

PowerEdge R630



Technical Guide



Ultra-dense, configurable, 2-socket, 1U versatile rack server for virtualization environments, large business applications or transactional databases



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1 System overview

Introduction

The Dell™ PowerEdge™ R630 is Dell's latest 2-socket, 1U rack server designed to run complex workloads using highly scalable memory, I/O capacity and flexible network options. The R630 features the Intel® Xeon® processor E5-2600 v3 product family, up to 24 DIMMs, PCI Express® (PCIe) 3.0 enabled expansion slots, and a choice of NIC technologies.

The PowerEdge R630 is a general-purpose platform with highly expandable memory (up to 768GB) and impressive I/O capabilities to match. The R630 can readily handle very demanding workloads, such as data warehouses, e-commerce, virtual desktop infrastructure (VDI), databases and high-performance computing (HPC).

The R630 brings a new dimension to dense rack servers with up to 24 x 1.8" solid-state drives (SSD) available in a single 1U chassis. The 24 drives can be zoned to add a second Dell PowerEdge RAID Controller (PERC) controller for maximum IOPS performance.

Manage data overload

Keep pace with the explosion of data in the virtual age with the flexible I/O and storage capabilities of the R630. You can quickly access and process vast amounts of data with up to 24 internal hot-plug SSDs. The R630 is a great solution for any midsize or large business that requires scalability in storage capacity while optional hot-plug, front-access Express Flash PCIe SSDs (up to 4) enable performance-enhancing, in-box storage tiering.

Tailor your network fabric

The R630 allows you to tailor your network throughput to match your application needs, enabling added I/O performance. Dell's flexible NIC technology Select Network Adapters, or Network Daughter Cards (NDC), let you choose the right network fabric without using a valuable PCI slot. You can pick speed, technology, vendor and other options, like switch independent partitioning that lets you share and manage bandwidth on 10GbE connections.

Virtualize more

Maximize your data center's application capacity by expanding your virtual environment using the large memory footprint of the R630. Choose an industry-leading hypervisor and take advantage of our system management capability to manage both physical and virtual assets. Redundant failsafe hypervisors can also help maximize your virtual machines' uptime. Dell's Virtual Integrated System (VIS) solution lets you enable complex virtualization environments in just a few mouse clicks.

Dell OpenManage systems management

The Dell OpenManage™ systems management portfolio includes the Integrated Dell Remote Access Controller 8 (iDRAC8) with Lifecycle Controller. Dell embedded server management features help IT administrators manage Dell servers in physical, virtual, local and remote environments, operating in-band or out-of-band, with or without a systems management software agent. OpenManage also integrates with and connects to third-party systems management solutions so you can maintain your single point of control and capitalize on your existing investment. OpenManage solutions simplify the lifecycle of deploying, updating, monitoring and maintaining your PowerEdge servers.

New technologies

Table 1 lists the new technologies featured on the PowerEdge R630 server.

Table 1. New technologies

New technology	Detailed description
Intel Xeon Processor E5-2600 v3 product family	The Intel Xeon processor E-2600 v3 product family has embedded PCIe lanes for improved I/O performance. See the Processor section for details.
Intel C610 series chipset	The R630 server uses the Intel Platform Controller Hub (PCH) chip.
2133MT/s DDR4 memory	Certain models of the E5-2600 v3 processors support 2133MT/s memory. The R630 supports three DIMMs per channel at 1866MT/s with these processors. See the Memory section for details.
Next-generation PERC options	The R630 supports the new PERC9 cards with improved functionality and faster performance. See the Storage section for details.
PERC S130	This new software RAID solution supports RAID 0, 1, 5 and 10, and supports a maximum of eight hot-plug SATA HDDs or SATA SSDs. See the Storage section for details.
iDRAC8 with Lifecycle Controller	The new embedded systems management solution for Dell servers features hardware and firmware inventory and alerting, data center level power monitoring, faster performance and many more features. See the Dell OpenManage systems management section for details.
iDRAC Quick Sync	This is a new at-the-box management solution that allows mobile devices to sync with the PowerEdge server by touching an Android mobile device against the Quick Sync hardware located in the bezel to gather system information including system status and logs. The mobile application also allows the user to make changes to the system configuration.
iDRAC Direct	The front USB port on R630 (marked with tool symbol) provides direct access to the iDRAC GUI via a laptop browser. An A-to-A USB cable is required to use this feature. This port can also be used to upload xml configuration files to the iDRAC.
Failsafe hypervisors	The internal dual SD module enables Dell's unique Failsafe Virtualization architecture, ensuring uptime by providing failover capability for embedded hypervisors, such as VMware® vSphere® ESXi™. See the Supported virtualization section for details.
Dell Fresh Air 2.0	Dell has tested and validated select 13 th generation PowerEdge servers that operate at higher temperatures helping you reduce your hours of economization or even go chiller-less. See the Power, thermal and acoustics section for details.
12Gb/s SAS	With fourth-generation SAS (SAS-3), we will again see a doubling of interface bandwidth, now reaching 12Gb/s. 12Gb/s SAS-3 addresses signal quality through "transmitter training." This gives one of the receiver device's key interconnects, its PHY, the ability to modify the settings of the transmitter device's PHY.
6Gb/s SATA	SATA revision 3.0 runs with a native transfer rate of 6Gb/s, and taking 8b/10b encoding into account, the maximum uncoded transfer rate is 4.8Gb/s (600MB/s). The theoretical burst throughput of SATA 3.0 is double that of SATA revision 2.0.



New technology	Detailed description
Next-generation Express Flash drives	Dell Express Flash PCIe SSDs provide fast performance without requiring processor resources or capturing DRAM. The R630 supports up to four Express Flash drives. See the Storage section for details.
1.8" SSD	The application of 1.8" form factor SATA SSDs has been expanded from the PowerEdge M420 half-height blade to rack servers. These SSDs provide a high spindle count fast cache layer for tiered storage applications.
USB 3.0	USB 3.0 can operate in both USB 2.0 and USB 3.0 speed modes. USB 3.0 driver is required to control USB device in USB 3.0 speed mode.



2 System features

Compared to previous generations, the Dell PowerEdge R630 offers faster processing power, more drive bay options, more PCIe slots, next-generation RAID controllers and advanced system management.

Comparison of PowerEdge systems

Table 2 compares some of the features of the R630 to the R620.

Table 2. Comparing the PowerEdge R620 to PowerEdge R630

Feature	PowerEdge R620	PowerEdge R630
Chassis	1U rack	1U rack
Processors	Intel Xeon processor E5-2600 and E5-2600 v2 product family	Intel Xeon processor E5-2600 v3 product family
Internal interconnect	Intel QuickPath Interconnect	Intel QuickPath Interconnect
Memory	24 x DDR3 RDIMM, UDIMM, and LRDIMM Up to 1.5TB ¹	24 x DDR4 RDIMM and LRDIMM Up to 768GB
Disk drives	2.5" 6Gb/s SAS, 3Gb/s SATA	2.5", 1.8" 12Gb/s SAS, 6Gb/s SATA
RAID controller	PERC S110, H310, H710, H710P, H810 (external)	PERC S130, H330, H730, H730P, H810/H830 (external)
Express Flash PCIe SSDs	Up to 2	Up to 4
PCI slots	3 PCIe 3.0	3 PCIe 3.0 (option to eliminate Riser 1)
Embedded NICs	Select Network Adapter: 4 x 1GbE, 2 x 10GbE	Select Network Adapter: 4 x 1GbE, 2 x 10GbE, 4 x 10GbE
Power supplies	Hot-plug, redundant power supply units: 495W AC, 750W AC, 750W AC mixed mode, 1100W AC, 1100W DC	Hot-plug, redundant power supply units: 495W AC, 750W AC, 750W AC mixed mode ² , 1100W AC, 1100W DC
USB	USB 2.0	USB 3.0 (back and internal ports only)
Dell OpenManage Systems Management	OpenManage Essentials OMSA Agent OpenManage Power Center (requires iDRAC7 Enterprise with Lifecycle Controller) OpenManage Integrations and Connections iDRAC7 Express with Lifecycle Controller (standard option)	OpenManage Essentials Dell Management Console OMSA Agent OpenManage Power Center (requires iDRAC8 Enterprise with Lifecycle Controller) OpenManage Integrations and Connections iDRAC8 Express with Lifecycle Controller (standard option)



Feature	PowerEdge R620	PowerEdge R630
Support for internal GPU	Yes (available through CFI or field upgrade only)	Not supported
Power efficiency	Titanium, Platinum+, Platinum	Titanium, Platinum+, Platinum
Availability	Hot-plug drives Hot-plug redundant cooling Hot-plug redundant power supply units Internal dual SD module support	Hot-plug drives Hot-plug redundant cooling Hot-plug redundant power supply units Internal dual SD module support (next generation)

¹GB means 1 billion bytes and TB equals 1 trillion bytes; actual capacity varies with preloaded material and operating environment and will be less.

²750W mixed mode PSU available only in China.

Specifications

Table 3 summarizes the specifications for the PowerEdge R630 features. For the latest information on supported features for the PowerEdge R630, visit the R630 page on [Dell.com](https://www.dell.com).

Table 3. Technical specifications

Feature	PowerEdge R630 technical specification
Form factor	1U rack
Processors	Intel Xeon processor E5-2600 v3 product family
Processor sockets	2 sockets
Internal interconnect	2 Intel Quick Path Interconnect (QPI) links: up to 9.6GT/s
Cache	2.5MB per core; core options: 4, 6, 8, 10, 12, 16, 18
Chipset	Intel C610 series chipset
Memory¹	Up to 768GB (24 DIMM slots): 4GB/8GB/16GB/32GB DDR4 up to 2133MT/s
I/O slots	Up to 3 x PCIe 3.0 slots plus dedicated PERC slot
RAID controller	Internal controllers: PERC S130 (SW RAID), PERC H330, PERC H730, PERC H730P External HBAs (RAID): PERC H830 External HBAs (non-RAID): 12Gb/s SAS HBA
Disk drives	Internal hard drive bay and hot-plug backplane: Up to 24 x 1.8" SATA SSD Up to 10 x 2.5" HDD: SAS, SATA, nearline SAS SSD: SAS, SATA, Up to 4 NVMe PCIe Up to 8 x 2.5" HDD: SAS, SATA, nearline SAS SSD: SAS, SATA



Feature	PowerEdge R630 technical specification
Maximum internal storage	HDD: SAS, SATA, nearline SAS SSD: SAS, SATA, NVMe PCIe 24 x 1.8" SSD: Up to 23TB using 0.96TB hot-plug SATA SSD 10 x 2.5": Up to 18TB using 1.8TB hot-plug SAS HDD 8 x 2.5": Up to 14TB using 1.8TB hot-plug SAS HDD
Embedded NIC	4 x 1GbE, 2 x 1GbE + 2 x 10GbE, 4 x 10GbE
Power supply	Titanium efficiency 750W AC power supply; 1100W DC power supply; Platinum efficiency 495W AC, 750W AC, 1100W AC
Availability	ECC memory, hot-plug hard drives, hot-plug redundant cooling, hot-plug redundant power, internal dual SD module, single device data correction (SDDC), spare rank, support for high availability clustering and virtualization, proactive systems management alerts
Systems management	<p>Systems management: IPMI 2.0 compliant; Dell OpenManage Essentials; Dell OpenManage Mobile; Dell OpenManage Power Center</p> <p>Remote management: iDRAC8 with Lifecycle Controller, iDRAC8 Express (default), iDRAC8 Enterprise (upgrade); 8GB vFlash media (upgrade), 16GB vFlash media (upgrade) iDRAC Quick Sync</p> <p>Dell OpenManage Integrations:</p> <ul style="list-style-type: none"> • Dell OpenManage Integration Suite for Microsoft® System Center • Dell OpenManage Integration for VMware® vCenter™ <p>Dell OpenManage Connections:</p> <ul style="list-style-type: none"> • HP Operations Manager, IBM Tivoli® Netcool® and CA Network and Systems Management • Dell OpenManage Plug-in for Oracle® Database Manager
Rack support	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	<p>Microsoft® Windows Server® 2008 R2 Microsoft Windows Server 2012 Microsoft Windows Server 2012 R2 Novell® SUSE® Linux Enterprise Server Red Hat® Enterprise Linux® VMware® ESX®</p> <p>Virtualization options: Microsoft Windows Server 2012 R2 with Hyper-V Citrix® XenServer® VMware vSphere ESXi For more information on the specific versions and additions, visit Dell.com/OSsupport.</p>
OEM-ready version available	From bezel to BIOS to packaging, your servers can look and feel as if they were designed and built by you. For more information, visit Dell.com/OEM .
Recommended support	Dell ProSupport Plus for critical systems or Dell ProSupport for premium hardware and software support for your PowerEdge solution. Consulting and deployment offerings are also available. Contact your Dell representative today for more information. Availability and terms of Dell Services vary by region. For more information, visit Dell.com/Service .

¹GB means 1 billion bytes and TB equals 1 trillion bytes; actual capacity varies with preloaded material and operating environment and will be less.



3 Chassis views and features

The Dell PowerEdge R630 is a 1U rack system with an 8-drive, 10-drive or 24-drive bay chassis design.

Chassis views

The R630 has three chassis options: 8 x 2.5" drives, 10 x 2.5" drives or 24 x 1.8" drives. A chassis cannot be reconfigured or upgraded after point of purchase. Other features on the front panel include an interactive LCD control panel, USB management port, video connector and vFlash media card slot.

Figure 1 is the front view of the R630 chassis with 8 x 2.5" hard drives.

Figure 1. 8-drive bay chassis front view without bezel



Figure 2 is the front view of the R630 chassis with 10 x 2.5" hard drives.

Figure 2. 10-drive bay chassis front view without bezel



Figure 3 is the front view of the R630 chassis with 24 x 1.8" hard drives.

Figure 3. 24-drive bay chassis front view without bezel



Figure 4 shows the optional bezel on the front of an 8-drive bay chassis. The bezel for the 10-drive bay chassis is different than the bezel for the 8-drive bay chassis.

Figure 4. Front view with bezel



Figure 5 shows the R630 back panel of the 8-drive bay chassis with 3 PCIe slots. Features on the back panel include the system identification light and button, iDRAC8 Enterprise port (activated only when iDRAC8 Enterprise is installed), serial connector, video connector, USB connectors, Ethernet connectors and power supplies.

Figure 5. Back view

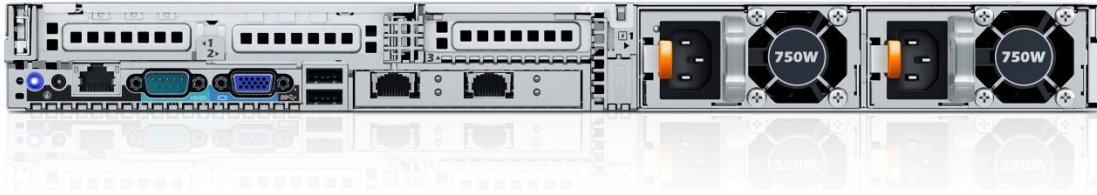
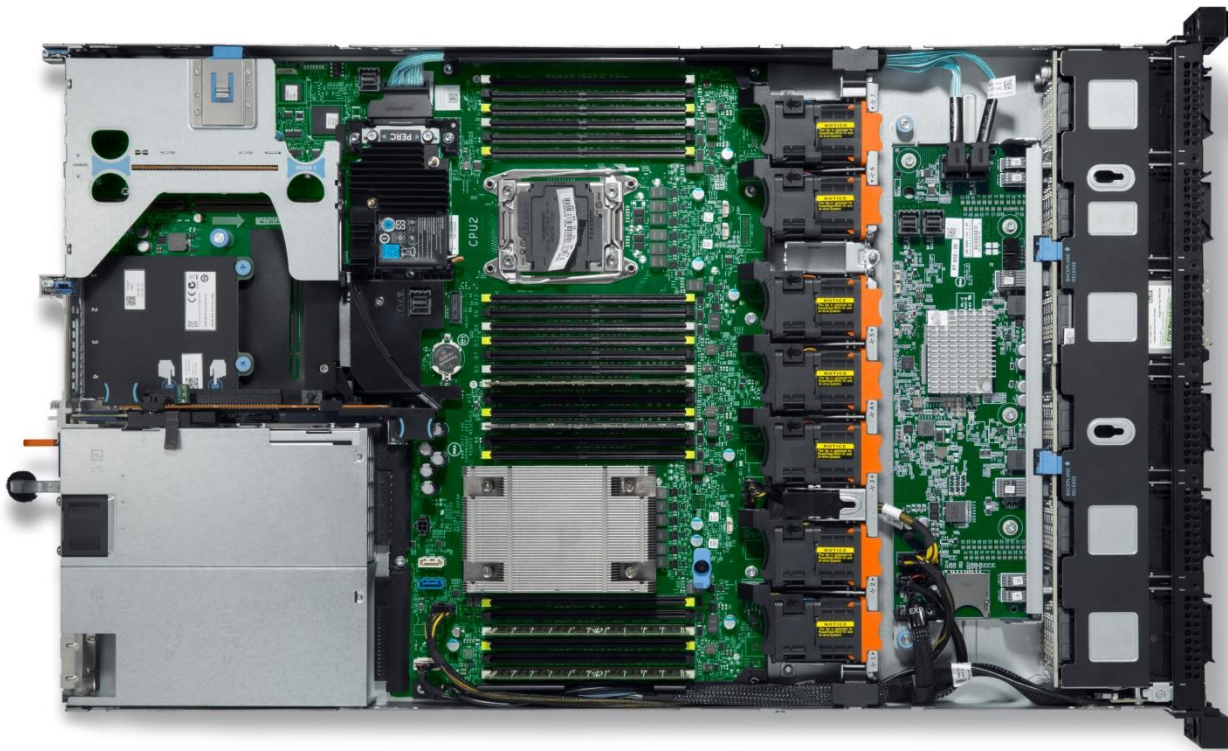


Figure 6 is an internal view of the R630 24-drive bay system including fans, DIMMs, power supplies, system board and hard drive bays.

Figure 6. 24-drive 1.8" bay chassis internal view



For additional system views, see the *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals.



Chassis features

Table 4 lists the features on the R630 chassis. For additional information, see the *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals.

Table 4. Chassis features

Feature	Description
Power button	ACPI-complaint power button with an integrated green power LED
Front bezel	Covers the system's front-loading hard drives; can be locked to prevent hard drives from being removed
NMI button	Recessed non-maskable interrupt (NMI) button used to troubleshoot software and device driver errors; use only if directed to do so by qualified support personnel or by the operating system's documentation
System identification button	Buttons on the back and front of a system to help identify the unit in a data center environment
Hard drive activity LED	Indicates the status and activity
Hard drives	Up to 10 x 2.5" drives and up to 24 x 1.8" drives
USB connectors	8-drive bay chassis: 2 on front, 2 on back, 1 internal 10-drive and 24-drive bay chassis: 1 mini on front, 2 on back, 1 internal
vFlash media reader	Activated when iDRAC8 Enterprise is installed; located on 8-drive bay front panel and inside the 10-drive bay and 24-drive chassis on the hard drive backplane
Information tag	Slide-out label panel for recording system information
Video connector	Connects a monitor to the system
LCD control panel	8-drive bay chassis: displays system ID, status information, and system error messages; two navigation buttons to scroll through the menu on the LCD and one select button
Diagnostic LED	10-drive and 24-drive bay chassis: displays error status during system startup
Optical drive	Optional ultra-slim (9.5mm) SATA DVD drive or DVD+RW drive
Tape drive	Optional external tape drive through the SAS 6Gb/s HBA
Power supply units	Supplies power to the system
Power supply indicators	Indicates whether system has power
NIC indicators	Indicates network activity and status
PCIe expansion card slots	Connects up to three PCIe expansion cards
Ethernet connectors	Choices of network connectors through the Select Network Adapter
Serial connector	Connects system to serial device and for console redirect
iDRAC8 Enterprise port	Dedicated management port for optional iDRAC8 Enterprise
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 information tag for information specific to the server by service tag



Control panels, LCD and LED

For more information about the R630 control panels, see the *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals.

8-drive bay chassis

The LCD control panel on the front of the R630 8-drive bay chassis (Figure 7) has these features:

- ACPI-complaint power button with an integrated green power LED
- 128 x 20 pixel LCD panel with controls
- Two navigation buttons and one select button
- NMI and system ID buttons
- Ambient temperature sensor
- Two external USB 2.0 connectors, one of which has iDRAC access
- System ID EEPROM (for differentiating between PowerEdge, PowerVault and other systems)

Figure 7. LCD control panel for 8-drive bay chassis



10-drive and 24-drive bay chassis

The LED control panel on the front of the R630 10-drive and 24-drive bay chassis as shown in Figure 8 has the following features:

- ACPI-complaint power button with an integrated green power LED
- NMI button
- One system ID button
- Ambient temperature sensor
- One external USB 3.0 connector on the right ear (shipped from the factory in USB 2.0 mode)
- Front VGA port on the right ear
- System ID EEPROM (for differentiating between PowerEdge, PowerVault and other systems)

Figure 8. LED control panel for 10-drive and 24-drive bay chassis



Quick Resource Locator

The QRL is a model-specific Quick Response code located on the R630 chassis as shown in Figure 9.

Figure 9. QRL on chassis



The QRL on the pull-out information (luggage) tag provides information specific to the server by service tag.

Figure 10. QRL on information tag



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

- 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

Figure 11. Accessing a QRL



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.



Security features

The latest generation of PowerEdge servers has the features listed in Table 5 to help ensure the security of your data center.

Table 5. Security features

Security feature	Description
Cover latch	A tooled latch is integrated in the side cover to secure it to the rack chassis.
Bezel	A standard bezel is an optional metal bezel mounted to the chassis front and shows the Dell ID. A lock on the bezel protects unauthorized access to hard drives. NFC bezel enables the iDRAC QuickSync management function for managing the server from the front using an NFC-capable device and the free Dell OpenManage Mobile App (currently Android only). Available only from the factory and not supported after purchase of sale.
TPM	The Trusted Platform Module (TPM) is used to generate/store keys, protect/authenticate passwords, and create/store digital certificates. It also supports the Intel Xeon TXT functionality. TPM can also be used to enable the BitLocker™ hard drive encryption feature in Windows Server 2008. TPM 1.2 is supported.
Power-off security	BIOS has the ability to disable the power button function.
Intrusion alert	An internal switch is used to detect chassis intrusion.
Secure mode	BIOS has the ability to enter a secure boot mode through system setup. This mode includes the option to lock out the power and NMI switches on the control panel or set up a system password.



4 Processor

The Dell PowerEdge R630 server features the exceptional performance, value and power efficiency of the Intel Xeon processor E5-2600 v3 product family. These processors provide high performance no matter what your constraint — floor space, power, or budget — and on workloads that range from the most complicated scientific exploration to crucial web-serving and infrastructure applications. In addition to providing raw performance gains, improved I/O is also made possible with Intel Integrated I/O, which can reduce latency by adding more lanes and doubling bandwidth. This helps to reduce network and storage bottlenecks, unleashing the processor's performance capabilities.

Processor features

The new Intel Xeon processor E5-2600 v3 product family not only adds new features, but also improves upon many features of the predecessor Intel Xeon processor E5-2600 v2 product family, including:

- Up to 18 execution cores per processor
- Each core supports two threads for up to 36 threads per processor
- 46-bit physical addressing and 48-bit virtual addressing
- 1GB large page support
- 32 kB instruction and 32 kB data first-level cache (L1) for each core
- 256 kB shared instruction/data mid-level cache (L2) for each core
- Up to 35MB last level cache (LLC) shared among all cores: up to 2.5MB per core
- Two QPI links up to 9.6GT/s
- Four DMI2 lanes
- 40 PCIe 3.0 links capable of 8.0GT/s
- Socket R, 2011-land FCLGA10 package
- No termination required for non-populated CPU (must populate CPU socket 1 first)
- Integrated 4-channel DDR4 memory controller (not all processors support 2133MT/s memory)
- 64 byte cache line size
- Execute Disable Bit
- Support for CPU Turbo Mode
- Increases CPU frequency if operating below thermal, power, and current limits
- Streaming SIMD (Single Instruction, Multiple Data) Intel Advanced Vector Extensions (Intel AVX)
- Intel 64 Technology
- Intel VT-x and VT-d Technology for virtualization support
- Enhanced Intel SpeedStep Technology
- Demand-based switching for active CPU power management as well as support for ACPI P-States, C-States, and T-States

For more information on Intel Xeon processor E5-2600 v3 product family, visit Intel.com.



Supported processors

The R630 supports up to two processors with up to 18 cores per processor. The PowerEdge R630 supports the Intel Xeon processors listed in Table 6. For the latest information on supported processors, visit the R630 page on Dell.com.

Table 6. Supported processors

Model	Speed	Cache	QPI	Max memory speed	Cores/Threads	Turbo	TDP
E5-2699 v3	2.3GHz	45M	9.6GT/s	2133	18/36	Turbo	145W
E5-2698 v3	2.3GHz	40M	9.6GT/s	2133	16/32	Turbo	135W
E5-2697 v3	2.6GHz	35M	9.6GT/s	2133	14/28	Turbo	145W
E5-2695 v3	2.3GHz	35M	9.6GT/s	2133	14/28	Turbo	120W
E5-2690 v3	2.6GHz	30M	9.6GT/s	2133	12/24	Turbo	135W
E5-2683 v3	2.0GHz	35M	9.6GT/s	2133	14/28	Turbo	120W
E5-2680 v3	2.5GHz	30M	9.6GT/s	2133	12/24	Turbo	120W
E5-2670 v3	2.3GHz	30M	9.6GT/s	2133	12/24	Turbo	120W
E5-2660 v3	2.6GHz	25M	9.6GT/s	2133	10/20	Turbo	105W
E5-2650 v3	2.3GHz	25M	9.6GT/s	2133	10/20	Turbo	105W
E5-2640 v3	2.6GHz	20M	8.0GT/s	1866	8/16	Turbo	90W
E5-2630 v3	2.4GHz	20M	8.0GT/s	1866	8/16	Turbo	85W
E5-2620 v3	2.4GHz	15M	8.0GT/s	1866	6/12	Turbo	85W
E5-2609 v3	1.9GHz	15M	4.0GT/s	1600	6/6	NA	85W
E5-2603 v3	1.6GHz	15M	4.0GT/s	1600	6/6	NA	85W
E5-2687W v3	3.1GHz	25M	9.6GT/s	1866	10/20	Turbo	160W
E5-2650L v3	1.8GHz	30M	9.6GT/s	2133	12/24	Turbo	65W
E5-2630L v3	1.8GHz	20M	8.0GT/s	1866	8/16	Turbo	55W
E5-2667 v3	3.2GHz	20M	9.6GT/s	2133	8/16	Turbo	135W
E5-2643 v3	3.4GHz	20M	9.6GT/s	2133	6/12	Turbo	135W
E5-2637 v3	3.5GHz	15M	9.6GT/s	2133	4/8	Turbo	135W
E5-2623 v3	3.0GHz	10M	8.0GT/s	1866	4/8	Turbo	105W

For information on processor installation and configuration, see the *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals.

Chipset

The PowerEdge R630 uses the Intel C610 chipset. For more information, visit Intel.com.



5 Memory

The Dell PowerEdge R630 supports up to 768GB of memory (24 DIMMs) and speeds up to 2133MT/s, providing high performance in a variety of applications. High memory density means there is no compromise when it comes to virtualization.

The R630 supports both registered DIMMs (RDIMM) and load-reduced DIMMs (LRDIMMs), which use a buffer to reduce memory loading and provide greater density, allowing for the maximum platform memory capacity. Unbuffered DIMMs (UDIMMs) are not supported.

DIMMs supported

The R630 server supports the memory technologies listed in Table 7.

Table 7. Memory technologies supported

Feature	RDIMM	LRDIMM
Register	Yes	Yes
Buffer	No	Yes
Frequencies	Up to 2133MT/s	Up to 2133MT/s
Ranks supported	Single or dual rank	Quad rank
Capacity per DIMM	4, 8, 16 or 32GB	32GB
Maximum DIMMs per channel	3	3
DRAM technology	x4 or x8	x4
Temperature sensor	Yes	Yes
Error Correction Code (ECC)	Yes	Yes
Single Device Disable Code (SDDC)	Yes	Yes
Address parity	Yes	Yes

The R630 supports the DIMMs listed in Table 8. For the latest information on supported memory, visit the R630 page on Dell.com.

Table 8. DIMMs supported

DIMM capacity	DIMM speed	DIMM type	Ranks per DIMM	Data width	SDDC support	Voltage
4	2133	RDIMM	1	x8	Advanced ECC	1.2
8	2133	RDIMM	2	x8	Advanced ECC	1.2
16	2133	RDIMM	2	x4	All modes	1.2
32	2133	LRDIMM	4	x4	All modes	1.2



DIMM speed

The R630 supports memory speeds of 2133MT/s, 1600MT/s, 1333MT/s, 1066MT/s and 800MT/s, depending on the DIMM types installed and the configuration. All memory on all processors and channels run at the same speed and voltage. By default, the systems run at the highest speed for the channel with the lowest DIMM voltage and speed. The operating speed of the DIMM is also determined by the maximum speed supported by the processor, the speed settings in the BIOS, and the operating voltage of the system. Not all processors support 2133MT/s memory speed.

Table 9. Memory configuration and performance

DIMM type	DIMM ranking	Capacity	DIMM rated voltage, speed	1 DPC	2 DPC	3 DPC
RDIMM	1R and 2R	4GB, 8GB, 16GB	DDR4 (1.2V), 2133MT/s	2133MT/s	2133MT/s	1866MT/s
LRDIMM	4R	32GB	DDR4 (1.2V), 2133MT/s	2133MT/s	2133MT/s	1866MT/s

Memory configurations

The R630 server supports flexible memory configurations ranging from capacities of 4GB to 768GB. The system supports up to 12 DIMMs per processor (up to 24 DIMMs in a dual-processor configuration). The R630 has four memory channels per processor, with each channel supporting up to three DIMMs.

The R630 supports a flexible memory configuration, according to these basic rules:

- Speed: If DIMMs of different speeds are mixed, all channels across all processors operate at the slowest DIMM's common frequency.
- DIMM type: Only one type of DIMM is allowed per system, either RDIMM or LRDIMM.

Memory population guidelines

The following memory population guidelines apply to the R630:

- Can mix DIMMs with x4 and x8 data widths
- Can mix DIMMs with different capacities
 - Population rules require the largest capacity DIMM be placed first
 - Maximum of two different capacity DIMMs allowed in a system
- Can mix DIMMs with different ranks; maximum of two different rank DIMMs allowed in a system

Table 10. Memory populations and operating frequencies

DIMM type	DIMM populated per channel	Operating frequency (MT/s)	Maximum DIMM ranks per channel
RDIMM	1	2133, 1866, 1600, 1333	Dual rank or single rank
	2		
	3	1866, 1600, 1333	
LRDIMM	1	2133, 1866, 1600, 1333	Quad rank
	2		
	3	1866, 1600, 1333	

For more information on memory configuration, see the *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals.



Memory RAS features

Reliability, availability and serviceability (RAS) features help keep the system online and operational without significant impact to performance, and can decrease data loss and crashing due to errors. RAS aids in rapid, accurate diagnosis of faults which require service. Table 11 describes the RAS features supported on the R630.

Table 11. Memory RAS features

Feature	Description
Dense configuration optimized profile	Increased memory reliability can result from this selectable platform profile that adjusts parameters to reduce faults regarding refresh rates, speed, temperature and voltage.
Memory demand and patrol scrubbing	Demand scrubbing is the ability to write corrected data back to the memory once a correctable error is detected on a read transaction. Patrol scrubbing proactively searches the system memory, repairing correctable errors.
Recovery from single DRAM device failure	Recovery from Single DRAM Device Failure (SDDC) provides error checking and correction that protects against any single memory chip failure as well as multi-bit errors from any portion of a single memory chip.
Failed DIMM isolation	This feature provides the ability to identify a specific failing DIMM channel pair, thereby enabling the user to replace only the failed DIMM pair.
Memory mirroring	Memory mirroring is a method of keeping a duplicate (secondary or mirrored) copy of the contents of memory as a redundant backup for use if the primary memory fails. The mirrored copy of the memory is stored in memory of the same processor socket.
Memory address parity protection	This feature provides the ability to detect transient errors on the address lines of the DDR channel.
Memory sparing (rank)	Memory sparing allocates one rank per channel as a spare. If excessive correctable errors occur in a rank or channel, it is moved to the spare area while the operating system is running to prevent the error from causing an uncorrectable failure.
Memory thermal throttling	This feature helps to optimize power/performance and can also be used to prevent DIMMs from overheating.

For information on memory mirroring and sparing configurations, see the *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals.



6 Storage

The Dell PowerEdge R630 provides storage expandability that allows you to adapt to your workload and operational demands. With comprehensive storage options, the R630 offers various drive types, internal and external storage controllers, and different chassis and backplanes for varied numbers of drives.

Features such as Express Flash PCIe SSDs and DAS Cache provide vastly accelerated performance over previous technologies. Dell Express Flash drives use PCIe lanes to connect directly to the processor and chipset and are easily accessible through a hot-plug drive bay.

Internal storage

With the 8-drive bay, 10-drive bay or 24-drive bay chassis options, the R630 supports five internal storage options as shown in Table 12.

Table 12. Storage options

Storage option	Storage controller and quantity
Up to 8 x 2.5" SAS, NL-SAS, SATA HDDs or SAS, SATA SSDs (2 PCIe slots)	1 x PERC S130, H330, H730, H730P
8 x 2.5" SAS, NL-SAS, SATA HDDs or SAS, SATA SSDs (3 PCIe slots)	1 x PERC S130, H330, H730, H730P
Up to 10 x 2.5" SAS, NL-SAS, SATA HDD or SAS, SATA SSDs	1 x PERC H330, H730, H730P
Up to 10 x 2.5" SAS, NL-SAS, SATA HDDs with up to 4 NVMe PCIe SSDs	1 x PERC H330, H730, H730P
Up to 24 x 1.8" SATA SSDs	1 or 2 x PERC H330, H730, H730P

Note: A backplane cannot be upgraded or reconfigured after point of purchase.

Supported drives

The R630 supports the drives listed in Table 13. For additional information, visit the R630 page on Dell.com.

Table 13. Supported drives

Form factor	Type	Speed (RPM)	Capacities
2.5"	SATA (6Gb)	7.2K	250GB, 500GB, 1TB
	NL-SAS (6Gb)	7.2K	500GB, 1TB*
	SAS (6Gb)	10K	300GB, 600GB, 1.2TB*, 1.8TB*
	SAS (6Gb)	15K	300GB, 600GB*
	SATA SSD (mix use, 6Gb)	N/A	100GB, 200GB, 400GB, 800GB



Form factor	Type	Speed (RPM)	Capacities
	SATA SSD (read intensive, 6Gb)	N/A	480GB, 960GB, 19.2TB
	SATA SSD (SSD boot, 6Gb)	N/A	60GB, 120GB
	SAS SSD (write intensive, 12Gb)	N/A	200GB, 400GB, 800GB
	SAS SSD (mix use, 12Gb)	N/A	200GB, 400GB, 800GB, 1.6TB
	SAS SSD (read intensive, 12Gb)	N/A	800GB, 1.6TB
	PCIe SSD	N/A	500GB, 800GB
	SATA SSD (mix use, 6Gb)	N/A	100GB, 200GB, 400GB
1.8"	SATA SSD (read intensive, 6Gb)	N/A	480GB, 960GB
	SATA SSD (SSD boot, 6Gb)	N/A	60GB, 120GB

*SED available

Express Flash drives

Express Flash drives use PCIe and SSD technologies to provide performance, scalability and optimal serviceability. Accelerated performance with high IOPS is made possible without requiring processor resources or capturing DRAM. Express Flash drives also use a standardized 2.5" hot-plug form factor that saves critical PCIe slot space by moving drives from the back to the front of the system and allows a common management process for all drives.

The PowerEdge R630 has an option to support up to four 2.5", hot-plug Express Flash PCIe SSDs in the 10 x 2.5" chassis.

External storage

The R630 supports the external storage devices types listed in Table 14. For more information, see Dell.com/Storage.

Table 14. External storage options

Device type	Description
iSCSI and FC SAN	Dell Storage PS6610 Series
	Dell EqualLogic™ PS6100/PS6210/PS6500/PS6510 Series
	Dell EqualLogic PS4100/PS4210 Series
	Dell EqualLogic PS-M4110 Series
	Dell Storage SCv2000 Series
	Dell Storage SC4020
	Dell Compellent™ SC8000
	Dell PowerVault™ MD3 iSCSI SAN
	Dell PowerVault MD3 Fibre Channel SAN



Device type	Description
DAS	Dell Storage MD1400 Series Dell PowerVault MD3 SAS
NAS options	Dell Compellent FS8600 (with SC Series) Dell EqualLogic FS76x0 (with PS Series)
Windows NAS appliances	PowerVault NX400 Dell Storage NX3230 Dell Storage NX3330
Data protection solutions	DR Series DL4000, DL1000 AppAssure vRanger NetVault
Tape options	TL1000, TL2000, TL4000, ML6000 Series

PowerEdge RAID Controllers

PERC cards provide enhanced performance, increased reliability and fault tolerance, and simplified management for a powerful, easy-to-manage way to create a robust infrastructure and help maximize server uptime. The new line, PERC9, cards feature:

- PCIe 3.0 support and 12Gb/s SAS host interface
- Significantly increased IOPS performance and throughput performance capability
- Capable of RAID as well as non-RAID operations
- FastPath™ I/O for accelerating performance when operating on SSDs
- Split Mirror function for breaking mirrored disk connection to quickly replace a drive
- Dimmer Switch™ for power control of spare or idle drives to save energy and operating expenses

The base RAID controller in the R630 is the miniPERC, which 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 secondary RAID controller is limited to the H730P low-profile PCIe controller. In two-controller systems, both controllers must be the H730P.

The R630 supports the PERC cards listed in Table 15. For more information about the latest PERC offerings, see Dell.com/PERC.



Table 15. Supported RAID controllers

Controller	Features	RAID modes supported	Form factor	Solution
PERC H830	<ul style="list-style-type: none"> External 8-port 12Gb/s SAS Supports up to 255 SAS HDDs or SSDs 2GB 1866MT/s DDR3 SDRAM non-volatile cache 	0, 1, 10, 5, 50, 6, 60	Adapter	Performance-hungry external storage environments
PERC H730P	<ul style="list-style-type: none"> Internal 8-port 12Gb/s PCIe RAID controller Supports up to 255 3Gb/s, 6Gb/s and 12Gb/s SAS or SATA HDDs or SSDs 2GB 1866MT/s DDR3 SDRAM non-volatile cache 	0, 1, 10, 5, 50, 6, 60	Mini and Adapter	Premium performance for significant performance gains
PERC H730	<ul style="list-style-type: none"> Internal 8-port 12Gb/s PCIe RAID controller Supports up to 255 3Gb/s, 6Gb/s and 12Gb/s SAS or SATA HDDs or SSDs 1GB 1866MT/s DDR3 SDRAM non-volatile cache 	0, 1, 10, 5, 50, 6, 60	Mini and Adapter	Value/performance RAID and non-RAID for high-density servers and workstations
PERC H330	<ul style="list-style-type: none"> Internal 8-port 12Gb/s PCIe RAID controller Supports 3Gb/s, 6Gb/s and 12Gb/s SAS and 3Gb/s and 6Gb/s SATA HDDs or SSDs 	0, 1, 10, 5, 50	Mini and Adapter	Low cost, entry RAID and non-RAID for high-density servers and workstations
PERC S130	<ul style="list-style-type: none"> Software RAID controller Supports up to 8 6Gb/s SATA HDDs and SSD Only available on the 8-drive 2.5" configuration Currently supports only Microsoft Windows operating systems 	0, 1, 5, 10	System board-embedded SATA	Software

Internal persistent storage

The R630 offers two types of persistent storage: Lifecycle Controller (LC 3.0) and Internal Dual SD Module (IDSDM). A vFlash option is available with iDRAC8 Enterprise.

Lifecycle Controller 3.0

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

Internal Dual SD Module

The IDSDM card provides the following major functions:

- Dual SD interface is maintained in a mirrored configuration (primary and secondary SD)
- Provides full RAID1 functionality
- Dual SD cards are not required; the module can operate with only one card but will provide no redundancy



- Enables support for Secure Digital eXtended Capacity (SDXC) cards
- USB interface to host system
- I2C interface to host system and onboard EEPROM for out-of-band status reporting
- Onboard LEDs show status of each SD card
- A BIOS Setup Redundancy setting supports Mirror Mode or Disabled

Table 16. IDSDM new features

New feature	Description
Support for RAID and Data Integrity	When RAID is enabled, writes to IDSDM will perform write operation to both SD cards simultaneously Ensures data integrity during power loss conditions
Support for USB 3.0 (higher bandwidth)	If USB 3.0 is disabled, or an error on USB 3.0 is detected, IDSDM will revert to USB 2.0
User-prioritized SD slots	User-defined primary SD slot for IDSDM; if RAID is enabled, content of primary SD card will be mirrored on secondary SD card
Bad Block management	Prevents a single bad sector from causing an SD card to fail
No more BIOS halt during rebuild	IDSDM does not require the BIOS to halt during POST and wait for the rebuild to complete; rebuild happens in the background and is much faster as compare than the previous generation
Enhanced support for mismatched SD cards	Functionality of primary SD card is not compromised if the secondary SD card has a different speed or lower storage Mismatch check will only happen if the IDSDM is operating in RAID mode Only secondary SD card will be placed in mismatch state; if the secondary card does not match the speed or have lower storage capacity than the primary card, the secondary card will be placed in the Mismatch state
Enhanced support for write-protected SD cards	Write-protected SD cards are treated as read-only; if at least one card is write-protected and RAID is enabled, IDSDM will operate in the degraded RAID state, and RAID will automatically be disabled if both cards are write-protected
Seamless SD card assignments	IDSDM will bring secondary SD card online and will make it primary if for some reason primary SD card fails If RAID is enabled, there will be no compromise in functionality however, system will notify user of degraded RAID status
Enriched error reporting	New errors have been implemented to help root cause a failure. Failures will be in iDRAC logs Multiple failures can be now recorded and logged
Mass erase for enhanced security	Mass erase options are provided in IDSDM; enabling this register will clean up all the data preset on SD cards
UHS-1 SD card support	Next-generation support



Optical drive

The R630 supports one slim, internal DVD-ROM or DVD+RW optical drive option in the 8-drive configuration only.

Tape drive

The R630 does not support internal tape drives and does supports external tape drives. See the External storage section.



7 Networking and PCIe

The Dell PowerEdge R630 offers balanced, scalable I/O capabilities, including integrated PCIe 3.0 capable expansion slots. Dell Select Network Adapters, Dell's network daughtercards (NDC), let you 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 lets you share and manage bandwidth on 10GbE connections.

Select Network Adapter

The Select Network Adapter family includes flexible LAN on motherboard (LOM) card options for the Dell PowerEdge servers. The Select Network Adapter form factor delivers the value of LOM integration with the system, including BIOS integration and shared port for manageability, while providing the flexibility of a modular card.

The R630 supports one custom NDC, as part of the Select Network Adapter family, to house the complete LOM subsystem. The R630 supports NDC options including a selection of 1GbE and 10GbE port cards, such as 1000BASE-T, 10GBASE-T and 10Gb SFP+.

Figure 12. Rack network daughter card (NDC)

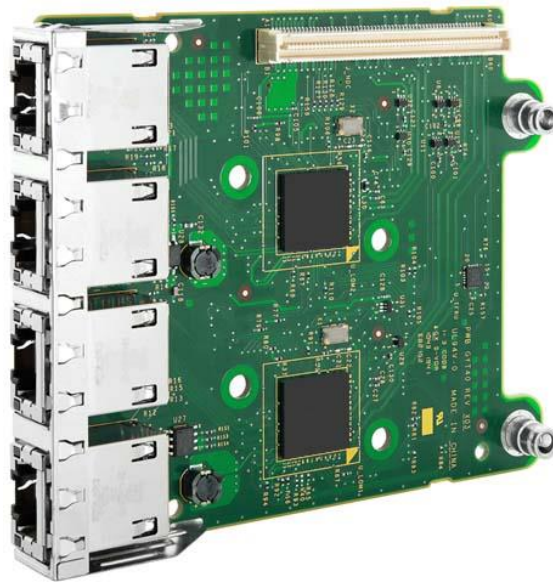


Table 17 lists the available Select Network Adapter options and supported features for the R630.

Table 17. Supported Select Network Adapter options and features

Features	Broadcom 5720 BASE-T (default)	Intel I350 BASE-T	QLogic 57800 DA/SFP+	QLogic 57800 BASE-T	Intel I350/X540 BASE-T	Intel I350/X520 2 x 1Gb BT + 2 x 10Gb SFP+	QLogic 57840S SFP+	Intel I350/X710 2x1Gb BT + 2 x 10Gb SFP+	Intel 4 x 10G x710 SFP+
Number of ports	4 x 1Gb	4 x 1Gb	2 x 1Gb + 2 x 10Gb	2 x 1Gb + 2 x 10Gb	2 x 1Gb + 2 x 10Gb	2 x 1Gb + 2 x 10Gb	4 x 10Gb	2 x 1Gb + 2 x 10Gb	4 x 10Gb
Link types	1000BASE-T	1000BASE-T	1GBASE-T, 10GBSFP+, DCA/SR	1GBASE-T, 10GBBASE-T	1GBASE-T, 10GBBASE-T	1GBASE-T, 10GBSFP+, DCA/SR	10GBASE-T, SFP+, DCA/SR	1GBASE-T, 10GBSFP+, DCA/SR	10GBASE-T, SFP+, DCA/SR
TCP Chimnet (TOE)	Not supported	Not supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
ISCSI HBA full offload	Not supported	Not supported	Supported*	Supported*	Supported*	Supported*	Supported	Post RTS	Post RTS
FCoE HBA full offload	Not supported	Not supported	Supported*	Supported*	Supported*	Supported*	Supported	Post RTS	Post RTS
FCoE boot (boot from SAN)	Not supported	Not supported	Supported*	Supported*	Supported*	Supported*	Supported	Post RTS	Post RTS
NetQueue/VMQ IOV	Not supported	Not supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
SR-IOV	Not supported	Not supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
NIC partitioning (NPAR)	Not supported	Not supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
VNTag/VEB	Not supported	Not supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported

*10GbE ports only

System management integration

With R630, the job of deploying, updating, monitoring and maintaining the Select Network Adapters is fast and easy. System management integration features include the following:

- Pre-boot: Using the Dell Lifecycle Controller graphical user interface (GUI) to set configuration such as bandwidth allocation or firmware revision level
- Post-boot: Agent-free out-of-band or high-speed in-band connection over LOM through the Operating System/BMC pass-thru feature for sensory information
- Automation of firmware and driver version deployment upon component replacement
- Automatic monitoring of NIC status and notification on SNMP traps
- Local or remote re-configuration of any NIC, physical or virtual



- PXE boot enabled on all LOM and NDCs for ease of use
- Boot from SAN (iSCSI, FCoE) configuration for networking devices through the Lifecycle Controller GUI

PCIe expansion

PCIe slots

PCIe connectivity is integrated with the processor in that the number of processors in a system impacts the number of PCIe 3.0 slots and the bandwidth of each PCIe slot.

For an R630 with one processor, one two-slot option is available:

- Two PCIe x16 slots with one x16 bandwidth and one x8 bandwidth

For an R630 with two processors, two slot options are available:

- Two PCIe x16 slots, both slots with x16 bandwidth
- Three PCIe x16 slots with two x16 bandwidth and one x8 bandwidth

Table 18 lists the details of the PCIe slot options.

Table 18. PCIe slot options

	Three PCIe slots with two processors ¹	Two PCIe slots with two processors ²	Two PCIe slots with one processor
PCIe slot 1	PCIe x16 connector with x8 bandwidth; half-length, half-height	PCIe x16 connector with x16 bandwidth; half-length, half-height	PCIe x16 connector with x8 bandwidth; half-length, half-height
PCIe slot 2	PCIe x16 connector with x16 bandwidth; half-length, half-height	PCIe x16 connector with x16 bandwidth; 3/4 length ³ , full-height	PCIe x16 connector with x16 bandwidth; 3/4 length ³ , full-height
PCIe slot 3	PCIe x16 connector with x16 bandwidth; half-length, half-height	N/A	N/A
Available with	8-, 10- or 24-drive bay chassis	8-drive bay chassis	8-drive bay chassis

¹Slot 1 and slot 2 require a second processor.

²Slot 1 requires a second processor.

³10Gb NDCs are not supported with a 3/4 length PCIe card.



PCIe expansion cards

The R630 supports a variety of PCIe expansion cards listed in Table 19.

Table 19. Optional add-in PCIe expansion cards

Type	Adapter
NIC	Broadcom® 5719 quad-port 1Gb NIC
	Broadcom 5720 dual-port 1Gb NIC
	QLogic® 57810 dual-port 10Gb BASE-T network adapter
	Intel Ethernet I350 dual-port 1Gb server adapter
	Intel Ethernet I350 quad-port 1Gb server adapter
	Intel Ethernet X540 dual-port 10GBASE-T server adapter
	Emulex® OCe14102-N1-D dual-port SFP+ 2 x 10Gb NIC
	Mellanox® ConnectX®-3 dual-port 10Gb Direct Attach/SFP+ server network adapter
	Mellanox ConnectX-3 dual-port 40Gb Direct Attach/QSFP server network adapter
Mellanox ConnectX-3 single-port FDR VPI	
HBA	Emulex LPe12000 single-port 8Gb FC HBA
	Emulex LPe12002 dual-port 8Gb FC HBA
	Emulex LPe16000B single-port 16Gb FC HBA
	Emulex LPe16002B dual-port 16Gb FC HBA, PCIe
	QLogic QLE2560 single-port 8Gb FC HBA, PCIe x8
	QLogic QLE2562 dual-port 8Gb FC HBA, PCIe x8
	QLogic QLE2660 single-port 16Gb FC HBA, PCIe x8
	QLogic QLE2662 dual-port 16Gb FC HBA, PCIe x8
CNA	Emulex OneConnect OCe14102-U1-D dual-port PCIe 10GbE CNA
	Emulex OneConnect OCm14104-U1-D, 4-port 10GbE SFP+ CNA, rNDC
	Intel Ethernet X520 dual-port SFP+/DA server adapter CNA
	Intel Ethernet X540 dual-port 10GBASE-T server adapter CNA
	Intel X710 2x10GE SFP+/DA
	Intel X710 4x10GE SFP+/DA
	QLogic 57810S 2x10GE SFP+/DA CNA
	QLogic 57810S 2x10GE 10BASE-T CNA



For the latest information on all supported add-in PCIe expansion cards for the R630, visit the R630 page on Dell.com. For more information on server network adapters, visit <http://www.dell.com/us/business/p/networking-cards>. For PCIe card dimensions, see Table 33 in Appendix A.



8 Power, thermal and acoustics

Lower overall system-level power draw is a result of Dell's breakthrough system design. The R630 PowerEdge server aims to maximize performance-per-watt through a combination of energy efficient technologies, optimized thermal designs and intelligent fan control algorithms. The PowerEdge R630 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.

Power consumption and energy efficiency

With the rise in the cost of energy coupled with increasing data center density, Dell provides tools and technologies to help you realize greater performance with less energy cost and waste. More efficient data center usage can reduce costs by slowing the need for additional data center space. Table 20 lists the tools and technologies Dell offers to help you achieve your data center goals by lowering power consumption and increasing energy efficiency.

Table 20. Power tools and technologies

Feature	Description
Power supply units (PSU) portfolio	Dell's PSU portfolio includes intelligent features such as dynamically optimizing efficiency while maintaining availability and redundancy. Find additional information in the Power supply units section.
Tools for right-sizing	The Dell Energy Smart Solution Advisor (ESSA) 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 .
Industry compliance	Dell's servers are compliant with all relevant industry certifications and guidelines, including 80 PLUS, Climate Savers and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: <ul style="list-style-type: none">• 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's systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
Systems management	iDRAC8 Enterprise provides server-level management that monitors, reports and controls power consumption at the processor, memory and system level. Dell OpenManage Power Center delivers group power management at the rack, row and data center level for servers, power distribution units and uninterruptible power supplies.
Dell Fresh Air 2.0	With the thermal design and reliability of Dell products, certain configurations of Dell 13 th generation servers have the capability to operate at temperatures beyond the industry standard of 35°C (95°F). The supported configurations that meet Dell Fresh Air 2.0 specifications can operate continuously at 40°C (104°F) and up to 45°C (113°F) for excursionary periods of time and up to a 29°C dew point at 90% relative humidity without impacting your availability model. Find additional information at Dell.com/FreshAir .



Feature	Description
Active power management	Intel Node Manager is an embedded technology that provides individual server-level power reporting and power limiting functionality. Dell offers a complete power management solution comprised of Intel Node Manager accessed through Dell iDRAC8 Enterprise and OpenManage Power Center that allows policy-based management of power and thermals at the individual server, rack and data center level.
	Hot spare reduces power consumption of redundant power supplies. Thermal control of fan speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption.
	Idle power enables Dell servers to run as efficiently when idle as when at full workload.

Find additional information at Dell.com/PowerCenter.

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 PowerEdge R630 supports up to two AC or DC power supplies with 1 + 1 redundancy, auto-sensing and auto-switching capability. The R630 supports the PSUs listed in Table 21. For additional power supply specifications, see Table 30.

Table 21. Power supply units and efficiency

Form factor	Output	Class	Efficiency targets by load			
			10%	20%	50%	100%
Redundant 86mm	495W AC	Platinum	82.0%	90.0%	94.0%	91.0%
	750W AC	Titanium	90.0%	94.0%	96.0%	91.0%
	750W AC	Platinum	82.0%	90.0%	94.0%	91.0%
	1100W AC	Platinum	89.0%	93.0%	94.5%	92.0%
	1100W DC	N/A	80.0%	88.0%	91.0%	88.0%
	750W AC/DC*	Platinum	82.0%	90.0%	94.0%	91.0%

*Available only in China.

Thermal and acoustics

The R630 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 data center power consumption.



Thermal design

The thermal design of the PowerEdge R630 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, hard disk drives, NDC and GPU.
- 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 iDRAC8 BIOS setup screen. For more information, see the *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals and "[Advanced Thermal Control: Optimizing across Environments and Power Goals](#)" on Dell.com.
- Cooling redundancy: The R630 allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.

Acoustical design

Dell 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 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 Table 22. An extensive description of Dell Enterprise acoustical design and metrics is available in the [Dell Enterprise Acoustics](#) white paper.

Table 22. 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



Acoustical performance data

The PowerEdge R630 is quiet enough for an office (typical and minimum configurations) and meets Dell's sound quality requirements.

- Minimally configured⁽¹⁾ 8 x 2.5" chassis in 23 ± 2 °C ambient
 - Idle⁽⁴⁾: LwA-UL⁽⁵⁾ = 3.9 bels; LpA⁽⁶⁾ = 25 dBA; No prominent tones⁽⁷⁾
 - Operating⁽⁴⁾: LwA-UL⁽⁵⁾ = 4.1 bels; LpA⁽⁶⁾ = 29 dBA; No prominent tones⁽⁷⁾
- Typically configured⁽²⁾ 8 x 2.5" chassis in 23 ± 2 °C ambient
 - Idle⁽⁴⁾: LwA-UL⁽⁵⁾ = 4.7 bels; LpA⁽⁶⁾ = 32 dBA; No prominent tones⁽⁷⁾
 - Operating⁽⁴⁾: LwA-UL⁽⁵⁾ = 5.0 bels; LpA⁽⁶⁾ = 33 dBA; No prominent tones⁽⁷⁾
- Feature-Rich configured⁽³⁾ 10 x 2.5" chassis in 23 ± 2 °C ambient
 - Idle⁽⁴⁾: LwA-UL⁽⁵⁾ = 6.4 bels; LpA⁽⁶⁾ = 43 dBA; No prominent tones⁽⁷⁾
 - Operating⁽⁴⁾: LwA-UL⁽⁵⁾ = 6.4 bels; LpA⁽⁶⁾ = 43 dBA; No prominent tones⁽⁷⁾

1. Minimum configuration means 1 x 85W-6C CPU (E5-2609 v3), 1 x 4GB DIMM, 1 x 2.5" SATA SSD, 1 x 495W PSU and no PCI cards.
2. Typical configuration means 2 x 105W-10C CPU (E5-2660 v3), 8 x 8GB DIMM, 4 x 2.5" 10K SAS HDD, 2 x 750W PSU and H730 miniPERC cards.
3. Feature-rich configuration means 2 x 135W-12C CPU (E5-2690 v3), 16 x 16GB DIMM, 8 x 2.5" 15K SAS HDD, 2 x 1100W PSU, FC8 Dual Port HBA and H730 miniPERC cards.
4. Idle means the state in which the product is doing nothing but running OS; values for Operating are the maximum acoustical output for active HDDs or active CPUs.
5. LwA – UL is the upper limit sound power levels (LwA) calculated per section 4.4.1 of ISO9296 (1988) and measured in accordance with ISO7779 (2010).
6. LpA is the average bystander position A-weighted sound pressure level calculated per section 4.3 of ISO9296 (1988) and measured in accordance with ISO7779 (2010). The system is placed in a 24U rack enclosure, 25 cm above reflective floor.
7. Prominent tone: Criteria of D.6 and D.11 of ECMA-74 12th ed. (2012) are followed to determine if discrete tones are prominent. The system is placed in center of ISO7779 table and acoustic transducer is at front standing operator position, ref ISO7779 (2010 Section 8.6.1, Position P1).

Acoustical dependencies

- System thermal profile selected in BIOS: The system default setting is "Power Optimized (DAPC)", which is in general a lower fan speed and noise level. If "Performance optimized" is selected, the fan speed/noise level will increase.
- CPU power:
 - Configurations with "low-power" CPUs (which have lower temperature limits than standard CPUs), such as an Intel Xeon E5-2650L v3 or E52630L v3 at 65W CPU, under moderate or heavy utilization, will be about twice as loud as typical configurations.
 - Configurations increase in loudness as CPU power increases from that in typical configurations.
- Types of storage devices:
 - HDD:
 - > Lower speed hard disk drives (such as 7.2K RPM SATA) are generally quieter than 10K/15K RPM SAS drives.
 - > Loudness increases with the following progression of drives: SATA, SAS 10K, SAS 15K.
 - SSD:
 - > SSDs are not themselves audible.
 - > However, a configuration with PCIe SSD requires more airflow for cooling and will be louder than a typical configuration. Under highly-stressed condition, the sound power levels may go up to 8.0 bels.
- Types of PCIe cards: Configurations with a 10/40GbE NIC or PERC H730 card installed increases the fan speed causing the system to run louder than a typical configuration.



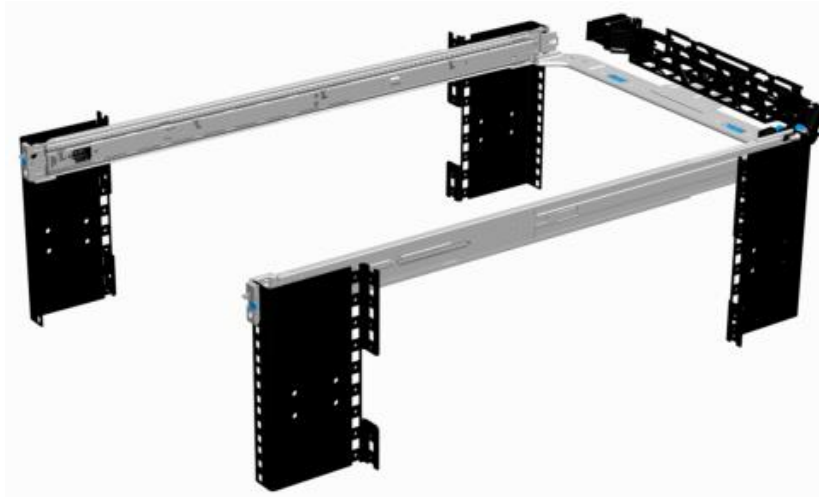
9 Rack rails systems

The rack rail systems for the Dell PowerEdge R630 provide tool-less support for 4-post racks with square or unthreaded round mounting holes. The R630 also supports tooled mounting in 4-post threaded racks and static rail tooled mounting in 2-post (Telco) racks for added versatility.

Sliding and static rail systems

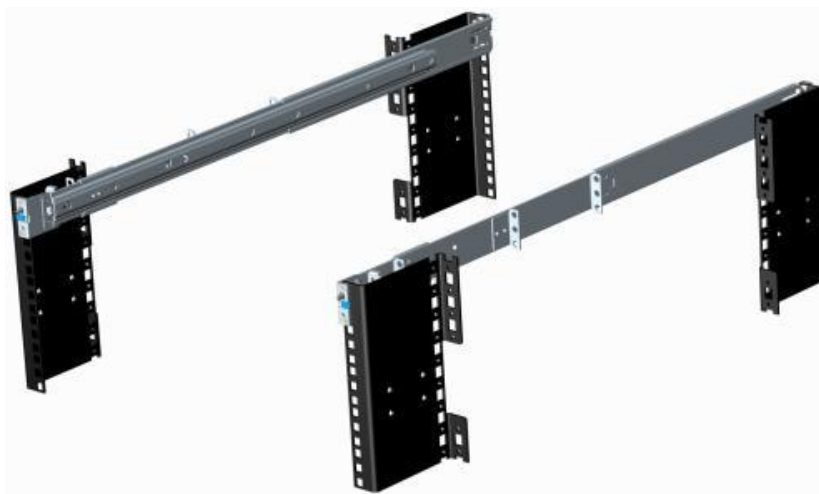
The sliding rails for the R630 offer native support for threaded hole racks via the ReadyRails II mounting interface. The rails ship in the tool-less mounting configuration but can be converted to the tooled configuration very quickly and easily. With the sliding rails, you can fully extend a system out of the rack for servicing. Rails are available with or without the optional cable management arm (CMA). Figure 13 shows sliding rails with CMA.

Figure 13. Sliding rails with optional CMA



The static rails (shown in Figure 14) support a wider variety of racks than the sliding rails, but do not support serviceability in the rack and are not compatible with the CMA.

Figure 14. Static rails



One key factor in selecting the proper rails is identifying the type of rack in which they will be installed. Both the sliding rails and the static rails support tool-less mounting in 19"-wide, EIA-310-E compliant square hole and unthreaded round hole 4-post racks. Both also support tooling mounting in threaded-hole 4-post racks, but only the static rails, as the more universal solution, support mounting in 2-post (Telco) racks. Table 23 lists the rack rail systems for the R630.

Table 23. Supported rack rail system

Product	Rail Identifier	Mounting Interface	Rail Type	Rack Types Supported				
				4-Post			2-Post	
				Square	Round	Thread	Flush	Center
R630	A7	ReadyRails II	Sliding	✓	✓	✓	X	X
	A8	ReadyRails	Static	✓	✓	✓	✓	✓

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

For detailed information about static and sliding rails, see the Rack rail specifications section in Appendix A. For more information on installing the R630 in a rack, see the *Dell PowerEdge Rack Installation Guide* on Dell.com/Support/Manuals.

Cable management arm

The optional CMA can be mounted on either the left or right side of the sliding rails without the use of tools for fast and easy deployment. The optional CMA organizes and secures the cords and cables exiting the back of the server and unfolds to allow the server to extend out of the rack without having to detach the cables. Some key features of the CMA include:

- Large U-shaped baskets to support dense cable loads
- Open vent pattern for optimal airflow
- Ability to be mounted on either side
- Use of hook-and-loop straps rather than plastic tie wraps to eliminate the risk of cable damage during cycling
- Low-profile fixed tray to both support and retain the CMA in its fully closed position
- Ability to mount the CMA and tray without the use of tools, due to snap-in designs



10 Operating systems and virtualization

The Dell PowerEdge R630 supports a wide range of industry-standard operating systems and virtualization software.

Supported operating systems

Table 24 lists the primary operating systems supported on the R630. For the latest information on supported operating systems, see Dell.com/OSsupport.

Table 24. Operating system support

Operating System	Platform	Edition	IDSDM support
Microsoft Windows Server 2012 R2	x64	Standard Datacenter	Yes
Microsoft Windows Server 2012	x64	Standard Datacenter	Yes
Microsoft Windows Server 2008 R2 SP1	x64	Standard Enterprise Datacenter	Yes
Red Hat Enterprise Linux 7.0	x64	N/A	No
Red Hat Enterprise Linux 6.5	x64	N/A	No
SUSE Linux Enterprise Server 12	x64	N/A	No
SUSE Linux Enterprise Server 11 SP3	x64	N/A	No

Supported virtualization

One of the key features for virtualization on the PowerEdge R630 is the support for a failsafe hypervisor. By running a hypervisor on an optional SD card and installing a backup copy on the other mirrored SD card, you can protect against hardware failure and maximize virtualization uptime.

Table 25 highlights the virtualization support for the R630.

Table 25. Virtualization support

Operating systems	Install version	IDSDM support	
Microsoft	Windows Server 2012 R2 with Hyper-V	N/A	Yes
VMware	vSphere v5.1, v5.5	ESXi	Yes
Citrix	XenServer 6.2 SP1	N/A	Yes

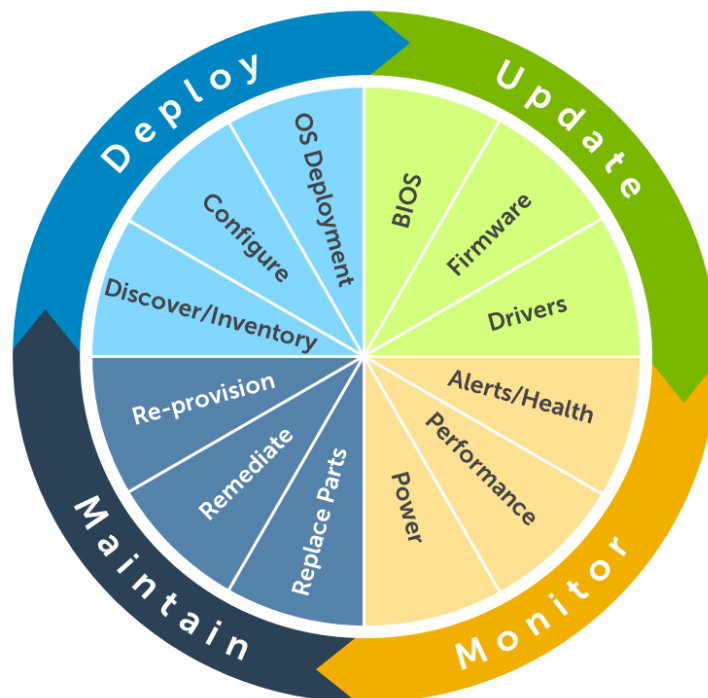


11 Dell OpenManage systems management

Whether your IT environment consists of a few servers or a few thousand servers, Dell 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 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 as shown in Figure 15. 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. As shown in Figure 15, OpenManage centers around efficient management of server lifecycle.

Figure 15. Server lifecycle management operations



OpenManage systems management

The Dell 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 PowerEdge servers.

iDRAC8 with Lifecycle Controller

The Integrated Dell Remote Access Controller 8 (iDRAC8) with Lifecycle Controller, the embedded intelligence of every Dell PowerEdge 13th generation server, helps you manage Dell servers agent-free or with a systems management agent, within physical, virtual, local and remote environments. iDRAC8 alerts server issues, enables remote server management and reduces the need to physically visit the server. iDRAC8 with Lifecycle Controller is part of Dell's comprehensive OpenManage



portfolio and works as a stand-alone or in conjunction with other components such as OpenManage Essentials, OpenManage Mobile, OpenManage Power Center, Chassis Management Controller, and OpenManage Integrations for Microsoft, VMware and BMC consoles to simplify, automate and streamline IT operations.

Table 26 describes some of the iDRAC8 features. For more iDRAC8 features, see the [“Introducing iDRAC8 with Lifecycle Controller for Dell 13th Generation PowerEdge Servers”](#) white paper.

Table 26. iDRAC8 with Lifecycle Controller functions and benefits

Feature	Function	Benefit
Out-of-band (OOB)	iDRAC8 offers real-time OOB discovery, inventory, deployment monitoring, alerting and updates for servers, factory-installed peripherals and internal storage	Manage servers independently from hypervisor/OS type or status. Allows for bare-metal deployment and monitoring.
Email alerts	Simplified, more informative, and expanded coverage than previous versions of iDRAC	More detail allows IT administrators to be more efficient in diagnosing and remediating an issue; alerts include a direct, embedded URL in the email notification to further speed resolution
vFlash media	Enabled with iDRAC8 Enterprise, vFlash or virtual flash allows the user to store CD, floppy and hard drive images directly on the iDRAC8. Users can store emergency boot images, diagnostic tools, or anything else that can fit in a 4GB partition. Users can create up to 16 partitions.	Administrators can use virtual flash to house a persistent image for future general or emergency use without relying on network resources or the constant presence of a client as with Virtual Media. Content can be stored permanently on vFlash or can be deleted and added as necessary. This is ideal for customers with slow bandwidth connections to the DRAC.
Enhanced power management	Integration with Intel Node Manager provides data-center level power monitoring and capping (requires iDRAC8 Enterprise)	Fine tune data center power policies, capping and usage. Report on historical power usage by rack, row or room using Power Center Manager.
Electronic licensing	Upgrades to iDRAC8 Express or iDRAC8 Enterprise by software licensing key and license portal	Digital licenses are installed at the Dell factory; free 30-day trial versions are available. Dell uses a license management portal versus paper-based licenses, which simplifies license management. For most server models, embedded server management and electronic licensing enables feature enhancements that do not require installation of additional hardware or system downtime.



iDRAC8 feature comparison

iDRAC8 Enterprise is available for the PowerEdge R630. Dell also offers iDRAC8 Express. A detailed feature comparison for iDRAC8 Enterprise and iDRAC8 Express is shown in Table 27.

Table 27. Feature comparison for iDRAC8 Express and Enterprise

Feature (function)	iDRAC8 Express	iDRAC8 Enterprise
Interfaces/Standards		
IPMI 2.0	✓	✓
DCMI 1.5	✓	✓
Web-based GUI	✓	✓
RACADM command line (local/remote)	✓	✓
SMASH-CLP (SSH-only)	✓	✓
Telnet	✓	✓
SSH	✓	✓
WSMAN	✓	✓
Network Time Protocol	✓	✓
Connectivity		
Shared NIC	✓	✓
Dedicated NIC	✓	✓
VLAN tagging	✓	✓
IPv4	✓	✓
IPv6	✓	✓
DHCP	✓	✓
Dynamic DNS	✓	✓
OS pass-through	✓	✓
Front panel USB	✓	✓
Security		
Role-based authority	✓	✓
Local users	✓	✓
SSL encryption	✓	✓
IP blocking	✓	✓
Directory services (AD, LDAP)		✓
Two-factor authentication		✓
Single sign-on		✓
PK authentication	✓	✓
Remote presence		
Power control	✓	✓
Boot control	✓	✓
Serial-over-LAN	✓	✓
Virtual Media		✓
Virtual Folders		✓
Remote File Share		✓
Virtual Console		✓



Feature (function)	iDRAC8 Express	iDRAC8 Enterprise
VNC connection to OS		✓
Quality/bandwidth control		✓
Virtual Console collaboration (6 users)		✓
Virtual Console chat		✓
Virtual Flash partitions		✓ ¹
Power and thermal		
Real-time power meter	✓	✓
Power thresholds and alerts	✓	✓
Real-time power graphing	✓	✓
Historical power counters	✓	✓
Power capping		✓
Power Center integration		✓
Temperature monitoring	✓	✓
Temperature graphing	✓	✓
Health monitoring		
Full agent-free monitoring	✓	✓
Predictive failure monitoring	✓	✓
SNMPv1, v2, and v3 (traps and gets)	✓	✓
Email alerting	✓	✓
Configurable thresholds	✓	✓
Fan monitoring	✓	✓
Power supply monitoring	✓	✓
Memory monitoring	✓	✓
CPU monitoring	✓	✓
RAID monitoring	✓	✓
NIC monitoring	✓	✓
HD monitoring (enclosure)	✓	✓
Out-of-band performance monitoring		✓
Update		
Remote agent-free update	✓	✓
Embedded update tools	✓	✓
Sync with repository (scheduled updates)		✓
Auto-update		✓
Deployment and configuration		
Embedded OS deployment tools	✓	✓
Embedded configuration tools	✓	✓
Auto-discovery	✓	✓
Remote OS deployment	✓	✓
Embedded driver pack	✓	✓
Full configuration inventory	✓	✓
Inventory export	✓	✓
Remote configuration	✓	✓



Feature (function)	iDRAC8 Express	iDRAC8 Enterprise
Zerotouch configuration		✓
System retire/repurpose	✓	✓
Diagnostics, service and logging		
Embedded diagnostic tools	✓	✓
Part replacement	✓	✓
Server configuration backup		✓
Server configuration restore	✓	✓
Easy restore (system configuration)	✓	✓
Health LED/LCD	✓	✓
Quick Sync (require NFC bezel)	✓	✓
iDRAC Direct (front USB management port)	✓	✓
iDRAC Service Module (iSM)	✓	✓
Embedded tech support report	✓	✓
Crash screen capture	✓	✓
Crash video capture		✓
Boot capture		✓
Manual reset for iDRAC	✓	✓
Virtual NMI	✓	✓
OS watchdog	✓	✓
Embedded health report	✓	✓
System event log	✓	✓
Lifecycle log	✓	✓
Work notes	✓	✓
Remote syslog		✓
License management	✓	✓

¹Requires vFlash SD card media

Agent-free management

Because Dell 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 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 provides OpenManage Server Administrator.

OpenManage Server Administrator

The Dell OpenManage Server Administrator (OMSA) agent gives you a comprehensive, one-to-one systems management solution for both local and remote servers and their storage. OMSA can help simplify single-server monitoring with a secure command-line interface (CLI) or Web-based



management GUI. It can also be used to view system configuration, inventory, health and performance.

iDRAC Service Module

The iDRAC Service Module (iSM) is a lightweight optional software application that can be installed on Dell PowerEdge server (12th generation or later). The iSM complements iDRAC interfaces – GUI, RACADM CLI, and Web Service Management (WSMAN) with additional monitoring data. You can configure the features on the supported operating system depending on the features to be installed and the unique integration needs in a work environment.

Dell 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 systems management portfolio includes several powerful consoles, depending upon your needs, including the following:

- **Dell OpenManage Essentials**—OpenManage Essentials (OME) is a systems management console that provides a comprehensive view of Dell systems, devices, and components in an enterprise network. It is used to monitor Dell PowerEdge servers, EqualLogic and PowerVault storage, and PowerConnect™ switches; to update and configure Dell servers; and to create asset reports. OpenManage Essentials also communicates health status alerts for Dell servers, storage, and network devices to the Dell 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 OpenManage Mobile (OMM) to securely perform a subset of data center monitoring and remediation tasks from a mobile device.
- **OpenManage Power Center**—Dell's power management solution, the Dell 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 Dell 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 OpenManage systems management tools and utilities consist of the following:

- **Dell Repository Manager:** The Dell 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 Update Packages:** The Dell Update Packages (DUP) is a self-contained executable in a standard package format that updates a software element on a Dell server such as the BIOS, a driver, firmware and other software updates.
- **Dell OpenManage Deployment Toolkit:** The Dell OpenManage Deployment Toolkit (DTK) is a CLI-based tool that includes a set of utilities for configuring and deploying Dell 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 iDRAC7.
- **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'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 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 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 and BMC Software work together to simplify IT by ensuring tight integration between Dell server, storage, and network management functionality and the BMC Software process and data center automation products.

OpenManage connections with third-party consoles

Dell 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 server systems to your existing IT environment. Integrate new systems at your own pace. Manage new Dell 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 assets to your IT infrastructure.

- OpenManage Connection for Nagios
- OpenManage Connection for Oracle
- OpenManage Connections for HP
- OpenManage Connections 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 server management operations

Dell 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. iDRAC7 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 16 illustrates the various operations that can be performed during the server's lifecycle.



Figure 16. Systems management server lifecycle

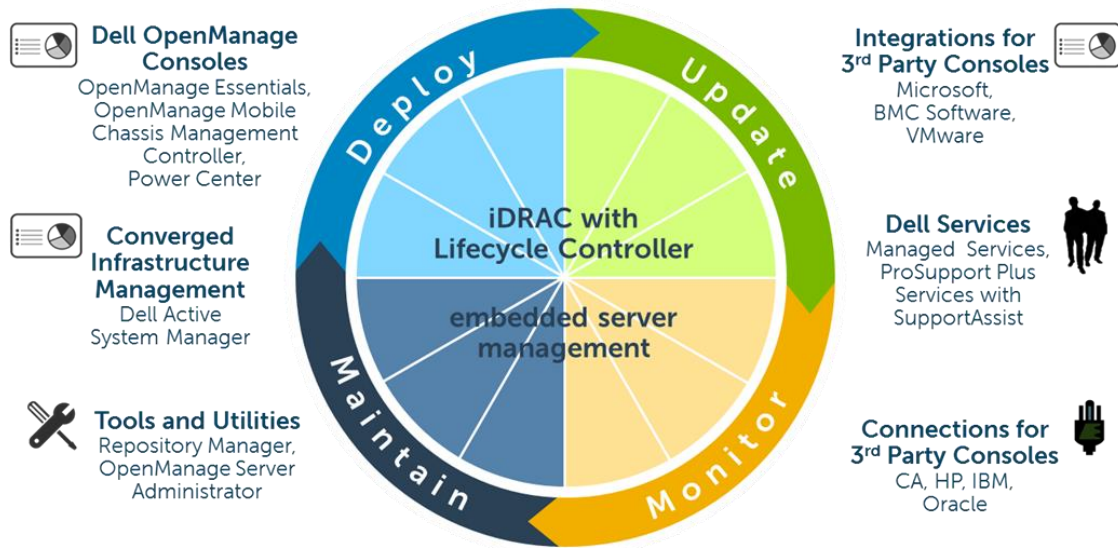


Table 28 lists the products that are available for one-to-one and one-to-many operations, and when they are used in the server’s lifecycle.

Table 28. One-to-one and one-to-many operations

Operation	One-to-one	One-to-many
Deploy	<ul style="list-style-type: none"> • Lifecycle Controller GUI • DTK 	<ul style="list-style-type: none"> • OpenManage Integration for VMware vCenter • OpenManage Integration for BMC BladeLogic • OpenManage Integration for Microsoft System Center Configuration Manager
Update	<ul style="list-style-type: none"> • iDRAC8 with Lifecycle Controller • Repository Manager • DUP • SUU • OpenManage Integration for VMware vCenter 	<ul style="list-style-type: none"> • Dell OpenManage Essentials • OpenManage Integration for Microsoft System Center Configuration Manager
Monitor	<ul style="list-style-type: none"> • iDRAC8 with Lifecycle Controller • OMSA 	<ul style="list-style-type: none"> • Dell OpenManage Essentials • Dell OpenManage Power Center • OpenManage Integration for VMware vCenter • OpenManage Integration for Microsoft System Center Operations Manager
Maintain	<ul style="list-style-type: none"> • iDRAC8 with Lifecycle Controller • IPMI 	<ul style="list-style-type: none"> • 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’s systems management portfolio, visit Dell.com/OpenManage.



Appendix A. Additional specifications

Chassis dimensions

10-drive and 24-drive PowerEdge R630 chassis options

Figure 17. Chassis width for 10-drive and 24-drive chassis options

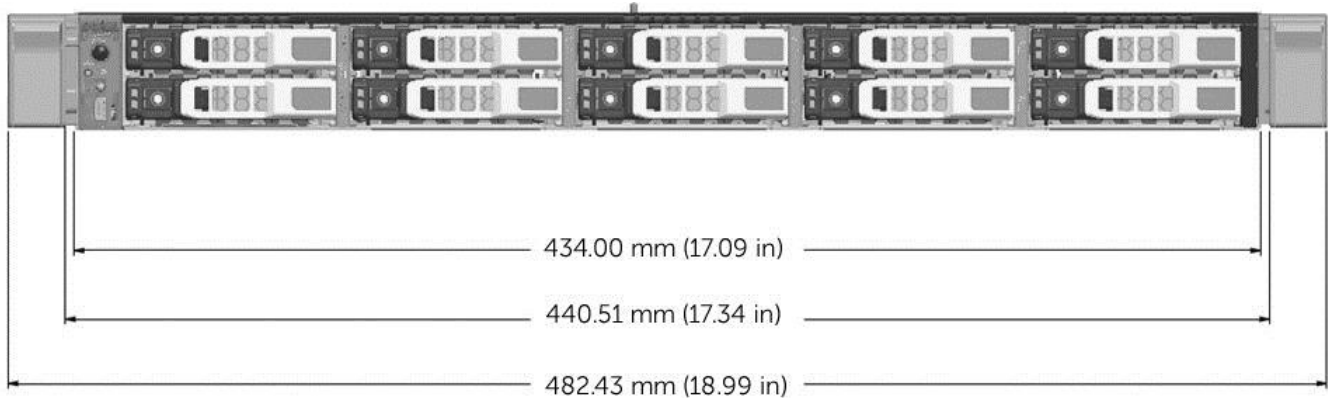


Figure 18. Chassis height for 10-drive and 24-drive chassis options

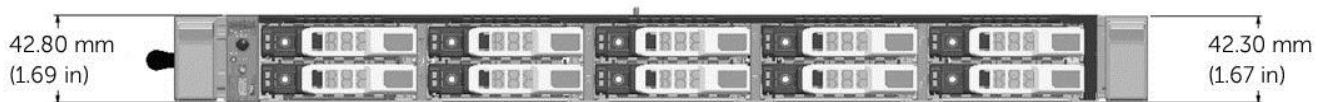
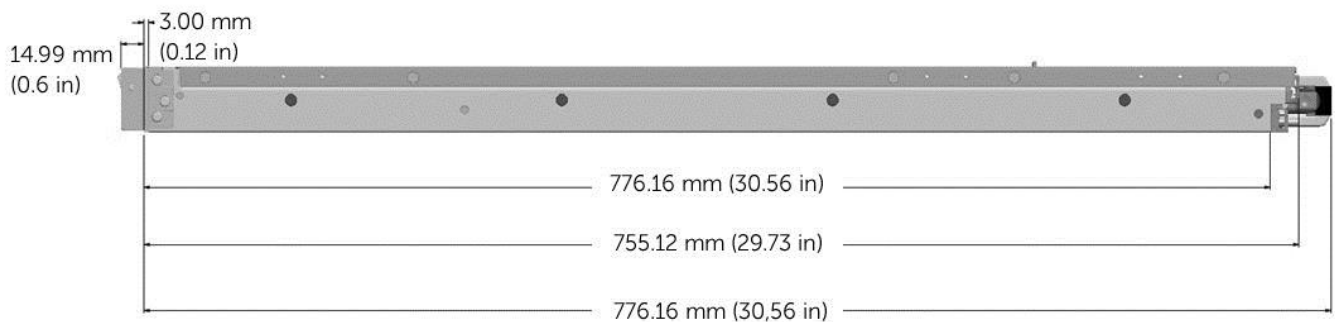


Figure 19. Chassis depth with bezel for 10-drive and 24-drive chassis options



Figure 20. Chassis depth without bezel for 10-drive and 24-drive chassis options



8-drive PowerEdge R630 chassis options

Figure 21. Chassis width for 8-drive chassis option

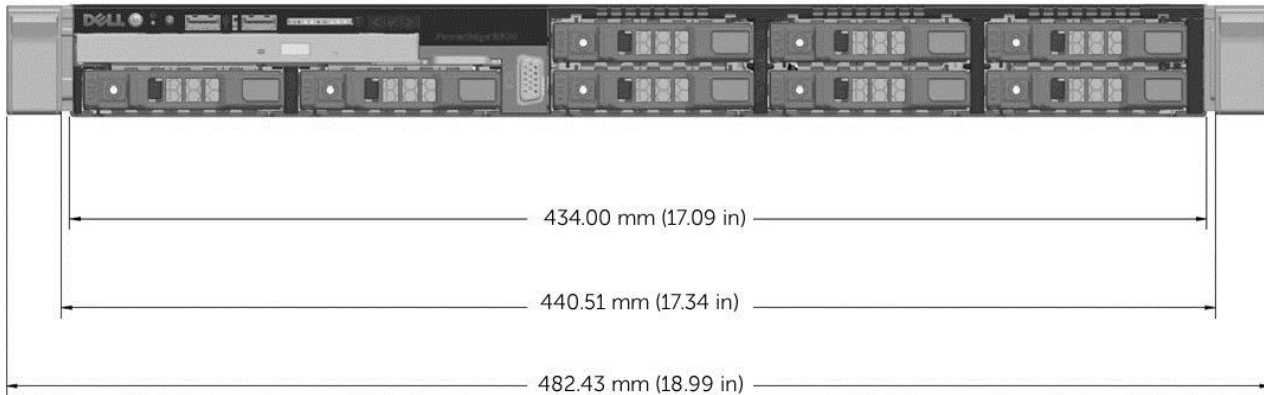


Figure 22. Chassis height for 8-drive chassis option

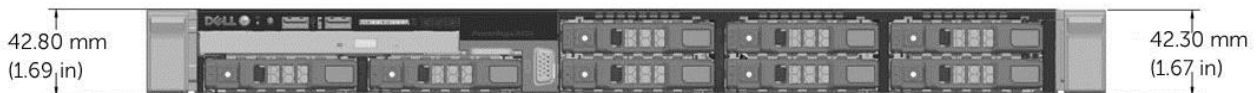


Figure 23. Chassis depth with bezel for 8-drive chassis option



Figure 24. Chassis depth without bezel for 8-drive chassis option



Chassis weight

Table 29 lists the weight of the R630 chassis at maximum configuration for the three different chassis options.

Table 29. Chassis weight

Configuration	8-drive bay chassis	10-drive bay chassis	24-drive bay chassis
Maximum	16.9 kg (37 lb)	18.4 kg (40.5 lb)	17.4 kg (38.3 lb)



Power supply specifications

Table 30 lists power supply specifications for the PowerEdge R630.

Table 30. Power supply specifications

Specification	495W	750W	750W	1100W	1100W DC	750W AC/DC mixed mode
80 PLUS	Platinum	Platinum	Titanium	Platinum	N/A – peak efficiency: 91%	Platinum
Power factor correction	Active	Active	Active	Active	None	Active
FCC classification	Class A	Class A	Class A	Class A	Class A	Class A
Max output current	40.57A 69.0A (peak)	61.47A 104.5A (peak)	61.47A 104.5A (peak)	90.16A 153.3A (peak)	91.6A	62.5A
Input voltage range	90–264V AC 47–63Hz	90–264V AC 47–63Hz	180–264V AC 47–63Hz	90–264V AC 47–63Hz	-36V to -72V DC	90–264V AC 47–63Hz 192–288V DC
Iin for rating on safety label	6.5A–3A ¹	10.0A–5.0A ¹	5.0A ²	12.0A–6.5A ¹	32A ³	10.0A–5.0A ¹ 4.5A
Initial in-rush current	25A (peak)	25A (peak)	25A (peak)	25A (peak)	55A (peak)	55A (peak)
Secondary in-rush current	25A (peak)	25A (peak)	25A (peak)	25A (peak)	43A (peak)	25A (peak)

¹100–240V AC

²240V AC

³-48.0V DC

⁴240–290V DC

Environmental specifications

See *Dell PowerEdge R630 Owner's Manual* on Dell.com/Support/Manuals for detailed environmental specifications including expanded operating temperature (Fresh Air) information.

Video specifications

The Dell PowerEdge R630 iDRAC8 incorporates an integrated video subsystem. The graphics controller is the 2D Matrox[®] G200. The video frame buffer (16MB) is contained within the iDRAC RAM (256MB) device. The R630 system supports the 2D graphics video modes listed in Table 31.

Table 31. Supported video modes

Resolution	Refresh Rate (Hz)	Color Depth (bit)
640 x 480	60, 70	8, 16, 32
800 x 600	60, 75, 85	8, 16, 32
1024 x 768	60, 75, 85	8, 16, 32
1152 x 864	60, 75, 85	8, 16, 32
1280 x 1024	60, 75	8, 16, 32
1440 x 900	60	8, 16, 32



Rack rail specifications

Table 32 lists the spacing dimensions for the R630 sliding and static rails.

Table 32. Rail adjustability range

Product	Rail identifier	Rail type	Rail adjustability range (mm)						Rail depth (mm)	
			Square		Round		Threaded		without CMA	with CMA
			Min	Max	Min	Max	Min	Max		
R630	A7	Sliding	681	868	667	861	681	883	720 ¹ 770 ²	845 ¹ 895 ²
	A8	Static	608	879	594	872	604	890	622	—

¹For 8-drive bay chassis

²For 10-drive and 24-drive bay chassis

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 rails with the outer CMA brackets removed (if applicable) as measured from the front mounting flanges of the rack.

The rail depth changes based on which version of the R630 is being installed. Although the 10-drive and 24-drive bay system is 50 mm deeper than the 8-drive bay system, both are able to share the same rails through a new self-adjusting feature included on the rails.

USB peripherals

USB peripherals are supported through the front and back USB ports on the R630. The front ports are USB 2.0 compliant and the back ports are USB 3.0 compliant.

PCIe card dimensions

Table 33 provides the dimensions of the PCIe cards supported by the R630.

Table 33. PCIe card dimensions

Type	Height	Length
Full-height, half-length card	111.15 mm (4.376 inches) max	167.65 mm (6.600 inches) max
Full-height, full-length card	111.15 mm (4.376 inches) max	312.00 mm (12.283 inches) max
Low-profile, half-height card	68.90 mm (2.731 inches) max	167.65 mm (6.600 inches) max

Note: ³/₄-length is 234mm (9.213 inches)



Appendix B. Standards compliance

The Dell PowerEdge R630 conforms to the industry standards listed in Table 34.

Table 34. Industry standard documents

Standard	URL for information and specifications
ACPI Advance Configuration and Power Interface Specification, v2.0c	acpi.info
Ethernet IEEE 802.3-2005	standards.ieee.org/getieee802/802.3.html
HDG Hardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/designguide/serverdg.msp
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR4 Memory DDR4 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	pmbus.info/specs.html
SAS Serial Attached SCSI, v1.1	t10.org
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2 and v2.0	trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	uefi.org/specifications
USB Universal Serial Bus Specification, Rev. 2.0	usb.org/developers/docs
Windows Logo Windows Logo Program System and Device Requirements, v3.10	microsoft.com/whdc/winlogo/hwrequirements.msp



Appendix C. Additional resources

Table 35 provides a list of documents and websites that provide for more information on the Dell PowerEdge R630.

Table 35. Additional resources

Resource	Description of contents	Location
PowerEdge R630 Owner's Manual	This manual, available in PDF format, provides the following information: <ul style="list-style-type: none">• Chassis features• System Setup program• System messages• System codes and indicators• System BIOS• Remove and replace procedures• Troubleshooting• Diagnostics• Jumpers and connectors	Dell.com/Support/Manuals
PowerEdge R630 Getting Started Guide	This guide ships with the system, and is also available in PDF format. This guide provides the following information: <ul style="list-style-type: none">• Initial setup steps• Key system features• Technical specifications	Dell.com/Support/Manuals
Rack Installation Instructions	This document ships with the rack kits, and provides instructions for installing a server in a rack.	Dell.com/Support/Manuals
Information Update	This document ships with the system, is also available in PDF format online, and provides information on system updates.	Dell.com/Support/Manuals
System Information Label	The system information label documents the system board layout and system jumper settings. Text is minimized due to space limitations and translation considerations. The label size is standardized across platforms.	Inside the system chassis cover
Quick Resource Locator (QRL)	This code on the chassis can be scanned by a phone application to access additional information and resources for the server, including videos, reference materials, service tag information, and Dell contact information.	Inside the system chassis cover



Resource	Description of contents	Location
Energy Smart Solution Advisor	The Dell online Energy Smart Solution Advisor (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
Power and cooling technologies	Provides details for improving energy efficiency in the data center.	Dell.com/powerandcooling
Energy management	Provides information on Dell's Fresh Air cooling solutions.	Dell.com/FreshAir
Operating system matrix for Dell PowerEdge systems	Provides updated information on which operating systems are available on which PowerEdge systems.	Dell.com/OSsupport
Processor and chipset	Provides more information about the R630 processors and chipset.	Intel.com
Systems management	Provides more information on how to simplify, automate and optimize IT operations.	Dell.com/OpenManage
Dell PowerEdge RAID controllers	Provides more information on Dell PowerEdge RAID controllers (PERC).	Dell.com/PERC
Uninterruptible power supply	Provides help selecting a UPS model.	DellUPS.com
Volatility information	Contact your Dell sales representative.	Dell.com
Dell Enterprise Acoustics	White paper that explores the mechanisms of, people's reaction to, language of, and Dell's work to control noise from Enterprise products.	Dell.com/downloads/global/products/pedge/en/acoustical-education-dell-enterprise-white-paper.pdf
Volatility information	Contact your Dell Sales Representative or visit the Dell Support site.	Dell.com/Support/Manuals



Appendix D. Support and Deployment Services

Dell 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.

Server Deployment Services

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

Figure 25. Server Deployment capabilities

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

In addition, we are also experts at rack integration and solutions such as High Performance Computing, Openstack and Hadoop.

Dell's Server Deployment Services help you optimize your server configurations and quickly and correctly install and integrate your solution so you can be up and running faster with minimal disruption to day-to-day business operations. Our deployment experts provide:

- Single point of project management contact from beginning to end
- Evaluation of your environment with a detailed project plan



- Optimized configurations for your workloads and user environment
- Personalized documentation and orientation

Remote Consulting Services

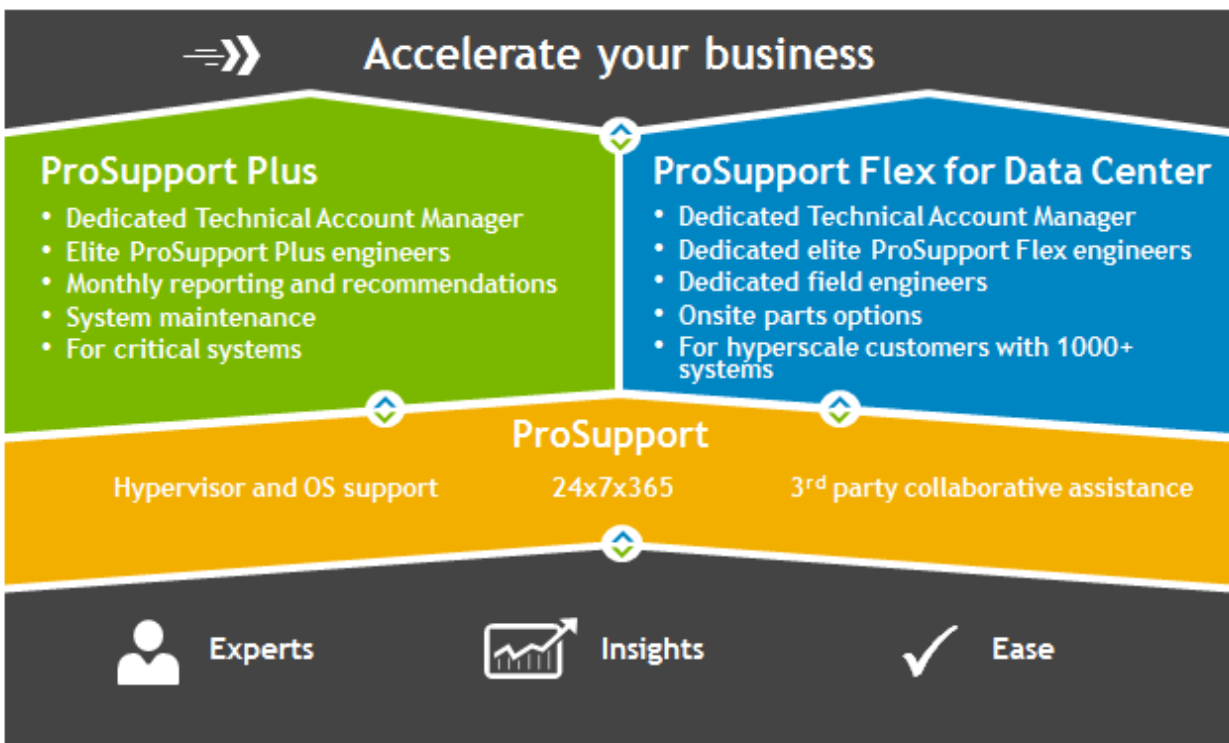
When you are in the final stages of your PowerEdge server implementation, you can rely on Dell Remote Consulting and our certified technical experts to help you optimize your configuration with best practices for your software, virtualization, server, storage, networking and systems management.

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 ProSupport Services, we can help you keep your operation running smoothly, so you can focus on running your business. We'll help you maintain peak performance and availability of your most essential workloads. Dell ProSupport is a suite of support services that enable you to build the solution that's 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.



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 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'll 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 ProSupport Flex for Data Center offers flexible site-wide support for hyperscale data centers with more than 1,000 assets. Built on standard Dell 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 ProSupport Flex for Data Center, you'll 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



Figure 26. ProSupport Enterprise Suite comparison

	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 3 rd 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			✓

Additional professional services

Dell Education Services

Dell Education Services offers 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’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 server solution. To learn more or register for a class today, visit LearnDell.com/Server.

Dell Global Infrastructure Consulting Services

Dell Global Infrastructure Consulting Services use skilled solution architects, innovative tools, automated analysis and Dell’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 Managed Services

Dell 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.

