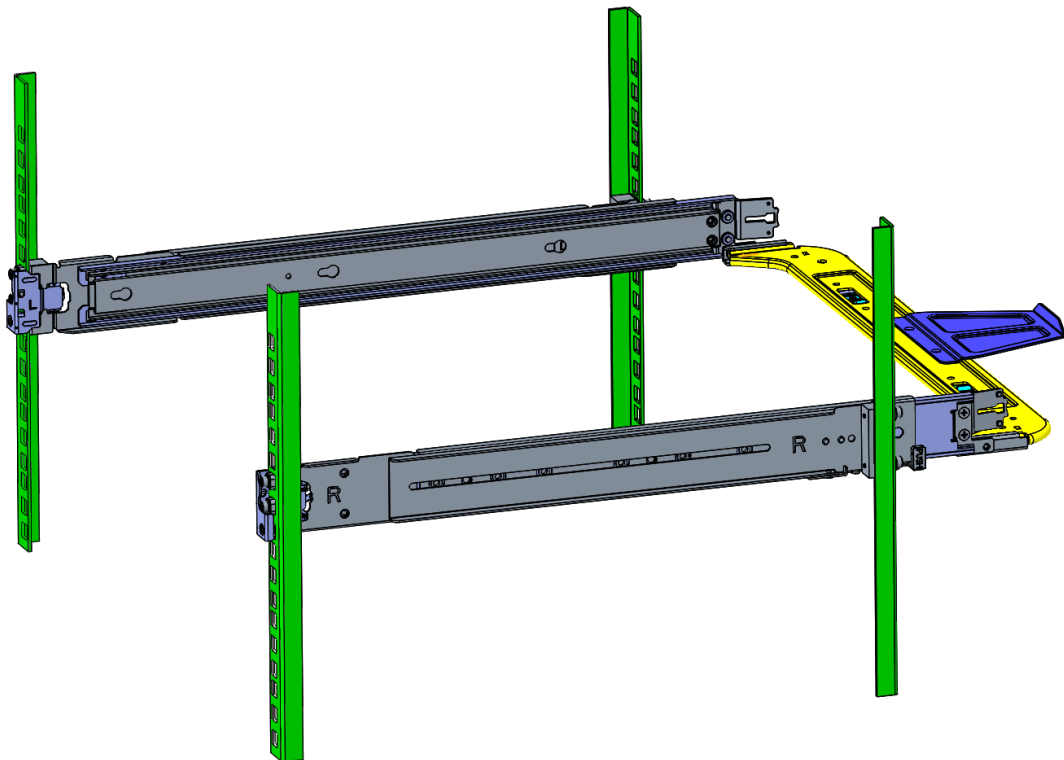


Figure 38. Sliding rails with optional SRB

- Tool-less attachment to rails
- Two depth positions to accommodate various cable loads and rack depths
- Supports cable loads and controls stresses on server connectors
- Cables can be segregated into discrete, purpose specific bundles

Supported Operating Systems

The PowerEdge XR11 and XR12 systems support the following operating systems:

- Canonical® Ubuntu® Server LTS
- Citrix® Hypervisor®
- Microsoft® Windows Server® with Hyper-V
- Red Hat® Enterprise Linux
- SUSE® Linux Enterprise server
- VMware® ESXi®
- RHEL Realtime

Links to specific OS versions and editions, certification matrices, Hardware Compatibility Lists (HCL) portal, and Hypervisor support are available at [Dell EMC Enterprise Operating Systems](#).

Dell EMC OpenManage systems management

Dell EMC OpenManage Portfolio

Simplifying hardware management through ease of use and automation

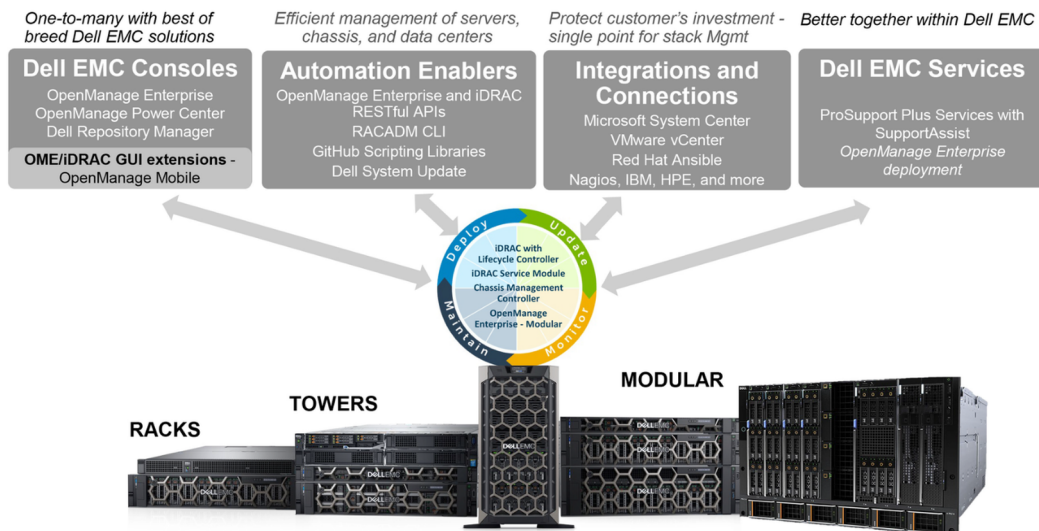


Figure 39. Dell EMC OpenManage Portfolio

Dell EMC delivers management solutions that help IT Administrators effectively deploy, update, monitor, and manage IT assets. OpenManage solutions and tools enable you to quickly respond to problems by helping them to manage Dell EMC servers effectively and efficiently; in physical, virtual, local, and remote environments, operating in-band, and out-of-band (agent-free). The OpenManage portfolio includes innovative embedded management tools such as the integrated Dell Remote Access Controller (iDRAC), Chassis Management Controller and Consoles like OpenManage Enterprise, OpenManage Power Manager plug in, and tools like Repository Manager.

Dell EMC has developed comprehensive systems management solutions based on open standards and has integrated with management consoles that can perform advanced management of Dell hardware. Dell EMC has connected or integrated the advanced management capabilities of Dell hardware into offerings from the industry's top systems management vendors and frameworks such as Ansible, thus making Dell EMC platforms easy to deploy, update, monitor, and manage.

The key tools for managing Dell EMC PowerEdge servers are iDRAC and the one-to-many OpenManage Enterprise console. OpenManage Enterprise helps the system administrators in complete lifecycle management of multiple generations of PowerEdge servers. Other tools such as Repository Manager, which enables simple yet comprehensive change management.

OpenManage tools integrate with systems management framework from other vendors such as VMware, Microsoft, Ansible, and ServiceNow. This enables you to use the skills of the IT staff to efficiently manage Dell EMC PowerEdge servers.

Topics:

- [Server and Chassis Managers](#)
- [Dell EMC consoles](#)
- [Automation Enablers](#)
- [Integration with third-party consoles](#)
- [Connections for third-party consoles](#)
- [Dell EMC Update Utilities](#)
- [Dell resources](#)

Server and Chassis Managers

- Integrated Dell Remote Access Controller (iDRAC)
- iDRAC Service Module (iSM)

Dell EMC consoles

- Dell EMC OpenManage Enterprise
- Dell EMC Repository Manager (DRM)
- Dell EMC OpenManage Enterprise Power Manager plugin to OpenManage Enterprise
- Dell EMC OpenManage Mobile (OMM)

Automation Enablers

- OpenManage Ansible Modules
- iDRAC RESTful APIs (Redfish)
- Standards-based APIs (Python, PowerShell)
- RACADM Command Line Interface (CLI)
- GitHub Scripting Libraries

Integration with third-party consoles

- Dell EMC OpenManage Integrations with Microsoft System Center
- Dell EMC OpenManage Integration for VMware vCenter (OMIVV)
- Dell EMC OpenManage Ansible Modules
- Dell EMC OpenManage Integration with ServiceNow

Connections for third-party consoles

- Micro Focus and other HPE tools
- OpenManage Connection for IBM Tivoli
- OpenManage Plug-in for Nagios Core and XI

Dell EMC Update Utilities


- Dell System Update (DSU)
- Dell EMC Repository Manager (DRM)
- Dell EMC Update Packages (DUP)
- Dell EMC Server Update Utility (SUU)
- Dell EMC Platform Specific Bootable ISO (PSBI)

Dell resources

For additional information about white papers, videos, blogs, forums, technical material, tools, usage examples, and other information, go to the OpenManage page at <https://www.dell.com/openmanagemanuals> or the following product pages:

Table 20. Dell resources

Resource	Location
Integrated Dell Remote Access Controller (iDRAC)	https://www.dell.com/idracmanuals
iDRAC Service Module (iSM)	https://www.dell.com/support/kbdoc/000178050/
OpenManage Ansible Modules	https://www.dell.com/support/kbdoc/000177308/
OpenManage Essentials (OME)	https://www.dell.com/support/kbdoc/000175879/
OpenManage Mobile (OMM)	https://www.dell.com/support/kbdoc/000176046
OpenManage Integration for VMware vCenter (OMIVV)	https://www.dell.com/support/kbdoc/000176981/
OpenManage Integration for Microsoft System Center (OMIMSSC)	https://www.dell.com/support/kbdoc/000147399
Dell EMC Repository Manager (DRM)	https://www.dell.com/support/kbdoc/000177083
Dell EMC System Update (DSU)	https://www.dell.com/support/kbdoc/000130590
Dell EMC Platform Specific Bootable ISO (PSBI)	Dell.com/support/article/sln296511
Dell EMC Chassis Management Controller (CMC)	www.dell.com/support/article/sln311283
OpenManage Connections for Partner Consoles	https://www.dell.com/support/kbdoc/000146912
OpenManage Enterprise Power Manager	https://www.dell.com/support/kbdoc/000176254
OpenManage Integration with ServiceNow (OMISNOW)	Dell.com/support/article/sln317784

 **NOTE:** Features may vary by server. Please refer to the product page on <https://www.dell.com/manuals> for details.

Dell Technologies Services

Dell Technologies Services include a wide, customizable range of service choices to simplify the assessment, design, implementation, management and maintenance of IT environments and to help you transition from platform to platform. Depending on your current business requirements and the level of service right for you, we provide factory, on-site, remote, modular, and specialized services that fit your needs and budget. We'll help with a little or a lot—your choice—and provide access to our global resources.

For more information, see DellEMC.com/Services.

Topics:


- [Dell EMC ProDeploy Enterprise Suite](#)
- [Dell EMC Remote Consulting Services](#)
- [Dell EMC Data Migration Service](#)
- [Dell EMC ProSupport Enterprise Suite](#)
- [Dell EMC ProSupport Plus for Enterprise](#)
- [Dell EMC ProSupport for Enterprise](#)
- [Dell EMC ProSupport One for Data Center](#)
- [ProSupport for HPC](#)
- [Support Technologies](#)
- [Dell Technologies Education Services](#)
- [Dell Technologies Consulting Services](#)
- [Dell EMC Managed Services](#)

Dell EMC ProDeploy Enterprise Suite

ProDeploy Enterprise Suite gets your server out of the box and into optimized production—fast. Our elite deployment engineers with broad and deep experience utilizing best-in-class processes along with our established global scale can help you around the clock and around the globe. From simple to the most complex server installations and software integration, we take the guess work and risk out of deploying your new server technology.

		Basic Deployment	ProDeploy	ProDeploy Plus
Pre-deployment	Single point of contact for project management	-	●	In-region
	Site readiness review	-	●	●
	Implementation planning	-	●	●
	SAM engagement for ProSupport Plus entitled devices	-	-	●
Deployment	Deployment service hours	Business hours	24x7	24x7
	Remote guidance for hardware installation or Onsite hardware installation and packaging material removal	Onsite	Remote or Onsite	Onsite
	Install and configure system software	-	Remote	Onsite
	Install support software and connect with Dell Technologies	-	●	●
	Project documentation with knowledge transfer	-	●	●
Post-deployment	Deployment verification	-	●	●
	Configuration data transfer to Dell EMC technical support	-	●	●
	30-days of post-deployment configuration assistance	-	-	●
	Training credits for Dell EMC Education Services	-	-	●

Figure 40. ProDeploy Enterprise Suite capabilities

 **NOTE:** Hardware installation not applicable on selected software products.

Dell EMC ProDeploy Plus

From beginning to end, ProDeploy Plus provides the skill and scale needed to successfully execute demanding deployments in today's complex IT environments. Certified Dell EMC experts start with extensive environmental assessments and detailed migration planning and recommendations. Software installation includes set up of most versions of Dell EMC SupportAssist and OpenManage system management utilities. Post-deployment configuration assistance, testing, and product orientation services are also available.

Dell EMC ProDeploy

ProDeploy provides full service installation and configuration of both server hardware and system software by certified deployment engineers including set up of leading operating systems and hypervisors as well as most versions of Dell EMC SupportAssist and OpenManage system management utilities. To prepare for the deployment, we conduct a site readiness review and implementation planning exercise. System testing, validation, and full project documentation with knowledge transfer complete the process.

Basic Deployment

Basic Deployment delivers worry-free professional installation by experienced technicians who know Dell EMC servers inside and out.

Dell EMC Server Configuration Services

With Dell EMC Rack Integration and other Dell EMC PowerEdge Server Configuration Services, you save time by receiving your systems racked, cabled, tested, and ready to integrate into the data center. Dell EMC staff pre-configure RAID, BIOS and iDRAC settings, install system images, and even install third-party hardware and software.

For more information, see [Server Configuration Services](#).

Dell EMC Residency Services

Residency Services helps customers transition to new capabilities quickly with the assistance of on-site or remote Dell EMC experts whose priorities and time you control. Residency experts can provide post implementation management and knowledge transfer related to a new technology acquisition or day-to-day operational management of the IT infrastructure.

Dell EMC Remote Consulting Services

When you are in the final stages of your PowerEdge server implementation, you can rely on Dell EMC Remote Consulting Services and our certified technical experts to help you optimize your configuration with best practices for your software, virtualization, server, storage, networking, and systems management.

Dell EMC Data Migration Service

Protect your business and data with our single point of contact to manage your data migration project. Your project manager will work with our experienced team of experts to create a plan using industry-leading tools and proven processes based on global best practices to migrate your existing files and data so your business system get up and running quickly and smoothly.

Dell EMC ProSupport Enterprise Suite

With the ProSupport Enterprise Suite, we help keep your IT systems running smoothly, so you can focus on running your business. We will help maintain peak performance and availability of your most essential workloads. ProSupport Enterprise Suite is a suite of support services that enable you to build the solution that is right for your organization.

Choose support models based on how you use technology and where you want to allocate resources. From the desktop to the data center, address everyday IT challenges, such as unplanned downtime, mission-critical needs, data and asset protection, support planning, resource allocation, software application management and more. Optimize IT resources by choosing the right support model.

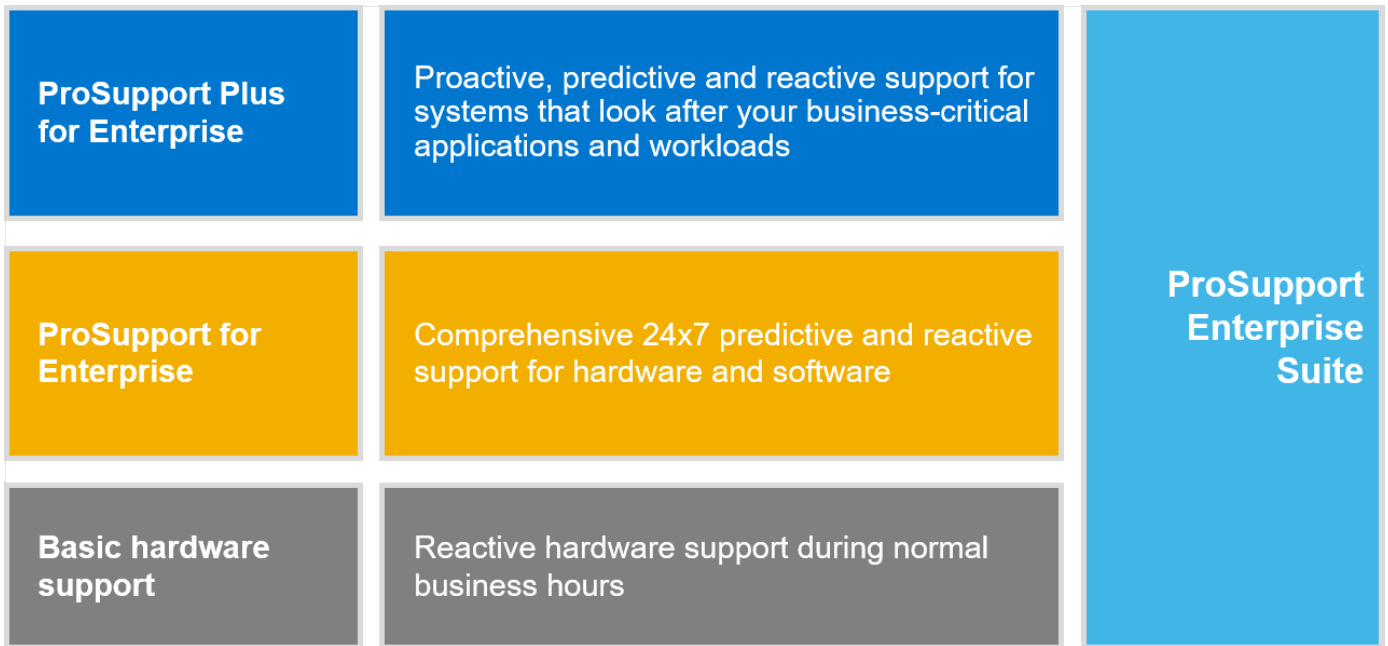


Figure 41. Dell EMC ProSupport Enterprise Suite

Dell EMC ProSupport Plus for Enterprise

When you purchase your PowerEdge server, we recommend ProSupport Plus, our proactive and preventative support service for your business-critical systems. ProSupport Plus provides you with all the benefits of ProSupport, plus the following:

- An assigned Services Account Manager who knows your business and your environment
- Immediate advanced troubleshooting from an engineer who understands your PowerEdge server
- Personalized, preventive recommendations based on analysis of support trends and best practices from across the Dell Technologies infrastructure solutions customer base to reduce support issues and improve performance
- Predictive analysis for issue prevention and optimization enabled by SupportAssist
- Proactive monitoring, issue detection, notification, and automated case creation for accelerated issue resolution enabled by SupportAssist
- On-demand reporting and analytics-based recommendations enabled by SupportAssist and TechDirect

Dell EMC ProSupport for Enterprise

Our ProSupport service offers highly trained experts around the clock and around the globe to address your IT needs. We help minimize disruptions and maximize availability of PowerEdge server workloads with:

- 24x7 support through phone, chat and online
- Predictive, automated tools and innovative technology
- A central point of accountability for all hardware and software issues
- Collaborative 3rd party support
- Hypervisor, operating system and application support
- Consistent experience regardless of where you are located or what language you speak
- Optional onsite parts and labor response options including next business day or four-hour mission critical

i **NOTE:** Subject to service offer country availability.

Enterprise Support Services Feature Comparison

	Basic	ProSupport	ProSupport Plus
Remote technical support	9x5	24x7	24x7
Covered products	Hardware	Hardware Software	Hardware Software
Onsite hardware support	Next business day	Next business day or 4hr mission critical	Next business day or 4 hr mission critical
3 rd party collaborative assistance		●	●
Automated issue detection & proactive case creation		●	●
Self-service case initiation and management		●	●
Access to software updates		●	●
Priority access to specialized support experts			●
3 rd party software support			●
Assigned Services Account Manager			●
Personalized assessments and recommendations			●
Semiannual systems maintenance			●

Availability and terms of Dell Technologies services vary by region and by product. For more information, please view our Service Descriptions available on Dell.com

Figure 42. Dell EMC Enterprise Support model

Dell EMC ProSupport One for Data Center

ProSupport One for Data Center offers flexible site-wide support for large and distributed data centers with more than 1,000 assets. This offering is built on standard ProSupport components that leverage our global scale but are tailored to your company's needs. While not for everyone, this service option offers a truly unique solution for Dell Technologies largest customers with the most complex environments.

- Team of assigned Services Account Managers with remote, on-site options
- Assigned ProSupport One technical and field engineers who are trained on your environment and configurations
- On-demand reporting and analytics-based recommendations enabled by SupportAssist and TechDirect
- Flexible on-site support and parts options that fit your operational model
- A tailored support plan and training for your operations staff

ProSupport for HPC

The ProSupport for HPC provides solution-aware support including:

- Access to senior HPC experts
- Advanced HPC cluster assistance: performance, interoperability & configuration
- Enhanced HPC solution level end-to-end support
- Remote pre-support engagement with HPC Specialists during ProDeploy implementation

Learn more at DellEMC.com/HPC-Services.

ProSupport Add-on for HPC

Delivering a true end-to-end support experience across your HPC environment

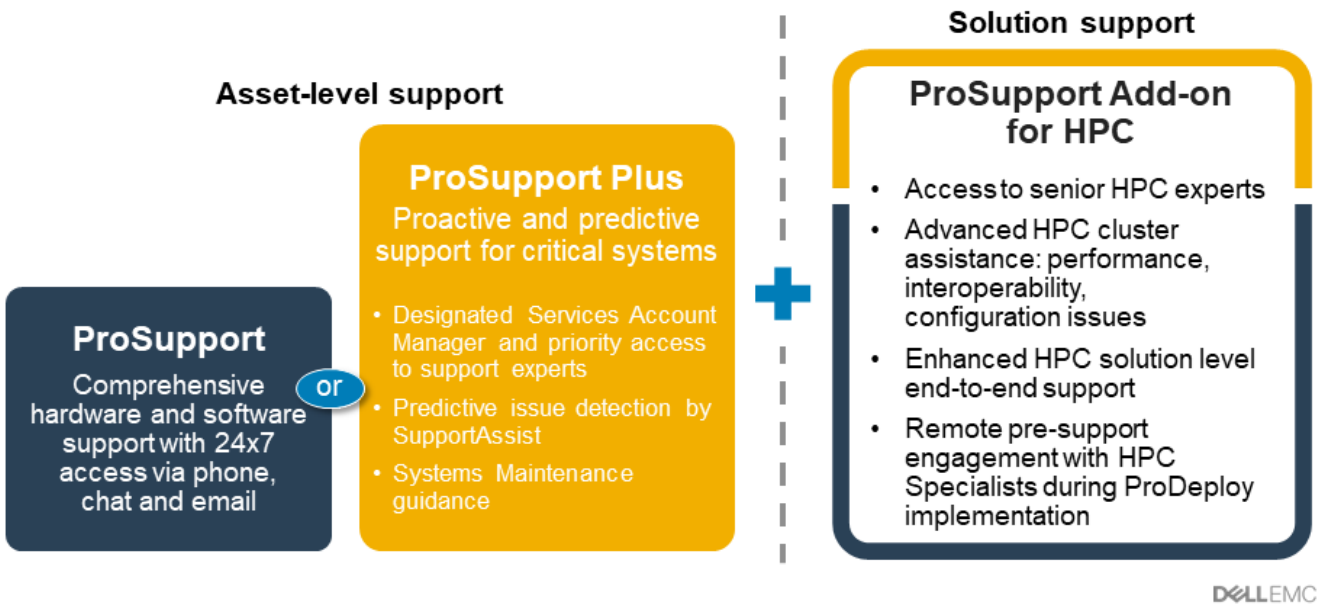


Figure 43. ProSupport for HPC

Support Technologies

Powering your support experience with predictive, data-driven technologies.

Dell EMC SupportAssist

The best time to solve a problem is before it happens. The automated proactive and predictive technology SupportAssist helps reduce steps and time to resolution, often detecting issues before they become a crisis. Benefits include:

- Value—SupportAssist is available to all customers at no additional charge
- Improve productivity—replace manual, high-effort routines with automated support
- Accelerate time to resolution—receive issue alerts, automatic case creation, and proactive contact from Dell EMC experts
- Gain insight and control—optimize enterprise devices with on-demand ProSupport Plus reporting in TechDirect, and get predictive issue detection before the problem starts

NOTE: SupportAssist is included with all support plans, but features vary based on service level agreement.

	Basic Hardware Warranty	ProSupport	ProSupport Plus
Automated issue detection and system state information collection	•	•	•
Proactive, automated case creation and notification		•	•
Predictive issue detection for failure prevention			•
Recommendation reporting available on-demand in TechDirect			•

Figure 44. SupportAssist model

Get started at Dell.com/SupportAssist

Dell EMC TechDirect

Boost IT team productivity when supporting Dell EMC systems. With over 1.4 million self-dispatches processed each year, TechDirect has proven its effectiveness as a support tool. You can:

- Self-dispatch replacement parts
- Request technical support
- Integrate APIs into your help desk

Or, access all your Dell EMC certification and authorization requirements. Train your staff on Dell EMC products, as TechDirect allows you to:

- Download study guides
- Schedule certification and authorization exams
- View transcripts of completed courses and exams

Register at techdirect.dell.

Dell Technologies Education Services

Build the IT skills required to influence the transformational outcomes of the business. Enable talent and empower teams with the right skills to lead and execute transformational strategy that drives competitive advantage. Leverage the training and certification required for real transformation.

Dell Technologies Education Services offers PowerEdge server training and certifications designed to help you achieve more from your hardware investment. The curriculum delivers the information and the practical, hands-on skills that you and your team need to confidently install, configure, manage, and troubleshoot your Dell EMC servers. To learn more or register for a class today, see LearnDell.com/Server.

Dell Technologies Consulting Services

Our expert consultants help you transform faster, and quickly achieve business outcomes for the high value workloads Dell EMC PowerEdge systems can handle.

From strategy to full-scale implementation, Dell Technologies Consulting can help you determine how to execute your IT, workforce, or application transformation.

We use prescriptive approaches and proven methodologies combined with Dell Technologies' portfolio and partner ecosystem to help you achieve real business outcomes. From multi-cloud, applications, DevOps, and infrastructure transformations, to business resiliency, data center modernization, analytics, workforce collaboration, and user experiences—we're here to help.

Dell EMC Managed Services

Reduce the cost, complexity, and risk of managing IT. Focus your resources on digital innovation and transformation while our experts help optimize your IT operations and investment with managed services backed by guaranteed service levels.

Appendix A. Additional specifications

Topics:

- Chassis dimensions
- Chassis weight
- Video specifications
- USB ports
- Power Supply Units for XR11 and XR12
- Environmental Specifications for XR11 and XR12

Chassis dimensions

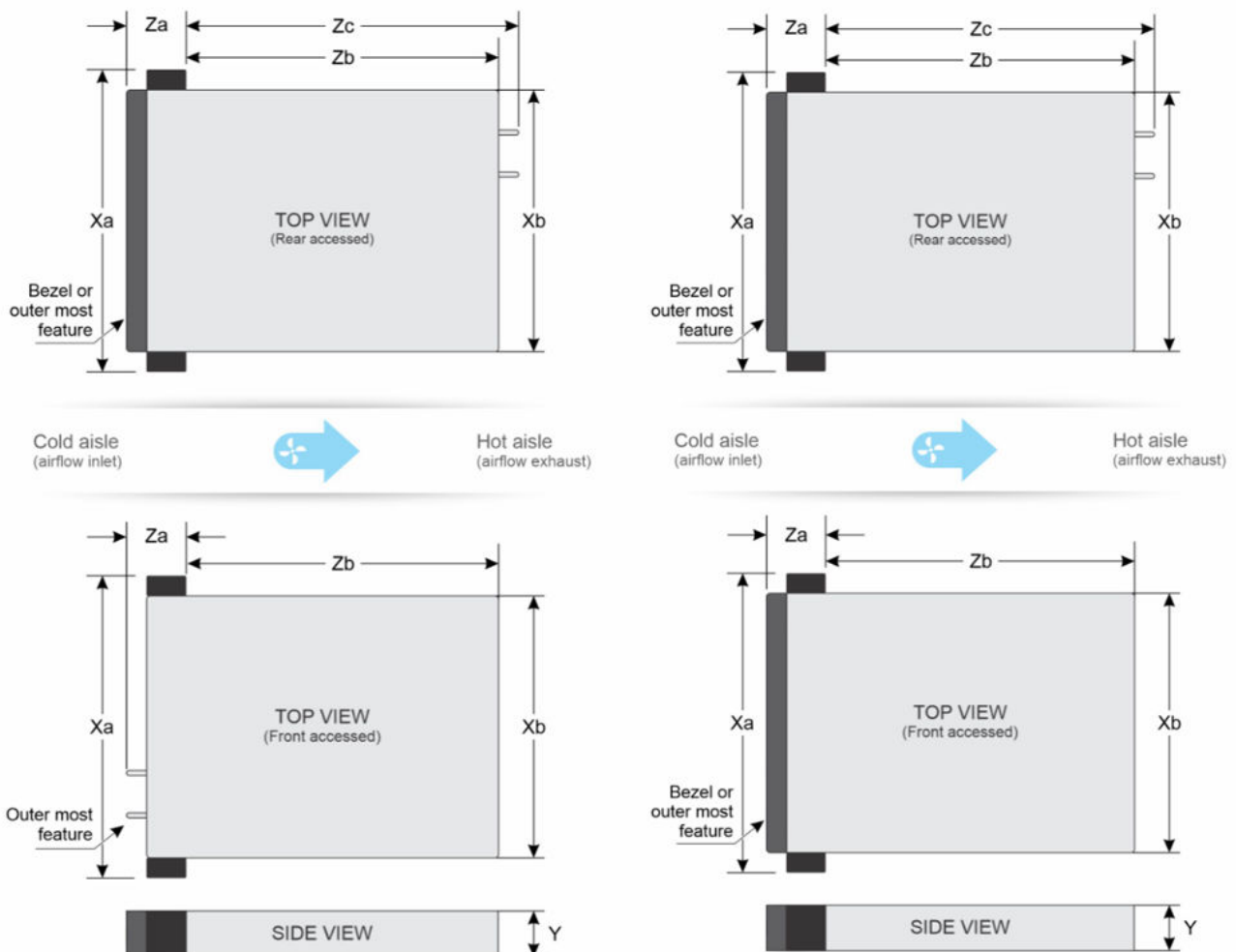
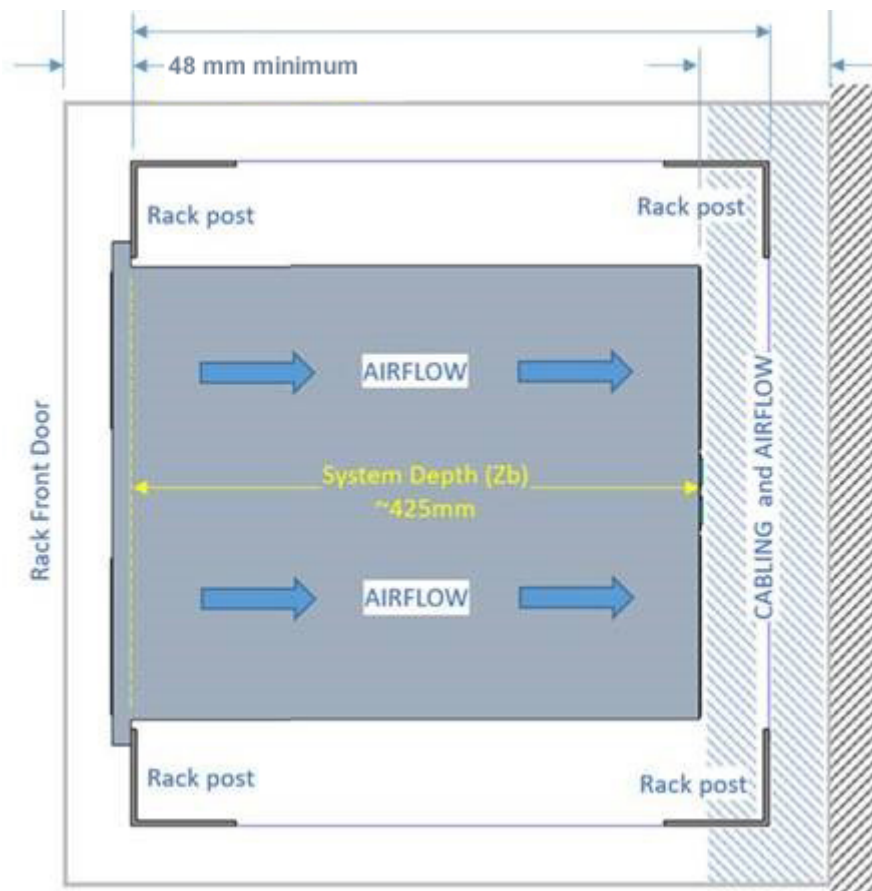


Figure 45. XR11 and XR12 Chassis dimensions for rear accessed (top) and front accessed (bottom)

Table 21. XR11 and XR12 Chassis dimensions

Dimensions	Rear Access (NAF)		Front Access (RAF)	
	XR11	XR12	XR11	XR12
Xa	482.6 mm (19 inches)	482.6 mm (19 inches)	482.6 mm (19 inches)	482.6 mm (19 inches)
Xb	434 mm (17.08 inches)	434 mm (17.08 inches)	434 mm (17.08 inches)	434 mm (17.08 inches)
Y	42.8 mm (1.68 inches)	86.8 mm (3.41 inches)	42.8 mm (1.68 inches)	86.8 mm (3.41 inches)
Za	31 mm (1.22 inches) without bezel	31 mm (1.22 inches) without bezel	63 mm (2.48 inches) without bezel	63 mm (2.48 inches) without bezel
Za (bezel)	45 mm (1.77 inches) with bezel	45 mm (1.77 inches) with bezel	N/A	153 mm (6.02 inches) with bezel
Zb	400 mm (15.74 inches) Ear to rear wall	400 mm (15.74 inches) Ear to rear wall	400 mm (15.74 inches) Ear to rear wall	400 mm (15.74 inches) Ear to rear wall
Zc	432 mm (17 inches) Ear to PSU handle	432 mm (17 inches) Ear to PSU handle	N/A	N/A

For XR11 and XR12 Rear Accessed (NAF) orientations support racks with 48 mm spacing from rack post to inside surface of rack door.



Chassis weight

Table 22. XR11 and XR12 Maximum chassis weight

Dimensions	Rear Access (NAF)		Front Access (RAF)	
	XR11	XR12	XR11	XR12
Maximum weight (with all drives/SSDs/rails/bezel)	13.8 kg	19.5 kg	13.6 kg	20.5 kg

Video specifications

The platform supports the following video resolution and refresh rates:

Table 23. Video resolution and refresh rate

Resolution	Refresh Rate	Freq.	Pixel Clock	DVO DisplayPort
1024 x 768	60 Hz	48.4 kHz	65.0 MHz	Yes*
1280 x 800	60 Hz	49.7 kHz	83.5 MHz	Yes*
1280 x 1024	60 Hz	64.0 kHz	108.0 MHz	Yes*
1360 x 768	60 Hz	47.71 kHz	85.5 MHz	Yes*
1440 x 900	60 Hz	55.9 kHz	106.5 MHz	Yes*
1600 x 900	60 Hz	55.54 kHz	97.75 MHz	Yes*
1600 x 1200	60 Hz	75.0 kHz	162.0 MHz	Yes*
1680 x 1050	60 Hz	64.7 kHz	119.0 MHz	Yes*
1920 x 1080	60 Hz (RB)	67.158 kHz	173.0 MHz	No
1920 x 1200	60 Hz (RB)	74.556 kHz	193.25 MHz	No

*DVO - DP is for investigation only, dependent on Nuvoton DVO capabilities to support up to 165 MHz. Rear Panel Performance is TBD subject to final board design and losses to rear VGA connector.

*(RB) - Reduced Blanking for Digital Displays requiring less blank time. This was introduced for Signal Integrity improvements by reducing Pixel Clock rates for VGA- Analog input devices.

USB ports

USB ports specifications for XR11

Table 24. PowerEdge XR11 USB ports specifications for Rear Accessed configuration

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

Table 24. PowerEdge XR11 USB ports specifications for Rear Accessed configuration (continued)

Front		Rear		Internal	
USB port type	No. of ports	USB port type	No. of ports	USB port type	No. of ports
Micro-USB 2.0-compliant port for iDRAC Direct	One	USB 3.0-compliant port	One		

Table 25. PowerEdge XR11 USB ports specifications for Front Accessed configuration

Front		Internal	
USB port type	No. of ports	USB port type	No. of ports
USB 2.0-compliant port	One	Internal USB 3.0-compliant port	One
USB 3.0-compliant port	One		
Micro-USB 2.0-compliant port for iDRAC Direct	One		

i NOTE: Internal USB port is available on Riser 1B.

USB ports specifications for XR12

Table 26. PowerEdge XR12 USB ports specifications for Rear Accessed configuration

Front		Rear		Internal	
USB port type	No. of ports	USB port type	No. of ports	USB port type	No. of ports
USB 2.0-compliant port	One	USB 2.0-compliant port	One	Internal USB 3.0-compliant port	One
Micro-USB 2.0-compliant port for iDRAC Direct	One	USB 3.0-compliant port	One		

Table 27. PowerEdge XR12 USB ports specifications for Front Accessed configuration

Front		Internal	
USB port type	No. of ports	USB port type	No. of ports
USB 2.0-compliant port	Two	Internal USB 3.0-compliant port	One
USB 3.0-compliant port	One		
Micro-USB 2.0-compliant port for iDRAC Direct	One		

i NOTE: Internal USB port is available on Riser 1B.

Power Supply Units for XR11 and XR12

Energy Smart power supplies have intelligent features, such as the ability to dynamically optimize efficiency while maintaining availability and redundancy. Also featured are enhanced power-consumption reduction technologies, such as high-efficiency power conversion, advanced thermal-management techniques, and embedded power-management features including high-accuracy power monitoring.

Supported power supply units

The table below shows the power supply unit options that are available for the PowerEdge XR11 and XR12.

Table 28. Power supply unit options

Wattage	Frequency	Voltage	Class	Heat dissipation
800 W (WRAC & MM 240V)	50/60Hz	100-240 Vac/ 9.2-4.7 A	Platinum	3139 BTU/hr
	N/A	240 Vdc/ 3.8 A	N/A	3139 BTU/hr
*1100 W -48 VDC	N/A	-48-60 Vdc/27A	N/A	4266 BTU/hr
*1400 W (WRAC & MM 240V)	50/60Hz	100-240 Vac/ 12-8 A	Platinum	5459 BTU/hr
	N/A	240 Vdc/ 6.6 A	N/A	5459 BTU/hr

NOTE: 1100 W -48 VDC and 1400 W AC come in Reverse Airflow offerings (Reverse Airflow PSUs).

Table 29. PSUs highline and lowline ratings

	800 W Platinum	1100 W -48 VDC	1400 W Platinum
Peak Power (Highline)	1360 W	N/A	2380 W
Highline	800 W	N/A	1400 W
Peak Power (Lowline)	1360 W	N/A	1785 W
Lowline	800 W	N/A	1050 W
Highline 240 VDC	800 W	N/A	1400 W
Highline 200-380 VDC	N/A	N/A	N/A
DC -48--60 V	N/A	1100 W	N/A

The PowerEdge XR11 and XR12 support up to 2 AC or DC power supplies with 1+1 redundancy, autosensing and auto-switching capability.

If two PSUs are present during POST, a comparison is made between the wattage capacities of the PSUs. In the event that the PSU wattages do not match, the larger of the two PSUs is enabled and there is also a PSU mismatch warning displayed in BIOS and iDRAC.

If a second PSU is added at run-time, in order for that particular PSU to be enabled, the wattage capacity of the first PSU must equal the second PSU. Otherwise, the PSU will be flagged as unmatched in iDRAC and the second PSU will not be enabled.

The PowerEdge XR11 and XR12 Rear Accessed chassis will only support normal airflow PSUs. Reverse airflow PSUs cannot be installed in a Rear Accessed/NAF chassis due to a specific keying mechanism on the chassis and PSU. Similarly, reverse airflow PSUs are only allowed in Front Accessed/RAF chassis. A normal airflow PSU cannot be installed in a Front Accessed/RAF chassis due to the same mechanical restrictions (keying mechanism) outlined above.

Power supply efficiency for XR11 and XR12

Dell PSUs have achieved Platinum efficiency levels as shown in the table below.

Table 30. PSU efficiency levels

Efficiency targets by load						
Form factor	Output	Class	10%	20%	50%	100%
Redundant 60 mm	800 W AC Platinum	Platinum	89.00%	93.00%	94.00%	91.50%
	1100 W -48 Vdc Power Supply efficiency at (-48 Vdc)	N/A	85.00%	90.00%	92.00%	90.00%

Table 30. PSU efficiency levels (continued)

Efficiency targets by load						
Form factor	Output	Class	10%	20%	50%	100%
	1400 W AC Platinum	Platinum	89.00%	93.00%	94.00%	91.50%

Environmental Specifications for XR11 and XR12

The table below details the environmental specifications for the platform. For additional information about environmental measurements for specific system configurations, see [Product Safety, EMC and Environmental datasheets](#).

An important feature of having a broad menu of different categories is to allow the same platform model to have different operational ranges depending on the MRD defined.

A list of range categories for different configurations shall be identified by thermal team as early in the project as possible. Post release, it may be found in the Dell EMC PowerEdge XR11 and XR12 Installation and Service Manual.

The below table summarizes the ASHRAE temperature, humidity and de-rating requirements.

Table 31. Operational climatic range ASHRAE categories

ASHRAE A2	Allowable continuous operations
Temperature Ranges (For Altitude <900 meters or 2953 feet)	10 to 35°C (50 to 95°F) with no direct sunlight on the equipment
Humidity Percent Ranges (Non-Condensing at all times)	8%RH with -12°C minimum dew point to 80%RH with 21°C (69.8°F) maximum dew point
Operational Altitude De-Rating	Maximum temperature is reduced by 1°C/300 meters (33.8°F/984 feet) above 900 meters (2,953 feet)

ASHRAE A3	Allowable continuous operations
Temperature Ranges (For Altitude <900 meters or 2953 feet)	5 to 40°C (41 to 104°F) with no direct sunlight on the platform
Humidity Percent Ranges (Non-Condensing at all times)	8%RH with -12°C minimum dew point to 85%RH with 24°C (75.2°F) maximum dew point
Operational Altitude De-Rating	Maximum temperature is reduced by 1°C/175 meters (33.8°F/574 feet) above 900 meters (2,953 feet)

ASHRAE A4	Allowable continuous operations
Temperature Ranges (For Altitude <900 meters or 2953 feet)	5 to 45°C (41 to 113°F) with no direct sunlight on the equipment
Humidity Percent Ranges (Non-Condensing at all times)	8%RH with -12°C minimum dew point to 90%RH with 24°C (75.2°F) maximum dew point
Operational Altitude De-Rating	Maximum temperature is reduced by 1°C/125 meters (33.8°F/410 feet) above 900 meters (2,953 feet)

Rugged	Allowable continuous operations
Temperature Ranges (For Altitude <900 meters or 2953 feet)	-5 to 55°C (23 to 131°F) with no direct sunlight on the equipment
Humidity Percent Ranges (Non-Condensing at all times)	8%RH with -12°C minimum dew point to 90%RH with 24°C (75.2°F) maximum dew point
Operational Altitude De-Rating	Maximum temperature is reduced by 1°C/80 meters (33.8°F/262 feet) above 900 meters (2,953 feet)

The table below shows the requirements shared across all environmental categories.

Table 32. Shared requirements

Allowable continuous operations	
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 to 65°C (-40 to 149°F)
Non-Operational Humidity Limits (Non-Condensing at all times)	5% to 95%RH with 27°C (80.6°F) maximum dew point.
Maximum Non-Operational Altitude	12,000 meters (39,370 feet)
Maximum Operational Altitude	3,048 meters (10,000 feet)

Table 33. Maximum vibration specifications

Maximum vibration	Specifications
Operating	MIL-STD-810H, Method 514.8, 1.04 Grms, 2-500Hz, Random Vibration, Figure 514.8D-11
Storage	For XR11: <ul style="list-style-type: none"> • MIL-STD-810H, Method 514.8, Category 4, Figure 514.8C-2, 10-500 Hz, 60 minutes/axis • MIL-STD-810H, Method 514.8, Category 24, Figure 514.8E-1, 20-2000Hz, 60 minutes/axis For XR12: <ul style="list-style-type: none"> • MIL-STD-810H, Method 514.8, Category 4, Figure 514.8C-2, 5-500 Hz, 60 minutes/axis • MIL-STD-810H, Method 514.8, Category 24, Figure 514.8E-1, 20-2000Hz, 60 minutes/axis

Table 34. Maximum shock specifications

Maximum shock	Specifications
Operating	MIL-STD-810H, Method 516.8, Procedure I, 11ms, 20G MIL-STD-810H, Method 516.8, Procedure I, 11ms, 40G (SSD)
Operating (Navy)	MIL-STD-901E, Grade A, Class 2, Type A, in approved military transit case
Storage	MIL-STD-810H, Method 516.8, Procedures I, 11 ms, 40G (SSD) MIL-STD-810H, Method 516.8, Procedures I, 11 ms, 40G

ASHRAE A3/A4/Rugged support restriction for XR11 and XR12

Thermal Restrictions for ASHRAE A3 for Rear Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported
- 128 GB or greater capacity DIMMs and DCPMM are not supported
- Non-Dell qualified peripheral cards are not supported
- GPU is not supported
- PCIe SSDs are not supported

- BOSS M.2 is not supported
- High temperature spec 85°C active optics cables are required
- PERC with battery is not supported
- NVMe drives are not supported
- CX-6 100GB NIC card is not supported (XR11)
- SAS SSD is not supported (XR11)

Thermal Restrictions for ASHRAE A4 for Rear Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported
- 128 GB or greater capacity DIMMs and DCPMM are not supported
- Non-Dell qualified peripheral cards are not supported
- GPU is not supported
- PCIe SSDs are not supported
- BOSS M.2 is not supported
- High temperature spec 85°C active optics cables are required
- PERC with battery is not supported
- NVMe drives are not supported
- CX-6 100GB NIC card is not supported (XR11)
- SAS SSD is not supported (XR11)

Thermal Restrictions for Rugged Rear Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported
- 128 GB or greater capacity DIMMs and DCPMM are not supported
- Two PSUs are required in redundant mode. System performance may be reduced in the event of a PSU failure
- Non-Dell qualified peripheral cards are not supported
- GPU is not supported
- PCIe SSDs are not supported
- BOSS M.2 is not supported
- High temperature spec 85°C active optics cables are required
- PERC with battery is not supported
- NVMe drives are not supported
- CX-6 100GB NIC card is not supported (XR11)
- SAS SSD is not supported (XR11)

Thermal Restrictions for ASHRAE A3 for Front Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported
- 128 GB or greater capacity DIMMs and DCPMM are not supported
- Non-Dell qualified peripheral cards are not supported
- GPU is not supported
- PCIe SSDs are not supported
- BOSS M.2 greater than 480 GB is not supported
- High temperature spec 85°C active optics cables are required
- NVMe drives are not supported
- SAS SSD is not supported (XR11)

Thermal Restrictions for ASHRAE A4 for Front Accessed configuration

Thermal Restrictions for ASHRAE A4 for Front Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported
- 128 GB or greater capacity DIMMs and DCPMM are not supported
- Non-Dell qualified peripheral cards are not supported
- GPU is not supported
- PCIe SSDs are not supported
- BOSS M.2 greater than 480 GB is not supported
- NVMe drives are not supported
- SAS SSD is not supported (XR11)

Thermal Restrictions for Rugged Front Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported
- 128 GB or greater capacity DIMMs and DCPMM are not supported
- Non-Dell qualified peripheral cards are not supported
- GPU is not supported
- PCIe SSDs are not supported
- BOSS M.2 is not supported
- PERC with battery is not supported
- NVMe drives are not supported
- SAS SSD is not supported (XR11)

Thermal restrictions

The XR11 and XR12 supports all standard configurations for continuous operation from 10°C to 35°C to meet ASHRAE standard A2. Additionally, the XR11 and XR12 will support custom configurations in rugged environment temperatures up to 55°C. Refer to the Environmental Specifications for information on ASHRAE temperature and humidity standards and any applicable configuration restrictions. For information on rugged specifications, please refer to Rugged Certifications and Specifications section. All configurations supported at the thermal limit of 55°C are subject to restrictions.

Table 35. Thermal restrictions for XR11 rear accessed chassis

Dell EMC PowerEdge Server Extended Ambient 40°C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Ambient 45°C Operating Support (ASHRAE A4 compliant)	Rugged Environment Extended Ambient 55°C Operating Support
<ul style="list-style-type: none"> • Processor TDP greater than 150 W are not supported • 128 GB or greater capacity DIMMs are not supported • Intel PMem memory not supported • NVMe or PCIeSSD not supported • SAS SSD not supported • BOSS 1.0 not supported • GPU not supported • PERC with battery not supported • 100 GB NIC card not supported • Non-Dell qualified peripheral cards are not supported • 85°C spec active optic cables are required 	<ul style="list-style-type: none"> • Processor TDP greater than 150 W are not supported • 128 GB or greater capacity DIMMs are not supported • Intel PMem memory not supported • NVMe or PCIeSSD not supported • SAS SSD not supported • BOSS 1.0 not supported • GPU not supported • PERC with battery not supported • 100 GB NIC card not supported • Non-Dell qualified peripheral cards are not supported • 85°C spec active optic cables are required 	<ul style="list-style-type: none"> • Processor TDP greater than 150 W are not supported • 128 GB or greater capacity DIMMs are not supported • Intel PMem memory not supported • NVMe or PCIeSSD not supported • SAS SSD not supported • BOSS 1.0 not supported • GPU not supported • PERC with battery not supported • 100 GB NIC card not supported • Non-Dell qualified peripheral cards are not supported • 85°C spec active optic cables are required • Two PSUs are required in redundant mode. System performance may be reduced in the event of a PSU failure

Table 36. Thermal restrictions for XR11 front accessed chassis

Dell EMC PowerEdge Server Extended Ambient 40°C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Ambient 45°C Operating Support (ASHRAE A4 compliant)	Rugged Environment Extended Ambient 55°C Operating Support
<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● SAS SSD not supported ● GPU not supported ● Non-Dell qualified peripheral cards are not supported 	<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● SAS SSD not supported ● GPU not supported ● Non-Dell qualified peripheral cards are not supported 	<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● SAS SSD not supported ● GPU not supported ● PERC with battery not supported ● Non-Dell qualified peripheral cards are not supported

Table 37. Thermal restrictions for XR12 rear accessed chassis

Dell EMC PowerEdge Server Extended Ambient 40°C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Ambient 45°C Operating Support (ASHRAE A4 compliant)	Rugged Environment Extended Ambient 55°C Operating Support
<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● BOSS 1.0 not supported ● GPU not supported ● PERC with battery not supported ● Non-Dell qualified peripheral cards are not supported ● 85°C spec active optic cables are required 	<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● BOSS 1.0 not supported ● GPU not supported ● PERC with battery not supported ● Non-Dell qualified peripheral cards are not supported ● 85°C spec active optic cables are required 	<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● BOSS 1.0 not supported ● GPU not supported ● PERC with battery not supported ● Non-Dell qualified peripheral cards are not supported ● 85°C spec active optic cables are required ● Two PSUs are required in redundant mode. System performance may be reduced in the event of a PSU failure

Table 38. Thermal restrictions for XR12 front accessed chassis

Dell EMC PowerEdge Server Extended Ambient 40°C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Ambient 45°C Operating Support (ASHRAE A4 compliant)	Rugged Environment Extended Ambient 55°C Operating Support
<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● GPU not supported ● Non-Dell qualified peripheral cards are not supported 	<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● GPU not supported ● Non-Dell qualified peripheral cards are not supported 	<ul style="list-style-type: none"> ● Processor TDP greater than 150 W are not supported ● 128 GB or greater capacity DIMMs are not supported ● Intel PMem memory not supported ● NVMe or PCIeSSD not supported ● GPU not supported ● PERC with battery not supported ● Non-Dell qualified peripheral cards are not supported

Other Restrictions for XR11 and XR12:

- Do not perform a cold startup below 5°C
- DIMM blanks are required on empty slots
- HDD blanks are required on empty slots
- PCIe blank is require on empty slot1 for XR11 and empty slot3 for XR12

- High temp spec (85°C) active optics cables are required for Rear Accessed Chassis at ambient higher than 35°C

Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 39. Industry standard documents

Standard	URL for information and specifications
ACPI Advance Configuration and Power Interface Specification, v2.0c	https://uefi.org/specsandtesttools
Ethernet IEEE 802.3-2005	https://standards.ieee.org/
HDG Hardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.msp
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR4 Memory DDR4 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	http://pmbus.org/Assets/PDFS/Public/PMBus_Specification_Part_1_Rev_1-1_20070205.pdf
SAS Serial Attached SCSI, v1.1	http://www.t10.org/
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2 and v2.0	trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	uefi.org/specifications
USB Universal Serial Bus Specification, Rev. 2.0	usb.org/developers/docs

Appendix C Additional resources

Table 40. Additional resources

Resource	Description of contents	Location
Installation and Service Manual	This manual, available in PDF format, provides the following information: <ul style="list-style-type: none"> • Chassis features • System Setup program • System indicator codes • System BIOS • Remove and replace procedures • Diagnostics • Jumpers and connectors 	Dell.com/Support/Manuals
Getting Started Guide	This guide ships with the system, and is also available in PDF format. This guide provides the following information: <ul style="list-style-type: none"> • Initial setup steps 	Dell.com/Support/Manuals
Rack Installation Guide	This document ships with the rack kits, and provides instructions for installing a server in a rack.	Dell.com/Support/Manuals
System Information Label	The system information label documents the system board layout and system jumper settings. Text is minimized due to space limitations and translation considerations. The label size is standardized across platforms.	Inside the system chassis cover
Quick Resource Locator (QRL)	This code on the chassis can be scanned by a phone application to access additional information and resources for the server, including videos, reference materials, service tag information, and Dell EMC contact information.	Inside the system chassis cover
Energy Smart Solution Advisor (ESSA)	The Dell EMC online ESSA enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use ESSA to calculate the power consumption of your hardware, power infrastructure, and storage.	Dell.com/calc