Extending the benefits of server innovation

By Lisa Onstot and Tad Walsh

By launching the latest members of the 12th-generation Dell™ PowerEdge™ server family, Dell extends the benefits of advanced innovations to organizations of all sizes—from small and medium businesses to large enterprises.

Large enterprise data centers are not alone in requiring fast, adaptable servers to help increase infrastructure intelligence and accelerate response to complex service demands. The efficiency, performance, and scalability of IT systems help drive the success of any size organization.

Innovative 12th-generation Dell PowerEdge servers reflect the input Dell received about what customers worldwide need to power their organizations. The resulting portfolio of 12th-generation PowerEdge servers is engineered with intelligent infrastructure that is designed to enhance IT flexibility and business agility through advanced systems management, fast deployment, and streamlined workload provisioning. Moreover, these servers optimize resource utilization through virtualization and minimize power and cooling costs with heightened energy efficiency.

Elevating data center intelligence across a broad range of deployments

Earlier this year, Dell introduced innovations in its first wave of 12th-generation PowerEdge servers designed primarily for large enterprise data centers.[1] Dell is extending these significant advancements in a second wave of 12th-generation PowerEdge servers. In addition to large enterprise operations, these systems are expressly designed to meet the needs of small and midsize organizations as well as departments and remote offices of large organizations (see the sidebar, "Benefits rich, size agnostic").

Centralized remote management

Organizations can utilize cost-effective systems management capabilities built into these PowerEdge servers, which are

Online systems management tool

IT decision makers can use the interactive Systems Management – Dell OpenManage advisor tool to help simplify data center planning. Its easy-to-use, interactive interface presents a series of multiple-choice questions designed to zero in on systems management requirements for server deployments.

dell.com/openmanageadvisor

[1] For more information on the first wave of 12th-generation Dell PowerEdge servers, see "The intelligent data center," by Paul Steeves and Matt McGinnis, in *Dell Power Solutions*, 2012 Issue 1, qrs.ly/6e1tjdy.

[2] For more information on Dell OpenManage Essentials, see "Streamlining basic hardware management," by Travis Zhao, Rob Cox, Enrico Bracalente, and Kevin Noreen, in *Dell Power Solutions*, 2012 Issue 1, qrs.ly/1o1tjea.

designed to save time and reduce the potential for error through automation. These built-in capabilities are available in Dell OpenManage™ Essentials[2] and Integrated Dell Remote Access Controller 7 (iDRAC7) with Lifecycle Controller for agent-free embedded systems management.

Using these PowerEdge servers, small or remote organizations can access enterprise-scale, one-to-many, automated management tools, and large organizations can leverage these tools to monitor their remote offices. Without this level of monitoring in previous-generation platforms, technicians often had to travel to remote sites to diagnose and fix problems. Instead, built-in monitoring and fault systems management in PowerEdge servers enable organizations to administer remote systems from a primary site—enhancing cost-effective use of IT resources.

Optimized virtualization support

As virtualization continues to expand into production environments, PowerEdge servers are designed to support the stepped-up deployments. For example, dual embedded Secure Digital (SD) media enables hypervisor information to be mirrored, providing for enterprise-quality hypervisor protection. Moreover, these PowerEdge servers are designed to offer significantly more powerful processing capabilities with either the Intel® Xeon® processor E5-2400 product family or the Intel Xeon processor E5-4600 product family, together with increased memory capacity compared to previous generations. This augmented processing power facilitates provisioning for high numbers of virtual machines per server. And to avoid bottlenecks in virtual machine performance, these PowerEdge servers also feature expanded I/O—offering additional PCI Express (PCIe) slots as well as PCIe 3.0 capability to provide more lanes than in previous generations to help speed throughput.

Room for organizational growth

Whether an organization is small, midsize, or large, it needs capacity for growth. But the rate of expansion often can be difficult to predict. For example, IT decision makers could anticipate an upcoming year's growth to be approximately 5 percent, but it may just as easily end up being 50 percent or higher. For this reason,

Benefits rich, size agnostic

The second wave of 12th-generation Dell PowerEdge servers advances business and organizational agility with innovative, enterprise-class features designed to heighten data center efficiency, performance, and scalability. In addition, the systems span rack, tower, and blade server form factors to meet specific platform needs for small or midsize organizations, small or branch offices, and large enterprises alike.

	PowerEdge R820	PowerEdge R520	PowerEdge R420
			
Key features and capabilities	Designed to excel at running a wide range of applications for both midsize and large enterprises, this ultradense four-socket, 2U rack server offers compute-intensive performance with highly scalable memory up to 1.5 TB and impressive I/O capabilities. Powered by the Intel Xeon processor E5-4600 product family, this server provides 48 dual in-line memory modules (DIMMs) and the capability to support dual RAID controllers. It readily handles demanding workloads including enterprise resource planning, data warehousing, and virtual desktop infrastructure.	This two-socket, 2U rack server powered by the Intel Xeon processor E5-2400 product family offers an excellent balance of performance and scalability that is well suited for Web serving and hosting, e-mail and messaging, or running a wide range of core applications. Its configuration flexibility and scalability, together with its memory capacity and balanced I/O bandwidth, provide a cost-effective platform for consolidation and virtualization.	Organizations requiring double-down density and performance may find this robust two-socket, 1U rack server powered by the Intel Xeon processor E5-2400 product family to be an excellent fit for compute-intense applications and high-performance computing workloads. A low profile also makes it attractive for departmental e-mail, workgroup collaboration, and file and print applications.

deploying servers that can expand with organizational needs over time regardless of the rate of growth is important.

When it comes to memory, hard drives, and even processors, these PowerEdge servers are designed to provide improved expandability and flexibility. Enhanced capacity helps IT organizations leverage their initial server investment as they grow and avoid downtime during reconfiguration or server swaps. Increased internal storage in these servers helps save space and reduce storage systems management requirements compared to external storage. This flexible capacity can be a tremendous benefit not only for large enterprises, but also for remote or satellite offices and growing organizations that may not have abundant internal IT expertise.

Fresh approach for cooling and energy efficiency

Because 12th-generation PowerEdge servers are Fresh Air compliant, they are designed to continue operating without problems in temperatures up to 113 degrees Fahrenheit (°F) or 45 degrees Celsius (°C)—for example, if it becomes necessary to raise the temperature of the workplace to meet brownout power limits set by a utility. This Fresh Air compliance not only delivers cost savings in the data center by helping reduce cooling needs, but it also helps organizations ride through power brownouts that are commonplace during summer months in many geographical areas.

Fresh Air compliance is also well suited for organizations with small, remote, or temporary installations in the field, from producers of music concerts to oil and gas companies. For example, oil exploration may require a limited number of remote on-site servers to keep track of seismic testing data, and PowerEdge servers can operate in the extended temperature ranges that might be a condition in these field activities.

Exploring flexible form factors

The second wave of 12th-generation Dell PowerEdge servers includes rack, tower, and blade form factors. Rack-mounted PowerEdge servers offer more hot-swappable hard drives than previous-generation PowerEdge servers to provide added support for growing volumes of internally stored data. These next-generation servers also provide a substantial increase in memory—up to 50 percent more dual in-line memory module (DIMM) slots than the previous generation. These DIMM slots can be used to provide rapid response times for memory-intensive workloads such as small and medium database applications. The rack servers are available with a small form factor and enhanced density that is well suited for virtualization deployments. Locations that require a slim-profile server may place this form factor on a desktop, shelf, or countertop.

Reliability, availability, and serviceability (RAS) features, such as memory mirroring, that are not typically available in servers designed for price-sensitive environments are available in PowerEdge rack servers. Memory mirroring allows the server to keep working in spite of a DIMM failure, preventing a potential server outage that could put business activity at risk. The

PowerEdge R320

Featuring enterprise-class, high availability and high-capacity internal storage with up to eight hard drives, this one-socket, 1U rack server based on the Intel Xeon processor E5-2400 product family and Intel Pentium® processor product family is designed to offer highly reliable and secure Web serving and file sharing. Straightforward systems management helps free up time for IT administrators while providing cost-effective local and remote operations.

PowerEdge T420

The acoustical profile of this two-socket, rackable tower server powered by the Intel Xeon processor E5-2400 product family is quiet office compliant and helps to reduce noise levels in data centers. Its performance and built-in capacity for nondisruptive growth make it an excellent platform for general-purpose business workloads such as data sharing, file and print, and e-mail. Small and remote offices, where IT skills may be limited, can benefit from its easy manageability enabled by Integrated Dell Remote Access Controller 7 (iDRAC7) with Lifecycle Controller.

PowerEdge T320

With enterprise-class memory protection features that help keep organizations up and running, this powerful yet quiet one-socket, rackable tower server powered by the Intel Xeon processor E5-2400 product family is appropriate for workgroup collaboration and productivity applications. Small offices that may not have trained technical IT resources on-site can benefit from its robust design and easy manageability.

servers also offer hard drive and memory expandability for future growth.

Dell engineers were able to reduce the depth of PowerEdge tower servers by two inches, which enables them to fit into a smaller space than previous-generation PowerEdge tower servers, or allow more room behind the server for cabling and airflow. Moreover, enhanced acoustics allow these servers to be placed unobtrusively in small, quiet offices.

In addition, PowerEdge tower servers can be converted to rackable units. This feature can be advantageous for fast-growing organizations and remote offices. As organizations or departments experience growth, they often lose space underneath desks or on countertops where tower servers are typically located. Consolidating servers into one or more racks helps conserve space in a confined server closet or a small room serving as a compact data center, as well as minimizing the server footprint in large data centers.

Maximized performance, density, and efficiency of PowerEdge blade servers enable organizations to greatly reduce the cost and complexity of managing computing resources. This form factor allows organizations to minimize the server footprint by housing multiple blades in a single enclosure. As business activity grows and additional compute resources are needed, organizations can simply slide additional blades into the enclosure. Redundant chassis components combine with remote management and fail-safe hypervisor capabilities to help ensure uptime for key applications and virtualization deployments.

Scaling server platforms for optimal agility and growth

By provisioning exceptionally flexible compute capacity, IT organizations can boost productivity and growth. Twelfth-generation Dell PowerEdge servers are designed to optimize energy efficiency, streamline management, and enhance compute power for heightened application performance, with abundant memory capacity to support virtualization and increasingly complex workloads.

Continuous efficiency gains are essential for organizations trying to do more with less. Built to bring world-class, enterprise-caliber performance and operational efficiency to any size organization, this fresh wave of 12th-generation PowerEdge servers enables IT decision makers to advance business and organizational goals—with a significant return on their technology investment. PS

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Learn more

Dell PowerEdge 12th-generation servers:
dell.com/servers

Embedded server management:
dell.com/idrac7

PowerEdge M820

This feature-rich, enterprise-class platform powered by the Intel Xeon processor E5-4600 product family offers remarkable memory capacity that scales up to 1.5 TB per full-height, four-socket blade server. Its form factor and leading-edge performance are well suited for high-end databases or dense data center environments that require very capable and highly scalable nodes.

PowerEdge M520

In this flexible, half-height blade platform powered by the Intel Xeon processor E5-2400 product family, energy efficiency and capable performance are well suited for mainstream business applications as well as e-mail, database, and virtual environments—even in small and midsize organizations where space may be at a premium.

PowerEdge M420

This quarter-height blade server powered by the Intel Xeon processor E5-2400 product family delivers impressive computational density by leveraging the Dell PowerEdge M1000e chassis, which accommodates up to 32 individually serviceable blade servers. By providing enterprise-class features, this server offers a combination of performance and efficiency that is well suited for space-constrained data centers or organizations looking to achieve cost-benefits from high node-count density.