Scaling Business Applications

with New Servers and Storage

Today’s IT organizations face unprecedented challenges brought on by globalization, rapid expansion, limited resources, and increasing prominence of core enterprise applications. Ninth-generation Dell™ PowerEdge™ servers and Dell/EMC CX3 UltraScale™ series storage arrays offer a world of choices through open management, interoperability, and virtualization. By embracing standards to help simplify operations, increase resource utilization, and scale out cost-effectively, these high-performance platforms grow scalable enterprise applications responsively and manage change flexibly.

BY MARK NICKERSON, JOE POLLOCK, STORI WAUGH, AND STACY HOWER

In a world of rapid growth and dizzying change, core IT solutions such as Microsoft® Exchange, Microsoft SQL Server™ 2005, mySAP™ Business Suite, and Oracle® Database 10g— together with the advent of virtualization—are forcing a paradigm shift in today’s business environment. The proliferation of servers and storage systems deployed to support explosive data growth while meeting stringent regulatory requirements has led to mounting complexity. At the same time, enterprises require IT solutions that simplify management, increase efficiency, and grow cost-effectively.

Dell's family of ninth-generation servers:
- PowerEdge 1950 (top left)
- PowerEdge 2950 (bottom left)
- PowerEdge 2900 (center)
- and PowerEdge 1955 blade server (right)

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- Case study
- Dell ninth-generation servers
- Dell PowerEdge blade servers
- Dell PowerEdge servers
- Dell Precision workstations
- Dell/EMC storage
- Scalable enterprise
- Storage management
- Systems management

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time, many administrators must still manually manage change, one server or storage array at a time, using a number of different tools and interfaces to oversee diverse application environments.

The proliferation of systems management tools often results from a one-application-per-server mindset that leads to wasted resources. All too often, when spikes in system demand require maximum compute power and availability, high-performance servers are not architected in a way that enables fast, flexible workload balancing to make the most of available data center resources.

Meanwhile, enterprises continue to demand more from their IT organizations, either holding IT staff levels constant (do more with the same resources) or decreasing headcount (do more with fewer resources). Such constraints present a major challenge for IT as pressure mounts to increase productivity and scale out business applications quickly, flexibly, and cost-effectively.

To address these critical business concerns, Dell has developed a new generation of server, storage, and workstation products that advance the scalable enterprise strategy—continuing the drive to standardize core infrastructure elements and reduce the complexity of the computing infrastructure so that enterprises can simplify operations, improve resource utilization, and scale out in pragmatic, cost-effective increments. Because Dell develops its products and solutions around open standards, this approach is designed to result in interoperability that enables businesses to create high-power, end-to-end solutions from standard hardware and software building blocks. Through a high level of interoperability, as well as innovative hardware and software design, Dell’s new server, storage, and workstation products help enterprises meet business requirements today with platforms that are designed from the ground up for future growth. And, on the IT front, this highly standardized approach can also help scale human resources more effectively.

**Ninth-generation servers: Reducing complexity by design**

To efficiently support demanding business applications, ninth-generation Dell PowerEdge servers are designed with the latest performance technologies, including Intel® Xeon® processors, fully buffered dual in-line memory modules (DIMMs), Serial Attached SCSI (SAS) hard drives, and TCP/IP Offload Engines. For detailed comparisons of the new PowerEdge servers, see the sidebar “Innovative New Platforms Built to Mix Well with Others.”

**Hardware and software commonality**

Dell has made significant hardware changes to increase commonality across platforms, which helps to reduce the complexity of server management. The resulting simplification in server management helps boost productivity, enabling IT staff to spend less time on routine server management tasks and more time on value-added projects that contribute to the bottom line.

To help ensure consistency across the new models as well as future generations, Dell has developed a behavioral specification that defines interaction and design guidelines for the servers. Handles, latches, and even the placement of components are common across multiple platforms. For example, once an administrator knows how to service a PowerEdge 1950 server, the learning curve is sharply reduced for servicing the PowerEdge 2950 server, PowerEdge 2900 server, and PowerEdge 1955 blade server. Clear, consistent labeling, including all hot-pluggable hard drives, helps simplify the servicing and upgrading of these systems. In addition, an always-visible LCD status panel is now standard across ninth-generation rack and tower servers, featuring administrator-level programmability for enhanced staff productivity.

Following the path set in earlier generations, Dell also continues to reduce the complexity of software updates through its industry-leading software commonality. For example, administrators typically spend a lot of time managing a server’s master system image, which comprises the BIOS, system drivers, OS, and applications. Administrators update and then copy this image to all production servers when software components change. In the ninth generation, Dell has reduced complexity so that Dell PowerEdge 1950, PowerEdge 2950, and PowerEdge 2900 servers can be maintained with one system image—compared to other server offerings that require a unique image for each server platform because of an unshared BIOS. By reducing the number of system images to maintain, organizations can reduce server administration time. In addition, the Dell ImageWatch™ program notifies administrators of upcoming changes, helping to proactively manage system images and reduce the number of changes. And through its block release process, Dell groups software changes to help minimize the total number of image changes that administrators need to manage.
Search and Deploy

FAST quickly turns to Dell PowerEdge 2950 servers as a way to meet the computationally-intense needs of its enterprise search infrastructure.

When asked what Norway is known for, many people might say Edvard Munch and his famous painting, The Scream. But if the engineers at FAST get their way, Norway will become more famous for screaming-fast enterprise search. That is because the Oslo-based company hosts many of the enterprise search applications it delivers for businesses and organizations worldwide. FAST’s operations span six continents and serve more than 3,500 organizations, including many of the world’s largest companies.

Searching for a way to meet enormous processing requirements

FAST offers a wide range of search-driven solutions, from applications solving specific vertical business challenges, such as online merchandizing, to solutions that apply to most industries, such as competitor monitoring. Some companies have even built their businesses on FAST, such as online directory providers. The common theme is the need to search and index billions of documents or mixed media, regardless of location, data type, language, or formatting—and to deliver answers or services based on the results of these searches.

Enhanced systems management tools

Continuing to drive industry-standard management, Dell offers enhanced systems management tools that are designed to enable enterprises to manage Dell platforms with great flexibility, security, and control. Two new hardware features help increase the manageability of ninth-generation Dell PowerEdge servers:

- **Intelligent Platform Management Interface (IPMI) 2.0 support**: Embedded server management now adheres to the IPMI 2.0 specification, helping improve administrator efficiency by providing industry-standard tools for managing hardware, monitoring systems, and communicating faults.¹
- **Dell Remote Access Controller 5 (DRAC 5)**: The new DRAC 5 delivers enhanced features and functionality for administrators who require a remote console connection regardless of the status of the server. DRAC 5 builds on DRAC 4 features, such as continuous video, virtual media, and integration with the Microsoft Active Directory® directory service, and introduces important features such as USB virtual media support, Secure Sockets Layer (SSL)–encrypted virtual media, and industry-standard Systems Management Architecture for Server Hardware Command-Line Protocol (SMASH CLP).²

The Dell OpenManage® 5 suite of comprehensive deployment, monitoring, and change-management tools provides excellent flexibility and security for managing Dell PowerEdge servers. Dell OpenManage 5 software supports industry-leading management standards and frameworks and can now manage printers, Dell/EMC storage, and network-attached tape automation systems.

Dell has also integrated its systems management tools with leading enterprise management applications and infrastructures—including Microsoft Operations Manager (MOM) 2005, Microsoft Systems Management Server (SMS) 2003, and Altiris® Server Management Suite”—to further extend the versatility and scope of management capability for Dell servers.


Customers rely on the FAST data center to collectively support millions of queries per second to keep their mission-critical applications delivering to expectation. In turn, FAST relies on Dell PowerEdge servers and storage devices to deliver the performance, scalability, and reliability that FAST’s customers demand. Dell products form the foundation of the FAST IT infrastructure. FAST continues to depend on Dell because the value and performance delivered by Dell products has helped the company scale to become a runaway success in the enterprise search marketplace.

Promoting server consolidation

As part of the Dell evaluation program, FAST was provided with PowerEdge 2950 servers before the general release in order to take them for a test ride. “We compared the PowerEdge 2950 against our current servers in a race to index one million documents,”
explains Demos Skipitaris, senior operations architect at FAST. “The PowerEdge 2950 consistently outperformed our current servers. As our older PowerEdge 2650 servers reach the end of their life cycle, we think we can replace 10 of them with around eight of the new PowerEdge 2950 servers based on this performance boost.”

Enabling storage consolidation

In addition to promoting server consolidation, the presence of expanded disk capacity in the new PowerEdge 2950 servers helps promote storage consolidation by reducing the dependence on direct attach storage devices. “Although we currently use and like Dell PowerVault enclosures for added storage capacity, the new PowerEdge 2950 servers—with eight internal drives—will quickly become very valuable to us,” explains Skipitaris. “When the 146 GB, 2.5-inch SAS drives become available, a single PowerEdge server will have the capability to provide an application with more than 1 TB of internal data storage. As processor speeds increase, the added disk space will make it possible to store more documents on a server, so the cost per searchable document will go down.”

And that is not all the new PowerEdge 2950 servers have to offer. Dell makes migrating from earlier platforms as simple as possible by maintaining hardware consistency across generations. Through incremental but significant improvements to the design such as the programmable LCD screen that is visible with the bezel on, easy-open draw-latch, and unique color-coding that indicates which items are hot-pluggable, Dell continues to deliver on the promise to help reduce complexity and ease manageability. Skipitaris says, “I noticed many enhancements. One that I really like is that the PowerEdge 2950 servers have aligned the ports on the left and the power supplies on the right, making our cabling neat and clean. Plus, there is a cable management clip to hold all the cables together. This may seem like a small thing, but it makes a big difference to us.”

Helping to reduce data center costs

By offering the potential for server and storage consolidation, PowerEdge 2950 servers help enterprises keep procurement costs and real estate–related expenses low. Plus, the new Intel Xeon processor was designed to reduce power requirements and cooling costs. Ultimately, the new PowerEdge 2950 servers have been designed to help enterprises get more performance while lowering data center costs. As Skipitaris concludes, “Dell is already the basis of our infrastructure, and with the release of the PowerEdge 2950 server, we have even more reason to stick with Dell.”

New Dell/EMC storage: Easing SAN deployment

Dell lowered the barrier to entry for growing organizations requiring enterprise-caliber networked storage by pioneering the easy-to-deploy Dell/EMC AX150 and AX150i—storage area network (SAN) arrays starting at under $10,000 that can be configured with only a few clicks of the mouse. Now Dell extends the ease of deployment to its new generation of Dell/EMC CX3 UltraScale series SAN arrays.

The Dell/EMC CX3 series provides an end-to-end 4 Gbps architecture designed to lead the midrange storage array market in performance and scalability. Third-generation CX3 series arrays offer breakthrough architecture with an expansive range of scalability options that provide a platform for cost-effective growth throughout the SAN life cycle. For specifications of the CX3 series arrays, see the sidebar “Innovative New Platforms Built to Mix Well with Others.”

For the introduction of the CX3 series, Dell worked to streamline the deployment and management of SANs through a series of integration efforts. As a result, Dell PowerEdge servers and Dell/EMC storage arrays can be even more closely coupled than before. The first step led to servers that are customized with SAN components—such as Fibre Channel host bus adapters (HBAs) and storage management software—preinstalled during manufacturing through Dell’s build-to-order process. The HBAs enable direct connectivity to a storage array or SAN fabric through a Fibre Channel switch. The storage management software includes the EMC® Navisphere® Server Utility and the EMC PowerPath® path management tool. Preinstallation of these SAN components helps reduce SAN deployment time and the risk of installation errors—simplifying the initial SAN deployment and minimizing the time to deploy additional servers to an existing SAN.

The next step in Dell’s effort to reduce complexity led to the integration of Dell and EMC management software. Version 8.0 of Dell OpenManage IT Assistant, which provides an integrated view of Dell’s comprehensive suite of server monitoring and reporting tools, is now integrated with EMC Navisphere software—enabling complete management of a Dell/EMC or EMC CLARiiON® storage environment. Together, the two software products enable top-level administration of key SAN elements through a single management console, helping to simplify overall SAN management.

Dell PowerVault solutions: Extending the storage domain

For applications configured with direct attach storage, the recently enhanced Dell PowerVault™ line includes the Dell PowerVault (Continued on page 16)
High-performance, industry-standard design and software commonality promote interoperability and scalability of Dell’s new servers, storage systems, and workstations. Plus, flexible management software and options for configuring IPMI settings together with DRAC 5 functionality enhance the efficiency of server administration—helping businesses do more, more easily.

**Ninth-generation Dell PowerEdge servers**

Figure A shows application environments suitable for ninth-generation PowerEdge server models, which are designed not only to help increase flat-out performance but also to help improve price/performance and performance per watt:

- **Dual-core Intel Xeon processors:** The new PowerEdge servers use dual-core Intel Xeon processors, increasing performance up to 69 percent with the 5000 series compared to eighth-generation Dell servers; with the 5100 series, performance increases up to 152 percent while power consumption decreases by as much as 25 percent compared to eighth-generation Dell servers. The resulting decrease in heat helps businesses scale their data centers without increasing power input or thermal output.
- **Fully buffered DIMMs:** Fully buffered DIMMs provide a point-to-point serial memory interface for fast, reliable data transmission—up to three times greater throughput and up to three times greater capacity compared to previous Intel Xeon–based servers—plus excellent signal integrity and error detection.
- **SAS hard drives:** SAS drives optimize data transmission through serialization while enhancing reliability through the use of small hard-drive form factors and cables—both of which are designed to consume less power and reduce thermal output compared to traditional SCSI hard drives.
- **TCP/IP Offload Engine:** A dedicated processor on the servers’ embedded Broadcom 5708 Gigabit Ethernet network interface cards (NICs) offloads TCP/IP traffic from the host processor—a boost for database and backup server applications as well as other applications with large I/O packets.
- **PCI Express:** PCI Express provides a high-performance Ethernet, RAID, InfiniBand, and Fibre Channel interconnect.

**Dell PowerEdge storage servers**

Dell PowerEdge 2900 and PowerEdge 2950 servers featuring Microsoft Windows Storage Server 2003 R2 are scalable network-attached storage servers that provide a scalable solution to support business growth and applications. They are designed to help businesses increase server performance, scalability, and reliability as their workloads grow. The servers are ideal for environments that require high performance, scalability, and reliability for critical applications, such as database, file sharing, and data mining.

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
<th>Suitability to task</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerEdge 1950</td>
<td>Dual-socket, rack-dense 1U server</td>
<td>Virtualization, Web applications, SAN compute node, network infrastructure, database front end, e-mail and messaging</td>
</tr>
<tr>
<td>PowerEdge 2950</td>
<td>Dual-socket, rack-mount 2U server</td>
<td>Virtualization, network infrastructure, database, e-mail and messaging, Internet applications</td>
</tr>
<tr>
<td>PowerEdge 2955</td>
<td>Dual-socket, ultra-rack-dense blade server</td>
<td>Distributed Web environments, network infrastructure, terminal services, virtualization</td>
</tr>
<tr>
<td>PowerEdge 2900</td>
<td>Dual-socket 5U tower</td>
<td>E-mail and messaging, application server, database server, Web server</td>
</tr>
</tbody>
</table>

*Based on the SPECjbb2005 benchmark test performed by Dell Labs in December 2005 and April–May 2006 on a PowerEdge 2950 server with two dual-core Intel Xeon 5160 processors at 3.0 GHz (Woodcrest); 8 GB, 667 MHz FBD memory; one SATA 60 GB, 2,000 rpm hard disk drive; and Windows Server 2003 Enterprise x64 Edition OS, as compared to a PowerEdge 2950 server with two dual-core Intel Xeon processors at 2.6 GHz (Penryn); 8 GB, 400 MHz DDR2 memory; one SATA 60 GB, 15,000 rpm hard disk drive; and Windows Server 2003 Standard Edition OS with Service Pack 1 (SP1).

*Based on the SPECjbb2005 benchmark test performed by Dell Labs in December 2005 and April–May 2006 on a PowerEdge 2950 server with two dual-core Intel Xeon 5160 processors at 3.0 GHz (Woodcrest); 8 GB, 667 MHz FBD memory; one SATA 60 GB, 2,000 rpm hard disk drive; and Windows Server 2003 Enterprise x64 Edition OS, as compared to a PowerEdge 2950 server with two dual-core Intel Xeon processors at 2.6 GHz (Penryn); 8 GB, 400 MHz DDR2 memory; one SATA 60 GB, 15,000 rpm hard disk drive; and Windows Server 2003 Standard Edition OS with SP1.

*Based on testing performed by Dell Labs in May 2006 using the SPECjbb2005 (integer-rate base) benchmark on a PowerEdge 2950 server with two dual-core Intel Xeon 5160 processors at 3.0 GHz (Woodcrest) and then with two dual-core Intel Xeon 5080 processors at 3.7 GHz (Dempsey); 4 GB, 667 MHz and 533 MHz FBD memory; two SAS 73 GB, 15,000 rpm hard disk drives; and Windows Server 2003 Enterprise x64 Edition OS, as compared to a PowerEdge 2850 server with two dual-core Intel Xeon processors at 2.8 GHz (Penryn); 8 GB, 400 MHz DDR2 memory; two SATA 60 GB, 15,000 rpm hard disk drives; and Windows Server 2003 Enterprise x64 Edition OS.


*This term does not consume an actual operating speed of 1 Gbps. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

*Based on testing performed by Dell Labs in January 2006 using the SPEC CPU2000 (integer-rate base) benchmark on a Dell Precision 690 workstation configured with two dual-core Intel Xeon 5150 processors at 2.66 GHz; 4 MB level 2 (L2) cache; 1,333 MHz FSB (no Intel Hyper-Threading Technology available); 8 GB, 533 MHz DDR2 error-correcting code (ECC) FBD memory; SATA 160 GB, 7,200 rpm hard disk drive; and Microsoft Windows XP Pro SP2 as compared to a Dell Precision 670 workstation with two single-core Intel Xeon processors at 3.8 GHz; 2 x 2 MB L2 cache; 800 MHz FSB (Intel Hyper-Threading Technology off); 2 GB DDR2 ECC memory; SATA 160 GB, 7,200 rpm hard disk drive, and Microsoft Windows XP Pro SP2. **NOTE:** For performance improvement claims cited in footnotes a, b, c, and f, actual performance will vary based on configuration, usage, and manufacturing variability.
The new storage servers provide the usability of a storage appliance with the enhanced price/performance and flexibility of the ninth-generation PowerEdge 2900 and PowerEdge 2950 servers—backed by Dell PowerVault and Dell/EMC storage systems.

**Figure B. Third-generation Dell/EMC CX3 series storage arrays and enclosures**

- Optimized for file sharing; preloaded with advanced capabilities for efficient storage management
- Ready to go right out of the box, in a matter of minutes
- Deployable anywhere on the Ethernet network
- Manageable remotely from any Microsoft Windows-based desktop through a convenient administrative console

The new storage servers provide the usability of a storage appliance with the enhanced price/performance and flexibility of the ninth-generation PowerEdge 2900 and PowerEdge 2950 servers—backed by Dell PowerVault and Dell/EMC storage systems.

**Figure C. New Dell Precision workstations**

**Dell/EMC CX3 UltraScale series storage arrays**

The Dell/EMC CX3 UltraScale series of networked storage arrays (see Figure B) form the core of a scalable infrastructure providing an end-to-end 4 Gbps architecture enabling the following benefits:

- Dramatically improved performance compared to previous-generation CX series arrays, enabling faster data access and shorter response times
- Up to double the capacity of previous-generation CX series arrays
- State-of-the-art storage processors, 4 Gbps host interconnect, 4 Gbps back-end topology, and 4 Gbps drives
- Easy integration with Gigabit Ethernet, 2 Gbps, and 4 Gbps SAN components
- Easy mix and match of storage tiers within the array to optimize performance or capacity
- Enhanced data integrity and availability

**Dell Precision workstations**

The new Dell Precision™ 490 and Precision 690 workstations (see Figure C) offer high performance, excellent graphics, and very large memory for memory-intensive applications, multi-threaded applications, multi-tasking environments, or demanding single-threaded applications:

- **Dual-core Intel Xeon processors:** When equipped with two dual-core Intel Xeon processors, a Dell Precision 690 workstation can deliver performance increases of up to 155 percent in multi-threaded applications, compared to the previous generation.1
- **Dual independent frontside buses (FSBs):** Dual independent FSBs, each capable of up to 1,333 MHz, offer extremely high-speed data transfers.
- **Fully buffered DIMMs:** Four fully buffered DIMM channels provide enormous bandwidth for data movement between memory and the system.
- **Innovative chassis:** New enclosures enable excellent flexibility and scalability.
MD1000 Disk Expansion Enclosure, a 15-drive system that can be outfitted with the latest SAS or SATA II disk drives. Designed and tested to work seamlessly with ninth-generation PowerEdge servers, the MD1000 enclosure can store up to 7.5 TB when fully equipped with fifteen 500 GB, 7,200 rpm SATA II drives.

Backup, recovery, and archiving are also chief concerns for IT organizations, and the latest tape automation systems from Dell are designed to scale in step with growing business requirements. For example, the modular Dell PowerVault ML6000 Tape Library series offers versatile, enterprise-level SAN backup with scalability up to 87 TB (native) and future scalability up to 161 TB (native). Also new on the scene is the Dell Tape Automation Sizing Tool (www.dell.com/tapesizing), which can help administrators plan effectively for tape automation needs.

New workstations: Boosting performance cost-effectively
The Dell Precision 490 and Precision 690 workstations are based on industry standards, providing the latest performance-enhancing technologies—such as multi-core processing, 64-bit computing, and OpenGL graphics—at an affordable price. Dell designed its new workstations to deliver excellent performance in highly threaded applications and in complex multi-tasking environments such as financial trading, digital content creation, oil and gas, medical imaging, and high-end computer-aided design. The sidebar “Innovative New Platforms Built to Mix Well with Others” describes the new workstations in more detail.

Scalable enterprise: Creating a stable foundation
Designed with software commonality and industry-leading interoperability in mind, the new Dell server, storage, and workstation platforms can help businesses achieve the benefits of the scalable enterprise strategy: simplified operations, improved resource utilization, and cost-effective growth in pragmatic, planned phases.

Simplifying operations in the IT infrastructure
Through innovative design and engineering, Dell has improved the ease of operation and standardization of its ninth-generation platforms compared to earlier Dell generations. Software commonality and integration help make maintenance tasks predictable and efficient. This leads to a reduction in complexity that helps maximize productivity—allowing IT staff to spend more time on contributions that enhance the value of business. For example:

- **SAN scale-out**: Integration between servers and storage systems streamlines SAN deployment and maintenance.
- **System administration**: Integration of EMC Navisphere with Dell OpenManage IT Assistant; tightly coupled plug-ins for MOM 2005, SMS 2003, and Altiris Server Management Suite; and Novell ZENworks Linux Management—Dell Edition help reduce the number of consoles required to keep systems running smoothly—minimizing the complexity of ongoing operations.
- **Server maintenance and deployment**: Reduction in the number of system images to manage on Dell servers allows administrators to spend less time updating system software and tracking BIOS or driver updates.

Improving utilization of system resources
By implementing server and storage consolidation, businesses can enhance management control and utilization of their IT infrastructures. Although consolidation is a way to collect disparate computing resources, consolidating onto complex platforms typically moves the pressure point from one spot to another. The benefits of consolidation clearly emerge when businesses consolidate on industry-standard platforms such as the new Dell servers and storage, which are designed to reduce complexity and promote integration.

The adoption of technologies such as virtualization also helps enterprises improve resource utilization. For more information

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**STORAGE SOLUTIONS FOR THE SCALABLE ENTERPRISE**

Dell’s highly scalable server, storage, and management platforms are based on industry standards to enable optimal performance, availability, and interoperability in any size enterprise. For schematics of highly scalable storage solutions in small office/branch office, data center, and regional office/disaster recovery scenarios, see the tear-out poster facing page 48. To download additional copies of the poster, visit www.dell.com/powersolutions.
about the attributes and benefits that server virtualization may bring to the scalable enterprise, see “Server Virtualization in the Scalable Enterprise” by Jimmy D. Pike and Drew Engstrom in Dell Power Solutions, August 2006, www.dell.com/downloads/global/power/ps3q06-20060381-Pike.pdf.

Scaling out to meet evolving needs
Simplifying operations and improving resource utilization leads to the third opportunity enabled by the scalable enterprise: cost-effective scale-out. Using industry-standard building blocks and integrated systems management tools, enterprises can grow the IT infrastructure in practical, affordable increments—allocating computer and human resources as they are needed.

The modularity of Dell servers and storage systems facilitates the management of unexpected growth. Spikes in business can quickly be handled by adding incremental capacity, such as additional servers and storage, or by scaling to more advanced technology, such as the forthcoming quad-core Intel Xeon processors or 4 Gbps Fibre Channel infrastructures. Industry-standard data center components enable modular expansion in practical, planned phases—helping organizations to eliminate overbuying patterns for up-front investments based on projected needs and instead to maximize their budget by growing the IT infrastructure in pace with actual business requirements.

Through the flexibility of the new ninth-generation server architecture, features such as SAS storage, PCI Express, and fully buffered DIMMs provide the capacity to meet future business needs within existing systems. From a storage perspective, the ability to deploy early components for a 4 Gbps infrastructure today allows businesses to continue using existing SAN architectures while simultaneously preparing for the future.

Planning for growth and stability
Because one size does not fit all, Dell has designed its Server Advisor tool to help enterprises zero in on the most suitable server platform for their specific application environment. This online tool asks a brief series of questions about the number of users; performance and availability needs; network infrastructure; print-and-file service; e-mail, messaging, and collaboration systems; business applications and Web services to be hosted; and firewall, load balancing, and high-performance clustering requirements. For more information about the Dell Server Advisor, visit www.dell.com/serveradvisor.

In addition, Dell offers a broad range of expert IT infrastructure services that specialize in the planning, implementation, and maintenance of standards-based systems and environments. For more information about the Dell IT services suite, visit www.dell.com/services.

Complementing the ninth-generation server and storage launch is Dell’s Platinum Plus Enterprise Support service, which helps ensure cost-effective uptime for business-critical server and storage infrastructures. The new service proactively monitors operations, provides communication logistics, and coordinates end-to-end support worldwide. For more information, see “Nothing Basic About Next-Generation Enterprise Support,” Dell Power Solutions, August 2006, www.dell.com/downloads/global/power/ps3q06-50060413-DellECC.pdf.

Business agility: Responding with flexibility and choice
Dell has evolved its server, storage, workstation, and management platforms to address the need for simplification, increased resource utilization, and cost-effective scale-out. Comprehensive enhancements in system architecture, processor and memory technology, and physical design characterize this new generation of products. Particularly in combination with advances in integrated systems management solutions and virtualization technology, Dell’s new servers, storage arrays, and workstations enable organizations to better align the IT infrastructure with vital business processes, meet demanding enterprise requirements quickly and flexibly, and take control of the change-management process.

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