PowerEdge R620

Technical Guide

This hyper-dense, 2-socket, 1U rack server has a large memory footprint and impressive I/O options that make it exceptional for space-sensitive environments.

Table of contents

Tables

Figures

1 System overview

Introduction

Designed for extraordinary performance on a wide range of applications, the Dell™ PowerEdge™ R620 rack server is an impressive general-purpose platform that is perfect for data centers with space constraints. With its hyper-dense memory—up to 768GB in a 1U form factor—and powered by the Intel® Xeon® processor E5 product family, the R620 shines when handling virtualization, high-performance computing (HPC), and workgroup collaboration applications.

Accomplish more

Pack more computing power into a space-challenged data center with the PowerEdge R620, which offers an exceptionally large memory footprint along with balanced, scalable I/O capabilities, including integrated PCI Express® (PCIe) 3.0 capable expansion slots. With reliability, availability, and serviceability (RAS) features like hot-pluggable fans, disks, power supply units (PSUs), and even redundant failsafe hypervisors, the R620 keeps your data center running with rock-steady reliability.

Dense design for demanding workloads

Virtualization environments demand high memory capacity to maximize the number of virtual machines per server, and the PowerEdge R620 was designed specifically with these environments in mind. The R620 also offers outstanding computational density for HPC application clusters by providing powerful processing capabilities in a compact form factor.

Tailor your network fabric

The R620's network features allow you to tailor your network throughput to match your application needs, enabling added I/O performance. Dell Select Network Adapters, our flexible NIC technology, let you choose the right network fabric without using up a valuable PCI slot. You can pick speed, technology, vendor, plus other options such as switch independent NIC partitioning, which lets you share and manage bandwidth on 10GbE connections.

Dell OpenManage systems management

The Dell OpenManage™ systems management portfolio includes the Integrated Dell Remote Access Controller 7 (iDRAC7) with Lifecycle Controller. Innovative embedded 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 integrates and connects to third-party systems management solutions so you can maintain your single point of control and capitalize on your existing investment. OpenManage simplifies the lifecycle of deploying, updating, monitoring, and maintaining your Dell PowerEdge servers.

New technologies

Table 1 summarizes the newest technologies used in the R620 rack server.

Table 1.   New technologies

New technologies	Detailed descriptions
Intel Xeon processor E5-2600 product family	This new family of Intel processors has embedded PCIe lanes for improved I/O performance. See the Processor section for details.
Intel C600 series chipset	The Intel Platform Controller Hub (PCH) chip is implemented on the R620 server.
1600MT/s DDR3 memory	Certain models of the Intel Xeon processor E5-2600 product family support 1600MT/s memory. The R620 supports two DIMMs per channel at 1600MT/s with these processors. See the Memory section for details.
LRDIMM	This new memory option, load reduced DIMM (LRDIMM), is designed with a buffer chip (or chips) to replace the register to help minimize loading. LRDIMMs can increase overall server system memory capacity and speed. See the Memory section for more information.
Flexible LOM	Dell's Select Network Adapter options allow you to customize your LAN port combinations from your choice of controller vendors. See the Networking and PCIe section for details.
Next generation PERC options	The R620 supports the new PERC controller cards with improved functionality and faster performance. See the Storage section for details.
PERC S110 software RAID Solution	This new software RAID solution supports RAID 0, 1, 5 and 10; supports maximum of four hot-plug SATA hard drives or SATA solid-state drives. See the Storage section for details.
Express Flash drives	Dell Express Flash PCIe solid-state drives provide fast performance without requiring processor resources or capturing DRAM. The R620 supports up to two Express Flash drives. See the Storage section for details.
iDRAC7 with Lifecycle Controller	The new embedded system management solution for Dell servers features hardware and firmware inventory and alerting, in-depth memory alerting, faster performance, a dedicated gigabit port and many more features. See the Dell OpenManage systems management section for details.
Internal GPU support	The R620 supports internal graphics processing units (GPUs) for extreme computing power to solve HPC needs. See the Processor section for details.
DC power supply	A new 1100W DC power supply option is available for the R620.
Advanced power management	The R620 supports advanced power monitoring and power capping tools that can help manage power consumption.
Fresh Air cooling	Dell has tested and validated an integrated data center solution that enables you to operate at higher temperatures or even chiller-less. See the Power, thermal, and acoustics section for details.
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.

2 System features

Compared to the previous generation of Dell PowerEdge servers, the R620 has more drive bay options, more PCIe slots, PCIe 3.0, a larger memory footprint, flexible I/O, Express Flash PCIe solid-state drives, and advanced system management.

Comparison of PowerEdge systems

The PowerEdge R620 is a direct replacement for the predecessor R610. Table 2 compares some of the features of the R620 to the R610.

Table 2.   Comparing the PowerEdge R610 to PowerEdge R620

Feature	PowerEdge R610	PowerEdge R620
Chassis	1U rack	1U rack
Processors	Intel Xeon processors 5500 and 5600 series	Intel Xeon processor E5-2600 product family
Internal interconnect	Intel QuickPath Interconnect	Intel QuickPath Interconnect
Memory[1]	12 x DDR3 RDIMM and UDIMM Up to 192GB	24 x DDR3 RDIMM, UDIMM, and LRDIMM Up to 768GB
Hard drive bays (hot plug)	6 x 2.5"	10 x 2.5"
RAID controller	PERC 6/i, SAS 6/iR, PERC 6/E, H200, H700, H800	PERC S110, H310, H710, H710P, H810
Express Flash drives	N/A	Up to 2 Express Flash PCIe SSDs
PCI slots	2 PCIe 2.0	3 PCIe 3.0
Embedded NICs	4 x 1Gb with optional TOE	Select Network Adapter: minimum configuration of 4 x 1Gb, 10Gb (optional)
Power supplies	Hot-plug, redundant power supply units: 502W, 717W	Hot-plug, redundant power supply units: 495W, 750W, 1100W, 1100W DC
Dell OpenManage Systems Management	Dell OpenManage Dell Management Console (DMC) Lifecycle Controller 1.x iDRAC6 (Express or Enterprise) with Lifecycle Controller 1.x	OpenManage Essentials Dell Management Console IT Assistant OMSA Agent OpenManage Power Center (requires iDRAC7 Enterprise with Lifecycle Controller) OpenManage Integrations and Connections iDRAC7 Express with Lifecycle Controller (standard option)
Support for internal GPU	No	Yes (available through CFI or field upgrade only)
Power efficiency	Gold	Titanium

Feature	PowerEdge R610	PowerEdge R620
Availability	Hot-plug drives Hot-plug redundant cooling Hot-plug redundant power supply units Internal SD module	Hot-plug drives Hot-plug redundant cooling Hot-plug redundant power supply units Internal dual SD module

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

Specifications

Table 3 summarizes the specifications for each of the PowerEdge R620 features. For the latest information on supported features for the PowerEdge R620, visit Dell.com.

Table 3.   Technical specifications

Feature	PowerEdge R620 technical specification
Form factor	1U rack
Processors	Intel Xeon processor E5-2600 product family
Processor sockets	2 sockets
Internal interconnect	2 Intel Quick Path Interconnect (QPI) links: 6.4GT/s, 7.2GT/s, 8.0GT/s
Cache	2.5MB per core; core options: 2, 4, 6, 8
Chipset	Intel C600
Memory[1]	Up to 768GB (24 DIMM slots): 2GB/4GB/8GB/16GB/32GB DDR3 up to 1600MT/s
PCIe slots	**3 PCIe slots:** (10-drive bay configuration is available only with this option) • Two x16 slots with x16 bandwidth, half-height, half-length • One x16 slot with x8 bandwidth, half-height, half-length **2 PCIe slots:** • One x16 slot with x16 bandwidth, full-height, 3/4 length • One x16 slot with x16 bandwidth (or x8 with one processor only), half-height, half-length
RAID controller	**Internal controllers:** PERC S110 (SW RAID) PERC H310 PERC H710 PERC H710P **External HBAs (RAID):** PERC H810 **External HBAs (non-RAID):** 6Gbps SAS HBA

Feature	PowerEdge R620 technical specification
Hard drives (hot-plug)	**Drive bay options:** • Up to 4 x 2.5" or • Up to 8 x 2.5" or • Up to 10 x 2.5" or • Up to 4 x 2.5" + 2 x Express Flash **Hard drive options:** 2.5" Express Flash, SAS SSD, SATA SSD, SAS (15K, 10K), nearline SAS (7.2K), SATA (7.2K) Self-encrypting drives (SEDs) available
Embedded NIC	**Select Network Adapter options:** Broadcom® 5720 4x1Gb Base-T Intel I350 4x1Gb Base-T Intel X540 2x1Gb + 2x10Gb Base-T Broadcom 57800S 2x1Gb + 2x10Gb Base-T Broadcom 57800S 2x1Gb + 2x10Gb SFP+
Power supply	Auto-ranging Titanium efficiency 750W AC power supply Auto-ranging Platinum efficiency 495W, 750W, or 1100W AC power supply 1100W DC power supply
Availability	High-efficiency, hot-plug, redundant power supplies; hot-plug hard drives; TPM; dual internal SD support; hot-plug redundant fans; optional bezel; information tag; ECC memory; interactive LCD screen; extended thermal support; ENERGY STAR® compliant; switch independent partitioning

Dell OpenManage Systems Management (Agent-free or with OpenManage Server Administrator [OMSA] Agent)	• OpenManage Essentials
	• Dell Management Console
	• IT Assistant
	• OMSA Agent
	• OpenManage Power Center (requires iDRAC7 Enterprise with Lifecycle Controller)
	• OpenManage Integrations and Connections:
	  – OpenManage Integration Suite for Microsoft® System Center
	  – Dell Management Plug-in for VMware vCenter™
	  – Connections for HP® Operations Manager, IBM® Tivoli® Netcool® and CA Network and Systems Management
	• iDRAC7 Express with Lifecycle Controller (standard option)
	  – Upgrade to iDRAC7 Enterprise with Lifecycle Controller
	  – Upgrade to 8GB vFlash media or 16GB vFlash media for iDRAC7 Enterprise with Lifecycle Controller
	  – Trial evaluation available for IDRAC7 Enterprise with Lifecycle Controller

Rack support	ReadyRails™ 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 ReadyRails static rails for tool-less mounting in 4-post racks with square or unthreaded round holes or tooled mounting in 4-post threaded and 2-post (Telco) racks

Feature	PowerEdge R620 technical specification
Operating systems	Microsoft Windows Server® 2012 Microsoft Windows Server 2008 R2 SP1, x64 (includes Hyper-V® v2) Microsoft Windows® HPC Server 2008 Microsoft Windows Small Business Server 2011 SUSE® Linux® Enterprise Server Red Hat® Enterprise Linux® **Optional embedded hypervisors:** Citrix® XenServer® VMware vSphere including ESX™ and ESXi Red Hat Enterprise Virtualization® For more information on the specific versions and additions, visit Dell.com/OSsupport.

[1]GB 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 R620 is a 1U rack system with an 8-drive bay or 10-drive bay chassis design. Like the R610, the R620 chassis provides an optional diagnostic LCD, a lockable bezel, a pull-out tray to record system information, and embedded NIC/iDRAC MAC address labels. In response to customer feedback, the vFlash media reader is now accessible on the front of the 8-drive bay chassis for easy access; the vFlash media reader on the 10-drive bay chassis is located on the hard drive backplane.

Chassis views

The R620 has two chassis options: an 8-drive bay option or a 10-drive bay option. A chassis cannot be reconfigured or upgraded after point of purchase.

Figure 1 shows the front view of the 8-drive bay chassis with eight 2.5-inch hard drives. Other features on the front panel include an interactive LCD control panel, two USB connectors, a video connector, and a vFlash media card slot.

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

Figure 2 shows the front view of the 10-drive bay chassis with ten 2.5-inch hard drives. Other features on the front panel include an LED control panel, mini USB connector, and power button.

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

Figure 3 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 3.   8-drive bay chassis front view with bezel

Figure 4 shows the R620 back panel of the 8-drive bay chassis. Features on the back panel include the system identification light and button, iDRAC7 Enterprise port (activated only when iDRAC7 Enterprise is enabled), serial connector, video connector, USB connectors, Ethernet connectors, PCIe slots, and power supplies (not shown is the chassis configuration with three PCIe slots).

Figure 4.   8-drive bay chassis back view

Figure 5 is an internal view of the R620 8-drive bay system including fans, DIMMs, power supplies, system board, and hard drive bays.

Figure 5.   8-drive bay chassis internal view
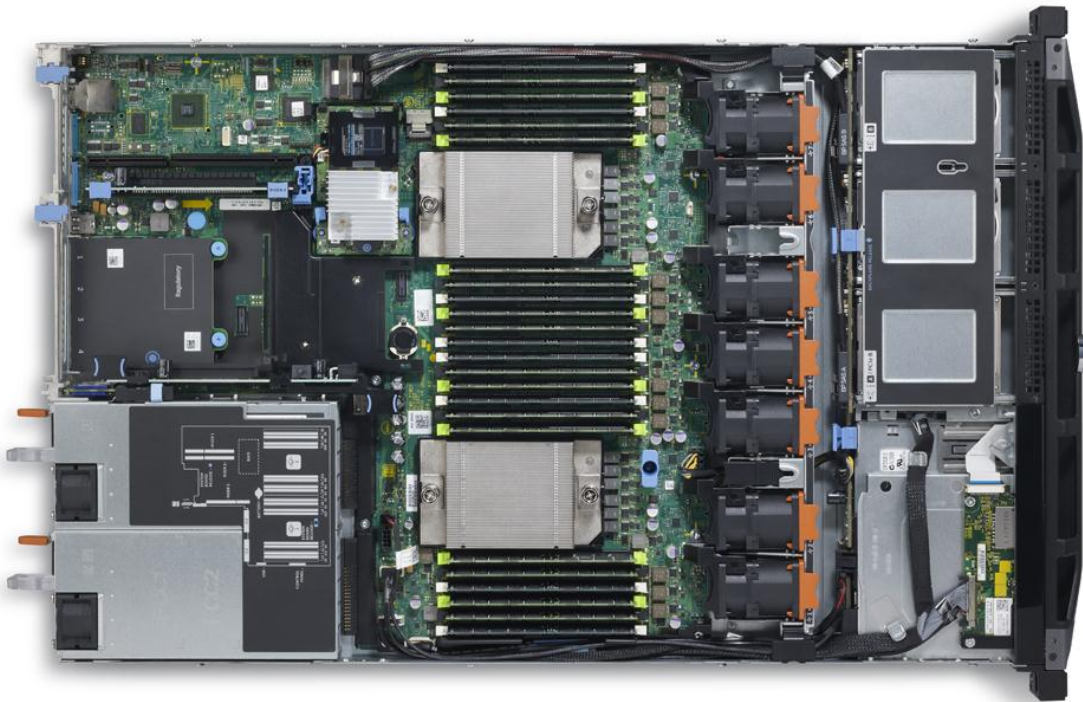
For additional system views, see the *Dell PowerEdge R620 Owner's Manual* on Support.Dell.com/Manuals.

Chassis features

Table 4 lists the features for the R620 chassis. For additional information, see the *Dell PowerEdge R620 Owner's Manual* on Support.Dell.com/Manuals.

<p style="text-align:center">Table 4.   Chassis features</p>

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 ten 2.5-inch drives
USB connectors	8-drive bay chassis: 2 on front, 2 on back, 1 internal 10-drive bay chassis: 1 mini on front, 2 on back, 1 internal
vFlash media reader	Activated when iDRAC7 Enterprise is enabled; located on 8-drive bay front panel and inside the 10-drive bay 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 only; 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 bay chassis only; 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 6Gbps 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
iDRAC7 Enterprise port	Dedicated management port for optional iDRAC7 Enterprise
Quick Resource Locator (QRL)	This code on the chassis can be scanned by a smartphone application to access additional information and resources for the server, including videos, reference materials, service tag information, and Dell contact information

Front control panels

8-drive bay chassis

The R620 LCD control panel is located on the front of the 8-drive bay chassis as shown in Figure 6. For more information about the LCD control panel, see the *Dell PowerEdge R620 Owner's Manual* on Support.Dell.com/Manuals.

Figure 6.   LCD control panel for 8-drive bay chassis

10-drive bay chassis

The LED panel for the 10-drive bay chassis includes the power button, NMI button, system ID light, mini USB connector, and a diagnostic LED. For more information on the diagnostic LEDs, see the *Dell PowerEdge R620 Owner's Manual* on Support.Dell.com/Manuals.

Quick Resource Locator

A useful feature included with Dell PowerEdge 12th generation servers is the Quick Resource Locator (QRL)—a model-specific Quick Response (QR) code that is located inside the R620 chassis cover (see Figure 7). Use your smartphone to access the Dell QRL app to learn more about the server.

Figure 7.   QRL code inside chassis cover

This QRL code allows you to:

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

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

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	An option metal bezel is mounted to the chassis front to provide the Dell ID. A lock on the bezel is used to protect un-authorized access to hard drives. System status is viewable on the LCD screen when the bezel is installed.
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. No TPM version is available for China or Russia.
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 R620 features the Intel Xeon processor E5-2600 product family, which offers an ideal combination of performance, power efficiency, and cost. These processors provide high performance no matter what your constraint is—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 product family not only adds new features, but also improves upon many features of the predecessor Intel Xeon processor 5600 series, including:

- Up to two additional cores and up to 8MB more last level cache
- More memory—six additional DIMMs and support for up to 32GB DIMMs, which increases memory capacity from 288GB to 768GB
- Intel Integrated I/O has support for up to 80 lanes of PCIe 3.0, which can reduce latency
- Faster connections are provided throughout the system with support for DDR3 1600MT/s memory and 8.0GT/s QPI
- Intel Data Direct I/O (DDIO) allows I/O traffic to skip the main system memory and be directed straight to the processor cache, which can provide a significant reduction in latency as well as allowing memory to remain in a low-power state
- Intel Advanced Vector Extensions offer up to double the floating point operations per clock cycle by doubling the length of registers, which can be useful for addressing very complex problems or dealing with large-number calculations, which are integral to many technical, financial, and scientific computing problems
- Intel Turbo Boost Technology 2.0 delivers up to double the boost than the previous-generation turbo technology
- Continued improvements to both Intel TXT and AES-NI help to better protect systems and data

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

Supported processors

The R620 supports up to two processors with up to eight cores per processor. Table 6 lists the Intel Xeon processors supported by the PowerEdge R620. For the latest information on supported processors, visit Dell.com/PowerEdge.

Table 6.   Supported processors

Model	Speed	TDP	Cache	Cores	QPI	Turbo
E5-2690	2.9GHz	135W	20M	8	8.0GT/s	Yes
E5-2680	2.7GHz	130W	20M	8	8.0GT/s	Yes
E5-2670	2.6GHz	115W	20M	8	8.0GT/s	Yes
E5-2667	2.9GHz	130W	15M	6	8.0GT/s	Yes
E5-2665	2.4GHz	115W	20M	8	8.0GT/s	Yes
E5-2660	2.2GHz	95W	20M	8	8.0GT/s	Yes
E5-2650L	1.8GHz	70W	20M	8	8.0GT/s	Yes
E5-2650	2.0GHz	95W	20M	8	8.0GT/s	Yes
E5-2643	3.3GHz	130W	10M	4	8.0GT/s	Yes
E5-2640	2.0GHz	95W	15M	6	7.2GT/s	Yes
E5-2637	2.0GHz	80W	5M	2	6.4GT/s	Yes
E5-2630	2.0GHz	95W	15M	6	7.2GT/s	Yes
E5-2630L	2.0GHz	60W	15M	6	7.2GT/s	Yes
E5-2620	2.0GHz	95W	15M	6	7.2GT/s	Yes
E5-2609	2.4GHz	80W	10M	4	6.4GT/s	NA
E5-2603	1.8GHz	80W	10M	4	6.4GT/s	NA

For information on processor installation and configuration, see the *Dell PowerEdge R620 Owner's Manual* on Support.Dell.com/Manuals.

GPU support

The R620 supports graphics processing unit (GPU) technology, which can provide accelerated performance for a variety of applications, including virtual desktop infrastructure (VDI) and HPC implementations.

Internal GPU support

The R620 supports up to two 75W GPUs. Each GPU can support up to 1GB of dedicated GDDR5 memory and is actively cooled. An internal GPU is available through certified factory installation (CFI) or field upgrade only. For a list of supported GPUs, see Table 7.

Table 7.   GPU cards supported

GPU card	Width	Power consumption
NVIDIA® Quadro® 2000	Single	62W
NVIDIA Quadro 600	Single	39W
ATI™ FirePro™ V5800	Single	75W

Note: With an internal GPU or a ¾ length PCIe card, the R620 cannot support a 10Gb Dell Select Network Adapter (NDC) or any mini-type PERC. An adapter-type PERC is required with an internal GPU configuration.

External GPU support

The R620 can connect to the PowerEdge C410x through an iPass cable. The NVIDIA requires one x16 PCIe slot.

Operating system support for GPUs

Some operating systems have not been validated to support GPUs. See Table 25 and Table 26 for more information on operating system support of GPUs.

Chipset

The Intel C600 chipset is implemented on the PowerEdge R620. For more information, visit Intel.com.

5 Memory

More memory options are available than ever before with the Dell PowerEdge R620—greater capacities, higher frequencies, and more flexibility. The R620 supports up to 768GB of memory (24 DIMMs) and speeds up to 1600MT/s, providing high performance in a variety of applications. High memory density means there is no compromise when it comes to virtualization.

Increase your uptime and reduce data loss due to Dell's focus on reliability, availability, and serviceability (RAS) features. RAS aids in the rapid and accurate diagnosis of faults which require service, increasing your memory reliability. System uptime is reinforced with RAS features like memory mirroring, sparing, and many others.

In addition to supporting existing unbuffered DIMMs (UDIMM) and registered DIMMs (RDIMM), the R620 supports load reduced DIMMs (LRDIMMs), which use a buffer to reduce memory loading and provide greater density, allowing for the maximum platform memory capacity.

Supported memory

Table 8 lists the memory technologies supported by the R620.

Table 8.   Memory technologies supported

Feature	UDIMM	RDIMM	LRDIMM
Register	No	Yes	Yes
Buffer	No	No	Yes
Frequencies*	800, 1066, or 1333MT/s	800, 1066, 1333, or 1600MT/s	1066 or 1333MT/s
Ranks supported	1 or 2	1, 2, or 4	4
Capacity per DIMM	2 or 4GB	2, 4, 8, 16, or 32GB	32GB
Maximum DIMMs per channel	2	3	3
DRAM technology	x8	x4 or x8	x4
Temperature sensor	Yes	Yes	Yes
Error Correction Code (ECC)	Yes	Yes	Yes
Single Device Disable Code (SDDC)	Yes (with advanced ECC mode)	Yes	Yes
Address parity	Yes	Yes	Yes

*Although the R620 supports DIMM speeds of 800MT/s and 1066MT/s, you can only purchase this system with DIMM speeds of 1333MT/s and 1600MT/s on Dell.com.

Table 9 lists the DIMMs supported by the R620. For the latest information on supported memory, visit Dell.com.

Table 9.   DIMMs supported

Capacity (GB)	Speed (MT/s)	Type	Ranks per DIMM	Data width	SDDC support	Voltage
2	1333	RDIMM	1	x8	Advanced ECC	1.35
2	1333	UDIMM	1	x8	Advanced ECC	1.35
2	1600	RDIMM	1	x8	Advanced ECC	1.5
4	1333	RDIMM	2	x8	Advanced ECC	1.35
4	1333	RDIMM	1	x4	All modes	1.35
4	1333	UDIMM	2	x8	Advanced ECC	1.35
4	1600	RDIMM	2	x8	Advanced ECC	1.5
8	1333	RDIMM	2	x4	All modes	1.35
8	1600	RDIMM	2	x4	All modes	1.5
16	1333	RDIMM	2	x4	All modes	1.35
16	1600	RDIMM	2	x4	All modes	1.5
32	1333	LRDIMM	4	x4	All modes	1.35
32	1333	RDIMM	4	x4	All modes	1.35

Memory configurations

The R620 server supports flexible memory configurations ranging from capacities of 2GB to 768GB. The system supports up to 12 DIMMs per processor (up to 24 DIMMs in a dual-processor configuration). The R620 has 4 memory channels per processor, with each channel supporting up to 3 DIMMs.

The R620 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: UDIMM, RDIMM, or LRDIMM. These types cannot be mixed.

The following additional memory population guidelines apply to the R620:

- Up to two quad-rank (QR) DIMMs and up to three dual-rank (DR) or single-rank (SR) DIMMs may be populated per channel. Although an LRDIMM is physically a QR DIMM, logic on the LRDIMM can make it appear as a DR DIMM to the system, allowing up to three LDRIMMs per channel.
- DIMMs must be installed in each channel, starting with the DIMM farthest from the processor.
- DIMMs should be installed with largest rank count to smallest. For example, if DR DIMMS are mixed with SR DIMMs, DR DIMMS should be placed in the lowest DIMM slots, followed by the SR DIMMs.

For more information on memory configuration, see the *Dell PowerEdge R620 Owner's Manual* on Support.Dell.com/Manuals.

Memory speed

The R620 supports memory speeds of 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 memory is also determined by the maximum speed supported by the processor, the speed settings in the BIOS, and the operating voltage of the system.

Table 10 lists memory configuration and performance details for the R620 based on the population of the number and type of DIMMs per memory channel.

Table 10.   Memory speed capabilities

DIMM type	DIMM 0	DIMM 1	DIMM 2	Number of DIMMs	Speed (MT/s)			
					800	1066	1333	1600
UDIMM	SR			1	•	•	•	
	DR			1	•	•	•	
	SR	SR		2	•	•	•	
	SR	DR		2	•	•	•	
	DR	DR		2	•	•	•	
RDIMM	SR			1	•	•	•	•
	DR			1	•	•	•	•
	QR			1	•	•	•	
	SR	SR		2	•	•	•	•
	SR	DR		2	•	•	•	•
	DR	DR		2	•	•	•	•
	QR	SR		2				
	QR	DR		2				
	QR	QR		2		•		
	SR	SR	SR	3		•	•	
	SR	SR	DR	3		•	•	
	SR	DR	DR	3		•	•	
	DR	DR	DR	3		•	•	
LRDIMM	QR			1		•	•	
	QR	QR		2		•	•	

*Although the R620 supports DIMM speeds of 800MT/s and 1066MT/s, you can only purchase this system with DIMM speeds of 1333MT/s and 1600MT/s on Dell.com.

Memory RAS features

Reliability, availability, 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 R620.

Table 11.   Memory RAS features

Feature	Description
Dense configuration optimized profile	Increased memory reliability can be a 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: intra-socket	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 R620 Owner's Manual* on Support.Dell.com/Manuals.

6 Storage

With comprehensive storage options, the Dell PowerEdge R620 offers a choice of drive types, internal and external storage controllers, and different chassis and backplane options for a varied numbers of drives.

Features such as Express Flash PCIe solid-state drives and CacheCade provide accelerated performance over previous technologies. Express Flash drives use PCIe lanes to connect directly to the processor and chipset, and are easily accessible through the hot-plug drive bay. CacheCade uses Dell PERC storage controllers to accelerate performance over hard drives or traditional solid-state drives (SSDs).

Internal storage

With the 8-drive bay or 10-drive bay chassis options, the R620 supports four different internal storage options:

- 4 x 2.5-inch drives
- 4 x 2.5-inch drives plus 2 x 2.5-inch Express Flash PCIe SSDs
- 8 x 2.5-inch drives
- 10 x 2.5-inch drives

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

Supported hard drives

The R620 supports up to ten 2.5-inch hard drives or solid state drives. Table 12 lists more information about these drives. For additional information, see Dell.com/PowerEdge.

Table 12.   Supported hard drives

Form factor	Type	Speed (rpm)	Capacities
2.5"	SATA (3Gb)	7.2K	250GB, 500GB, 1TB
	Nearline SAS (6Gb)	7.2K	500GB, 1TB
	SAS (6Gb)	10K	300GB, 600GB, 900GB
	SAS (6Gb)	15K	146GB, 300GB
	SAS SSD (SLC, 6Gb)	N/A	200GB, 400GB
	SATA SSD (MLC, 3Gb)	N/A	100GB, 200GB
	Express Flash PCIe SSD (SLC)	N/A	175GB, 350GB

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. Also, Express Flash drives use a standardized 2.5-inch 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 R620 has an option to support up to two 2.5-inch, hot-plug Express Flash drives with capacities of 175GB or 350GB.

External storage

The R620 supports the external storage devices types listed in Table 13. For more information, see Dell.com/Storage.

Table 13.   External storage device types

Device type	Description
	Supports connection to external USB tape products (supports boot from PowerVault™ RD1000)
	Supports connection to external SAS tape products
External tape	Supports connection to external FC tape products
	Supports connection to external SCSI* tape products (legacy support only)
	Supports connection to external iSCSI tape products
NAS/IDM appliance software	Supports the NAS software stack
PowerVault NAS	Supports connection to current PowerVault NAS products
PowerVault DAS	Supports connection to current PowerVault DAS (including JBOD and RBOD enclosures) products
PowerVault SAN	Supports connection to current PowerVault SAN (including EqualLogic™ iSCSI, Dell|EMC arrays, and JBOD disk enclosures) products
PowerVault IDM	Supports connection to current PowerVault IDM (archive solutions, deduplication, B2D and data protection appliances) products

*No SCSI HBA support for R620

Table 14 lists the external storage options for the R620. For more information, see <u>Dell.com/Storage</u>.

Table 14.   External storage options

Device type	Description
Disk storage options	Dell EqualLogic PS6000 Series Dell EqualLogic PS5000 Series Dell EqualLogic PS4000 Series Dell PowerVault RD1000 disk-based backup system Dell PowerVault MD3200 Modular Disk Storage Array Dell PowerVault MD3200i iSCSI Disk Storage Array Dell PowerVault MD1120 SAS external storage system
Dell|EMC products	Dell|EMC AX4-5 Dell|EMC CX4-120 Dell|EMC CX4-240 Dell|EMC CX4-480 Dell|EMC CX4-960 Dell|EMC NX4 Dell|EMC NS120 Dell|EMC NS480 Dell|EMC DD140 Dell|EMC DD610 Dell|EMC DD640
PowerVault NAS	PowerVault NX300 PowerVault NX3000 PowerVault NX3100
PowerVault IDM	PowerVault DL2200 PowerVault DX Platform

Storage controllers

Dell provides highly capable RAID options for you to ensure that your data remains safe. Dell's RAID controller options offer impressive performance improvements, including the following features:

- FastPath™ I/O: This feature can help accelerate performance when operating on SSDs.
- Split mirror: This function allows you to break mirrored disk connection in order to quickly replace a drive.
- Physical disk power management (Dimmer Switch™): This feature allows for power control of spare or idle drives, which can save energy and operating expenses.

Supported RAID controllers

The newest line of PERC (PowerEdge RAID Controller) cards offer high I/O performance for database applications and streaming digital media environments. The R620 supports the new PERC 8 family of controllers with improved functionality and faster performance. The internal RAID controllers have a dedicated connection to the system board.

The default PERC for the R620 is a mini-type PERC. However, for a system with an internal GPU card or a card between half-length and ¾-length, the adapter-type PERC is required. The R620 also supports the new software RAID solution that supports RAID 0, 1, 5 and 10. The R620 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	Description	Features	RAID modes supported	Form factor	Usage model
PERC H810 External	Eight-port, external and 6Gp/s PCIe RAID controller that supports up to 192 SATA and SAS hard drives or SSDs	Includes 1GB NV DDR3 cache, premium performance and feature set, security SED/EKMS, and SSD as cache	0, 1, 10, 5, 50, 6, 60	Adapter	Premium performance
PERC H710P Internal	Eight-port, internal 6Gb/s PCIe RAID controller that supports up to 32 SATA and SAS hard drives or SSDs	Includes 1GB NV DDR3 cache, premium performance and feature set, security SED/EKMS, and SSD as cache	0, 1, 10, 5, 50, 6, 60	Integrated mini-type[1] and adapter-type[2]	Premium performance
PERC H710 Internal	Eight-port, internal 6Gb/s PCIe RAID controller that supports up to 32 SATA and SAS hard drives or SSDs	Includes 512MB DDR3 cache, advanced feature set, security SED/EKMS	0, 1, 10, 5, 50, 6, 60	Integrated mini-type[1] and adapter-type[2]	Performance
PERC H310 Internal	Eight-port, internal 6Gb/s PCIe RAID that supports up to 32 SATA and SAS hard drives or SSDs	Supports hot-plug drives, expansion, pass-through	0, 1, 10, 5, 50	Integrated mini-type[1] and adapter-type[2]	Value
PERC S110 Software RAID	3Gb/s SATA software RAID controller that supports up to 4 physical disks or 8 virtual disks	Supports hot-plug SATA drives (4 drive maximum); no expansion; Microsoft Windows only	0, 1, 5, 10	System board-embedded SATA	Entry-level

[1]Mini-type PERCs are not supported with an internal GPU or a ¾ length PCIe card
[2]Adapter-type required with the two-PCIe slot chassis and required when configuring an internal GPU or ¾-length PCIe card

Table 16 lists the R620 backplane options for supported Dell PERC cards.

Table 16.   Hard-drive backplane options

Backplane options	Controller	Drive types
4 x 2.5"[1]	PERC S110, H310, H710, H710P	SATA HDD/SSD SAS HDD/SSD
8 x 2.5"[1]	PERC H310, H710, H710P	SATA HDD/SSD SAS HDD/SSD
10 x 2.5"[2]	PERC H310, H710, H710P	SATA HDD/SSD SAS HDD/SSD
4 x 2.5" + 2 PCIe SSDs[3]	PCIe SSD interface card + PERC H310, H710, H710P	Express Flash PCIe SSD

[1]Mini-type and adapter-type PERC available; adapter-type is available with the two-PCIe slot chassis and required when configuring internal GPU or 3/4 length PCIe card.
[2]10-drive bay chassis supports only the mini-type PERC.
[3]Express Flash PCIe SSD configurations support only the mini-type PERC.

CacheCade

CacheCade is a technology that provides automated storage tiering on SSDs with the PERC H810 and H710P. It works by detecting the most often accessed data and copying it over time to the CacheCade SSD(s) where that cached data is accessed directly, instead of accessing the hard disk drives. This can dramatically increase how your applications respond when they are under peak traffic times and how they perform when response time is critical.

CacheCade provides cost-effective performance scaling for database-type applications that perform lots of random reads, and saves the cost of adding extra drives.

Optical drive

The R620 supports one ultra-slim, 9.5mm, internal optical drive (4-, 6-, or 8-drive bay options) on the system board embedded SATA. The R620 10-drive bay chassis, however, does not support an internal optical drive due to space limitation; an external USB optical drive is an option for the 10-drive bay chassis. The R620 supports DVD-ROM and DVD+/-RW. An optical drive cable is included.

Tape drive

The R620 supports an external tape drive only through the SAS 6Gbps HBA. The R620 does not support internal tape drives.

7 Networking and PCIe

The Dell PowerEdge R620 offers balanced, scalable I/O capabilities, including integrated PCIe 3.0 capable expansion slots. Dell Select Network Adapters, Dell's network daughter cards, 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 12th generation 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 R620 supports one custom rack network daughter card (NDC), as part of the Select Network Adapter family, to house the complete LOM subsystem. The rack NDC options supported on the R620 include a selection of 1GbE and 10GbE port cards, such as 1000 Base-T, 10Gb Base-T, and 10Gb SFP+.

Figure 8.   Rack network daughter card (NDC)

Table 17 lists the available Select Network Adapter options and supported features for the R620.

Table 17.   Supported Select Network Adapter options and features

Features	Broadcom 5720 Base-T	Intel I350 Base-T	Broadcom 57800 SFP+[1]	Broadcom 57800 Base-T[1]	Intel X540 Base-T [1]
Ports x link speed	4 x 1Gb	4 x 1Gb	2 x 1Gb + 2 x 10Gb[2]	2 x 1Gb + 2 x 10Gb[2]	2 x 1Gb + 2 x 10Gb[2]
Supported speed	1Gb/s	1Gb/s	1Gb/s and 10Gb/s	1Gb/s and 10Gb/s	1Gb/s and 10Gb/s
SR-IOV	Not supported	Not supported	Not supported	Not supported	Supported (10Gb only)
ISCSI HBA	Not supported	Not supported	Supported[3]	Supported[3]	Not supported
EEE	Supported	Supported	Not supported	Not supported	Not supported
FCoE	Not supported	Not supported	Supported[4]	Supported[4]	Supported[4]
Switch independent partitioning	Not supported	Not supported	Supported[5]	Supported[5]	Not supported
DCB	Not supported	Not supported	Supported[6]	Supported[6]	Supported[6]
iSCSI TLV	Not supported	Not supported	Supported[7]	Supported[7]	Supported[7]

[1]These cards have two chipsets that offer the choice of either 10GbE or 1GbE.
[2]10Gb NDCs are not supported with an internal GPU or a ¾ length PCIe card.
[3]Only 10Gb ports have iSCSI HBA support.
[4]Only 10Gb ports have FCoE support.
[5]Only 10Gb ports have switch independent partitioning support. The maximum number of partitions supported is four (two partitions per 10Gb port). 1Gb ports do not support switch independent partitioning.
[6]Only 10Gb ports have DCB support.
[7]Only 10Gb ports have iSCSI TLV support.

System management integration

With R620, 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: Use 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 USC.

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 slots and the bandwidth of each PCIe slot. The PowerEdge R620 offers a two-slot option (available with the 4-, 6-, or 8-drive bay chassis only) and a three-slot option (this is the only option on the 10-drive bay chassis, but available also with the 4-, 6-, and 8-drive bay chassis).

For an R620 system with one processor, one two-slot option is available:

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

For an R620 system 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	NA	NA
Available with	4-, 6-, 8- or 10-drive bay chassis	4-, 6-, or 8-drive bay chassis	4-, 6-, or 8-drive bay chassis

[1]Slot 1 and slot 2 require a second processor.
[2]Slot 1 requires a second processor.
[3]10Gb NDCs are not supported with a ¾ length PCIe card.

PCIe expansion cards

The R620 supports a variety of PCIe expansion cards. Table 19 lists the supported add-in NICs and HBAs.

Table 19.   Supported NICs and HBAs

Type	Adapter
1Gb/10Gb NICs	Broadcom 5720 2x1Gb Base-T
	Broadcom 5719 4x1Gb Base-T
	Intel I350 2x1Gb Base-T
	Intel I350 4x1Gb Base-T
	Broadcom 57810S 2x10Gb SFP+
	Broadcom 57810S 2x10Gb Base-T
	Intel X520 2x10Gb SFP+
	Intel X540 2x10Gb Base-T
	QLogic® QLE8262 2x10Gb SFP+
	Brocade® BR1020 2x10Gb SFP+
FC4/FC8 HBAs	QLogic QLE2460 4Gb
	QLogic QLE2462 4Gb
	QLogic QLE2560 8Gb
	QLogic QLE2562 8Gb
	Emulex LPe12000 8Gb
	Emulex LPe12002 8Gb
	Brocade BR815 8Gb
	Brocade BR825 8Gb

Table 20 lists additional supported PCIe expansion cards for the R620.

Table 20.   Additional supported PCIe expansion cards

Type	Adapter
PCIe SSD	Fusion-io® IoDrive® 640GB V1
	Fusion-io PCIe SSD V2
PCIe bridge	PCIe bridge adapter for front-accessible, hot-plug Express Flash PCIe SSDs

For the latest information on all supported add-in PCIe expansion cards for the R620, visit Dell.com. For PCIe card dimensions, see Table 36 in Appendix A.

8 Power, thermal, and acoustics

Lower overall system-level power draw is a result of Dell's breakthrough system design. The R620 PowerEdge server maximizes performance per watt through a combination of power and cooling, energy efficient technologies, and tools. Additionally, the PowerEdge R620 has an extensive collection of sensors that automatically track thermal activity, which helps regulate temperature thereby reducing server noise and power consumption.

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 center space. Table 21 lists the tools and technologies Dell offers to help you achieve your data center goals by lowering power consumption and increasing energy efficiency.

Table 21.   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	**Energy Smart Solution Advisor (ESSA)** is a tool that helps you determine the most efficient configuration possible. With ESSA, you can calculate the power consumption of your hardware, power infrastructure, and storage. ESSA can help you determine exactly how much power your server will use at a given workload, and the PSU Advisor can help you choose the best, most efficient PSU for your workload. Learn more at Dell.com/calc. **Energy Smart Data Center Assessment** is a Dell Services offering that uses infrastructure and thermal analysis to help maximize system efficiency. Learn more at Dell.com/EnergySmart.
Industry compliance	Dell's servers are compliant with all relevant industry certifications and guidelines, including 80 PLUS, Climate Savers, and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: • Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5% • More accurate reporting of power • Better performance under a power cap
Power capping	Use Dell's systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
Systems management	**iDRAC7 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.

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 iDRAC 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.
Fresh Air cooling	With the thermal design and reliability of Dell products, you can have the capability to operate at excursion-based temperatures beyond the industry standard of 35°C (95°F) without impacting your availability model. This solution takes into account servers, networking, storage, and other infrastructure . Find additional information at Dell.com/FreshAir.
Rack infrastructure	Dell offers some of the industry's highest-efficiency power infrastructure solutions, including: • Power distribution units (PDUs) • Uninterruptible power supplies (UPSs) • Energy Smart containment rack enclosures Find additional information at http://content.dell.com/us/en/enterprise/power-and-cooling-technologies-components-rack-infrastructure.aspx.

Find additional information at Dell.com/PowerAndCooling and Power.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 following power supply unit options are available for the R620:

- 495W AC
- 750W AC
- 1100W AC
- 1100W DC

Figure 9 shows a 750W power supply unit extended from the R620 chassis.

Figure 9.   750W power supply unit

The PowerEdge R620 supports up to two AC or DC power supplies with 1 + 1 redundancy, auto-sensing, and auto-switching capability.

Dell PSUs have achieved Titanium efficiency levels as shown in Table 22.

Table 22.   Power supply efficiency

Form factor	Output	Class	Efficiency targets by load			
			10%	20%	50%	100%
	495W AC	Platinum	82.0%	90.0%	94.0%	91.0%
	750W AC	Titanium	90.0%	94.0%	96.0%	91.0%
Redundant 86mm	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%

Thermal and acoustics

Optimized thermal management makes the PowerEdge R620 cool and quiet. Benefiting from smart cooling fan speed control, the R620 can keep both high performance and good acoustics across a wide range of ambient temperatures from 10°C to 35°C (50°F to 95°F) and to extended ambient temperature ranges (see Table 33). Operating environments for the R620 can vary from the data center to general-use spaces. In typical and minimum configurations, the R620 is quiet enough to be used in an office environment.

Thermal design

The thermal design of the PowerEdge R620 reflects the following:

- **Multiple sensors are monitored for thermal feedback control:** The PowerEdge R620 dynamically controls system cooling fan speed based on responses from all component temperature sensors, including processors, hard disk drives, DIMMs, storage cards, and the inlet ambient temperature. Thermal control detects and responds to hardware configuration. Thermal management adjusts

cooling according to what the system really needs, and draws lower fan power draw and generates lower acoustical noise levels than servers without such controls.

- **User-configurable settings:** An R620 thermal control design target is to minimize the contribution of fan power to overall system power. However, with the understanding and realization that every customer has a unique set of circumstances or expectations of the system, in this generation of servers, we are introducing limited user-configurable settings in the iDRAC7 BIOS setup screen. For more information, see the *Dell PowerEdge R620 Owner's Manual* on Support.Dell.com/Manuals and "Advanced Thermal Control: Optimizing across Environments and Power Goals" on Dell.com.
- **Cooling redundancy:** The R620 allows continuous operation with a fan failure in the system.
- **Environmental specifications:** The optimized thermal management makes the R620 reliable under a wide range of operating environments as shown in the environmental specifications in Table 33. Many configurations are also compliant under expanded operating temperature environments, but a few are not.

Acoustical design

The acoustical design of the PowerEdge R620 reflects the following:

- **Versatility:** The PowerEdge R620 saves you power draw in the data center, but it also is quiet enough for the office environment in typical and minimum configurations. Compare the values for L_{pA} in Table 23 for these configurations and note that they are lower than ambient measurements of typical office environments.
- **Adherence to Dell's high sound quality standards:** Sound quality is different from sound power level and sound pressure level in that it describes how humans respond to annoyances in sound, like whistles and hums. One of the sound quality metrics in the Dell specification is prominence ratio of a tone, which is listed in Table 23.
- **Noise ramp and descent during bootup from power off:** Fan speeds and noise levels ramp during the boot process (from power off to power on) in order to add a layer of protection for component cooling in the case that the system were not to boot properly. To keep bootup as quiet as possible, the fan speed reached during bootup is limited to about half of full speed.
- **Noise level dependencies:** If acoustics is important to you, you may want to make the following configuration choices and settings for the PowerEdge R620 because they result in quieter operation:
  - iDRAC7 BIOS settings: Performance Per Watt (DAPC or OS) may be quieter than Performance or Dense Configuration (iDRAC Settings > Thermal > Max. Exhaust Temperature or Fan speed offset)
  - Hot spare feature of power supply unit: In system default setting, the Hot Spare Feature is disabled; acoustical output from the power supplies is lowest in this setting
  - Hard drive noise is highly dependent on spindle speed; a 7200 rpm SATA hard drive has the quietest hard drive operation and a 15k SAS hard drive has the loudest

  However, some components cause significant but not necessarily intuitive increases in loudness when they are installed in the R620. Contributors to acoustical output can include:
  - PCIe SSD cards (such as Fusion-io)
  - GPUs
  - Express Flash PCIe SSDs
  - 10Gb NIC
  - Number of installed processors
  - Number of installed PCIe cards

Table 23 details the acoustical performance for the R620.

Table 23.   Acoustical performance

Configuration (23 ± 2°C ambient)	CPUs	Hard drives	Power supply unit	Memory	PCI card/HDD controller	Operating mode	L_{WA}-UL[1] (bels)	L_{pA}[2] (dBA)	Prominent tones[3]
Minimum	1	1 x 250GB SATA (7.2K)	1 x 495W	1 x 2GB 1333Hz	1 x PERC H310	Idle[4]	3.9	24	None
						Stress[5]	3.9	24	None
Typical	2	4 x 300GB SAS (10K)	2 x 750W	8 x 8GB 1600Hz	1 x PERC H710 1 x Gb NIC	Idle[4]	4.4	31	None
						Stress[5]	5.1	39	None

[1]L_{WA}-UL is the upper limit sound power levels (L_{WA}) calculated per section 4.4.1 of ISO 9296 (1988) and measured in accordance to ISO 7779 (2010).

[2]L_{pA} is the average A-weighted sound pressure level from the four bystander positions calculated per section 4.3 of ISO9296 (1988) and measured in accordance with ISO 7779 (2010). The system is placed in a half rack enclosure (base of system is 25 cm above reflective floor).

[3]Prominent tone: Criteria of D.6 and D.11 of ECMA-74 11th ed. (2010) are followed to determine if discrete tones are prominent. The system is placed in a half rack enclosure (base of system is 75 cm above reflective floor) and acoustic transducer is at front bystander position, ref ISO 7779 (2010 Section 8.6.2).

[4]Idle: Reference ISO 7779 (2010) definition 3.1.7; system is running in its operating system but no other specific activity.

[5]Stressed processor: An operating mode per ISO 7779 (2010) definition 3.1.6. The software SPECPower at 50% loading is activated to stress the processors.

For more information on Dell's acoustical design, see the Dell Enterprise Acoustics white paper.

9 Rack rails and cable management

The rack rail systems for the Dell PowerEdge R620 provide tool-less support for 4-post racks with square or unthreaded round mounting holes. Compared to the R610 sliding rails that required the use of adapter brackets, the sliding rails for the R620 now offer support for threaded hole racks with the ReadyRails II mounting interface. The optional cable management arm (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.

Sliding and static rail systems

The R620 supports both sliding rails and static rails. Both rails have a new slim rail design that supports the wide system chassis. The rails ship in the tool-less mounting configuration, but can be converted to the tooled configuration very quickly and easily.

The sliding rails for the R620 also include a self-adjusting mechanism that accommodates both chassis depths. The sliding rail system allows you to fully extend the server out the rack for easy access for service. The sliding rails are available with or without the optional CMA. Figure 10 shows the sliding rails with the CMA.

Figure 10.   Sliding rails with optional CMA
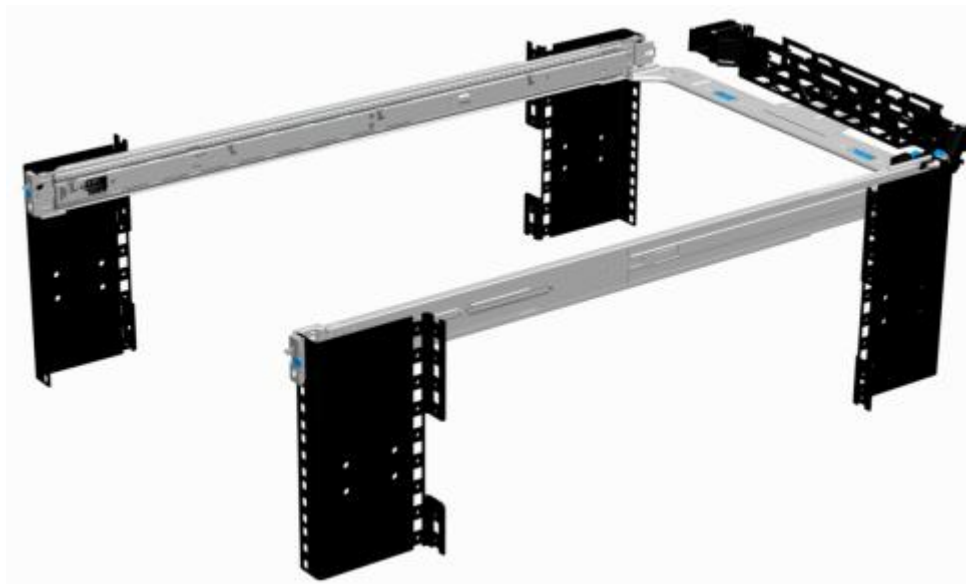
The static rails (shown in Figure 11) support a wider variety of racks than the sliding rails but do not support serviceability in the rack and are therefore are not compatible with the CMA.

Figure 11.   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 tooled 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 24 lists the rack rail systems that the R620 supports. The R620 is not compatible with any other Dell rails or CMAs including previous generation rails.

Table 24.   Supported rack rail system

Product	Rail Identifier	Mounting Interface	Rail Type	Rack Types Supported				
				4-Post			2-Post	
				Square	Round	Thread	Flush	Center
R620	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 R620 in a rack, see the *Rack Installation Instructions* on Support.Dell.com/Manuals.

Cable management arm

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 R620 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 R620 supports a wide range of industry-standard operating systems and virtualization software.

Supported operating systems

Table 25 lists the primary operating systems supported on the R620. For the latest information on supported operating systems, see Dell.com/OSsupport.

Table 25.   Primary operating system support

Operating System	Platform	Edition
Red Hat Enterprise Linux 5.8[1]	x32 x64	N/A
Red Hat Enterprise Linux 6.2[2]	x64	N/A
Red Hat Enterprise Linux for HPC	x64	N/A
SUSE Linux Enterprise Server 11 SP2	x64	N/A
SUSE Linux Enterprise Server 10 SP4	x64	N/A
Microsoft Windows Server 2012	x64	Standard Data center
Microsoft Windows Small Business Server 2011[3]	x64	Standard Premium Add-on
Microsoft Windows Server 2008 R2 with SP1	x64 (with Hyper-V role enabled)	Web Standard Enterprise Data center HPC

[1]RHEL 5.7 is the minimum supported version. Current drop in box option is RHEL 5.8.
[2]RHEL 6.1 is the minimum supported version. Current factory install is RHEL 6.2.
[3]Not validated for use with GPUs.

Support of the operating systems listed in Table 26 is limited to a virtual environment as a guest operating system. Please contact the software vendor for additional support or questions about running the operating system in a virtualized environment.

Table 26.   Virtual guest operating system support

Operating System	Platform	Edition
Microsoft Windows 2003[1]	x86	Web
Microsoft Windows 2003 R2 with SP2[1]	x86	Standard Enterprise
	x64	Standard Enterprise Data center

[1]Not validated for use with AMD® GPUs

Supported virtualization

One of the key features for virtualization on the PowerEdge R620 is the support for a fail-safe 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 27 highlights the virtualization support for the R620.

Table 27.   Virtualization support

Operating systems	Version	Options	
VMware[1]	vSphere v4.1 U2	ESX Classic	DIB
	vSphere v4.1 U2	ESXi Installable	DIB
	vSphere v4.1 U2	ESXi Embedded	FI
	vSphere v5.0 U1	ESXi (one version)	FI/DIB
	vSphere v5.1	ESXi (one version)	DIB
Citrix	XenServer 6.0	N/A	DIB
Red Hat[2]	Enterprise Virtualization 3.0	N/A	DIB

FI = factory install; DIB = drop in box
[1]vSphere Fault Tolerance is supported with these versions
[2]No OpenManage support; drop-in-box license registration card only

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.

The advanced management capabilities of Dell OpenManage also integrates into offerings from other popular systems management solutions that you may already use, making Dell platforms easy to manage and deploy in any IT environment. This ensures your IT services are available when your business needs them. If you have already standardized on offerings from industry leaders, such as BMC Software, Microsoft, Symantec™, VMware, or other vendors, you can leverage OpenManage integration and connections developed for use with your existing systems management framework to efficiently manage Dell servers, storage, business-client PCs, and network devices.

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

Systems management solutions

Dell systems management solutions include a wide variety of tools, products, and services that enable you to leverage an existing systems management framework. As shown in Figure 12, Dell systems management solutions are centered around OpenManage server management, featuring iDRAC7 with Lifecycle Controller.

Figure 12.   Dell systems management solutions
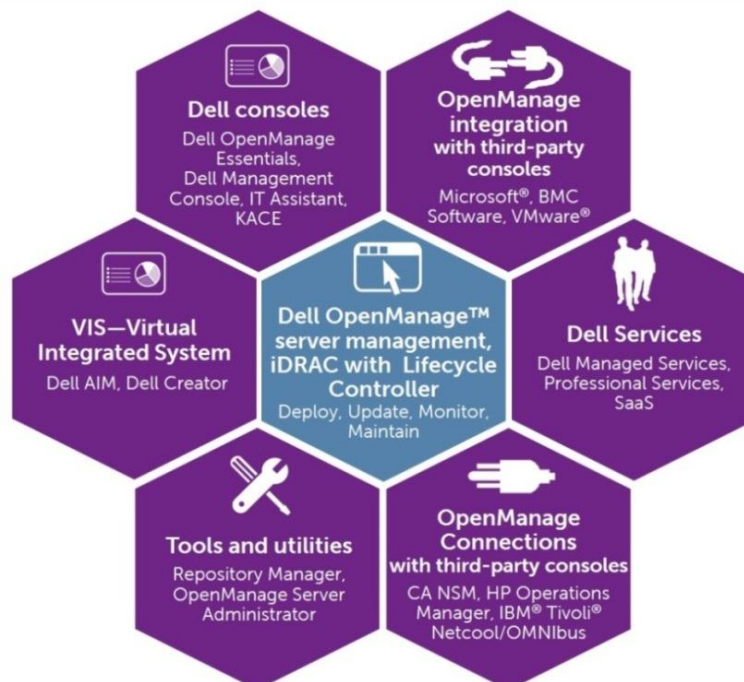
OpenManage systems management

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.

iDRAC7 with Lifecycle Controller

The Integrated Dell Remote Access Controller 7 (iDRAC7) with Lifecycle Controller is the heart of Dell's second generation of Dell PowerEdge server embedded management functionality. In addition to enabling agent-free management, iDRAC7 with Lifecycle Controller provides remote access to the system—whether or not there is a functioning operating system running on the server. These embedded features improve all aspects of a typical server lifecycle. Table 28 describes the functions and benefits of iDRAC7 with Lifecycle Controller.

Table 28.   iDRAC7 with Lifecycle Controller functions and benefits

Feature	Function	Benefit
Out of band (OOB)	iDRAC7 offers real-time OOB discovery, inventory, deployment monitoring, alerting and updates for servers and internal storage	Manage servers independent of the OS type or status—even if an OS is not installed
Single code base	All server types have the same embedded management hardware and firmware	Simplified and consistent maintenance across server platforms
Dedicated GigE port (PowerEdge rack and tower systems)	Gigabit Ethernet replaces 10/100 on predecessor iDRAC6	Fast throughput for better performance; compatibility with setup for switches
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 iDRAC7 Enterprise	Allows for use of a non-Dell SD card
Enhanced power management	Integration with Intel Node Manager provides data center level power monitoring and capping (requires iDRAC7 Enterprise)	Fine tune data center power policies, capping, and usage; report on historical power usage by rack, row or room using Power Center Manager (new)

Feature	Function	Benefit
Electronic licensing	Upgrades to iDRAC7 Express or iDRAC7 Enterprise by software licensing key and license portal (may require installation of hardware option for 300-500 series servers)	Digital license installed in factory; free 30-day trial versions are available; uses a license management portal versus paper-based licenses and 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.

iDRAC7 feature comparison

iDRAC7 Enterprise is available for the PowerEdge R620, and Dell also offers an option of iDRAC7 Express. A detailed feature comparison for iDRAC7 Enterprise and iDRAC7 Express is shown in Table 29.

Table 29.   Feature comparison for iDRAC7 Express and Enterprise

Feature (function)	iDRAC7 Enterprise	iDRAC7 Express
Local configuration with USC	•	•
IPMI 2.0	•	•
Embedded diagnostics	•	•
Local OS install	•	•
Local updates	•	•
Driver pack	•	•
Shared NIC (LOM)	•	•
Remote update	•	•
Power control	•	•
Encryption	•	•
Crash screen capture[1]	•	•
IPv6	•	•
Auto-discovery	•	•
Auto-recovery	•	•
Web GUI	•	•
Remote CLI	•	•
Local/SSH CLI	•	•
Serial redirection	•	•
Remote configuration	•	•
Email alerts	•	•

Feature (function)	iDRAC7 Enterprise	iDRAC7 Express
SNMP alerts	•	•
Power monitoring	•	•
Comprehensive monitoring	•	•
Dedicated NIC 1Gbps (100MB in iDRAC6)	•	
Part replacement	•	
Backup and restore configurations	•	
Virtual console (4 user)	•	
Virtual console chat	•	
Support for customer-supplied SD cards for vFlash media	•	
Virtual flash partitions	•	
Virtual media	•	
Virtual folders	•	
Remote file share	•	
Crash video playback	•	
Boot record/playback	•	
Power capping	•	
Enterprise group power management	•	
Directory services (AD, LDAP)	•	
PK authentication	•	
Two-factor authentication[2]	•	

[1]Requires OMSA agent on target server
[2]Uses Microsoft ActiveX® on Internet Explorer® only

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 graphical user interface (GUI). It can also be used to view system configuration, inventory, health, and performance.

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.

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 recently released 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 KACE™ K1000 service desk. OpenManage Essentials is available as a no-charge software download from Support.Dell.com.
- **Dell Management Console**—Dell Management Console (DMC) offers sophisticated data-center management capabilities with comprehensive reporting features. DMC can perform basic hardware management and can manage operating systems and applications using various plug-ins from Symantec.
- **Dell IT Assistant**—Dell IT Assistant (ITA) is a console for managing Dell servers, storage arrays, and other components distributed throughout a network. Dell IT Assistant allows for easy identification of system issues through alerts, helping to reduce system downtime. Systems administrators can easily monitor systems anywhere within their network using ITA. ITA is supported on the R620, however, enhanced functionality is now available with OpenManage Essentials.

OpenManage systems management tools and utilities

Dell OpenManage systems management tools and utilities consist of the following:
- **Dell Repository Manager**—The Dell Repository Manager (RM) is a standalone 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 OpenManage Server Update Utility**—The Dell Server Update Utility (SUU) is a DVD-based application for identifying and applying BIOS and firmware updates to your Dell PowerEdge servers.
- **Dell OpenManage Systems Build and Update Utility**—The Dell System Build and Update Utility (SBUU) provides one-to-one and one-to-many deployment and single-server update capabilities in the pre-operating system environment.
- **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.

Integration with third-party consoles

Dell OpenManage easily integrates with several leading third-party consoles, including:

- **Dell Server Management Pack Suite for Microsoft System Center Operations Manager (SCOM)**—This suite of server management packs enables several functions through System Center Operations Manager, including in-band discovery and monitoring of racks and towers, out-of-band discovery and monitoring through iDRAC7 with Lifecycle Controller, as well as performance and advanced monitoring.
- **Dell Lifecycle Controller Integration (DLCI) for Microsoft System Center Configuration Manager (SCCM)**—This pack contains Dell Lifecycle Controller Integration (DLCI), which integrates OpenManage functions in SCCM to manage the Dell PowerEdge servers, including auto-discovery, operating system deployment and configuration of hardware elements, (RAID, NIC, BIOS, iDRAC7), OS and hypervisor agnostic updates, firmware management, and system viewer utilities.
- **Dell Server PRO Management Pack for Microsoft System Center Virtual Machine Manager (SCVMM)**—This pack manages Dell physical servers and hosts of virtual machines (VMs) by using Microsoft System Center Operations Manager/System Center Essentials (SCOM/SCE) and System Center Virtual Machine Manager (SCVMM). It provides guidance for remedial actions based on alerts to best manage virtual machines and handle the impacts appropriately.
- **Dell Management Plug-in 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.
- **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 provides connections with many third-party consoles, including:

- **Dell OpenManage Connection for Computer Associates Network and Systems Management**—This connection allows you to monitor PowerEdge servers and PowerVault storage arrays from within the Computer Associates Network and Systems Management (CANSM) console.
- **Dell OpenManage Connection for HP Operations Manager**—This connection enables several functions through HP Operations Manager, including auto-grouping, SNMP trap reception, global health monitoring, and a context-sensitive launch of OpenManage Server Administrator.
- **Dell OpenManage Connection for IBM Tivoli Netcool/OMNIBus**—This connection provides event monitoring capabilities to monitor Dell PowerEdge servers and Dell EqualLogic systems. It allows event monitoring, automatic event correlation, and launching device consoles from the Netcool/OMNIbus console.

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 13 illustrates the various operations that can be performed during the server's lifecycle.

Figure 13.   Systems management server lifecycle

Table 30 lists the products that are available for one-to-one and one-to-many operations, and when they are used in the server's lifecycle.

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

Operation	One-to-one	One-to-many	
Deploy	• Lifecycle Controller GUI • DTK • SBUU	• Symantec Deployment Server • Dell Management Plug-in for VMware vCenter • KACE K1000 Appliance • Lifecycle Controller Remote Services • BMC BladeLogic integration with Lifecycle Controller	• Dell Server Deployment Pack (DSDP) for Microsoft System Center Configuration Manager and Dell Lifecycle Controller Integration (DLCI) for Microsoft System Center Configuration Manager
Update	• iDRAC7 with LifeCycle Controller • Lifecycle Controller GUI • Repository Manager • DUP • SUU • SBUU • Dell Management Plug-in for VMware vCenter	• Dell OpenManage Essentials • Dell OpenManage ITA • Dell Management Console • Lifecycle Controller Remote Services	• Dell Update Catalogs for Microsoft System Center Configuration Manager • Dell Lifecycle Controller Integration (DLCI) for Microsoft System Center Configuration Manager
Monitor	• iDRAC7 • OMSA	• Dell OpenManage Essentials • Dell OpenManage ITA • BMC ProactiveNet Performance Management • Dell OpenManage Power Center • Dell Management Console	• Dell Management Plug-in for VMware vCenter • BMC ProactiveNet • Dell Server Management Pack Suite for Microsoft System Center Operations Manager (SCOM)
Maintain	• iDRAC7 • Lifecycle Controller GUI	• Lifecycle Controller Remote Services	Remediate: • Dell Server PRO Management Pack for Microsoft System Center Virtual Machine Manager (SCVMM) Replace parts: • Dell Lifecycle Controller Integration (DLCI) for Microsoft System Center Configuration Manager

For additional detailed information on Dell's systems management portfolio, see the *Dell Systems Management Overview Guide* on Support.Dell.com/Manuals.

Appendix A. Additional specifications

Chassis dimensions

Figure 14 details the dimensions of the Dell PowerEdge R620 chassis.

Figure 14. System dimensions
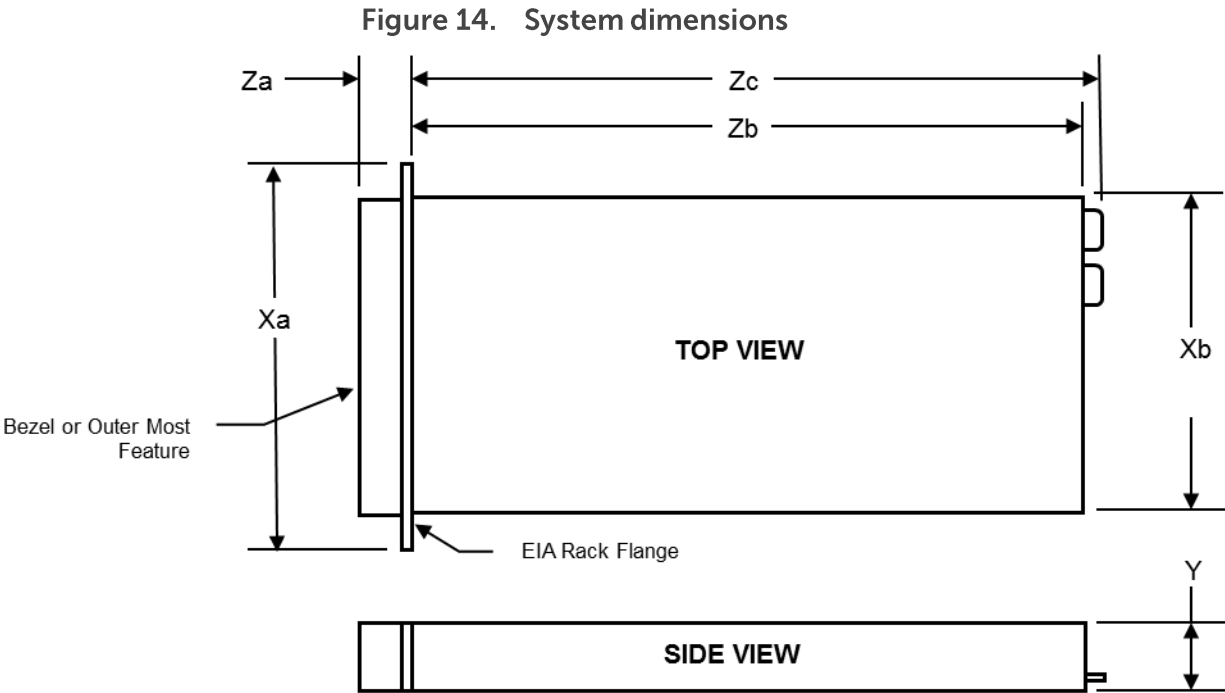
Chassis configuration	Xa	Xb	Y	Za with bezel	Za without bezel	Zb	Zc
8-drive bay chassis	482.4mm	434.0mm	42.8mm	35.0mm	20.4mm	682.7mm	701.3mm
10-drive bay chassis	482.4mm	434.0mm	42.8mm	35.0mm	20.4mm	731.0mm	752.1mm

Chassis weight

Table 31 lists the weight of the R620 chassis at maximum configuration as well as empty of any hardware.

Table 31. Chassis weight

Configuration	8-drive bay chassis	10-drive bay chassis
Maximum	18.6Kg (40.96lb)	19.8Kg (43.56lb)
Empty chassis	8.z6Kg (18.92lb)	9.4Kg (20.66lb)

Power supply specifications

Table 32 lists power supply specifications for the PowerEdge R620.

Table 32.   Power supply specifications

Specification	1100W DC	1100W AC	750W AC	495W AC
Current consumption	32A	12A−6.5A	10A−5A	6.5A−3A
Supply voltage	-48V to -60V DC	100−240VAC[1]	100−240VAC[1]	100−240VAC[1]
Frequency	N/A	50/60Hz	50/60Hz	50/60Hz
Heat dissipation (BTU/hr max)	4416	4100	2843[2] 2891[3]	1908

[1]Auto-ranging
[2]Titanium efficiency
[3]Platinum efficiency

Environmental specifications

Table 33 details the environmental specifications for the R620. For additional information about environmental measurements for specific system configurations, see Dell.com/environmental_datasheets.

Table 33.   Environmental specifications

Fresh Air: temperature, humidity, altitude de-rating	
Continuous operation	10°C to 35°C (50°F to 95°F) at 10% to 80% relative humidity with 26°C (78.8°F) maximum dew point (maximum wet bulb temperature). De-rate maximum allowable dry bulb temperature at 1°C per 300m above 950m (1°F per 547 ft above 3117 ft).

Expanded operation	When operating in the expanded temperature range, system performance may be impacted, and ambient temperature warnings may be reported on the LCD and in the System Event Log.
	
	≤ 10% of annual operating hours: 5°C to 10°C and 35°C to 40°C (with no direct sunlight on the equipment) at 5% to 85% relative humidity with 26°C dew point (maximum wet bulb temperature). Outside the standard operating temperature (10°C to 35°C), the system can operate down to 5°C or up to 40°C for a maximum of 10% of its annual operating hours. For temperatures between 35°C and 40°C (95°F to 104°F), de-rate maximum allowable dry bulb temperature by 1°C per 175m above 950m (1°F per 319 ft above 3117 ft).
	
	≤ 1% of annual operating hours: −5°C to 5°C and 40°C to 45°C (with no direct sunlight on the equipment) at 5% to 90% relative humidity with 26°C dew point (maximum wet bulb temperature). Outside the standard operating temperature (10°C to 35°C), the system can operate down to −5°C or up to 45°C for a maximum of 1% of its annual operating hours. For temperatures between 40°C and 45°C (104°F to 113°F), de-rate maximum allowable dry bulb temperature by 1°C per 125m above 950m (1°F per 228 ft above 3117 ft).
	
	Expanded operation restrictions:
	• No cold startup below 5°C
	• Maximum altitude for the operating temperature must be 3050m (10,000ft)
	• Redundant power supplies required
	• Not supported:
	  − Express Flash PCIe SSD
	  − GPU

- LRDIMM
- 130W 4-core and 135W processors
- Peripheral cards not qualified by Dell
- Peripheral cards greater than 25W

Temperature	
Operating	See Fresh Air for temperature information
Storage	−40°C to 65°C (-40°F to 149°F) with a maximum temperature gradation of 20°C per hour

Relative humidity	
Operating	See Fresh Air for relative humidity information
Storage	5% to 95% at a maximum wet bulb temperature of 33°C (91°F); atmosphere must be condensing at all times

Maximum vibration	
Operating	0.26 Grms at 5Hz to 350Hz in all orientations
Storage	1.87 Grms at 10Hz to 500Hz for 15 minutes (all six sides tested)

Maximum shock	
Operating	Half sine shock in all operational orientations of 31G +/− 5% with a pulse duration of 2.6ms +/− 10%
Storage	Half sine shock on all six sides of 71G +/− 5% with a pulse duration of 2ms +/−10%; square wave shock on all six sides of 27G with velocity change at 235 in/sec or greater

Altitude	
Operating	−15.2m to 3048m (−50 ft to 10,000 ft)
Storage	−15.2m to 12,000m (−50 ft to 39,370 ft)

Airborne contaminant level
Class G1 or lower as defined by ISA-S71.04-1985

Video specifications

The Dell PowerEdge R620 iDRAC 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. Front access video is not available on the 10-drive bay chassis due to space limitation.

The R620 system supports the 2D graphics video modes listed in Table 34.

Table 34.   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

Resolution	Refresh Rate (Hz)	Color Depth (bit)
1280 x 1024	60, 75	8, 16, 32
1440 x 900	60	8, 16, 32

Rack rail specifications

Table 35 lists the spacing dimensions for the R620 sliding and statics rails.

Table 35.   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		
R620	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	—

[1]For 8-drive bay chassis; [2]For 10-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 R620 is being installed. Although the 10-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 R620. These ports are USB 2.0 compliant.

PCIe card dimensions

Table 36 provides the dimensions of the PCIe cards supported by the R620.

Table 36.   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: ¾-length is 234mm (9.213 inches)

Appendix B. Standards compliance

The Dell PowerEdge R620 conforms to the industry standards listed in Table 37.

Table 37.   Industry standard documents

Standard	URL for information and specifications
ACPI Advance Configuration and Power Interface Specification, v2.0c	www.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	www.microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx
IPMI Intelligent Platform Management Interface, v2.0	www.intel.com/design/servers/ipmi
DDR3 Memory DDR3 SDRAM Specification, Rev. 3A	www.jedec.org/download/search/JESD79-3C.pdf
LPC Low Pin Count Interface Specification, Rev. 1.1	developer.intel.com/design/chipsets/industry/lpc.htm
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	www.pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	pmbus.info/specs.html
SAS Serial Attached SCSI, v1.1	www.t10.org
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	www.sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	www.dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2	www.trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	www.uefi.org/specs
USB Universal Serial Bus Specification, Rev. 2.0	www.usb.org/developers/docs
Windows Logo Windows Logo Program System and Device Requirements, v3.10	www.microsoft.com/whdc/winlogo/hwrequirements.mspx

Appendix C. Additional resources

Table 38 provides a list of documents and websites that provide for more information on the Dell PowerEdge R620.

<div align="center">Table 38.   Additional resources</div>

Resource	Description of contents	Location
PowerEdge R620 Owner's Manual	This manual is provided in HTML format on the CD provided with the R620 system, and also in HTML and PDF format at the Dell support site. A printed version is available in Asian languages as a customer-orderable option. This manual provides information on the following: • Chassis features • System Setup program • System messages • System codes and indicators • System BIOS • Remove and replace procedures • Troubleshooting • Diagnostics • Jumpers and connectors	Support.Dell.com/Manuals
PowerEdge R620 Getting Started Guide	This guide is printed and shipped with the system, and is also available in PDF format on the Dell support site. This guide provides information on the following: • Initial setup steps • Key system features • Technical specifications	Support.Dell.com/Manuals
Rack Installation Instructions	This printed document is provided with the rack kits. The document provides the instructions for installing the server in a rack.	Support.Dell.com/Manuals
Cable Management Arm Installation Instructions	This printed document is provided with the rack kits. The document provides the instructions for installing the cable management arm on the rack.	Support.Dell.com/Manuals
Information Update	This document is printed and shipped with the system, and is also available in PDF format on the Dell support site. This document provides information on system updates.	Support.Dell.com/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

Resource	Description of contents	Location
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
Dell Energy Smart Data Center Assessment	This tool uses infrastructure and thermal analysis to help maximize system efficiency.	Dell.com/EnergySmart
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/ESSA
Power and cooling technologies	Provides details for improving energy efficiency in the data center.	Dell.com/PNC
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 R620 processors and chipset.	Intel.com
Dell PowerEdge RAID controllers	Provides more information on Dell PowerEdge RAID controllers (PERC).	Dell.com/PERC
Power distribution unit	Provides help selecting a rack-based power distribution unit (rPDU).	DellPDU.com
Uninterruptible power supply	Provides help selecting an uninterruptible power supply (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.	www.dell.com/downloads/global/products/pedge/en/acoustical-education-dell-enterprise-white-paper.pdf

Appendix D. System board block diagram

Figure 15.   R620 system board block diagram