DELL EMC

TEChnICal GUIDE

PowerEdge R740/740xd

2-socket, 2U rack system for demanding environments, provides ideal balance between storage, I/O and application acceleration with superior configuration flexibility

The following documentation is designed as both an instructional aid and online reference material for the Dell EMC PowerEdge R740/R740xd rack server. The material introduces new technologies and features specific to the PowerEdge R740/R740xd in an effort to better prepare technicians to provide outstanding support to our customers.

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

Introduction

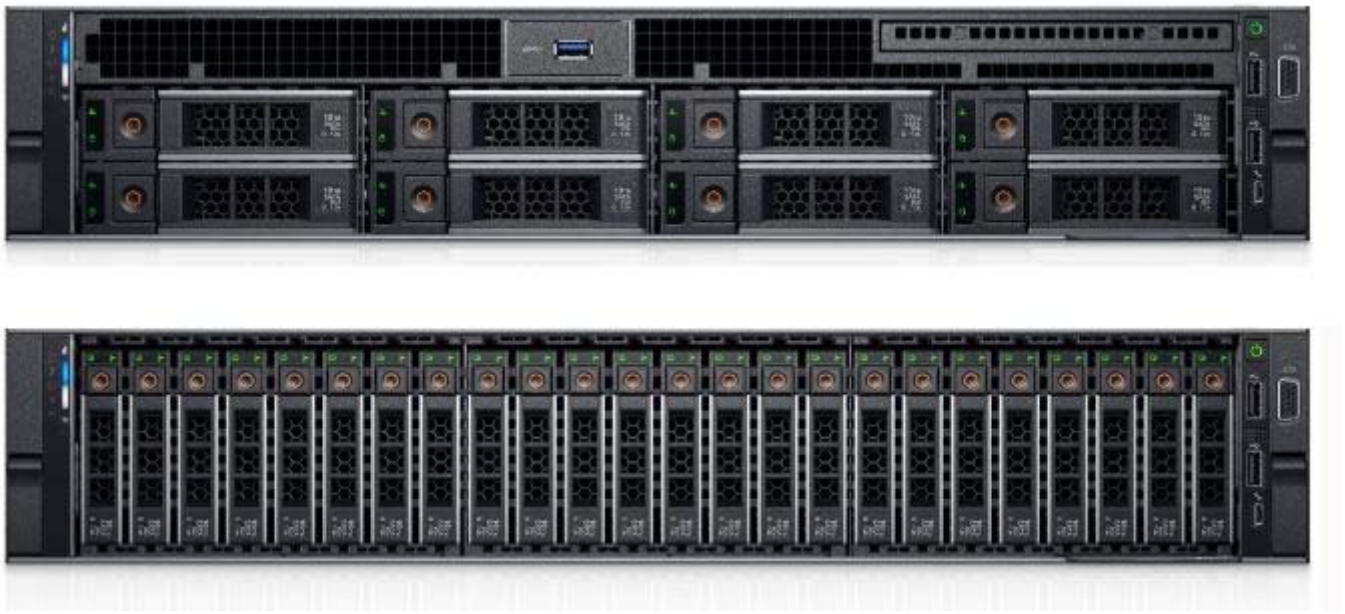

Figure 1. PowerEdge R740/R740xd

The PowerEdge R740/R740xd is Dell EMC's latest two socket, 2U rack servers designed to run complex workloads using highly scalable memory, I/O capacity and network options. The R740/R740xd features the Intel Xeon processor scalable family, up to 24 DIMMs, PCI Express (PCIe) 3.0 enabled expansion slots, and a choice of network interface technologies to cover NIC and rNDC.

The PowerEdge R740/R740xd is a general-purpose platform with highly expandable memory (up to 3TB) and impressive I/O capability to match. The R740 is capable of handling demanding workloads and applications, such as data warehouses, E-commerce, databases, and high-performance computing (HPC).

Inadditiontothe R740'scapabilities, The R740xdaddsextraordinarystoragecapacityoptions, makingitwell-suitedfordata intensive applicationsthatrequiregreaterstorage, whilenot sacrificing I/Operformance.

New technologies

Table 1. New technologies in R740 and R740xd

New technology	Detailed description
Intel Xeon processor scalable family	The Intel Xeonprocessorscalablefamily has advancedfeaturesthatdeliverexceptionalperformance and value. See the Processors section.
Intel C620 series chipset	The R740 and R740xd systems incorporates the Intel Platform Controller Hub (PCH) chip.
2666MT/s DDR4 memory	The Intel Xeon processor scalable family support 2666 MT/smemory. The R740 and R740xd supports two DIMMs per channel at 2666 MT/s with these processors. See the Memory section for details.
Next-generation PERC options	The R740 and R740xd support new PowerEdge RAID Controller (PERC) cards with improved functionality and faster performance. See the Storage section.
iDRAC 9 with Lifecycle Controller	The new embedded system management solution features hardware and firmware inventory and alerting, in-depth memory alerting, faster performance, a dedicated gigabit port and many more features. See the iDRAC section.
Wireless management	The QuickSync 2.0 feature is an extension of Near-field communication(NFC) based low bandwidth Quicksyncinterfacein PowerEdge R730. QuickSync 2.0 will offer featureparitywithprevious generation server's NFC interface to improve user experience. Toextend this QuickSync feature to widevarietyofMobileOS'swithhigherdatathroughput, theQuickSync 2.0versionreplacesthe previous generation server's NFC technology with wireless at-the-box system management.
LCD bezel	The R740 and R740xd LCD control panel will be embedded in the system front bezel for easy access and management. See the LCD bezel section.

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System features

Compared to the previous generation of Dell EMC PowerEdge servers, the R740 and R740xd have more drive bay options, more PCIe slots, next-generation RAID controllers and advanced system management.

Topics:

System features comparison

Table 2. Comparison of PowerEdge R740/R740xd and R730/R730xd

Feature	PowerEdge R740/R740xd	PowerEdge R730/R730xd
CPU	2 x Intel Xeon Processor Scalable Family	Intel Xeon processor E5-2600 v4 product family
Intel Ultra Path Interconnect (UPI)	Intel Ultra Path Interconnect (UPI)	Intel QuickPath Interconnect (QPI)
Memory	24 x DDR4 RDIMM, LRDIMM or 12 x NVDIMM up to 3TB	24 x DDR4 RDIMM, LRDIMM up to 1.5TB
Disk drives	· 3.5"or 2.5" 12Gb/s SAS, 6Gb/s SATA · Upto 24 x PCIe SSD	· 3.5", 2.5" or 1.8" 12Gb/s SAS, 6Gb/s SATA · 4 x PCIe SSD w/common slot
RAID controllers	Adapters: HBA330, H330, H730P, H740P, H840, 12G SAS HBA Mini Mono: HBA330, H330, H730P, H740P SWRAID: S140	Adapters: HBA330, H330, H730, H730P, H830 (ext) Mini Mono: HBA330, H330, H730, H730P, H830 SWRAID: S130
PCIe slots	Max 8 x PCIe 3.0	Max 7 x PCIe 3.0 or 6 x PCIe 3.0
rNDC	Select Network Adapter NDC: 4x 1GB, 4x 10GB, 2x 10GB + 2 x 1GB, or 2 x 25GB	Select Network Adapter NDC: 4 x 1GB, 4x 10GB, or 2 x 10GB + 2 x 1GB
USB ports	Front: two ports (USB 3.0), one managed (micro-usb 2.0) Optional Upsell: one port (USB 3.0) – Not offered on R740xd Rear: two ports (USB 3.0) Internal: one port (USB 3.0)	Front: two ports (USB 2.0), one managed port Rear: two ports (USB 3.0) Internal: one port (USB 3.0)
Rack height	2U	2U

Feature	PowerEdge R740/R740xd	PowerEdge R730/R730xd
Power supply	2400W AC Platinum	1100W AC Platinum
	2000W AC Platinum	1100W -48V DC Gold
	1600W AC Platinum	750W AC Platinum
	1100W AC and 380V DC Mixed Mode Platinum	750W AC Titanium
	1100W AC Platinum	750W AC and 240V DC Mixed Mode Platinum
	1100W -48V DC Gold	495W AC Platinum
	750W AC Platinum	
	750W AC Titanium	
	750W AC and 240V DC Mixed Mode Platinum	
	495W AC Platinum	
System management	LC 3.x, OpenManage, QuickSync2.0, Digital License Key, Idrac 9, iDRAC Direct(dedicated micro-USB port), Easy Restore, vFlash	LC 3.x, OpenManage, QuickSync1.0, Digital License Key, iDRAC8, iDRAC Direct(dedicated micro-USB port), Easy Restore, vFlash
Internal GPU	3 x 300W (double-wide) or 6 x 150W (single-wide)	2 x 300W (double-wide) or 4 x 150w (single-wide)
	XD - x24 non NVMe backplane only	Not supported on R730xd
Availability	Hot-plug drives	Hot-plug drives
	Hot-plug redundant cooling	Hot-plug redundant cooling
	Hot-plug redundant power supplies	Hot-plug redundant power supplies
	IDSDM support	IDSDM support
	Boot Optimized Storage Subsystem (BOSS)	

Specifications

Table 3. Technical specifications

Feature	Specification
Form factor	2U rack
Processors	Intel Xeon processor scalable family
Processor sockets	Two sockets
Internal interconnect	Two Intel Ultra Path Interconnect (UPI) links, 10.5 GT/s
Cache	Up to 38.5MB per core; core options: 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28
Chipset	Intel C620
Memory	Up to 3 TB (24 DIMM slots): 8GB/16GB/32GB/64/128GB DDR4 up to 2666MT/s

PCIe slots	R740: Up to 8 PCIe 3.0 slots plus dedicated PERC slot	
RAID controller	Internal controllers:	External HBAs (RAID):

Feature	Specification	
	PERC S140	PERC H840P
	PERC HBA330	External HBAs (non-RAID): 12G SAS HBA
	PERC H730P	
	PERC H740P	
	PERC H330	
Drives	R740 internal hard drive bay and hot-plug backplane: Up to 16 x 2.5" harddrives: SAS, SATA	
	Up to 8 x 2.5" hard drives: SAS, SATA	
	Up to 8 x 3.5" hard drives: SAS, SATA	
	R740xd internal hard drive bay and hot-plug backplane: Up to 12 x 3.5" SAS,SATA(front) + 4 x 3.5" SAS,SATA(mid) + 4 x 2.5" SAS, SATA(rear)	
	Up to 24 x 2.5" SAS,SATA(front) + 4 x 2.5" SAS,SATA(mid) + 4 x 2.5" SAS, SATA(rear)	
	Up to 24 x 2.5" NVMe SSD(front) + 4 x 2.5"NVMe SSD((mid) + 4 x 2.5" NVMe SSD((rear)	
Maximuminternal storage	R740: Up to 80 TB using 8 x 3.5" 10 TB SAS hard drives	
	Up to 61 TB using 16 x 2.5" 3840 GB SATA, SAS, SSD hard drives	
	R740xd: Up to 151.7 TB using 12 x 3.5" 10 TB SAS hard drives + 4 x 2.5" 3840 GB SATA, SAS, SSD hard drives + 4 x 2.5" 3840 GB SATA, SAS, SSD hard drives	
	Up to 204.8 TB using 24 x 2.5" 6.4TB NVMe SSD + 4 x 2.5" 6.4TB NVMe SSD + 4 x 2.5" 6.4TB NVMe SSD	
Embedded NIC	4x1GB, 4x10GB, 2x10GB+2x1GB, or 2x25GB NDC	
Power supply	495W AC, 750W AC, 1100W AC, 1600W AC, 2000W AC, 1100W DC, 750W and 1100W AC/DC mixed mode	
Availability	ECC memory, hot-plug harddrives, hot-plugredundantcooling, hot-plugredundantpower, IDSDM/vFlash, Single Device Data Correction (SDDC), spare rank, tool-less chassis, supportfor high availability clustering and virtualization, proactive systems management alerts, iDRAC9 with Lifecycle Controller	
Systems management	IPMI 2.0 compliant	Dell EMC OpenManage Connections:
	Dell EMC OpenManage Essentials	· HP Operations Manager, IBM Tivoli Netcool and CA Network and Systems Management
	Dell EMC OpenManage Mobile	· Dell EMC OpenManage Plug-in for Oracle Database Manager
	Dell EMC OpenManage Power Center	
	Dell EMC OpenManage Integrations:	
	· Dell EMC OpenManage Integration Suite for Microsoft System Center	
	· Dell EMC OpenManage Integration for VMware vCenter™	
Rack support	· ReadyRails™ static rails for tool-less mounting in 4-post racks with square or unthreaded round holes or tooled mounting in 4-post threaded and 2-post (Telco) racks	

Feature	Specification
	· ReadyRails II™ sliding rails for tool-less mounting in 4-post racks with square or unthreaded round holes or tooled mounting in 4-post threaded hole racks, with support for optional tool-less cable management arm
Operating systems	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 Red Hat Enterprise Linux 7.3 server x86_64 Ubuntu 16.04 LTS Virtualization options: Citrix XenServer 7.1 x VMware vSphere 2016 U1 (ESXi 6.5 U1) VMware vSphere 2016 U3 (ESXi 6.0 U3) For more information on the specific versions and additions, visit Dell.com/OSsupport.

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Chassis views and features

The following sections provide external and internal views of the Dell EMC PowerEdge R740 and R740xd systems and describe the chassis features. For detailed information on features and descriptions for these systems, see the Dell EMC PowerEdge R740 and R740xd Installation and Service Manual on Dell.com/Support/Manuals

Chassis views

The R740 and R740xd are available in several chassis options with varying numbers of drive bays.

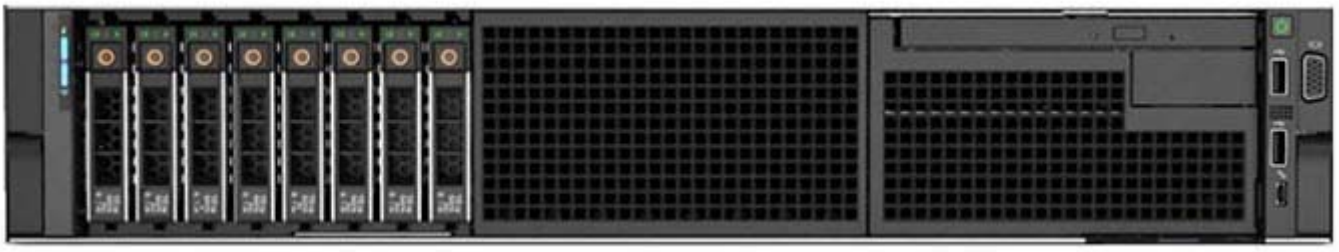
NOTE: A chassis cannot be reconfigured or upgraded after point of purchase.

Topics:

- R740 and R740xd front views
- R740 and R740xd Rear views
- R740and R740xdinternalchassisviews
- Chassis Features
- Leftcontrolpanel
- Right Control Panel
- Quick Resource Locator
- Physical Security features

R740 and R740xd front views

The R740 supports up to 16 x 2.5" or up to 8 x 3.5" front-accessible, hot-plug hard drives that are secured by a removable front bezel.
R740Frontview-8x2.5"harddriveconfiguration



R740 Front view - 16 x 2.5" hard drive configuration

R740 Front view - 8 x 3.5” hard drive configuration

R740xd

The R740xd supports up to 12 x 3.5” or up to 24 x 2.5” front-accessible, hot-plug hard drives that are secured by a removable front bezel.

R740xd Front view - 12 x 3.5" hard drive configuration

R740xd Front view - 24 x 2.5" hard drive configuration

R740 and R740xd Rear views

The R740 back panel includes PSUs, Ethernet connectors, PCIe slots and many other features described in this guide
R740Rearview-with8xPCIeslotsavailable

R740 Rear view - with 4x PCIe slots available with riser 2 and riser 3 blanks

R740xd

R740xd Rear view - with 2 x 3.5" backplane installed

R740xd Rear view - with 4 x 2.5" backplane installed

R740 and R740xd internal chassis views

The chassis design of the R740 and R740xd is optimized for easy access to components and for airflow for effective and efficient cooling. The R740 and R740xd support up to 24 DIMMs, two processors, hot-plug redundant fans, and many other components and features described in thisguide.

R740

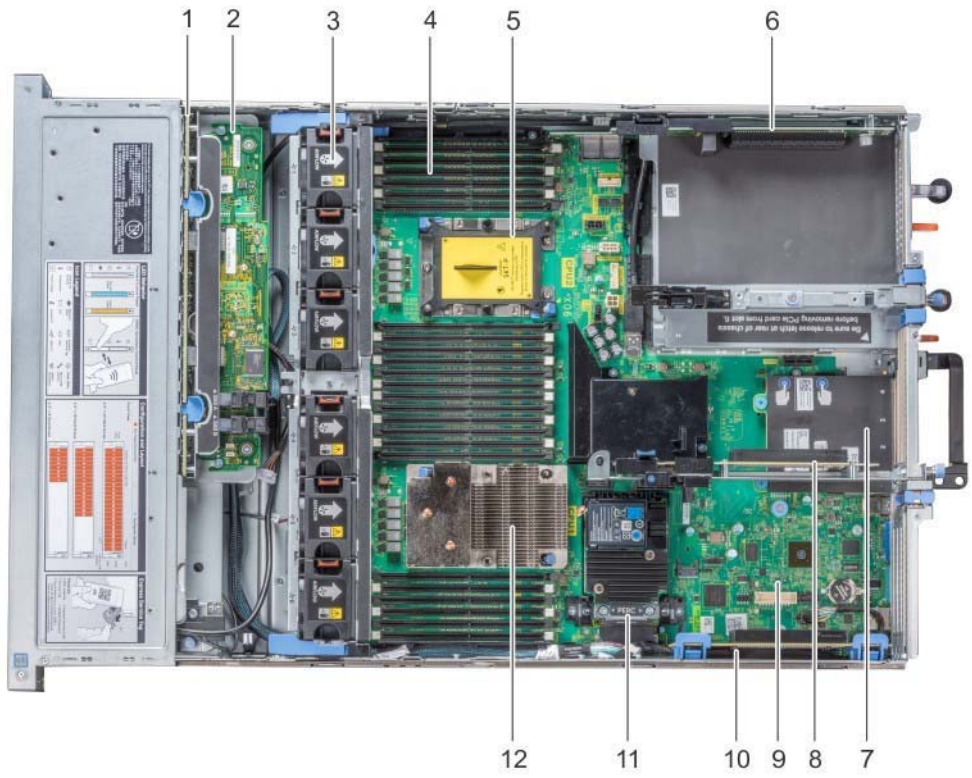


Figure 2. R740 internal chassis view

1	hard drive backplane	2	SAS expandercard
3	cooling fan in the cooling fan assembly (6)	4	memory module
5	CPU2 processor heat sink module socket	6	expansion card riser 3
7	network daughter card	8	expansion card riser 2
9	system board	10	expansion card riser 1
11	integrated storage controller card	12	CPU1 processorheatsinkmodule

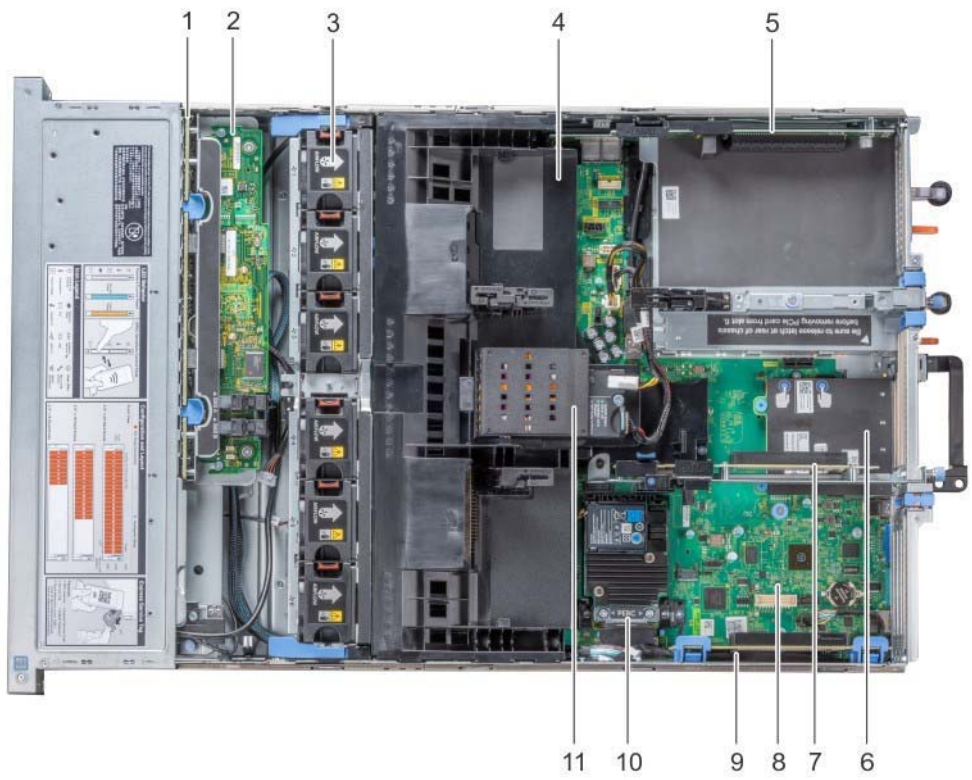


Figure 3. R740 internal chassis view – NVDIMM-N battery

1	hard drive backplane	2	SAS expandercard
3	cooling fan (6) in the cooling fan assembly	4	air shroud
5	expansion card riser 3	6	network daughter card
7	expansion card riser 2	8	system board
9	expansion card riser 1	10	integrated storage controller card
11	NVDIMM-Nbattery		

R740xd

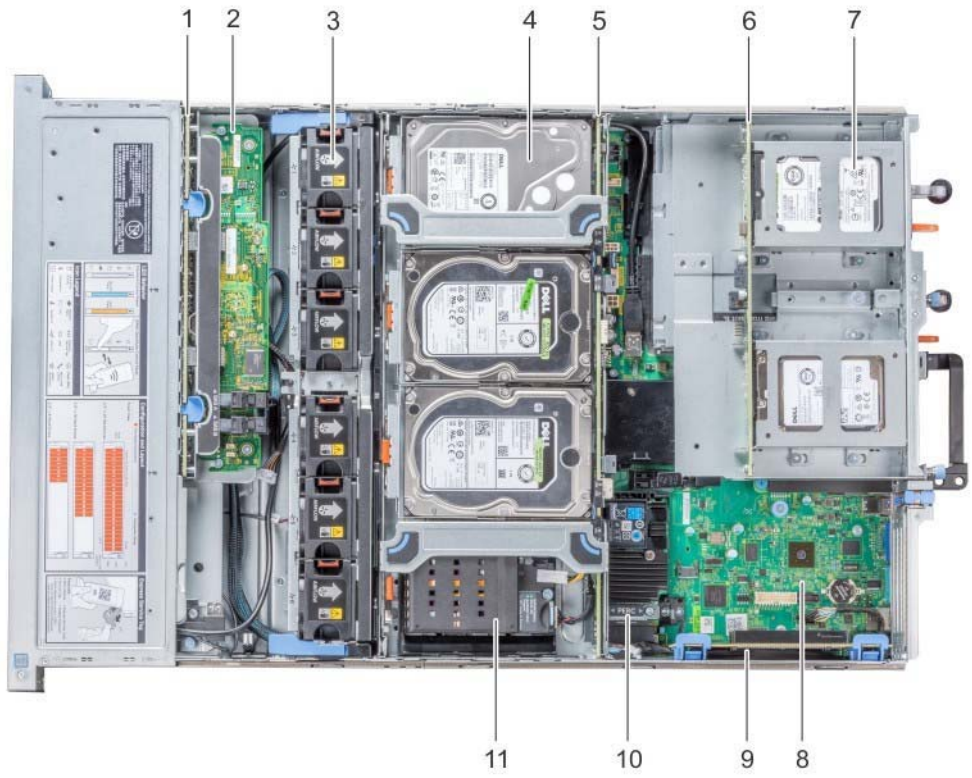


Figure 4. R740xd internal chassis view – hard drive tray and hard drive cage with NVDIMM-N battery

1	hard drive backplane	2	SAS expandercard
3	cooling fan (6) in the cooling fan assembly	4	hard drive (4) in the hard drive tray
5	mid hard drive backplane	6	rear hard drive backplane
7	harddrive(2 or 4) intheharddrivecage	8	system board
9	expansion card riser 1	10	integrated storage controller card
11	NVDIMM-Nbattery		

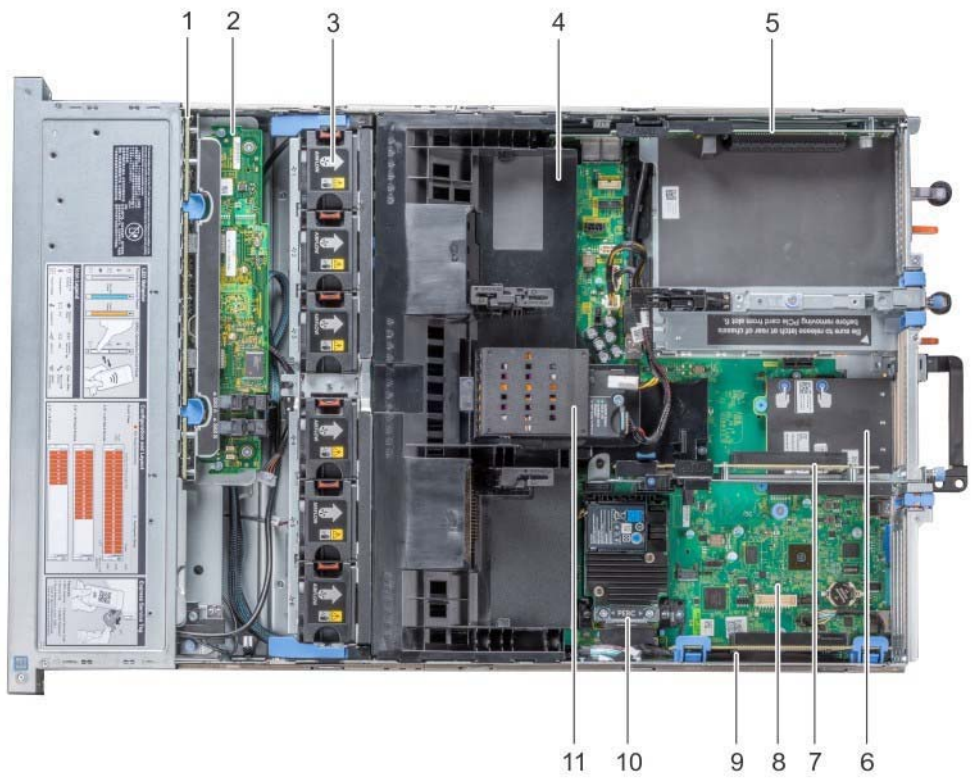


Figure 5. R740Xd internal chassis view with NVDIMM-N battery on the air shroud

1	hard drive backplane	2	SAS expandercard
3	cooling fan (6) in the cooling fan assembly	4	air shroud
5	expansion card riser 3	6	network daughter card
7	expansion card riser 2	8	system board
9	expansion card riser 1	10	integrated storage controller card
11	NVDIMM-Nbattery		

For additional system views, see the Dell EMC PowerEdge R740 and R740xd installation and service manual on Dell.com/Support/Manuals

Chassis Features

Table 4. Chassis Features

Feature	Description
Power button	ACPI-compliant power button with an integrated green power LED
System identification	Buttons (Blue when active) on the front and back of the system to help identify the unit in a datacenter environment

Feature	Description
Hard drive LEDs	Indicate the status and activity of the hard drives
USB connectors	R740: two front, two back, and one internal with one optional front USB up sell. R740xd: two front, two back, and one internal
Video connectors	R740 & R740xd: one front, one back Both cannot be used at the same time. The front overrides the back.
Bezel	LCD bezel control panel: Provides user access to buttons, display, and I/O interfaces
Control panel	Left control panel: There are 2 SKUs: 1 Status LED Only 2 Quick Sync 2 Right control panel · two USB and one micro-USB for iDRAC Direct · one VGA
Luggage tag	Slide-out label panel for system information Content: QRL label, Express Service Tag, QR code for OMM app, iDRAC default password
Serial connector	Connector located in rear of system for serial device connection and console redirection.
iDRAC 9 management port	Dedicated management port for optional iDRAC9 Enterprise located on right control panel.
PCIe expansion slots	Supports up to 8 PCIe Gen3 expansion cards
Power supplies	Location: Up to two, rear-accessible, hot-plug power supplies. Indicator: Bi-color LED in handle to report power supply status to users.
Quick Resource Locator (QRL)	Scan the code on the chassis with smartphone app for additional information and resources including videos, reference materials, service tag information and Dell contact information. Scan the code on the Luggage tag for information specific to the server built for the particular customer and the specific warranty purchased.

Left control panel

The left control panel is intended to provide support for at-the-box-management or system health at a glance. The left control panel will be located on the left ear of the chassis when viewing from the front of the system.

The left control panel will be offered in two SKUs:

1 Quick Sync 2 (wireless)
2 Status LED

NOTE: By default, system offers with Status LED control panel and Quick Sync 2 is optional.

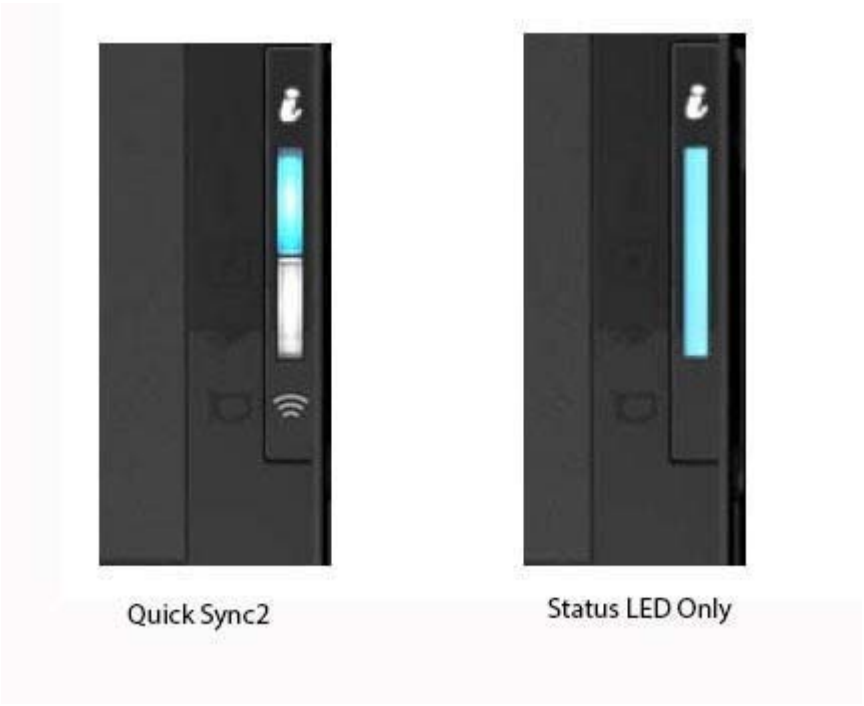


Figure 6. Left control panel light bar

The Left control panel LED behavior is broken in two subsets, light bar and status LEDs. The light bar also functions as button(s). Upper half of light bar is "Chassis Health" that will also function as "System ID" when pressed. Lower half of the light bar is the "Wireless activation button". Following table highlight the various LED modes for the overall system health:

Table 5. Decoding of LEDs in Light Bar

Status	ID Button(Top)	Wireless Button (Bottom)
Healthy	Solid Blue	OFF
Fault	Blink Amber	OFF
Sys ID	Blink Blue	OFF
Healthy, Wireless ON	Solid Blue	Solid White
Fault, Wireless ON	Blink Amber	Solid White
Sys ID, Wireless ON	Blink Blue	Solid White
Healthy, Wireless Communication	Solid Blue	Blink White
Fault, Wireless Communication	Blink Amber	Blink White
Sys ID, Wireless Communication	Blink blue	Blink White
Healthy, Wireless fault	Solid Blue	Blink Amber
Fault, Wireless fault	Blink Amber	Blink Amber
Sys ID, Wireless fault	Blink Blue	Blink Amber

Quick Sync 2 module

The Quick Sync 2 module allows for wireless at-the-box provisioning of system IP address, boot device, root credential, common BIOS, and location settings. Using BLE, it offers improved performance and usability over 13G NFC technology along with iOS support. The Quick Sync 2 Wi-Fi module offers support for SupportAssist collection and crash video/screen download/transfer, remote RACADM, VNC remote console connectivity, and access to the iDRAC GUI.

To interact with the Quick Sync 2 module, OpenManage Mobile (OMM) application is required. Only iOS and Android mobile operating systems will be supported at launch. The wireless capability is enabled by an external button referred to as an Activation Button, it is deactivated by pressing the button again (or upon disconnect/timeout). It will be located on the front of the mechanical assembly and when pressed will start transmitting and receiving.

Figure 7. Quick Sync 2 Activation Button

Status LED

A common design language is used to maintain commonality and consistent user experience. There are five status LEDs and an overall system health LED (chassis health and system ID) bar to indicate and identify any failed hardware components.

For the users who do not want radio frequency enablement for any reason, an opt-out version of status control panel called "Status LED" control panel, is also offered. Status LED control panel follows same connectivity and LED behavior as described in the QuickSync 2 Module section above, however, there will be no wireless features hardware or software available on this module.

Figure 8. Status LEDs decoded view

Right Control Panel

The right control panel encompasses many of the features no longer supported by the left control panel. The NMI is managed in software and there is no external NMI button for latest Dell EMC PowerEdge systems.

Figure 9. Right Control Panel

Features of the right control panel include:

- Power button with integrated power LED
- Ambient temperature sensor
- Two USB 3.0 ports
- VGA port
- LCD Bezel support
- Micro-USB for iDRAC Direct
- Status LED for iDRAC Direct

Quick Resource Locator

The QRL is a model-specific quick response code located inside the system chassis as shown in

graphic of QRL code inside chassis

Use a smartphone to access the Dell QRL app to learn more about the server:

- View step-by-step videos, including overviews of system internals and externals, as well as detailed, concise, task-oriented videos and installation wizards.
- Locate reference materials, including searchable owner's manual content, LCD diagnostics, and an electrical overview.
- Look up your service tag so you can quickly gain access to your specific hardware configuration info and warranty information.
- Contact Dell directly (by link) to get in touch with technical support and sales teams and provide feedback to Dell.

These codes provide an easy way to retrieve the critical support information you need when you need it, making you more efficient and effective in managing your hardware.

Location of Quick Resource Locator (QRL)

The QRL link on System Information Lable(SIL), Getting Start Guide(GSG) and installation service manual is a generic QRL link that leads to a webpage for for R740 and R740xd. This webpage has links to the information of setup and service videos, iDRAC manual, and other generic information related to R740 and R740xd.

However, the QRL on the Luggage tag EST QRL label is unique and specific to the service tag that contains the system Service Tag number and iDRAC password. The label and QRL code within it are printed on demand from the factories. This QRL will have links to a specific web page that shows the exact configuration as it is built and the specific warranty that it is entitled.

Figure 10. Chassis QRL Label

Figure 11. Luggage tag EST QRL label

Physical Security features

A number of physical security features are present on the latest generation of the R740 and R740xd. Additional security features (non-physical) are included in the BIOS and iDRAC sections.

Table 6. Physical Security features

Securityfeature	Description
Coverlatch	The system cover contains a non-keyed locking mechanism integrated into the latch.
Frontbezel	An optional bezel may be mounted to the front of the chassis. The bezel includes a keyed lock to prevent its removal and to protect from unauthorized access to externally accessible media, such as hard drives. The system status remains viewable even when the bezel is attached.
Intrusion detection switch	An internal intrusion detection switch allows users to be alerted when the system cover has been removed.
Power button	The power button functionality can be disabled through BIOS.

4

Processors

The Dell EMC PowerEdge R740 and R740xd feature the Intel Xeon scalable processor family offers versatility across diverse workloads. These processors are designed for next-generation data centers running on, software defined infrastructure supercharged for efficiency, performance, and agile services delivery across cloud-native and traditional applications. The Intel Xeon scalable processor familysupport workloads for cloud, high-performance computing, networking, and also storage for data centers.

Processor features

The new Intel Xeon scalable processor family is the next generation core architecture with improved Instructions per Cycle (IPC) and other architectural improvements. The Intel Xeon scalable processor family not only adds new features, but also improves upon many features of thepredecessorIntelXeonprocessorE5-2600v4productfamily,including:

- Virtual address space of 48 bits and a physical address space of 46 bits.
- Intel Hyper-Threading Technology (Intel® HT Technology) when enabled allow each core to support two threads.
- First Level Cache (FLC) 64 KB total. The FLC is comprised of a 32 KB ICU (Instruction Cache) and 32 KB DCU (Data Cache)
- MB Mid-Level Cache (MLC) per core (non-inclusive with the LLC).
- Intel® Advanced Vector Extensions 512 (Intel® AVX-512) with a single AVX512 fused multiply-add (FMA) execution units. processors which support Advanced RAS enable a 2nd FMA execution unit.

Topics:

Supported Processors

Table 7. Supported Processors for R740 and R740xd

Model	Intel SKU	SKU type	Speed(GHz)	Cache(M B)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family	8180M	Platinum	2.5	38.5	10.4	2666	28	Turbo	205W
Intel Xeon Processor Scalable Family	8180	Platinum	2.5	38.5	10.4	2666	28	Turbo	205W
Intel Xeon Processor Scalable Family	8176M	Platinum	2.1	38	10.4	2666	28	Turbo	165W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(M B)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family	8176	Platinum	2.1	38	10.4	2666	28	Turbo	165W
Intel Xeon Processor Scalable Family	8170M	Platinum	2.1	36	10.4	2666	26	Turbo	165W
Intel Xeon Processor Scalable Family	8170	Platinum	2.1	36	10.4	2666	26	Turbo	165W
Intel Xeon Processor Scalable Family	8168	Platinum	2.7	33	10.4	2666	24	Turbo	205W
Intel Xeon Processor Scalable Family	8164	Platinum	2.7	33	10.4	2666	26	Turbo	205W
Intel Xeon Processor Scalable Family	8160M	Platinum	2.1	33	10.4	2666	24	Turbo	150W
Intel Xeon Processor Scalable Family	8160	Platinum	2.1	33	10.4	2666	24	Turbo	150W
Intel Xeon Processor Scalable Family	8158	Platinum	3	24.75	10.4	2666	12	Turbo	150W
Intel Xeon Processor Scalable Family	8156	Platinum	3.6	16.5	10.4	2666	4	Turbo	105W
Intel Xeon Processor Scalable Family	8153	Platinum	2.0	22	10.4	2666	16	Turbo	125W
Intel Xeon Processor Scalable Family	6154	Gold	3.0	25	10.4	2666	18	Turbo	200W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family	6152	Gold	2.1	25	10.4	2666	22	Turbo	140W
Intel Xeon Processor Scalable Family	6150	Gold	2.7	25	10.4	2666	18	Turbo	165W
Intel Xeon Processor Scalable Family	6148	Gold	2.4	27	10.4	2666	20	Turbo	150W
Intel Xeon Processor Scalable Family	6146	Gold	3.2	24.75	10.4	2666	12	Turbo	165W
Intel Xeon Processor Scalable Family	6144	Gold	3.5	24.75	10.4	2666	8	Turbo	150W
Intel Xeon Processor Scalable Family	6142M	Gold	2.6	22	10.4	2666	16	Turbo	150W
Intel Xeon Processor Scalable Family	6142	Gold	2.6	22	10.4	2666	16	Turbo	150W
Intel Xeon Processor Scalable Family	6140M	Gold	2.3	25	10.4	2666	18	Turbo	140W
Intel Xeon Processor Scalable Family	6140	Gold	2.3	25	10.4	2666	18	Turbo	140W
Intel Xeon Processor Scalable Family	6138	Gold	2	27.5	10.4	2666	20	Turbo	125W
Intel Xeon Processor Scalable Family	6136	Gold	3.0	24.75	10.4	2666	12	Turbo	125W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family	6134M	Gold	3.2	24.75	10.4	2666	8	Turbo	130W
Intel Xeon Processor Scalable Family	6134	Gold	3.3	24.75	10.4	2666	8	Turbo	130W
Intel Xeon Processor Scalable Family	6132	Gold	2.6	19.25	10.4	2666	14	Turbo	140W
Intel Xeon Processor Scalable Family	6130	Gold	2.1	22	10.4	2666	16	Turbo	125W
Intel Xeon Processor Scalable Family	6128	Gold	3.4	19.25	10.4	2666	6	Turbo	115W
Intel Xeon Processor Scalable Family	6126	Gold	2.6	19.25	10.4	2666	12	Turbo	125W
Intel Xeon Processor Scalable Family	5122	Gold	3.6	16.5	10.4	2400	4	Turbo	105W
Intel Xeon Processor Scalable Family	5120	Gold	2.2	19.25	10.4	2400	14	Turbo	105W
Intel Xeon Processor Scalable Family	5118	Gold	2.3	16.5	10.4	2400	12	Turbo	105W
Intel Xeon Processor Scalable Family	5115	Gold	2.4	13.75	10.4	2400	10	Turbo	85W
Intel Xeon Processor Scalable Family	4116	Silver	2.1	16	9.6	2400	12	Turbo	85W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family	4114	Silver	2.2	14	9.6	2400	10	Turbo	85W
Intel Xeon Processor Scalable Family	4112	Silver	2.6	8.25	9.6	2400	4	Turbo	85W
Intel Xeon Processor Scalable Family	4110	Silver	2.1	11	9.6	2400	8	Turbo	85W
Intel Xeon Processor Scalable Family	4108	Silver	1.8	11	9.6	2400	8	Turbo	85W
Intel Xeon Processor Scalable Family	3106	Bronze	1.7	11	9.6	2133	8	No Turbo	85W
Intel Xeon Processor Scalable Family	3104	Bronze	1.7	11	9.6	2133	6	No Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	3204	Bronze	1.9	8.25	9.6	2133	6	No Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	5215	Gold	2.5	13.75	10.4	2667	10	Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	5217	Gold	3	11	10.4	2667	8	Turbo	115W
Intel Xeon Processor Scalable Family Cascade Lake	5218	Gold	2.3	22	10.4	2667	16	Turbo	125W
Intel Xeon Processor Scalable Family Cascade Lake	5220	Gold	2.2	25	10.4	2667	18	Turbo	125W
Intel Xeon Processor Scalable Family Cascade Lake	5222	Gold	3.8	17	10.4	2933	4	Turbo	105W
Intel Xeon Processor Scalable Family	6230	Gold	2.1	28	10.4	2933	20	Turbo	125W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family Cascade Lake	6240	Gold	2.6	25	10.4	2933	18	Turbo	150W
Intel Xeon Processor Scalable Family Cascade Lake	6242	Gold	2.8	22	10.4	2933	16	Turbo	150W
Intel Xeon Processor Scalable Family Cascade Lake	6244	Gold	3.6	25	10.4	2933	8	Turbo	150W
Intel Xeon Processor Scalable Family Cascade Lake	6248	Gold	2.5	28	10.4	2933	20	Turbo	150W
Intel Xeon Processor Scalable Family Cascade Lake	6252	Gold	2.1	36	10.4	2933	24	Turbo	150W
Intel Xeon Processor Scalable Family Cascade Lake	6254	Gold	3.1	25	10.4	2933	18	Turbo	200W
Intel Xeon Processor Scalable Family	8253	Platinum	2.2	22	10.4	2933	16	Turbo	125W
Intel Xeon Processor Scalable Family Cascade Lake	8256	Platinum	3.8	17	10.4	2933	4	Turbo	105W
Intel Xeon Processor Scalable Family Cascade Lake	8260	Platinum	2.4	36	10.4	2933	24	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	8268	Platinum	2.9	36	10.4	2933	24	Turbo	205W
Intel Xeon Processor Scalable Family Cascade Lake	8270	Platinum	2.7	36	10.4	2933	26	Turbo	205W
Intel Xeon Processor Scalable Family Cascade Lake	8276	Platinum	2.2	39	10.4	2933	28	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	8280	Platinum	2.7	39	10.4	2933	28	Turbo	205W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family Cascade Lake	4208	Silver	2.1	11	9.6	2400	8	Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	4210	Silver	2.2	14	9.6	2400	10	Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	4214	Silver	2.2	17	9.6	2400	12	Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	4215	Silver	2.5	11	9.6	2400	8	Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	4216	Silver	2.1	22	9.6	2400	16	Turbo	100W

Extended Reliability(T) SKUs

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family	8160T	Platinum	2.1	33	10.4	2666	24	Turbo	150W
Intel Xeon Processor Scalable Family	6138T	Gold	2	27.5	10.4	2666	20	Turbo	125W
Intel Xeon Processor Scalable Family	6130T	Gold	2.1	22	10.4	2666	16	Turbo	125W
Intel Xeon Processor Scalable Family	6126T	Gold	2.6	19.25	10.4	2666	12	Turbo	125W
Intel Xeon Processor Scalable Family	5120T	Gold	2.2	19.25	10.4	2400	14	Turbo	105W
Intel Xeon Processor Scalable Family	5215L	Gold	2.5	14	10.4	2667	10	Turbo	85W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family Cascade Lake	5215M	Gold	2.5	14	10.4	2667	10	Turbo	85W
Intel Xeon Processor Scalable Family Cascade Lake	5218N	Gold	2.3	22	10.4	2667	16	Turbo	105W
Intel Xeon Processor Scalable Family Cascade Lake	6210U	Gold	2.5	28	10.4	2933	20	Turbo	150W
Intel Xeon Processor Scalable Family Cascade Lake	6212U	Gold	2.4	36	10.4	2933	24	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	6238T	Gold	1.9	30	10.4	2933	22	Turbo	125W
Intel Xeon Processor Scalable Family Cascade Lake	6240Y	Gold	2.6	25	10.4	2933	18	Turbo	150W
Intel Xeon Processor Scalable Family Cascade Lake	8260L	Platinum	2.4	36	10.4	2933	24	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	8260M	Platinum	2.4	36	10.4	2933	24	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	8260Y	Platinum	2.4	36	10.4	2933	24	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	8276L	Platinum	2.2	39	10.4	2933	28	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	8276M	Platinum	2.2	39	10.4	2933	28	Turbo	165W
Intel Xeon Processor Scalable Family Cascade Lake	8280L	Platinum	2.7	39	10.4	2933	28	Turbo	205W
Intel Xeon Processor Scalable Family Cascade Lake	8280M	Platinum	2.7	39	10.4	2933	28	Turbo	205W

Model	Intel SKU	SKU type	Speed(GHz)	Cache(MB)	QPI(GT/s)	Max Memory Speed(MT/s)	Cores	Turbo	TDP
Intel Xeon Processor Scalable Family Cascade Lake	4209T	Silver	2.2	11	9.6	2400	8	Turbo	70W
Intel Xeon Processor Scalable Family Cascade Lake	4214Y	Silver	2.2	17	9.6	2400	12	Turbo	85W
Intel Xeon Processor Scalable Family	5119T	Gold	2.2	19.25	10.4	2400	14	Turbo	85W
Intel Xeon Processor Scalable Family	4116T	Silver	2.2	16.5	9.6	2400	12	Turbo	85W
Intel Xeon Processor Scalable Family	4114T	Silver	2.2	13.75	9.6	2400	10	Turbo	85W
Intel Xeon Processor Scalable Family	4109T	Silver	2	24.75	9.6	2400	8	Turbo	70W

NOTE: CPU SKUs with SKU numbers ending with M can support up to 1.5TB of memory

Processor Configurations

The R740 and R740xd supports up to two processors with up to 28 cores per processor.

Single CPU Configuration

The R740 and R740xd will function normally if there is just a single processor placed in the CPU1 socket. However, CPU and memory blanks associated with CPU2 are required to be populated for thermal reasons. The system will not boot if only CPU2 socket is populated. With Single CPU configuration, any Riser1 (1A/1B/1C/1D) card and only Riser 2B will be functional.

Chipset

The DELL EMC PowerEdge R740 and R740xd use the Intel C620 chipset (PCH) that provides extensive I/O support. Functions and capabilities include:

- ACPI Power Management Logic Support, Revision 4.0a
- PCI Express* Base Specification Revision 3.0
- Integrated Serial ATA host controller, supports data transfer rates of up to 6 Gb/s on all ports.
- xHCI USB controller with SuperSpeed USB 3.0 ports
- Direct Media Interface
- Serial Peripheral Interface
- Enhanced Serial Peripheral Interface
- Flexible I/O - Allows some high speed I/O signals to be configured as PCIe root ports, PCIe uplink for use with certain PCH SKUs, SATA (and sSATA), or USB 3.0.
- General Purpose Input Output (GPIO)
- Low Pin Count interface, interrupt controller, and timer functions

- System Management Bus Specification, Version 2.0
- Integrated Clock Controller/Real Time Clock Controller
- Intel High Definition Audio and Intel Smart Sound Technology
- Integrated 10/1 Gb Ethernet
- Integrated 10/100/1000 Mbps Ethernet MAC
- Supports Intel Rapid Storage Technology Enterprise
- Supports Intel Active Management Technology and Server Platform Services
- Supports Intel Virtualization Technology for Directed I/O
- Supports Intel Trusted Execution Technology
- JTAG Boundary Scan support
- Intel QuickAssist Technology
- Intel Trace Hub for debug

For more information, visit Intel.com

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Systemmemory

The R740/R740xd supports DDR4 registered DIMMs (RDIMMs), load reduced DIMMs (LRDIMMs) and non-volatile dual in-line DIMM-Ns (NVDIMM-Ns). System memory holds the instructions that are executed by the processor.

NOTE: MT/s indicates DIMM speed in MegaTransfers per second.

Memory bus operating frequency can be 2666 MT/s, 2400 MT/s, or 2133 MT/s depending on the following factors:

- DIMM type (RDIMM or LRDIMM)
- Number of DIMMs populated per channel
- System profile selected (for example, Performance Optimized, or Custom [can be run at high speed or lower])
- Maximum supported DIMM frequency of the processors

The R740/R740xd system contains 24 memory sockets split into two sets of 12 sockets, one set per processor. Each 12-socket set is organized into six channels. In each channel, the release tabs of the first socket are marked white, and the second socket black.

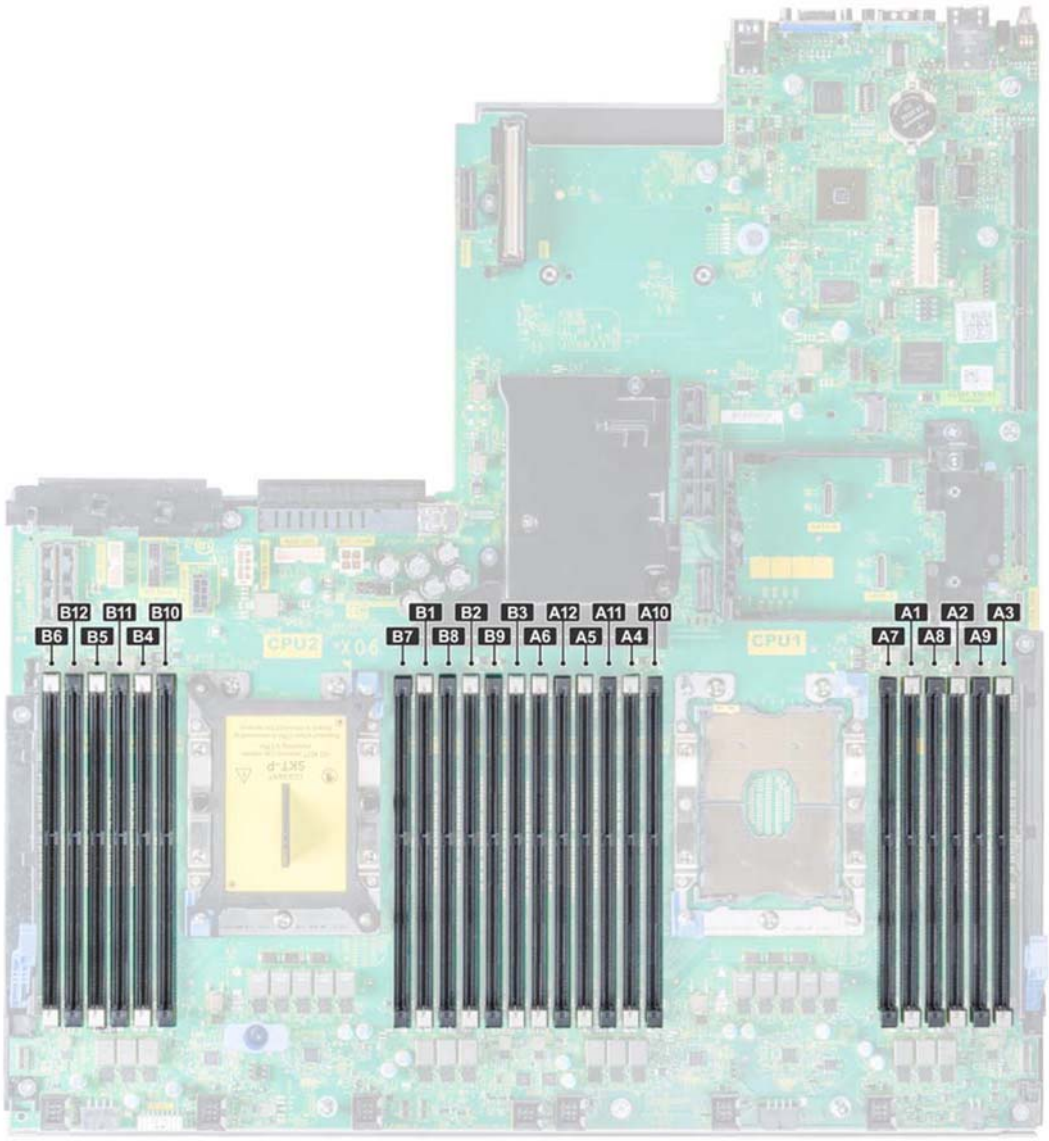

Figure 12. Memory socket locations

Memory channels are organized as follows:

Table 8. Memory channels

Processor	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
Processor 1	Slots A1 and A7	Slots A2 and A8	Slots A3 and A9	Slots A4 and A10	Slots A5 and A11	Slots A6 and A12
Processor 2	Slots B1 and B7	Slots B2 and B8	Slots B3 and B9	Slots B4 and B10	Slots B5 and B11	Slots B6 and B12

General memory module installation guidelines

NOTE: Memory configurations that fail to observe these guidelines can prevent system from booting, stop responding during memory configuration, or operating with reduced memory.

The R740/R740xd system supports Flexible Memory Configuration, enabling the system to be configured and run in any valid chipset architectural configuration. The following are the recommended guidelines for installing memory modules:

- RDIMMs and LRDIMMs must not be mixed.
- x4 and x8 DRAM based memory modules can be mixed.
- Up to two RDIMMs can be populated per channel regardless of rank count.
- Up to two LRDIMMs can be populated per channel regardless of rank count.
- If memory modules with different speeds are installed, they will operate at the speed of the slowest installed memory module(s) or slower depending on the system DIMM configuration.
- Populate memory module sockets only if a processor is installed. For single-processor systems, sockets A1 to A12 are available. For dual-processor systems, sockets A1 to A12 and sockets B1 to B12 are available.
- Populate all the sockets with white release tabs first, followed by the black release tabs.
- When mixing memory modules with different capacities, populate the sockets with memory modules with highest capacity first. For example, if you want to mix 8 GB and 16 GB memory modules, populate 16 GB memory modules in the sockets with white release tabs and 8 GB memory modules in the sockets with black release tabs.
- In a dual-processor configuration, the memory configuration for each processor should be identical. For example, if you populate socket A1 for processor 1, then populate socket B1 for processor 2, and so on.
- Memory modules of different capacities can be mixed provided other memory population rules are followed (for example, 8 GB and 16 GB memory modules can be mixed).
- Mixing of more than two memory module capacities in a system is not supported.
- Populate six memory modules per processor (one DIMM per channel) at a time to maximize performance.

NVDIMM-N memory module installation guidelines

The following are the recommended guidelines for installing NVDIMM-N memory modules:

- Each system supports memory configurations with 1, 2, 4, 6, or 12 NVDIMM-Ns.
- Supported configurations have dual processors and a minimum of 12x RDIMMs.
- LRDIMMS and NVDIMM-Ns must not be mixed.
- Maximum of 12 NVDIMM-Ns can be installed in a system.

The following table lists the NVDIMM-N configurations that are currently supported on R740/R740xd.

Table 9. Supported NVDIMM-N configurations

Configuration	Description	Memory population rules
Configuration 1	12x 16 GB RDIMMs, 1x NVDIMM-N	RDIMMs – C1{1,2,3,4,5,6}, C2{1,2,3,4,5,6} NVDIMM-N – C1{7}
Configuration 2	12x 32 GB RDIMMs, 1x NVDIMM-N	RDIMMs – Same for all 12x RDIMM configurations. See Configuration 1 NVDIMM-N – C1{7},C2{7}
Configuration 3	23x 32 GB RDIMMs, 1x NVDIMM-N	RDIMMs – C1{1,2,3,4,5,6,7,8,9,10,11,12}, C2{1,2,3,4,5,6,7,8,9,10,11}

Configuration	Description	Memory population rules
		NVDIMM-N – C2{12}
Configuration 4	12x 16 GB RDIMMs, 2x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7}, C2{7}
Configuration 5	12x 32 GB RDIMMs, 2x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7}, C2{7}
Configuration 6	22x 32 GB RDIMMs, 2x NVDIMM-Ns	RDIMMs – C1{1,2,3,4,5,6,7,8,9,10,11}, C2{1,2,3,4,5,6,7,8,9,10,11} NVDIMM-N– C1{12}, C2{12}
Configuration 7	12x 16 GB RDIMMs, 4x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7,8}, C2{7,8}
Configuration 8	22x 32 GB RDIMMs, 4x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7,8}, C2{7,8}
Configuration 9	20x 32 GB RDIMMs, 4x NVDIMM-Ns	RDIMMs – C1{1,2,3,4,5,6,7,8,9,10}, C2{1,2,3,4,5,6,7,8,9,10} NVDIMM-N – C1{11,12}, C2{11,12}
Configuration 10	12x 16 GB RDIMMs, 6x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7,8,9}, C2{7,8,9}
Configuration 11	12x 32 GB RDIMMs, 6x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7,8,9}, C2{7,8,9}
Configuration 12	18x 32 GB RDIMMs, 6x NVDIMM-Ns	RDIMMs – C1{1,2,3,4,5,6,7,8,9}, C2{1,2,3,4,5,6,7,8,9} NVDIMM-N – C1{10,11,12}, C2{10,11,12}
Configuration 13	12x 16 GB RDIMMs, 12x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7,8,9,10,11,12}, C2{7,8,9,10,11,12}
Configuration 14	12x 32 GB RDIMMs, 12x NVDIMM-Ns	RDIMMs – Same for all 12x RDIMM configurations. See Config 1 NVDIMM-N – C1{7,8,9,10,11,12}, C2{7,8,9,10,11,12}

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Storage

The Dell EMC PowerEdge R740 and R740xd provide scalable storage that allows you to adapt to your workload and operational demands. With comprehensive storage options, the R740 and R740xd offer various internal and external storage controllers, drive types and different chassis and backplanes for varied numbers of drives. Features such as Express Flash PCIe SSDs, H740P and H840 RAID controller provide vastly accelerated performance over previous technologies. Dell EMC Express Flash drives use PCIe lanes to connect directly to the processor and chipset and are easily accessible through a hot-plug drive bay.

Storage Controllers

Dell EMC's RAID controller options offer performance improvements, including the Mini PERC solution. Mini PERC provides a base RAID hardware controller without consuming a PCIe slot by using a small form factor and high density connector to the base planar.

The new PERC controller offerings will leverage heavily on previous generation PERC family. The premium performance PERC series controller will drive better IOPs and enhanced the SSD performance.

Table 10. PERC Series Controller Offerings

Performance Level	Controller & Description
Entry	S140 (SATA, NVMe)
Value	HBA330 ,H330, 12Gbps SAS HBA
Value Performance	H730P
Premium Performance	H740P, H840

Supported Drives

Table 11. Supported Drives - SAS and SATA

Form Factor	Type	Speed	Rotational Speed	Capacities
2.5"	SATA, SSD	6 Gb	N/A	120GB Boot, 240GB Boot, 240GB, 400GB, 480GB, 800GB, 960GB, 1600GB, 1920GB, 3200GB, 3840GB
	SATA	6 Gb	7.2K	1TB, 2TB
	SAS	12 Gb	7.2K	1TB, 2TB, 2TB(SED FIPS)
	SAS,SSD	12 Gb	N/A	400GB, 480GB, 800GB, 960GB, 1600GB, 1920GB, 3840GB
	SAS	12 Gb	10K	300GB, 600GB, 1.2TB, 1.8TB, 2.4TB(P-RTS), 1.2TB(SED FIPS),
	SAS	12 Gb	15K	300GB, 600GB, 900GB, 900GB (SED FIPS)

Form Factor	Type	Speed	Rotational Speed	Capacities
3.5"	SATA	6 Gb	7.2K	1TB, 2TB, 4TB, 8TB, 10TB
	SAS	12 Gb	7.2K	1TB, 2TB, 4TB, 8TB, 10TB, 4TB (SED FIPS),8TB (SED FIPS)

Table 12. Supported Drives - NVMe SSD

Supported NVMe SSD
800GB 2.5" Device
1.6TB 2.5" Device
3.2TB 2.5" Device
6.4TB 2.5" Device
KIT,CRD,NVM,1.6,HHHL,PM1725
KIT,CRD,CTL,NVME,PM1725
KIT,CRD,NVM,3.2,HHHL,PM1725

Topics:

IDSDM with vFlash card

The Internal Dual SD Module (IDSDM) and vFlash card are combined into a single card module in the latest PowerEdge systems. The following are SKUs available for PowerEdge R740 and R740xd systems:

- vFlash only
- IDSDM only
- vFlash and IDSDM

NOTE: The IDSDM only option come with vFlash hardware but required iDRAC license to enable it.

The IDSDM with vFlash module sits in the back of the chassis, in a Dell-proprietary PCIe x1 slot using a USB 3.0 interface to host. In 14 Gen system, the IDSDM and/or vFlash card moves from SD to microSD and the supported capacity for IDSDM microSD cards are 16/32/64 GB while for vFlash the capacity is 16 GB only. The write-protect switch is built onboard on the IDSDM with vFlash module.

Optical Drives

The PowerEdge R740 supports one of the following internal optical drive options:

- DVD-ROM
- DVD+ROM

The R740xd does not support an internal optical drive.

Tape Drives

The R740 and R740xd do not support internal tape drives. However, external tape backup devices will be supported on both R740 and R740xd.

Supported external tape drives:

- External RD1000 USB
- External LTO-5, LTO-6, LTO-7 and 6 Gb SAS tape drives
- 114X rack mount chassis with LTO-5, LTO-6, and LTO-7 6Gb SAS tape drives
- TL1000 with LTO-5, LTO-6, and LTO-7 6 Gb SAS tape drives
- TL2000 with LTO-5, LTO-6, and LTO-7 6 Gb SAS tape drives
- TL4000 with LTO-5, LTO-6, and LTO-7 6 Gb SAS tape drives
- TL4000 with LTO-5, LTO-6, and LTO-7 8Gb FC tape drives
- ML6000 with LTO-5, LTO-6, 6 Gb SAS tape drives
- ML6000 with LTO-5, LTO-6, LTO-7 8Gb FC tape drives

Boot Optimized Storage Subsystem (BOSS)

The BOSS is offered as a means of booting R740/R740xd systems to a full OS mode when,

- target OS is a full OS and not hypervisor that may supported best by IDSDM
- the user does not wish to trade off standard hot plug drive slots for OS install

The Hardware RAIDBOSSisa RAIDcontrollerwithalimitedfeaturesetforthepurposeofbootuptoafull OSdrive. The BOSS RAID controller presents M.2 SATA-only Solid State drives (SSD) as either Non-RAID disks or a single RAID1 volume configuration.

Figure 13. Boot Optimized Storage Subsystem (BOSS)

Table 13. BOSS RAID controller features

Function/Feature	Supported
Stripe size supported	64k
Configuration (HII)	Yes
Full initialization	No
Fast initialization	Yes

Function/Feature	Supported
	NOTE: Performed on virtual disk creation by default.
Background initialization	No
RAID0	No
RAID1	Yes
Single non-RAID	Yes
Dual non-RAID	Yes
Degraded RAID1 and non-RAID	No
Foreign import	Yes
Consistency check	No
Patrol read	No
Load balance	N/A
Rebuild	Yes
	NOTE: Manually triggered in Human Interface Infrastructure(HII) or via Marvell Command Line Interface (CLI).
Auto-rebuild	Yes
	NOTE: Auto Rebuild will occur at power up only if there is a surviving native virtualdiskandanotherphysicaldiskispresentatpowerup.
Hot spare	No
Change rebuild priority/rate	No
Virtual disk write back/ read ahead cache	No
	NOTE: No controller cache.
Battery support	N/A
	NOTE: No battery.
Non-RAID disk cache policy	Yes
	NOTE: OS controlled/Device defaults.
SMART Info	Yes
	NOTE: Can be pulled by Marvell CLI.
Physical disk hot swap	No
Virtual disk expansion	No
Virtual disk slicing	No
Virtual disk migration	Yes
	NOTE: On new controller, virtual disk must be Imported from HII before presented to OS.
Split mirror	No
	NOTE: System requiredtoshutdownand migrateonephysicaldiskto another system and continue rebuild.
Non-RAID migration	Yes

Function/Feature	Supported
BIOS configurationutility (Ctrl-M)	No
Addondriverfordatapath(OSdevice driver)	No NOTE: ConsoleWindowsdriverorLinuxlibraryisrequiredformanagement purposes only.
4K nativedrive support	No
TRIMandUNMAPvirtualdisk	No
TRIM and UNMAP Non-RAID physical disk	Yes
Self-encrypting drives(SED) support	No
Cryptographic erase (sanitize)	Yes NOTE: If drive supports SANITIZE Crypto Erase. No other encryption support from controller ordrive.

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Networking and PCIe

The Dell EMC PowerEdge R740 and R740xd offers offer balanced, scalable I/O capabilities, including integrated PCIe 3.0-capable expansion slots. Dell Select Network Adapters, Dell's network daughter cards, enable you to choose the right network fabric without using up a valuable PCI slot. Pick the speed, technology, vendor, and other options, such as switch independent partitioning, which enable you to share and manage bandwidth on 10GbE connections.

Topics:

- Network card options
- PCIe Expansion cards

Network card options

The DELL EMC PowerEdge R740 and R740xd system supports four Network Interface Controller (NIC) ports on the back panel, which are available in the following configurations:

- Four 1 Gbps
- Four 10 Gbps
- Two 10 Gbps and two 1 Gbps
- Two 25 Gbps

NOTE: You can install up to eight PCIe add-on NIC cards.

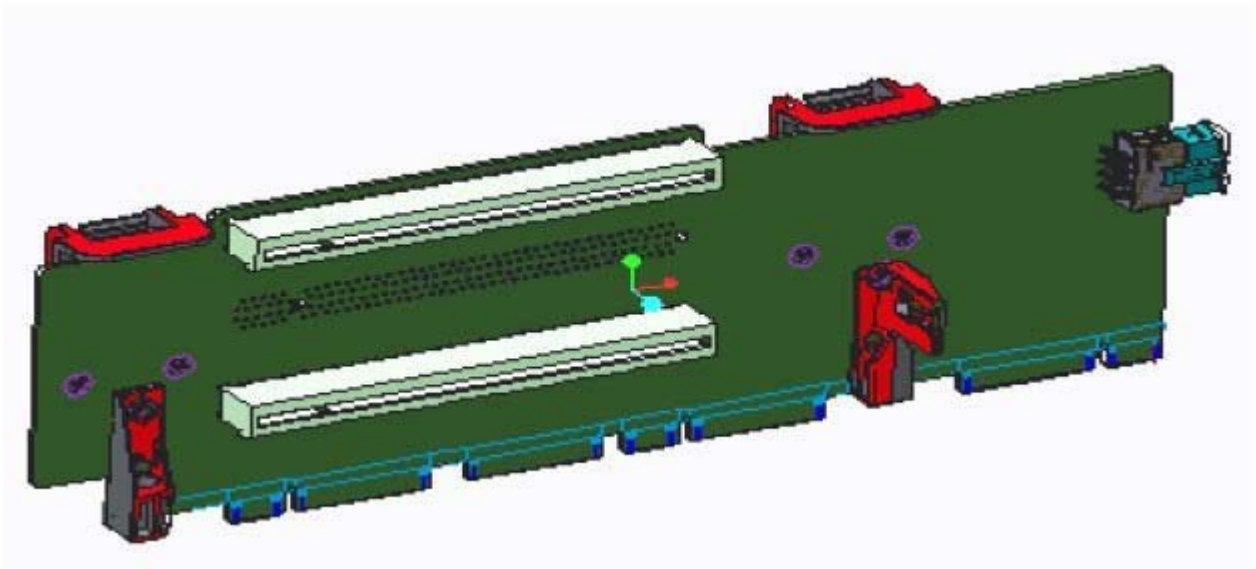
PCIe Expansion cards

The PowerEdge R740 and R740xd system supports up to eight PCI express (PCIe) generation 3 expansion cards, that can be installed on the system board using PCIe expansion card risers.

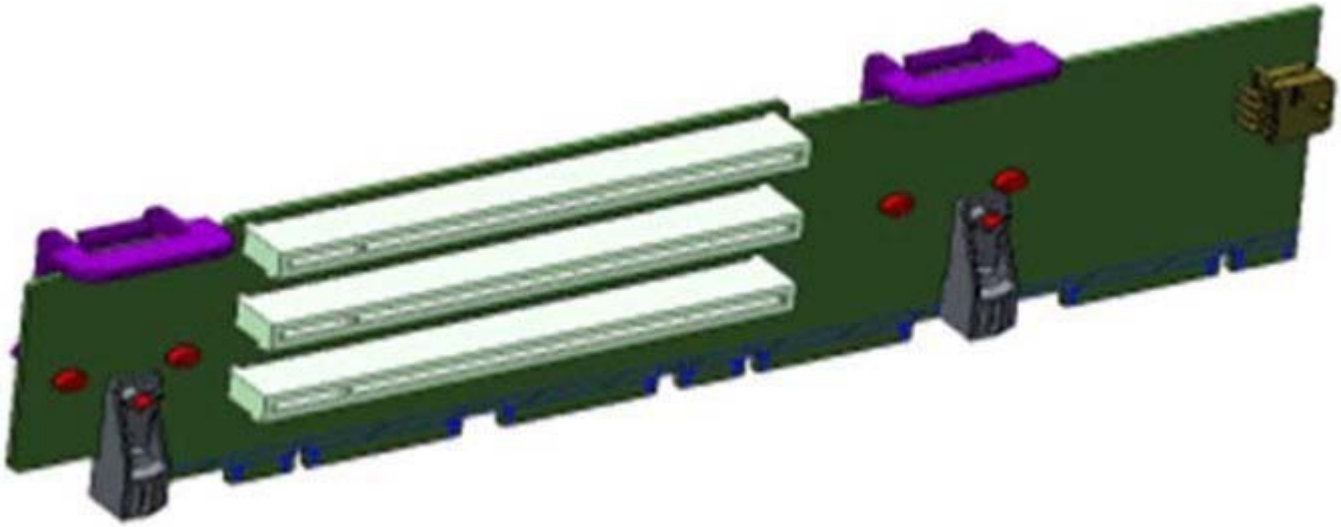
Below are the risers offerings for both the R740 and R740xd.

PCIe Expansion card riser

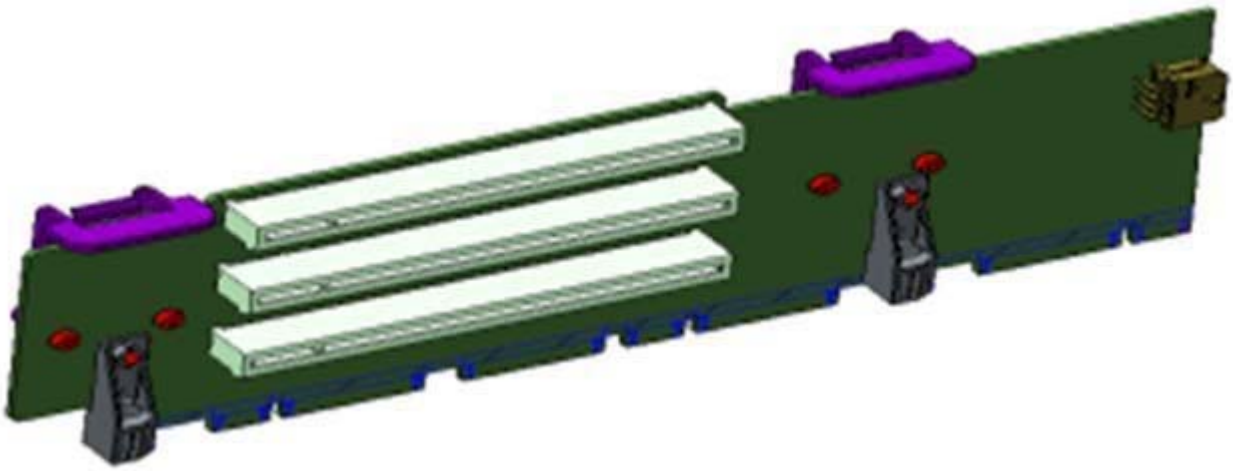
Riser 1A - 2 slots, 2x16(top and bottom)



Riser 1B - 3 slots, 3x8 (top, middle and bottom)

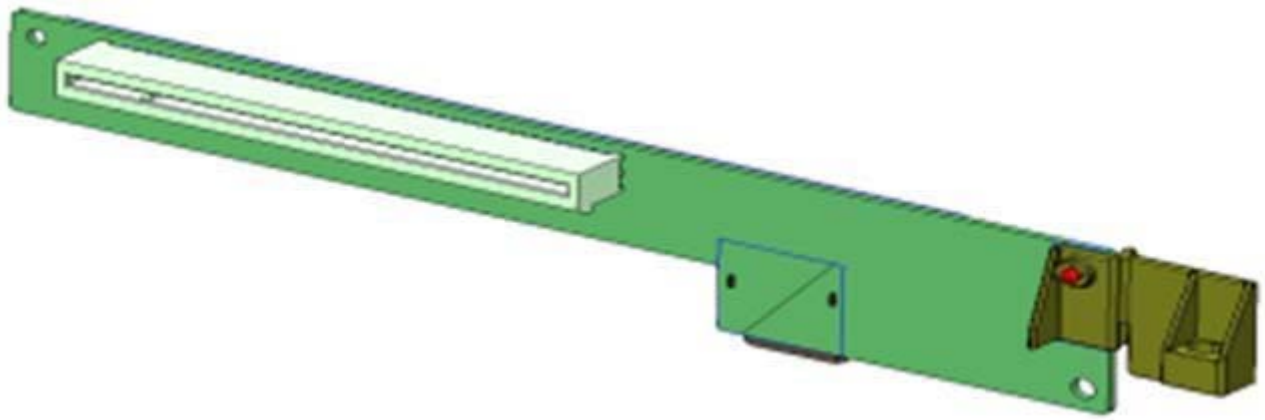


Riser 1D - 3slots, 3 slots, 1x16 (top) 2 x8 (middle and bottom)

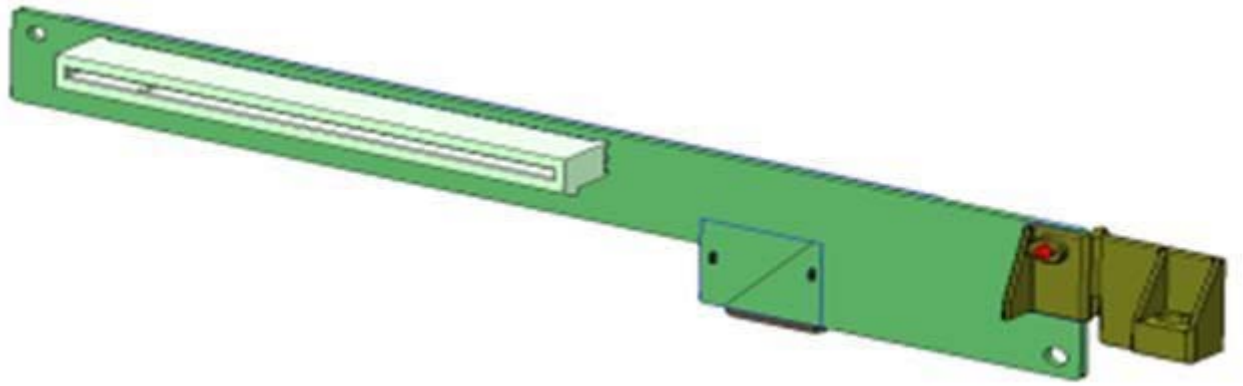


Riser 2A - 2 slots, 3slots, 3 slots, 1x16 (top) 2 x8 (middle and bottom)

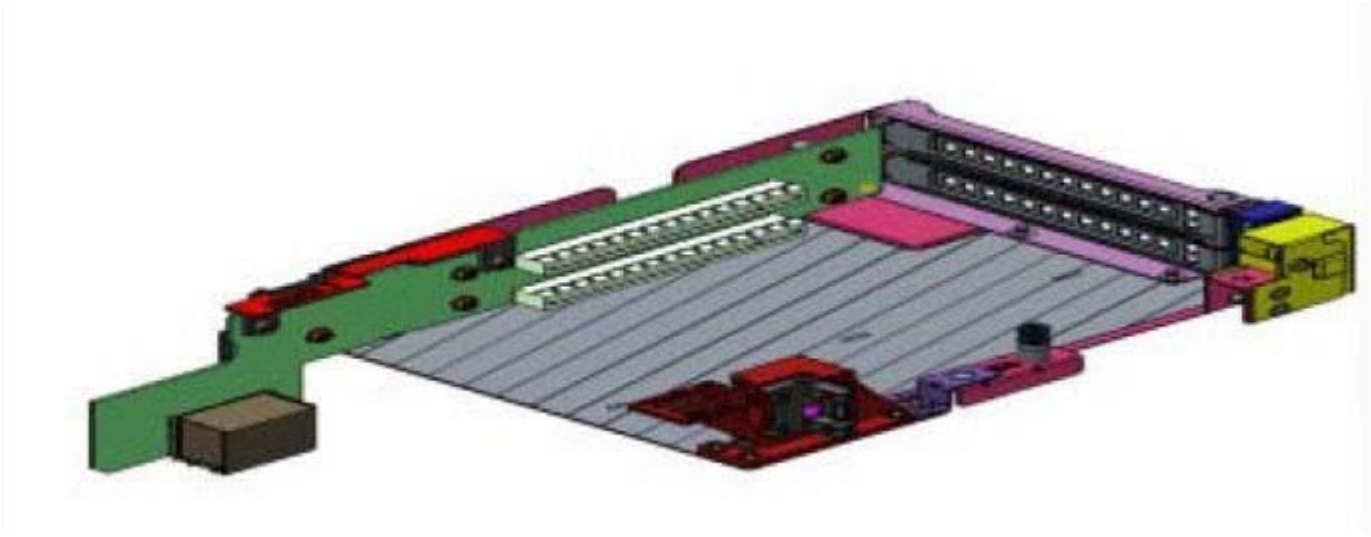
Riser 2B - 1slots, 1x8(Top and bottom)



Riser 2C - 1 slots, 1x16(Top and bottom)



Riser 3A - 2 slots, 1x8(Top), 1 x16 (bottom)



PCIe expansion card riser configurations

Table 14. PCIe Expansion card riser configurations for R740 and R740xd

Expansion card riser	PCIe slots onthe riser	Height	Length	Link
Riser 1A	Slot 1	Full Height	Full Length	x16
	Slot 3	Full Height	Half Length	x16
Riser 1B	Slot 1	Full Height	Full Length	x8
	Slot 2	Full Height	Full Length	x8
	Slot 3	Full Height	Half Length	x8
Riser 1D	Slot 1	Full Height	Full Length	x16
	Slot 2	Full Height	Full Length	x8
	Slot 3	Full Height	Half Length	x8
Riser 2A	Slot 4	Full Height	Full Length	x16
	Slot 5	Full Height	Full Length	x8
	Slot 6	Low Profile	Half Length	x8
Riser 2B	Slot 4	Low Profile	Half Length	x8
Riser 2C	Slot 4	Low Profile	Half Length	x16
Riser 3A	Slot 7	Full Height	Full Length	x8
	Slot 8	Full Height	Full Length	x16

Table 15. PCIe riser configuration

Riser configuration	Numbers of CPUs	Supported PERC type	Possible rear storage
No riser	1 or 2	Mini-Mono	Yes
1B+2B	1 or 2	Mini-Mono/Adapter	Yes
1B+2C	2	Mini-Mono/Adapter	Yes
1A+2A	2	Adapter	No
1A+2A+3A	2	Adapter	No
1B+2A+3A	2	Mini-Mono/Adapter	No
1D+2A+3A	2	Adapter	No

8

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. 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

With the rise in the cost of energy 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 16. Power tools and technologies

Feature	Description
Power supply units (PSU) portfolio	Dell EMC PSU portfolio includes intelligent features such as dynamically optimizing efficiency while maintaining availability and redundancy. For more information, see, the *Power supply units* section.
Tools for right-sizing	The Dell Enterprise Infrastructure Planning Tool (EIPT) is a tool that helps you plan and tune your computer and infrastructure equipment for maximum efficiency by calculating hardware power consumption, power infrastructure and storage. Learn more at Dell.com/calc.
Power monitoring accuracy	PSU power monitoring improvements include: · 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 systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell EMC is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
Systems management	iDRAC9 Enterprise provides system-level management that monitors, reports, and controls power consumption at the

	processor, memory and system level. OpenManage Power Center delivers group power management at the rack, row, and data center level for servers, power distribution units, and uninterruptible power supplies.
Active power management	Intel Node Manager is an embedded technology that provides individual system-level power reporting and power limiting functionality. Dell EMC offers a complete power management solution comprised of Intel Node Manager accessed through Dell EMC iDRAC9 Enterprise and OpenManage Power Center that allows policy-based management of power and thermals at the individual system, rack, and data center level. Hot spare reduces power consumption of redundant power supplies. Thermal control of fan speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption. Idle power enables Dell EMC servers to run as efficiently when idle as when at full workload.

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 for lower total system power and datacenter 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 a number of psychacoustical metrics and thresholds in delivering to 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 17. Acoustical reference points and output comparisons

Value measured at your ears		Equivalent familiar noise experience
LpA, dBA, re 20 µPa	Loudness, sones	
90	80	Loud concert
75	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

Rack rails

The rail offerings for the R740 and R740xd consist of two general types: sliding and static

Sliding rails features summary

The sliding rails (two varieties are offered) allow the system to be fully extended out of the rack for service. They are available with or without the optional cable management arm (CMA).

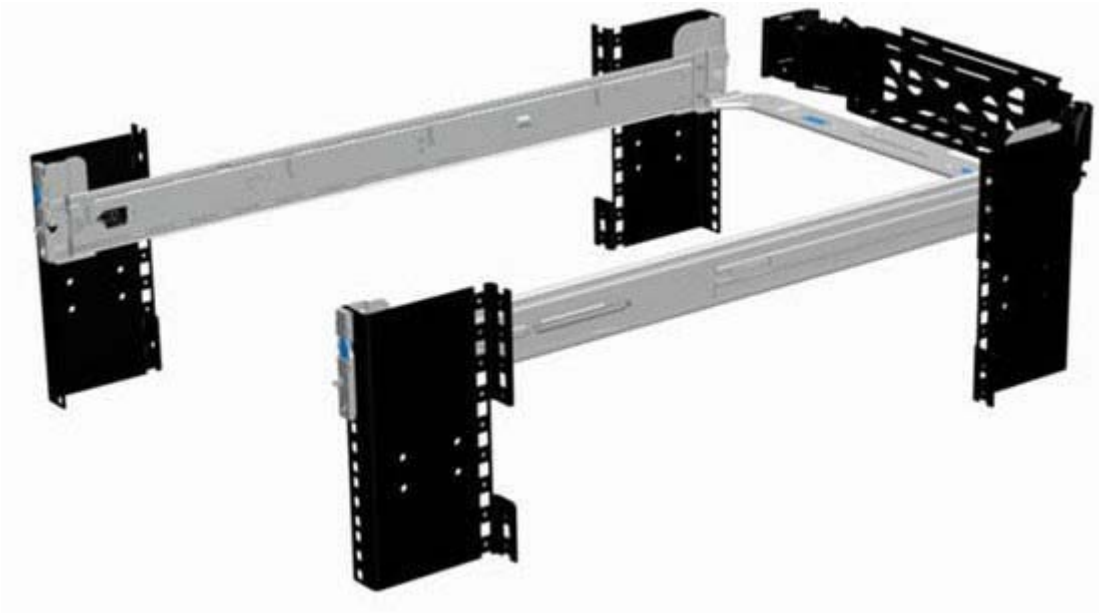


Figure 14. Sliding rails with optional CMA

ReadyRails-Sliding rails for 4-post racks

- Supports Drop-in Installationofthechassistotherails.
- Support for tool-less installation in 19" EIA-310-E compliant square or unthreaded round hole 4-post racks including all generations of the Dell racks.
- Supportfortooledinstallationin 19" EIA-310-Ecompliantthreadedhole 4-postracks.
- Support full extension of the system out of the rack to allow serviceability of key internal components.
- Support for optional cable management arm (CMA).
- Minimumrailmountingdepthwithoutthe CMA: 714 mm.
- Minimum rail mounting depth with the CMA: 845 mm.
- Square-hole rack adjustment range: 631-868 mm.
- Round-hole rack adjustment range: 617-861 mm.
- Threaded-hole rack adjustment range: 631-883 mm.

Stab-in/Drop-in sliding rails for 4-post racks (New for 14G systems)

- Supports drop-in or stab-in installation of the chassis to the rails.

- Support for tool-less installation in 19" EIA-310-E compliant square, unthreaded round hole racks including all generations of the Dell racks. Also supports tool-less installation in threaded round hole 4-post racks.
- Required for installing R740 in a Dell EMC Titan or Titan-D rack.
- Support full extension of the system out of the rack to allow serviceability of key internal components.
- Support for optional cable management arm (CMA).
- Minimum rail mounting depth without the CMA: 714 mm.
- Minimum rail mounting depth with the CMA: 845 mm.
- Square-hole rack adjustment range: 603-915 mm.
- Round-hole rack adjustment range: 603-915 mm.
- Threaded-hole rack adjustment range: 603-915 mm.

Static rails

The static rails support a wider variety of racks than the sliding rails. However, they do not support serviceability in the rack and are thus not compatible with the CMA.

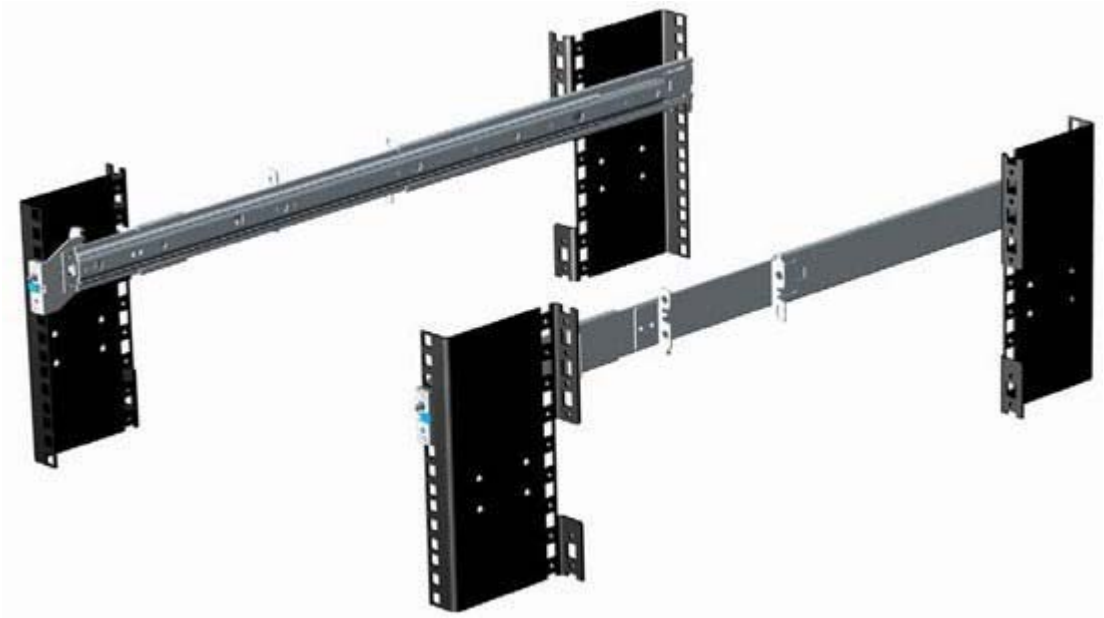


Figure 15. Static rails

Static rails features summary

Static Rails for 4-post & 2-post Racks:

- Supports Stab-in installation of the chassis to the rails.
- Support tool-less installation in 19" EIA-310-E compliant square or unthreaded round hole 4-post racks including all generations of Dell racks.
- Support tooled installation in 19" EIA-310-E compliant threaded hole 4-post and 2-post racks.
- Minimum rail mounting depth: 622 mm.
- Square-hole rack adjustment range: 608-879 mm.
- Round-hole rack adjustment range: 594-872 mm.
- Threaded-hole rack adjustment range: 608-890 mm.

NOTE: One key factor in selecting the proper rails is identifying the type of rack in which they are installed.

2-Post racks installation

If installing to 2-Post (Telco) racks, the ReadyRails Static rails (B4) must be used. Both sliding rails support mounting in 4-post racks only.

Figure 16. Static rails in 2-post center mount configuration

Installation in the Dell EMC Titan or Titan-D racks

If installing to Titan or Titan-D racks, the Stab-in/Drop-in Sliding rails (B13) must be used. This rail collapses down sufficiently to fit in racks with mounting flanges spaced about 24 inches apart from front to back. The Stab-in/Drop-in Sliding rail allows bezels of the servers and storage systems to be in alignment when installed in these racks.

System-to-Rail Installation Method

If the customer prefers to use the stab-in installation method for installing their systems to the rails, the Stab-in/Drop-in Sliding rails (B13) or the ReadyRails Static rail (B4) must be selected.

NOTE: ReadyRails Sliding rails (B6) are drop-in only.

Table 18. Static, Sliding, or Stab-in/Drop-in sliding rails

Rail identifier	Rail type	Installation method	Supported rack types					
			Dell EMC Titan or Titan-D	4-Post			2-Post	
			Racks	Square	Round	Thread	Flush	Center
B6	Ready Rails Sliding	Drop-in	X	√	√	√ *	X	X
B13	Stab-in/Drop-in Sliding	Stab-in/ Drop-in	√	√	√	√	X	X
B4	Ready Rails Static	Stab-in	X	√	√	√ *	√ *	√

* Minor conversion required

NOTE: No screws are required for the Stab-in/Drop-in Sliding (B13) rails when mounting the rails to the racks

NOTE: Screws are not included in either kit as threaded racks are offered with various thread designations. Users must therefore provide their own screws when mounting the rails in threaded racks.

NOTE: Screw head diameter for the sliding rails must be 10 mm or less.

Other key factors governing proper rail selection include the following:

- Spacing between the front and rear mounting flanges of the rack
- Type and location of any equipment mounted in the back of the rack such as power distribution units (PDUs)
- Overall depth of the rack

Thestaticrailsoffer agreater adjustabilityrange and asmaller overall mounting footprintthantheslidingrails. Thisisbecauseoftheir reduced complexity and lack of need for CMA support.

Table 19. Rail Adjustability Range and Rail Depth

Rail Identifier	Rail Type	Rail Adjustability Range (mm)*						Rail Depth (mm)+	
		Square		Round		Threaded		Without CMA	With CMA
		Min	Max	Min	Max	Min	Max		
B6	Ready Rails Sliding	676	868	662	861	676	883	714	845
B13	Stab-in/ Drop-in Sliding	603	915	603	915	603	915	714	845
B4	Ready Rails Static	608	879	594	872	604	890	622	N/A

* Values represent the distance between the front and rear mounting flanges on the rack

+ Measured from the front surface of the front rack mounting flange

NOTE: For situations where CMA support is not required, the outer CMA mounting brackets can be removed from the sliding rails toreducetheoverallllengthoftherailsand eliminatepotentialinterferences withrear-mounted PDUs ortherackrear door.

NOTE: For the ReadyRails Sliding rails(B6) and ReadyRails Static rails (B4), the adjustment range of the rails is a function of the type of rack in which they are being mounted. The Min/Max values listed above represent the allowable distance between the front and rear mounting flanges in the rack. Rail depth without the CMA represents the minimum depth of the rail with the outer CMA brackets removed (if applicable) as measured from the front mounting flanges of the rack.

Cable management arm (CMA)

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

- Large U-shaped baskets to support dense cable loads.
- Open vent pattern for optimalairflow.
- Ability to be mounted on either side by simply swinging the spring-loaded brackets from one side to the other.
- Utilizeshook-and-loopstrapsratherthanplastic tiewrapstoeliminatethe riskof cabledamageduringcycling.
- Includes a low-profile fixed tray to both support and retain the CMA in its fully closed position.
- Both the CMA and the tray mount without the use of tools via simple and intuitive snap-in designs.

The CMA can be mounted to either side of the sliding rails without the use of tools or the need for conversion. However, it is recommended thatitbemountedonthesideoppositetothepowersuppliestoalloweasieraccesstothepowersuppliesandrearharddrives(if applicable) for service or replacement.

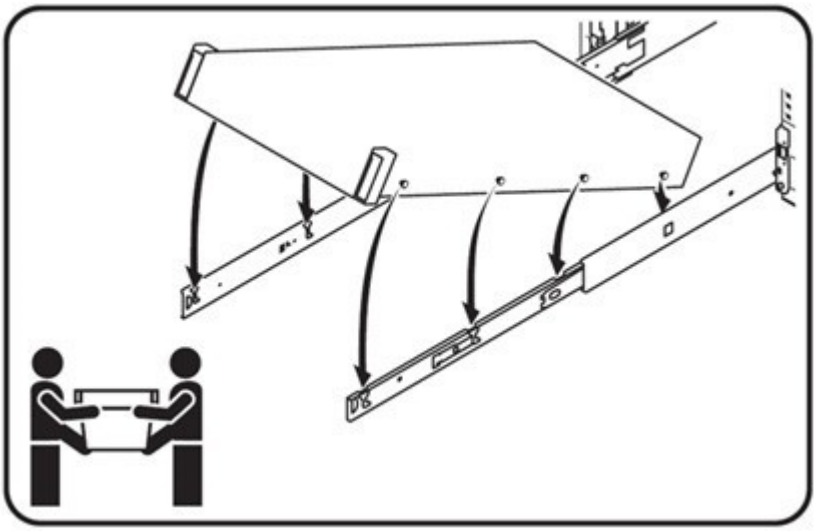
Figure 17. Sliding rails with CMA

Rack Installation

The R740 offers two different varieties of sliding rails: ReadyRail Sliding rails (B6), and combination Stab-in/Drop-in Sliding rails (B13). Only one variety of static rail is offered: ReadyRails Static rails (B4).

A "drop-in" design means that the system is installed vertically into the rails by inserting the standoffs on the sides of the system into the "J-slots" in the inner rail members with the rails in the fully extended position. The recommended method of installation is to first insert the rear standoffs on the system into the rear J-slots on the rails to free up a hand and then rotate the system down into the remaining J-slots while using the free hand to hold the rail against the side of the system.

A "stab-in" design means that the inner (chassis) rail members must first be attached to the sides of the system and then inserted into the outer (cabinet) members installed in the rack. For 2U systems, it is recommended that two people perform this operation.



NOTE: The 2U system requires two people for installation due to its heavier weight.

Installing system into the rack (option A: Drop-In)

1 Pull the inner rails out of the rack until they lock into place.

Figure 18. Pull out inner rail

2 Locate the rear rail standoff on each side of the system and lower them into the rear J-slots on the slide assemblies.

3 Rotate the system downward until all the rail standoffs are seated in the J-slots.

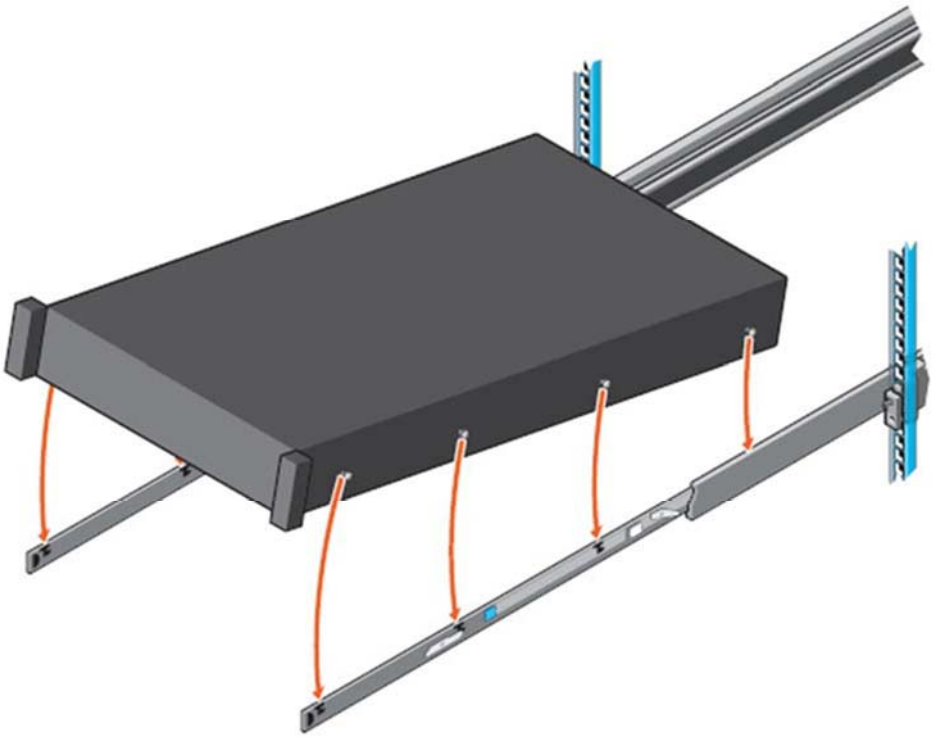


Figure 19. Rail standoffs seated in J-slots

4 Push the system inward until the lock levers click into place.

5 Pull the blue slide release lock tabs forward on both rails and slide the system into the rack until the system is in the rack.

Figure 20. Slide system into the rack

Installing the system into the rack (option B: Stab-In)

1 Pull the intermediate rails out of the rack until they lock into place.

2 Release the inner rail lock by pulling forward on the white tabs and sliding the inner rail out of the intermediate rails.

Figure 21. Pull out the intermediate rail

Table 20. Rail component

Number	Component
1	Intermediate rail
2	Inner rail

3 Attach the inner rails to the sides of the system by aligning the J-slots on the rail with the standoffs on the system and sliding forward on the system until they lock into place.

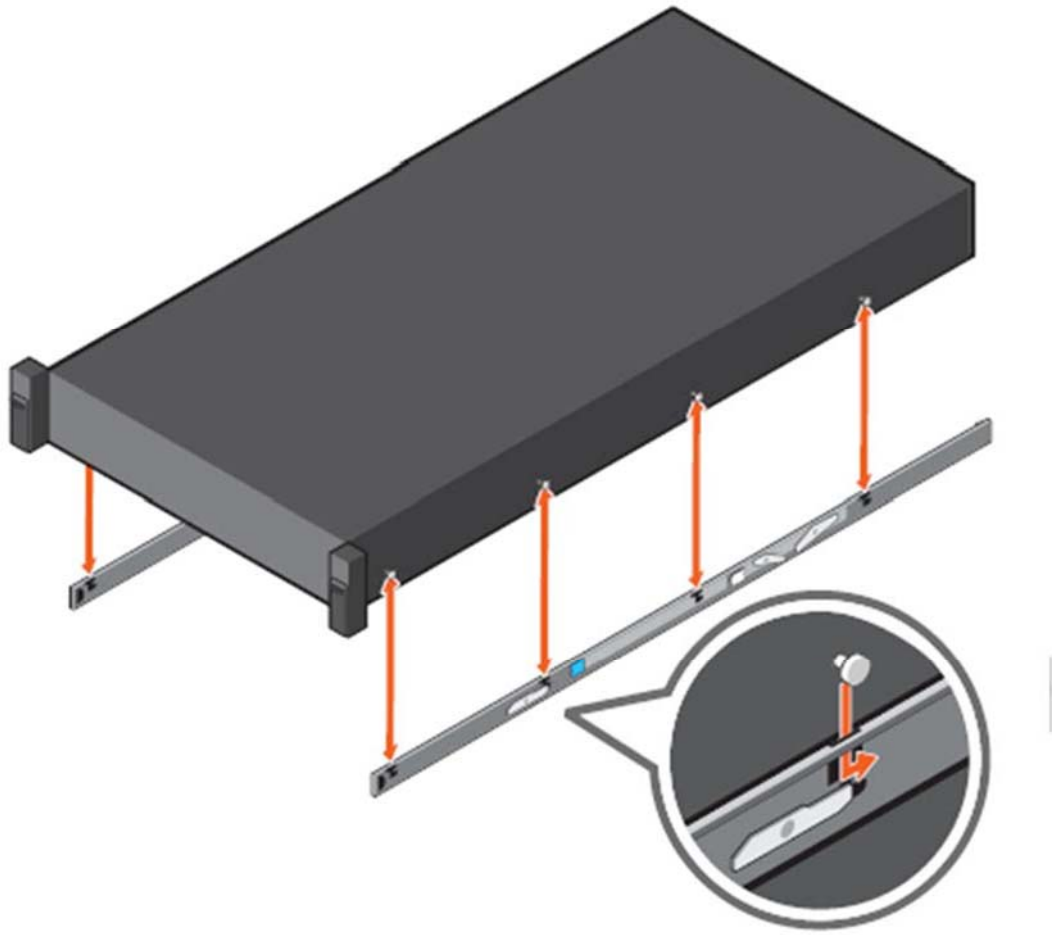


Figure 22. Attach the inner rails to the system

4 With the intermediate rails extended, install the system into the extended rails.

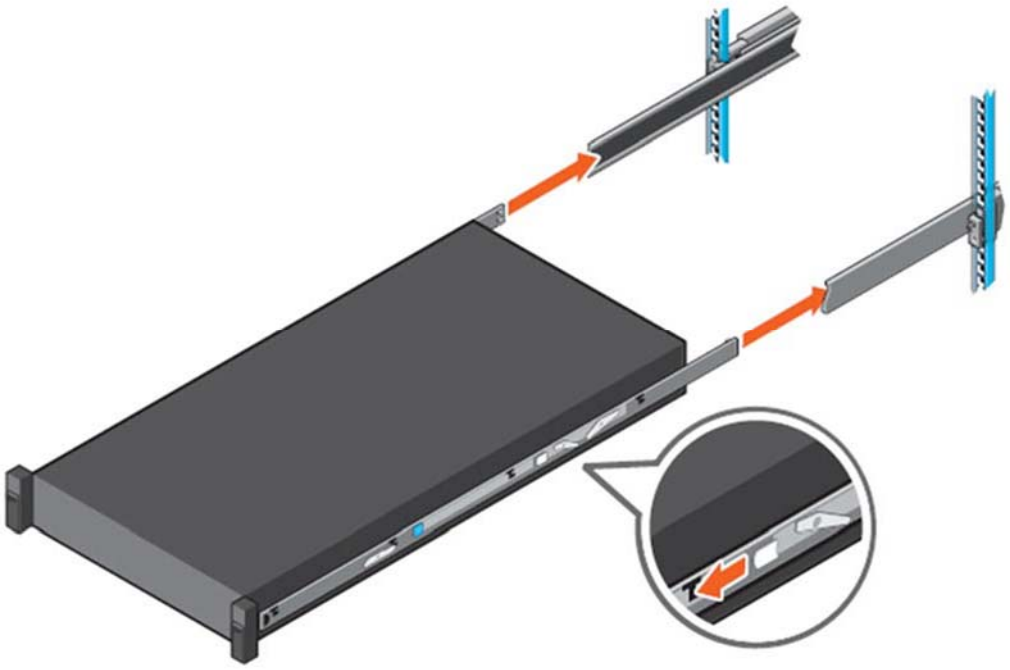


Figure 23. Install system into the extended rails

5 Pull the blue slide release lock tabs forward on both the rails, and slide the system into the rack.

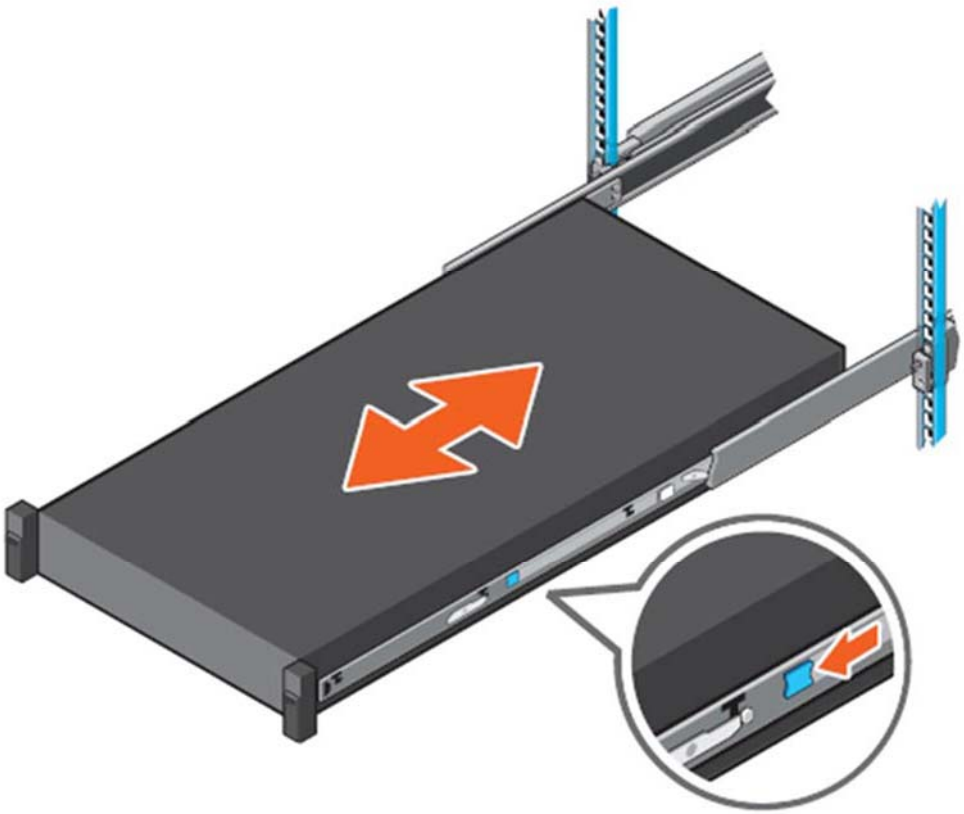


Figure 24. Slide system into the rack

Dell EMC OpenManage systems management

Whether your IT environment consists of a few servers or a few thousand servers, Dell EMC OpenManage systems management solutions provide comprehensive management for evolving IT environments. OpenManage is based on open standards and provides agent-based and agent-free server lifecycle management functionality for Dell EMC PowerEdge servers. OpenManage solutions help you automate and streamline essential hardware management tasks.

Start with a firm foundation for efficient hardware management using OpenManage tools, utilities and management consoles. OpenManage systems management solutions consist of a combination of embedded management features and software products that help you automate and simplify the entire server lifecycle: deploy, update, monitor and maintain. OpenManage solutions are innovatively designed for simplicity and ease of use to help you reduce complexity, save time, achieve efficiency, control costs and empower productivity. OpenManage centers around efficient management of server lifecycle.

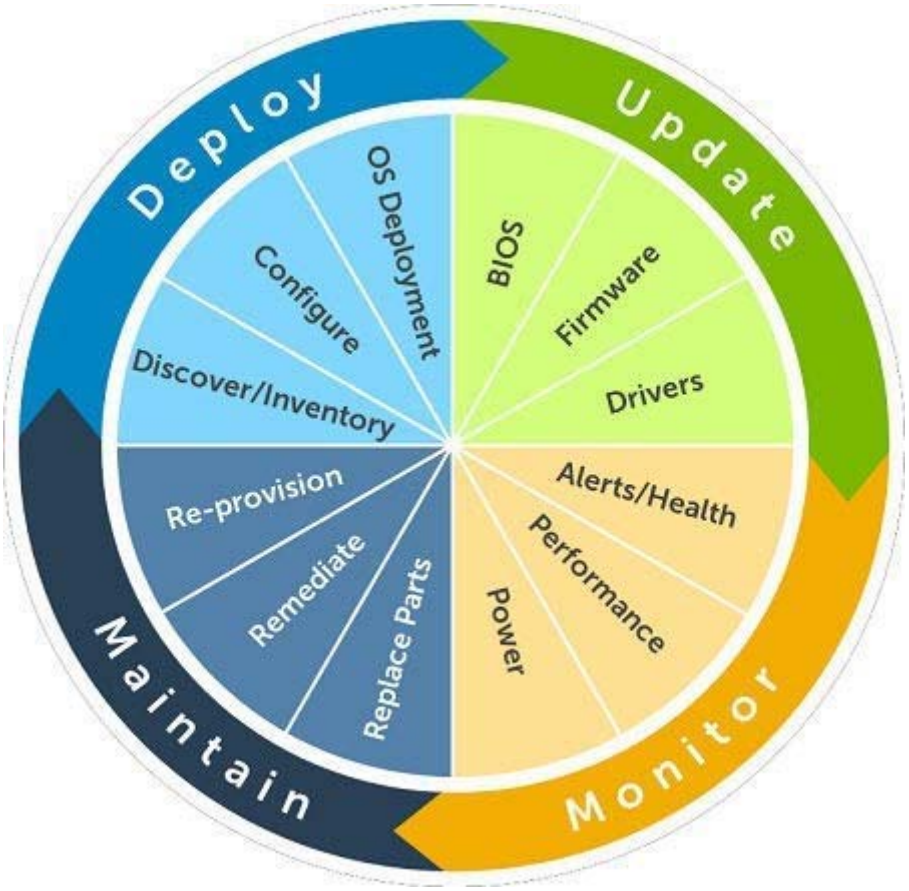


Figure 25. Server lifecycle management operations

Topics:

- OpenManage systems management
- iDRAC Lifecycle controller
- Agent-free management

- Agent-based management
- Dell EMC consoles
- OpenManage systems management tools, utilities and protocols
- Integration with third-party consoles
- OpenManage connections with 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.

iDRAC Lifecycle controller

The PowerEdge server provides storage expandability that allows you to adapt to your workload and operational demands. With comprehensive storage options, the server offer various drive types, internal and external storage controllers, and different backplanes for varied number of drives. The microcontroller is responsible for acting as an interface or gateway between the host system (i.e., server management software) and the peripheral devices. These peripheral devices, which may or may not be Intelligent Platform Management Interface (IPMI) compliant, consist of the power supplies, the storage backplane, integrated storage controllers, control panel with semi-intelligent display, and Lifecycle Controller.

iDRAC features and comparison

iDRAC9 is available in basic, express, and enterprise options.

Table 21. iDRAC feature comparison

Features	iDRAC8 Basic	iDRAC9 Basic	iDRAC8 Express	iDRAC9 Express	iDRAC8 Express for Blades	iDRAC9 Express for Blades	iDRAC8 Enterprise	iDRAC9 Enterprise
Interface/Standards								
Redfish	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPMI 2.0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DCMI 1.5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Web-based GUI—HTML5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Racadm command line—local/remote	Yesses	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SMASH-CLP—SSH-only	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Telnet	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Serial redirection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WSMAN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Network Time Protocol		No	Yes	Yes	Yes	Yes	Yes	Yes
Connectivity								
Shared NIC	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes

Features	iDRAC8 Basic	iDRAC9 Basic	iDRAC8 Express	iDRAC9 Express	iDRAC8 Express for Blades	iDRAC9 Express for Blades	iDRAC8 Enterprise	iDRAC9 Enterprise
Dedicated NIC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VLAN tagging	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPv4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPv6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DHCP(newdefault; no static IP)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DHCP with Zero Touch	No	No	No	No	No	No	No	Yes
Dynamic DNS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OS pass-through	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
iDRAC Direct-Front panel USB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Connection View	No	Yes	No	Yes	No	Yes	No	Yes
NFS v4	No	Yes	No	Yes	No	Yes	No	Yes
SMB3.0 with NTLM v1 and NTLM v2	No	Yes	No	Yes	No	Yes	No	Yes
Security								
Role-based authority	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Local users	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSL encryption	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP blocking	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Directory services—AD, LDAP	No	No	No	No	No	No	Yes	Yes
2-factor authentication	No	No	No	No	No	No	Yes	Yes
Single sign-on	No	No	No	No	No	No	Yes	Yes
PK authentication	No	No	Yes	Yes	Yes	Yes	Yes	Yes
FIPS 140-2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Secure UEFI boot-certificate management	No	Yes	No	Yes	No	Yes	No	Yes
Lock down mode	No		No		No		No	Yes
Unique iDRAC default password	No	Yes	No	Yes	No	Yes	No	Yes
Customizable Security Policy Banner-login page	No	Yes	No	Yes	No	Yes	No	Yes
Quick Sync 2.0-optional auth for read operations	No	Yes	No	Yes	No	Yes	No	Yes
Quick Sync 2.0-add mobile device number to LCL	No	Yes	No	Yes	No	Yes	No	Yes
Remote Presence								

Features	iDRAC8 Basic	iDRAC9 Basic	iDRAC8 Express	iDRAC9 Express	iDRAC8 Express for Blades	iDRAC9 Express for Blades	iDRAC8 Enterprise	iDRAC9 Enterprise
Power control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Boot control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Serial-over-LAN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Virtual Media	No	No	No	No	Yes	Yes	Yes	Yes
Virtual Folders	No	No	No	No	No	No	Yes	Yes
Remote File Share	No	No	No	No	No	No	Yes	Yes
Virtual Console	No	No	No	No	Yes	Yes	Yes	Yes
HTML5 access to virtual console	No	No	No	No	Yes	Yes	Yes	Yes
VNC connection to OS	No	No	No	No	No	No	Yes	Yes
Quality/bandwidth control	No	No	No	No	No	No	Yes	Yes
Virtual Console collaboration—6 users	No	No	No	No	No	No	Yes	Yes
Virtual Console chat	No	No	No	No	No	No	Yes	Yes
Virtual Flash partitions	No	No	No	No	No	No	Yes	Yes
Group manager	No	No	No	No	No	No	No	Yes
HTTP/HTTPS support along with HFS/CIFS	No	Yes	No	Yes	No	Yes	No	Yes
Power and Thermal								
Real-time power meter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power thresholds & alerts	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Real-time power graphing	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Historical power counters	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Power capping	No	No	No	No	No	No	Yes	Yes
Power Center integration	No	No	No	No	No	No	Yes	Yes
Temperature monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Temperature graphing	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Health Monitoring								
Full agent-free monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Predictive failure monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMPv1, v2 andv3—traps and gets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Email alerting	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Configurable thresholds	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fan monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power Supply monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Features	iDRAC8 Basic	iDRAC9 Basic	iDRAC8 Express	iDRAC9 Express	iDRAC8 Express for Blades	iDRAC9 Express for Blades	iDRAC8 Enterprise	iDRAC9 Enterprise
Memory monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CPU monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RAID monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NIC monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HD monitoring—enclosure	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Out of Band Performance Monitoring	No	No	No	No	No	No	Yes	Yes
Alerts for excessive SSD wear	No	Yes	No	Yes	No	Yes	No	Yes
Customizable settings for Exhaust Temperature	No	Yes	No	Yes	No	Yes	No	Yes
Update								
Remote agent-free update	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Embedded update tools	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sync with repository—scheduled updates	No	No	No	No	No	No	Yes	Yes
Auto update	No	No	No	No	No	No	Yes	Yes
Improved PSU firmware updates	No	Yes	No	Yes	No	Yes	No	Yes
Deployment and Configuration								
Local configuration via F10	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Embedded OS deployment tools	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Embedded configuration tools	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AutoDiscovery	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Remote OS deployment	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Embedded driver pack	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Full configuration inventory	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inventory export	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Remote configuration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zerotouch configuration	No	No	No	No	No	No	Yes	Yes
System Retire/Repurpose	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Server Configuration Profile in GUI	No	Yes	No	Yes	No	Yes	No	
Diagnostics, Service and Logging								
Embedded diagnostic tools	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Features	iDRAC8 Basic	iDRAC9 Basic	iDRAC8 Express	iDRAC9 Express	iDRAC8 Express for Blades	iDRAC9 Express for Blades	iDRAC8 Enterprise	iDRAC9 Enterprise
Part Replacement	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Server Configuration Backup	No	No	No	No	No	No	Yes	Yes
Server Configuration Restore	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Easy Restore—system configuration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Easy Restore Auto Timeout	No	Yes	No	Yes	No	Yes	No	Yes
LED health status indicator	No	No	No	No	No	No	No	No
LCD screen—iDRAC9 requires optional bezel	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes
Quick Sync—require NFC bezel	Yes	No	Yes	No	N/A	No	Yes	No
Quick Sync 2.0—requires BLE/WiFi hardware	No	Yes	No	Yes	No	N/A	No	Yes
iDRAC Direct—front USB mgmt port	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
iDRAC Service Module (iSM) embedded	No	Yes	No	Yes	No	Yes	No	Yes
iSM to inband alert forwarding to consoles	No	Yes	No	Yes	No	Yes	No	Yes
Crash screen capture	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Crash video capture	No	No	No	No	No	No	Yes	Yes
Boot capture	No	No	No	No	No	No	Yes	Yes
Manual reset for iDRAC—LCD ID button	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Remote reset for iDRAC—requires iSM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Virtual NMI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OS watchdog	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SupportAssist Report—embedded	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
System Event Log	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lifecycle Log	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enhancedlogginginthe Lifecycle controller log	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Work notes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Remote Syslog	No	No	No	No	No	No	Yes	Yes
License management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Improved customer experience								

Features	iDRAC8 Basic	iDRAC9 Basic	iDRAC8 Express	iDRAC9 Express	iDRAC8 Express for Blades	iDRAC9 Express for Blades	iDRAC8 Enterprise	iDRAC9 Enterprise
iDRAC -Faster processor, more memory	No	Yes	No	Yes	No	Yes	No	Yes
GUI rendered in HTML5	No	Yes	No	Yes	No	Yes	No	Yes
Add BIOS configuration to iDRAC GUI	No	Yes	No	Yes	No	Yes	No	Yes
iDRAC support for SWRAID licensing	No	Yes	No	Yes	No	Yes	No	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

The central console in a systems management solution is often referred to as the one-to-many console. The central console provides a rapid view and insight into the overall health of all systems in the IT environment. The Dell EMC systems management portfolio includes several powerful consoles, depending upon your needs, including the following:

- Dell EMC OpenManage Essentials—OpenManage Essentials (OME) is a systems management console that provides a comprehensive view of Dell EMC systems, devices, and components in an enterprise network. It is used to monitor Dell EMC PowerEdge servers, EqualLogic and PowerVault storage, and PowerConnect™ switches; to update and configure Dell EMC servers; and to create asset reports. OpenManage Essentials also communicates health status alerts for Dell EMC servers, storage, and network devices to the Dell EMC KACE™ K1000 service desk. OpenManage Essentials is available as a no-charge software download from Dell.com/Support. When connected through OME, you can use Dell EMC OpenManage Mobile (OMM) to securely perform a subset of data center monitoring and remediation tasks from a mobile device.
- OpenManage Power Center—Dell EMC's power management solution, the Dell EMC OpenManage Power Center (OMPC) management console, provides increased visibility to power consumption, anomalies, and utilization through fine-grained instrumentation. This enables increased control, improved rack density, faster response times, greater accuracy, and broader decision-making intelligence than would otherwise be possible. When used with a suitably licensed PowerEdge server (with a iDRAC Enterprise license), OMPC leverages Intel Node Manager technology for platform-level power reporting and capping of Intel chipsets. Power Center then communicates with iDRAC to provide node, rack, row or data-center level aggregation of power-management data, as well as execution of control policy — making it easy for IT professionals to identify areas to gain efficiencies and cut wasteful costs.

OpenManage systems management tools, utilities and protocols

Dell EMC OpenManage systems management tools and utilities consist of the following:

- Dell EMC Repository Manager: The Dell EMC Repository Manager (RM) is a stand-alone GUI-based productivity tool that helps simplify the process of managing downloads and baseline BIOS, firmware and driver updates. Repository Manager can create deployment disks as well as create and manage customized repositories.

- Dell EMC Update Packages: The Dell EMC Update Packages (DUP) is a self-contained executable in a standard package format that updates a software element on a Dell EMC server such as the BIOS, a driver, firmware and other software updates.
- Dell EMC OpenManage Deployment Toolkit: The Dell EMC OpenManage Deployment Toolkit (DTK) is a CLI-based tool that includes a set of utilities for configuring and deploying Dell EMC PowerEdge systems, and can be used to build scripted, unattended OS installations to deploy large numbers of servers in a reliable fashion.
- RACADM: The RACADM command-line utility provides a scriptable interface that allows you to locally or remotely configure iDRAC9.
- IPMITool: IPMITool includes scriptable console application programs used to control and manage remote systems using the IPMI version 1.5 and later protocol.
- Web Services for Management (WSMAN): WSMAN is a SOAP-XML–based protocol for exchanging system management information. Dell EMC's implementation provides remote management capabilities through a secure and standards-based Web Services–Management (WS-MAN) interface to PowerEdge servers and blade server node chassis.

Integration with third-party consoles

Dell EMC OpenManage provides integration with several leading third-party consoles, including:

- OpenManage Integration Suite for Microsoft System Center—This suite helps you further streamline, automate and simplify your most essential IT management tasks. For more information, visit http://www.dell.com/learn/us/en/04/solutions/dcsm-microsoft-system-center.
- OpenManage Integration for VMware vCenter—This plug-in allows IT administrators to monitor, provision, and manage the physical PowerEdge server hardware and firmware from a dedicated Dell EMC menu accessed through the VMware vCenter console using the same role-based access control model as vCenter, combining physical server management. For more information, visit http://www.dell.com/learn/us/en/04/virtualization/management-plug-in-for-vmware-vcenter.
- BMC Software—Dell EMC and BMC Software work together to simplify IT by ensuring tight integration between Dell EMC server, storage, and network management functionality and the BMC Software process and data center automation products.

OpenManage connections with third-party consoles

Dell EMC OpenManage Connections gives you an easy path to adding support for third-party devices, so you can continue to use your existing management tools while easily adding Dell EMC server systems to your existing IT environment. Integrate new systems at your own pace. Manage new Dell EMC servers and storage with your legacy management tools, while extending the useful life of your existing resources. With OpenManage Connections you can add monitoring and troubleshooting of Dell EMC assets to your IT infrastructure.

- OpenManage Connection for Nagios
- OpenManage Connection for Oracle
- OpenManage Connection for HP
- OpenManage Connection for IBM
- OpenManage Connection for CA

For more information on these OpenManage Connections, visit http://www.dell.com/learn/us/en/04/solutions/dcsm-partner-consoles.

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.

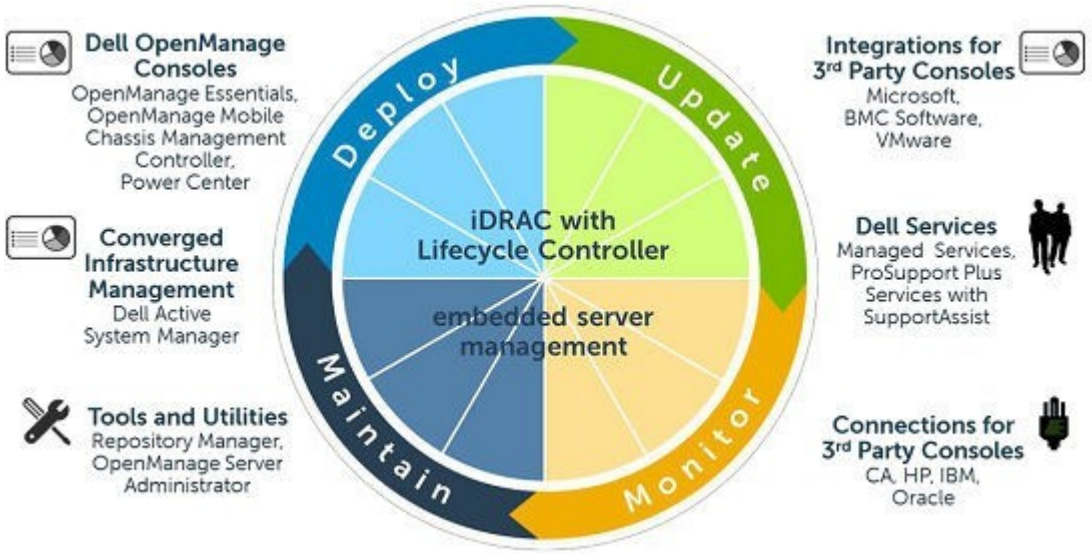


Figure 26. Systems management server lifecycle

Table 22. One-to-one and one-to-many operations

Operation	One-to-one	One-to-many
Deploy	· Lifecycle Controller GUI · DTK	· OpenManage Integration for VMware vCenter · OpenManage Integration for BMC BladeLogic · OpenManage Integration for Microsoft System Center Configuration Manager
Update	· iDRAC9 with Lifecycle Controller · Repository Manager · DUP · SUU · OpenManage Integration for VMware vCenter	· Dell EMC OpenManage Essentials · OpenManage Integration for Microsoft System Center Configuration Manager
Monitor	· iDRAC9 with Lifecycle Controller · OMSA	· Dell EMC OpenManage Essentials · Dell EMC OpenManage Power Center · OpenManage Integration for VMware vCenter · OpenManage Integration for Microsoft System Center Operations Manager
Maintain	· iDRAC9 with Lifecycle Controller · IPMI	· Lifecycle Controller Remote Services Remediate and replace parts: · OpenManage Integration for Microsoft System Center Virtual Machine Manager (SCVMM) · 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:

PSU specifications

The PowerEdge R740 system supports up to two AC or DC power supply units (PSUs).

Table 23. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	Current
495 W AC	Platinum	1908 BTU/hr	50/60 Hz	100–240 V AC, autoranging	6.5 A–3 A
750 W AC	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC, autoranging	10 A–5 A
750 W AC	Titanium	2843 BTU/hr	50/60 Hz	200–240 V AC, autoranging	5 A
750 W Mixed Mode HVDC (for China only)	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC, autoranging	10 A–5 A
	N/A	2891 BTU/hr	N/A	240 V DC, autoranging	4.5 A
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging	12 A–6.5 A
1100 W DC	N/A	4416 BTU/hr	N/A	–(48–60) V DC, autoranging	32 A
1100 W Mixed Mode HVDC (for China and Japan only)	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging	12 A–6.5 A
	N/A	4100 BTU/hr	N/A	200–380 V DC, autoranging	6.4 A–3.2 A
1600 W AC	Platinum	6000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	10 A
2000 W AC	Platinum	7500 BTU/hr	50/60 Hz	100–240 V AC, autoranging	11.5 A

NOTE: Heat dissipation is calculated using the PSU wattage rating.

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

NOTE: Ifasystemwith 2000 WACPSUoperatesatlowline 100–120VAC,thenthepowerratingper PSUisderatedto1000W.

NOTE: Ifasystemwith 1600WACPSUoperatesatlowline 100–120VAC,thenthepowerratingper PSUisderatedto 800W.

NOTE: If system with 1100W AC PSU or 1100W Mixed Mode HVDC PSU operates at low line 100-120VAC, then the power rating per PSU is derated to 1050W.

Chassis dimensions

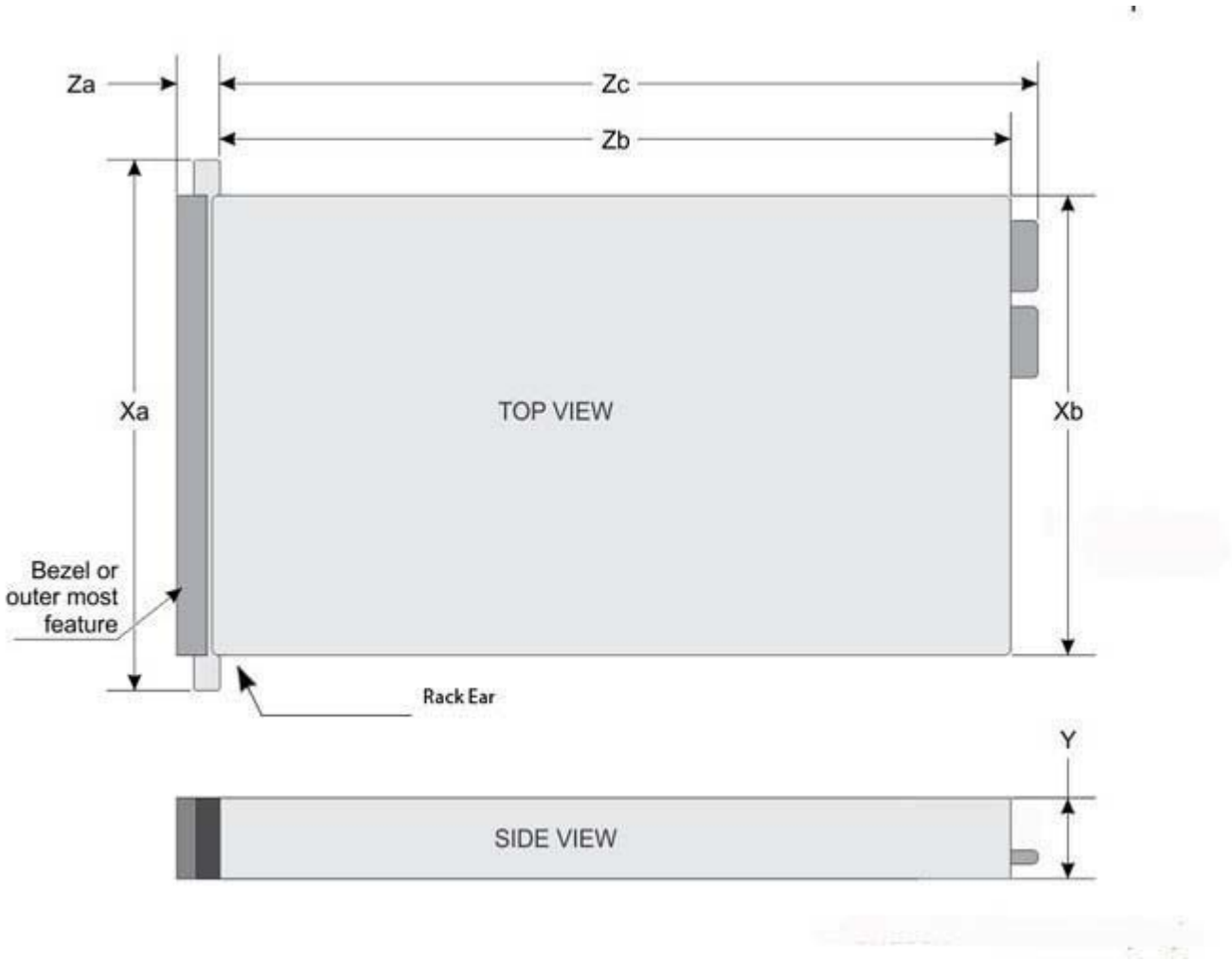


Figure 27. Chassis Dimensions for R740 and R740xd

Table 24. Chassis dimensions (cm)

Chassis dimensions (cm)						
Xa	Xb	Y	Za bezel	Za without bezel	Zb	Zc
482.0 mm	434.0 mm	86.8 mm	35.84mm	22.0 mm	678.8 mm	715.5 mm

Table 25. Chassis weight

Configuration	Maximum Weight
2.5" HDD for R740	26.3Kg
3.5" HDD for R740	28.6Kg
2.5" HDD for R740xd	28.1Kg

3.5"HDDforR740xd	33.1Kg

Environmental specifications

See Dell EMC PowerEdge R740 and R740xd installation service manuals on Dell.com/Support/Manuals for detailed environmental specifications.

Video specifications

The PowerEdge R740 system supports integrated Matrox G200eW3 graphics controller with 16 MB of video frame buffer.

Table 26. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

NOTE: 1920 x 1080 and 1920 x 1200 resolutions are only supported in reduced blanking mode.

USB peripherals

USB peripherals are supported through the front and back USB ports on the R740 and R740xd. The front USB ports are USB 2.0 compliant, only the back ports are USB 3.0 compliant. The R740 offers an upsell option to add an additional USB 3.0 port to the front of the chassis but this option is not available in R740xd.

Appendix B. Standards compliance

Table 27. 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/desguide/serverdg.mspx
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR4 Memory DDR4 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	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

Table 28. Additional resources

Resource	Description of contents	Location
PowerEdge R740/R740xd Installation Service Manuals	This manual, available in PDF format, provides the following information: · 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 R740/R740xd Getting Started Guide	This guide ships with the system, and is also available in PDF format. This guide provides the following information: · Initial setup steps · 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
Energy Smart Solution Advisor (ESSA)	The Dell online ESSA enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use ESSA to calculate the power consumption of your hardware, power infrastructure, and storage.	Dell.com/calc

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

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 yourgoals, thendesignandintegrateyourserversolutionforyou.

Table 29. 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

	Server Installation	Server Integration
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.

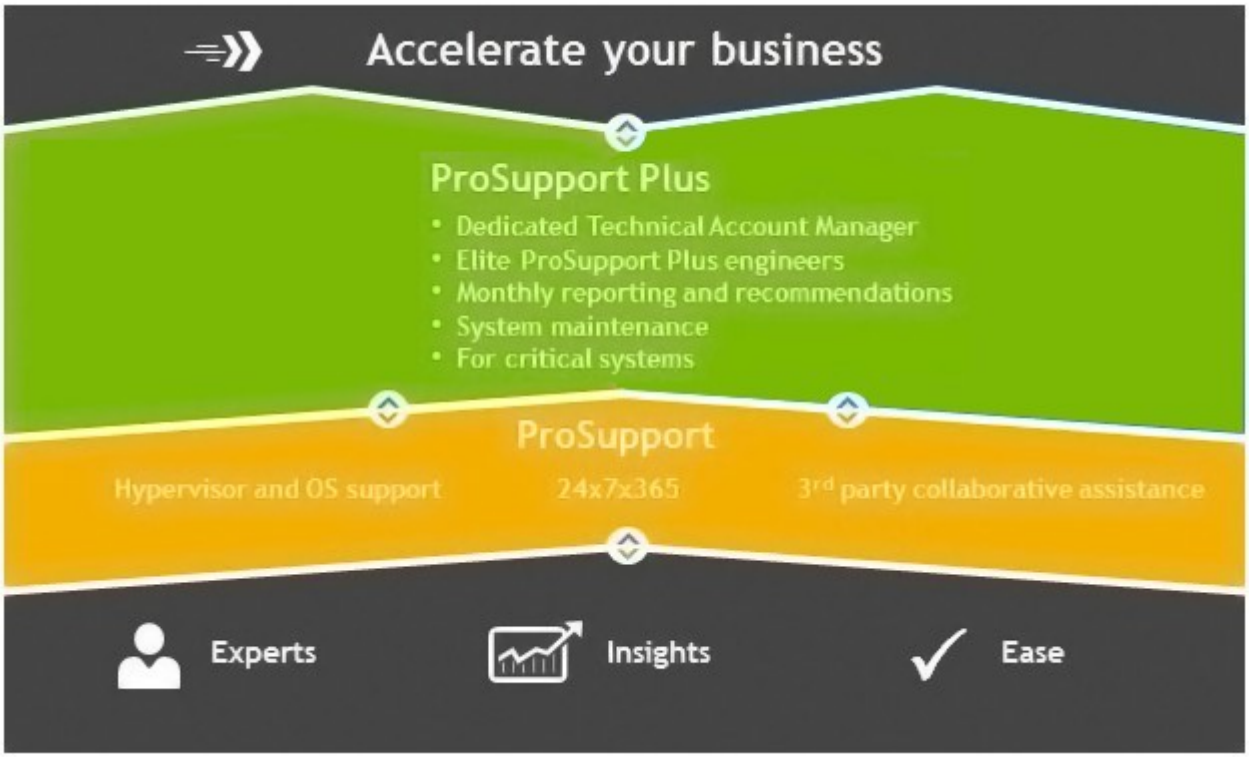


Figure 28. ProSupport Enterprise Suite

ProSupport Plus (for business-critical servers)

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.

	ProSupport	ProSupport Plus	ProSupport Flex for Data Center
Technical support access	24x7	24x7	24x7
Parts and labor response	NBD or Mission Critical	NBD or Mission Critical	Flexible
TechDirect online cases and dispatch	✓	✓	✓
SupportAssist remote monitoring	✓	✓	✓
Dispatch monitoring and crisis management	✓	✓	✓
Escalation management	✓	✓	✓
Hypervisor and OS support	✓	✓	✓
Collaborative 3rd party software support	✓	✓	✓
SupportAssist proactive resolution	✓	✓	✓
Direct access to elite ProSupport Plus engineers		✓	✓
Dedicated Technical Account Manager		✓	✓
Monthly health check and performance recommendations		✓	✓
Monthly contract renewal and service history reporting		✓	✓
System maintenance (as needed)		✓	✓
Dedicated technical and field support teams			✓
Site-wide entitlement and contract			✓
Case management API			✓

Figure 29. 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.

Appendix. Supported processor for R740／R740xd

CPU	Cores	Speed(GHz)	Memory Speed	TDP(W)	threads
Bronze3104	6	1.7	2133	85	6
Bronze3106	8	1.7	2133	85	8
Silver4108	8	1.8	2400	85	16
Silver4109T	8	2	2400	70	16
Silver4110	8	2.1	2400	85	16
Silver4112	4	2.6	2400	85	8
Silver4114	10	2.2	2400	85	20
Silver4116	12	2.1	2400	85	24
Gold5115	10	2.4	2400	85	20
Gold5118	12	2.3	2400	105	24
Gold5120	14	2.2	2400	105	28
Gold5122	4	3.6	2666	105	8
Gold6126	12	2.6	2666	125	24
Gold6128	6	3.4	2666	115	12
Gold6130	16	2.1	2666	125	32
Gold6132	14	2.6	2666	140	28
Gold6134	8	3.2	2666	130	16
Gold6134M	8	3.2	2666	130	16
Gold6136	12	3	2666	150	24
Gold6138	20	2	2666	125	40
Gold6140	18	2.3	2666	140	36
Gold6140M	18	2.3	2666	140	36
Gold6142	16	2.6	2666	150	32
Gold6142M	16	2.6	2666	150	32
Gold6144	8	3.5	2666	150	16
Gold6146	12	3.2	2666	165	24
Gold6148	20	2.4	2666	150	40

CPU	Cores	Speed(GHz)	Memory Speed	TDP(W)	threads
Gold6150	18	2.7	2666	165	36
Gold6152	22	2.1	2666	140	44
Gold6154	18	3	2666	200	36
Platinum8153	16	2	2666	125	32
Platinum8160	24	2.1	2666	150	48
Platinum8160M	24	2.1	2666	150	48
Platinum8164	26	2	2666	150	52
Platinum8168	24	2.7	2666	205	48
Platinum8170	26	2.1	2666	165	52
Platinum8170M	26	2.1	2666	165	52
Platinum8176	28	2.1	2666	165	56
Platinum8176M	28	2.1	2666	165	56
Platinum8180	28	2.5	2666	205	56
Platinum8180M	28	2.5	2666	205	56
Bronze3204	6	1.9	2133	85	6
Gold5215	10	2.5	2667	85	20
Gold5215L	10	2.5	2667	85	20
Gold5215M	10	2.5	2667	85	20
Gold5217	8	3	2667	115	16
Gold5218	16	2.3	2667	125	32
Gold5218N	16	2.3	2667	105	32
Gold5220	18	2.2	2667	125	36
Gold5222	4	3.8	2933	105	8
Gold6210U	20	2.5	2933	150	40
Gold6212U	24	2.4	2933	165	48
Gold6230	20	2.1	2933	125	40
Gold6238T	22	1.9	2933	125	44
Gold6240	18	2.6	2933	150	36
Gold6240Y	18	2.6	2933	150	36

CPU	Cores	Speed(GHz)	Memory Speed	TDP(W)	threads
Gold6242	16	2.8	2933	150	32
Gold6244	8	3.6	2933	150	16
Gold6248	20	2.5	2933	150	40
Gold6252	24	2.1	2933	150	48
Gold6254	18	3.1	2933	200	36
Platinum8253	16	2.2	2933	125	32
Platinum8256	4	3.8	2933	105	8
Platinum8260	24	2.4	2933	165	48
Platinum8260L	24	2.4	2933	165	48
Platinum8260M	24	2.4	2933	165	48
Platinum8260Y	24	2.4	2933	165	48
Platinum8268	24	2.9	2933	205	48
Platinum8270	26	2.7	2933	205	52
Platinum8276	28	2.2	2933	165	56
Platinum8276L	28	2.2	2933	165	56
Platinum8276M	28	2.2	2933	165	56
Platinum8280	28	2.7	2933	205	56
Platinum8280L	28	2.7	2933	205	56
Platinum8280M	28	2.7	2933	205	56
Silver4208	8	2.1	2400	85	16
Silver4209T	8	2.2	2400	70	16
Silver4210	10	2.2	2400	85	20
Silver4214	12	2.2	2400	85	24
Silver4214Y	12	2.2	2400	85	24
Silver4215	8	2.5	2400	85	16
Silver4216	16	2.1	2400	100	32