Dell EMC PowerEdge MX750c

Technical Guide

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DELL Technologies

Notes, cautions, and warnings

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

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

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

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1

System overview

Designed to run a variety of high-performance workloads, PowerEdge MX750c is the 2-socket modular server for the Dell EMC PowerEdge MX infrastructure. This server features the Intel® Xeon® Scalable processor family, with up to 32 DIMMs, PCI Express® (PCIe) 4.0 enabled I/O slots, and a choice of high bandwidth Ethernet and Fiber Channel mezzanine cards.

Topics:

- Key workloads
- New technologies

Key workloads

Designed for Dell EMC's PowerEdge MX infrastructure ecosystem, the PowerEdge MX750c server, with dense compute, large memory capacity and rich set of storage subsystem options, delivers the flexibility and agility needed in today's software-defined data centers. This full-featured, storage-rich, flexible 2-socket compute sled is ideal for virtualization, containerization, collaborative, and software-defined workloads given the low-latency capabilities of the MX ecosystem networking portfolio.

New technologies

Table 1. New Technologies featured on the MX750c

Technology	Detailed Description
Intel® Xeon® Scalable processors	Workload-optimized processors to support hybrid cloud infrastructures and the most high-demand applications.
3rd Generation Intel® Xeon® Scalable processors	• Up to 40 cores per socket • Up to 3.8 GHz • Up to 270 W for TDP (Please refer to processor restriction – Thermal Restriction Matrix) • Intel® Ultra Path Interconnect (UPI) up to 11.2 GT/s with up to three links between sockets • 10 nm process technology Consult the processor section for specific SKUs offered.
Intel® C627A Chipset	Intel® Platform Controller Hub (PCH) • Optional Intel® QuickAssist Technology (QAT)
DDR4 ECC/Intel Intel Optane Persistent Memory 200 Series memory up to 3200 MT/s	8 DDR4 channels per socket, 2 DIMMs per channel (2DPC) • Up to 3200 MT/s (depending on configuration) • RDIMM, LRDIMM and Intel Intel Optane Persistent Memory 200 Series memory support Consult the memory section for specific details.
iDRAC9 with Lifecycle Controller	Works in conjunction with OpenManage Enterprise - Modular, embedded systems management solution for Dell EMC servers' features hardware and firmware inventory and alerting, faster performance and many more features.

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System features and generational comparison

The following table shows the comparison between the PowerEdge MX750c with the PowerEdge MX740c:

Table 2. Features compared to previous version

Feature	PowerEdge MX750c	PowerEdge MX740c
Processor	Up to two 3rd Generation Intel® Xeon® Scalable Processors DIMM Speed: Up to 3200 MT/s Up to 40 cores per socket Max TDP: 270 W	Up to two Intel® Xeon® Scalable Processors One or two 2nd Generation Intel® Xeon® Scalable Processors Up to 28 cores per socket Max TDP: 205 W
Chipset	Intel® C627A	Intel® C628
Memory	32 DDR4 DIMM slots 32 slots for RDIMMs and LRDIMMs Maximum capacity (RDIMM): 2 TB Maximum capacity (LRDIMM): 8 TB Intel Optane PMem 200 Series	24 DIMM slots 12 slots enabled for NVDIMM-N Maximum capacity (RDIMM): 1.5 TB Maximum capacity (LRDIMM): 3 TB Maximum capacity (NVDIMM-N): 192 GB Intel Optane PMem 100 Series
Storage Controllers	S150 Software RAID HBA350i MX H745P MX Performance RAID via PERC 10, internal and external drive connect, 8GB NV cache H755 Performance RAID, NVMe RAID HBA330 MX mini-mezz, HBA, external drive connect, no cache	S140 Software RAID HBA330 MX H730P MX Performance RAID, 2 GB NV cache H745P MX Performance RAID, internal and external drive connect, 8 GB NV cache HBA330 MX mini-mezz, HBA, external drive connect, no cache
Drive Support	2.5-inch 12 Gb SAS 2.5-inch 6 Gb SATA 2.5-inch NVMe	2.5-inch 12 Gb SAS 2.5-inch 6 Gb SATA 2.5-inch NVMe
Drive Backplanes	6 x 2.5-inch SAS/SATA 6 x 2.5-inch SATA/NVMe (universal BP) 4 x 2.5-inch SAS/SATA/NVMe (universal BP)	6 x 2.5-inch SAS/SATA 6 x 2.5-inch SAS/SATA/NVMe 4 x 2.5-inch SAS/SATA/NVMe for NVDIMM implementations

Table 2. Features compared to previous version (continued)

Feature	PowerEdge MX750c	PowerEdge MX740c
Internal Boot	Choice of BOSS (Boot Optimized Storage Subsystem) or IDSDM (Internal Dual SD Module)	Choice of BOSS (Boot Optimized Storage Subsystem) or IDSDM (Internal Dual SD Module)
I/O Slots	Two PCIe 4.0 x16 Mezz slots (Fabric A and B) One PCIe 4.0 x16 Mini-mezz slot (Fabric C)	Two PCIe 3.0 x16 Mezz slots (Fabric A and B) One PCIe 3.0 x16 Mini-mezz slot (Fabric C)
USB	One internal USB 3.0 port One external USB 3.0 port One USB 2.0 management port to iDRAC One USB 3.0 + USB 2.0 port for IDSDM	One internal USB 3.0 port One external USB 3.0 port One USB 2.0 management port to iDRAC One USB 3.0 + USB 2.0 port for IDSDM
Video	Integrated VGA controller in iDRAC, VGA over LAN 4 Gb DDR4 shared with iDRAC application memory	Integrated VGA controller in iDRAC, VGA over LAN 4 Gb DDR4 shared with iDRAC application memory
Management	iDRAC9	iDRAC9
Security	Optional TPM 1.2/2.0 Cryptographically signed firmware Silicon Root of Trust Secure Boot System Lockdown System Erase	Optional TPM 1.2/2.0 Cryptographically signed firmware Silicon Root of Trust Secure Boot System Lockdown System Erase
Fans	In chassis	In chassis
Power Supplies	Power provided by chassis	Power provided by chassis
Chassis	MX7000	MX7000

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Chassis views and features

Topics:

- Chassis views

Chassis views

Front view of the sled

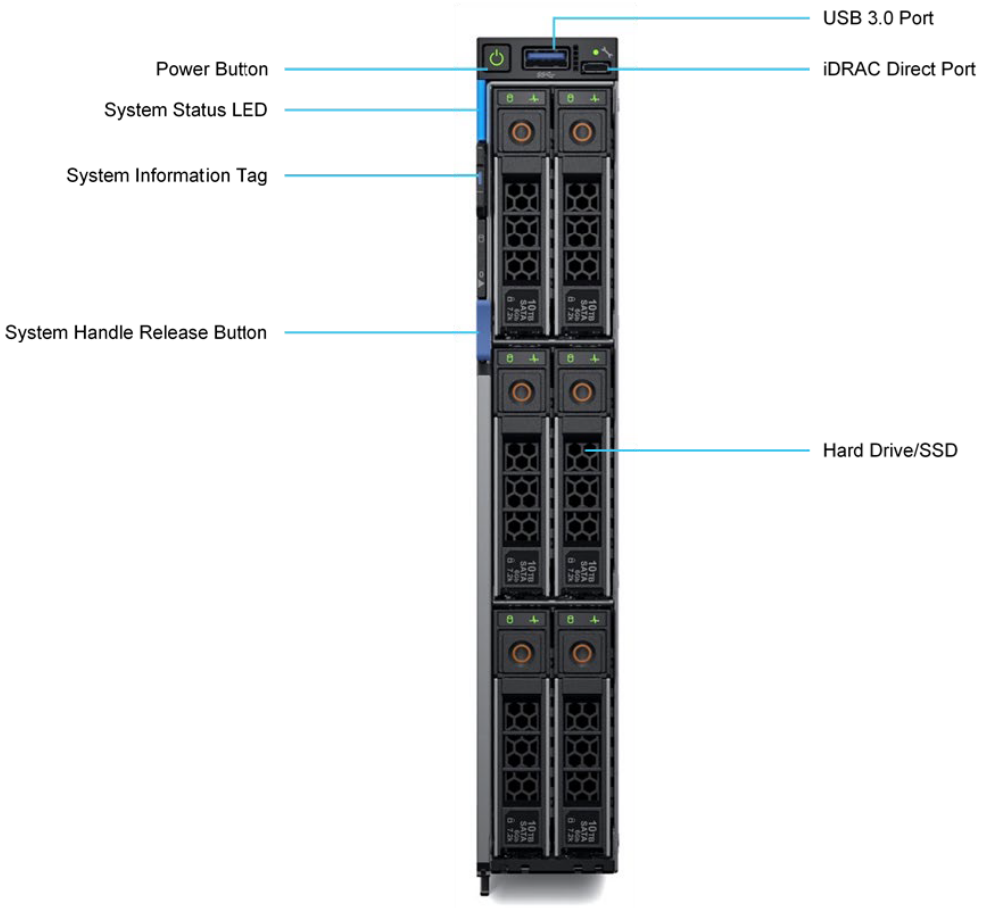

Figure 1. Front view, up to 6 drive configuration

Inside the sled

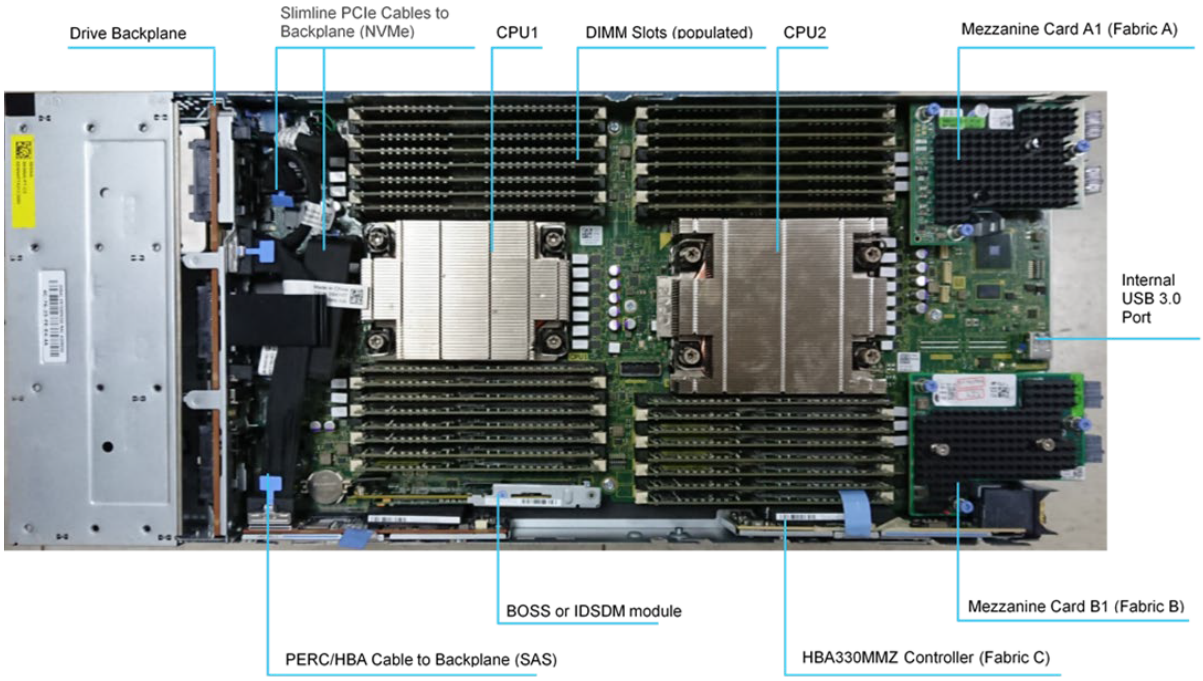

Figure 2. Internal view

Quick Resource Locator

The QRL on the system information label is a generic QRL for the MX750c that leads to a product web page which contains links to installation, setup, service, and instructional videos and documents specific to the MX750c.

Figure 3. System information label (QRL for MX750c)

Previously, the default EST label applied on the top of the server pullout information tag did not include a barcode for customers to capture the Service Tag #. As of March 2021, customers can now access, on all 14G and 15G servers (except OEM), the barcoded Service Tag number directly from the pullout information tag making Service Tag capture for PowerEdge servers easy and convenient.

Old EST Label	**New** EST Label
Example Old Label (Left QRL): 	Example New Label (Left QRL):

Figure 4. Example of Express Service Tag (EST) label

4

Processor

Topics:

- Processor features
- Supported processors
- Chipset

Processor features

The 3rd Generation Xeon Scalable Processors stack is a next generation data center CPU 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:

- Faster UPI with 3 Intel Ultra Path Interconnect (Intel UPI) at 11.2 GT/s (supported in gold and platinum options)
- More, Faster I/O with PCI Express 4 and up to 64 lanes (per socket) at 16 GT/s
- Enhanced Memory Performance with support for up to 3200MT/s DIMMs (2 DPC)
- Increased Memory Capacity with up to 8 channels and up to 256GB DDR4 DIMM support
- Breakthrough System Memory with Intel Optane persistent memory 200 series (Intel Optane Persistent Memory 200 Series, up to 512GB modules (up to 6TB of total system memory/socket DDR+PMM)

Supported processors

Chipset

Intel® C627A (LBG-R B3 stepping) series Chipset Features

USB ports - up to 10 superspeed (USB 3.0), 14 highspeed (USB 2.0)

SATA ports - up to 14 SATA Gen3 6Gb/s

TPM Support - TPM 2.0

The MX750c uses the Intel® C627A chipset with optional Intel® QuickAssist technology (Intel® QAT).

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Memory subsystem

For 15G 3rd generation Intel Xeon processor scalable family offers, the best approach to memory configuration is to remember, "Balanced, Balanced & Balanced." Customers should be purchasing balanced configurations to ensure that they can gain the performance improvements that are being claimed for the platforms. Below is an overview of the DIMM characteristics including Intel Optane Persistent Memory 200 Series:

Topics:

- DIMM types
- DIMM speed and frequency
- Memory RAS features

DIMM types

The MX750c supports two different dual in-line memory module (DIMM) types that can meet customer needs depending on how they prioritize R.A.S. (reliability, availability, and serviceability) and power consumption.

Dell supports two DIMM types on the MX750c:

- RDIMM: Registered DIMM – Provides for higher capacity options and advanced RAS features.
- LRDIMM: Load Reduced DIMM – Provides maximum capacity but higher power consumption.

RDIMM , or registered memory, is the most commonly used DIMM type, and offers the best mix of frequency, capacity, and rank structure choices. It provides high signal integrity - performing parity checking to detect improper addresses or commands - and increased performance for heavy workloads.

RDIMMs (Single Rank and Dual Rank)

- Maximum frequency of 3200 MT/s (Depending on processor)
- Maximum frequency using 2 DIMMs per channel of 3200 MT/s
- Maximum capacity of 64GB per DIMM
- Maximum system capacity of 2 TB

LRDIMM, or load-reduced memory, uses a buffer to reduce memory loading to a single load on all DDR signals, allowing for greater density.

LRDIMMs

- Maximum frequency of 3200 MT/s
- Maximum frequency using 2 DIMMs per channel of 2666 MT/s
- Maximum capacity of 256GB per DIMM
- Maximum system capacity of 8 TB

DIMM speed and frequency

The memory offerings for the MX750c is based on double-data rate type 4 (DDR4) memory which operates at 1.2 volts.

The processor SKU stack has memory speed support and limits by bin.

Table 3. Processor memory speed support by CPU

CPU Metal Tier	3200 MT/s	2933 MT/s	2666MT/s
Platinum	Supported	Supported	Supported
Gold	Supported	Supported	Supported

Table 3. Processor memory speed support by CPU (continued)

CPU Metal Tier	3200 MT/s	2933 MT/s	2666MT/s
Silver	Not supported	Not supported	Supported

NOTE: *3rd Generation Intel® Xeon® Scalable Processor

Only 3200 MT/s, 2933 MT/s and 2666 MT/s DIMMs have been validated on the MX750c and will clock down based on CPU bin support level.

Memory RAS features

Reliability, Availability, and Serviceability (RAS) features help keep the system online and operational without significant impact to performance and can decrease data loss and crashing due to errors. RAS aids in rapid, accurate diagnosis of faults which require service.

The following RAS features are supported on the platform:

Table 4. Memory RAS features

Feature	Description
Advanced ECC	Advanced ECC is a RAS feature that provides error correction on single-bit and multi-bit failures that are bound within 4-bits (nibble) of memory accesses. When used in conjunction with DIMMs based on x4 DRAM devices, Advanced ECC may provide error correction to an entire single DRAM device. This type of error correction that covers an entire DRAM device has been branded in various forms, most popularized as Chipkill and Single Device Data Correction (SDDC).
Memory Page Retire (MPR)	Memory Page Retire (MPR) is a feature implemented by PowerEdge server BIOS that instructs operating systems to stop using memory page locations (4 KB in size) that BIOS has deemed as potentially unhealthy - essentially removing it from the operating system's memory pool. This feature is also known as Operating System Memory Page Retirement or Page Off-lining. BIOS makes the determination of a potentially unhealthy memory page based on a proprietary PowerEdge server algorithm that takes into account correctable error patterns and error rates at a given memory page location.
Fault Resilient Memory	It is a memory RAS feature that leverages partial memory mirroring to create a fault resilient memory region specifically for critical memory functions. This will prevent any uncorrectable errors in this memory region from generating a kernel panic or termination of virtual machines or applications. A comparative advantage of FRM versus full memory mirroring is that the memory capacity overhead can be configured based on need. The maximum memory redundancy overhead for FRM is 25% compared to 50% with full memory mirroring.
Memory Self-Healing or PPR	It is an industry-standard capability, defined by JEDEC, where a memory module is capable of swapping out degraded rows of memory with spare ones being held in reserve. While JEDEC requires that all DDR4 memory be built with at least one spare row per DRAM bank group, Dell requires all memory suppliers manufacture genuine Dell DIMMs with a significantly larger number of available spare rows. This is done to ensure that PowerEdge servers have a robust self-healing memory ecosystem.

Table 4. Memory RAS features (continued)

Feature	Description
Partial Cache Line Sparing (PCLS)	This is a RAS feature in which the iMC uses spare cache lines in CPU to temporarily 'replace' bad DRAM nibbles

Table 5. RAS feature support per DIMM type

Feature	Data Width x4	Data Width x48
SEC-DED ECC	Yes	Yes
Advanced ECC	Yes	Yes
ADDDC Adaptive Double Device Data Correction	Yes	NA
SDDC	Yes	NA
Memory Patrol Scrub	Yes	Yes
MPR Memory Page Retire	Yes	Yes
Memory rank sparing	Yes	Yes
Memory Mirroring	Yes	Yes
Fault Resilient Memory FRM	Yes	Yes
Memory Self-heal	Yes	Yes
Machine check architecture recovery	Yes	Yes

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Storage

Topics:

- Storage controllers
- Supported HDDs and SSDs
- External Storage

Storage controllers

Dell's RAID controller options offer performance improvements, including the PERC9/10/11 solutions. PERC provides a base RAID HW controller by using a small form factor and high-density connector to the base planar

15G PERC Controller offerings will be a heavy leverage of 14G PERC family. The Value and Value Performance levels will carry over to 15G from 14G. New to 15G, is the Harpoon-based Premium Performance tier offering. This high-end offering will drive IOPs performance and enhanced SSD performance.

Table 6. PERC series controller offerings

Performance Level	Controller & Description
Entry	SW RAID S150 (SATA, NVMe)
Value	HBA350i MX, H BA330MMz
Value Performance	H745P MX V3
Premium Performance	H755 MX

Supported HDDs and SSDs

The tables below list the internal SAS and SATA hard drives and SSDs by backplane supported by the MX750c.

Table 7. Supported HDDs and SSDs (x4 SAS/SATA/NVMe Universal Backplane)

x4 SAS/SATA/NVMe Universal Backplane						
Raid Configuration	**Configuration**	**Configuration MOD**	**S150**	**H745P MX**	**H755 MX**	**HBA350i MX**
No RAID SATA (Chipset SATA)	C20 (MSTNR)	Y4W6F	N/A	N/A	N/A	N/A
No RAID (Chipset PCIe)	C30 (NVMENR)	2WYMB	N/A	N/A	N/A	N/A
RAID0 SATA (SWRAID S150)	C21 (MSTRNR)	P4M4R	Yes	N/A	N/A	N/A
RAID1 SATA (SWRAID S150)	C22 (MSTR0)	R4JK7	Yes	N/A	N/A	N/A
RAID5 SATA (SWRAID S150)	C23 (MSTR5)	4NKGF	Yes	N/A	N/A	N/A
RAID10 SATA (SWRAID S150)	C24 (MSTR10)	44RG3	Yes	N/A	N/A	N/A

Table 7. Supported HDDs and SSDs (x4 SAS/SATA/NVMe Universal Backplane) (continued)

x4 SAS/SATA/NVMe Universal Backplane						
Raid Configuration	**Configuration**	**Configuration MOD**	**S150**	**H745P MX**	**H755 MX**	**HBA350i MX**
No RAID SAS/ SATA (Passthrough/HBA required)	C1 (ASSR)	84M3T	No	No	No	Yes
RAID0 SAS/SATA (Using PERC controller)	C2 (ASSR0)	1D47H	No	Yes	Yes	No
RAID0NVMe (Using H755MX controller)	C32 (MNVMER0)	3RVPF	No	No	Yes	No
RAID1 SAS/SATA (Using PERC controller)	C3 (ASSR1)	5GGWG	No	Yes	Yes	No
RAID1 NVMe (Using PERC controller)	C33 (MNVMER1)	GGP90	No	No	Yes	No
RAID5 SAS/SATA (Using PERC controller)	C4 (ASSR5)	8C7V4	No	Yes	Yes	No
RAID5 NVMe (Using PERC controller)	C34 (MNVMER5)	JHGXD	No	No	Yes	No
RAID 10 SAS/SATA (Using PERC controller)	C5 (ASSR10)	H4WR4	No	Yes	Yes	No
RAID 10 NVMe (Using PERC controller)	C35 (MNVMER10)	PV5YM	No	No	Yes	No
Unconfigured SAS/SATA (Using PERC controller)	C7 (ASSUNC)	XTV9H	No	Yes	Yes	No
Unconfigured NVMe (Using PERC controller)	C36 (ANVMER10)	4JVYK	No	No	Yes	No

Table 8. Supported HDDs and SSDs (x6 SAS/SATA/NVMe Universal Backplane)

x6 SAS/SATA/NVMe Universal Backplane						
Raid Configuration	**Configuration**	**Configuration MOD**	**S150**	**H745P MX**	**H755 MX**	**HBA350i MX**
No RAID SATA (Chipset SATA)	C20 (MSTNR)	Y4W6F	N/A	N/A	N/A	N/A
No RAID (Chipset PCIe)	C30 (NVMENR)	2WYMB	N/A	N/A	N/A	N/A
RAID0 SATA (SWRAID S150)	C21 (MSTRNR)	P4M4R	Yes	N/A	N/A	N/A
RAID1 SATA (SWRAID S150)	C22 (MSTR0)	R4JK7	Yes	N/A	N/A	N/A
RAID5 SATA (SWRAID S150)	C23 (MSTR5)	4NKGF	Yes	N/A	N/A	N/A
RAID10 SATA (SWRAID S150)	C24 (MSTR10)	44RG3	Yes	N/A	N/A	N/A
RAID0NVMe (Using H755MX controller)	C32 (MNVMER0)	3RVPF	No	No	Yes	No
RAID1 NVMe (Using PERC controller)	C33 (MNVMER1)	GGP90	No	No	Yes	No

Table 8. Supported HDDs and SSDs (x6 SAS/SATA/NVMe Universal Backplane) (continued)

x6 SAS/SATA/NVMe Universal Backplane						
Raid Configuration	**Configuration**	**Configuration MOD**	**S150**	**H745P MX**	**H755 MX**	**HBA350i MX**
RAID5 NVMe (Using PERC controller)	C34 (MNVMER5)	JHGXD	No	No	Yes	No
RAID 10 NVMe (Using PERC controller)	C35 (MNVMER10)	PV5YM	No	No	Yes	No
Unconfigured NVMe (Using PERC controller)	C36 (ANVMER10)	4JVYK	No	No	Yes	No

Table 9. Supported HDDs and SSDs (x6 SAS/SATA Low Cost Backplane)

x6 SAS/SATA/NVMe Universal Backplane						
Raid Configuration	**Configuration**	**Configuration MOD**	**S150**	**H745P MX**	**H755 MX**	**HBA350i MX**
Diskless	C0 (NZC)	7GDXM	N/A	N/A	N/A	N/A
No RAID SATA (Chipset SATA)	C20 (MSTNR)	Y4W6F	N/A	N/A	N/A	N/A
No RAID SAS/ SATA (Passthrough/HBA required)	C1 (ASSR)	84M3T	No	No	No	Yes
RAID0 SATA (SWRAID S150)	C21 (MSTRNR)	P4M4R	Yes	N/A	N/A	N/A
RAID0 SAS/SATA (Using PERC controller)	C2 (ASSR0)	1D47H	No	Yes	Yes	No
RAID1 SATA (SWRAID S150)	C22 (MSTR0)	R4JK7	Yes	N/A	N/A	N/A
RAID1 SAS/SATA (Using PERC controller)	C3 (ASSR1)	5GGWG	No	Yes	Yes	No
RAID5 SATA (SWRAID S150)	C23 (MSTR5)	4NKGF	Yes	N/A	N/A	N/A
RAID5 SAS/SATA (Using PERC controller)	C4 (ASSR5)	8C7V4	No	Yes	Yes	No
RAID10 SATA (SWRAID S150)	C24 (MSTR10)	44RG3	Yes	N/A	N/A	N/A
RAID 10 SAS/SATA (Using PERC controller)	C5 (ASSR10)	H4WR4	No	Yes	Yes	No
Unconfigured SAS/SATA (Using PERC controller)	C7 (ASSUNC)	XTV9H	No	Yes	Yes	No

With a limited amount of physical space, the MX750c does manage to give the customer the largest number of drives in the modular form factor. Below is a matrix of support HDD's.

For the most up-to-date list of supported internal drives, refer to Dell.com or the Dell EMC PowerEdge Server and Component Roadmap found on the Dell EMC Sales Portal Servers Knowledge Center.

External Storage

The MX750c is compatible with the Dell EMC MX5016s Storage Sled to enable additional SAS storage. To connect an MX750c to an MX5016s storage sled, the MX750c must have either an H745P MX PERC controller or HBA330 MX mini-mezzanine card installed. The MX7000 chassis must have a pair of Dell EMC PowerEdge MX5000s SAS switches installed.

For additional information, please consult the MX7000 Sourcebook and MX5016s Sourcebook.

7

Networking

Topics:

- Mezzanine Card Slot Priority Matrix

Mezzanine Card Slot Priority Matrix

Table 10. Mezzanine Card Slot Priority Matrix

Category	Card Priority	Description	Slot Priority	Max Cards
25 Gb Ethernet Mezzanine	200	CRD, NTWK, BCME, MEZZ, 25 G,4P, KR	Mezz slot A or B (populate A first)	2
	300	CRD, NTWK, MEZZ, DP, 25, CNA, QL41262	Mezz slot A or B (populate A first)	2
	310	CRD, NTWK, MEZZ, DP, 25 G, CNA, INTEL	Mezz slot A or B (populate A first)	2
Fibre Channel	—	CRD, NTWK, MMEZZ, DP, FC32, EMULEX	Mezz slot C	1
	—	CRD, NTWK, MMEZZ, DP, FC32, QME2742	Mezz slot C	1
Storage	—	PWA, CTL, FABC, HBA330, MINI, MEZZ	Mezz slot C	1
	—	ASSY, CRD, CTL, H745P, NGM, MX, V3	Mezz slot C	1
	—	PWA, CTL, HBA350I, MX	PERC connector	1
	—	ASSY, CRD, CTL, H755, MX	PERC connector	1

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PCIe

Topics:

- PCIe subsytem

PCIe subsytem

One PCIe Gen4 x8 for PERC connected to processor 1 (CPU1).

Two PCIe Gen4 x16 mezzanine card slots. Mezz A is connected to processor 1 (CPU1). Mezz B is connected to processor 2 (CPU2).

One PCIe Gen4 x16 mini mezzanine card slot connected to processor 2 (CPU2).

Two PCIe Gen3 x4 for BOSS M.2 hardware RAID card connected to PCH.

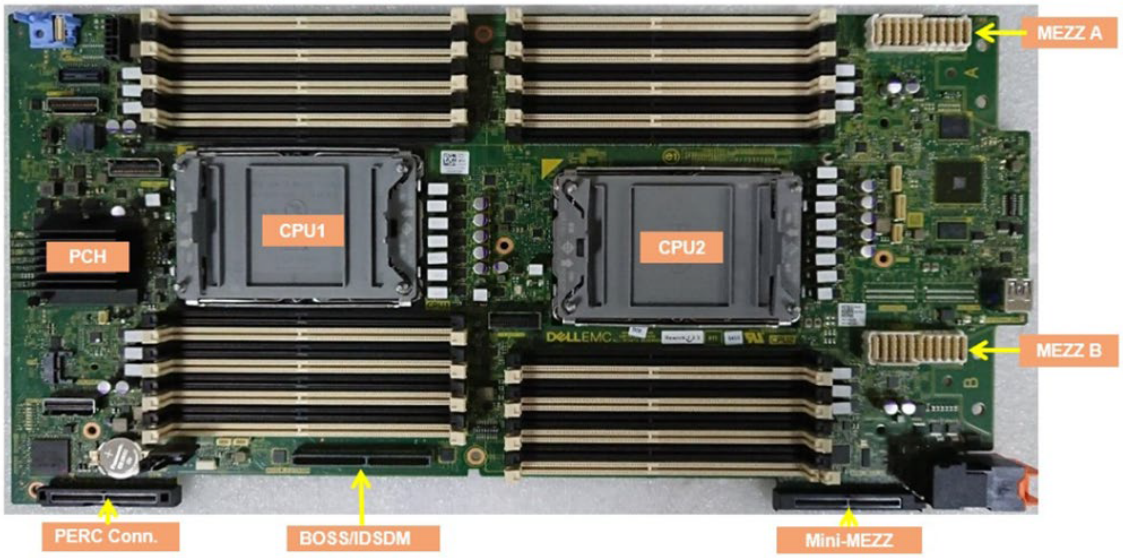

Figure 5. MX750c PCIe Slots

The following mezzanine and mini mezzanine cards are supported on the MX750c:

Table 11. Supported Fabric Adapters

Device	Fabric	Ports	Max Port Speed	Supported Fabric Slots	Data Sheet
Intel® XXV710 Dual Port 25 GbE Mezz Ethernet Adapter	Ethernet	2	25 Gb	Fabric A Fabric B	Info
Broadcom PCIe Gen4 Quad-Port 25 GbE NIC	Ethernet	4	25 Gb	Fabric A Fabric B	Info
QLogic 41262 Dual Port 25 GbE	Ethernet (CNA)	2	25 Gb	Fabric A	Info

Table 11. Supported Fabric Adapters (continued)

Device	Fabric	Ports	Max Port Speed	Supported Fabric Slots	Data Sheet
Storage Offload Ethernet Mezz Adapter				Fabric B	
Emulex LPm32002 Dual Port FC32 Mini-Mezz Adapter	Fibre Channel	2	32 Gb	Fabric C	Info
QLogic 2742 Dual Port FC32 Mini-Mezz Adapter	Fibre Channel	2	32 Gb	Fabric C	Info
Dell EMC PERC HBA350i MX Mezz Adapter	SAS	2	12 Gb	Fabric C	Info
Dell EMC PERC HBA330 MX Mini-Mezz Adapter	SAS	2	12 Gb	Fabric C	Info

NOTE: VMware ESXi 6.5 and 6.7 support a maximum of four 25 Gb Ethernet ports

Additional feature and specification information can be found in the 15G PowerEdge Server Adapter Matrix on the Dell EMC Sales Portal.

9

Power, thermal, and acoustics

Topics:

- Power
- Thermal
- Acoustics

Power

Lower overall system-level power draw is a result of Dell's breakthrough system design. PowerEdge servers maximize performance per watt through a combination of power and cooling, energy efficient technologies, and tools. Additionally, 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 12. Power Efficiency Tools

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	EINSTEIN is a power planning tool that is now available as a standalone executable and will support PSU sizing in addition to workload estimates. EINSTEIN is located at www.dell.com/calc Energy Smart Data Center Assessment is a Dell Services offering that uses infrastructure and thermal analysis to help maximize system efficiency.
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: ● 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	iDRAC Enterprise provides server- level management that monitors, reports, and controls power consumption at the processor, memory, and system level.

Table 12. Power Efficiency Tools (continued)

Feature	Description
	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 Enterprise 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 of fan 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.
ASHRAE A3/A4 Support	ASHRAE A3/A4 is supported with certain configuration limitations. With the thermal design and reliability of Dell products, you can have the capability to operate at excursion-based temperatures beyond the industry standard of 35°C (95°F) without impacting your availability model. This solution takes into account servers, networking, storage, and other infrastructure.
Rack infrastructure	Dell offers some of the industry's highest- efficiency power infrastructure solutions, including: • Power distribution units (PDUs) • Uninterruptible power supplies (UPSs) • Energy Smart containment rack enclosures

Thermal

Thermal design

PowerEdge server cooling builds on the features and capability of previous Dell servers but expands support for higher power processors, PCIe cooling, and increased NVMe count.

A new chassis mechanical architecture enables increased airflow capability for cooling of higher power and dense system configurations and results in fewer system restrictions and increased feature density. Dell Server Thermal, Mechanical, and Thermal Control designs are based on the following key tenets and order of priority.

Table 13. PowerEdge thermal design tenets

Feature	Description
Reliability	• Component hardware reliability remains top thermal priority. • System thermal architectures and thermal control algorithms are designed to ensure there are no tradeoffs in system level hardware life.

Table 13. PowerEdge thermal design tenets (continued)

Feature	Description
Performance	• Performance and uptime are maximized through the development of cooling solutions that meet these needs of even the densest hardware configurations.
Efficiency	• PowerEdge servers are designed with an efficient thermal solution to maximize power and airflow consumption, and/or acoustics for acoustical deployments. • Dell EMC's advanced thermal control algorithms enable minimization of system fan speeds while meeting reliability and performance tenants.
Management	• System management settings are provided such that customers have options to customize for their unique hardware, environments, and/or workloads
Forward Compatibility	• Forward compatibility means that thermal controls and thermal architecture solutions are robust to scale to new components that historically would have otherwise required firmware updates to ensure proper cooling. • The frequency of required firmware updates is thus reduced.

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 sensors in the MX750c interact with the chassis management services module which regulates fan speed. All fans which cool the MX750c are contained in the MX7000 chassis.

Thermal management of PowerEdge MX750c 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 95°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.

For detailed information about thermals please consult the MX7000 Sourcebook.

Acoustics

Acoustical performance

Dell typically categorizes servers in 5 categories of acoustically acceptable usage:

- Category 1: Table-top in Office Environment
- Category 2: Floor-standing in Office Environment
- Category 3: General Use Space
- Category 4: Attended Data Center
- Category 5: Unattended Data Center

The MX750c is approved for use in Category 5, Unattended Data Center.

Category 5: Unattended Data Center

When Dell determines that a specific Enterprise product is to be predominantly used in an unattended data center (and not blades or blade enclosures; these have their own category), then the acoustical specification of the table below applies. The phrase "unattended data center" is used to mean a space in which many (from tens to 1000s) of Enterprise products are deployed together, its own heating and cooling systems condition the space, and operators or servicers of equipment enter generally only to deploy, service, or decommission equipment. Hearing protection or hearing monitoring programs may be expected (per government or company guidelines) in these areas. Examples in this category include monolithic rack products.

Table 14. Dell Enterprise Category 5 “Unattended Data Center” acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
NA	NA	Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient
Sound Power	**LWA,m, B**	Report	≤ 7.5	≤ 7.8	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD and Rear Microphone	**Tones, Hz, dB**	Report	< 15 dB	< 15 dB	Report
	Tonality, tu	Report	Report	Report	Report
	Dell Modulation, %	Report	Report	Report	Report
	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report
Front Binaural HEAD	**Transients**	• Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: ○ Max. {ΔLpA} < 3.0 dB ○ Event count < 3 for “1.5 dB < ΔLpA < 3.0 dB” ○ Acoustical Jump (see AC0159) ΔLpA during fan speed transitions between operating states. ○ Startup behavior ▪ Report Startup behavior re. AC0159 ▪ Startup must proceed smoothly, i.e., no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum ∞ Transient inputs: Report time-history sound pressure levels re AC0159 “Train of Step Functions on Processor”			N/A
Any	**Other**	No rattles, squeaks, or unexpected noises Sound should be “even” around the EUT (one side should not be dramatically louder than another) Unless otherwise specified, the “default” thermal-related settings shall be selected for BIOS and iDRAC. Specific operating conditions will be defined in “Configurations & Configuration Dependencies” for each platform.			
Sound Pressure	**LpA-reported, dBA, re AC0158 and program**	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Table 14. Dell Enterprise Category 5 “Unattended Data Center” acoustical specification category (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
	configuration document				

An optional Acoustic Kit is available to lower the noise level and tones emitted from the MX7000 chassis. For detailed information about acoustics please consult the MX7000 Sourcebook.

10

Supported Operating Systems

The following lists the supported operating systems for the MX750c system:

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

NOTE: VMware ESXi 6.5 and 6.7 support a maximum of four 25 Gb Ethernet ports.

For the most up to date list of supported operating systems and versions, please visit: www.dell.com/ossupport

11

Dell EMC OpenManage systems management

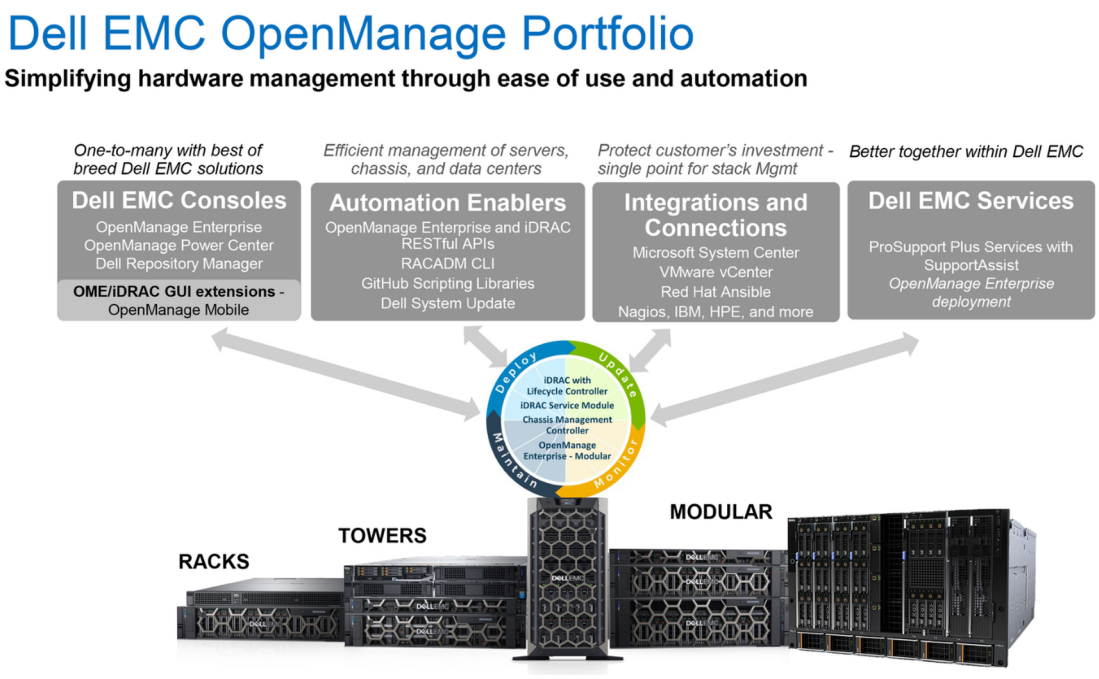

Figure 6. Dell EMC OpenManage Portfolio

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 15. 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.

12

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 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
- Services for Data Security
- 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 7. 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 ProDeploy for HPC

HPC deployments require specialist that understand that cutting edge is yesterday's news. Dell EMC deploys the world's fastest systems and understands the nuances that make them perform. ProDeploy for HPC provides:

- Global team of dedicated HPC specialists
- Proven track record, thousands of successful HPC deployments
- Design validation, bench marking and production orientation

Learn more at http:/DellEMC.com/HPC-Services

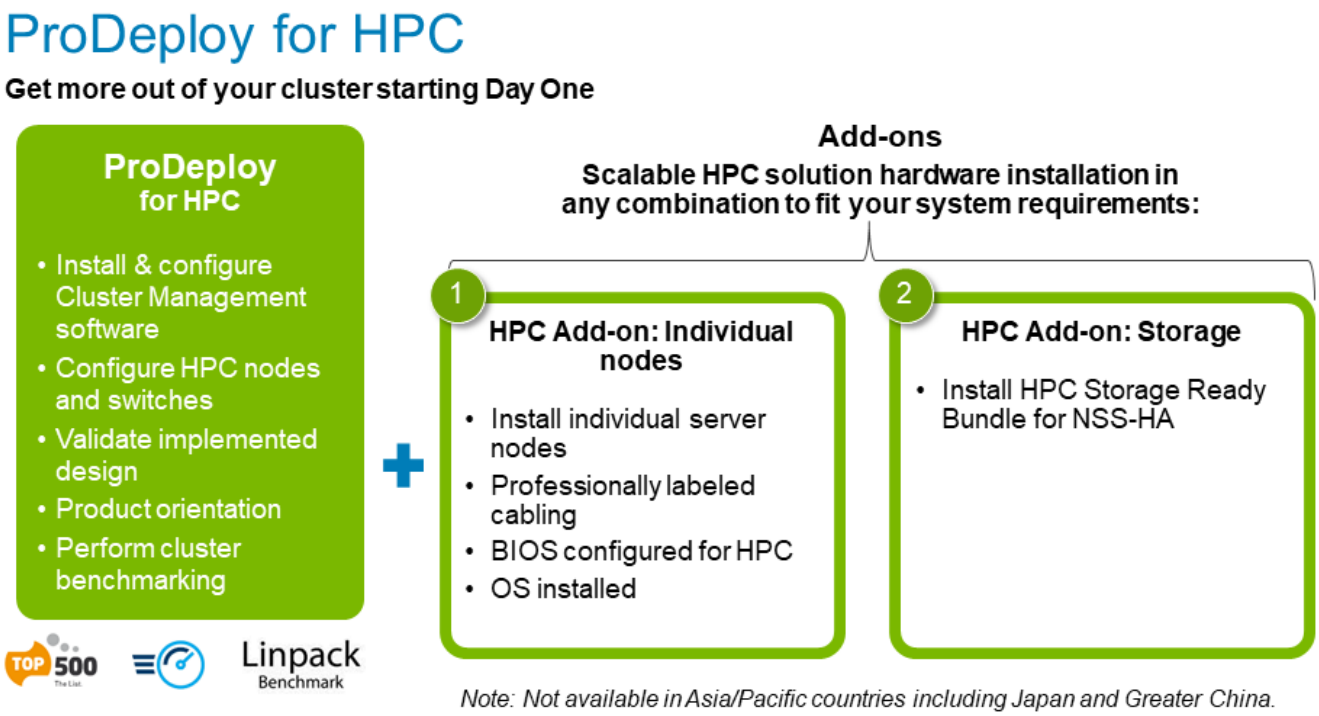

Figure 8. ProDeploy for HPC

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 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 9. 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

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
3rd 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			●
3rd 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 10. 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.

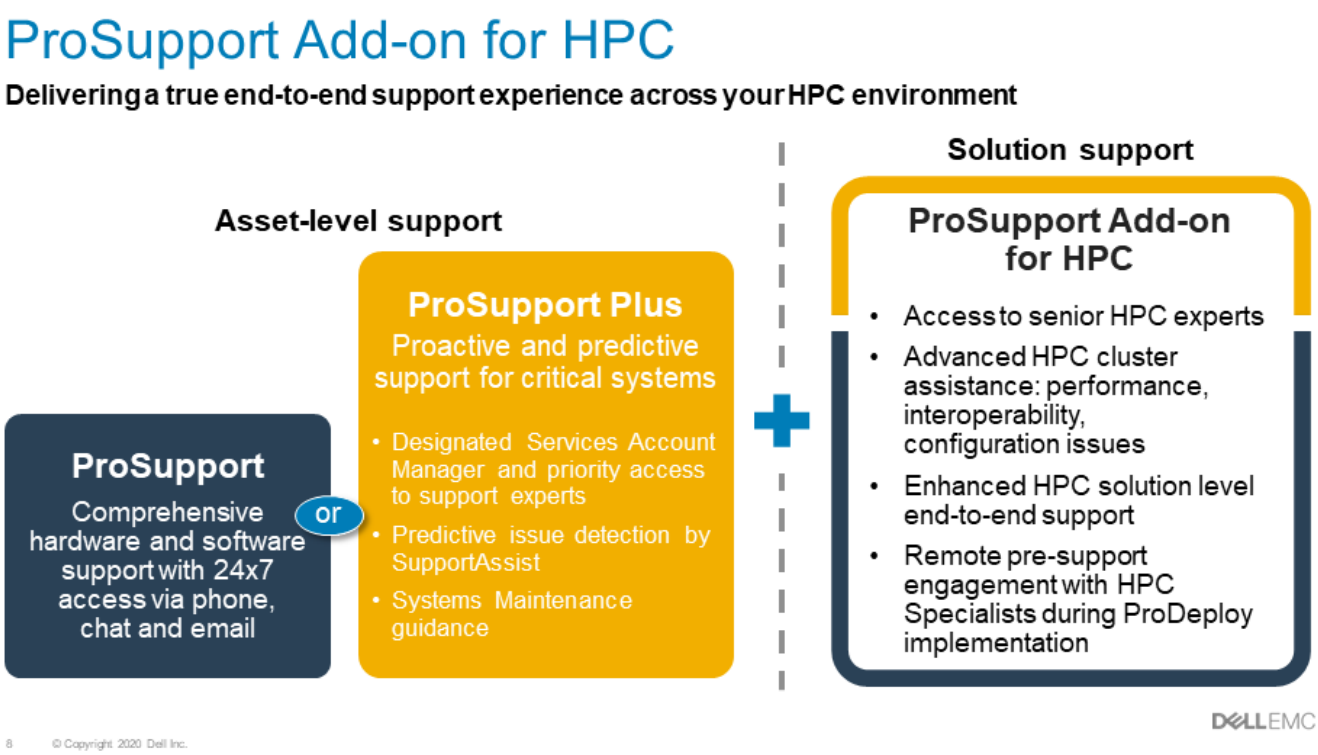

Figure 11. ProSupport for HPC

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.

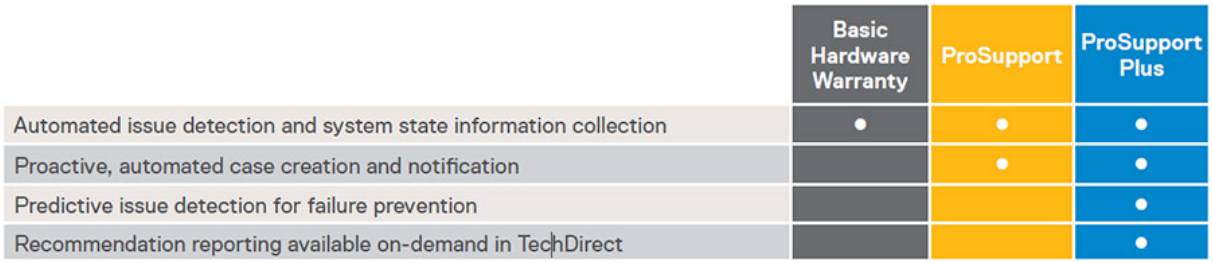

Figure 12. SupportAssist model

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.

Services for Data Security

As data security concerns intensify, businesses require focused security strategies to help mitigate risk. Get end to end protection throughout the life of your technology. Keep sensitive data on failed parts completely in your control with Dell EMC Keep Your Hard Drive and Keep Your Component for Enterprise or render data unrecoverable on re-purposed or retired products with Dell EMC Data Sanitization and Data Destruction for Enterprise. Promote social responsibility while maintaining data security with Dell EMC Data Sanitization for Enterprise Offsite with Asset Resale & Recycle we can help customers secure data on specific Dell EMC Server and Storage products as well as similar third-party systems. As part of this service, we remove old systems from your environment, securely sanitize data and responsibly reuse or recycle those systems to contribute to a more sustainable future. No matter your need, risk of unauthorized access to sensitive information is eliminated.

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 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 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.

13

Appendix A. Additional specifications

Topics:

- Sled dimensions
- Sled weight
- Video specifications for iDRAC
- USB Ports
- Environmental Specifications

Sled dimensions

The MX750c has the following dimensions:

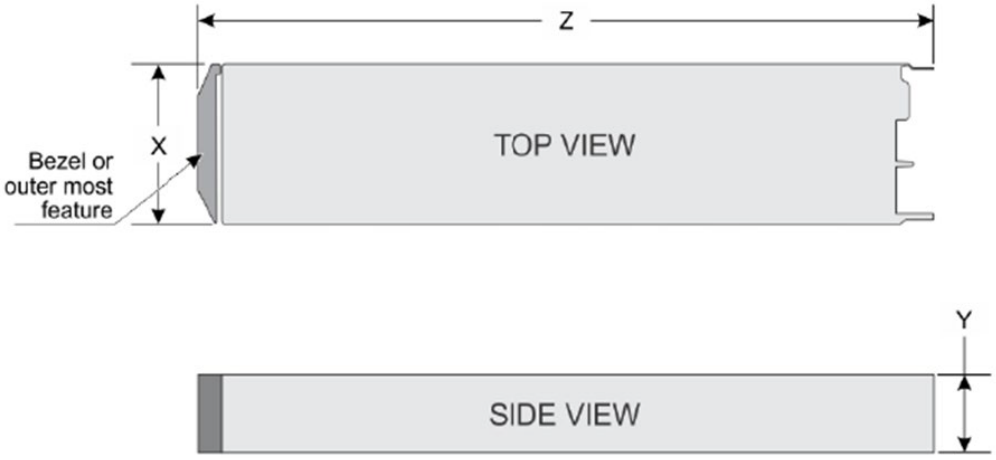

Figure 13. System dimensions

Table 16. MX750c chassis dimensions

Model number	X	Y	Z (handle closed)
MX750c	250.2 mm (9.85 inches)	42.15 mm (1.66 inches)	612.35 mm (24.11 inches)

Sled weight

Table 17. System weight

Model number	Max Weight
MX750c	9.5 kg (20.94 lbs)

Video specifications for iDRAC

- Integrated VGA controller in iDRAC, VGA over LAN

- 4 Gb DDR4 shared with iDRAC application memory

USB Ports

The system contains one internal and one external USB 3.0 port.

Figure 14. External USB 3.0 Ports

Environmental Specifications

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 MX750c Installation and Service Manual.

Table 18. temperature specifications

Temperature	Specifications
Storage	-40°C to -65°C (-40°F to 149°F)
Continuous operation (for altitude less than 950m or 3117 ft)	10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment
Maximum temperature gradient (operating and storage)	20°C/h (68°F/h)

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

Table 19. Relative humidity specifications

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

Table 20. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26Grms at 5Hz to 350Hz (all operation conditions)

Table 20. Maximum vibration specifications (continued)

Maximum vibration	Specifications
Storage	1.87Grms at 10Hz to 500Hz for 15min (all six sides tested)

Table 21. Maximum shock specifications

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

Table 22. Maximum altitude specifications

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

Table 23. Operating temperature de-rating specifications

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

Thermal restrictions

Given the form factors found of the compute sleds used for the MX7000 implementations, there are some design considerations that have been utilized. Understanding benefits of the airflow design are key to running in an efficient manner concerning heating or cooling scenarios.

Below is a table that displays restrictions for the hardware configurations found in the MX750c.

- For high TDP (TDP > 205 W), X4 drives back plane is the supported implementation
- For fully loaded hardware configuration (CPU 270 W TDP & Intel Optane Persistent Memory 200 Series), there are potential performance drops at high ambient temperatures

Legend	Supported at 35°C Max 30°C support Max 25°C support Not supported	Senna MX750c			
Configuration		6x2.5" BP w/ 6 drives and 32 DIMMs		4x2.5" BP w/ 4 drives and 32 DIMMs	
Test Storage		SAS drive	NVMe drive	SAS drive	NVMe drive
ICX CPU TDP	105W				
	120W				
	125W				
	135W				
	150W				
	165W				
	185W				
	205W				
	220W				
	250W				
	270W				
Memory	128GB LRDIMM 3200, 9.4W, 2DPC				
	Barlow Pass DCPMM, 15-18W				
PCIe Card	Mezzanine card, Tier2, ≤ 30W				
	Mini Mezzanine card				

* Worst sled mixed condition for this table

Figure 15. Thermal restrictions for hardware configurations in the MX750c

Table 24. 6x2.5-inch Storage Configuration

ASHRAE (Ambient) Restrictions		
Standard Operating Support (ASHRAE A2 compliant) All options supported unless otherwise noted.	Extended Ambient 40°C Operating Support (ASHRAE A3 compliant)	Extended Ambient 45°C Operating Support (ASHRAE A4 compliant)
• Does not support CPU > 205 W • Does not support 256 GB LRDIMM • Maximum 30°C with Intel Optane Persistent Memory 200 Series PMem	• Do not perform a cold startup below 5°C • Does not support CPU >140 W • Does not support Non-Dell qualified peripheral cards or peripheral cards greater than 30 W • Does not support NVMe drive • Does not support Intel Optane Persistent Memory 200 Series PMem • Does not support 128 GB LRDIMM	• Do not perform a cold startup below 5°C • Does not support CPU >135 W • Does not support Non-Dell qualified peripheral cards or peripheral cards greater than 30 W • Does not support NVMe drive • Does not support Intel Optane Persistent Memory 200 Series PMem • Does not support 128 GB LR DIMM

Table 25. 4x2.5-inch Storage Configuration

ASHRAE (Ambient) Restrictions		
Standard Operating Support (ASHRAE A2 compliant) All options supported unless otherwise noted.	Extended Ambient 40°C Operating Support (ASHRAE A3 compliant)	Extended Ambient 45°C Operating Support (ASHRAE A4 compliant)
• Maximum 30°C with 270 W CPU + >2 NVMe drives • Does not support Intel Optane Persistent Memory 200 Series PMem with 256 GB LRDIMM	• Do not perform a cold startup below 5°C • Does not support CPU >140 W • Does not support Non-Dell qualified peripheral cards or peripheral cards greater than 30 W • Does not support NVMe drive • Does not support Intel Optane Persistent Memory 200 Series PMem • Does not support 128 GB LRDIMM	• Do not perform a cold startup below 5°C • Does not support CPU >135 W • Does not support Non-Dell qualified peripheral cards or peripheral cards greater than 30 W • Does not support NVMe drive

Table 25. 4x2.5-inch Storage Configuration (continued)

ASHRAE (Ambient) Restrictions		
		• Does not support Intel Optane Persistent Memory 200 Series PMem • Does not support 128 GB LR DIMM

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Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 26. Industry standard documents

Standard	URL for information and specifications
ACPIAdvance Configuration and Power Interface Specification, v2.0c	https://uefi.org/specsandtesttools
Ethernet IEEE 802.3-2005	https://standards.ieee.org/
HDGHardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx
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_I_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. 2.7	usb.org/developers/docs

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Appendix C Additional resources

Table 27. Additional resources

Resource	Description of contents	Location
Installation and Service Manual	This manual, available in PDF format, provides the following information: • 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: • 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
Enterprise Infrastructure Planning Tool (EIPT)	The Dell EMC online EIPT enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use EIPT to calculate the power consumption of your hardware, power infrastructure, and storage.	Dell.com/calc