# Dell EMC PowerEdge MX750c

## Technical Guide

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## 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<br>• Up to 3.8 GHz<br>• Up to 270 W for TDP (Please refer to processor restriction – Thermal Restriction Matrix)<br>• Intel® Ultra Path Interconnect (UPI) up to 11.2 GT/s with up to three links between sockets<br>• 10 nm process technology<br>Consult the processor section for specific SKUs offered. |
| Intel® C627A Chipset | Intel® Platform Controller Hub (PCH)<br>• 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)<br>• Up to 3200 MT/s (depending on configuration)<br>• RDIMM, LRDIMM and Intel Intel Optane Persistent Memory 200 Series memory support<br>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. |

# 2

# 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<br>DIMM Speed: Up to 3200 MT/s<br>Up to 40 cores per socket<br>Max TDP: 270 W | Up to two Intel® Xeon® Scalable Processors<br>One or two 2nd Generation Intel® Xeon® Scalable Processors<br>Up to 28 cores per socket<br>Max TDP: 205 W |
| Chipset | Intel® C627A | Intel® C628 |
| Memory | 32 DDR4 DIMM slots<br>16 slots for RDIMMs and LRDIMMs<br>Maximum capacity (RDIMM): 2.0 TB<br>Maximum capacity (LRDIMM): 4.0 TB | 24 DIMM slots<br>12 slots enabled for NVDIMM-N<br>Maximum capacity (RDIMM): 1.5 TB<br>Maximum capacity (LRDIMM): 3 TB<br>Maximum capacity (NVDIMM-N): 192 GB |
| Storage Controllers | S150 Software RAID<br>HBA350i MX<br>H745P MX Performance RAID via PERC 10, internal and external drive connect, 8GB NV cache<br>H755 Performance RAID, NVMe RAID<br>HBA330 MX mini-mezz, HBA, external drive connect, no cache | S140 Software RAID<br>HBA330 MX<br>H730P MX Performance RAID, 2 GB NV cache<br>H745P MX Performance RAID, internal and external drive connect, 8 GB NV cache<br>HBA330 MX mini-mezz, HBA, external drive connect, no cache |
| Drive Support | 2.5-inch 12 Gb SAS<br>2.5-inch 6 Gb SATA<br>2.5-inch NVMe | 2.5-inch 12 Gb SAS<br>2.5-inch 6 Gb SATA<br>2.5-inch NVMe |
| Drive Backplanes | 6 x 2.5-inch SAS/SATA<br>6 x 2.5-inch SATA/NVMe (universal BP)<br>4 x 2.5-inch SAS/SATA/NVMe (universal BP) | 6 x 2.5-inch SAS/SATA<br>6 x 2.5-inch SAS/SATA/NVMe<br>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)<br>One PCIe 4.0 x16 Mini-mezz slot (Fabric C) | Two PCIe 3.0 x16 Mezz slots (Fabric A and B)<br>One PCIe 3.0 x16 Mini-mezz slot (Fabric C) |
| USB | One internal USB 3.0 port<br>One external USB 3.0 port<br>One USB 2.0 management port to iDRAC<br>One USB 3.0 + USB 2.0 port for IDSDM | One internal USB 3.0 port<br>One external USB 3.0 port<br>One USB 2.0 management port to iDRAC<br>One USB 3.0 + USB 2.0 port for IDSDM |
| Video | Integrated VGA controller in iDRAC, VGA over LAN<br>4 Gb DDR4 shared with iDRAC application memory | Integrated VGA controller in iDRAC, VGA over LAN<br>4 Gb DDR4 shared with iDRAC application memory |
| Management | iDRAC9 | iDRAC9 |
| Security | Optional TPM 1.2/2.0<br>Cryptographically signed firmware<br>Silicon Root of Trust<br>Secure Boot<br>System Lockdown<br>System Erase | Optional TPM 1.2/2.0<br>Cryptographically signed firmware<br>Silicon Root of Trust<br>Secure Boot<br>System Lockdown<br>System Erase |
| Fans | In chassis | In chassis |
| Power Supplies | Power provided by chassis | Power provided by chassis |
| Chassis | MX7000 | MX7000 |

# 3

# Chassis views and features

**Topics:**

- Chassis views

## Chassis views

### Front view of the system

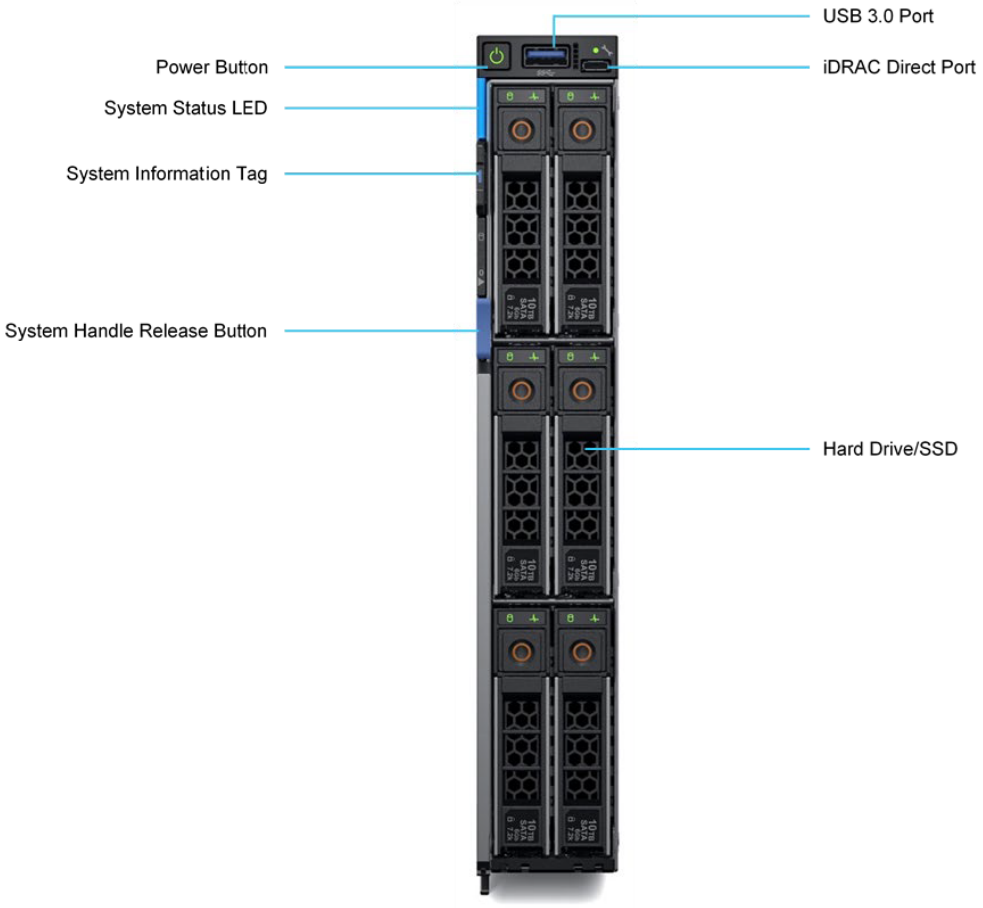


**Figure 1. Front view, up to 6 drive configuration**

## Inside the system

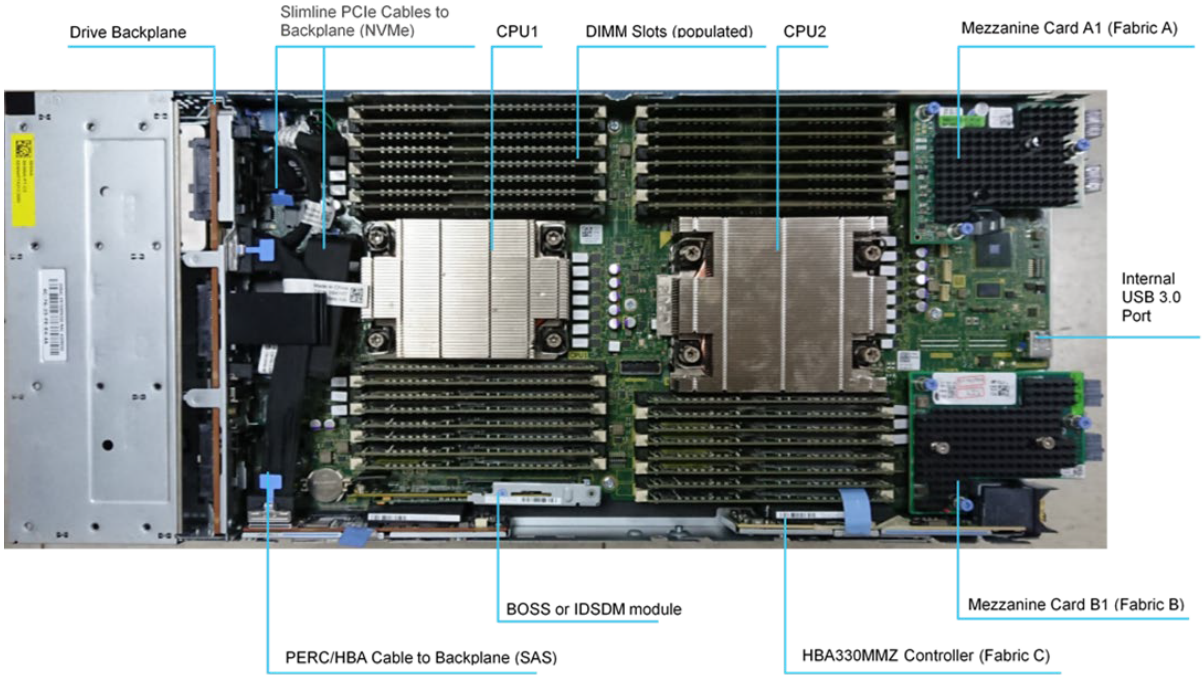


**Figure 2. Internal view**

## 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 luggage tab 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 luggage 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

**Table 3. Supported processors for PowerEdge MX750c**

| Proc | Clock Speed(GHz) | Cache (M) | UPI (GT/s) | Cores | Threads | Turbo | Memory Speed(MT/s) | Memory Capacity | Optane Memory Capable | TDP |
|---|---|---|---|---|---|---|---|---|---|---|
| 8380 | 2.3 | 60 | 11.2 | 40 | 80 | Turbo | 3200 | 6 TB | Y | 270 W |
| 8360Y | 2.4 | 54 | 11.2 | 36 | 72 | Turbo | 3200 | 6 TB | Y | 250 W |
| 8358 | 2.6 | 48 | 11.2 | 32 | 64 | Turbo | 3200 | 6 TB | Y | 250 W |
| 8352Y | 2.2 | 48 | 11.2 | 32 | 64 | Turbo | 3200 | 6 TB | Y | 205 W |
| 8352V | 2.1 | 54 | 11.2 | 36 | 72 | Turbo | 3200 | 6 TB | Y | 195 W |
| 8352S | 2.2 | 48 | 11.2 | 32 | 64 | Turbo | 3200 | 6 TB | Y | 205 W |
| 6348 | 2.6 | 42 | 11.2 | 28 | 56 | Turbo | 3200 | 6 TB | Y | 235 W |
| 6338 | 2 | 36 | 11.2 | 32 | 64 | Turbo | 3200 | 6 TB | Y | 205 W |
| 6330 | 2 | 42 | 11.2 | 28 | 56 | Turbo | 3200 | 6 TB | Y | 205 W |
| 6314U | 2.3 | 48 | 11.2 | 32 | 64 | Turbo | 3200 | 6 TB | Y | 205 W |

# 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).

# 5

# 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 2.0TB

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 128GB per DIMM
- Maximum system capacity of 4TB

## 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 4. 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 |
| 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 5. 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. |
| 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 |

# 6

# Storage

**Topics:**


- Storage controllers
- Supported HDDs and SSDs
- External Storage


## Storage controllers

The Dell PowerEdge RAID Controller (PERC) series-9, series-10 and series-11 family of enterprise-class controllers are designed for enhanced performance, increased reliability, fault tolerance, and simplified management of your RAID array drives.

### Table 6. Supported Software Controllers

| | Interface Support | Cache Memory Size | RAID Levels | RAID Support | MX750c Max Drives Supported | |
|---|---|---|---|---|---|---|
| S150 Software RAID | 6Gb/s SATA NVMe | No Cache | 0,1,5,10 | Software RAID | 6 | Internal drive support |
| HBA350i MX | 12Gb/s SAS 6Gb/s SAS/ SATA 3Gb/s SAS/SATA | N/A | N/A | N/A | 6 | Internal drive support |
| H745P MX | 12Gb/s SAS 6Gb/s SATA | 8GB NV | 0,1,5,6,10,50,60 | Hardware RAID | 6 internal, 112 from MX5016s storage sled | For use with both internal drives and MX5016s storage sled |
| H755 MX | 12Gb/s SAS | 8 GB NV | 0,1,5,6,10,50,60 | Hardware RAID | 6 internal, 112 from MX5016s storage sled | For use with both internal drives and MX5016s storage sled |
| HBA330 mini-mezz | 12Gb/s SAS | No Cache | No RAID Pass-Through Only | No RAID SAS HBA | 112 | For use with MX5016s storage sled |

**NOTE:** For the most up-to-date and detailed information, please refer to:

- Dell PowerEdge RAID Controller (PERC) Landing Page for external, customer facing collateral.
- PERC User's Guide
- Dell EMC Sales Portal Servers Knowledge Center for internal facing collateral including roadmaps, product launch details, performance data, and competitive data.
- Storage Controller Matrix

## 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 |
| 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 |

### 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** |
| 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 |
| 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 |

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

| x6 SAS/SATA/NVMe Universal Backplane | | | | | | |
|---|---|---|---|---|---|---|
| **Raid Configuration** | **Configuration** | **Configuration MOD** | **S150** | **H745P MX** | **H755 MX** | **HBA350i MX** |
| 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 |

# 8

# 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.

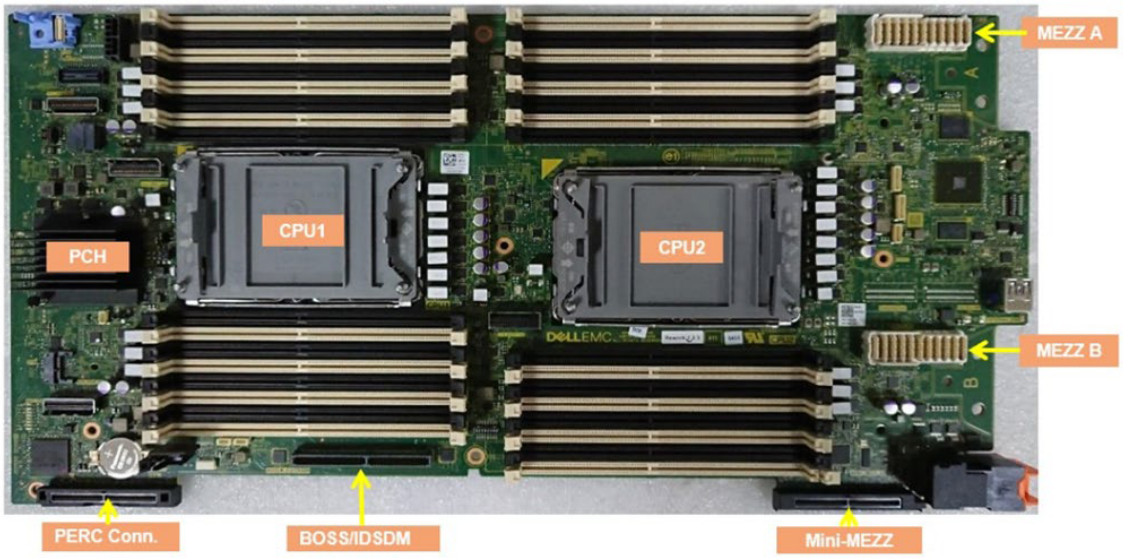


**Figure 5. MX750c PCIe Slots**

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<br>Fabric B | Info |
| Broadcom PCIe Gen4 Quad-Port 25 GbE NIC | Ethernet | 4 | 25 Gb | Fabric A<br>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.<br>EINSTEIN is located at www.dell.com/calc<br>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:<br>● Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5%<br>● More accurate reporting of power<br>● 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<br>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.<br><br>Hot spare reduces power consumption of redundant power supplies.<br><br>Thermal control of fan speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption.<br><br>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:<br>● Power distribution units (PDUs)<br>● Uninterruptible power supplies (UPSs)<br>● 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**

| | |
|---|---|
| Reliability | ● Component hardware reliability remains top thermal priority.<br>● 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)**

| | |
|---|---|
| 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.<br>• 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.<br>• 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

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 Table Acoustical Reference Points and Output Comparisons. A more extensive description of Dell EMC PowerEdge acoustical design and metrics is available in the white paper, "Dell Enterprise Acoustics".

**Table 14. 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 |

Dell EMC PowerEdge MX750c is approved for use in Category 6 Unattended Data Center (Data Center Blades/Enclosures).

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.

# 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 15. 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)** | | | |
|---|---|---|---|---|---|
| | | 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:<br>○ Max. {ΔLpA} < 3.0 dB<br>○ Event count < 3 for "1.5 dB < ΔLpA < 3.0 dB" | | | N/A |

**Table 15. Dell Enterprise Category 5 “Unattended Data Center” acoustical specification category (continued)**

| | | | | | |
|---|---|---|---|---|---|
| | | ○ Acoustical Jump (see AC0159) ΔLpA during fan speed transitions between operating states.<br>○ Startup behavior<br>▪ Report Startup behavior re. AC0159<br>▪ Startup must proceed smoothly, i.e., no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum<br>∞ Transient inputs: Report time-history sound pressure levels re AC0159 “Train of Step Functions on Processor” | | | |
| **Any** | **Other** | No rattles, squeaks, or unexpected noises<br>Sound should be “even” around the EUT (one side should not be dramatically louder than another)<br>Unless otherwise specified, the “default” thermal-related settings shall be selected for BIOS and iDRAC.<br>Specific operating conditions will be defined in “Configurations & Configuration Dependencies” for each platform. | | | |
| **Sound Pressure** | **LpA-reported, dBA, re AC0158 and program configuration document** | Report for all mics | Report for all mics | Report for all mics | Report for all mics |

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:

- RedHat(R) Enterprise Linux 7.9
- RedHat(R) Enterprise Linux 8.2
- RedHat(R) Enterprise Linux 8.3
- Ubuntu 20.04
- SUSE(R) Linux Enterprise server 15 SP2

**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

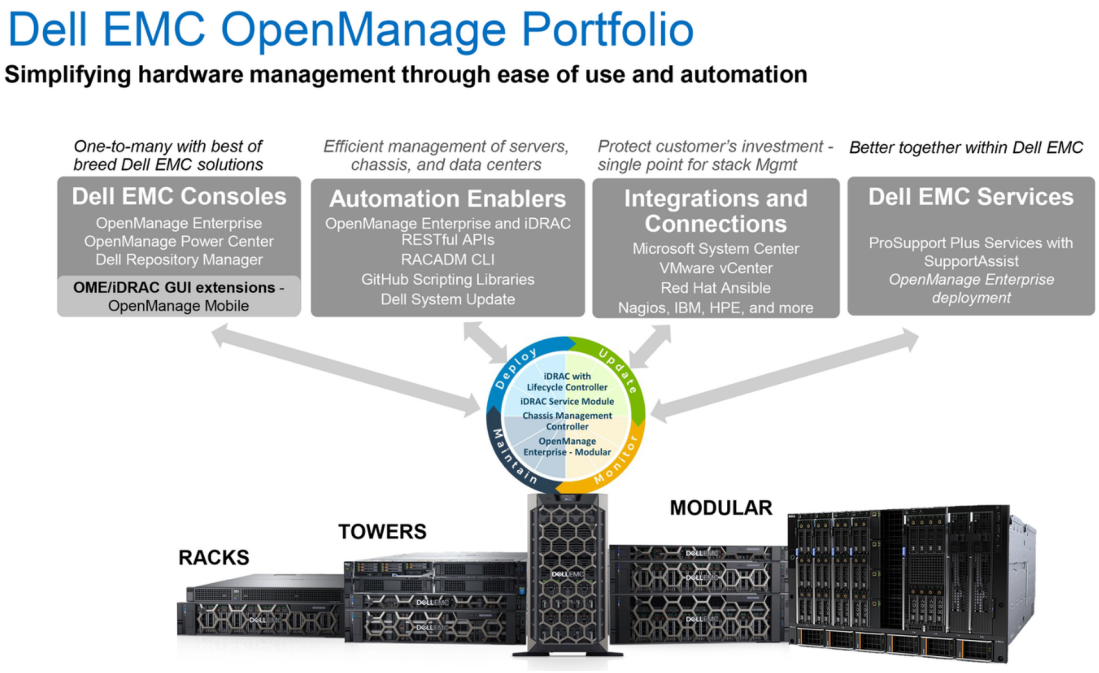


**Figure 6. Dell EMC OpenManage Portfolio**

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 16. Dell resources**

| Resource | Location |
|---|---|
| Integrated Dell Remote Access Controller (iDRAC) | https://www.dell.com/idracmanuals |
| iDRAC Service Module (iSM) | https://www.dell.com/support/article/sln310557 |
| OpenManage Ansible Modules | https://www.dell.com/support/article/sln310720 |
| OpenManage Essentials (OME) | https://www.dell.com/support/article/sln310714 |
| OpenManage Mobile (OMM) | https://www.dell.com/support/article/sln310980 |
| OpenManage Integration for VMware vCenter (OMIVV) | https://www.dell.com/support/article/sln311238 |
| OpenManage Integration for Microsoft System Center (OMIMSSC) | https://www.dell.com/support/article/sln312177 |
| Dell EMC Repository Manager (DRM) | https://www.dell.com/support/article/sln312652 |
| Dell EMC System Update (DSU) | https://www.dell.com/support/article/sln310654 |
| 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/article/sln312320 |
| OpenManage Enterprise Power Manager | https://www.dellemc.com/solutions/openmanage/power-management.htm |
| 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

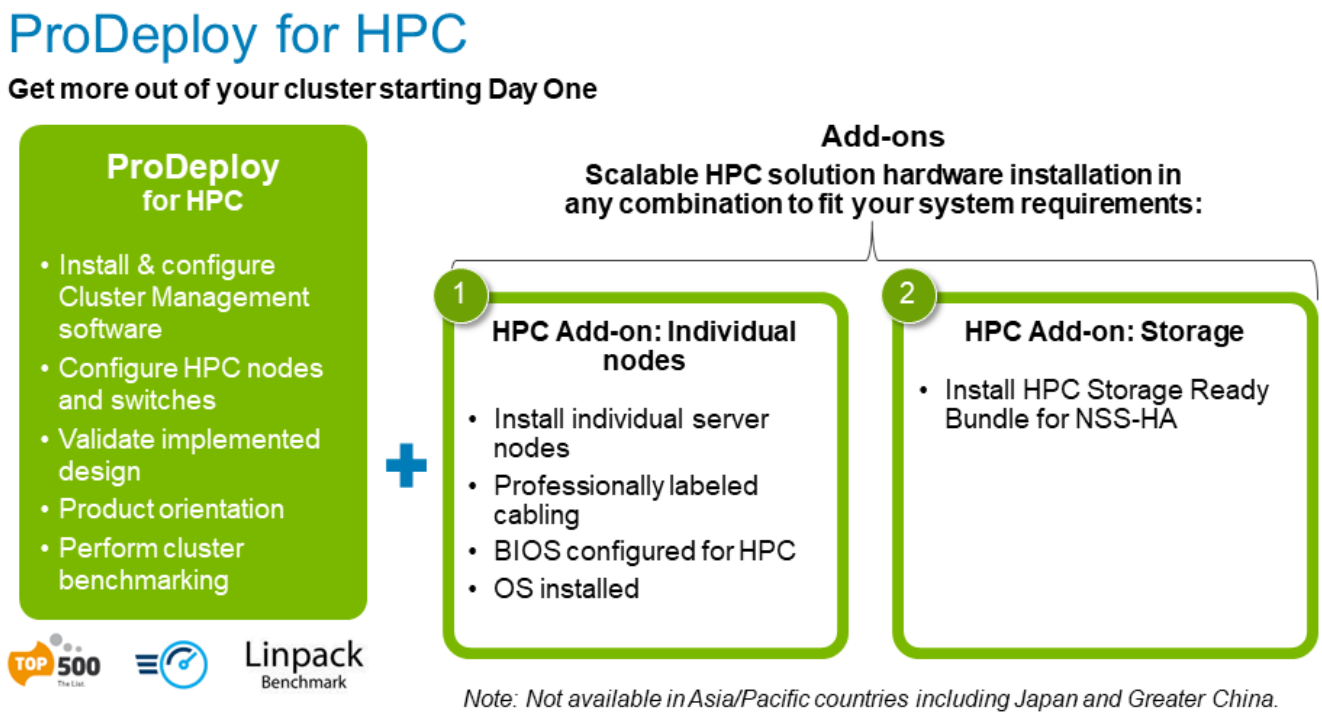


**Figure 8. ProDeploy for HPC**

## 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.

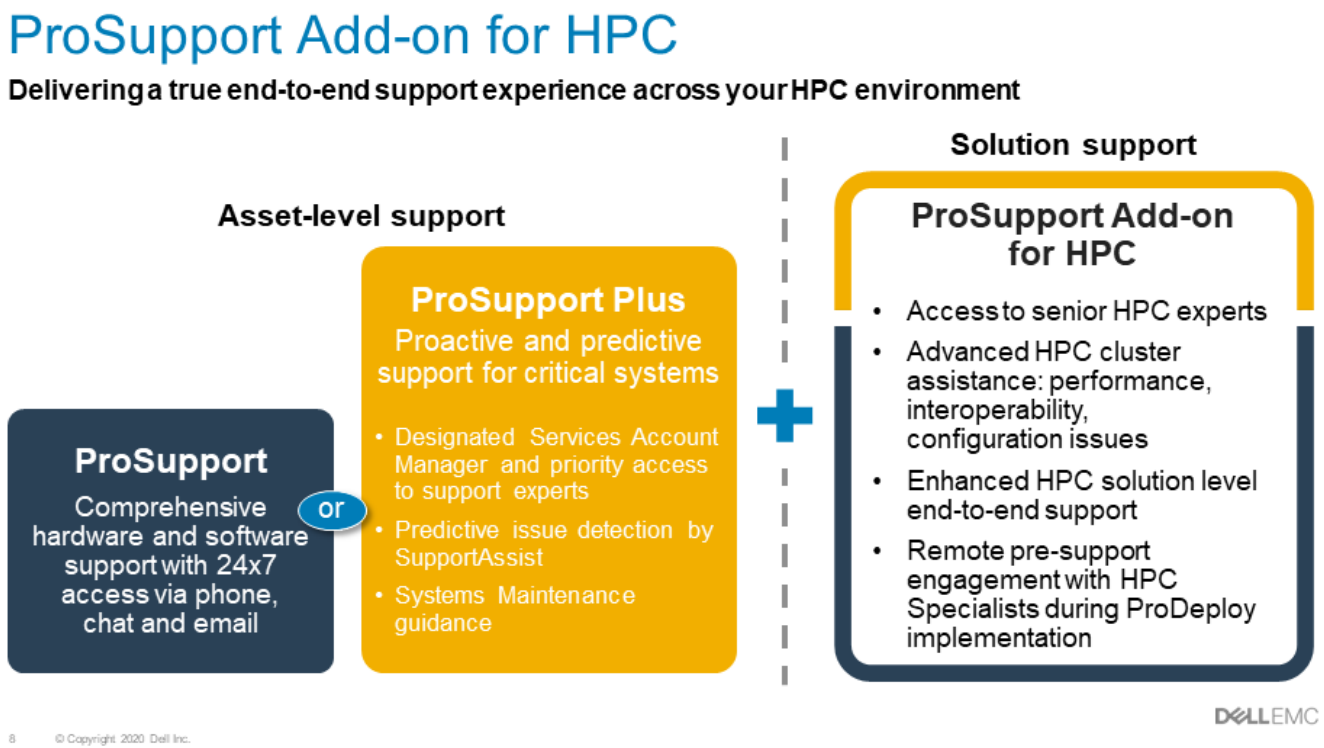


**Figure 11. ProSupport for HPC**

# 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.

| | 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 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.

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# Appendix A. Additional specifications

**Topics:**


- Chassis dimension
- Chassis weight
- Video specifications for iDRAC
- USB Ports
- Environmental Specifications


## Chassis dimension

The MX750c has the following dimensions:

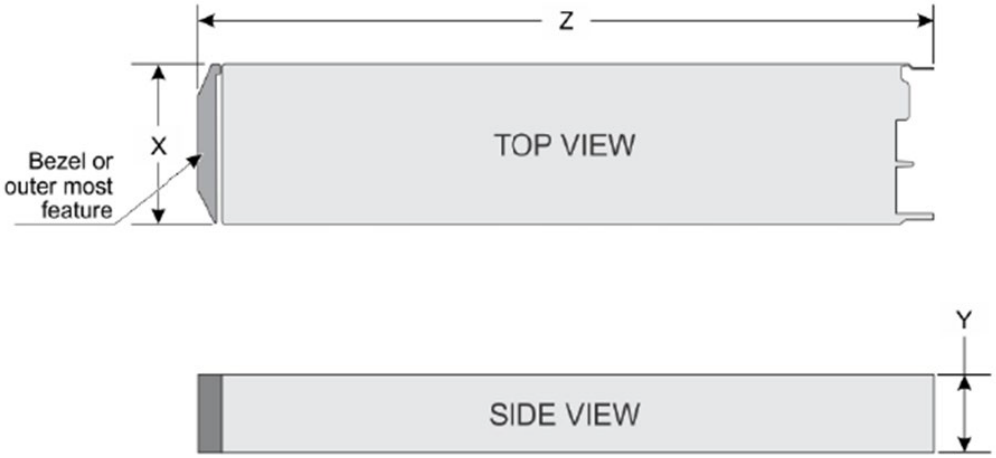


**Figure 13. System dimensions**

| 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) |

## Chassis 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) |
| 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<br>Max 30°C support<br>Max 25°C support<br>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-inches Storage Configuration

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

### Table 25. 4x2.5-inches Storage Configuration

| ASHRAE (Ambient) Restrictions | | |
|---|---|---|
| Dell EMC PowerEdge Server<br><br>Standard Operating Support (ASHRAE A2 compliant)<br><br>All options supported unless otherwise noted. | Dell EMC PowerEdge Server<br><br>Extended Ambient 40°C Operating Support (ASHRAE A3 compliant) | Dell EMC PowerEdge Server<br><br>Extended Ambient 45°C Operating Support (ASHRAE A4 compliant) |
| • Maximum 30°C with 270 W CPU + >2 NVMe drives | • Do not perform a cold startup below 5°C<br>• Does not support CPU >135 W (TBD)<br>• Does not support Non-Dell qualified peripheral cards or peripheral cards greater than 30 W<br>• Does not support NVMe drive<br>• Does not support Intel Optane Persistent Memory 200 Series DCPMM<br>• Does not support 128 GB LRDIMM | • Do not perform a cold startup below 5°C<br>• Does not support CPU >135 W<br>• Does not support Non-Dell qualified peripheral cards or peripheral cards greater than 30 W<br>• Does not support NVMe drive<br>• Does not support Intel Optane Persistent Memory 200 Series DCPMM<br>• 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 |
|---|---|
| **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.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. 2.0 | 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:<br>● Chassis features<br>● System Setup program<br>● System indicator codes<br>● System BIOS<br>● Remove and replace procedures<br>● Diagnostics<br>● 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:<br>● 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 |