PowerEdge R730 and R730xd

Technical Guide

Exceptionally flexible and scalable 2-socket, 2U rack servers delivering high-performance processing and a broad range of workload-optimized local storage options
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1 System overview

Introduction

The Dell PowerEdge R730 is a general-purpose platform with highly expandable memory (up to 768GB) and impressive I/O capabilities to match. The R730 can readily handle very demanding workloads, such as data warehouses, e-commerce, virtual desktop infrastructure (VDI), databases and high-performance computing (HPC). In addition to the R730’s capabilities, the R730xd offers extraordinary storage capacity, making it well suited for data-intensive applications that require storage and I/O performance, like medical imaging and email servers.

Deliver peak performance

Drive peak compute performance across a variety of workloads with the Intel® Xeon® processor E5-2600 v3 product family and state-of-the-art DDR4 memory. Boost data access for applications with up to 16 x 12Gb/s SAS drives and high-performance dual RAID. Take advantage of advanced accelerators and GPUs to maximize performance in HPC, VDI and imaging environments.

Discover greater versatility

With 24 DIMMs of high-capacity, low-power DDR4 memory, 7 PCI Express® (PCIe) 3.0 expansion slots and highly scalable local storage, the R730 is extremely flexible. Create a dense, resource-rich virtualization environment with up to 16 x 2.5” drives. Combine that with the R730’s GPU capability to save infrastructure costs and consolidate management operations in a scalable and centralized virtual desktop environment. The GPU option also makes the R730 an excellent choice as a midrange medical imaging solution.

Maximize operational efficiency

PowerEdge servers let you construct and manage highly efficient infrastructures for data centers and small businesses. Accelerate time-to-production with automated deployment processes that use fewer manual steps and reduce the potential for error. Improve IT productivity with innovative-at-the-server management tools like iDRAC Direct and iDRAC Quick Sync to deliver in-depth system health status and speed deployment. Optimize data center energy usage with improved performance-per-watt and more granular control of power and cooling.

Innovative management with intelligent automation

The Dell OpenManage systems management portfolio includes innovative solutions that simplify and automate essential server lifecycle management tasks — making IT operations more efficient and Dell servers the most productive, reliable and cost effective. Leveraging the incomparable agent-free capabilities of the PowerEdge embedded Integrated Dell Remote Access Controller (iDRAC) with Lifecycle Controller technology, server deployment, configuration and updates are streamlined across the OpenManage portfolio and through integration with third-party management solutions.

Monitoring and control of Dell and third-party data center hardware is provided by OpenManage Essentials and with anytime, anywhere mobile access, through OpenManage Mobile. OpenManage Essentials now also delivers Server Configuration Management capabilities that automate one-to-many PowerEdge bare-metal server and operating system deployments, quick and consistent replication of configurations and ensure compliance to a predefined baseline with automated drift detection.
## New technologies

Table 1 lists the new technologies featured on the PowerEdge R730 and R730xd systems.

<table>
<thead>
<tr>
<th>New technologies</th>
<th>Detailed descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Xeon Processor E5-2600 v3 product family</td>
<td>The Intel Xeon Processor E5-2600 v3 product has advanced features that deliver exceptional performance and value. See the Processors section for details.</td>
</tr>
<tr>
<td>Intel C610 series chipset</td>
<td>The R730 and R730xd servers use the Intel Platform Controller Hub (PCH) chip.</td>
</tr>
<tr>
<td>2133MT/s DDR4 memory</td>
<td>Certain models of E5-2600 v3 processors support 2133MT/s memory. The R730 and R730xd support three DIMMs per channel at 1866MT/s with these processors. See the Memory section for details.</td>
</tr>
<tr>
<td>Next-generation PERC options</td>
<td>The R730 and R730xd support new Dell PowerEdge RAID Controller (PERC) cards with improved functionality and faster performance. See the Storage section for details.</td>
</tr>
<tr>
<td>PERC S130</td>
<td>This new software RAID solution supports RAID 0, 1, 5 and 10 and supports a maximum of eight hot-plug SATA hard disk drives (HDD) or solid-state drives (SSD). See the Storage section for details.</td>
</tr>
<tr>
<td>iDRAC8 with Lifecycle Controller</td>
<td>The new embedded systems management solution for Dell servers features hardware and firmware inventory and alerting, data center level power monitoring, faster performance and many more features. See the Dell OpenManage systems management section for details.</td>
</tr>
<tr>
<td>iDRAC Quick Sync</td>
<td>This is a new at-the-box management solution that allows mobile devices to sync with the PowerEdge server by touching an Android mobile device against the Quick Sync hardware located in the bezel to gather system information including system status and logs. The mobile application also allows the user to make changes to the system configuration.</td>
</tr>
<tr>
<td>iDRAC Direct</td>
<td>Allows direct access to the iDRAC through the special front USB port using any portable device with a browser. An A-to-A USB cable is required.</td>
</tr>
<tr>
<td>Failsafe hypervisors</td>
<td>The internal dual SD module (IDSDM) enables Dell’s unique Failsafe Virtualization architecture, ensuring uptime by providing failover capability for embedded hypervisors, such as VMware® vSphere® ESXi™.</td>
</tr>
<tr>
<td>Dell Fresh Air 2.0</td>
<td>Dell has tested and validated select 13th generation PowerEdge servers that operate at higher temperatures helping you reduce your hours of economization or even go chiller-less. See the Power, thermal and acoustics section for details.</td>
</tr>
<tr>
<td>12Gb/s SAS</td>
<td>SAS-3 doubles the interface bandwidth from the previous generation at 12Gb/s. SAS-3 addresses signal quality through transmitter training, which gives one of the receiver device’s key interconnects, its PHY, the ability to modify the settings of the transmitter device’s PHY.</td>
</tr>
<tr>
<td>6Gb/s SATA</td>
<td>SATA 3.0 runs with a native transfer rate of 6Gb/s, and taking 8b/10b encoding into account, the maximum uncoded transfer rate is 4.8Gb/s (600MB/s). The theoretical burst throughput of SATA 3.0 is double that of SATA 2.0.</td>
</tr>
<tr>
<td>New technologies</td>
<td>Detailed descriptions</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Next-generation Express Flash drives</td>
<td>Dell Express Flash PCIe SSDs provide fast performance without requiring processor resources or capturing DRAM. The R730xd with the 24 x 3.5&quot; backplane configuration supports up to 4 Express Flash PCIe SSDs. The R730 does not support Express Flash PCIe SSDs.</td>
</tr>
<tr>
<td>1.8” SSD</td>
<td>The application of 1.8” form factor SATA SSD has been expanded from the PowerEdge M420 half-height blade to rack servers. These SSDs provide a high spindle count fast cache layer for tiered storage applications.</td>
</tr>
<tr>
<td>USB 3.0</td>
<td>USB 3.0 can operate in both USB 2.0 and USB 3.0 speed modes. USB 3.0 driver is required to control USB device in USB 3.0 speed mode.</td>
</tr>
</tbody>
</table>
2 System features

Compared to the previous generation of Dell PowerEdge servers, the R730 and R730xd have more drive bay options, more PCIe slots, next-generation RAID controllers and advanced system management.

Comparison of PowerEdge systems

Table 2 compares some of the features of the R730 and R730xd and the R720 and R720xd systems.

<table>
<thead>
<tr>
<th>Feature</th>
<th>PowerEdge R720/R720xd</th>
<th>PowerEdge R730/R730xd</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chassis</strong></td>
<td>2U rack</td>
<td>2U rack</td>
</tr>
<tr>
<td><strong>Processors</strong></td>
<td>Intel Xeon processor E5-2600 v2 product family</td>
<td>Intel Xeon processor E5-2600 v3 product family</td>
</tr>
<tr>
<td><strong>Internal interconnect</strong></td>
<td>Intel QuickPath Interconnect (QPI)</td>
<td>Intel QPI</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>24 x DDR3 RDIMM, UDIMM, and LRDIMM Up to 768GB</td>
<td>24 x DDR4 RDIMM and LRDIMM Up to 768GB</td>
</tr>
<tr>
<td><strong>Disk drives</strong></td>
<td>R720: Up to 16 x 2.5” or 8 x 3.5” 6Gb SAS, 3Gb SATA</td>
<td>Up to 16 x 2.5” HDD: SAS, SATA, NL-SAS; SSD: 12Gb SAS, 6Gb SATA Up to 8 x 3.5” HDD: SATA, NL-SAS; SSD: 12Gb SAS, 6Gb SATA</td>
</tr>
<tr>
<td></td>
<td>R720xd: Up to 26 x 2.5” SAS SSD, SATA SSD, SAS, NL-SAS, SATA, SAS 512n or 12 x 3.5” SAS, NL-SAS, SATA + 2 x 2.5” drives</td>
<td>Up to 24 x 2.5” + 2 x 2.5” HDD: SAS, SATA, NL-SAS; SSD: 12Gb SAS, 6Gb SATA, up to 4 NVMe Express Flash PCIe</td>
</tr>
<tr>
<td><strong>RAID controller</strong></td>
<td>PERC S110 (software RAID), H310, H710, H710P, H810 (external); support for 2 internal RAID controllers</td>
<td>PERC S130 (software RAID), H330, H730, H730P, H830 (external); support for 2 internal RAID controllers</td>
</tr>
<tr>
<td><strong>PCI slots</strong></td>
<td>Max 7 + 1 x PCIe 3.0/6 + 1 x PCIe 3.0</td>
<td>Max 7 + 1 x PCIe 3.0/6 + 1 x PCIe 3.0 option to eliminate Riser 1</td>
</tr>
<tr>
<td><strong>Embedded NICs</strong></td>
<td>Select Network Adapter NDC 4 x 1GbE, 2 x 10GbE</td>
<td>Select Network Adapter NDC 4 x 1GbE, 2 x 10GbE, 4 x 10GbE</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>USB 2.0</td>
<td>USB 3.0 (back and internal ports only)</td>
</tr>
</tbody>
</table>
### Power supplies
- **PowerEdge R720/R720xd**: Hot-plug, redundant power supply units: 495W AC, 750W AC, 750W AC/DC mixed mode, 1100W AC, 1100W DC
- **PowerEdge R730/R730xd**: Hot-plug, redundant power supply units: 495W AC, 750W AC, 750W AC/DC mixed mode, 1100W AC, 1100W DC

### Power efficiency 80 PLUS® certification
- **PowerEdge R720/R720xd**: Titanium and Platinum
- **PowerEdge R730/R730xd**: Titanium and Platinum

### Dell OpenManage Systems Management
- **PowerEdge R720/R720xd**: OpenManage Essentials, Dell Management Console, IT Assistant, OMSA Agent, OpenManage Power Center (requires iDRAC7 Express with Lifecycle Controller), OpenManage Integrations and Connections, iDRAC7 Express with Lifecycle Controller (standard option)
- **PowerEdge R730/R730xd**: OpenManage Essentials, Dell Management Console, OMSA Agent, OpenManage Power Center (requires iDRAC8 Enterprise with Lifecycle Controller), OpenManage Integrations and Connections, iDRAC8 Express with Lifecycle Controller (standard option)

### Internal GPU
- **PowerEdge R720/R720xd**: 2 x 300W (double-wide) or 4 x 150W (single-wide), Not supported on R720xd
- **PowerEdge R730/R730xd**: 2 x 300W (double-wide) or 4 x 150W (single-wide), Not supported on R730xd

### Availability
- **PowerEdge R720/R720xd**: Hot-plug drives, Hot-plug redundant cooling, Hot-plug redundant PSUs, IDSDM support
- **PowerEdge R730/R730xd**: Hot-plug drives, Hot-plug redundant cooling, Hot-plug redundant PSUs, IDSDM support (next generation)

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**Specifications**

Table 3 lists the technical specifications for the PowerEdge R730 and R730xd systems. For the latest information on supported features, visit the R730 and R730xd pages on Dell.com.

**Table 3. Technical specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>2U rack</td>
</tr>
<tr>
<td>Processors</td>
<td>Intel Xeon processor E5-2600 v3 product family</td>
</tr>
<tr>
<td>Processor sockets</td>
<td>2 sockets</td>
</tr>
<tr>
<td>Internal interconnect</td>
<td>2 Intel QPI links; 6.4GT/s; 7.2GT/s; 8.0GT/s</td>
</tr>
<tr>
<td>Cache</td>
<td>2.5MB per core; core options: 2, 4, 6, 8, 10, 12, 14, 16, 18</td>
</tr>
</tbody>
</table>

---

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

2 750W mixed mode PSU available only in China.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chipset</strong></td>
<td>Intel C610</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>Up to 768GB² (24 DIMM slots): 4GB/8GB/16GB/32GB DDR4 up to 2133MT/s</td>
</tr>
<tr>
<td><strong>PCIe slots</strong></td>
<td><strong>R730</strong>: Up to 7 PCIe 3.0 slots plus dedicated PERC slot <strong>R730xd</strong>: Up to 6 PCIe 3.0 slots plus dedicated PERC slot</td>
</tr>
<tr>
<td><strong>RAID controller</strong></td>
<td><strong>Internal controllers</strong>: PERC S130 (software RAID; R730 only) PERC H330 PERC H730 PERC H730P <strong>External HBAs (RAID)</strong>: PERC H830 <strong>External HBAs (non-RAID)</strong>: 12Gb/s SAS HBA</td>
</tr>
<tr>
<td><strong>Drives</strong></td>
<td><strong>R730 internal hard drive bay and hot-plug backplane</strong>: Up to 16 x 2.5” HDD: SAS, SATA, NL-SAS; SSD: SAS, SATA <strong>R730xd internal hard drive bay and hot-plug backplane</strong>: Up to 16 x 3.5” SAS, SATA, NL-SAS, SSD drives + 8 x 3.5” SAS, SATA, NL-SAS, SSD drives, + 2 x 2.5” HDD Up to 26 x 2.5” SAS, SATA, NL-SAS, SSD, PCIe SSD drives</td>
</tr>
<tr>
<td><strong>Maximum internal storage</strong></td>
<td><strong>R730</strong>: Up to 29TB using 16 x 2.5” 1.8TB SAS hard drives Up to 48TB using 8 x 3.5” 6TB NL-SAS hard drives <strong>R730xd</strong>: Up to 31.9TB using 18 x 1.8” 960GB SATA SSD + 8 x 3.5” 1.8TB SAS HDD Up to 43.2TB using 24 x 2.5” 1.8TB SAS HDD + 2 x 2.5” 1.8TB SAS HDD Up to 99.6TB using 12 x 3.5” 6TB NL-SAS HDD or SSD + 4 x 3.5” 6TB SAS + 2 x 2.5” 1.8TB SAS HDD or SSD</td>
</tr>
<tr>
<td><strong>Embedded NIC</strong></td>
<td>4 x 1GbE, 2 x 10+2GbE, 4 x 10GbE NDC</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>750W AC (Titanium³); 495W, 750W or 1100W AC (Platinum³); 1100W DC</td>
</tr>
<tr>
<td><strong>Availability</strong></td>
<td>ECC memory, hot-plug hard drives, hot-plug redundant cooling, hot-plug redundant power, IDSDM, single device data correction (SDDC), spare rank, tool-less chassis, support for high availability clustering and virtualization, proactive systems management alerts, iDRAC8 with Lifecycle Controller</td>
</tr>
<tr>
<td><strong>Systems management</strong></td>
<td><strong>Systems management</strong>: IPMI 2.0 compliant; Dell OpenManage Essentials; Dell OpenManage Mobile; Dell OpenManage Power Center <strong>Remote management</strong>: iDRAC8 with Lifecycle Controller, iDRAC8 Express (default), iDRAC8 Enterprise (upgrade) 8GB vFlash media (upgrade), 16GB vFlash media (upgrade) iDRAC Quick Sync <strong>Dell OpenManage Integrations</strong>: • Dell OpenManage Integration Suite for Microsoft® System Center • Dell OpenManage Integration for VMware® vCenter™ <strong>Dell OpenManage Connections</strong>: • HP Operations Manager, IBM Tivoli® Netcool® and CA Network and Systems Management • Dell OpenManage Plug-in for Oracle® Database Manager</td>
</tr>
<tr>
<td>Feature</td>
<td>Specification</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 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 |
| Operating systems  | Microsoft® Windows Server® 2008 R2  
                      Microsoft Windows Server 2012  
                      Microsoft Windows Server 2012 R2  
                      Novell® SUSE® Linux Enterprise Server  
                      Red Hat® Enterprise Linux®  
                      VMware® ESX®  
                      Virtualization options:  
                      Microsoft Windows Server 2012 R2 with Hyper-V  
                      Citrix® XenServer®  
                      VMware vSphere ESXi  
                      For more information on the specific versions and additions, visit Dell.com/OSsupport. |
| OEM-ready version  | From bezel to BIOS to packaging, your servers can look and feel as if they were designed and built by you. For more information, visit Dell.com/OEM. |
| Recommended        | Dell ProSupport Plus for critical systems or Dell ProSupport for premium hardware and software support for your PowerEdge solution. Consulting and deployment offerings are also available. Contact your Dell representative today for more information. Availability and terms of Dell Services vary by region. For more information, visit Dell.com/Service. |

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

2 80 PLUS certification
3 Chassis views and features

The following sections provide external and internal views of the Dell PowerEdge R730 and R730xd systems and describe the chassis features. For detailed information on features and descriptions for these systems, see the Dell PowerEdge R730 and R730xd Owner’s Manual on Dell.com/Support/Manuals.

Chassis views

The R730 and R730xd are available in several chassis options with varying numbers of drive bays. 

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

R730 front views

The R730 supports up to 16 x 2.5” or up to 8 x 3.5” front-accessible, hot-plug hard drives that are secured by a removable front bezel. Other front-panel features include an interactive LCD control panel, USB management port/iDRAC Direct, a video connector and a vFlash media card slot.

Figure 1. R730 front view (2.5” chassis with bezel)

Figure 2. R730 front view (2.5” chassis without bezel)
R730xd front views

The R730xd supports up to 24 x 2.5", 12 x 3.5", or 8 x 3.5" plus 18 x 1.8" front-accessible, hot-plug drives that are secured by a removable front bezel. Other front-panel features include an LED control panel, USB management port/iDRAC Direct and video connector.

Figure 3.  R730xd front view (8 x 3.5” plus 18 x 1.8” with bezel)

Figure 4.  R730xd front view (8 x 3.5” plus 18 x 1.8” without bezel)

R730 back view

The R730 back panel includes PSUs, Ethernet connectors, PCIe slots and many other features described in this guide.

Figure 5.  R730 back view
R730xd back view

In addition to the R730 back-panel features, the R730xd includes 2 optional 2.5" hot-plug drives in the back of the system.

Figure 6. R730xd back view

Internal chassis views

The chassis design of the R730 and R730xd is optimized for easy access to components and for airflow for effective and efficient cooling. The R730 and R730xd support up to 24 DIMMs, 2 processors, hot-plug redundant fans, and many other components and features described in this guide.

Figure 7. R730 internal chassis view
For additional system views, see the *Dell PowerEdge R730 and R730xd Owner’s Manual* on Dell.com/Support/Manuals.

**Chassis features**

Table 4 lists the chassis features for the R730 and R730xd systems. For additional information on these features, see the *Dell PowerEdge R730 and R730xd Owner’s Manual* on Dell.com/Support/Manuals.

**Table 4. Chassis features**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power button and indicator</td>
<td>ACPI-complaint power button with an integrated green power LED</td>
</tr>
<tr>
<td>Front bezel</td>
<td>Covers the system’s front-loading hard drives; can be locked to prevent hard drives from being removed</td>
</tr>
<tr>
<td>NMI button</td>
<td>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</td>
</tr>
<tr>
<td>System identification button</td>
<td>Buttons on the back and front of a system to help identify the unit in a data center environment</td>
</tr>
<tr>
<td>Hard drive activity LEDs</td>
<td>Indicate the status and activity of the hard drives</td>
</tr>
</tbody>
</table>
| USB connectors                | R730: 2 front, 2 back, and 1 internal  
R730xd: 1 front, 2 back, and 1 internal                                                                 |
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vFlash media reader</td>
<td>Supports 1 vFlash media card (the R730 slot is located in the front of the system and the R730x slot is located in the back); functionality is activated only when iDRAC8 Enterprise is enabled</td>
</tr>
<tr>
<td>Video connector</td>
<td>Connects a monitor to the system</td>
</tr>
<tr>
<td>LCD control panel</td>
<td>Provides user access to buttons, display, and I/O interfaces (R730 only)</td>
</tr>
<tr>
<td>LED panel</td>
<td>Indicates the status of system conditions (R730xd only)</td>
</tr>
<tr>
<td>Hard drives</td>
<td>Front-accessible, hot-plug hard drives plus 2 optional back-accessible hot-plug hard drives (R730 only)</td>
</tr>
<tr>
<td>Optical drive (optional)</td>
<td>The R730 supports one optional slimline SATA DVD-ROM drive or DVD+-/RW drive; R730xd does not support an internal optical drive</td>
</tr>
<tr>
<td>System identification panel</td>
<td>Slide-out label panel for system information</td>
</tr>
<tr>
<td>Serial connector</td>
<td>Connects a serial device to the system and for console redirect</td>
</tr>
<tr>
<td>iDRAC8 Enterprise port</td>
<td>Dedicated management port for optional iDRAC8 Enterprise</td>
</tr>
<tr>
<td>PCIe expansion card slots</td>
<td>The R730 supports up to 7 PCIe expansion cards; R730xd supports up to 6 PCIe expansion cards</td>
</tr>
<tr>
<td>Ethernet connectors</td>
<td>Choice of network connectors through Select Network Adapter family</td>
</tr>
<tr>
<td>Power supply units</td>
<td>Up to two back-accessible, hot-plug power supplies</td>
</tr>
<tr>
<td>Power supply indicators</td>
<td>Indicate whether system has power</td>
</tr>
<tr>
<td>NIC indicators</td>
<td>Indicate network activity and status</td>
</tr>
<tr>
<td>Quick Resource Locator (QRL)</td>
<td>Scan the code on the chassis with smartphone app for additional information and resources including videos, reference materials, service tag information and Dell contact information; scan the code on the information tag for information specific to the server</td>
</tr>
</tbody>
</table>

**LCD control panel (R730)**

The R730 system control panel is located on the front of the chassis to provide user access to buttons, display, and I/O interfaces. For more information on the R730 LCD control panel, see the *Dell PowerEdge R730 and R730xd Owner’s Manual* on Dell.com/Support/Manuals.

**Figure 9.** R730 LCD control panel
LED panel (R730xd)

The R730xd LED panel is located on the front of the chassis to indicate the status of system conditions. For more information on the R730xd LED panel, see the Dell PowerEdge R730 and R730xd Owner’s Manual on Dell.com/Support/Manuals.

Figure 10. R730xd LED panel

Quick Resource Locator

The QRL is a model-specific Quick Response code located on the server chassis as shown in Figure 11.

Figure 11. QRL on chassis

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

Figure 12. QRL on information tag

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

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

**Figure 13. Accessing a QRL**

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

**Security features**

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

**Table 5. Security features**

<table>
<thead>
<tr>
<th>Security feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover latch</td>
<td>A tooled latch is integrated in the top cover to secure it to the rack chassis.</td>
</tr>
<tr>
<td>Bezel</td>
<td>A standard bezel is an optional metal bezel mounted to the chassis front and shows the Dell ID. A lock on the bezel protects unauthorized access to hard drives. NFC bezel enables the iDRAC QuickSync management function for managing the server from the front using an NFC-capable device and the free Dell OpenManage Mobile App (currently Android only). Available only from the factory and not supported after purchase of sale. See the Dell iDRAC Quick Sync Tech Guide for more information.</td>
</tr>
<tr>
<td>TPM</td>
<td>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.</td>
</tr>
<tr>
<td>Power-off security</td>
<td>BIOS has the ability to disable the power button function.</td>
</tr>
<tr>
<td>Intrusion alert</td>
<td>An internal switch is used to detect chassis intrusion.</td>
</tr>
<tr>
<td>Secure mode</td>
<td>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.</td>
</tr>
</tbody>
</table>
4 Processors

The Dell PowerEdge R730 and R730xd feature the Intel Xeon processor E5-2600 v3 product family, offering 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 v3 product family not only adds new features, but also improves upon many features of the predecessor Intel Xeon processor E5-2600 v2 product family, including:

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

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

The R730 and R730xd support up to two processors with up to 18 cores per processor. Table 6 lists the Intel Xeon processors supported by the PowerEdge R730 and R730xd. For the latest information on supported processors, visit the R730 and R730xd pages on Dell.com.

Table 6. Supported processors

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

*Not supported on the R730xd

For information on processor installation and configuration, see the Dell PowerEdge R730 and R730xd Owner’s Manual on Dell.com/Support/Manuals.
GPU support

The R730 supports GPU technology, which can provide accelerated performance for a variety of applications, including VDI and HPC implementations.

Note: GPU support is limited to compute and co-processing only; external video out is not supported.

The R730xd does not support internal or external GPUs.

Internal GPU support

The R730 supports two 300W, full-length, double-wide GPUs or up to four 150W, full-length, single-wide GPUs. Each GPU can support up to 6GB of dedicated GDDR5 memory. Active cooled GPU cards not supported. The GPUs are installed on the PCIe x16 3.0 interfaces available on riser 2 and GPU-optional riser 3. A system must have the optional riser 3 with a single x16 slot to support two double-wide GPUs. A standard riser 3 is required to support 3 or 4 single-wide GPUs.

Because GPUs demand high power, each GPU has up to two power connectors for power delivery. The GPU enablement kit is required for internal GPU installation. The kit contains the power cables and other items to enable GPU support on the R730 chassis.

Internal CPU cooling restriction

Due to the high power consumption of GPUs, there is an ambient temperature restriction of 30°C maximum system inlet temperature to ensure adequate system cooling the R730 has one or more GPUs installed. Note that this temperature is less than the standard environmental specification of 35°C.

Other GPU restrictions

The following GPU restrictions for the R730 are enforced by the order validator:

- Requires two processors
- Processors must be 120W or less
- Maximum of two double-wide GPUs (since they take up two slots)
- Maximum of four single-wide GPUs
- All GPUs must be same type and model
- GPUs require a redundant 1100W power supply and GPU enablement kit
- Two double-wide GPUs require the optional riser 3 with a single x16 slot
- Four single-wide GPUs cannot occupy optional riser 3 with a single x16 slot
- Must have 1U heatsinks and solid PCIe blanks
- Tape backup not supported

External GPU support

The R730 and R730xd cannot connect to the PowerEdge C410x.
Supported GPUs
For a list of supported GPUs, see Table 7 and Dell.com/PowerEdge/GPU.

Table 7. Supported GPUs

<table>
<thead>
<tr>
<th>Type</th>
<th>Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Xeon Phi™ 5110P coprocessor</td>
<td></td>
</tr>
<tr>
<td>Intel Xeon Phi 7120P coprocessor</td>
<td></td>
</tr>
<tr>
<td>Intel Xeon Phi 3120P coprocessor</td>
<td></td>
</tr>
<tr>
<td>NVIDIA K40</td>
<td></td>
</tr>
<tr>
<td>NVIDIA M20</td>
<td></td>
</tr>
<tr>
<td>NVIDIA K10</td>
<td></td>
</tr>
<tr>
<td>NVIDIA GRID™ K1</td>
<td></td>
</tr>
<tr>
<td>NVIDIA GRID K2</td>
<td></td>
</tr>
<tr>
<td>AMD S7000 FirePro</td>
<td></td>
</tr>
<tr>
<td>AMD S9050 FirePro</td>
<td></td>
</tr>
</tbody>
</table>

Chipset
The PowerEdge R730 and R730xd servers use the Intel C610 chipset. For more information, visit Intel.com.
5 Memory

More memory options are available than ever before with the Dell PowerEdge R730 and R730xd — greater capacities, higher frequencies, and more flexibility. The R730 and R730xd support up to 768GB of memory (24 DIMMs) and speeds up to 2133MT/s (2 DIMMs per channel), providing high performance in a variety of applications. High memory density means there is no compromise when it comes to virtualization. 64GB DIMMs will be available immediately post-RTS and will expand the memory footprint to 1.5TB.

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.

The R730 and R730xd support both registered and load reduced DIMMs (LRDIMMs), which use a buffer to reduce memory loading and provide greater density, allowing for the maximum platform memory capacity. Unbuffered DIMMs (UDIMMs) are not supported.

Supported memory

Table 8 lists the memory technologies supported by the R730 and R730xd.

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

Table 9 lists the DIMMs supported on the R730 and R730xd. For the latest information on supported memory, visit the R730 and R730xd pages on Dell.com.
Table 9. DIMMs supported

<table>
<thead>
<tr>
<th>DIMM capacity</th>
<th>DIMM speed</th>
<th>DIMM type</th>
<th>Ranks per DIMM</th>
<th>Data width</th>
<th>SDDC support</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2133</td>
<td>RDIMM</td>
<td>1</td>
<td>x8</td>
<td>Advanced ECC</td>
<td>1.2</td>
</tr>
<tr>
<td>8</td>
<td>2133</td>
<td>RDIMM</td>
<td>2</td>
<td>x8</td>
<td>Advanced ECC</td>
<td>1.2</td>
</tr>
<tr>
<td>16</td>
<td>2133</td>
<td>RDIMM</td>
<td>2</td>
<td>x4</td>
<td>All modes</td>
<td>1.2</td>
</tr>
<tr>
<td>32</td>
<td>2133</td>
<td>LRDIMM</td>
<td>4</td>
<td>x4</td>
<td>All modes</td>
<td>1.2</td>
</tr>
</tbody>
</table>

DIMM speed

The R730/R730xd support memory speeds of 2133MT/s, 1600MT/s, 1333MT/s, 1066MT/s and 800MT/s, depending on the DIMM types installed and the configuration. All memory on all processors and channels run at the same speed and voltage. By default, the systems run at the highest speed for the channel with the lowest DIMM voltage and speed. The operating speed of the DIMM is also determined by the maximum speed supported by the processor, the speed settings in the BIOS, and the operating voltage of the system. Not all processors support 2133MT/s memory speed.

Table 10. Memory configuration and performance

<table>
<thead>
<tr>
<th>DIMM type</th>
<th>DIMM ranking</th>
<th>Capacity</th>
<th>DIMM rated voltage, speed</th>
<th>1 DPC</th>
<th>2 DPC</th>
<th>3 DPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDIMM</td>
<td>1R and 2R</td>
<td>4GB, 8GB, 16GB</td>
<td>DDR4 (1.2V), 2133MT/s</td>
<td>2133MT/s</td>
<td>2133MT/s</td>
<td>1866MT/s</td>
</tr>
<tr>
<td>LRDIMM</td>
<td>4R</td>
<td>32GB</td>
<td>DDR4 (1.2V), 2133MT/s</td>
<td>2133MT/s</td>
<td>2133MT/s</td>
<td>1866MT/s</td>
</tr>
</tbody>
</table>

Memory configurations

The R730/R730xd support flexible memory configurations ranging from capacities of 4GB to 768GB. The system supports up to 12 DIMMs per processor (up to 24 DIMMs in a dual-processor configuration). The R730/R730xd have four memory channels per processor, with each channel supporting up to three DIMMs.

Both systems support a flexible memory configuration, according to these basic rules:

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

Memory population guidelines

The following memory population guidelines apply to the R730 and R730xd:

- Can mix DIMMs with x4 and x8 data widths
- Can mix DIMMs with different capacities
  - Population rules require the largest capacity DIMM be placed first
  - Maximum of two different capacity DIMMs allowed in a system
- Can mix DIMMs with different ranks; maximum of two different rank DIMMs allowed in a system
### Table 11. Memory populations and operating frequencies

<table>
<thead>
<tr>
<th>DIMM type</th>
<th>DIMM populated per channel</th>
<th>Operating frequency (MT/s)</th>
<th>Maximum DIMM ranks per channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDIMM</td>
<td>1</td>
<td>2133, 1866, 1600, 1333</td>
<td>Dual rank or single rank</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1866, 1600, 1333</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1866, 1600, 1333</td>
<td></td>
</tr>
<tr>
<td>LRDIMM</td>
<td>1</td>
<td>2133, 1866, 1600, 1333</td>
<td>Quad rank</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1866, 1600, 1333</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1866, 1600, 1333</td>
<td></td>
</tr>
</tbody>
</table>

For more information on memory configuration and population, see the *Dell PowerEdge R730 and R730xd Owner's Manual* on [Dell.com/Support/Manuals](https://www.dell.com/support/manuals).

### Memory RAS features

Reliability, availability, and serviceability (RAS) features help keep the system online and operational without significant impact to performance, and can decrease data loss and crashing due to errors. RAS aids in rapid, accurate diagnosis of faults which require service. Table 12 describes the memory RAS features supported on the R730 and R730xd.

### Table 12. Memory RAS features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dense configuration optimized profile</td>
<td>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.</td>
</tr>
<tr>
<td>Memory demand and patrol scrubbing</td>
<td>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.</td>
</tr>
<tr>
<td>Recovery from single DRAM device failure</td>
<td>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.</td>
</tr>
<tr>
<td>Failed DIMM isolation</td>
<td>This feature provides the ability to identify a specific failing DIMM channel pair, thereby enabling the user to replace only the failed DIMM pair.</td>
</tr>
<tr>
<td>Memory mirroring: intra-socket</td>
<td>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.</td>
</tr>
<tr>
<td>Memory address parity protection</td>
<td>This feature provides the ability to detect transient errors on the address lines of the DDR channel.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Memory sparing (rank)</td>
<td>Memory sparing allocates one rank per channel as a spare. If excessive correctable errors occur in a rank or channel, they are moved to the spare area while the operating system is running to prevent the errors from causing an uncorrectable failure.</td>
</tr>
<tr>
<td>Memory thermal throttling</td>
<td>This feature helps to optimize power/performance and can also be used to prevent DIMMs from overheating.</td>
</tr>
</tbody>
</table>

For information on memory mirroring and sparing configurations, see the *Dell PowerEdge R730 and R730xd Owner’s Manual* on [Dell.com/Support/Manuals](https://www.dell.com/Support/Manuals). Memory RAID is not supported.
6 Storage

The Dell PowerEdge R730 and R730xd provide storage expandability that allows you to adapt to your workload and operational demands. With comprehensive storage options, the R730 and R730xd offer various drive types, internal and external storage controllers, and different chassis and backplanes for varied numbers of drives.

Features such as Express Flash PCIe SSDs and DAS Cache provide vastly accelerated performance over previous technologies. Dell Express Flash drives use PCIe lanes to connect directly to the processor and chipset and are easily accessible through a hot-plug drive bay (R730xd only; R730 does not support Express Flash drives).

Internal storage

The R730 and R730xd are available in hot-plug backplane options listed in Table 13. Note that the backplane option must be selected at point of purchase and cannot be changed or upgraded later.

Table 13. Internal storage options

<table>
<thead>
<tr>
<th>Server</th>
<th>Storage options</th>
<th>Storage controller options</th>
</tr>
</thead>
<tbody>
<tr>
<td>R730</td>
<td>8 or 16 x 2.5” SATA, SAS, NL-SAS HDDs; SATA, SAS SSDs</td>
<td>PERC H330, H730, H730P</td>
</tr>
<tr>
<td></td>
<td>8 x 3.5” SATA, NL-SAS HDDs</td>
<td>PERC H130, H330, H730, H730P</td>
</tr>
<tr>
<td></td>
<td>18 x 1.8” SATA SSDs + 8 x 3.5” SATA, NL-SAS HDDs</td>
<td>PERC H330, H730, H730P</td>
</tr>
<tr>
<td>R730xd</td>
<td>24 x 2.5” SAS, SATA, NL-SAS HDDs, and SATA, SAS SSDs, with or without optional flex bay: 2 x 2.5” SAS, SATA, NL-SAS HDDs, and SATA, SAS SSDs</td>
<td>PERC H330, H730, H730P</td>
</tr>
<tr>
<td></td>
<td>12 or 16 x 3.5” SATA, NL-SAS HDDs with or without optional flex bay: 2 x 2.5” SAS, SATA, NL-SAS HDDs, and SATA, SAS SSDs</td>
<td>PERC H330, H730, H730P</td>
</tr>
</tbody>
</table>

1Back-accessible 2.5” drives are optional depending on configuration.
## Supported drives

Table 14 lists the internal drives supported by the R730 and R730xd. For the latest information on supported hard drives, visit the [R730](https://www.dell.com) and [R730xd](https://www.dell.com) pages on [Dell.com](https://www.dell.com).

**Table 14. Supported drives**

<table>
<thead>
<tr>
<th>Form factor</th>
<th>Type</th>
<th>Speed (RPM)</th>
<th>Capacities</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5&quot;</td>
<td>SATA (6Gb)</td>
<td>7.2K</td>
<td>1TB, 2TB, 4TB, 6TB, 8TB</td>
</tr>
<tr>
<td></td>
<td>SATA (3Gb)</td>
<td>7.2K</td>
<td>500GB</td>
</tr>
<tr>
<td></td>
<td>NL-SAS (6Gb)</td>
<td>7.2K</td>
<td>1TB, 2TB, 4TB*, 6TB*, 8TB</td>
</tr>
<tr>
<td></td>
<td>SAS (6Gb)</td>
<td>10K</td>
<td>300GB, 600GB, 1.2TB*, 1.8TB*</td>
</tr>
<tr>
<td></td>
<td>SAS (6Gb)</td>
<td>15K</td>
<td>300GB, 600GB*</td>
</tr>
<tr>
<td></td>
<td>SATA (6Gb)</td>
<td>7.2K</td>
<td>250GB, 500GB, 1TB</td>
</tr>
<tr>
<td></td>
<td>NL-SAS (6Gb)</td>
<td>7.2K</td>
<td>500GB, 1TB*, 2TB*</td>
</tr>
<tr>
<td></td>
<td>SATA SSD (mixed use, 6Gb)</td>
<td>N/A</td>
<td>100GB, 200GB, 400GB, 800GB</td>
</tr>
<tr>
<td>2.5&quot;</td>
<td>SATA SSD (read intensive, 6Gb)</td>
<td>N/A</td>
<td>480GB, 960GB, 19.2TB</td>
</tr>
<tr>
<td></td>
<td>SATA SSD (SSD boot, 6Gb)</td>
<td>N/A</td>
<td>60GB, 120GB</td>
</tr>
<tr>
<td></td>
<td>SAS SSD (write intensive, 12Gb)</td>
<td>N/A</td>
<td>200GB, 400GB, 800GB</td>
</tr>
<tr>
<td></td>
<td>SAS SSD (mixed use, 12Gb)</td>
<td>N/A</td>
<td>200GB, 400GB, 800GB, 1.6TB</td>
</tr>
<tr>
<td></td>
<td>SAS SSD (read intensive, 12Gb)</td>
<td>N/A</td>
<td>800GB, 1.6TB</td>
</tr>
<tr>
<td></td>
<td>PCIe SSD</td>
<td>N/A</td>
<td>500GB, 800GB</td>
</tr>
<tr>
<td>1.8&quot; (R730xd)</td>
<td>SATA SSD (mix use, 6Gb)</td>
<td>N/A</td>
<td>100GB, 200GB, 400GB</td>
</tr>
<tr>
<td></td>
<td>SATA SSD (read intensive, 6Gb)</td>
<td>N/A</td>
<td>480GB, 960GB</td>
</tr>
<tr>
<td></td>
<td>SATA SSD (SSD boot, 6Gb)</td>
<td>N/A</td>
<td>60GB, 120GB</td>
</tr>
</tbody>
</table>

*SED available
Express Flash drives

Express Flash drives use PCIe and SSD technologies to provide performance, scalability and optimal serviceability. Accelerated performance with high IOPS is made possible without requiring processor resources or capturing DRAM. Also, Express Flash drives use a standardized 2.5” hot-plug form factor, which 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 R730xd has an option to support up to four hot-plug Express Flash PCIe SSDs in the 2.5” chassis. The R730 does not support Express Flash drives.
External storage

The R730 and R730xd support the external storage devices types listed in Table 15. For more storage information, see Dell.com/Storage.

<table>
<thead>
<tr>
<th>Device type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>iSCSI and FC SAN</td>
<td>Dell Storage PS6610 Series</td>
</tr>
<tr>
<td></td>
<td>Dell EqualLogic™ PS6100/PS6210/PS6500/PS6510 Series</td>
</tr>
<tr>
<td></td>
<td>Dell EqualLogic PS4100/PS4210 Series</td>
</tr>
<tr>
<td></td>
<td>Dell EqualLogic PS-M4110 Series</td>
</tr>
<tr>
<td></td>
<td>Dell Storage SCv2000 Series</td>
</tr>
<tr>
<td></td>
<td>Dell Storage SC4020</td>
</tr>
<tr>
<td></td>
<td>Dell Compellent™ SC8000</td>
</tr>
<tr>
<td></td>
<td>Dell PowerVault™ MD3 iSCSI SAN</td>
</tr>
<tr>
<td></td>
<td>Dell PowerVault MD3 Fibre Channel SAN</td>
</tr>
<tr>
<td>DAS</td>
<td>Dell Storage MD1400 Series</td>
</tr>
<tr>
<td></td>
<td>Dell PowerVault MD3 SAS</td>
</tr>
<tr>
<td>NAS options</td>
<td>Dell Compellent FS8600 (with SC Series)</td>
</tr>
<tr>
<td></td>
<td>Dell EqualLogic FS76x0 (with PS Series)</td>
</tr>
<tr>
<td>Windows NAS appliances</td>
<td>Dell PowerVault NX400</td>
</tr>
<tr>
<td></td>
<td>Dell Storage NX3230</td>
</tr>
<tr>
<td></td>
<td>Dell Storage NX3330</td>
</tr>
<tr>
<td>Data protection solutions</td>
<td>DR Series</td>
</tr>
<tr>
<td></td>
<td>DL4000, DL1000</td>
</tr>
<tr>
<td></td>
<td>AppAssure</td>
</tr>
<tr>
<td></td>
<td>vRanger</td>
</tr>
<tr>
<td></td>
<td>NetVault</td>
</tr>
<tr>
<td>Tape options</td>
<td>TL1000, TL2000, TL4000, ML6000 Series</td>
</tr>
</tbody>
</table>

PowerEdge RAID Controllers

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

- PCIe 3.0 support and 12Gb/s SAS host interface
- Significantly increased IOPS performance and throughput performance capability
- Capable of RAID as well as non-RAID operations
- FastPath™ I/O for accelerating performance when operating on SSDs
- Split Mirror function for breaking mirrored disk connection to quickly replace a drive
- Dimmer Switch™ for power control of spare or idle drives to save energy and operating expenses
The base RAID controller in the R730 and R730xd is the miniPERC, which provides a base RAID hardware controller without consuming a PCIe slot by using a small form factor and high-density connector to the base planar. The secondary RAID controller is limited to the H730P low-profile PCIe controller. In two-controller systems, both controllers must be the H730P.

The R730 and R730xd support the PERC cards listed in Table 16. For more information about the latest PERC offerings, see Dell.com/PERC.

<table>
<thead>
<tr>
<th>Controller</th>
<th>Features</th>
<th>RAID modes supported</th>
<th>Form factor</th>
<th>Solution</th>
</tr>
</thead>
</table>
| PERC H830    | • External 8-port 12Gb/s SAS  
  • Supports up to 255 SAS HDDs or SSDs  
  • 2GB 1866MT/s DDR3 SDRAM non-volatile cache | 0, 1, 10, 5, 50, 6, 60 | Adapter     | Performance-hungry external storage environments |
| PERC H730P   | • Internal 8-port 12Gb/s PCIe RAID controller  
  • Supports up to 255 3Gb/s, 6Gb/s and 12Gb/s SAS or SATA HDDs or SSDs  
  • 2GB 1866MT/s DDR3 SDRAM non-volatile cache | 0, 1, 10, 5, 50, 6, 60 | Mini and Adapter | Premium performance for significant performance gains |
| PERC H730    | • Internal 8-port 12Gb/s PCIe RAID controller  
  • Supports up to 255 3Gb/s, 6Gb/s and 12Gb/s SAS or SATA HDDs or SSDs  
  • 1GB 1866MT/s DDR3 SDRAM non-volatile cache | 0, 1, 10, 5, 50, 6, 60 | Mini and Adapter | Value/performance RAID and non-RAID for high-density servers and workstations |
| PERC H330    | • Internal 8-port 12Gb/s PCIe RAID controller  
  • Supports 3Gb/s, 6Gb/s and 12Gb/s SAS and 3Gb/s and 6Gb/s SATA HDDs or SSDs | 0, 1, 10, 5, 50      | Mini and Adapter | Low cost, entry RAID and non-RAID for high-density servers and workstations |
| PERC S130    | • Software RAID controller  
  • Supports up to 8 6Gb/s SATA HDDs and SSD  
  • Only available on the 8-drive 2.5" configuration  
  • Currently supports only Microsoft Windows operating systems | 0, 1, 5, 10          | System board-embedded SATA | Software |

**Internal persistent storage**

The R730 and R730xd offer two types of persistent storage: Lifecycle Controller (LC 3.0) and Internal Dual SD Module (IDSDM). A vFlash option is available with iDRAC8 Enterprise.
Lifecycle Controller 3.0


Internal Dual SD Module

The IDSDM card provides the following major functions:

- Dual SD interface is maintained in a mirrored configuration (primary and secondary SD)
- Provides full RAID1 functionality
- Dual SD cards are not required; the module can operate with only one card but will provide no redundancy
- Enables support for Secure Digital eXtended Capacity (SDXC) cards
- USB interface to host system
- I2C interface to host system and onboard EEPROM for out-of-band status reporting
- Onboard LEDs show status of each SD card
- A BIOS Setup Redundancy setting supports Mirror Mode or Disabled

<table>
<thead>
<tr>
<th>New feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for RAID and Data Integrity</td>
<td>When RAID is enabled, writes to IDSDM will perform write operation to both SD cards simultaneously. Ensures data integrity during power loss conditions</td>
</tr>
<tr>
<td>Support for USB 3.0 (higher bandwidth)</td>
<td>If USB 3.0 is disabled, or an error on USB 3.0 is detected, IDSDM will revert to USB 2.0</td>
</tr>
<tr>
<td>User-prioritized SD slots</td>
<td>User-defined primary SD slot for IDSDM; if RAID is enabled, content of primary SD card will be mirrored on secondary SD card</td>
</tr>
<tr>
<td>Bad Block management</td>
<td>Prevents a single bad sector from causing an SD card to fail</td>
</tr>
<tr>
<td>No more BIOS halt during rebuild</td>
<td>IDSDM does not require the BIOS to halt during POST and wait for the rebuild to complete; rebuild happens in the background and is much faster as compare than the previous generation</td>
</tr>
<tr>
<td>Enhanced support for mismatched SD cards</td>
<td>Functionality of primary SD card is not compromised if the secondary SD card has a different speed or lower storage</td>
</tr>
<tr>
<td>Enhanced support for write-protected SD cards</td>
<td>Mismatch check will only happen if the IDSDM is operating in RAID mode. Only secondary SD card will be placed in mismatch state; if the secondary card does not match the speed or have lower storage capacity than the primary card, the secondary card will be placed in the Mismatch state</td>
</tr>
<tr>
<td>Seamless SD card assignments</td>
<td>Write-protected SD cards are treated as read-only; if at least one card is write-protected and RAID is enabled, IDSDM will operate in the degraded RAID state, and RAID will automatically be disabled if both cards are write-protected</td>
</tr>
</tbody>
</table>

Table 17. IDSDM new features
<table>
<thead>
<tr>
<th>New feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>If RAID is enabled, there will be...</td>
<td>If RAID is enabled, there will be no compromise in functionality however, system will notify user of degraded RAID status</td>
</tr>
<tr>
<td>Enriched error reporting</td>
<td>New errors have been implemented to help root cause a failure. Failures will be in iDRAC logs. Multiple failures can be now recorded and logged</td>
</tr>
<tr>
<td>Mass erase for enhanced security</td>
<td>Mass erase options are provided in IDSDM; enabling this register will clean up all the data preset on SD cards.</td>
</tr>
<tr>
<td>UHS-1 SD card support</td>
<td>Next-generation support</td>
</tr>
</tbody>
</table>

**Optical drives**

The PowerEdge R730 supports one of the following internal optical drive options:

- DVD-ROM
- DVD+RW

The R730xd does not support an internal optical drive.

**Tape drives**

The R730 supports the Dell PowerVault RD1000 internal backup device on the 2.5" chassis only. Internal tape drives are not supported on the R730, and the R730xd does not support any internal backup device.
7 Networking and PCIe

The Dell PowerEdge R730 and R730xd offer 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 Adapters

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

The R730 and R730xd support one custom NDC, as part of the Select Network Adapter family, to house the complete LOM subsystem. The R730 and R730xd support NDC options including a selection of 1GbE and 10GbE port cards, such as 1000BASE-T, 10GBASE-T and 10Gb SFP+.

Figure 14. Rack network daughter card (NDC)
Table 18 lists the available Select Network Adapter options and supported features for the R730 and R730xd.

**Table 18. Supported Select Network Adapter options and features**

<table>
<thead>
<tr>
<th>Features</th>
<th>Broadcom 5720 BASE-T (default)</th>
<th>Intel I350 BASE-T</th>
<th>QLogic 57800 DA/SFP+</th>
<th>QLogic 57800 BASE-T</th>
<th>Intel I350/X540 2x1Gb BT + 2x10Gb SFP+</th>
<th>QLogic 57840S 2x1Gb BT + 2x10Gb SFP+</th>
<th>Intel I350/X710 2x1Gb BT + 2x10Gb SFP+</th>
<th>Intel 4x10G x710 SFP+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ports</td>
<td>4 x 1Gb</td>
<td>4 x 1Gb</td>
<td>2 x 1Gb + 2x10Gb</td>
<td>2 x 1Gb + 2x10Gb</td>
<td>2 x 1Gb + 2x10Gb</td>
<td>4 x 10Gb</td>
<td>2 x 1Gb + 2x10Gb</td>
<td>4 x 10Gb</td>
</tr>
<tr>
<td>Link types</td>
<td>1000BASE-T</td>
<td>1000BASE-T</td>
<td>1GBASE-T, 10GBSFP+, DCA/SR</td>
<td>1GBASE-T, 10GBBSFP+, DCA/SR</td>
<td>1GBASE-T, 10GBSFP+, DCA/SR</td>
<td>10GBASE-T, 10GBSFP+, DCA/SR</td>
<td>10GBASE-T, 10GBSFP+, DCA/SR</td>
<td></td>
</tr>
<tr>
<td>TCP Chimnet (TOE)</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>ISCSI HBA full offload</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Supported Post RTS</td>
<td>Post RTS</td>
<td></td>
</tr>
<tr>
<td>FCoE HBA full offload</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Post RTS</td>
<td></td>
</tr>
<tr>
<td>FCoE boot (boot from SAN)</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Supported*</td>
<td>Post RTS</td>
<td></td>
</tr>
<tr>
<td>NetQueue/VMQ IOV</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td></td>
</tr>
<tr>
<td>SR-IOV</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td></td>
</tr>
<tr>
<td>NIC partitioning (NPAR)</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td></td>
</tr>
<tr>
<td>VNTag/VEB</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td></td>
</tr>
</tbody>
</table>

*10GbE ports only

**System management integration**

With R730 and R730xd, 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-through 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 reconfiguration of any NIC, physical or virtual
• PXE boot enabled on all LOM and NDCs for ease of use
• Boot from SAN (iSCSI, FCoE) configuration for networking devices through the Lifecycle Controller GUI

PCIe expansion

For information on card installation, requirements, and slot priorities, see the PowerEdge R730 and R730xd Owner’s Manual on Dell.com/Support/Manuals.

PCIe slots

The R730 and R730xd provide greatly expanded PCIe slot capability over their predecessor servers. This is made possible by the 40 PCIe lanes available from each processor in the system. Two processors are required in the system to enable all PCIe slots. The R730 and R730xd have been designed to be PCIe 3.0 compliant in order to take full advantage of the processor capabilities. Table 19 details the R730 and R730xd PCIe slots.

Table 19. PCIe expansion slots

<table>
<thead>
<tr>
<th>Slot types</th>
<th>R730</th>
<th>R730xd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slots¹</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Slot types</td>
<td>One x16 full-length, full-height</td>
<td>Two x16 full-length, full-height</td>
</tr>
<tr>
<td></td>
<td>Three x8 full-length, full-height</td>
<td>One x8 full-length, full-height</td>
</tr>
<tr>
<td></td>
<td>Three x8 half-length, half-height</td>
<td>Three x8 half-length, half-height</td>
</tr>
</tbody>
</table>

¹In a single-processor configuration, slots 1–4 are not usable.

Table 20 shows the slot mapping for the R730 and R730xd PCIe slots.

Table 20. PCIe slot mapping

<table>
<thead>
<tr>
<th>Riser</th>
<th>Slot number</th>
<th>Form factor</th>
<th>Controlling CPU</th>
<th>Slot electrical bandwidth and physical connector</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right riser 1</td>
<td>1</td>
<td>Low profile</td>
<td>CPU2</td>
<td>PCIe 3.0 x8 (x16 connector)</td>
<td>25W</td>
</tr>
<tr>
<td>Right riser 1</td>
<td>2</td>
<td>Low profile</td>
<td>CPU2</td>
<td>PCIe 3.0 x8 (x16 connector)</td>
<td>25W</td>
</tr>
<tr>
<td>Right riser 1</td>
<td>3</td>
<td>Low profile</td>
<td>CPU2</td>
<td>PCIe 3.0 x8 (x16 connector)</td>
<td>25W</td>
</tr>
<tr>
<td>Center riser 2</td>
<td>4</td>
<td>Full height</td>
<td>CPU2</td>
<td>PCIe 3.0 x16 (x16 connector)</td>
<td>75W</td>
</tr>
<tr>
<td>Center riser 2</td>
<td>5</td>
<td>Full height</td>
<td>CPU1</td>
<td>PCIe 3.0 x8 (x16 connector)</td>
<td>75W</td>
</tr>
<tr>
<td>Left riser 3</td>
<td>6</td>
<td>Full height</td>
<td>CPU1</td>
<td>PCIe 3.0 x8 (x16 connector)</td>
<td>75W</td>
</tr>
<tr>
<td>Left riser 3</td>
<td>7</td>
<td>Full height</td>
<td>CPU1</td>
<td>PCIe 3.0 x8 (x16 connector)</td>
<td>75W</td>
</tr>
</tbody>
</table>
### PCIe cards

The R730 and R730xd support a variety of PCIe expansion cards. Table 21 lists the supported add-in NICs and HBAs for the R730 and R730xd.

#### Table 21. Optional add-in PCIe expansion cards

<table>
<thead>
<tr>
<th>Type</th>
<th>Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIC</td>
<td>Broadcom® 5719 quad-port 1Gb NIC</td>
</tr>
<tr>
<td></td>
<td>Broadcom 5720 dual-port 1Gb NIC</td>
</tr>
<tr>
<td></td>
<td>QLogic® 57810 dual-port 10Gb BASE-T network adapter</td>
</tr>
<tr>
<td></td>
<td>Intel Ethernet I350 dual-port 1Gb server adapter</td>
</tr>
<tr>
<td></td>
<td>Intel Ethernet I350 quad-port 1Gb server adapter</td>
</tr>
<tr>
<td></td>
<td>Intel Ethernet X540 dual-port 10GBASE-T server adapter</td>
</tr>
<tr>
<td></td>
<td>Emulex® OCE14102-N1-D dual-port SFP+ 2 x 10Gb NIC</td>
</tr>
<tr>
<td></td>
<td>Mellanox® ConnectX®-3 dual-port 10Gb Direct Attach/SFP+ server network adapter</td>
</tr>
<tr>
<td></td>
<td>Mellanox ConnectX-3 dual-port 40Gb Direct Attach/QSFP server network adapter</td>
</tr>
<tr>
<td></td>
<td>Mellanox ConnectX-3 single-port FDR VPI</td>
</tr>
<tr>
<td></td>
<td>Emulex LPe12000 single-port 8Gb FC HBA</td>
</tr>
<tr>
<td></td>
<td>Emulex LPe12002 dual-port 8Gb FC HBA</td>
</tr>
<tr>
<td></td>
<td>Emulex LPe16000B single-port 16Gb FC HBA</td>
</tr>
<tr>
<td></td>
<td>Emulex LPe16002B dual-port 16Gb FC HBA, PCIe</td>
</tr>
<tr>
<td></td>
<td>QLogic QLE2560 single-port 8Gb FC HBA, PCIe x8</td>
</tr>
<tr>
<td></td>
<td>QLogic QLE2562 dual-port 8Gb FC HBA, PCIe x8</td>
</tr>
<tr>
<td></td>
<td>QLogic QLE2660 single-port 16Gb FC HBA, PCIe x8</td>
</tr>
<tr>
<td></td>
<td>QLogic QLE2662 dual-port 16Gb FC HBA, PCIe x8</td>
</tr>
<tr>
<td>HBA</td>
<td>Emulex OneConnect OCE14102-U1-D dual-port PCIe 10GbE CNA</td>
</tr>
<tr>
<td></td>
<td>Emulex OneConnect OCm14104-U1-D, 4-port 10GbE SFP+ CNA, rNDC</td>
</tr>
<tr>
<td></td>
<td>Intel Ethernet X520 dual-port SFP+/DA server adapter CNA</td>
</tr>
<tr>
<td>Type</td>
<td>Adapter</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Intel Ethernet X540 dual-port 10GBASE-T server adapter CNA</td>
</tr>
<tr>
<td></td>
<td>Intel X710 2x10GE SFP+/DA</td>
</tr>
<tr>
<td></td>
<td>Intel X710 4x10GE SFP+/DA</td>
</tr>
<tr>
<td></td>
<td>QLogic 57810S 2x10GE SFP+/DA CNA</td>
</tr>
<tr>
<td></td>
<td>QLogic 57810S 2x10GE 10BASE-T CNA</td>
</tr>
</tbody>
</table>

For the latest information on supported PCIe expansion cards for the R730 and R730xd, visit the [R730](#) and [R730xd](#) pages on [Dell.com](https://www.dell.com). For more information on server network adapters, visit [http://www.dell.com/us/business/p/networking-cards](http://www.dell.com/us/business/p/networking-cards).
8 Power, thermal and acoustics

Lower overall system-level power draw is a result of Dell’s breakthrough system design. PowerEdge servers aim to maximize performance-per-watt through a combination of energy efficient technologies, optimized thermal designs and intelligent fan control algorithms. The PowerEdge R730/R730xd fan control algorithms use an extensive array of sensors that automatically monitor power and thermal activity to minimize fan speeds based on system cooling requirements, reducing the power required for cooling.

Power consumption and energy efficiency

With the rise in the cost of energy coupled with increasing data center density, Dell provides tools and technologies to help you realize greater performance with less energy cost and waste. More efficient data center usage can reduce costs by slowing the need for additional data center space. Table 22 lists the tools and technologies Dell offers to help you achieve your data center goals by lowering power consumption and increasing energy efficiency.

<table>
<thead>
<tr>
<th>Table 22. Power tools and technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feature</strong></td>
</tr>
<tr>
<td>Power supply units (PSU) portfolio</td>
</tr>
<tr>
<td>Tools for right-sizing</td>
</tr>
<tr>
<td>Industry compliance</td>
</tr>
<tr>
<td>Power monitoring accuracy</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Power capping</td>
</tr>
<tr>
<td>Systems management</td>
</tr>
<tr>
<td>Dell Fresh Air 2.0</td>
</tr>
</tbody>
</table>
**Active power management**

- **Dell Active Power Controller (DAPC)** provides operating system-agnostic power-management capability designed to save you money by lowering the system-level power draw at times of low utilization.

- **Intel Node Manager** is an embedded technology that provides individual server-level power reporting and power limiting functionality. Dell offers a complete power management solution comprised of Intel Node Manager accessed through Dell iDRAC8 Enterprise and OpenManage Power Center that allows policy-based management of power and thermals at the individual server, rack and data center level.

- **Hot Spare** improves the operating PSU efficiency, thereby reducing overall power consumption.

- **Thermal Control of Fan Speed** optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption.

- **Idle Power** enables Dell servers to run as efficiently when idle as when at full workload.

Find additional information at [Dell.com/PowerCenter](http://Dell.com/PowerCenter).

**Power supply units**

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

The PowerEdge R730 and R730xd support up to two AC or DC power supplies with 1+1 redundancy, auto sensing and auto-switching capability. The PowerEdge R730 and R730xd support the power supply units listed in Table 23. The 750W AC/DC mixed-mode PSU is available only in China. For additional power supply specifications, see Table 32.

<table>
<thead>
<tr>
<th>Form factor</th>
<th>Output</th>
<th>Class</th>
<th>Efficiency targets by load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>495W AC</td>
<td>Platinum</td>
<td>82.0%</td>
<td>90.0%</td>
</tr>
<tr>
<td>750W AC</td>
<td>Titanium</td>
<td>90.0%</td>
<td>94.0%</td>
</tr>
<tr>
<td>750W AC</td>
<td>Platinum</td>
<td>82.0%</td>
<td>90.0%</td>
</tr>
<tr>
<td>1100W AC</td>
<td>Platinum</td>
<td>89.0%</td>
<td>93.0%</td>
</tr>
<tr>
<td>1100W DC</td>
<td>N/A</td>
<td>80.0%</td>
<td>88.0%</td>
</tr>
<tr>
<td>750W AC/DC*</td>
<td>Platinum</td>
<td>82.0%</td>
<td>90.0%</td>
</tr>
</tbody>
</table>

*Available only in China.*
Thermal and acoustics

The R730 and R730xd thermal management delivers high performance through optimized cooling of components at the lowest fan speeds across a wide range of ambient temperatures from 10°C to 35°C (50°F to 95°F) and to extended ambient temperature ranges. These optimizations result in lower fan power consumption for lower total system power and data center power consumption.

Thermal design

The thermal design of the PowerEdge R730 and R730xd reflects the following:

- Optimized thermal design: The system layout is architectured for optimum thermal design. System component placement and layout are designed to provide maximum airflow coverage to critical components with minimal expense of fan power.
- Comprehensive thermal management: The thermal control system regulates the system fan speeds based on feedback from system component temperature sensors, as well as for system inventory and subsystem power draw. Temperature monitoring includes components such as processors, DIMMs, chipset, system inlet air temperature, hard disk drives, NDC and GPU.
- Open and closed loop fan speed control: Open loop fan control uses system configuration to determine fan speed based on system inlet air temperature. Closed loop thermal control uses temperature feedback to dynamically adjust fan speeds based on system activity and cooling requirements.
- User-configurable settings: With the understanding and realization that every customer has a unique set of circumstances or expectations from the system, in this generation of servers, we have introduced limited user-configurable settings in the iDRAC8 BIOS setup screen. For more information, see the Dell PowerEdge R730 and R730xd Owner's Manual on Dell.com/Support/Manuals and “Advanced Thermal Control: Optimizing across Environments and Power Goals” on Dell.com.
- Cooling redundancy: The R730 and R730xd allow N+1 fan redundancy, allowing continuous operation with one fan failure in the system.

Acoustical design

Dell focuses on sound quality in addition to sound power level and sound pressure level. Sound quality describes how disturbing or pleasing a sound is interpreted, and Dell references a number of psychoacoustical metrics and thresholds in delivering to it. Tone prominence is one such metric. Sound power and sound pressure levels increase with greater populations or higher utilization, while sound quality remains good even as the frequency content changes. A reference for comparison to sound pressure levels for familiar noise sources is given in Table 24. An extensive description of Dell Enterprise acoustical design and metrics is available in the Dell Enterprise Acoustics white paper.
**Table 24. Acoustical reference points and output comparisons**

<table>
<thead>
<tr>
<th>Value measured at your ears</th>
<th>Equivalent familiar noise experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>LpA, dBA, re 20 µPa</td>
<td>Loudness, sones</td>
</tr>
<tr>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>75</td>
<td>39</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>45</td>
<td>4</td>
</tr>
<tr>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

**Acoustical performance data for the R730**

Consciously designed to scale with configuration and usage, sound from the PowerEdge R730 in minimal configuration is sufficiently quiet to be masked in open office layout environments. The R730 meets Dell’s sound quality requirements.

- **Minimally configured**¹ 2.5” chassis in 23 ± 2 °C ambient
  - Idle⁵: LwA-UL⁴ = 4.7 bels; LpA⁵ = 28 dBA; No prominent tones⁶
  - Operating⁵: LwA-UL⁴ = 5.3 bels; LpA⁵ = 33 dBA; No prominent tones⁶
- **Typically configured**² 3.5” chassis in 23 ± 2 °C ambient
  - Idle⁵: LwA-UL⁴ = 4.7 bels; LpA⁵ = 28 dBA; No prominent tones⁶
  - Operating⁵: LwA-UL⁴ = 5.3 bels; LpA⁵ = 33 dBA; No prominent tones⁶
- **Typically configured**² 2.5” chassis in 23 ± 2 °C ambient
  - Idle⁵: LwA-UL⁴ = 4.7 bels; LpA⁵ = 28 dBA; No prominent tones⁶
  - Operating⁵: LwA-UL⁴ = 5.8 bels; LpA⁵ = 39 dBA; No prominent tones⁶

1. Minimum configuration means 1 x 85W-6C CPU (Intel E5-2609 v3), 1 x 4GB DIMM, 1 x Client SSD, 1 x 495W PSU, no PCI cards, and 6 system fans.
2. Typical configuration means:
   - For 3.5” chassis: 2 x 105W-10C CPU (Intel E5-2660 v3), 8 x 8GB DIMM, 6 x 3.5” SATA HDD, 2 x 750W PSU, 1 x H730 miniPERC, 1 x Intel 1GbE NDC card, 1 x 1GbE NIC card, and 6 system fans.
   - For 2.5” chassis: 2 x 105W-10C CPU (Intel E5-2660 v3), 8 x 8GB DIMM, 8 x 2.5” 10K SAS HDD, 2 x 750W PSU, 1 x H730 miniPERC, 1 x H830 external PERC, 1 x Intel 1GbE NDC card, 1 x 1GbE NIC card, and 6 system fans.
3. Idle means the state in which the product is doing nothing but running OS; values for Operating are the maximum of acoustical output for active HDDs or active CPUs.
4. LwA – UL is the upper limit sound power levels (LwA) calculated per section 4.4.1 of ISO9296 (1988) and measured in accordance with ISO7779 (2010).
5. LpA is the average bystander position A-weighted sound pressure level calculated per section 4.3 of ISO9296 (1988) and measured in accordance with ISO7779 (2010). The system is placed in a 24U rack enclosure, 25 cm above reflective floor.
6. Prominent tone: Criteria of D.6 and D.11 of ECMA-74 12th ed. (2012) are followed to determine if discrete tones are prominent. The system is placed in center of ISO7779 table and acoustic transducer is at front standing operator position, ref ISO7779 (2010 Section 8.6.1, Position P1).

**Acoustical dependencies for the R730**

- System thermal profile selected in BIOS: The system default setting is “Power Optimized (DAPC)”, which is in general a lower fan speed and noise level. If “Performance optimized” is selected, the fan speed/noise level will increase.
- **CPU power:**
  - Configurations with "low-power" CPUs (which have lower temperature limits than standard CPUs), such as an Intel Xeon E5-2650L v3 or E52630L v3 at 65W CPU, under moderate or heavy utilization, will be about twice as loud as typical configurations.
  - Configurations increase in loudness as CPU power increases from that in typical configurations.
- **Types of storage devices:**
  - **HDDs**
    > Lower speed HDDs (such as 7.2K RPM SATA, 10K RPM SAS) are generally quieter than 15K RPM SAS drives.
    > Loudness increases with the following progression of drives: SATA (2.5" or 3.5"), 2.5" 10K, 2.5" 15K, 3.5" 15K.
  - **SSDs**
    > SSDs are not themselves audible.
    > However, a configuration with PCIe SSD requires more airflow for cooling and will be significantly louder than a typical configuration. Under highly-stressed condition, the sound power levels may go up to 7.0 bels.
- **Quantity of HDDs:** Acoustics related to the HDD itself (read/write noise) increases with the number of HDDs installed.
- **GPGPU cards:** A configuration with any GPGPU card will be significantly louder (about twice as loud) than the typical configuration.

### Acoustical performance data for the R730xd

The PowerEdge R730xd acoustics are appropriate for open office layout in typical configurations but are low enough for an office environment in minimum configuration. The R730xd meets Dell’s sound quality requirements.

- **Minimally configured**
  - **2.5" chassis in 23 ± 2 °C ambient**
    - Idle\(^3\): LwA-UL\(^4\) = 5.1 bels; LpA\(^5\) = 31 dBA; No prominent tones\(^6\)
    - Operating\(^3\): LwA-UL\(^4\) = 5.2 bels; LpA\(^5\) = 32 dBA; No prominent tones\(^6\)
  - **Typically configured**
    - **3.5" chassis in 23 ± 2 °C ambient**
      - Idle\(^3\): LwA-UL\(^4\) = 5.1 bels; LpA\(^5\) = 32 dBA; No prominent tones\(^6\)
      - Operating\(^3\): LwA-UL\(^4\) = 6.1 bels; LpA\(^5\) = 43 dBA; No prominent tones\(^6\)
    - **2.5" chassis in 23 ± 2 °C ambient**
      - Idle\(^3\): LwA-UL\(^4\) = 5.1 bels; LpA\(^5\) = 32 dBA; No prominent tones\(^6\)
      - Operating\(^3\): LwA-UL\(^4\) = 6.2 bels; LpA\(^5\) = 41 dBA; No prominent tones\(^6\)

1. Minimum configuration means 1 x 85W-6C CPU (Intel E5-2609 v3), 1 x 4GB DIMM, 1 x Client SSD, 1 x 495W PSU, no PCI cards, and 6 system fans.
2. Typical configuration means
   - For 3.5" chassis: 2 x 85W-8C CPU (Intel E5-2630 v3), 8 x 8GB DIMM, 10 x 3.5" SATA HDD, 2 x 750W PSU, 1 x H730 miniPERC, 1 x Intel 1GbE NDC card, and 6 system fans.
   - For 2.5" chassis: 2 x 85W-8C CPU (Intel E5-2630 v3), 8 x 8GB DIMM, 12 x 2.5" 10K SAS HDD, 2 x 750W PSU, 1 x H730 miniPERC, 1 x Intel 1GbE NDC card, 1 x 1GbE NIC card, and 6 system fans.
3. Idle means the state in which the product is doing nothing but running OS; values for Operating are the maximum of acoustical output for active HDDs or active CPUs.
4. LwA – UL is the upper limit sound power levels (LwA) calculated per section 4.4.1 of ISO9296 (1988) and measured in accordance to ISO7779 (2010).
5. LpA is the average bystander position A-weighted sound pressure level calculated per section 4.3 of ISO9296 (1988) and measured in accordance with ISO7779 (2010). The system is placed in a 24U rack enclosure, 25 cm above reflective floor.
6. Prominent tone: Criteria of D.6 and D.11 of ECMA-74 12th ed. (2012) are followed to determine if discrete tones are prominent. The system is placed in center of ISO7779 table and acoustic transducer is at front standing operator position, ref ISO7779 (2010 Section 8.6.1, Position P1).
Acoustical dependencies for the R730xd

- **Chassis types:** The idle fan speeds and acoustics generally depend on chassis types – shown as below from the quietest to the loudest:
  - 24 x 2.5” chassis
  - 12 x 3.5” chassis
  - 8 x 3.5” + 18 x 1.8” SSD chassis

- **System thermal profile selected in BIOS:** The system default setting is “Power Optimized (DAPC)”, which is in general lower fan speed/noise level. If “Performance optimized” is selected, the fan speed/noise level will become higher.

- **CPU power:**
  - Configurations with “low-power” CPUs (which have lower temperature limits than standard CPUs), such as an Intel Xeon E5-2650L v3 or E52630L v3 at 65W CPU, under moderate or heavy utilization, will be about twice as loud as typical configurations.
  - Configurations increase in loudness as CPU power increases from that in typical configurations.

- **Types of storage devices:**
  - **HDDs**
    - Lower speed HDDs (such as 7.2K RPM SATA, 10K RPM SAS) are generally quieter than 15K RPM SAS drives.
    - Loudness increases with the following progression of drives: SATA (2.5” or 3.5”), 2.5” 10K, 2.5” 15K, 3.5” 15K.
  - **SSDs**
    - SSDs are not themselves audible.
    - However, a configuration with PCIe SSD requires more airflow for cooling and will be significantly louder than a typical configuration. Under highly-stressed condition, the sound power levels may go up to 7.0 bels.

- **Quantity of HDDs and SSDs:** For the following reasons, higher acoustics accompanies increase in quantity of HDDs.
  - Airflow needs and acoustics increase with the number of drives. For example, an R730xd 3.5” configuration with 16 drives will be about 50% louder in idle condition than one with four drives (6.2 bels vs. 5.6 bels).
  - Acoustics related to the HDD itself (read/write noise) increases with the number of HDDs installed.
9 Rack rail systems

The rack rail systems for the Dell PowerEdge R730 and R730xd provide tool-less support for 4-post racks with square or unthreaded round mounting holes. The R730 and R730xd also support tooled mounting in 4-post threaded racks and static rail tooled mounting in 2-post (Telco) racks for added versatility.

Sliding and static rail systems

The sliding rails for the R730 and R730xd offer native support for threaded hole racks via the ReadyRails II mounting interface. The rails ship in the tool-less mounting configuration but can be converted to the tooled configuration very quickly and easily. With the sliding rails, you can fully extend a system out of the rack for servicing. Rails are available with or without the optional cable management arm (CMA). Figure 15 shows sliding rails with CMA.

The static rails (shown in Figure 16) support a wider variety of racks than the sliding rails, but do not support serviceability in the rack and are not compatible with the CMA.
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 25 lists the rack rail systems that the R730 and R730xd support.

<table>
<thead>
<tr>
<th>System</th>
<th>Rail identifier</th>
<th>Mounting interface</th>
<th>Rail type</th>
<th>Rack types supported</th>
<th>Rack types supported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Square</td>
<td>Round</td>
</tr>
<tr>
<td>R730/R730xd</td>
<td>B6</td>
<td>Ready Rails II</td>
<td>Sliding</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>B4</td>
<td>Ready Rails</td>
<td>Static</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

For detailed information about rail dimensions, see the Rack rail specifications section in Appendix A. For more information on installing the R730 or R730xd in a rack, see the Rack Installation Instructions on Dell.com/Support/Manuals.

Cable management arm

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

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

The Dell PowerEdge R730 and R730xd support a wide range of industry-standard operating systems and virtualization software.

Supported operating systems

Table 26 lists the primary operating systems supported on the R730 and R730xd. For the latest information on supported operating systems, see Dell.com/OSsupport.

Table 26. Operating system support

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Platform</th>
<th>Edition</th>
<th>IDSDM support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Windows Server 2012 R2</td>
<td>X64</td>
<td>Standard Datacenter</td>
<td>Yes</td>
</tr>
<tr>
<td>Microsoft Windows Server 2012</td>
<td>x64</td>
<td>Standard Datacenter</td>
<td>Yes</td>
</tr>
<tr>
<td>Microsoft Windows Server 2008 R2 SP1</td>
<td>x64</td>
<td>Standard Enterprise Datacenter</td>
<td>Yes</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 7.0</td>
<td>x64</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 6.5</td>
<td>x64</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>SUSE Linux Enterprise Server 12</td>
<td>x64</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>SUSE Linux Enterprise Server 11 SP3</td>
<td>x64</td>
<td>N/A</td>
<td>No</td>
</tr>
</tbody>
</table>

Supported virtualization

One of the key features for virtualization on the R730 and R730xd is the support for a failsafe hypervisor. By running the 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 R730 and R730xd. For the latest information on supported hypervisors, see Dell.com/OSsupport.

Table 27. Virtualization support

<table>
<thead>
<tr>
<th>Operating systems</th>
<th>Install version</th>
<th>IDSDM support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft</td>
<td>Windows Server 2012 R2 with Hyper-V</td>
<td>N/A</td>
</tr>
<tr>
<td>VMware</td>
<td>vSphere v5.1, v5.5</td>
<td>ESXi</td>
</tr>
<tr>
<td>Citrix</td>
<td>XenServer 6.2 SP1</td>
<td>N/A</td>
</tr>
</tbody>
</table>
11 Dell OpenManage systems management

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

Start with a firm foundation for efficient hardware management using OpenManage tools, utilities and management consoles. OpenManage systems management solutions consist of a combination of embedded management features and software products that help you automate and simplify the entire server lifecycle: deploy, update, monitor and maintain as shown in Table 15. OpenManage solutions are innovatively designed for simplicity and ease of use to help you reduce complexity, save time, achieve efficiency, control costs and empower productivity. As shown in Figure 17, OpenManage centers around efficient management of server lifecycle.

![Figure 17. Server lifecycle management operations](image)

OpenManage systems management portfolio

The Dell OpenManage systems management portfolio includes powerful hardware and software management tools and consoles designed to simplify and automate the most frequently performed server management tasks. The OpenManage portfolio includes the following items.

iDRAC8 with Lifecycle Controller

The Integrated Dell Remote Access Controller 8 (iDRAC8) with Lifecycle Controller, the embedded intelligence of every Dell PowerEdge 13th generation server, helps you manage Dell servers agent-free or with a systems management agent, within physical, virtual, local and remote environments. iDRAC8 alerts server issues, enables remote server management and reduces the need to physically visit the server. iDRAC8 with Lifecycle Controller is part of Dell’s comprehensive OpenManage
portfolio and works as a stand-alone or in conjunction with other components such as OpenManage Essentials, OpenManage Mobile, OpenManage Power Center, Chassis Management Controller, and OpenManage Integrations for Microsoft, VMware and BMC consoles to simplify, automate and streamline IT operations.

Table 28 describes the functions and benefits of iDRAC8 with Lifecycle Controller. For more information on iDRAC8 with Lifecycle Controller, see the “Introducing iDRAC8 with Lifecycle Controller for Dell 13th Generation PowerEdge Servers” white paper and visit http://en.community.dell.com/techcenter/systems-management/w/wiki/3204#usefulLinks.

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

iDRAC8 Enterprise is available for the PowerEdge R730 and R730xd. Dell also offers iDRAC8 Express. A detailed feature comparison for iDRAC8 Enterprise and iDRAC8 Express is shown in Table 29.

**Table 29. Feature comparison for iDRAC8 Express and Enterprise**

<table>
<thead>
<tr>
<th>Feature (function)</th>
<th>iDRAC8 Express</th>
<th>iDRAC8 Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interfaces/Standards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPMI 2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DCMI 1.5</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Web-based GUI</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>RACADM command line (local/remote)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SMASH-CLP (SSH-only)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Telnet</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SSH</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WSMAN</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Network Time Protocol</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Connectivity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared NIC</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dedicated NIC</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>VLAN tagging</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IPv4</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IPv6</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DHCP</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dynamic DNS</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OS pass-through</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Front panel USB</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role-based authority</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Local users</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SSL encryption</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IP blocking</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Directory services (AD, LDAP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-factor authentication</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Single sign-on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PK authentication</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Remote presence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power control</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Boot control</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Serial-over-LAN</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Virtual Media</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual Folders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote File Share</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual Console</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feature (function)</td>
<td>iDRAC8 Express</td>
<td>iDRAC8 Enterprise</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>VNC connection to OS</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Quality/bandwidth control</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Virtual Console collaboration (6 users)</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Virtual Console chat</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
| Virtual Flash partitions                               |                | ✓
| **Power and thermal**                                  |                |                   |
| Real-time power meter                                  | ✓              | ✓                 |
| Power thresholds and alerts                            | ✓              | ✓                 |
| Real-time power graphing                               | ✓              | ✓                 |
| Historical power counters                              | ✓              | ✓                 |
| Power capping                                          |                | ✓                 |
| Power Center integration                               |                | ✓                 |
| Temperature monitoring                                 | ✓              | ✓                 |
| Temperature graphing                                   | ✓              | ✓                 |
| **Health monitoring**                                  |                |                   |
| Full agent–free monitoring                            | ✓              | ✓                 |
| Predictive failure monitoring                          | ✓              | ✓                 |
| SNMPv1, v2, and v3 (traps and gets)                     | ✓              | ✓                 |
| Email alerting                                         | ✓              | ✓                 |
| Configurable thresholds                                | ✓              | ✓                 |
| Fan monitoring                                         | ✓              | ✓                 |
| Power supply monitoring                                | ✓              | ✓                 |
| Memory monitoring                                      | ✓              | ✓                 |
| CPU monitoring                                         | ✓              | ✓                 |
| RAID monitoring                                        | ✓              | ✓                 |
| NIC monitoring                                         | ✓              | ✓                 |
| HD monitoring (enclosure)                              | ✓              | ✓                 |
| Out-of-band performance monitoring                     |                | ✓                 |
| **Update**                                             |                |                   |
| Remote agent–free update                               | ✓              | ✓                 |
| Embedded update tools                                  | ✓              | ✓                 |
| Sync with repository (scheduled updates)               |                | ✓                 |
| Auto-update                                            |                | ✓                 |
| **Deployment and configuration**                       |                |                   |
| Embedded OS deployment tools                            | ✓              | ✓                 |
| Embedded configuration tools                            | ✓              | ✓                 |
| Auto-discovery                                         | ✓              | ✓                 |
| Remote OS deployment                                   | ✓              | ✓                 |
| Embedded driver pack                                   | ✓              | ✓                 |
| Full configuration inventory                           | ✓              | ✓                 |
| Inventory export                                       | ✓              | ✓                 |
| Remote configuration                                   | ✓              | ✓                 |
### Agent-free management

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

### Agent-based management

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

**OpenManage Server Administrator**

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

**iDRAC Service Module**

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

**Dell consoles**

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

- **Dell OpenManage Essentials**—OpenManage Essentials (OME) is a systems management console that provides a comprehensive view of Dell systems, devices, and components in an enterprise network. It is used to monitor Dell PowerEdge servers, EqualLogic and PowerVault storage, and PowerConnect™ switches; to update and configure Dell servers; and to create asset reports. OpenManage Essentials also communicates health status alerts for Dell servers, storage, and network devices to the Dell KACE™ K1000 service desk. OpenManage Essentials is available as a no-charge software download from Dell.com/Support. When connected through OME, you can use Dell OpenManage Mobile (OMM) to securely perform a subset of data center monitoring and remediation tasks from a mobile device.

- **OpenManage Power Center**—Dell’s power management solution, the Dell OpenManage Power Center (OMPC) management console, provides increased visibility to power consumption, anomalies, and utilization through fine-grained instrumentation. This enables increased control, improved rack density, faster response times, greater accuracy, and broader decision-making intelligence than would otherwise be possible. When used with a suitably licensed PowerEdge server (with a Dell iDRAC Enterprise license), OMPC leverages Intel Node Manager technology for platform-level power reporting and capping of Intel chipsets. Power Center then communicates with iDRAC to provide node, rack, row or data-center level aggregation of power-management data, as well as execution of control policy — making it easy for IT professionals to identify areas to gain efficiencies and cut wasteful costs.

**OpenManage systems management tools, utilities and protocols**

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

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

- **Dell Update Packages**—The Dell Update Packages (DUP) is a self-contained executable in a standard package format that updates a software element on a Dell server such as the BIOS, a driver, firmware and other software updates.

- **Dell OpenManage Deployment Toolkit**—The Dell OpenManage Deployment Toolkit (DTK) is a CLI-based tool that includes a set of utilities for configuring and deploying Dell PowerEdge systems, and can be used to build scripted, unattended OS installations to deploy large numbers of servers in a reliable fashion.
- **RACADM**—The RACADM command-line utility provides a scriptable interface that allows you to locally or remotely configure iDRAC8.
- **IPMITool**—IPMITool includes scriptable console application programs used to control and manage remote systems using the IPMI version 1.5 and later protocol.
- **Web Services for Management (WSMAN)**—WSMAN is a SOAP-XML-based protocol for exchanging system management information. Dell’s implementation provides remote management capabilities through a secure and standards-based Web Services—Management (WS-MAN) interface to PowerEdge servers and blade server node chassis.

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

- **OpenManage Integration for VMware vCenter**—This plug-in allows IT administrators to monitor, provision, and manage the physical PowerEdge server hardware and firmware from a dedicated Dell menu accessed through the VMware vCenter console using the same role-based access control model as vCenter, combining physical server management. For more information, visit [http://www.dell.com/learn/us/en/04/virtualization-management-plug-in-for-vmware-vcenter](http://www.dell.com/learn/us/en/04/virtualization-management-plug-in-for-vmware-vcenter).
- **BMC Software**—Dell and BMC Software work together to simplify IT by ensuring tight integration between Dell server, storage, and network management functionality and the BMC Software process and data center automation products.

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

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


### 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. iDRAC8 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 18 illustrates the various operations that can be performed during the server’s 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

<table>
<thead>
<tr>
<th>Operation</th>
<th>One-to-one</th>
<th>One-to-many</th>
</tr>
</thead>
</table>
| **Deploy** | • Lifecycle Controller GUI  
• DTK | • OpenManage Integration for VMware vCenter  
• OpenManage Integration for BMC BladeLogic  
• OpenManage Integration for Microsoft System Center Configuration Manager |
| **Update** | • iDRAC8 with Lifecycle Controller  
• Repository Manager  
• DUP  
• SUU  
• OpenManage Integration for VMware vCenter | • Dell OpenManage Essentials  
• OpenManage Integration for Microsoft System Center Configuration Manager |
| **Monitor** | • iDRAC8 with Lifecycle Controller  
• OMSA | • Dell OpenManage Essentials  
• Dell OpenManage Power Center  
• OpenManage Integration for VMware vCenter  
• OpenManage Integration for Microsoft System Center Operations Manager |
| **Maintain** | • iDRAC8 with Lifecycle Controller  
• IPMI | • Lifecycle Controller Remote Services  
• RemEDIATE and replace parts:  
• OpenManage Integration for Microsoft System Center Virtual Machine Manager (SCVMM)  
• Server Pro Management Pack and Lifecycle Controller Integration (DLCI) |

For additional detailed information on Dell’s systems management portfolio, visit [Dell.com/OpenManage](http://Dell.com/OpenManage).
Appendix A. Additional specifications

Chassis dimensions

Figure 19 details the dimensions of the Dell PowerEdge R730 and R730xd chassis.

![Figure 19. Chassis dimensions](image)

<table>
<thead>
<tr>
<th>Xa</th>
<th>Xb</th>
<th>Y</th>
<th>Za (with bezel)</th>
<th>Za (without bezel)</th>
<th>Zb</th>
<th>Zc</th>
</tr>
</thead>
<tbody>
<tr>
<td>482.4mm</td>
<td>444.0mm</td>
<td>87.3mm</td>
<td>32.0mm</td>
<td>18.0mm</td>
<td>684.0mm</td>
<td>723.0mm</td>
</tr>
</tbody>
</table>

Chassis weight

Table 31 lists the weight of the R730 and R730xd chassis at maximum configuration as well as empty of any hardware.

<table>
<thead>
<tr>
<th>Configuration</th>
<th>R730 (2.5” chassis)</th>
<th>R730 (3.5” chassis)</th>
<th>R730xd (2.5” chassis)</th>
<th>R730xd (3.5” chassis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>29.5kg (64.9lb)</td>
<td>29.2kg (64.3lb)</td>
<td>29.5kg (64.9lb)</td>
<td>32.5kg (71.5lb)</td>
</tr>
<tr>
<td>Empty chassis</td>
<td>11.7kg (25.7lb)</td>
<td>10.3kg (22.7lb)</td>
<td>11.7kg (25.7 lb)</td>
<td>10.3kg (22.7lb)</td>
</tr>
</tbody>
</table>
Power supply specifications

Table 32 lists power supply specifications for the PowerEdge R730 and R730xd.

### Table 32. Power supply specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>495W</th>
<th>750W</th>
<th>750W</th>
<th>1100W</th>
<th>1100W DC</th>
<th>750W AC/DC mixed mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>80 PLUS</strong></td>
<td>Platinum</td>
<td>Platinum</td>
<td>Titanium</td>
<td>Platinum</td>
<td>N/A – peak efficiency: 91%</td>
<td>Platinum</td>
</tr>
<tr>
<td><strong>Power factor correction</strong></td>
<td>Active</td>
<td>Active</td>
<td>Active</td>
<td>Active</td>
<td>None</td>
<td>Active</td>
</tr>
<tr>
<td><strong>FCC classification</strong></td>
<td>Class A</td>
<td>Class A</td>
<td>Class A</td>
<td>Class A</td>
<td>Class A</td>
<td>Class A</td>
</tr>
<tr>
<td><strong>Max output current</strong></td>
<td>40.57A</td>
<td>61.47A</td>
<td>61.47A</td>
<td>90.16A</td>
<td>91.6A</td>
<td>62.5A</td>
</tr>
<tr>
<td></td>
<td>69.0A (peak)</td>
<td>104.5A (peak)</td>
<td>104.5A (peak)</td>
<td>153.3A (peak)</td>
<td>153.3A (peak)</td>
<td></td>
</tr>
<tr>
<td><strong>Iin for rating on safety label</strong></td>
<td>6.5A–3A&lt;br&gt;1</td>
<td>10.0A–5.0A&lt;br&gt;1</td>
<td>5.0A&lt;br&gt;2</td>
<td>12.0A–6.5A&lt;br&gt;1</td>
<td>32A&lt;br&gt;3</td>
<td>10.0A–5.0A&lt;br&gt;1 4.5A</td>
</tr>
<tr>
<td><strong>Initial in-rush current</strong></td>
<td>25A (peak)</td>
<td>25A (peak)</td>
<td>25A (peak)</td>
<td>25A (peak)</td>
<td>55A (peak)</td>
<td>55A (peak)</td>
</tr>
<tr>
<td><strong>Secondary in-rush current</strong></td>
<td>25A (peak)</td>
<td>25A (peak)</td>
<td>25A (peak)</td>
<td>25A (peak)</td>
<td>43A (peak)</td>
<td>25A (peak)</td>
</tr>
</tbody>
</table>

1. 100–240V AC  
2. 240V AC  
3. -48.0V DC  
4. 240–290V DC

Environmental specifications

See Dell PowerEdge R730 and R730xd Owner’s Manual on Dell.com/Support/Manuals for detailed environmental specifications including expanded operating temperature (Fresh Air) information.

Video specifications

The Dell PowerEdge R730 and R730xd iDRAC8 incorporates an integrated video subsystem. The graphics controller is the 2D Matrox® G200. The video frame buffer (16 MB) is contained within the iDRAC RAM (256 MB) device. The R730 and R730xd systems support the 2D graphics video modes listed in Table 33.

### Table 33. Supported video modes

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Refresh Rate (Hz)</th>
<th>Color Depth (bit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
<td>60, 70</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>800 x 600</td>
<td>60, 75, 85</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>60, 75, 85</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1152 x 864</td>
<td>60, 75, 85</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>60, 75</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1440 x 900 (stretch goal)</td>
<td>60</td>
<td>8, 16, 32</td>
</tr>
</tbody>
</table>
Rack rail specifications

The rack rail adjustability ranges are listed in Table 34.

<table>
<thead>
<tr>
<th>Server</th>
<th>Rail identifier</th>
<th>Rail type</th>
<th>Rail adjustability range (mm)</th>
<th>Rail depth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Square</td>
<td>Round</td>
<td>Threaded</td>
</tr>
<tr>
<td>R730/R730xd</td>
<td>B6</td>
<td>Sliding</td>
<td>676 868 662 861</td>
<td>676 883</td>
</tr>
<tr>
<td></td>
<td>B4</td>
<td>Static</td>
<td>608 879 594 872</td>
<td>604 890</td>
</tr>
</tbody>
</table>

The adjustment range of the rails is a function of the type of rack in which they are being mounted. The minimum and maximum values listed above represent the allowable distance between the front and rear mounting flanges in the rack. Rail depth without the CMA represents the minimum depth of the rail with the outer CMA brackets removed (if applicable) as measured from the front mounting flanges of the rack.

USB peripherals

USB peripherals are supported through the front and back USB ports on the R730 and R730xd. The front ports are USB 2.0 compliant and the back ports are USB 3.0 compliant.
Appendix B. Standards compliance

The R730 and R730xd systems conform to the industry standards in Table 35.

<table>
<thead>
<tr>
<th>Standard</th>
<th>URL for information and specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACPI</td>
<td>acpi.info</td>
</tr>
<tr>
<td>Ethernet</td>
<td>standards.ieee.org/getieee802/802.3.html</td>
</tr>
<tr>
<td>HDG</td>
<td>microsoft.com/whdc/system/platform/pcedesign/desguide/serverdg.mspx</td>
</tr>
<tr>
<td>IPMI</td>
<td>intel.com/design/servers/ipmi</td>
</tr>
<tr>
<td>DDR4 Memory</td>
<td>jedec.org/standards-documents/docs/jesd79-4.pdf</td>
</tr>
<tr>
<td>PCI Express</td>
<td>pcisig.com/specifications/pciexpress</td>
</tr>
<tr>
<td>PMBus</td>
<td>pmbus.info/specs.html</td>
</tr>
<tr>
<td>SAS</td>
<td>t10.org</td>
</tr>
<tr>
<td>SATA</td>
<td>sata-io.org</td>
</tr>
<tr>
<td>SMBIOS</td>
<td>dmtf.org/standards/smbios</td>
</tr>
<tr>
<td>TPM</td>
<td>trustedcomputinggroup.org</td>
</tr>
<tr>
<td>UEFI</td>
<td>uefi.org/specifications</td>
</tr>
<tr>
<td>USB</td>
<td>usb.org/developers/docs</td>
</tr>
<tr>
<td>Windows Logo</td>
<td>microsoft.com/whdc/winlogo/hwrequirements.mspx</td>
</tr>
</tbody>
</table>

Table 35. Industry standard documents
## Appendix C. Additional resources

Table 36 provides a list of documents and websites that provide for more information on the Dell PowerEdge R730 and R730xd.

### Table 36. Additional resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description of contents</th>
<th>Location</th>
</tr>
</thead>
</table>
| PowerEdge R730 and R730xd Owner's Manual      | This manual, available in PDF format, provides the following information:  
  - Chassis features  
  - System Setup program  
  - System messages  
  - System codes and indicators  
  - System BIOS  
  - Remove and replace procedures  
  - Troubleshooting  
  - Diagnostics  
  - Jumpers and connectors                                                                 | Dell.com/Support/Manuals        |
| PowerEdge R730 and R730xd Getting Started Guide | This guide ships with the system, and is also available in PDF format on the Dell support site. This guide provides the following information:  
  - Initial setup steps  
  - Key system features  
  - Technical specifications                                                                                                                                   | Dell.com/Support/Manuals        |
<p>| Rack Installation Instructions                | This document ships with the rack kits, and provides instructions for installing a server in a rack.                                                                                                                 | Dell.com/Support/Manuals        |
| System Information Label                       | The system information label documents the system board layout and system jumper settings.                                                                                                                              | Inside the system chassis       |
| Quick Resource Locator (QRL) code             | This code 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       |
| Information Update                             | This document provides updated system information and is printed and shipped with the system. It is also available in PDF format on the Dell support site.                                                                  | Dell.com/Support/Manuals        |
| Energy Smart Solution Advisor                  | The Dell online Energy Smart Solution Advisor (ESSA) enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use ESSA to calculate the power consumption of your hardware, power infrastructure, and storage. | Dell.com/calc                    |
| Power and cooling technologies                 | Provides details for improving energy efficiency in the data center.                                                                                                                                                    | Dell.com/powerandcooling        |</p>
<table>
<thead>
<tr>
<th>Resource</th>
<th>Description of contents</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy management</td>
<td>Provides information on Dell’s Fresh Air solutions.</td>
<td>Dell.com/FreshAir</td>
</tr>
<tr>
<td>Operating system matrix for Dell</td>
<td>Provides updated information on which operating systems are available on which PowerEdge systems.</td>
<td>Dell.com/OSsupport</td>
</tr>
<tr>
<td>PowerEdge systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processing and chipset</td>
<td>Provides more information about the R730 processors and chipset.</td>
<td>Intel.com</td>
</tr>
<tr>
<td>Systems management</td>
<td>Provides more information on how to simplify, automate and optimize IT operations.</td>
<td>Dell.com/OpenManage</td>
</tr>
<tr>
<td>Dell PowerEdge RAID controllers</td>
<td>Provides more information on Dell PERC cards.</td>
<td>Dell.com/PERC</td>
</tr>
<tr>
<td>Uninterruptible power supply</td>
<td>Provides help selecting a UPS model.</td>
<td>DellUPS.com</td>
</tr>
<tr>
<td>Volatility information</td>
<td>Contact your Dell Sales Representative or visit the Dell Support site.</td>
<td>Dell.com/Support/Manuals</td>
</tr>
</tbody>
</table>
Appendix D. Support and Deployment Services

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

Server Deployment Services

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

Figure 20. Server Deployment capabilities

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

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

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

- Single point of project management contact from beginning to end
- Evaluation of your environment with a detailed project plan
- Optimized configurations for your workloads and user environment
- Personalized documentation and orientation

**Remote Consulting Services**

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

**Data Migration Service**

Protect your business and data with our single point of contact to manage your data migration project. Your project manager will work with our experienced team of experts to create a plan using industry-leading tools and proven processes based on global best practices to migrate your existing files and data, so your business gets up and running quickly and smoothly.

**ProSupport Enterprise Suite**

With Dell ProSupport Services, we can help you keep your operation running smoothly, so you can focus on running your business. We’ll help you maintain peak performance and availability of your most essential workloads. Dell ProSupport is a suite of support services that enable you to build the solution that’s right for your organization. Choose support models based on how you use technology and where you want to allocate resources. From the desktop to the data center, address everyday IT challenges, such as unplanned downtime, mission-critical needs, data and asset protection, support planning, resource allocation, software application management and more. Optimize your IT resources by choosing the right support model.
ProSupport Plus (for business-critical servers)

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

ProSupport

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

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

ProSupport Flex for Data Center

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

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

Dell Education Services

Dell Education Services offers PowerEdge server training courses designed to help you achieve more with your hardware investment. The curriculum is designed in conjunction with the server development team, as well as Dell’s technical support team, to ensure that the training delivers the information and practical, hands-on skills you and your team need to confidently manage and maintain your Dell server solution. To learn more or register for a class today, visit LearnDell.com/Server.

Dell Global Infrastructure Consulting Services

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

Dell Managed Services

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