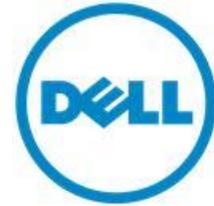


# PowerEdge C6220 Rack Server



Technical Guide



Streamlined and powerful, the PowerEdge™ C6220 server with 2-socket Intel® Xeon® processors offers optimal efficiency and two flexible sled options in a 2U chassis.

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# 1 System overview

The Dell™ PowerEdge™ C6220 rack server is an ultra-dense 2U server that can support up to four independent two-socket servers and is the direct successor to the PowerEdge C6100. The PowerEdge C6220 has two sled configurations that are selected based on the number of nodes populated in the chassis:

- Two-node systems ship with 2U sleds
- Four-node systems ship with 1U sleds

Each independent server features the single or dual Intel® Xeon® processor E5-2600 product family with up to eight cores, C602 chipset for I/O connectivity, DDR3 memory, dual-port embedded Gigabit Ethernet (GbE) controllers and integrated IPMI 2.0 BMC with a dedicated RJ45 connection.

The PowerEdge C6220 server benefits from all the features of the Intel E5-2600 product family as well as an extremely dense and energy-efficient shared infrastructure chassis. The combination of Intel's new performance E5-2600 architecture and the C6000 shared infrastructure chassis provide performance, efficiency and flexibility in one dense package.

## New technologies

The Dell PowerEdge C6220 leads the PowerEdge portfolio in key areas of differentiation, primarily:

- Ultra density: up to four independent 2S servers in a 2U form factor
- High-performance E5-2600 series processors up to 135W TDP
- Up to 12 x 3.5-inch or 24 x 2.5-inch hot-plug drives in a 2U form factor
- Flexible backplane enables customizable hard drives for interchangeable node assignments
- Enhanced serviceability over previous generations
- Redundant hot-plug power supply for limited configurations
- Serviceable nodes: ability to service one node while others are running (All four system boards are hot-pluggable.)
- Configure each server node differently to accomplish different workloads in one chassis
- Up to 512GB memory support with 16 DDR3 slots

Table 1 lists new technologies featured in the PowerEdge C6220 server.

**Table 1. New technologies**

New technologies	Detailed descriptions
<b>Intel Xeon processor E5-2600 product family</b>	This family of Intel processors has embedded PCI Express® (PCIe) lanes for improved I/O performance. See the Processor section for details.
<b>Intel C602 chipset</b>	The Intel Platform Controller Hub (PCH) chip is implemented on the PowerEdge C6220 server.
<b>1600MT/s DDR3 memory</b>	Certain models of the Intel Xeon processor E5-2600 product family support 1600MT/s memory. The PowerEdge C6220 supports two DIMMs per channel at 1600MT/s with these processors. See the Memory section for details.



New technologies	Detailed descriptions
<b>Advanced power management</b>	The PowerEdge C6220 supports advanced power monitoring and power capping tools that can help manage power consumption. See the Power section for details.
<b>Dell Fresh Air cooling</b>	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 section for details.

## Product comparison

The PowerEdge C6220 is the successor to the C6100 system. Table 2 compares the features of the PowerEdge C6220 to the C6100 and R620 systems.

**Table 2. Comparison of PowerEdge C6220, C6100 and R620**

Specification	PowerEdge C6100	PowerEdge C6220	PowerEdge R620
<b>Chassis</b>	2U rack	2U rack	1U rack
<b>Processors</b>	Intel Xeon processors 5500 and 5600 product families	Intel Xeon processor E5-2600 product family	Intel Xeon processor E5-2600 product family
<b>Front side bus (FSB)</b>	Intel QuickPath <sup>®</sup> Interconnect (QPI)	Intel QPI	Intel QPI
<b>Memory<sup>1</sup></b>	12 x DDR3 RDIMM and UDIMM; up to 192GB	16 x DDR3 RDIMM and UDIMM; up to 512GB	24 x DDR3 RDIMM, UDIMM, and LRDIMM; up to 768GB
<b>Hard drive bays (hot plug)</b>	4-node: up to 6 x 2.5" or 3 x 3.5" hard drives 2-node: up to 12 x 2.5" or 6 x 3.5" hard drives	4-node: up to 6 x 2.5" or 3 x 3.5" hard drives 2-node: up to 12 x 2.5" or 6 x 3.5" hard drives	10 x 2.5" hard drives or 8 x 2.5" hard drives + 2x PCIe SSDs 4 x 2.5" hard drives + 2x PCIe SSDs
<b>External drive bay</b>	None	None	Slimline optical disk drive (8 x 2.5" only)
<b>Embedded hard drive controller</b>	Chipset-based SATA	Chipset-based SATA	Chipset-based SATA
<b>RAID controller</b>	See optional storage controller	See optional storage controller	PERC S110, H310, H710, H810
<b>Optional storage controller</b>	Non-RAID: ICH10R RAID: LSI 1068e Mezzanine, LSI; 2008 Mezzanine, LSI 9260-8i	Non-RAID: Intel C602 RAID: LSI 2008 Mezzanine at 3Gbps, LSI 9210-8i at 3Gbps, LSI 9265-8i at 3Gbps	RAID: PERC S110, PERC H310, PERC H710, PERC H710P, PERC H810
<b>Express flash drives</b>	N/A	N/A	Up to two PCIe SSDs



Specification	PowerEdge C6100	PowerEdge C6220	PowerEdge R620
<b>PCIe slots</b>	1 x PCIe x16 2.0 + 1 x PCIe x8 2.0 (mezzanine)	1U sled: 1 x16 PCIe 2.0 (half-height, half-length) + 1 x8 PCIe 3.0 (mezzanine) 2U sled: 2 x16 PCIe 2.0 (full height, full length) + 1 x8 PCIe 3.0 (mezzanine)	3 x PCIe 3.0: 2 PCIe x16 3.0 (half height, half length) + PCIe x8 3.0 (half height, half length), or 2 x PCIe 3.0: 1 PCIe x16 3.0 (full height, 3/4 length) + PCIe V x 16 3.0 (half height, half length)
<b>Embedded NIC</b>	2x Intel 82576 GbE	2x Intel i350 GbE	Network daughter card, minimum configuration 4x 1Gb Broadcom® 5720
<b>Power supplies</b>	Hot-plug, redundant power supply units: 470W/750W/1100W (80+ Gold)	Hot-plug, redundant power supply 495W, 1200W (80+ Platinum); auto-ranging (100V-240V) Redundant, 1400W (80+ Platinum) (240V)	Hot-plug, redundant, 495W, 750W, 1100W, or 1100W DC (80+ Platinum), (80+ Titanium) Auto Ranging
<b>Fans</b>	4 x 80mm, non-redundant, not hot-pluggable	4 x 60mm, non-redundant, not hot-pluggable	4 x 40mm, redundant, hot-pluggable
<b>Systems management</b>	BMC, IPMI 2.0 compliant; iKVM, virtual media, Intel Node Manager 2.0 compliant	BMC, IPMI 2.0 compliant; iKVM, virtual media, Intel Node Manager 2.0 compliant	Dell OpenManage™ Essentials, OMSA Agent, OpenManage Power Center (requires iDRAC7 Enterprise with Lifecycle Controller), OpenManage Integrations and Connections, iDRAC7 Express with Lifecycle Controller (standard option)
<b>Support for internal GPU</b>	No	No	Yes (available through CFI or field upgrade only)
<b>Power efficiency</b>	Gold	Platinum	Titanium

<sup>1</sup>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 product features for the PowerEdge C6220. For the latest information on supported features for the PowerEdge C6220, visit [Dell.com/PowerEdgeC](http://Dell.com/PowerEdgeC).

**Table 3. Technical specifications**

Feature	PowerEdge C6220 technical specification																		
<b>Form factor</b>	2U rack mount chassis supporting 1 to 4 independent server nodes																		
<b>Sled types</b>	1U or 2U PowerEdge C6220 sleds Maximum of 4 1U or 2 2U PowerEdge C6220 sleds in a chassis																		
<b>Processors</b>	Intel Xeon processor E5-2600 product family																		
<b>Processor sockets</b>	2 sockets (up to 4x 2-socket servers)																		
<b>Internal interconnect</b>	2 Intel QPI links: 6.4GT/s, 7.2GT/s, 8.0GT/s																		
<b>Cache</b>	Up to 20MB with L3 cache; core options: 2, 4, 6, 8																		
<b>L2/L3 cache</b>	5MB, 10MB, 15MB or 20MB																		
<b>Chipset</b>	Intel C602																		
<b>Memory<sup>1</sup></b>	<b>16 DIMM slots, up to 512GB per node:</b> 4GB/8GB/16GB/32GB DDR3 RDIMM, UDIMM (1333MT/s 1.35V) 4GB/8GB/16GB DDR3 RDIMM (1600MT/s 1.5V and 1.35V)																		
<b>I/O slots</b>	<table border="0"> <tr> <td><b>1U sled:</b></td> <td><b>2U sled:</b></td> </tr> <tr> <td>1 x16 PCIe 2.0 riser slot</td> <td>2 x16 PCIe 2.0 riser slot</td> </tr> <tr> <td>1 x8 PCIe 3.0 daughtercard (mezzanine) connector</td> <td>1 x8 PCIe 3.0 daughtercard (mezzanine) connector</td> </tr> </table>	<b>1U sled:</b>	<b>2U sled:</b>	1 x16 PCIe 2.0 riser slot	2 x16 PCIe 2.0 riser slot	1 x8 PCIe 3.0 daughtercard (mezzanine) connector	1 x8 PCIe 3.0 daughtercard (mezzanine) connector												
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1 x8 PCIe 3.0 daughtercard (mezzanine) connector	1 x8 PCIe 3.0 daughtercard (mezzanine) connector																		
<b>Drive controller</b>	Intel C602: SATA or SSDs only																		
<b>RAID controller</b>	LSI 2008 SAS mezzanine (optional) LSI 9210-8i SAS add-in controller (optional) LSI 9265-8i SAS add-in controller (optional)																		
<b>Hard drives (hot-plug)</b>	<table border="0"> <tr> <td><b>Drive bay options:</b></td> <td></td> </tr> <tr> <td>Up to 24 x 2.5" or up to 12 x 3.5"</td> <td></td> </tr> <tr> <td><b>Hard drive options:</b></td> <td></td> </tr> <tr> <td>2.5" SAS (15K): 146GB, 300GB</td> <td></td> </tr> <tr> <td>2.5" SAS (10K): 300GB, 600GB, 900GB, 1.2TB</td> <td>3.5" SATA (7.2K): 500GB, 1TB, 2TB, 3TB, 4TB</td> </tr> <tr> <td>2.5" SATA (7.2K): 500GB, 1TB</td> <td>3.5" SAS (15K): 300GB, 600GB</td> </tr> <tr> <td>2.5" NL SAS (7.2K): 500GB, 1TB</td> <td>3.5" NL SAS (7.2K): 1TB, 2TB, 3TB, 4TB</td> </tr> <tr> <td>2.5" SATA SSD (MLC): 120GB, 160GB, 240GB, 300GB, 480GB, 600GB, 800GB</td> <td></td> </tr> <tr> <td>2.5" SATA SSD (eMLC): 100GB, 200GB, 400GB, 800GB</td> <td></td> </tr> </table>	<b>Drive bay options:</b>		Up to 24 x 2.5" or up to 12 x 3.5"		<b>Hard drive options:</b>		2.5" SAS (15K): 146GB, 300GB		2.5" SAS (10K): 300GB, 600GB, 900GB, 1.2TB	3.5" SATA (7.2K): 500GB, 1TB, 2TB, 3TB, 4TB	2.5" SATA (7.2K): 500GB, 1TB	3.5" SAS (15K): 300GB, 600GB	2.5" NL SAS (7.2K): 500GB, 1TB	3.5" NL SAS (7.2K): 1TB, 2TB, 3TB, 4TB	2.5" SATA SSD (MLC): 120GB, 160GB, 240GB, 300GB, 480GB, 600GB, 800GB		2.5" SATA SSD (eMLC): 100GB, 200GB, 400GB, 800GB	
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2.5" SATA SSD (eMLC): 100GB, 200GB, 400GB, 800GB																			



Feature	PowerEdge C6220 technical specification
<b>Embedded Network Adapter</b>	Intel i350 2 x 1GbE
<b>I/O adapter options</b>	<p><b>1GbE</b> Intel i350 quad-port 1Gb adapter Intel 82580 ET quad-port 1Gb mezzanine</p> <p><b>10GbE</b> Intel 82599 dual-port 10Gb DA/SFP+ mezzanine Intel X520 dual-port 10Gb DA/SFP+ mezzanine</p> <p><b>InfiniBand®</b> QLogic® QLE7340 QDR single-port adapter Mellanox® ConnectX®-2 QDR dual-port mezzanine Mellanox ConnectX-3 FDR single-port mezzanine Dell X410 HIC for connection to the C410x</p>
<b>Power supply</b>	2 hot-plug redundant Platinum efficiency 1200W and 1400W power supplies
<b>USB</b>	2 external
<b>Fans</b>	Shared cooling with quick-disconnect 4 x 60mm speed fans detectable with PWM control
<b>Server management</b>	Embedded BMC with IPMI 2.0 support with 1 x 10/100 Mbps RJ45 connector: Intel Node Manager 2.0 compliant — server management support for the PowerEdge C6220 is delivered by third-party solutions only. No Dell OpenManage support is provided at this time. Systems management scripts and tools can be found at <a href="http://PowerEdgeC.Dell.com">PowerEdgeC.Dell.com</a> .
<b>Rack support</b>	ReadyRails™ static rails for tool-less mounting in 4-post racks with square or unthreaded round holes in a 19-inch EIA-310-E compliant rack including all Dell 42xx and 24xx racks. Note: APC racks are also supported.
<b>Operating systems</b>	<p>Microsoft® Windows Server® 2012 Microsoft Windows Server 2012 R2 (includes Hyper-V®) Microsoft Windows Server 2008 R2 x64 SP1 (includes Hyper-V) Microsoft Windows® HPC Server 2008 R2 x64 SP1 Novell® SUSE® Linux® Enterprise Server 11 SP3 Red Hat® Enterprise Linux</p> <p><b>Virtualization options:</b> Citrix® XenServer® Microsoft Hyper-V; a server role in Microsoft Windows Server operating systems VMware® vSphere® ESXi™</p>



Feature	PowerEdge C6220 technical specification
<b>Services</b>	Data Center Consulting Services Rack Integration (U.S. only, not available in China) Rack Design Verification Configuration Services/CFI Onsite Deployment Online Self Dispatch Basic Support ProSupport for IT ProSupport for Data Center 4-Hour Support Keep Your Hard Drive Enterprise Wide Contract IT Advisory Service Remote Advisory Service Certified Data Destruction Specialized Onsite Services

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## 2 Chassis views and features

The Dell PowerEdge C6220 rack server is a 2U rack system that can support one to four independent server node options. The Power Edge C6220 chassis is available in three versions:

- One supports 12 x 3.5-inch SAS/SATA drives
- Two support up to 24 x 2.5-inch SAS/SATA drives with a passive or expander backplane

A PowerEdge C6220 system consists of the PowerEdge C6000 enclosure and an optional number of compute sleds.

### Front panel

The front panel on the PowerEdge C6220 chassis, as shown in Figure 1 and Figure 2, contains the power buttons and LEDs for each server node, and the hard drive bays and LEDs.

**Figure 1. 3.5-inch two- and four-system board chassis**



**Figure 2. 2.5-inch two- and four-system board chassis**



### Back panel

The fans, power supplies and connectors (USB, NIC, serial and Ethernet) are on the back panel of the PowerEdge C6220 chassis, as shown in Figure 3.

**Figure 3. Back view with four server nodes**



## Chassis features

Table 4 lists the features on the PowerEdge C6220 chassis. For additional information on PowerEdge C6220 chassis features, see the *Dell PowerEdge C6220 Systems Hardware Owner's Manual* on [Dell.com/Support/Manuals](http://Dell.com/Support/Manuals).

**Table 4. Chassis features**

Feature	Description
<b>Power-on indicator and power button</b>	ACPI-complaint power button with an integrated green power LED
<b>System identification indicator/button</b>	Buttons on the back and front of a system to help identify the unit in a data center environment
<b>USB connectors</b>	2 on the back panel
<b>Hard drives</b>	Up to 12 x 3.5-inch hot-plug hard drives Up to 24 x 2.5-inch hot-plug hard drives
<b>Hard drive activity LEDs</b>	Indicate the status and activity of the hard drives
<b>Optical drive (optional)</b>	Supports optional DVD drives; see the Storage section
<b>Drive cover</b>	Applicable for 2.5-inch hard drive systems only
<b>Power supply units</b>	Up to 2 back-accessible, hot-plug power supplies
<b>Power supply indicators</b>	Indicates whether system has power
<b>NIC indicators</b>	Indicates network activity and status
<b>Ethernet connectors</b>	Choice of network connectors through the Select Network Adapter family
<b>Serial connector</b>	Connects a serial device to the system



## Compute sled options

The PowerEdge C6220 has two different sled configurations that are selected based on the number of nodes you'll be populating in the chassis. The 2-node systems ship with 2U-high sleds and 4-node systems ship with 1U-high sleds.

The PowerEdge C6220 offers a cost-effective, flexible solution for ordering a system that is not fully loaded. This option is for customers who want to start with one or two nodes and add more as needed, and for customers who want to have a dedicated server for servicing tasks.

**Figure 4. 1U sled — top view**



**Figure 5. 1U sled — back view**



**Figure 6. 2U sled — top view**



Figure 7. 2U sled – side view

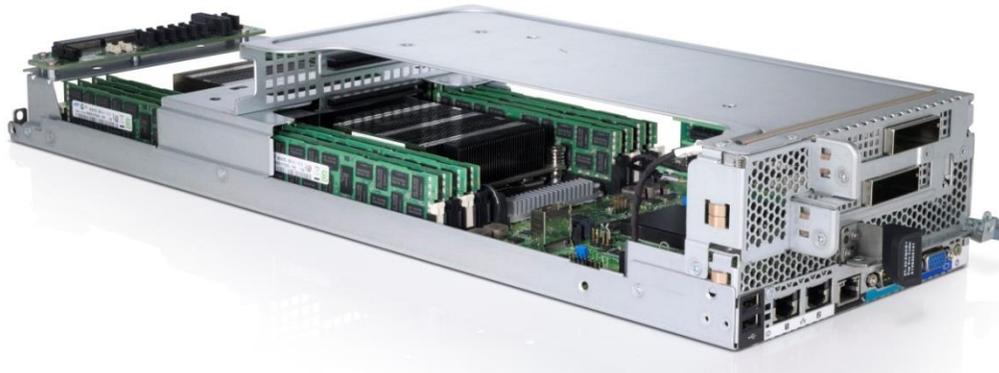


Figure 8. 2U sled – back view



Table 5. PowerEdge C6220 1U and 2U sled features and comparisons

Category	1U sled	2U sled
Height	1 rack unit (1.75 inches)	2 rack units (3.5 inches)
Number of system boards	1	1
Maximum number of sleds in a C6000 chassis	4	2
Custom mezzanine slots	1 x8 PCIe 3.0	1 x8 PCIe 3.0
PCIe slots	1 x16 PCIe 2.0, low profile, half length	1 x16 PCIe 2.0, full height, half-length 1 x16 PCIe 2.0, full height, full length
Midplane connections	1 midplane connection: power, control, 6 SATA/SAS	2 midplane connections: bottom = power, control, 4 SATA/SAS top = 4 SATA/SAS

The PowerEdge C6220 chassis is available with multiple drive size and backplane options. The base chassis remains the same, but installed backplanes determine drive size and capability. The number of drives per sled depends on the number of compute sleds installed as well as the backplane selected.

For additional information on PowerEdge C6220 backplanes, see the *Dell PowerEdge C6220 Systems Hardware Owner's Manual* on [Dell.com/Support/Manuals](http://Dell.com/Support/Manuals).



### 3 Processor

The Intel Xeon processor E5-2600 product family is at the heart of a flexible and efficient data center that meets your diverse needs. These engineering marvels are designed to deliver the best combination of performance, built-in capabilities and cost effectiveness. From virtualization and cloud computing to design automation or real-time financial transactions, you can expect better-than-ever performance. I/O latency is dramatically reduced with Intel Integrated I/O, which helps you to eliminate data bottlenecks, streamline your operations and increase your agility. The Intel Xeon processor E5-2600 product family – versatile processors at the heart of today’s data center.

#### Processor features

Table 6 highlights the features of the Intel Xeon processor E5-2600 product family.

**Table 6. Intel Xeon processor E5-2600 product family features**

Feature	Benefits
<b>Intel Xeon E5-2600 microarchitecture</b>	32 nm process for greater performance per watt
<b>Intel Advanced Vector Extensions (AVX)</b>	Delivers up to 2X the floating point throughput Extends SSE FP instruction set to 256 bit operand size Intel AVX extends all 16 XMM registers to 256 bits New, non-destructive source syntax VADDPS ymm1, ymm2, ymm3 New operations to enhance vectorization Broadcasts Masked load and store
<b>Intel Turbo Boost 2.0 technology</b>	Delivers more turbo upside potential Allows >TDP operation for short bursts
<b>40 lanes of integrated PCIe</b>	Better I/O latency and bandwidth
<b>High bandwidth, low latency, bidirectional ring interconnect</b>	Allows faster access to the 20MB multi-banked last level cache
<b>Intel Hyper-Threading technology</b>	Enables up to 16 computational threads
<b>Integrated memory controller with four channels of DDR3 and 46b physical addressing</b>	Facilitate greater memory capacity 2.3x the memory bandwidth of the previous generation

For more information on the Intel Xeon processor E5-2600 product family, visit [Intel.com](http://Intel.com).



## Supported processors

The PowerEdge C6220 supports up to two processors with up to eight cores per processor. Table 7 lists the processors supported by the PowerEdge C6220. For the latest information on supported processors, visit [Dell.com/PowerEdgeC](https://Dell.com/PowerEdgeC).

**Table 7. Supported processors**

Model	Clock speed	Maximum TDP	Cache	Cores	QPI speed	Maximum memory speed	Turbo
<b>E5-2690</b>	2.9GHz	135W	20M	8	8.0GT/s	1600MT/s	Yes
<b>E5-2680</b>	2.7GHz	130W	20M	8	8.0GT/s	1600MT/s	Yes
<b>E5-2670</b>	2.6GHz	115W	20M	8	8.0GT/s	1600MT/s	Yes
<b>E5-2665</b>	2.4GHz	115W	20M	8	8.0GT/s	1600MT/s	Yes
<b>E5-2660</b>	2.2GHz	95W	20M	8	8.0GT/s	1600MT/s	Yes
<b>E5-2650</b>	2.0GHz	95W	20M	8	8.0GT/s	1600MT/s	Yes
<b>E5-2650L</b>	1.8GHz	70W	20M	8	8.0GT/s	1600MT/s	Yes
<b>E5-2640</b>	2.5GHz	95W	15M	6	7.2GT/s	1333MT/s	Yes
<b>E5-2630</b>	2.3GHz	95W	15M	6	7.2GT/s	1333MT/s	Yes
<b>E5-2630L</b>	2.0GHz	60W	15M	6	7.2GT/s	1333MT/s	Yes
<b>E5-2620</b>	2.0GHz	95W	15M	6	7.2GT/s	1333MT/s	Yes
<b>E5-2643</b>	3.3GHz	130W	10M	4	8.0GT/s	1600MT/s	Yes
<b>E5-2637</b>	3.0GHz	80W	10M	2	8.0GT/s	1600MT/s	Yes
<b>E5-2609</b>	2.4GHz	80W	10M	4	6.4GT/s	1066MT/s	NA
<b>E5-2603</b>	1.8GHz	80W	10M	4	6.4GT/s	1066MT/s	NA

For information on processor installation and configuration, see the *Dell PowerEdge C6220 Systems Hardware Owner's Manual* on [Dell.com/Support/Manuals](https://Dell.com/Support/Manuals).

## GPU support

GPUs are supported in the PowerEdge C6220 only through the PowerEdge C410x expansion chassis.

## Supported GPU ratios

The PowerEdge C6220 supports up to eight GPUs per server through the PowerEdge C410x.



## Supported GPU configuration options

The PowerEdge C6220 and the PowerEdge C410x support the following GPUs:

- Intel Phi 5110P
- NVIDIA K10\*
- NVIDIA K20

\*Not supported with Microsoft Windows Server 2012.

For more information, see the *PowerEdge C410x Technical Guide* at [Dell.com/PowerEdgeC](http://Dell.com/PowerEdgeC).

## Chipset

The PowerEdge C6220 incorporates the Intel C602 chipset. For more information, visit [Intel.com](http://Intel.com).



## 4 Memory

The PowerEdge C6220 uses DDR3 memory to provide a high-performance, high-speed memory interface capable of low-latency response and high throughput. The PowerEdge C6220 supports registered ECC DDR3 DIMMs (RDIMM) and unbuffered DIMMs (UDIMM); standard-voltage and low-voltage DIMMs are both available.

The system contains 16 memory sockets split into two sets of eight slots, one set per each processor. Each eight-slot set is organized into four channels of two memory slots per channel.

The DDR3 memory interface consists of four channels, with up to two RDIMMs or UDIMMs per channel. The system supports 4GB UDIMMs and 4GB, 8GB, 16GB or 32GB RDIMMs. The memory mode depends on how the memory is populated in the system.

### Supported memory

Table 8 lists the DIMMs supported by the PowerEdge C6220. For the latest information on supported memory, visit [Dell.com/PowerEdgeC](http://Dell.com/PowerEdgeC).

**Table 8. DIMMs supported**

Capacity (GB)	Speed (MT/s)	Type	Ranks per DIMM	Data width	SDDC support	Voltage
4	1333	UDIMM	2	x8	Advanced ECC	1.35
4	1333	RDIMM	2	x8	Advanced ECC	1.35
4	1600	RDIMM	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	1066	RDIMM	4	x4	All modes	1.35
16	1333	RDIMM	2	x4	All modes	1.35
16	1600	RDIMM	2	x4	All modes	1.5
16	1600	RDIMM	2	x4	All modes	1.35
32	1333	RDIMM	4	x4	All modes	1.35

### Memory configurations

For information on memory configuration, see the *Dell PowerEdge C6220 Systems Hardware Owner's Manual* on [Dell.com/Support/Manuals](http://Dell.com/Support/Manuals).

### Memory speed

The PowerEdge C6220 supports memory speeds up to 1600MT/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.



## 5 Storage

To accommodate various drive options, the PowerEdge C6220 supports one backplane for 12 x 3.5-inch drives, one for 24 x 2.5-inch drives without expander, and one for 24 x 2.5-inch drives with expander. Each backplane can be used in a two-node or four-node configuration. These drive slots are divided equally across server nodes by default, but the 2.5-inch chassis with expander allows user-defined split of drives. All drive slots are hot-pluggable, and each SAS or SATA slot has two LED indicators to indicate drive status and health.

In addition, the PowerEdge C6220 has a MicroSD slot located on the PCIe riser for loading an embedded hypervisor.

### PowerEdge C6220 MicroSD card reader

The PCIe risers on the PowerEdge C6220 include a MicroSD card reader slot. Cards installed in this slot can be used for storing an embedded hypervisor.

### PowerEdge C6220 hard drive cable routing

To facilitate easier and cleaner cable routing, the SAS/SATA signals in the PowerEdge C6220 are routed through the system board to the midplane. This eliminates the need to run cables the length of the system board to connect to the midplane. Hard drive controller connectors are provided near the expansion slots to facilitate easier connection between the controller and system board. The advantages of this design are:

- Configurations that use the onboard controller are cable-less to avoid clutter and additional cost.
- Cabling for add-in controllers is shorter and promotes better signal integrity and a streamlined design.

### Internal storage

The PowerEdge C6220 supports up to 24 hard drives per server node depending on the number of installed nodes (2-4) and the backplane type (2.5-inch direct, 2.5-inch expander or 3.5-inch expander).

- Support for 7.2K, 10K and 15K RPM 2.5-inch and 3.5-inch SAS drives
- Support for 7.2K RPM Enterprise 2.5-inch and 3.5-inch SATA drives
- Hard drives must use the PowerEdge C6220-specific drive carrier

### Supported hard drives

Table 9 lists PowerEdge C6220 hard drive options. For additional information, see [Dell.com/PowerEdgeC](http://Dell.com/PowerEdgeC).

**Table 9. Supported hard drives**

Form factor	Type	Speed (rpm)	Capacities
3.5"	SATA (3Gb)	7.2K	500GB, 1TB, 2TB, 3TB, 4TB
	SAS (6Gb)	15K	300GB, 600GB
	Nearline SAS (6Gb)	7.2K	1TB, 2TB, 3TB, 4TB



Form factor	Type	Speed (rpm)	Capacities
2.5"	SATA (3Gb)	7.2K	500GB, 1TB
	SAS (6Gb)	10K	300GB, 600GB, 900GB, 1.2TB
	SAS (6Gb)	15K	146GB, 300GB
	Nearline SAS (6Gb)	7.2K	500GB, 1TB
	SATA SSD (MLC)	NA	120GB, 160GB, 240GB, 300GB, 480GB, 600GB, 800GB
	SATA SSD (eMLC)	NA	100GB, 200GB, 400GB, 800GB

## RAID configurations

The PowerEdge C6220 supports RAID configurations, but only as a user-configurable option. See the available RAID options listed in Table 10.

**Table 10. RAID support**

Controller	Supported RAID levels
Embedded Intel C602 chipset-based SATA	RAID 0, 1, 10, 5
LSI 2008 mezzanine at 3Gbps	RAID 0, 1, 10, JBOD
LSI MegaRAID SAS 9265-8i at 3Gbps	RAID 0, 1, 5, 6, 10, 50, 60, JBOD
LSI SAS 9210-8i at 3Gbps	RAID 0, 1, 1E, 10, JBOD

## Storage controllers

### Onboard controller

The Intel C602 chipset includes the embedded. The PowerEdge C6220 uses the –J variant of the C602. For more information, visit [intel.com](http://intel.com).

- Storage controller: Intel AHCI SATA
- Supported protocols: SATA only
- Cache: None
- Battery: None
- RAID level: RAID 0, 1, 5
- RAID spans: 10
- Device Type: Onboard controller
- PCI Interface: x4 DMI
- Ports: 6
- Interface type: Routed through the system board to the midplane
- Interfaces transfer rate: Up to 3Gbps on all six ports



## LSI 2008 mezzanine card

The LSI 2008 mezzanine card is a custom SAS HBA mezzanine card for the PowerEdge C6220. This card provides higher performance SAS drives without higher RAID levels and battery-backed cache.

Note: The LSI 2008 mezzanine card is limited to 3Gbps on the PowerEdge C6220.

- Storage Controller : LSI SAS 2008
- Supported protocols: SATA and SAS
- RAID level: RAID 0, 1, JBOD
- RAID spans: 10
- Device Type: PCIe mezzanine card
- PCI Interface: PCIe 2.0 x8 lanes
- Ports: 8
- Interface type: 2 MiniSAS SFF-8087 x4 connectors
- Interfaces transfer rate: Up to 3Gbps per port

## LSI 9210-8i PCIe card

The LSI 9210-8i provides higher performance SAS HBA cards and higher RAID levels with battery-backed cache.

- Storage Controller: LSI SAS 2008
- Supported protocols: SATA and SAS
- RAID level: RAID 0, 1, 1E, 5, JBOD
- RAID spans: 10
- Device Type: PCIe mezzanine card
- PCI Interface: PCIe 2.0 x8 lanes
- Ports: 8
- Interface type: 2 MiniSAS SFF-8087 x4 connectors
- Interfaces transfer rate: Up to 3Gbps per port
- PCIe slot configuration by drive controller

## LSI 9265-8i PCIe card

The LSI 9265-8i provides higher performance SAS drives and higher RAID levels with battery-backed cache.

- Storage Controller: LSI SAS2208 dual-core ROC
- Supported protocols: SATA and SAS
- Cache: 1Gb DDR3 1333MT/s
- Battery: LSI iBBU09
- RAID level: RAID 0, 1, 5 and 6
- RAID spans: 10, 50 and 60
- Device Type: PCIe add-in controller
- PCI Interface: PCIe 2.0 x8 lanes
- Ports: 8



- Interface type: Two MiniSAS SFF-8087 x4 connectors
- Interfaces transfer rate: Up to 3Gbps per port

Table 11 lists the supported add-in cards for the PowerEdge C6220 server.

**Table 11. PCIe slot configuration by drive controller**

Factory hard drive controller configuration	Card type	LP x16 slot–1U	FH x16 slot 1 (lower)–2U	FH x16 slot 2 (upper)–2U
<b>1U diskless</b>	Mezzanine available	LP available	N/A	N/A
<b>1U onboard</b>	Mezzanine available	LP available	N/A	N/A
<b>1U LSI 2008</b>	LSI 2008	LP available	N/A	N/A
<b>1U LSI 9210-8i</b>	Mezzanine available	LSI 9210-8i LP	N/A	N/A
<b>1U LSI 9265-8i</b>	Mezzanine available	LSI 9265-8i LP	N/A	N/A
<b>2U onboard</b>	Mezzanine available	N/A	FH available	FH available
<b>2U LSI 2008</b>	LSI 2008	N/A	FH available	FH available
<b>2U LSI 9210-8i</b>	Mezzanine available	N/A	LSI 9210-8i FH	FH available
<b>2U LSI 9265-8i</b>	Mezzanine available	N/A	LSI 9265-8i FH	FH available

## LED indicators

For more information on LED indicators, see the *Dell PowerEdge C6220 Systems Hardware Owner's Manual* on [Dell.com/Support/Manuals](http://Dell.com/Support/Manuals).

## Optical drive

The PowerEdge C6220 chassis does not support optical drives. If needed, any external USB 2.0-compliant drive can be used, although no specific vendors have been qualified.

## Tape drive

The PowerEdge C6220 chassis does not support an internal tape drive. External storage peripherals are not directly validated with PowerEdge C6220, but customers can use any supported network-based storage options validated with our network and fabric card matrix.



## 6 Networking and I/O

For the latest information on PowerEdge C6220-supported cards, visit [Dell.com/PowerEdgeC](http://Dell.com/PowerEdgeC).

### Embedded NIC/LAN on motherboard (LOM)

The PowerEdge 6220 has a single Intel i350 dual-port GbE controller installed on the system board as an independent Ethernet interface device. From a board perspective, the LOM refers to this controller. Other features include:

- x4 PCIe 2.0 capable interface
- Power 1W (max) with DMA Coalescing, Smart Power Down (SPD) and Active State Power Management (ASPM)
- I/O virtualization
- Eight transmit and receive queue pairs per port
- Flexible port partitioning
- SR-IOV support
- Stateless offloads
- TCP/UDP IPv4 checksum offloads
- IPv6 support for IP/TCP and IP/UDP receive checksum offload
- Tx TCP segmentation offload
- Jumbo frame support up to 9.5KB
- Low latency interrupts
- Remote boot
- PXE 2.1 remote boot
- iSCSI boot
- Wake-up support
- Wake-on-LAN (WOL)
- ACPI specification v2.0c
- Magic Packet wake-up enable with unique MAC address
- IPv4 and IPv6 support
- Supports teaming

### I/O slots

The PowerEdge C6220 supports up to two PCIe expansion options:

- One PCIe riser with a single x16 PCIe 2.0 slot (1U sled)
  - Support for half-height/half-length (6.6-inch maximum length) PCIe cards
- One PCIe Riser set with a dual x16 PCIe 2.0 slot (2U sled)
  - Support for full-height/full-length PCIe cards
- One x8 PCIe 3.0 mezzanine network daughter card slot for RAID, networking or fabric options
  - x8 mezzanine is not available in single processor configurations. Both CPU sockets must be populated to access the mezzanine.



The PowerEdge C6220 does not support hot-pluggable PCIe cards.

Table 12 lists the supported mezzanine and add-in cards.

**Table 12. Supported mezzanine and add-in cards**

Card type	Interface
LSI 2008 8-port SAS (supported only at 3Gbps)	Mezzanine slot
Mellanox ConnectX-2 dual-port QDR InfiniBand	Mezzanine slot
Mellanox ConnectX-3 single-port FDR InfiniBand	Mezzanine slot
Intel 82599 dual-port 10GbE (SFP+)	Mezzanine slot
Intel 82580 quad-port 1GbE	Mezzanine slot
QLogic single-port QDR InfiniBand QLE7340	Riser slot
LSI 9265-8i (supported only at 3Gbps)	Riser slot
LSI 9210-8i (supported only at 3Gbps)	Riser slot
LSI 9285-8e	Riser slot (available via CUST kit only)
Intel i350 quad-port 1Gb	Riser slot
Dell X410 HIC card	Riser slot
Intel X520-DA dual-port 10GbE (SFP+)	Riser slot
Intel X540 dual-port 10GbE Base-T	Riser slot (available via CUST kit or S&P)

## NIC cards

Table 13 lists the supported NIC add-in cards.

**Table 13. Supported NIC add-in cards**

Card type	Interface
Intel 82559 dual-port 10GbE (SFP+)	PCIe x8 mezzanine slot
Intel 82580 quad-port 1GbE	PCIe x8 mezzanine slot
Mellanox Connect X-2 dual-port QDR IB	Mezzanine slot
Mellanox Connect X-3 single-port FDR IB	Mezzanine slot
Intel i350 1Gb quad-port	Riser slot
Intel X520-DA dual-port 10GbE (SFP+)	Riser slot
Intel X540 dual-port 10GbE Base-T	Riser slot (validated only)

For the latest information on PowerEdge C6220-supported PCIe expansion cards, visit [Dell.com/PowerEdgeC](http://Dell.com/PowerEdgeC).



# 7 Power

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

## Power consumption and energy efficiency

With the rise in the cost of energy coupled with increasing data center density, Dell provides tools and technologies to help you realize greater performance with less energy cost and waste. More efficient data center usage can reduce costs by slowing the need for additional data center space. Table 14 lists the tools and technologies Dell offers to help you achieve your data center goals by lowering power consumption and increasing energy efficiency.

**Table 14. Power tools and technologies**

Feature	Description
<b>Tools for right-sizing</b>	<b>Energy Smart Solution Advisor (ESSA)</b> is a tool that can help you determine the most efficient configuration possible. With Dell's 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 power supply Advisor can help you choose the best, most efficient power supply for your workload. Learn more at <a href="http://Dell.com/ESSA">Dell.com/ESSA</a> .
<b>Industry compliance</b>	The PowerEdge C6220 server is compliant with all relevant industry certifications and guidelines, including 80 PLUS.
<b>Power monitoring accuracy</b>	Power supply power monitoring improvements include: <ul style="list-style-type: none"><li>• Dell power monitoring accuracy is currently 1%, whereas the industry standard is 5%</li><li>• More accurate reporting of power</li><li>• Better performance under a power cap</li></ul>
<b>Power capping</b>	Use Dell's systems management to set the power cap limit for your systems to limit the output of a power supply and reduce system power consumption. Dell is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
<b>Dell Fresh Air cooling</b>	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 <a href="http://Dell.com/FreshAir">Dell.com/FreshAir</a> .



Feature	Description
<b>Rack infrastructure</b>	<p>Dell offers some of the industry's highest efficiency power infrastructure solutions, including:</p> <ul style="list-style-type: none"> <li>• <a href="#">Power distribution units</a></li> <li>• <a href="#">Uninterruptible power supplies</a></li> <li>• <a href="#">Energy Smart containment rack enclosures</a></li> </ul> <p>Find additional information at <a href="https://Dell.com/RackInfrastructure">Dell.com/RackInfrastructure</a>.</p>

Find additional information at [Dell.com/PowerAndCooling](https://Dell.com/PowerAndCooling) and [Dell.com/PowerCenter](https://Dell.com/PowerCenter).

## Power supply units

The base redundant system consists of two hot-plug power supplies in a 1+1 configuration available at 1200W and 1400W. The PowerEdge C6220 supports two configurations based on the number of system boards, as shown in Table 15.

**Table 15. Supported configurations for power supply redundancy**

Power supply	Two system boards	Four systems boards
<b>1400W</b>	Up to 2x 130W processors/MLB (main logic board) 3x hard drives/MLB 8x memory modules/MLB	1x 130W processor/MLB Two hard drives/MLB 2x memory modules/MLB
<b>1200W</b>	Up to 2x 130W processors/MLB 3x hard drives/MLB 4x memory modules/MLB	1x 95W processor/MLB 1x hard drive/MLB 3x memory modules/MLB

Dell power supplies have achieved Platinum efficiency levels as shown in Table 16.

**Table 16. Power supply efficiency**

Form factor	Output	Class	Efficiency targets by load			
			10%	20%	50%	100%
<b>Redundant 86 mm</b>	1400W AC	Platinum+	89.0%	93.0%	94.5%	92.0%
	1200W AC	Platinum	89.0%	93.0%	94.5%	92.0%

## System power supply throttling feature

The PowerEdge C6220 supports a power supply throttling feature that protects the system if power consumption exceeds the maximum for the supply (either 1400W or 1200W). In configurations where power consumption is greater than the maximum, redundancy is lost, and the PowerEdge C6220 throttles power consumption of the two or four independent nodes to stay within the power budget. Performance is degraded in this mode, but the system continues to operate. After you replace the failed power supply, redundancy is restored and all nodes resume normal operation.



## 8 Rack information

Rack installation components such as rails are provided with the PowerEdge C6220 rack kit. The components consist of a static rail system; there is no support for a cable management arm.

### Static rails

The static rails allow for tool-less installation in 19-inch EIA-310-E compliant square or unthreaded round hole four-post racks. (Note: APC racks are also supported.) Other specifications include:

- Rail depth: 602 mm
- Square-hole and round-hole rack adjustment range: 582 mm–822 mm



## 9 Operating systems and virtualization

The Dell PowerEdge C6220 rack server supports a wide range of industry standard operating systems and virtualization software.

### Supported operating systems

The PowerEdge C6220 supports the following operating systems:

- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2 (includes Hyper-V)
- Microsoft Windows Server 2008 R2 Enterprise x64 SP1 (includes Hyper-V)
- Microsoft Windows HPC Server 2008 R2 (64-bit) SP1
- Novell SUSE Linux Enterprise Server 11 SP3
- Red Hat Enterprise Linux

### Supported virtualization

The PowerEdge C6220 supports the following virtualization hypervisors:

- Citrix XenServer
- Microsoft Hyper-V, a server role in Microsoft Windows Server operating systems
- VMware vSphere ESXi



## 10 Systems management

Systems management for the PowerEdge C6220 is through third-party solutions only. There is no Dell OpenManage support for server management at this time.

### Embedded server management

The PowerEdge C6220 supports BMCs that comply with IPMI v2.0. The PowerEdge C6220 BMC provides the following features for managing the server remotely or in data center lights-out environments:

- Views of hardware sensors (temperature, voltage, presence, error)
- Error alerts (server reset, critical sensor values and others) using email traps, paging and more
- Option to share embedded NIC Ethernet ports
- WS-MAN/SMASH-CLP
- IPMI 2.0 monitoring and management functionality
- Server reset, reboot and power-on/off/cycle
- Remote KVM over IP console support for up to three simultaneous users



# Appendix A. Additional specifications and options

## System dimensions

Table 17 and Figure 9 details the dimensions of the PowerEdge C6220.

Figure 9. PowerEdge C6220 chassis dimensions

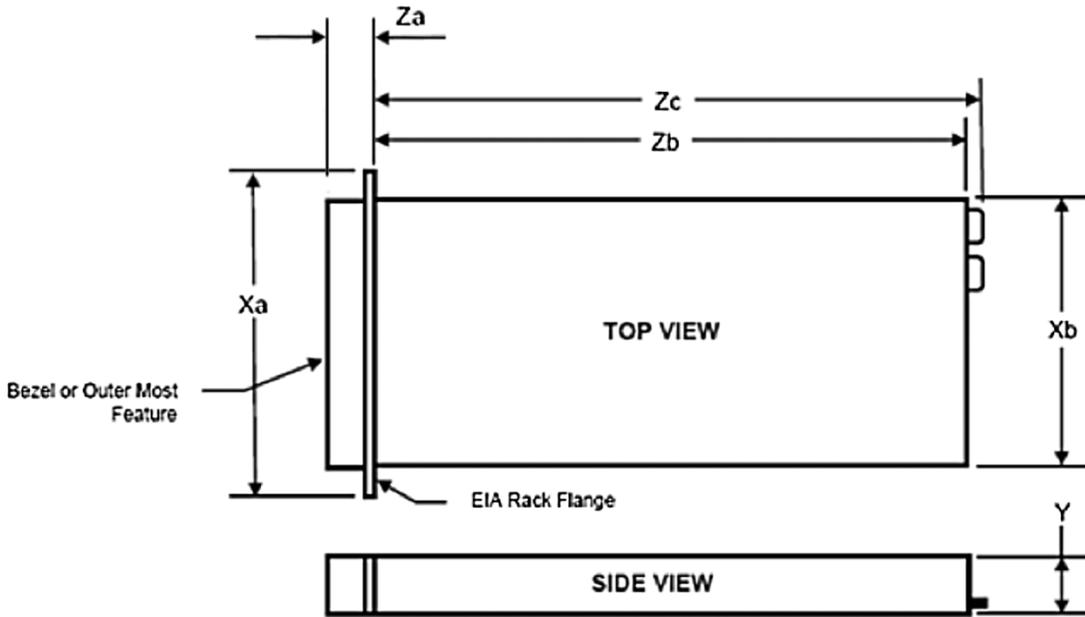


Table 17. PowerEdge C6220 chassis dimensions

Xa	Xb	Xa without bezel	Y	Zb	Zc
48.23 cm	44.8 cm	4.2 cm	8.76 cm	75.01 cm	76.2 cm

## System weight

Table 18 lists the weight of the PowerEdge C6220 rack server at minimum and maximum configuration.

Table 18. System weight

Maximum configuration	Minimum configuration
37 kg (81.571 lb)	17.14 kg (37.79 lb)



## Environmental specifications

Table 19 details the environmental specifications for the PowerEdge C6220. For the most up-to-date information, see the *Dell PowerEdge C6220 Getting Started Guide* on [Dell.com/Support/Manuals](http://Dell.com/Support/Manuals). For additional information about environmental measurements for specific system configurations, see [Dell.com/environmental\\_datasheets](http://Dell.com/environmental_datasheets).

**Table 19. Environmental specifications**

Temperature	
<b>Operating</b>	10°C to 35°C (50°F to 95°F) with a maximum temperature gradation of 10°C per hour. Note: For altitudes above 2950 feet, the maximum operating temperature is de-rated 1°F/550 ft
<b>Storage</b>	–40°C to 65°C (–40°F to 149°F) with a maximum temperature gradation of 20°C per hour
Relative humidity	
<b>Operating</b>	20% to 80% (non-condensing) with a maximum humidity gradation of 10% per hour
<b>Storage</b>	–40°C to 65°C (–40°F to 149°F) with a maximum temperature gradation of 20°C per hour
Maximum vibration	
<b>Operating</b>	0.26 Grms at 5Hz to 350Hz for 5 minutes in operational orientations
<b>Storage</b>	1.88 Grms at 10Hz to 500Hz for 15 minutes in all orientations
Maximum shock	
<b>Operating</b>	One shock pulse in the positive z-axis (one pulse on each side of the system) of 31G for 2.6 ms in the operational orientation
<b>Storage</b>	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71G for up to 2 ms. Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each of the system) of 22G faired square wave pulse with velocity change at 200 in/second (508 cm/second)
Altitude	
<b>Operating</b>	–15.2 m to 3048 m (–50 ft to 10,000 ft) Note: For altitudes above 2950 feet, the maximum operating temperature is de-rated 1°F/550 ft
<b>Storage</b>	–15.2 m to 10,668 m (–50 ft to 35,000 ft) Note: For altitudes above 2950 feet, the maximum operating temperature is de-rated 1°F/550 ft
Airborne contaminant level	
Class G1 or lower as defined by ISA-S71.04-1985	

## Video specifications

The baseboard management controller (BMC) for the PowerEdge C6220 incorporates an integrated video subsystem that is connected to the 32-bit PCI interface of the ICH10R. The logic is based on the ATS2050 and supports 2D graphics only. The video device output is available only as a back video port. The integrated video core shares its video memory with the BMC's 64 MB DDR2 application space memory. This memory is also used for the KVM buffer. The PowerEdge C6220 system supports the 2D graphics video modes listed in Table 20.



**Table 20. Supported video modes**

Resolution	Refresh rate (Hz)	Color depth (bit)
640 x 480	60, 72, 75, 85	8, 16, 32
800 x 600	56, 60, 72, 75, 85	8, 16, 32
1024 x 768	60, 72, 75, 85	8, 16, 32
1152 x 864	75	8, 16, 32
1280 x 1024	60, 75, 85	8, 16
1280 x 1024	60	32
1600 x 1200	60	32

## Power supply specifications

Table 21 lists power supply specifications for the PowerEdge C6220.

**Table 21. Power supply specifications**

Specification	1400W AC power supply	1200W AC power supply
Current consumption	9.0A	12.0–8.0A
Supply voltage	200–240V AC	100–240V AC (auto ranging)
Frequency	50/60Hz	50/60Hz
Heat dissipation	6024 BTU/hour maximum	4016 BTU/hour maximum
Maximum inrush current	Initial in-rush current cannot exceed 55A (peak). Secondary inrush current cannot exceed 55A (peak).	Initial in-rush current cannot exceed 55A (peak). Secondary inrush current cannot exceed 35A (peak).

## USB peripherals

The PowerEdge C6220 supports the following USB 2.0 compliant devices through the two back ports:

- DVD (bootable)
- USB key (bootable)
- Keyboard (only one USB keyboard is supported)
- Mouse (only one USB mouse is supported)



## Appendix B. Standards compliance

The PowerEdge C6220 conforms to the industry standards listed in Table 22.

**Table 22. Industry standard documents**

Standard	URL for information and specifications
<b>ACPI</b> Advance Configuration and Power Interface Specification, v2.0c	<a href="http://acpi.info">acpi.info</a>
<b>Ethernet</b> IEEE 802.3-2005	<a href="http://standards.ieee.org/getieee802/802.3.html">standards.ieee.org/getieee802/802.3.html</a>
<b>HDG</b> Hardware Design Guide Version 3.0 for Microsoft Windows Server	<a href="http://microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx">microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx</a>
<b>DDR3 Memory</b> DDR3 SDRAM Specification, Rev. 3A	<a href="http://jedec.org/download/search/JESD79-3C.pdf">jedec.org/download/search/JESD79-3C.pdf</a>
<b>PCI Express</b> PCI Express Base Specification	<a href="http://pcisig.com/specifications/pciexpress">pcisig.com/specifications/pciexpress</a>
<b>PMBus</b> Power System Management Protocol Specification, v1.2	<a href="http://pmbus.info/specs.html">pmbus.info/specs.html</a>
<b>SAS</b> Serial Attached SCSI, v1.1	<a href="http://t10.org">t10.org</a>
<b>SATA</b> Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	<a href="http://sata-io.org">sata-io.org</a>
<b>SMBIOS</b> System Management BIOS Reference Specification, v2.7	<a href="http://dmtf.org/standards/smbios">dmtf.org/standards/smbios</a>
<b>UEFI</b> Unified Extensible Firmware Interface Specification, v2.1	<a href="http://uefi.org/specifications">uefi.org/specifications</a>
<b>USB</b> Universal Serial Bus Specification, Rev. 2.0	<a href="http://usb.org/developers/docs">usb.org/developers/docs</a>
<b>Windows Logo</b> Windows Logo Program System and Device Requirements, v3.10	<a href="http://microsoft.com/whdc/winlogo/hwrequirements.mspx">microsoft.com/whdc/winlogo/hwrequirements.mspx</a>



## Appendix C. Additional resources

Table 23 provides a list of documents and websites that provide for more information on the Dell PowerEdge C6220 rack server.

**Table 23. Additional resources**

Resource	Description of contents	Location
<b>PowerEdge C6220 Systems Hardware Owner's Manual</b>	<p>This manual is provided in PDF format and provides information on the following:</p> <ul style="list-style-type: none"><li>• Chassis features</li><li>• System Setup program</li><li>• System messages</li><li>• System codes and indicators</li><li>• System BIOS</li><li>• Remove and replace procedures</li><li>• Troubleshooting</li><li>• Diagnostics</li><li>• Jumpers and connectors</li></ul>	<a href="http://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a>
<b>PowerEdge C6220 Getting Started Guide</b>	<p>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:</p> <ul style="list-style-type: none"><li>• Initial setup steps</li><li>• Key system features</li><li>• Technical specifications</li></ul>	<a href="http://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a>
<b>Rack Installation Instructions</b>	<p>This printed document is provided with the rack kits. The document provides the instructions for installing the server in a rack.</p>	<a href="http://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a>
<b>Rack 2420, 4220, and 4820 Rack Enclosures Technical Guide</b>	<p>This guide describes the expanded portfolio of rack enclosures and components.</p>	<a href="http://Dell.com/us/Enterprise">Dell.com/us/Enterprise</a>
<b>Using the Baseboard Management Controller</b>	<p>This document is available in PDF format on the Dell support site. This document provides information on the BMC.</p>	<a href="http://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a>
<b>Information Update</b>	<p>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.</p>	<a href="http://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a>
<b>Energy Smart Solution Advisor</b>	<p>The Dell 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.</p>	<a href="http://Dell.com/ESSA">Dell.com/ESSA</a>



Resource	Description of contents	Location
<b>Power and cooling technologies</b>	Provides details for improving energy efficiency in the data center.	<a href="http://Dell.com/PNC">Dell.com/PNC</a>
<b>Energy management</b>	Provides information on Dell's Fresh Air cooling solutions.	<a href="http://Dell.com/FreshAir">Dell.com/FreshAir</a>
<b>Processor and chipset</b>	Provides more information about the PowerEdge C6220 processor and chipset.	<a href="http://Intel.com">Intel.com</a>
<b>Dell PowerEdge RAID controllers</b>	Provides more information about Dell PERCs.	<a href="http://Dell.com/PERC">Dell.com/PERC</a>
<b>Power distribution unit</b>	Provides help selecting a rack-based power distribution unit.	<a href="http://DellPDU.com">DellPDU.com</a>
<b>Uninterruptible power supply</b>	Provides help selecting an uninterruptible power supply model.	<a href="http://DellUPS.com">DellUPS.com</a>
<b>Volatility information</b>	Contact your Dell sales representative.	

