

Dell EMC PowerEdge

C6400 and C6420 Technical Guide

Notes, cautions, and warnings

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

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

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

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System overview

Topics:

- [Introduction](#)
- [New technologies](#)

Introduction

The PowerEdge C6400 is an ultra-dense, 2U enclosure that supports up to four independent (C6420), hot-swappable two-socket (2S) sleds.

The system (C6400 and C6420) is optimized for the most demanding workloads, such as:

- High performance computing (HPC)
- High Performance Data Analytics (HPDA)
- Analytics and Big Data
- Web 2.0
- Web scale applications, SaaS, and IaaS
- Software defined storage
- Private cloud
- Financial Analysis and High Frequency Trading (HFT)
- Hyper Converged Infrastructure (HCI), vSAN

With flexible configurations and hyper-scale capabilities, the system is the ideal choice for hyper-converged infrastructures including validated, pre-bundled Dell EMC HPC solutions, VxRail and VxRack and the Dell EMC XC Series.

The system offers the following features:

- Latest generation of Intel® Xeon® processors with up to 205W processors and 28 cores per processor.
- Supports up to 512 GB memory per node.
- Offers flexible I/O options including, low-latency InfiniBand™ and next-generation Intel Omni-Path.
- Provides new Direct Contact Liquid Cooling options for improved power efficiency and thermal efficiency.

New technologies

Table 1. New technologies

New technology	Detailed description
Intel® Xeon® processor series	The processor product family has embedded PCIe lanes for improved I/O performance. For details, see the Processor section.
Intel C621 series chipset	The system uses the Intel 620 family of Platform Controller Hub (PCH).
2666 MT/s 16x DDR4 memory, 3200 MT/s 16x DDR4 memory	The processor product family supports 2666 MT/s memory and 3200 MT/s memory. The system supports ECC DDR4 (RDIMM/LRDIMM). For details, see the Memory section.
iDRAC9 with Lifecycle Controller	The new embedded systems management solution for Dell EMC servers features hardware and firmware inventory and in-depth memory alerting, data center level power monitoring, faster performance and many more features. For details, see the Dell EMC OpenManage systems management section.

Table 1. New technologies (continued)

New technology	Detailed description
USB 3.0	USB 3.0 can operate in both USB 2.0 and USB 3.0 speed modes. USB 3.0 driver is required to control USB device in USB 3.0 speed mode.
Micro USB	1x micro USB CONN type-AB for iDRAC direct.
miniDP video	Digital video with smaller connector to improve thermals at the exit.
M.2	Internal SATA boot, Larger capacity (upto 240 G).
Native fabric support from INTEL	Omnipath direct from CPU.

System features

Compared to previous generations, C6420 offers faster processing power and advanced system management.

Topics:

- [Comparison of PowerEdge systems](#)
- [Specifications](#)

Comparison of PowerEdge systems

The following table compares some of the features of the PowerEdge C6320 with PowerEdge C6420.

Table 2. PowerEdge C6320 and C6420 product Comparison

Feature	PowerEdge C6320	PowerEdge C6420
Processor	Intel Xeon E5-2600v3 and v4 Series	Intel Xeon Scalable Family Processor Series
Front Side Bus	Intel QuickPath Interconnect (QPI)	Intel Ultra Path Interconnect (UPI)
Sockets	2	2
Cores	4, 6, 8, 10, 12, 14, 16, 18, 20, 22 core	4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 28 core
L2/L3 Cache	10 MB, 15 MB, 20 MB, 25 MB, 30 MB, 35 MB, 40 MB, or 45 MB	8, 11, 16, 16.5, 19, 19.25, 22, 27, 20, 22, 24.75, 25, 27.30, 33, 36, or 38MB
Chipset	Intel C612 chipset	Intel C621 Chipset
DIMMs	16 x DDR4 1600MHz/1866/2133MHz/2400MHz	16 x DDR4 2666 MT/s
Min/Max RAM	4GB / 512GB	8GB/1024GB
Hard Drive Bays	4-node: Up to 6 x 2.5-in. or 3 x 3.5-in. hot-swap HDDs	4-node: Up to 6 x 2.5-in. or 3 x 3.5-in. hot-swap HDDs
Hard Drive Types	SAS/SATA	SAS/SATA/NVMe
External Drive Bay	None	None
Internal Boot Drive	SATA DOM (64GB) or 1.8" SSD options	1 x 120/240GB M.2 Boot Drive 2 x 120/240GB M.2 Boot Drives in RAID 1
Embedded Hard Drive Controller	Chipset-based SATA	Chipset-based SATA
Optional Storage Controller	NON-RAID: Intel C612 RAID: All @ 6Gbs - LSI 2008 Mezzanine, PERC H330, PERC H730	NON-RAID: Intel C621, HBA330 RAID: PERC H330, PERC H730p Mezz, HBA355e external PERC, and S140 SWRAID
Availability	Hot-plug HDD and PSU; Redundant PSU	Hot-plug HDD and PSU; Fault Tolerant Redundant PSU
Server Management	iDRAC8 (Express, Enterprise) editions	BMC (including virtual media and console), iDRAC9 Enterprise

Table 2. PowerEdge C6320 and C6420 product Comparison (continued)

Feature	PowerEdge C6320	PowerEdge C6420
I/O Slots	1U sled: One x PCIe x16 Gen3 (half height, half length)+ One x PCIe x8 Gen3 (mezzanine)	One x16 PCIe Gen3 riser (low profile, half height and half length)+ One x8 PCIe Gen3 Mezzanine (for storage controller)+ One x16 PCIe Gen3 OCP Mezzanine (for network controller)+ One x16 PCIe Gen3 riser (for M.2 Boot Device)
NIC/LOM	2x Intel® 82599ES 10GbE (SFP+)	1 x 1 Gb Ethernet RJ45. Multiplexed between LOM and dedicated system management ports.
USB	1 rear per server	2 x USB 3.0 ports per C6420
Power Supplies	Hot-Swap Redundant, 1400W (80+ Platinum) Redundant, 1600W (80+ Platinum) (200~240VAC or 240VDC)	Hot-Swap Fault Tolerant Redundant 2600W/1600W (Titanium),Fault Tolerant Redundant 2600W/1600W (80+ Platinum), Fault Tolerant Redundant 2000W/2400W (200~240VAC or 240VDC)
Fans	4 x 60 mm, Non-redundant, non-hot Swappable	4x60 mm dual rotor redundant, non-hot swappable fans
Form Factor	2U Rack	2U Rack
Dimension (HxWxD)	87 mm x 448 mm x 790 cm	86.8 mm x 448 mm x 790 mm
Weight	Max: 41 Kg (90.4 lbs)	24 x 2.5 HDD chassis - 41.6 Kg / 91.71232 lb 12 x 3.5 HDD chassis - 43.62 Kg / 96.1656 lb No Backplane - 34.56 Kg / 76.1917 lb

Specifications

Table 3. Technical Specifications

Feature	PowerEdge C6400 and C6420 technical specification
Form factor	Up to four 2-socket C6420 servers per C6400 chassis
Processor	Intel® Xeon® E5- 2600 Scalable family series + Fabric SKU in each of the four independent sleds
Chipset	Intel C621 chipset
Memory	16 x DDR4 RDIMM (2677 MT/s); 4 slots capable of Apache Pass (AEP) DIMM, DDR4 RDIMM (3200 MT/s)
I/O slots	<ul style="list-style-type: none"> ● 1 x16 PCIe Gen 3 LP HH riser slot ● 1 x16 OCP Mezz slot (for network controller) ● 1 x8 Mezz slot (for storage controller) ● 1 x16 PCIe Gen 3 buried slot (for M.2 Boot device)
I/O adapter options	<ul style="list-style-type: none"> ● 1 Gb Ethernet ● 10/25/40/100Gb Ethernet ● InfiniBand ● Omni-Path
C6400 Chassis Configurations	<ul style="list-style-type: none"> ● No backplane chassis

Table 3. Technical Specifications (continued)

Feature	PowerEdge C6400 and C6420 technical specification
	<ul style="list-style-type: none"> ● 24 x 2.5 inch SAS/SATA drives with up to six drives per sled ● 24 x 25 inch SAS/SATA drives with Expander Backplane with either four sleds each with six 2.5 inch drives or two sleds each with 12 2.5 inch drives ● 24 x 2.5 inch drives with up to two NVMe drives and four SAS/SATA drives per sled ● 12 x 3.5 inch drives with up to three drives per sled
Operating systems	<ul style="list-style-type: none"> ● Microsoft Windows Server 2012 R2 ● Microsoft Windows Server 2016 ● Novell SuSE Linux Enterprise Server 11 (with PLDP) SP4 x86_64 ● Novell SuSE Linux Enterprise Server 12 SP2 x86_64 ● RedHat Enterprise Linux 7.3 Server x86_64 ● Ubuntu 16.04 LTS <p>Virtualization options:</p> <ul style="list-style-type: none"> ● Citrix Xen Server 7.1.x ● VMWare vSphere 2016 U1 (ESXi 6.5 U1) ● VMWare vSphere 2015 U3 (ESXi 6.0 U3)
Storage Controllers	<ul style="list-style-type: none"> ● S140 Software RAID ● PERC H330 x8 Mezz Card ● PERC H730p x8 Mezz Card ● SAS HBA330 ● 12 Gb SAS HBA x16 PCIe Adapter ● HBA355e HBA: External adapter x8 Low Profile
Embedded NIC	Intel i350 1 GbE (single port)
Power supplies	<ul style="list-style-type: none"> ● Dual hot-plug non-redundant high-efficiency 1600W PSU ● Dual hot-plug fault tolerant redundant high-efficiency 1600W/2000W/2400W PSUs ● 2600 W PSU (supported only on Dell EMC PowerEdge C6525 and Dell EMC PowerEdge C6520 sleds)
Availability	<ul style="list-style-type: none"> ● Hot-plug hard drives ● Hot-plug redundant power ● ECC memory ● Single device data correction (SDDC) ● Dual Rotor redundant fans
Systems management	<ul style="list-style-type: none"> ● BMC or iDRAC9 Enterprise with 1 x 1Gbps RJ45 connector ● Intel Node Manager 3.0 compliant
Chassis Dimensions	<ul style="list-style-type: none"> ● Height: 86.8 mm (3.41 in) ● width: 448 mm (17.63 in) ● Chassis depth: 797 mm (31.3 cm)
Recommended support	<p>Dell EMC ProSupport Plus for critical systems or Dell EMC ProSupport for premium hardware and software support for your PowerEdge solution. Consulting and deployment offerings are also available. Contact your Dell representative today for more information. Availability and terms of Dell Services vary by region. For more information, visit Dell.com/ServiceDescriptions .</p>

Chassis views and features

The C6400 chassis is an ultra-dense 2U enclosure that supports up to four independent two-socket (2S) sleds connected to a direct backplane.

Topics:

- [Chassis views](#)
- [Accessing system information by using QRL](#)
- [Security features](#)

Chassis views

Front panel view and features

The C6400 chassis offers four sled options.

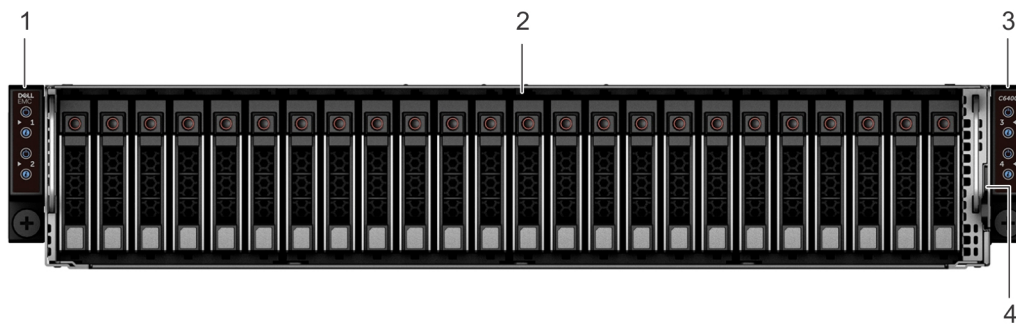


Figure 1. Front panel features and indicators of the 24 x 2.5 inch hard drive enclosure

- | | |
|------------------------|--------------------|
| 1. left control panel | 2. drive bay |
| 3. right control panel | 4. information tag |

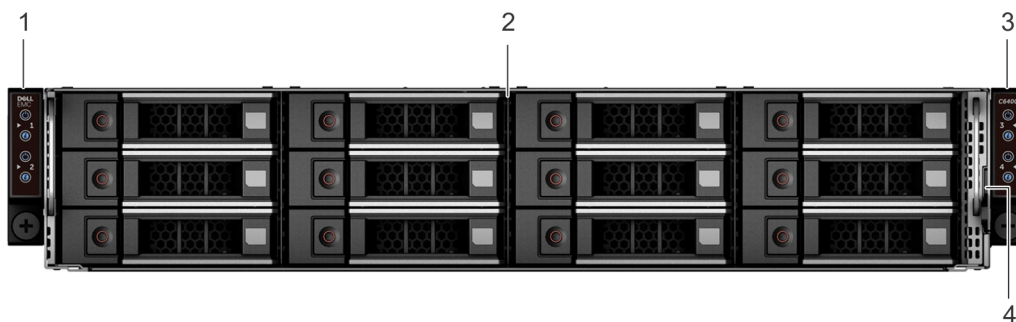


Figure 2. Front panel features and indicators of the 12 x 3.5 inch hard drive enclosure

- | | |
|------------------------|--------------------|
| 1. left control panel | 2. drive bay |
| 3. right control panel | 4. information tag |

System sled enumeration

The enumeration for the motherboards is:

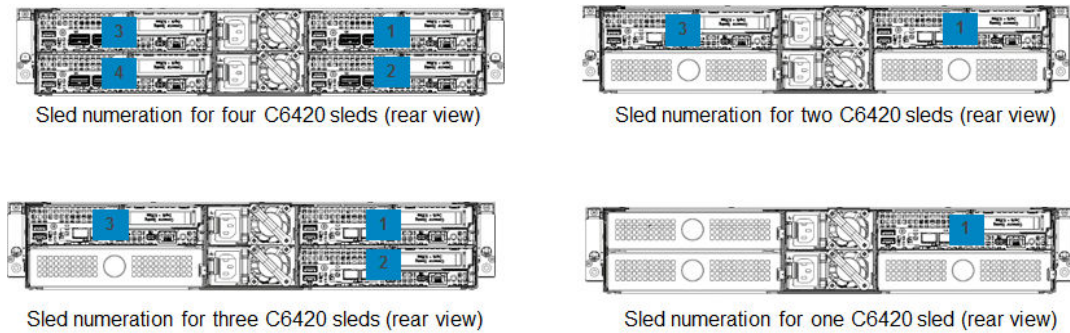


Figure 3. System sled enumeration

1U sled are shipped from the factory in:

- 1- node, 2- node, 3- node, and 4- node configurations only with 2.5 inch backplanes, 2.5 inch with NVMe backplanes and 3.5 inch backplanes.
 - Only 1- node, and 3-node applies to the 2.5 inch expander backplane.
- The empty slots in 1- node, 2- node, and 3- node configurations are filled with the dummy or blank sleds.

Back view

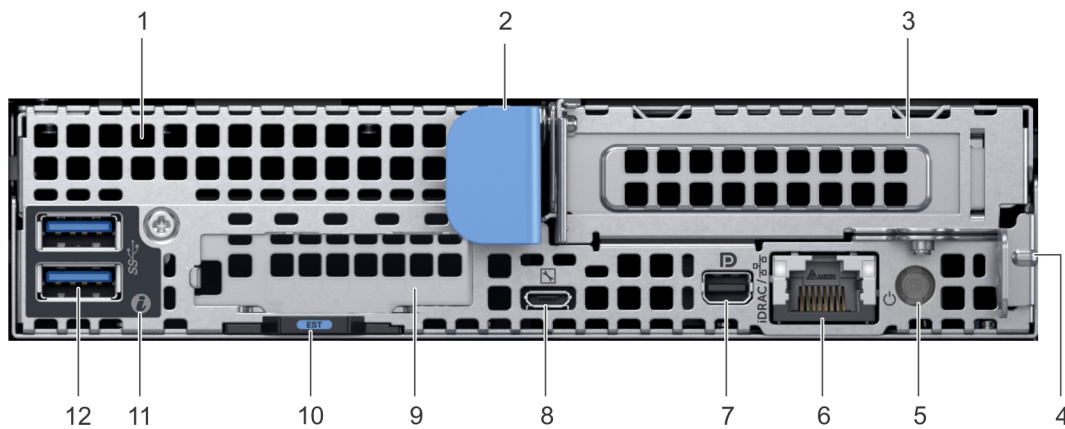







Figure 4. Back view of the PowerEdge C6420 sled

Table 4. Back panel features

Item	Indicator, button, or connector	Icon	Description
1	mezzanine card slot	N/A	Enables you to connect mezzanine expansion cards. For more information, see the Technical specifications section.
2	sled release handle	N/A	Enables you to remove the sled from the enclosure.
3	Low Profile PCIe card slot	N/A	Enables you to connect PCI Express expansion cards. For more information, see

Table 4. Back panel features (continued)

Item	Indicator, button, or connector	Icon	Description
			the Technical specifications section.
4	sled release lock	N/A	Enables you to remove the sled from the enclosure.
5	rear power button	N/A	Enables you to power on the sled while accessing it from the rear.
6	iDRAC or NIC port	 iDRAC	Enables you to remotely access iDRAC. For more information, see the iDRAC User's Guide at www.dell.com/poweredgemanuals .
7	mini display port		Enables you to connect a display device to the system. For more information, see the Technical specifications section.
8	iDRAC Direct micro USB port		Enables you to connect a portable device to the sled.
9	OCP or OPA card slot	N/A	Enables you to connect Open Compute Project (OCP) or Omni-Path Architecture (OPA) expansion cards. For more information, see the Technical specifications section.
10	EST pull out tab	N/A	This tab has the unique Express Service Code, Service Tag, and MAC address labels.
11	system id indicator and button		The System Identification (ID) button is available on the front and back of the systems. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the step through mode.
12	USB 3.0 port (2)		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.

Accessing system information by using QRL

You can use the Quick Resource Locator (QRL) to get immediate access to the information about your system. The QRL is located on the top of the system cover and provides access to generic information about your system. If you want to access information specific to the system service tag, such as configuration and warranty, you can access QR code located on the system Information tag.

Ensure that your smart phone or tablet has the QR code scanner installed.

The QRL includes the following information about your system:

- How-to videos
 - Reference materials, including the Owner’s Manual and mechanical overview
 - A direct link to Dell to contact technical assistance and sales teams
1. Go to **Dell.com/QRL** and navigate to your specific product or
 2. Use your smart phone or tablet to scan the model-specific Quick Resource (QR) code on your PowerEdge system or in the Quick Resource Locator section.

Security features

The latest generation of PowerEdge servers has the features listed in the table to help ensure the security of your data center.

List of the security features:

- PowerEdge Secure Boot
- System Erase
- System Lockdown
- Drift Detection
- BIOS and OS Recovery
- Active Directory/LDAP
- two-factor authentication (TFA)
- SSH with Public Key Authentication (PKA)
- TLS 1.2
- SNMP v3
- Self-Encrypting and Instant Secure Erase (ISE) Drives

Table 5. Security features

Security feature	Description
Power-off security	BIOS has the ability to disable the power button function.
Secure mode	BIOS has the ability to enter a secure boot mode via Setup. This mode includes the option to lock out the power and NMI switches on the Control Panel or set up a system password.

Processor

Intel Xeon processor

The C6420 sled supports up to two Intel Xeon E5- 2600 or 2600 F product family processors in each of the four independent sleds. Each processor supports up to 28 cores.

Topics:

- [Processor Features](#)
- [Supported processors](#)
- [Processor installation](#)
- [Processor configurations](#)
- [Chipset](#)

Processor Features

Based on Intel's 14nm fabrication technology, the Intel® Xeon® processor family introduced a new micro-architecture that provides significant performance advantages and new features targeted for a range of workloads such as: High Performance Computing (HPC), Enterprise applications, Cloud service providers, storage, network applications, Internet of Things (IoT), and many more. The following table summarizes key features of the processor family.

Table 6. Processor Features

Category	Feature	Function
Compute	Additional Cores	Up to 28C
	Intel® AVX-512	512-bit instructions
	MLC Optimization	Acceleration of enterprise-class and HPC workloads
		Heterogeneous support with converged programming environment
		Higher 'private-local' ratio in cache
	Lower power	
	Intel® Ultra Path Interconnect (UPI) (replaces QPI)	Increases bandwidth: up to 10.4 GT/s
Memory & Security	Memory Capacity and Bandwidth increase	Up to DDR4 2666 MHz (11% increase)
		Up to 6 channels (50% increase)
	MPX (Memory Protection Extensions)	Prevents buffer overflow
I/O	Fabric Integration	On package integration of next-generation Intel® Omni-Path Fabric controller
	PCIe Bandwidth	Up to 48 PCIe lanes; 3.0 speed 79 GB/s bi-directional pipeline (from 53 GB/s on BDW)
	Separate Reference with Independent Spread Spectrum Clocking (SRIS)	Eliminates clock in PCIe cables

Table 6. Processor Features (continued)

Category	Feature	Function
	MCTP Scaling	256 PCIe buses, up to 8 segments
Storage	Non-Transparent Bridge (NTB) Enhancements	3 full-duplex NTBs and 32 MSI-X vectors
	Crystal Beach DMA (CBDMA)	Adds MMIO -> mem transfer support 2X performance increase vs. prior gen platform
	Intel® Volume Management Device (Intel® VMD)	Manages CPU attached PCIe NVMe SSDs: Provides robust hot-plug capability
		Enclosure Management and Error isolation

Supported processors

The system supports the following processors:

Table 7. Supported processors

SKU	Class	Frequency (GHz)	Number of Cores	TDP Watts
8176	Platinum	2.1	28	165
8176M	Platinum	2.1	28	165
8170M	Platinum	2.1	26	165
8170	Platinum	2.1	26	165
8164	Platinum	2	26	150
8160M	Platinum	2.1	24	150
8160	Platinum	2.1	24	150
8153	Platinum	2	16	125
6152	Gold	2.1	22	140
6138	Gold	2	20	125
6140M	Gold	2.3	18	140
6140	Gold	2.3	18	140
6130	Gold	2.1	16	135
5120	Gold	2.2	14	105
5118	Gold	2.3	12	105
5115	Gold	2.4	10	85
4116	Silver	2.1	12	85

Table 7. Supported processors (continued)

SKU	Class	Frequency (GHz)	Number of Cores	TDP Watts
4114	Silver	2.2	10	85
4112	Silver	2.6	4	85
4110	Silver	2.1	8	85
4108	Silver	1.8	8	85
3106	Bronze	1.7	8	85
3104	Bronze	1.7	6	85
8180	Platinum	2.5	28	205
8180M	Platinum	2.5	28	205
8176M	Platinum	2.1	28	165
8168	Platinum	2.7	24	205
8158	Platinum	3	12	150
8156	Platinum	3.6	4	105
6148	Gold	2.4	20	150
6154	Gold	3	18	200
6150	Gold	2.7	18	165
6142	Gold	2.6	16	150
6132	Gold	2.6	14	140
6146	Gold		12	
6136	Gold	3	12	150
6126	Gold	2.6	12	125
6144	Gold		8	
6134	Gold	3.2	8	130
6128	Gold	3.4	6	115
5122	Gold	3.6	4	105
8176F	Platinum	2.1	28	173
8160F	Platinum	2.1	24	160
6138F	Platinum	2	20	135
6130F	Platinum	2.1	16	135
6148F	Gold	2.0	2.4	160

Table 7. Supported processors (continued)

SKU	Class	Frequency (GHz)	Number of Cores	TDP Watts
6142F	Gold	16	2.6	160
6126F	Gold	12	2.6	135

Processor installation

For processor installation instructions see the Dell EMC PowerEdge C6420 Installation and Service Manual.

Processor configurations

The system offers the following processor configurations:

- **Non Fabric Processor Configuration** — The system is available in single and dual non Fabric processor configurations. In the dual non Fabric processor configuration, both the processors should match.
- **Omni-Path Fabric Processor Configuration** — The system is available in dual Omni-Path Fabric processors. The following table lists the available Stock Keeping Units (SKUs):

Table 8. Fabric SKUs

Type	SKU
Fabric	8176F
Fabric	8160F
Fabric	6138F
Fabric	6130F
Fabric/Frequency Optimized	6148F
Fabric/Frequency Optimized	6142F
Fabric/Frequency Optimized	6126F

NOTE:

- Single processor configuration using an Omni-Path fabric CPU is not a supported configuration.
- When an Omni-Path fabric CPU is configured, the C6420 compute sled cannot be configured with the OCP Mezz card. So, for additional networking, the x16 PCIe LP slot must be used.
- **Fabric and Non-Fabric Mixed Processor Configurations** — The system can be configured to have one non-fabric CPU and one Omni-Path fabric CPU. The following table shows the allowed CPU SKUs for mixing fabric and non-fabric processors:

Table 9. Allowed Mixed Processor Configurations

SKU for CPU1	Allowed SKU for CPU2
6126 12C 2.6GHz 125W	6126F 12C 2.6GHz 135W
6130 16C 2.1GHz 125W	6130F 16C 2.1GHz 135W
6138 20C 2.0GHz 125W	6138F 20C 2.0GHz 135W
6142 16C 2.6GHz 150W	6162F 16C 2.6GHz 160W
6148 20C 2.4GHz 150W	4148F 20C 2.4GHz 160W
8160 24C 2.1GHz 150W	8160F 24C 2.1GHz 160W
8176 28C 2.1GHz 165W	8176F 28C 2.1GHz 173W

NOTE:

- In mixed fabric and non-fabric CPU configurations, CPU2 will be always populated with an Omni-Path fabric CPU.
- When an Omni-Path fabric CPU is configured, the C6420 compute sled cannot be configured with the OCP Mezz card. So, for additional networking, the x16 PCIe LP slot must be used.

Chipset

The C6400 and C6420 uses the Intel C620 chipset. For more information, visit [Intel.com](https://www.intel.com).

Memory

The system supports up to 512 GB of memory and speeds up to 3200 MT/s, providing high performance in a variety of applications. High memory density means there is no compromise when it comes to virtualization.

The system supports both registered DIMMs (RDIMM) and load-reduced DIMMs (LRDIMMs). Unbuffered DIMMs (UDIMMs) are not supported.

DIMMs supported

Table 10. Memory technologies supported

Feature	RDIMM	LRDIMM
Register	Yes	Yes
Buffer	No	No
Frequencies	Up to 2666 MT/s	Up to 2666 MT/s
Ranks supported	Single or dual rank	Dual Rank
Capacity per DIMM	Upto 32GB	Upto 64 GB
Maximum DIMMs per channel per sled	2	2
DRAM technology	x4 or x8	x4
Error Correction Code (ECC)	Yes	Yes

The C6420 supports the following DIMMs. For the latest information on supported memory, visit the C6420 page on [Dell.com](https://www.dell.com).

Table 11. DIMMs supported.

DIMM Capacity	DIMM Speed	DIMM Type	Ranks Per DIMM	Data width	Voltage (V)
8 GB	2666 MT/s	RDIMM	Single Rank	x8	1.2
16 GB	2666 MT/s	RDIMM	Dual Rank	x8	1.2
32 GB	2666 MT/s	RDIMM	Dual Rank	x4	1.2
32 GB	3200 MT/s	RDIMM	Dual Rank	x8	1.2
64 GB	2666 MT/s	LRDIMM	Dual Rank	x4	1.2

NOTE: The older 32 GB capacity RDIMM memory with x4 data width and 8Gb DRAM density cannot be mixed with the newer 32GB capacity RDIMM memory with x8 data width and 16Gb DRAM density in the same AMD EPYC™ processor unit.

Storage

The system enables multiple storage configurations to tune the system configuration for a wide variety of workloads. The C6400 chassis is available in the following configuration types:

- No hard drives in a No-Backplane Configuration
- 24 x 2.5" Direct Backplane configuration with up to 6 SAS/SATA drives per node
- 24 x 2.5" Expander Backplane configuration with up to 12 SAS/SATA drives per node and two nodes per chassis
- 24 x 2.5" NVMe Backplane configuration with up to 6 drives per node out of which two drives can be NVMe drives
- 12 x 3.5" Direct Backplane configuration with up to 3 SAS/SATA drives per node

Topics:

- [Supported drives](#)
- [RAID Configurations](#)
- [Internal storage](#)
- [Optical Drives](#)
- [Tape drive](#)

Supported drives

The system supports the following drives:

Table 12. Supported NVMe Drives

Vendor	Description	Capacity	Type	Interface
Samsung	SSDR, 1.6T, NVME, PCIE, 2.5, PM1725	1.6TB	MU	PCIe
Samsung	SSDR, 1.6T, NVME, PCIE, 2.5, PM1725A	1.6TB	MU	PCIe
Samsung	SSDR, 3.2, NVME, PCIE, 2.5, PM1725A	3.2TB	MU	PCIe
Samsung	SSDR, 3.2, NVME, PCIE, 2.5, PM1725	3.2TB	MU	PCIe
Samsung	SSDR, 800G, NVME, PCIE, 2.5, PM1725	800GB	MU	PCIe
Samsung	SSDR, 800G, NVME, PCIE, 2.5, PM1725A	800GB	MU	PCIe

Table 13. Supported Solid State Drives (SSDs)

Vendor	Description	Capacity	Type	FIPS	Interface
Intel	Downieville S3520 Boot, SSD, 6Gbps SATA, 2.5, 512n, ISE	120GB	Boot	No	SATA
Samsung	SM863a MU, SSD, 6Gbps SATA, 2.5, 512n, ISE	960GB	MU	No	SATA

Table 13. Supported Solid State Drives (SSDs) (continued)

Vendor	Description	Capacity	Type	FIPS	Interface
TOS	Phoenix M4 MU, SSD, 12Gbps SAS, 2.5, 512n, ISE	960GB	MU	No	SAS
Intel	Haleyville S3610 MU (ND), SSD, 6Gbps SATA, 2.5, 512n, ISE	800GB	MU	No	SATA
Samsung	PM1635a MU, SSD, 12Gbps SAS, 2.5, 512e, FIPS-140	800GB	MU	Yes	SAS
Samsung	PM1635a MU, SSD, 12Gbps SAS, 2.5, 512e, ISE	800GB	MU	No	SAS
Samsung	SM863a MU, SSD, 6Gbps SATA, 2.5, 512n, ISE	480GB	MU	No	SATA
TOS	Phoenix M4 MU, SSD, 12Gbps SAS, 2.5, 512n, ISE	480GB	MU	No	SAS
Samsung	PM1635a MU, SSD, 12Gbps SAS, 2.5, 512e, ISE	400GB	MU	No	SAS
TOS	Phoenix M3 MU, SSD, 12Gbps SAS, 2.5, 512n	400GB	MU	No	SAS
Samsung	SM863a MU, SSD, 6Gbps SATA, 2.5, 512n, ISE	240GB	MU	No	SATA
Samsung	SM863a MU, SSD, 6Gbps SATA, 2.5, 512n, ISE	1.92TB	MU	No	SATA
TOS	Phoenix M4 MU, SSD, 12Gbps SAS, 2.5, 512n, ISE	1.92TB	MU	No	SAS
Samsung	PM1635a MU, SSD, 12Gbps SAS, 2.5, 512e, FIPS-140	1.6TB	MU	Yes	SAS
Samsung	PM1635a MU, SSD, 12Gbps SAS, 2.5, 512e, ISE	1.6TB	MU	No	SAS
Samsung	PM863a RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	960GB	RI	No	SATA

Table 13. Supported Solid State Drives (SSDs) (continued)

Vendor	Description	Capacity	Type	FIPS	Interface
Intel	Downieville S3520 RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	960GB	RI	No	SATA
TOS	Phoenix M4 RI, SSD, 12Gbps SAS, 2.5, 512n, ISE	960GB	RI	No	SAS
Samsung	PM1633a RI, SSD, 12Gbps SAS, 2.5, 512e, ISE	960GB	RI	No	SAS
Intel	Downieville S3520 RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	800GB	RI	No	SATA
Intel	Downieville S3520 RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	480GB	RI	No	SATA
Samsung	PM863a RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	480GB	RI	No	SATA
Samsung	PM863a RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	3.84TB	RI	No	SATA
TOS	Phoenix M4 RI, SSD, 12Gbps SAS, 2.5, 512n, ISE	3.84TB	RI	No	SAS
Samsung	PM1633a RI, SSD, 12Gbps SAS, 2.5, 512e, ISE	3.84TB	RI	No	SAS
Samsung	PM863a RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	1.92TB	RI	No	SATA
Samsung	PM1633a RI, SSD, 12Gbps SAS, 2.5, 512e, ISE	1.92TB	RI	No	SAS
TOS	Phoenix M4 RI, SSD, 12Gbps SAS, 2.5, 512n, ISE	1.92TB	RI	No	SAS
Intel	Downieville S3520 RI, SSD, 6Gbps SATA, 2.5, 512n, ISE	1.6TB	RI	No	SATA
TOS	Phoenix M4 WI, SSD, 12Gbps SAS, 2.5, 512n, ISE	800GB	WI	No	SAS

Table 13. Supported Solid State Drives (SSDs) (continued)

Vendor	Description	Capacity	Type	FIPS	Interface
TOS	Phoenix M4 WI, SSD, 12Gbps SAS, 2.5, 512n, ISE	400GB	WI	No	SAS
TOS	Phoenix M3 WI, SSD, 12Gbps SAS, 2.5, 512n	400GB	WI	No	SAS
TOS	Phoenix M4 WI, SSD, 12Gbps SAS, 2.5, 512n, ISE	1.6TB	WI	No	SAS

Table 14. Supported 2.5" Hard Disk Drives (HDDs)

Vendor	Description	Capacity	Speed	Interface
TOS	AL13SX MLK, HDD, 12Gbps SAS, 2.5, 15K, 512n, ISE	300GB	15K	SAS
STX	Kestrel, HDD, 12Gbps SAS, 2.5, 15K, 512n, ISE	300GB	15K	SAS
STX	Avenger, HDD, 12Gbps SAS, 2.5, 7.2K, 512n, FIPS-140	2TB	7.2K	SAS
TOS	AL14SE, HDD, 12Gbps SAS, 2.5, 10K, 512e, ISE	1.8TB	10K	SAS
HGST	Cobra F, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	600GB	10K	SAS
STX	Avenger, HDD, 12Gbps SAS, 2.5, 7.2K, 512n, ISE	1TB	7.2K	SAS
HGST	King Cobra F, HDD, 12Gbps SAS, 2.5, 15K, 512n, ISE	300GB	15K	SAS
TOS	AL14SE-Lite, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	1.2TB	10K	SAS
STX	Kestrel TEC, HDD, 12Gbps SAS, 2.5, 15K, 512e, ISE	900GB	15K	SAS
TX	Kestrel, HDD, 12Gbps SAS, 2.5, 15K, 512n, ISE	900GB	15K	SAS
HGST	Cobra F, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	300GB	10K	SAS
STX	Kestrel, HDD, 12Gbps SAS, 2.5, 15K, 512n, ISE	600GB	15K	SAS

Table 14. Supported 2.5" Hard Disk Drives (HDDs) (continued)

Vendor	Description	Capacity	Speed	Interface
STX	Kestrel, HDD, 12Gbps SAS, 2.5, 15K, 512n, FIPS-140	900GB	15K	SAS
STX	Thunderbug, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	600GB	10K	SAS
TX	Thunderbug, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	300GB	10K	SAS
STX	Avenger, HDD, 12Gbps SAS, 2.5, 7.2K, 512n, ISE	2TB	7.2K	SAS
STX	Thunderbolt, HDD, 12Gbps SAS, 2.5, 10K, 512n, FIPS-140	1.2TB	10K	SAS
HGST	Cobra F, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	1.2TB	10K	SAS
STX	Avenger, HDD, 12Gbps SAS, 2.5, 7.2K, 4096n, ISE	2TB	7.2K	SAS
HGST	King Cobra F, HDD, 12Gbps SAS, 2.5, 15K, 512n, ISE	600GB	15K	SAS
TOS	AL13SX MLK, HDD, 12Gbps SAS, 2.5, 15K, 512n, ISE	600GB	15K	SAS
TOS	AL14SE-Lite, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	600GB	10K	SAS
STX	Kestrel, HDD, 12Gbps SAS, 2.5, 15K, 4096n, ISE	900GB	15K	SAS
STX	Avenger, HDD, 6Gbps SATA, 2.5, 7.2K, 512n, ISE	1TB	7.2K	SATA
STX	Thunderbolt, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	1.2TB	10K	SAS
STX	Thunderbolt 2, HDD, 12Gbps SAS, 2.5, 10K, 512e, ISE	1.8TB	10K	SAS
TOS	AL14SE-Lite, HDD, 12Gbps SAS, 2.5, 10K, 512n, ISE	300GB	10K	SAS

Table 14. Supported 2.5" Hard Disk Drives (HDDs) (continued)

Vendor	Description	Capacity	Speed	Interface
HGST	King Cobra F, HDD, 12Gbps SAS, 2.5, 15K, 512n	600GB	15K	SAS

Table 15. Supported 3.5" Hard Disk Drives (HDDs)

Vendor	Description	Capacity	Speed	Interface
STX	Makara Plus, HDD, 12Gbps SAS, 3.5, 7.2K, 512e, ISE	8TB	7.2K	SAS
STX	Makara Plus, HDD, 12Gbps SAS, 3.5, 7.2K, 512e, FIPS-140	8TB	7.2K	SAS
HGST	Libra HE10, HDD, 12Gbps SAS, 3.5, 7.2K, 4096n, ISE	8TB	7.2K	SAS
HGST	Libra HE10, HDD, 12Gbps SAS, 3.5, 7.2K, 512e, ISE	8TB	7.2K	SAS
STX	Makara Plus, HDD, 12Gbps SAS, 3.5, 7.2K, 4096n, ISE	8TB	7.2K	SAS
STX	Makara Plus, HDD, 6Gbps SATA, 3.5, 7.2K, 512e, ISE	8TB	7.2K	SATA
HGST	Libra HE10, HDD, 6Gbps SATA, 3.5, 7.2K, 512e, ISE	8TB	7.2K	SATA
TOS	Tomcat R, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, ISE	4TB	7.2K	SAS
STX	Makara BP, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, ISE	4TB	7.2K	SAS
HGST	Aries K Plus, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, ISE	4TB	7.2K	SAS
STX	Makara BP, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, FIPS-140	4TB	7.2K	SAS
STX	Makara BP, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	4TB	7.2K	SATA
HGST	Aries K Plus, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	4TB	7.2K	SATA

Table 15. Supported 3.5" Hard Disk Drives (HDDs) (continued)

Vendor	Description	Capacity	Speed	Interface
STX	Makara BP, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, ISE	2TB	7.2K	SAS
HGST	Aries K Plus, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, ISE	2TB	7.2K	SAS
TOS	Tomcat R, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, ISE	2TB	7.2K	SAS
HGST	Aries K Plus, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	2TB	7.2K	SATA
HGST	Rainier MLK, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	2TB	7.2K	SATA
STX	Nemo, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	2TB	7.2K	SATA
STX	Makara BP, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	2TB	7.2K	SATA
STX	Makara BP, HDD, 12Gbps SAS, 3.5, 7.2K, 512n, ISE	1TB	7.2K	SAS
STX	Nemo, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	1TB	7.2K	SATA
STX	Makara BP, HDD, 6Gbps SATA, 3.5, 7.2K, 512n	1TB	7.2K	SATA
HGST	Rainier MLK, HDD, 6Gbps SATA, 3.5, 7.2K, 512n, ISE	1TB	7.2K	SATA
STX	Tatsu, HDD, 12Gbps SAS, 3.5, 7.2K, 512e, ISE	10TB	7.2K	SAS
HGST	Libra HE10, HDD, 12Gbps SAS, 3.5, 7.2K, 512e, ISE	10TB	7.2K	SAS
HGST	Libra HE10, HDD, 6Gbps SATA, 3.5, 7.2K, 512e, ISE	10TB	7.2K	SATA
STX	Tatsu, HDD, 6Gbps SATA, 3.5, 7.2K, 512e, ISE	10TB	7.2K	SATA

RAID Configurations

The system supports the following RAID configurations:

Table 16. Supported RAID Levels

Storage Controller	Supported RAID Levels
Chipset SATA	RAID 0, 1, 10, 5 (Software RAID Only)
PERC H330 Mezz	RAID 0, 1, 5, 10, 50
PERC H730p Mezz	RAID 0, 1, 5, 6, 10, 50, 60

NOTE: RAID using a PERC controller is not supported on NVMe drives

Internal storage

The C6420 introduces support for internal boot storage using the M.2 boot device. A single M.2 boot drive can be configured for each C6420 node. The boot device uses a PCIe riser which, in turn uses the x16 PCIe buried riser. Note that the M.2 boot device is not a PCIe devices, but a SATA device and connects to the SATA port.

M.2 Boot Storage

PowerEdge C6420 introduces support for internal boot storage using the M.2 boot device. A single M.2 boot drive can be configured for each C6420 node. The boot device uses a PCIe riser which uses the x16 PCIe buried riser. Note that the M.2 boot device is not a PCIe devices, but a SATA device and connects to the SATA port. The available M.2 capacity is 120 GB.



Figure 5. M.2 Boot Device Riser



Figure 6. M.2 Boot Device installed in buried x16 PCIe slot

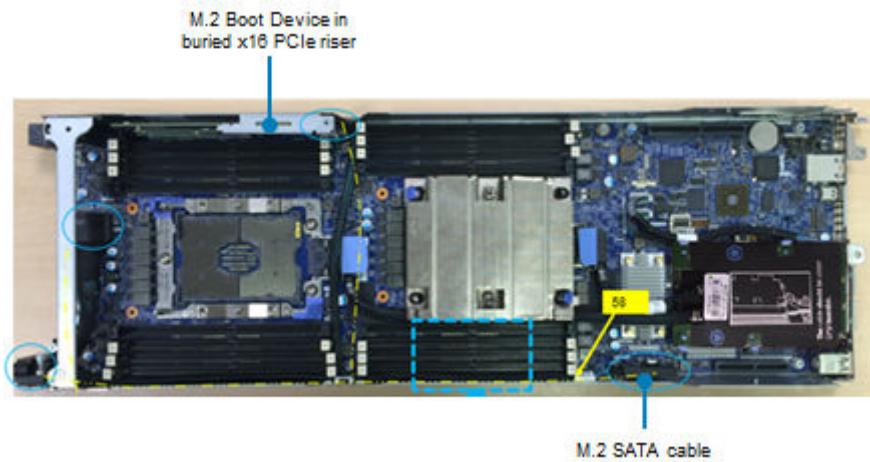


Figure 7. M.2 Boot drive SATA cabling

NOTE:

- The x16 PCIe riser used for M.2 device uses PCIe lanes from CPU2, hence C6420 configurations using an M.2 device must have both CPUs populated.
- Currently support for dual M.2 devices in a RAID 1 configuration is not available.

MicroSD card storage

The PCI Express riser which is optional on the C6420 includes a MicroSD card reader slot. An SD card can be ordered and installed in this slot to be used for storing an embedded hypervisor. SD cards with capacity of 16GB, 32GB and 64GB are available on C6420.

Lifecycle Controller 3.0

For more information on LC 3.0, visit <http://en.community.dell.com/techcenter/systems-management/w/wiki/4126.dell-lifecycle-controller-integration-for-configuration-manager>

Optical Drives

The system does not support optical drives.

Tape drive

The system does not support an internal tape drive. External storage peripherals are not directly validated.

Networking and PCIe

The C6400 and C6420 offers a choice of integrated, low latency I/O fabric (Omni-Path integrated on the CPU and in PCIe card form factor, InfiniBand in a PCIe card form factor), for balanced processing that fuels performance acceleration.

NOTE: The C6420 does not support hot-swapping of PCIe cards.

Topics:

- [Network card options](#)
- [PCIe expansion cards](#)

Network card options

The system supports the following IO slots:

Table 17. Mezzanine and Daughtercard Options

Slot	Description	Standard Usage
x8 Mezz PCI-e Riser	One x8 PCIe Gen3 for Mezz (x8 lanes)	Storage Controller
x16 (x8+x8) OCP Mezz Riser	X8 + X8 PCIe Gen3 for OCP Mezz (x16 lanes max)	Network card for host
x16 PCI-e Main Riser (plug-in)	One x16 PCIe Gen3 for LP from CPU 1 (x16 lanes)	Half Height Low Profile PCIe Adapter
x16 buried PCI-e Riser	One x16 PCIe Gen3 for specific form factor (x16 lanes)	M.2 SATA Boot Device

PCIe expansion cards

The system supports one PCIe card and one mezzanine card. There is no slot priority concern as the sled has a single PCIe slot.

Table 18. Supported expansion cards

Description	Type	Form Factor
Intel 1Gb Dual Port Ethernet LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Broadcom 1Gb Dual Port Ethernet LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Intel X710 Dual Port 10Gb SFP+ OCP Mezzanine Adapter	Ethernet	Open Compute Project (OCP) Mezzanine Card
Intel Dual Port 10Gb SFP+ LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Intel Dual Port 10Gb BASE-T LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Intel Quad Port 10Gb BASE-T LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Broadcom 57402 10Gb SFP+ LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter

Table 18. Supported expansion cards (continued)

Broadcom 57406 10Gb BASE-T LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
SolarFlare SFN8002F Dual Port 10Gb SFP+ LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Mellanox 10Gb Dual Port ConnectX-3 LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Broadcom Dual Port 25Gbps SFP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
QLogic Dual Port 25Gbps SFP LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Mellanox Dual Port 25Gbps SFP LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Mellanox Dual Port 40Gbps QSFP LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Intel Dual Port 40Gbps QSFP LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Mellanox ConnectX-4 Dual Port 100Gb QSFP28 LP PCIe Adapter	Ethernet	Low Profile PCIe Adapter
Mellanox ConnectX3 VPI QSFP+ Single Port FDR LP PCIe Adapter	InfiniBand	Low Profile PCIe Adapter
Mellanox ConnectX-4 Single Port VPI QSFP28 EDR LP PCIe Adapter	InfiniBand	Low Profile PCIe Adapter
Mellanox ConnectX-4 Dual Port VPI QSFP28 EDR LP PCIe Adapter	InfiniBand	Low Profile PCIe Adapter
Intel Omni-Path Single Port Host Fabric Adapter 100 Series LP PCIe Adapter	OmniPath	Low Profile PCIe Adapter
Samsung PM1725 1.6 TB	NVMe	Low Profile, Half Height, Half Length PCIe controller cards
Samsung PM1725A 3.2 TB	NVMe	Low Profile, Half Height, Half Length PCIe controller cards
Samsung PM1725 3.2 TB	NVMe	Low Profile, Half Height, Half Length PCIe controller cards
Samsung PM1725A 1.6 TB	NVMe	Low Profile, Half Height, Half Length PCIe controller cards

Power, Thermal, and Acoustics

The lower overall system-level power draw is a result of the breakthrough system design developed by Dell EMC. The system aims to maximize performance per watt through a combination of energy efficient technologies, optimized thermal designs and intelligent fan control algorithms. The system fan control algorithms use an extensive array of sensors that automatically monitor power and thermal activity to minimize fan speeds based on system cooling requirements, reducing the power required for cooling.

Topics:

- [Power consumption and energy efficiency](#)
- [Power supply units](#)
- [Thermal and Acoustics](#)
- [Inlet temperature guidelines and requirements](#)

Power consumption and energy efficiency

With the rise in the cost of energy that is coupled with increasing data center density, Dell EMC provides tools and technologies to help you realize greater performance with lower energy cost and wastage. More efficient data center usage can reduce costs by slowing the need for additional data center space. The following table lists the tools and technologies that Dell EMC offers to help you achieve your data center goals by lowering power consumption and increasing energy efficiency.

Table 19. Power tools and technologies

Feature	Description
Power supply units (PSU) portfolio	PSU portfolio includes intelligent features such as dynamically optimizing efficiency while maintaining availability and redundancy.
Tools for right-sizing	Enterprise Infrastructure Planning Tool (EIPT) is a tool that helps you to plan and tune your computer and infrastructure equipment for maximum efficiency. EIPT helps you by calculating hardware power consumption, power infrastructure, and storage. You can learn more at Dell.com/calc
Industry compliance	Dell EMC's servers are compliant with all relevant industry certifications and guidelines, including 80 PLUS, Climate Savers, and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: <ul style="list-style-type: none"> • Power monitoring accuracy of 1%, whereas the industry standard is 5% • More accurate reporting of power • Better performance under a power cap
Power capping	Use Dell EMC'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	Dell EMC's servers are compliant with all relevant industry certifications and guidelines, including 80 PLUS, Climate Savers, and ENERGY STAR.

Table 19. Power tools and technologies (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	<p>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 that is comprised of Intel Node Manager that is 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.</p> <p>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.</p>
Fresh Air cooling	FAC 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	<p>Dell EMC offers some of the industry's highest- efficiency power infrastructure solutions, including:</p> <ul style="list-style-type: none"> ● Power distribution units (PDUs) ● Uninterruptible power supplies (UPSs) ● Energy smart containment rack enclosures

Power supply units

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

The system supports two hot-swappable AC power supplies with 1 + 1 redundancy, auto-sensing and auto-switching capability.

Thermal and Acoustics

The system's thermal management delivers high performance through optimized cooling of 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. These optimizations result in lower fan power consumption which translate to lower system power and data center power consumption.

Thermal design

The thermal design of the system reflects the following:

- **Optimized thermal design:** The system layout is architected for optimum thermal design. System component placement and layout are designed to provide maximum airflow coverage to critical components with minimal expense of fan power.

- **Comprehensive thermal management:** The thermal control system regulates the system fan speeds based on feedback from system component temperature sensors, as well as for system inventory and subsystem power draw. Temperature monitoring includes components such as processors, DIMMs, chipset, system inlet air temperature and hard disk drives.
- **Open and closed loop fan speed control:** Open loop fan control uses system configuration to determine fan speed based on system inlet air temperature. Closed loop thermal control uses temperature feedback to dynamically adjust fan speeds based on system activity and cooling requirements.
- **User-configurable settings:** With the understanding and realization that every customer has a unique set of circumstances or expectations from the system, in this generation of servers, we have introduced limited user-configurable settings in the iDRAC9 BIOS setup screen. For more information, see the Dell EMC PowerEdge system Installation and Service Manual on Dell.com/Support/Manuals and “Advanced Thermal Control: Optimizing across Environments and Power Goals” on Dell.com.
- **Cooling redundancy:** The system allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.

Acoustical design

Dell EMC focuses on sound quality in addition to sound power level and sound pressure level. Sound quality describes how disturbing or pleasing a sound is interpreted, and Dell EMC references several psychacoustical metrics and thresholds in delivering it. Tone prominence is one such metric. Sound power and sound pressure levels increase with greater populations or higher utilization, while sound quality remains good even as the frequency content changes. A reference for comparison to sound pressure levels for familiar noise sources is given in the following table. An extensive description of Dell EMC Enterprise acoustical design and metrics is available in the [Dell Enterprise Acoustics](#) white paper.

Table 20. 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	39	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

Inlet temperature guidelines and requirements

Table 21. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Dual Processors

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8180	2.5	28	205	CPU1: 6 CPU2: 8	C30	Not Supported	Not Supported	Not Supported	Not Supported	C20 or lower	C21 or lower	C21 or lower	C21 or lower	C21 or lower

Table 21. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Dual Processors (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
										or lower					
Platinum	8180M	2.5	28	205	CPU1: 6 CPU2: 8	C30	Not Supported C5 or lower	Not Supported C13 or lower	Not Supported C14 or lower	Not Supported C19 or lower	C20 or lower	C21 or lower	C21 or lower	C21 or lower	C21 or lower
Platinum	8168	2.7	24	205	CPU1: 6 CPU2: 8	C30	Not Supported C5 or lower	Not Supported C13 or lower	Not Supported C14 or lower	Not Supported C19 or lower	C20 or lower	C21 or lower	C21 or lower	C21 or lower	C21 or lower
Gold	6154	3	18	200	CPU1: 6 CPU2: 8	C30	Not Supported C6 or lower	Not Supported C14 or lower	Not Supported C15 or lower	C20 or lower	C21 or lower	C22 or lower	C22 or lower	C22 or lower	C22 or lower
Gold	6150	2.7	18	165	CPU1: 8 CPU2: 8	C35	Not Supported C11 or lower	Not Supported C18 or lower	Not Supported C19 or lower	C30	C30	C30	C30	C30	C35
Platinum	8158	3	12	150	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C23 or lower	C30	C30	C30	C30	C30	C35
Gold	6148	2.4	20	150	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C23 or lower	C30	C30	C30	C30	C30	C35
Gold	6146	3.2	12	165	CPU1: 8 CPU2: 8	C35	Not Supported C11 or lower	Not Supported C18 or lower	Not Supported C19 or lower	C30	C30	C30	C30	C30	C35

Table 21. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Dual Processors (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Gold	6144	3.5	8	150	CPU1: 6 CPU2: 8	C35	Not Supported C14 or lower	Not Supported C18 or lower	C20 or lower	C30	C30	C30	C30	C30	C35
Gold	6142	2.6	16	150	CPU1: 6 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C23 or lower	C30	C30	C30	C30	C30	C35
Gold	6136	3	12	150	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C23 or lower	C30	C30	C30	C30	C30	C35
Gold	6132	2.6	14	140	CPU1: 8 CPU2: 8	C35	Not Supported C16 or lower	C25	C25	C30	C30	C35	C35	C35	C35
Gold	6134	3.2	8	130	CPU1: 8 CPU2: 8	C35	Not Supported C18 or lower	C25	C25	C30	C30	C35	C35	C35	C35
Gold	6126	2.6	12	125	CPU1: 8 CPU2: 8	C35	C25	C30	C30	C30	C30	C35	C35	C35	C35
Gold	6128	3.4	6	115	CPU1: 6 CPU2: 8	C35	C25	C30	C30	C30	C30	C35	C35	C35	C35
Platinum	8156	3.6	4	105	CPU1: 6 CPU2: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5122	3.6	4	105	CPU1: 6 CPU2: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35

Table 21. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Dual Processors (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8176	2.1	28	165	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C22 or lower	C30	C30	C30	C30	C30	C35
Platinum	8176M	2.1	28	165	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C22 or lower	C30	C30	C30	C30	C30	C35
Platinum	8170M	2.1	26	165	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C22 or lower	C30	C30	C30	C30	C30	C35
Platinum	8170	2.1	26	165	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C22 or lower	C30	C30	C30	C30	C30	C35
Platinum	8164	2	26	150	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C23 or lower	C30	C30	C30	C30	C30	C35
Platinum	8160M	2.1	24	150	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C23 or lower	C30	C30	C30	C30	C30	C35
Platinum	8160	2.1	24	150	CPU1: 8 CPU2: 8	C35	Not Supported C14 or lower	C21 or lower	C23 or lower	C30	C30	C30	C30	C30	C35
Gold	6152	2.1	22	140	CPU1: 8 CPU2: 8	C35	Not Supported C16 or lower	C25	C25	C30	C30	C35	C35	C35	C35

Table 21. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Dual Processors (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Gold	6140 M	2.3	18	140	CPU1: 8 CPU2: 8	C35	Not Supported C16 or lower	C25	C25	C30	C30	C35	C35	C35	C35
Gold	6140	2.3	18	140	CPU1: 8 CPU2: 8	C35	Not Supported C16 or lower	C25	C25	C30	C30	C35	C35	C35	C35
Gold	6130	2.1	16	135	CPU1: 8 CPU2: 8	C35	C25	C30	C30	C30	C30	C35	C35	C35	C35
Platinum	8153	2	16	125	CPU1: 8 CPU2: 8	C35	C25	C30	C30	C30	C30	C35	C35	C35	C35
Gold	6138	2	20	125	CPU1: 8 CPU2: 8	C35	C25	C30	C30	C30	C30	C35	C35	C35	C35
Gold	5120	2.2	14	105	CPU1: 8 CPU2: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5118	2.3	12	105	CPU1: 8 CPU2: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5115	2.4	10	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4116	2.1	12	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 21. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Dual Processors (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Silver	4114	2.2	10	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4112	2.6	4	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4110	2.1	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4108	1.8	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3106	1.7	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3104	1.7	6	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176F	2.1	28	173	CPU1: 6 CPU2: 8	C30	Not Available	Not Available	Not Available	C20 or lower	C21 or lower	C22 or lower	C22 or lower	C25	C25
Platinum	8160F	2.1	24	160	CPU1: 6 CPU2: 8	C30	Not Available	Not Available	Not Available	C25	C25	C25	C25	C25	C30
Platinum	6138F	2	20	135	CPU1: 8 CPU2: 8	C35	Not Available	Not Available	Not Available	C30	C30	C30	C30	C30	C35
Platinum	6130F	2.1	16	135	CPU1: 8 CPU2: 8	C35	Not Available	Not Available	Not Available	C30	C30	C30	C30	C30	C35

Table 21. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Dual Processors (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Gold	6148F	2.4	20	160	CPU1: 6 CPU2: 8	C30	Not Available	Not Available	Not Available	C25	C25	C25	C25	C25	C30
Gold	6142F	2.6	16	160	CPU1: 6 CPU2: 8	C30	Not Available	Not Available	Not Available	C25	C25	C25	C25	C25	C30
Gold	6126F	2.6	12	135	CPU1: 8 CPU2: 8	C35	Not Available	Not Available	Not Available	C30	C30	C30	C30	C30	C35
Silver	4109T	2	8	70	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 22. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Single Processor

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8180	2.5	28	205	CPU1: 6	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Platinum	8180M	2.5	28	205	CPU1: 6	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Platinum	8168	2.7	24	205	CPU1: 6	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Gold	6154	3	18	200	CPU1: 6	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Gold	6150	2.7	18	165	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8158	3	12	150	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35

Table 22. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Single Processor (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Gold	6148	2.4	20	150	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6146	3.2	12	165	CPU1: 6	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Gold	6144	3.5	8	150	CPU1: 6	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Gold	6142	2.6	16	150	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6136	3	12	150	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6132	2.6	14	140	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6134	3.2	8	130	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6126	2.6	12	125	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6128	3.4	6	115	CPU1: 6	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8156	3.6	4	105	CPU1: 6	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5122	3.6	4	105	CPU1: 6	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176	2.1	28	165	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176 M	2.1	28	165	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8170 M	2.1	26	165	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8170	2.1	26	165	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8164	2	26	150	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8160 M	2.1	24	150	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35

Table 22. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Single Processor (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8160	2.1	24	150	CPU1: 8	C35	C30	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6152	2.1	22	140	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6140 M	2.3	18	140	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6140	2.3	18	140	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6130	2.1	16	135	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8153	2	16	125	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6138	2	20	125	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5120	2.2	14	105	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5118	2.3	12	105	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5115	2.4	10	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4116	2.1	12	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4114	2.2	10	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4112	2.6	4	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4110	2.1	8	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4108	1.8	8	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3106	1.7	8	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3104	1.7	6	85	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 22. Maximum continuous operating inlet air temperature (°C) with for Air Cooled C6420 Sleds with Single Processor (continued)

Class	SKU	Frequency (GHz)	Cores	Watts	Max DIMM Counts	No-BP Air Cooled Chassis	3.5" Chassis with Air Cooled Sleds			2.5" (Direct BP/EXP/NVMe) Chassis with Air Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8176F	2.1	28	173	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Platinum	8160F	2.1	24	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Platinum	6138F	2	20	135	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Platinum	6130F	2.1	16	135	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gold	6148F	2.4	20	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gold	6142F	2.6	16	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gold	6126F	2.6	12	135	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	4109T	2	8	70	CPU1: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 23. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 45°C coolant entering cold plate at .48L/minute

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIMM Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8180	2.5	28	205	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8180M	2.5	28	205	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8168	2.7	24	205	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 23. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 45°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIM M Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8158	3	12	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8156	3.6	4	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6148	2.4	20	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6146	3.2	12	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6144	3.5	8	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6154	3	18	200	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6150	2.7	18	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6142	2.6	16	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6132	2.6	14	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6136	3	12	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 23. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 45°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIM M Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Gold	6126	2.6	12	125	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6134	3.2	8	130	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6128	3.4	6	115	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5122	3.6	4	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176	2.1	28	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176 M	2.1	28	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8170 M	2.1	26	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8170	2.1	26	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8164	2	26	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8160 M	2.1	24	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 23. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 45°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIM M Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8160	2.1	24	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8153	2	16	125	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6152	2.1	22	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6138	2	20	125	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6140 M	2.3	18	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6140	2.3	18	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6130	2.1	16	135	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5120	2.2	14	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5118	2.3	12	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5115	2.4	10	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 23. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 45°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIMM Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Silver	4116	2.1	12	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4114	2.2	10	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4112	2.6	4	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4110	2.1	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4108	1.8	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3106	1.7	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3104	1.7	6	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176F	2.1	28	173	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Platinum	8160F	2.1	24	160	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Platinum	6138F	2	20	135	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35

Table 23. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 45°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIM M Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	6130F	2.1	16	135	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Gold	6148F	2.0	2.4	160	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Gold	6142F	1.6	2.6	160	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Gold	6126F	1.2	2.6	135	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Silver	4109T	2	8	70	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 24. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 57°C coolant entering cold plate at .48L/minute

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIM M Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8180	2.5	28	205	CPU1: 8 CPU2: 8	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Platinum	8180 M	2.5	28	205	CPU1: 8 CPU2: 8	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35

Table 24. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 57°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIMM Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8168	2.7	24	205	CPU1: 8 CPU2: 8	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Platinum	8158	3	12	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8156	3.6	4	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6148	2.4	20	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6146	3.2	12	165	CPU1: 8 CPU2: 8	C35*	C35*	C35*	C35*	C35*	C35*	C35*	C35*	C35*	C35*
Gold	6144	3.5	8	150	CPU1: 8 CPU2: 8	C35*	C35*	C35*	C35*	C35*	C35*	C35*	C35*	C35*	C35*
Gold	6154	3	18	200	CPU1: 8 CPU2: 8	C35	C30	C30	C30	C35	C35	C35	C35	C35	C35
Gold	6150	2.7	18	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6142	2.6	16	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6132	2.6	14	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 24. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 57°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIMM Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Gold	6136	3	12	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6126	2.6	12	125	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6134	3.2	8	130	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6128	3.4	6	115	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5122	3.6	4	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176	2.1	28	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176 M	2.1	28	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8170 M	2.1	26	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8170	2.1	26	165	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8164	2	26	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 24. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 57°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIMM Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	8160 M	2.1	24	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8160	2.1	24	150	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8153	2	16	125	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6152	2.1	22	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6138	2	20	125	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6140 M	2.3	18	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6140	2.3	18	140	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	6130	2.1	16	135	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5120	2.2	14	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Gold	5118	2.3	12	105	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

Table 24. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 57°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIMM Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Gold	5115	2.4	10	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4116	2.1	12	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4114	2.2	10	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4112	2.6	4	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4110	2.1	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Silver	4108	1.8	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3106	1.7	8	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Bronze	3104	1.7	6	85	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35
Platinum	8176F	2.1	28	173	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Platinum	8160F	2.1	24	160	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35

Table 24. Maximum continuous operating inlet air temperature (°C) for C6420 Sleds with Dual Processors and 57°C coolant entering cold plate at .48L/minute (continued)

Class	SKU	Frequency (GHz)	Number of Cores	TDP Watts	Max DIMM Counts	No-BP Liquid Cooled Chassis	3.5" Chassis with Liquid Cooled Sleds			2.5" (Direct BP) Chassis with Liquid Cooled Sleds					
							NA	12 HDD	8 HDD	4 HDD	24 HDD	20 HDD	16 HDD	12 HDD	8 HDD
Platinum	6138F	2	20	135	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Platinum	6130F	2.1	16	135	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Gold	6148F	2.0	2.4	160	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Gold	6142F	1.6	2.6	160	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Gold	6126F	1.2	2.6	135	CPU1: 8 CPU2: 8	C35	NA	NA	NA	C35	C35	C35	C35	C35	C35
Silver	4109T	2	8	70	CPU1: 8 CPU2: 8	C35	C35	C35	C35	C35	C35	C35	C35	C35	C35

PowerEdge C6420 has the following restrictions when deployed in a configuration compliant with Fresh Air:

PERC Restriction:

- Support 105W CPUs without H730. H330 can be supported.
- Support 85W and less TDP CPUs without PERC restrictions.

General restrictions

- CPUs with TDP > 105W are not supported
- 3.5" HDD chassis is not supported
- NVMe SSDs are not supported
- 114mm HSK (FMM2M) is required for CPU#1
- OCP Mezz card is not supported
- X8 M.2 on DCS Mezz slot is not supported
- LR DIMMs are not supported
- PCIe cards >25W are not supported

Table 25. Configuration Restrictions with Mellanox ConnectX-4 EDR Dual Port Card with Active (Optical) connectivity

CPU TDP	3.5" Chassis			2.5" Chassis				No BP
	12x HDDs	8x HDDs	4x HDDs	24x HDDs	16x HDDs	8x HDDs	4x HDDs	N/A
205W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	23
200W	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	23
173W	Not supported	Not supported	Not supported	Not supported	Not supported	24	24	28
165W	Not supported	Not supported	Not supported	24	25	25	26	29
160W	Not supported	Not supported	Not supported	24	25	26	26	30
150W	Not supported	Not supported	Not supported	26	27	28	28	31
140W	Not supported	23	25	28	29	29	30	33
135W	Not supported	24	25	29	30	30	31	33
130W	Not supported	24	26	30	31	31	31	34
125W	20	25	27	30	31	32	32	35
115W	21	27	28	32	33	34	34	35
113W	21	27	28	32	33	34	34	35
105W	22	28	30	34	35	35	35	35
85W	23	32	33	35	35	35	35	35
70W	25	34	35	35	35	35	35	35

Rack rails systems

The rack rail systems for C6400 server provide tool-less support for 4-post racks with square or unthreaded round holes. There is no support for cable management arms (CMA). The static rails supports a wider variety of racks.

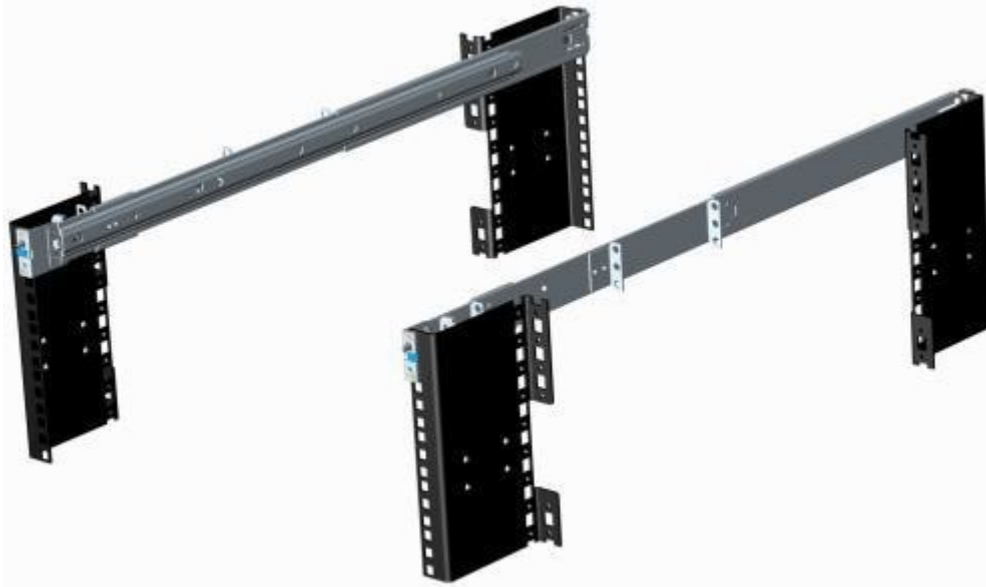


Figure 8. Static rail

The key factor in selecting the proper rails is identifying the type of rack in which they are installed. The static rail supports tool-less mounting in 19"-wide, EIA-310-E compliant square hole and unthreaded round hole 4-post racks. The static rail also supports tooling mounting in threaded-hole 4-post racks including all Dell EMC 42xx and 24xx racks.

NOTE: APC racks are also supported.

Table 26. Rail adjustability range

Product	Rail identifier	Mounting Interface	Rail type	Rail adjustability range (mm)				Rail depth (mm) without CMA
				Square		Rounded		
				Min	Max	Min	Max	
C6400	N/A	Tool-less	Static	582 mm	822 mm	582 mm	822 mm	602 mm

Other key factors governing proper rail selection include the spacing between the front and rear mounting flanges of the rack, the type and location of any equipment mounted in the back of the rack, such as power distribution units, and the overall depth of the rack. Due to their reduced complexity and lack of need for CMA support, the static rails offer a greater adjustability range and a smaller overall mounting footprint than the sliding rails.

For information about installing the system in a rack, see the *Dell EMC PowerEdge Rack Installation Guide* on Dell.com/Support/Manuals.

Operating systems and virtualization

The Dell EMC PowerEdge C6400 and C6420 supports a wide range of industry-standard operating systems and virtualization software.

Topics:

- [Supported operating systems](#)
- [Supported virtualization](#)

Supported operating systems

The following table lists the supported operating systems.

Table 27. Supported operating systems

Operating system	Platform	Edition
Microsoft Windows Server 2016	x64	Standard Datacenter
Microsoft Windows Server 2012 R2	x64	Standard Datacenter
RedHat Enterprise Linux 6.9 x86	x64	N/A
RedHat Enterprise Linux 7.3 x86	x64	N/A
Novell SuSE Linux Enterprise Server 11 (with PLDP) SP4 x86	x64	N/A
Novell SuSE Linux Enterprise Server 12 SP2 x86	x64	N/A
Ubuntu 16.04 LTS	x64	N/A

Supported virtualization

The following table lists the supported virtualization.

Table 28. Supported virtualization

Operating system	Install version
VMWare	vSphere 2016 U1 (ESXi 6.5 U1)
VMWare	vSphere 2015 U3 (ESXi 6.0 U3)
Citrix Xen Server	7.1.x

Dell EMC OpenManage systems management

Dell EMC OpenManage Portfolio

Simplifying hardware management through ease of use and automation

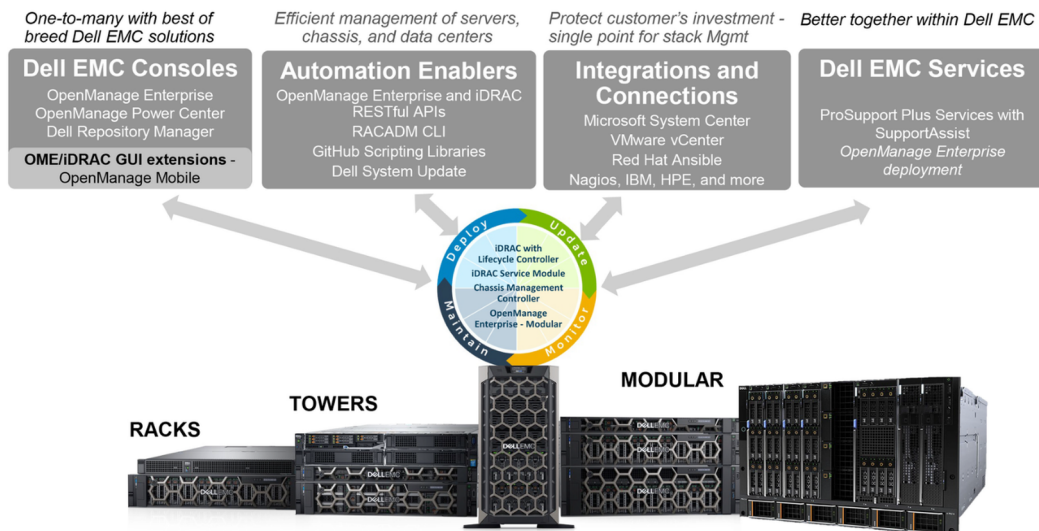


Figure 9. Dell EMC OpenManage Portfolio

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:

- [OpenManage systems management](#)
- [iDRAC9 with Lifecycle Controller](#)
- [Agent-free management](#)
- [Agent-based management](#)
- [Dell EMC consoles](#)
- [Automation Enablers](#)
- [Integration with third-party consoles](#)
- [Connections for third-party consoles](#)
- [Dell EMC server management operations](#)

OpenManage systems management

The Dell EMC OpenManage systems management portfolio includes powerful hardware and software management tools and consoles. OpenManage simplifies the lifecycle of deploying, updating, monitoring and maintaining your Dell EMC PowerEdge servers.

iDRAC9 with Lifecycle Controller

The Integrated Dell Remote Access Controller 9 (iDRAC9) with Lifecycle Controller, the embedded intelligence of every Dell EMC PowerEdge 14th generation server, helps you manage Dell EMC servers agent-free or with a systems management agent, within physical, virtual, local and remote environments. iDRAC9 alerts server issues, enables remote server management and reduces the need to physically visit the server. iDRAC9 with Lifecycle Controller is part of Dell EMC comprehensive OpenManage portfolio and works as a stand-alone or in conjunction with other components such as OpenManage Essentials, OpenManage Mobile, OpenManage Power Center, Chassis Management Controller, and OpenManage Integrations for Microsoft, VMware and BMC consoles to simplify, automate and streamline IT operations.

Dell EMC BMC and iDRAC9 feature comparison

iDRAC9 Enterprise is available for the system. Dell EMC also offers BMC. A detailed feature comparison for Dell EMC BMC and iDRAC9 Express is shown in the following table

Table 29. Feature comparison for Dell EMC BMC and iDRAC9 Enterprise

Feature	Dell EMC BMC	iDRAC9 Enterprise
Interfaces / Standards		
IPMI 2.0	Yes	Yes
DCMI 1.5	Yes	Yes
Web-based GUI	Yes	Yes
Racadm command line (local/remote)	Yes	Yes
SMASH-CLP (SSH-only)	Yes	Yes
Telnet	Yes	Yes
SSH	Yes	Yes
WSMAN	Yes	Yes
RedFish API	Yes	Yes
Network Time Protocol	Yes	Yes
Connectivity		
Shared NIC	Yes	Yes
Dedicated NIC (with Ports card)	Yes	Yes
VLAN tagging	Yes	Yes
IPv4	Yes	Yes
IPv6	Yes	Yes
DHCP	Yes	Yes
Dynamic DNS	Yes	Yes
OS pass-through	Yes	Yes
Security		
Role-based authority	Yes	Yes
Local users	Yes	Yes

Table 29. Feature comparison for Dell EMC BMC and iDRAC9 Enterprise (continued)

SSL encryption	Yes	Yes
IP blocking	Yes	Yes
Directory services (AD, LDAP)	No	Yes
Two-factor authentication	No	Yes
Single sign-on	No	Yes
PK authentication	Yes	Yes
14G: Configuration Lockdown	No	Yes
14G: System Erase of internal storage devices	Yes	Yes
Remote Presence		
Power control	Yes	Yes
Boot control	Yes	Yes
Serial-over-LAN	Yes	Yes
Virtual Media	No	Yes
Virtual Folders	No	Yes
Remote File Share	No	Yes
Virtual Console	Yes	Yes
VNC connection to OS	No	Yes
Quality/bandwidth control	No	Yes
Virtual Console collaboration (6 users)	No	Yes
Virtual Console chat	No	Yes
Power & Thermal		
Real-time power meter	Yes	Yes
Power thresholds & alerts	Yes	Yes
Real-time power graphing	Yes	Yes
Historical power counters	Yes	Yes
Power capping	Yes	Yes
Power Center integration	Yes	Yes
Temperature monitoring	Yes	Yes
Temperature graphing	Yes	Yes
Health Monitoring		
Full agent-free monitoring	Yes	Yes
Predictive failure monitoring	Yes	Yes
SNMPv1, v2, and v3 (traps and gets)	Yes	Yes
Email Alerting	Yes	Yes
Configurable thresholds	Yes	Yes
Fan monitoring	Yes	Yes
Power Supply monitoring	Yes	Yes
Memory monitoring	Yes	Yes

Table 29. Feature comparison for Dell EMC BMC and iDRAC9 Enterprise (continued)

CPU monitoring	Yes	Yes
RAID monitoring (PERC)	Yes	Yes
NIC monitoring	Yes	Yes
HD monitoring ((including JBOD enclosure)	Yes	Yes
Out of Band Performance Monitoring	No	Yes
Update		
Remote agent-free update	Yes	Yes
Embedded update tools	No	Yes
Sync with repository (scheduled updates)	No	Yes
Auto-update	No	Yes
Deployment & Configuration		
Embedded OS deployment tools	No	Yes
Embedded configuration tools	No	Yes
Auto-Discovery	No	Yes
Remote OS deployment (vMedia)	No	Yes
Embedded driver pack	Yes	Yes
Full configuration inventory	Yes	Yes
Inventory export	Yes	Yes
Remote configuration	Yes	Yes
Zerotouch configuration	No	Yes
System Retire/Repurpose	Yes	Yes
14G: iDRAC Connection View	No	Yes
14G: BIOS configuration page in iDRAC GUI	Yes	Yes
Diagnostics, Service, & Logging		
Embedded diagnostic tools	Yes	Yes
Part Replacement	No	Yes
Server Configuration Backup	No	Yes
Server Configuration Restore	Yes	Yes
Easy Restore (system configuration) - USB and rSPI	Yes	Yes
Health LED only	Yes	Yes
14G: Quick Sync 2.0	NA	NA
14G: iDRAC Direct 2.0 (micro USB port on rear)	Yes	Yes
iDRAC Service Module (iSM)	Yes	Yes
Embedded Tech Support Report	Yes	Yes
Crash screen capture	No	Yes

Table 29. Feature comparison for Dell EMC BMC and iDRAC9 Enterprise (continued)

Crash video capture (requires iSM or OMSA)	No	Yes
Boot capture	No	Yes
Manual reset for iDRAC	Yes	Yes
Virtual NMI	Yes	Yes
OS watchdog (requires iSM or OMSA)	Yes	Yes
System Event Log	Yes	Yes
Lifecycle Log	Yes	Yes
Work notes	Yes	Yes
Remote Syslog	No	Yes
License management	Yes	Yes

Agent-free management

As Dell EMC PowerEdge servers have embedded server lifecycle management, in many cases, there is no need to install an OpenManage systems management software agent into the operating system of a Dell EMC PowerEdge server. This greatly simplifies and streamlines the management footprint.

Agent-based management

Most systems management solutions require pieces of software, called agents, to be installed on each node in order to be managed within the IT environment. Additionally, the same agent is often used as a local interface into the hardware health and may be accessed remotely as a management interface, typically referred to as a one-to-one interface. For customers that continue to use agent-based solutions, Dell EMC provides OpenManage Server Administrator.

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 server management operations

Dell EMC OpenManage systems management is centered on automating the server management lifecycle — deploy, update, monitor and maintain. To manage an infrastructure properly and efficiently, you must perform all of these functions easily and quickly. iDRAC9 with Lifecycle Controller technology provides you with these intelligent capabilities embedded within the server infrastructure. This allows you to invest more time and energy on business improvements and less on maintenance.

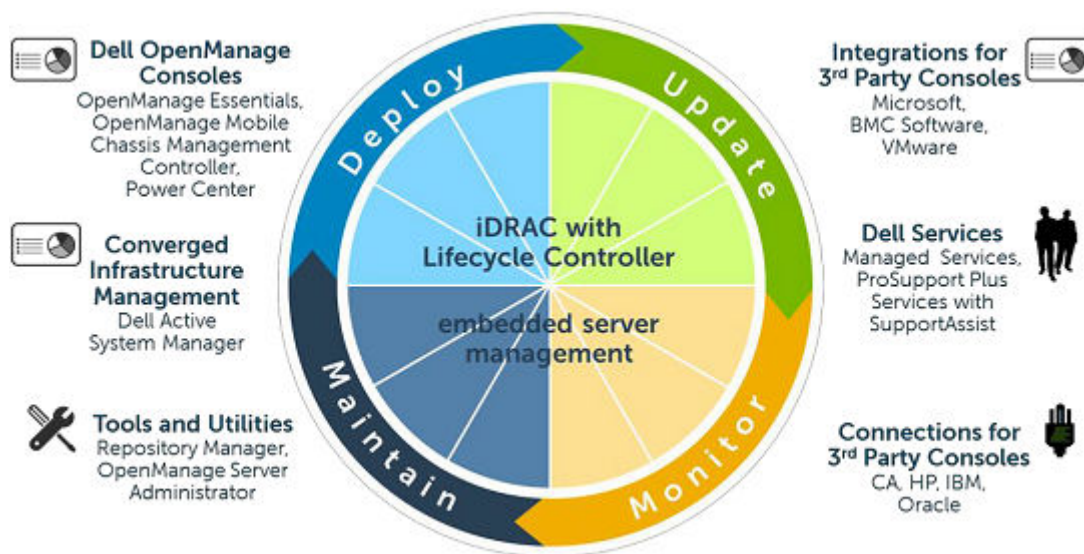


Figure 10. Systems management server lifecycle

The following table lists the products that are available for one-to-one and one-to-many operations, and when they are used in the server’s lifecycle.

Table 30. One-to-one and one-to-many operations

Operation	One-to-one	One-to-many
Deploy	<ul style="list-style-type: none"> • Lifecycle Controller GUI • DTK 	<ul style="list-style-type: none"> • OpenManage Integration for VMware vCenter • OpenManage Integration for BMC BladeLogic • OpenManage Integration for Microsoft System Center Configuration Manager
Update	<ul style="list-style-type: none"> • iDRAC9 with Lifecycle Controller • Repository Manager • DUP • SUU • OpenManage Integration for VMware vCenter 	<ul style="list-style-type: none"> • Dell EMC OpenManage Essentials • OpenManage Integration for Microsoft System Center Configuration Manager
Monitor	<ul style="list-style-type: none"> • iDRAC9 with Lifecycle Controller • OMSA 	<ul style="list-style-type: none"> • Dell EMC OpenManage Essentials • Dell EMC OpenManage Power Center • OpenManage Integration for VMware vCenter • OpenManage Integration for Microsoft System Center Operations Manager
Maintain	<ul style="list-style-type: none"> • iDRAC9 with Lifecycle Controller • IPMI 	<ul style="list-style-type: none"> • Lifecycle Controller Remote Services Remediate and replace parts:

Table 30. One-to-one and one-to-many operations (continued)

Operation	One-to-one	One-to-many
		<ul style="list-style-type: none"><li data-bbox="946 271 1489 353">• OpenManage Integration for Microsoft System Center Virtual Machine Manager (SCVMM)<li data-bbox="946 356 1489 414">• Server Pro Management Pack and Lifecycle Controller Integration (DLCI)

For additional detailed information on Dell EMC systems management portfolio, visit Dell.com/OpenManage.

Appendix A. Additional specifications

Topics:

- Chassis dimensions
- Power supply specifications
- Environmental specifications
- Video specifications
- USB peripherals
- PCIe card dimensions

Chassis dimensions

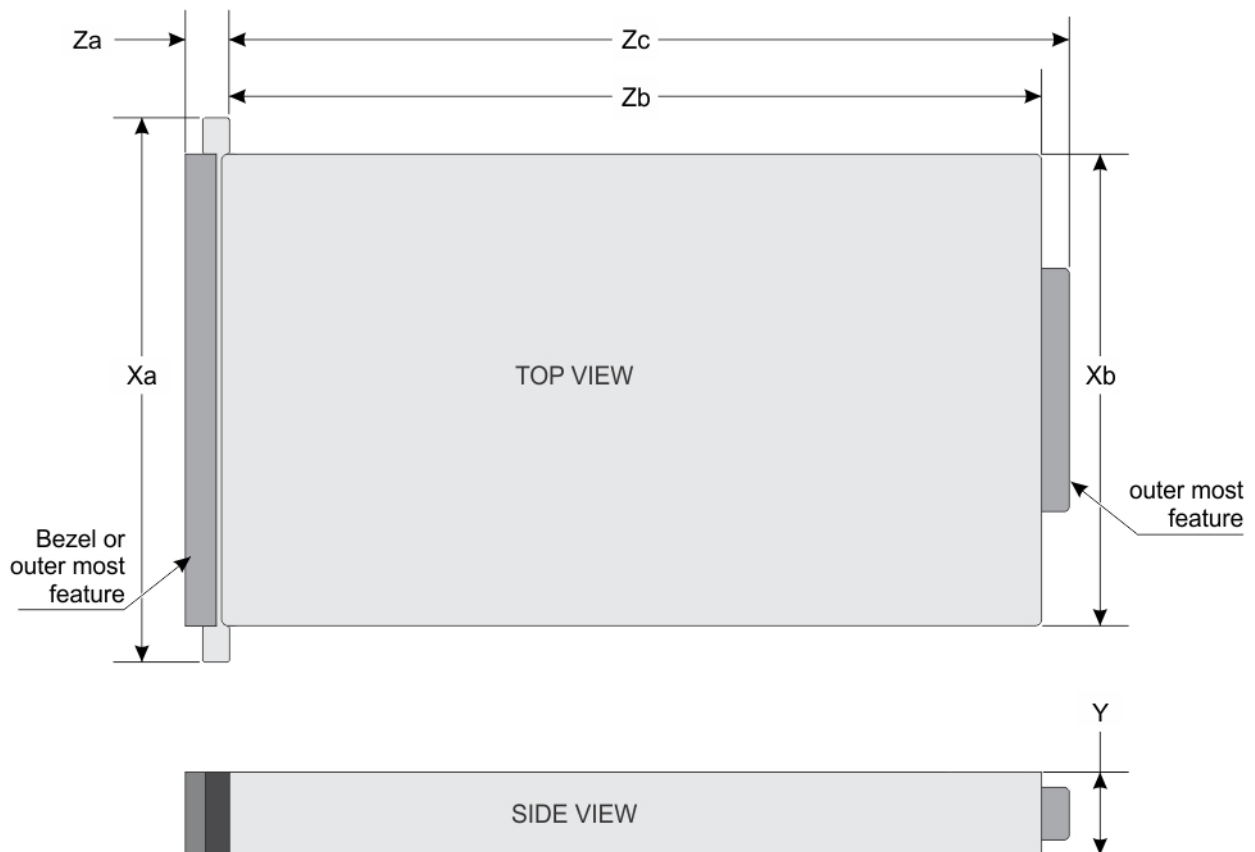


Figure 11. Chassis dimensions

Table 31. Chassis Dimensions (mm)

Chassis dimensions (mm)					
Xa	Xb	Y	Za without bezel	Zb	Zc
482.6 mm	448.0 mm	86.8 mm	26.8 mm	763.2 mm	797.3 mm

Table 32. Chassis weight

Configuration	Weight
24 x 2.5 HDD chassis	8.7717 Kg (19.32 lb)
12 x 3.5 HDD chassis	8.7717 Kg (19.32 lb)

Power supply specifications

The following table lists power supply specifications.

Table 33. Power supply specifications

Specification	1600 W Platinum	2000 W Platinum	2400 W Platinum
Power factor correction	Active	Active	Active
FCC classification	Class A	Class A	Class A
Max Output Current	131.15 A (180-264 V AC) 65.57 A (90-140 V AC)	163.93 A (180-264 V AC) 81.97 A (90-140 V AC)	196.72 A (180-264 V AC) 114.75 A (90-140 V AC)
Input voltage range	90-264 V AC 47-63 Hz	90-264 V AC 47-63 Hz	90-264 V AC 47-63 Hz
Iin for rating on safety label	10.0 A	11.5 A	16.0 A
Initial in-rush current	25 A (peak)	25 A (peak)	35 A (peak)
Secondary in-rush current	25 A (peak)	45 A (peak)	45 A (peak)

Environmental specifications

See Dell EMC PowerEdge C6420 Owner's Manual on Dell.com/Support/Manuals for detailed environmental specifications.

Video specifications

The Dell EMC PowerEdge C6420 iDRAC incorporates an integrated video subsystem, connected to the south bridge via PCI Express and internal PCIe Switch and PCIe to PCI Bridge. The graphics controller is the 2D Matrox® G200. The video frame buffer (16MB) is contained within the iDRAC RAM (256MB) device. The system supports the 2D graphics video modes listed in the following table.

Table 34. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
640 x 480	60, 72	8, 16, 24
800 x 600	60, 75, 85	8, 16, 24
1024 x 768	60, 75, 85	8, 16, 24
1152 x 864	60, 75, 85	8, 16, 24
1280 x 1024	60, 75	8, 16, 24

USB peripherals

USB peripherals are supported through the front USB ports on the C6420 sled. The ports are USB 3.0 compliant. The system also supports Micro USB for iDRAC direct.

PCIe card dimensions

The following table provides the dimensions of the PCIe cards supported by the C6420.

Table 35. PCIe card dimensions

Type	Height	Length
Half-height, half-length card	68.90 mm (2.731 inches) max	167.65 mm (6.600 inches) max

Appendix B. Standards compliance

The Dell EMC PowerEdge C6400 and C6420 conforms to the following industry standards.

Table 36. Industry standard documents

Standard	URL for information and specifications
ACPI Advance Configuration and Power Interface Specification, v2.0c	acpi.info
Ethernet IEEE 802.3-2005	standards.ieee.org/getieee802/802.3.html
HDG Hardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/designguide/serverdg.msp
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR4 Memory DDR4 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	pmbus.info/specs.html
SAS Serial Attached SCSI, v1.1	t10.org
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2 and v2.0	trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	uefi.org/specifications
USB Universal Serial Bus Specification, Rev. 2.0	usb.org/developers/docs

Appendix C Additional resources

The following table provides a list of documents and web sites that provide more information.

Table 37. Additional resources

Resource	Description of contents	Location
PowerEdge Installation and Service Manual	This manual, available in PDF format, provides the following information: <ul style="list-style-type: none"> • Chassis features • System Setup program • System messages • System codes and indicators • System BIOS • Remove and replace procedures • Troubleshooting • Diagnostics • Jumpers and connectors 	Dell.com/Support/Manuals
PowerEdge Getting Started Guide	This guide ships with the system, and is also available in PDF format. This guide provides the following information: <ul style="list-style-type: none"> • Initial setup steps • Key system features • Technical specifications 	Dell.com/Support/Manuals
Rack Installation Instructions	This document ships with the rack kits, and provides instructions for installing a server in a rack.	Dell.com/Support/Manuals
Information Update	This document ships with the system, is also available in PDF format online, and provides information on system updates.	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 contact information.	Inside the system chassis cover
Enterprise Infrastructure Planning Tool (EIPT)	The Dell 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

Appendix D. Support and Deployment Services

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

Topics:

- [Server Deployment Services](#)
- [Remote Consulting Services](#)
- [ProSupport Enterprise Suite](#)
- [Additional professional services](#)

Server Deployment Services

Our Server Deployment Services can maximize the value of your servers quickly using our expert server deployment engineers. With over 10,000 server deployment projects each year, we have experience, best practices, and comprehensive deployment tools to install, configure, and integrate your new solution optimally and correctly. Our deployment experts will assess your environment and understand your goals, then design and integrate your server solution for you.

Table 38. Server deployment capabilities

	Server Installation	Server Integration
Place single server in target workspace	Yes	
Rack, cable, and label servers	Yes	
Install image	Yes	
Connect to network	Yes	Yes
Test and validate connection	Yes	Yes
Install operating system		Yes
Install applications		Yes
Perform advanced configuration services		Yes
Remote configuration services		Yes
Virtualization		Yes
Converged infrastructure		Yes
Test and validate data center integration		Yes

Remote Consulting Services

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

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 gets up and running quickly and smoothly.

ProSupport Enterprise Suite

With Dell EMC ProSupport Services, we can help you keep your operation running smoothly, so you can focus on running your business. We will help you maintain peak performance and availability of your most essential workloads. Dell EMC ProSupport 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 your IT resources by choosing the right support model.

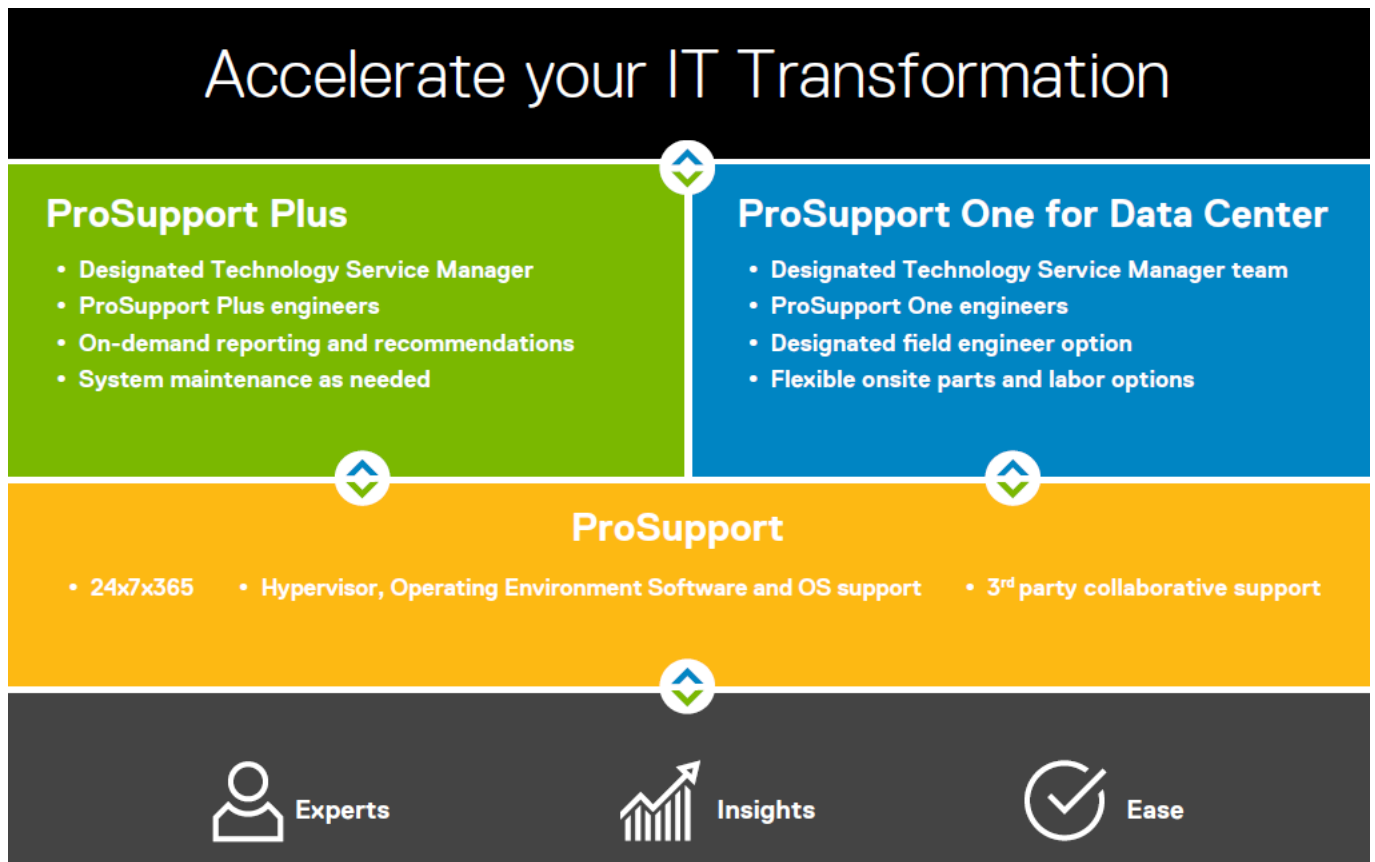


Figure 12. ProSupport Enterprise Suite

ProSupport Plus

When you purchase your PowerEdge server, we recommend ProSupport Plus, our proactive and preventative support for your business-critical systems. Dell EMC ProSupport Plus provides you with all the benefits of ProSupport, plus access to a dedicated Technical Account Manager and our elite ProSupport Plus engineers. ProSupport Plus gives you quick and efficient resolutions, working along with our [SupportAssist](#) technology that enables us to get ahead of issues in your environment before they become problems.

ProSupport

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

- 24x7x365 access to certified hardware experts
- Collaborative support assistance with over 195 third-party vendors
- Hypervisor and operating system support
- Onsite parts and labor response options including next business day or four-hour mission critical

ProSupport Flex for Data Center

Dell EMC ProSupport Flex for Data Center offers flexible site-wide support for hyperscale data centers with more than 1,000 assets. Built on standard Dell EMC ProSupport components, Flex for Data Center leverages our global scale while being tailored to suit your needs. While not for everyone, it offers a flexible solution for those with large and complex environments. When you choose Dell EMC ProSupport Flex for Data Center, you will get:

- Enterprise-wide support that covers your entire data center.
- A dedicated Technical Account Manager with remote, on-site, part-time and full-time options.
- Dedicated elite ProSupport Flex technical and field engineers who are trained on your environment and configurations.
- Flexible on-site support and parts options that fit your operational model
- A tailored support plan for your operations staff.

Enterprise Support Services Feature Comparison

	ProSupport	ProSupport Plus	ProSupport One for Data Center
Remote technical support	24x7	24x7	24x7
Onsite support	Next Business Day or Mission Critical	Next Business Day ¹ or Mission Critical	Flexible
Automated issue detection and case creation	●	●	●
Self-service case initiation and management	●	●	●
Hypervisor, Operating Environment Software and OS support	●	●	●
Priority access to specialized support experts		●	●
Designated service account management expert		●	●
Periodic assessments and recommendations		●	●
Monthly contract renewal and support history reporting		●	Monthly or Quarterly
Systems Maintenance guidance		Semiannual	Optional
Designated technical and field support teams			●

Next Business Day option available only on applicable legacy Dell products.

Figure 13. ProSupport Enterprise Suite comparison

Additional professional services

Dell EMC Education Services

Dell EMC Education Services offers the PowerEdge server training courses designed to help you achieve more with your hardware investment. The curriculum is designed in conjunction with the server development team, as well as Dell EMC's technical support team, to ensure that the training delivers the information and practical, hands-on skills you and your team need to confidently manage and maintain your Dell EMC server solution.

Dell EMC Global Infrastructure Consulting Services

Dell EMC Global Infrastructure Consulting Services use skilled solution architects, innovative tools, automated analysis and Dell EMC's intellectual property to give you rapid insight into the root causes of unnecessary complexity. We seek better answers than traditional service models, and our strategy is to help you quickly identify high-impact, short-duration projects that deliver return on investment (ROI) and free up resources. The results are practical, action-oriented plans with specific, predictable, measurable outcomes. From data center optimization to server virtualization to systems management, our consulting services can help you build a more efficient enterprise.

Dell EMC managed services

Dell EMC Managed Services are a modular set of lifecycle services designed to help you automate and centrally configure, deploy, and manage your day-to-day data center operations. These services extend your existing on-premise IT infrastructure with off-premise cloud services designed to better address challenges with mobility, highly distributed organizations, security, compliance, business continuity, and disaster preparedness.