



Simplifying the SMB IT Experience — Dell Expands Data Center Options

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Management Summary

Have you noticed recently how much you can carry in your shirt pocket? In the same space that was previously reserved for a nerdy pocket protector and a full set of leaky pens, the upscale *GenXer* can carry everything that he or she needs to phone home, email, or Instant Message with the office, or even download a critical sales presentation to a P.C., all within a single, inexpensive, compact device. Furthermore, you will never get lost again, not with an atlas of maps neatly folded in that same space in the form of a GPS tracking system. That *iPhone*, *Blackberry*, or other device can do all of those business-critical functions while also entertaining you in your downtime with a wide selection of music or games. In fact, you can even watch your hometown baseball team from thousands of miles away without a TV set. Consolidating and virtualizing your cell phone with PDA and *iPod* functionality, delivers more intelligence, memory, storage, and Wi-Fi communications in a device small enough to fit in your shirt pocket. This has freed us from the shackles of an office desk to be where we need to be when we need to be there. It has simplified our lives, saved us money, and made us smarter.

Simplifying the data center infrastructure is equally important. Like the larger enterprise, the SMB has the same requirements to remove complexity from the IT environment, to simplify the IT process, to reduce downtime, to enable the data center staff to employ consolidation and virtualization features within a smaller footprint, and to enhance information security. The SMB needs to improve efficiency, flexibility, and agility within the data center, keeping control of, and lowering, capital expenditures (CapEx) and operating costs (OpEx). The SMB needs a faster process to acquire and deploy scalable IT components and manage them as the enterprise grows, on demand, to enable the enterprise to reclaim time, money, and people, while protecting their investment in existing infrastructure. Moreover, the SMB needs to be able to do this amidst an on-going expansion of requirements that include physical and virtual servers, an unprecedented growth in storage and production databases, a myriad number of network ports and devices, and an exploding number of client devices. To accomplish this, the SMB data center needs the latest compact server technology to consolidate and virtualize their application environment, the most efficient shared storage and networking to support the mission- and business-critical applications, and fully-integrated management services to ensure ease-of-use. The question then becomes where to find the right solution to make better use of IT resources, and run your business better.

One answer may be from the same company sitting that makes your desktop PC. Dell has a full line of the latest server and storage hardware and software to enable you to consolidate and virtualize your environment, control your costs, and satisfy all of your IT needs. To learn more about the newest line of single- and dual-socket servers and storage in the Dell lineup, please read on.

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The SMB Data Center

It is not only the enterprise data center that needs to be more efficient. Today, all businesses, not just the biggest enterprises, need to be productive all day, every day. They require servers designed to provide businesses with technologies designed to deliver around the clock reliability to help them improve productivity, efficiency, and performance, lower energy costs, and adapt to changing workloads.

The SMB data center can achieve significant gains in total cost of ownership (TCO), while improving the deployment of IT resources, by changing the paradigm of the IT environment. Today's SMB data center often is populated with a myriad of servers that are anywhere from three-to-five years old and have been deployed with a single application to try to limit complexity. Unfortunately, **this has led to a culture of waste – wasted IT resources, wasted energy resources, and wasted human resources.** The typical three-to-five year old server is operating at only 15% to 20% efficiency, leaving at least 80% of the compute capability untapped, while consuming 100% of the floor space and 100% of the energy required to power the servers and cool the data center. With tens, or even hundreds, of applications required to enable normal enterprise operations, the resultant server sprawl requires an ever-increasing administrative staff to manage and maintain the IT environment.

The SMB requires a scalable, open systems platform on which the data center can deploy and manage the consolidation and virtualization of its business- and mission-critical applications, running on a modest number of optimized servers, not the hundreds or thousands of systems found in an enterprise environment. With today's highly performant quad-core processors, the typical SMB has no requirement to scale beyond one or two sockets in any given system, keeping down the costs associated with a more complex architecture that needs to integrate as many as four, or more, processors. **Most SMBs simply require an entry-level server that will give their businesses the dependability, improved productivity, and performance they need to focus on their business instead of their computers.**

The average SMB does not have the staff to deploy and manage a proprietary environment. They require an open systems platform based

upon the x86 architecture developed by Intel and supported today by both Intel and AMD, and packaged by companies such as Dell, along with their extensive line of storage and management products. Dell's newest entry-level server platforms, part of their 11th generation, provide a comprehensive solution that has the flexibility to grow with your business. Dell has combined effective technologies, software, and industry alliances, along with 25 years of experience with SMBs, to provide you with solutions optimized for your business. Dell provides solutions that enable the SMB to spend less time managing an IT system and more time running a business; solutions that are reliable, eliminating unscheduled downtime; solutions that protect the data that is the lifeblood of any business. Using Intel's newest technology, based upon the *Nehalem* micro-architecture, Dell delivers innovative features in a compact single socket format that provides compelling performance for value-conscious customers with superior quality and reliability to drive your business forward. **With a variety of storage options and an even broader selection of consulting services, Dell can deliver a turnkey solution for the SMB operating without the administrative staff of a large enterprise.**

Dell's Entry PowerEdge Servers

Dell's newest offerings, the *PowerEdge R210 Server*, the *PowerEdge T110 Server*, and the *PowerEdge T310 Server* are based on the Intel *Xeon Processor 3400 Series* for single-socket servers, while Dell's new *PowerEdge R510 Server* uses Intel's *Xeon Processor 5500 Series* for two-socket systems¹. Intel's Xeon 3400 delivers the computing power of Intel's Xeon 5500 (the *Nehalem* architecture) to single socket servers. Designed with innovative features that adapt performance to software and business needs, the Intel Xeon 3400 helps curtail energy consumption for optimum performance and efficiency, and enables hardware-based virtualization capabilities. The capabilities found in servers featuring the Intel Xeon 3400 make them ideal for small businesses stepping up to a first server or companies requiring a dedicated server for a workgroup to support multiple clients. (See Exhibit 1, on page 3, for a

¹ See [The Clipper Group Navigator](http://www.clipper.com/research/TCG2009018.pdf) dated April 5, 2009, entitled *Dell PowerEdge with Xeon 5500 – Simplifying an Optimized Data Center*, available at <http://www.clipper.com/research/TCG2009018.pdf>.

list of significant features of the Intel Xeon 3400.)

All of Dell's new platforms provide the SMB with exceptional performance and power efficiency, and more significantly, *higher performance per watt*, all at a very affordable cost with flexibility for both 64-bit and 32-bit applications and operating systems.

Dell's *PowerEdge* (PE) single-socket servers based on the Xeon 3400 protect critical business information and offer the performance and headroom to make employees and businesses more productive, making them ideal for small and medium business owners looking for ways to support rapid business growth on small technology budgets. Designed for the entry-level needs of the business, the Dell PE servers adapt to application behavior by automatically adjusting processing power to deliver maximum performance, protecting valuable assets from data corruption and loss, and improving productivity with business growth. The low-power version of the Xeon 3400, the *Xeon L3426*, operates at a power requirement of only 45W and will be available by mid-October on the T110, T310, and the R210.

The new single-socket PE R210 is a 1U rack-mounted server supporting up to 16GB of DDR3 error correcting code (ECC) memory to check and correct system memory errors, at up to 1333 MHz, the same as the PE T110 tower, while the PE T310 can support up to 32GB of DDR3 ECC memory. The 2U PE R510, using the Xeon 5500, can scale to two processors, necessitating increased memory support, up to 64GB of DDR3 memory. All of the servers include 8MB of cache and an integrated serial I/O technology, with PCI-Express offering higher bandwidth, lower latency, and fewer I/O bottlenecks than PCI and PCI-X slots. While the 1U R210 has only 1 PCI-X slot, the R510 and T110 have four, and the T310 can support up to five PCI-X interfaces. These PE servers are configured with from two drive bays, supporting up to 2TB in the R210, to eight hot-swap bays, supporting up to 8TB, in the R510, with a wide variety of RAID controller options.

Dell Storage Enhancements

Dell has always offered a wide variety of DAS, SAN, and NAS options for the SMB, with options including:

- The *PowerVault MD1120* for the direct-connect of up to 24 SAS/SATA drives;

Exhibit 1 –

Features of the Intel Xeon 3400

- **Dell's PE servers** adapt to the workload, automatically increasing processor frequency for greater performance with Intel's *Turbo Boost Technology*, increasing processor frequency and enabling faster speeds when conditions allow.
- **Intel's *Hyper-Threading Technology*** enables simultaneous multi-threading within each core to reduce computational latency.
- **Intel's *Intelligent Power Technology*** lowers energy costs for PE servers while minimizing impact to performance, automatically putting the processor and memory into the lowest available power state by reducing power to individual cores to near-zero, independent of other operating cores.
- **Intel's *Virtualization Technology (VT)*** is a suite of virtualization-specific hardware enhancements to Intel processors, chipsets, and I/O devices to increase application reliability, security, and overall system performance; VT speeds up virtual machine transition (entry/exit) times and supports hardware assist for I/O virtualization using Intel's *Virtualization Technology for Directed I/O (Intel VT-d)*.
- **Intel's Xeon 3400** includes an integrated PCI-Express 2.0 interface providing a direct connection between the processor and PCI Express component/adapters with bandwidth up to 8 GB/s on a PCI-Express 2.0 *x16* interface. This interface can be sub-divided to either two *x8* PCI Express or four *x4* PCI-Express interfaces, for maximum design flexibility.

Sources: Dell and Intel

- The *Dell EqualLogic PS4000 Series* virtualized iSCSI SAN; and
- The *Dell/EMC CX4-120* for cost-effective, scalable enterprise networked storage for both F.C. and iSCSI interfaces.

Now Dell has introduced the *PowerVault NX300* for the SMB that is running out of disk space on their desktops and laptops, or the department or remote office of a larger enterprise that requires dedicated file sharing and collaboration. At around \$3,000, the NX300 is a turn-key entry-level Network-Attached Storage

(NAS) array that is preconfigured, easy to deploy and manage, and is ideal for the consolidation of SMB or departmental files, centralizing them and enabling a managed backup for data security. It is positioned strictly as a file server to relieve this mundane workload from servers running business-critical applications.

Configured as a 1U, rack-mounted chassis, the NX300 can support up to 4TB of data using four SAS or SATA drives. It is based upon Microsoft *Windows Storage Server 2008* running on an Intel Xeon 5500 quad-core CPU and includes RAS features in the form of hot-swappable drives, redundant power and cooling, and ECC memory. The NX300 includes essential software support for single instance storage to eliminate duplicate files and maximize capacity, single namespace distributed file systems, *DFS* and *DFS with Replication, DFS-R*, for quick access and to protect stored files across WAN and LAN environments, snapshots and replication, including a file services resource manager, and *Open Manage* systems management. The NX300 includes an intuitive management interface to help the SMB deploy it more quickly and make ongoing management more efficient. The NX300 can share files across Windows and non-Windows client systems using CIFS and NFS.

Dell Solutions and Service Offering

Dell offers tested and validated Microsoft *Windows Server 2008 R2* solutions with enhanced virtualization capabilities via *Hyper-V*. *Hyper-V*, with live migration, is an easy solution for moving virtual machines from one server to another without any disruption or loss of service. In addition, Virtual Desktop Infrastructure (VDI) enables Windows and other desktop environments to be run and managed on virtual machines on a centralized server.

The SMB can simplify the installation, monitoring, and management of its servers through the *Dell Lifecycle Controller 1.2*, automating the operating system installation of local and remote servers. By including the correct drivers for all of the operating systems and components pre-loaded on Dell servers, the SMB can save time and money. Dell's systems management tools, such as *Open Manage*, focus on simplicity, efficiency, reduction of TCO, and

an adherence to standards.²

Dell has designed a comprehensive, fully-customizable portfolio of services specifically for medium and small businesses looking to cost effectively plan, deploy and manage growing IT environments, without requiring long-term consultative or outsourcing agreements. Dell ProSupport services help growing businesses achieve greater IT efficiency, including:

- Dell's *ProConsult Remote Virtualization Readiness Assessment* helps assess IT environments to determine consolidation opportunities and provide recommendations for implementing an optimal solution designed to maximize performance and efficiency.
- Dell's *ProConsult Data Protection Services* include *Hard Drive Data Recovery* and *Certified Data Destruction* to help organizations protect their business operations by protecting their data through risk mitigation and improved data security.

Conclusion

Today's large enterprise data center has no trouble attracting IT suitors to tailor a solution to its requirements. If you can throw enough money at a problem, it will go away. Unfortunately, SMBs do not have that luxury. They require a low-cost, open standard solution that can be ordered, deployed, and managed with a minimum of human intervention. They need an IT supplier who can provide servers, storage, solutions, and services to relieve their beleaguered staff of any more headaches.

Dell has been supplying IT solutions to the SMB for the past 25 years, and they continue to supply innovative solutions today. With partners such as Intel and Microsoft, Dell can pre-configure the right solution for any small or mid-sized data center. Dell can pre-configure the right solution for your data center!



² See [The Clipper Group Navigator](http://www.clipper.com/research/TCG2008006.pdf) dated February 7, 2008, entitled *Dell Offers Simplified I.T. Management – “Have I.T. Your Way”*, available at <http://www.clipper.com/research/TCG2008006.pdf>.

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