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Storage and Server Convergence: IBM Announces TotalStorage DS6000 and DS8000

By Clay Ryder

Today IBM announced two new storage solutions that span the once disconnected continuum of high-end, midrange, and entry-level storage markets. The new systems, the IBM TotalStorage DS6000 and DS8000, are based upon IBM's POWER microprocessor, which enables customers to improve their storage utilization through virtualization and partitioning of storage system capacity across multiple servers and applications. The company stated that it believes the new solutions are the most significant storage announcements it has made in more than a decade. The new systems are the result of a multi-year R&D effort and leverage innovative technologies from multiple divisions including IBM Research, IBM Systems and Technology Group, and IBM Software Group. IBM's TotalStorage Open Software Family also supports the DS6000 and DS8000.

The TotalStorage DS6000 is available with configurations starting at 580GB and scaling up to 67.2TB, and is positioned as a new class of storage solution that provides technology previously only available in high-end systems in a much smaller form factor. The DS6000 can connect to eServer zSeries and iSeries as well as Open Systems and Intel-based environments. Key features of the DS6000 include:

- *Power Architecture* – A PowerPC processor platform that features high system throughput and data response times;
- *Modular Architecture* – A scalable design that allows customers to purchase storage incrementally by adding disk drives;
- *Calibrated Vectored Cooling* – Advanced cooling for the DS6000 high-density package;
- *Predictive failure analysis* – Preemptive autonomic monitoring for data integrity;
- *Common Code Base with DS8000* – Ability for the new systems to share 97% of their software;
- *Express Configuration Wizards* – A web-based GUI for simplified deployments.

The TotalStorage DS8000 is available in either dual two-processor or dual four-processor configurations, with an architecture that can address over 96 petabytes of data. It is positioned as a virtual storage system that provides clients with massive scalability, high-end performance, and high availability for business continuity and infrastructure simplification. The DS8000 provides customers the ability to scale up or scale out their infrastructure with integrated virtualization capabilities. Key features of the DS8000 include:

- *POWER5 Processor* – A state of the art 64-bit platform that features high system throughput and data response times;
- *Virtualization Engine* – IBM's virtualization technology that eliminates dependencies on physical resources to achieve enhanced performance while reducing costs;
- *Logical Partitioning* – LPAR technology that allocates resources to storage system partitions that are independent and isolated;
- *Adaptive Replacement Cache* – Providing enhanced throughput by incorporating a more efficient caching algorithm that optimizes performance for both sequential and randomly accessed workloads.

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Pricing/Availability

The new offerings feature an entry point of less than a half a terabyte of storage and prices starting at $97,000. The DS6000 and the DS8000 come standard with a four-year warranty on hardware and software, and will be available on December 3, 2004. Qualified customers can receive IBM financing with flexible terms and rates as low as 4%.

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Throughout the history of IT, the Internet, and frankly anything electronic, there has always been a latent desire for manufacturers and users to lay claim to having the biggest, baddest, and fastest instantiation of any gizmo. While we saw much of this testosterone-driven envy throughout the golden daze of the Internet in the late1990s, this fascination with speeds and feeds came to an abrupt halt when the pools of easy money vanished and long lines at the unemployment office came into fashion. However, for some, the competitive drive for supremacy continued unabated in the disk-based storage market. Nevertheless, much of the recent progress made in the hardware-based storage space could be described as incremental in nature. This is not to say progress was insignificant, but rather that earth-shattering events were few and far between. Fortunately, all excitement was not lost in the storage marketplace as vendors, notably EMC and IBM, posited — rather correctly to our way of thinking — that new value aplenty can be found in storage solutions that carry a new emphasis on software.

Today's announcements are clearly an exception to the hardware incrementalism that we have seen as of late. In fact, these announcements posit much more to the market than merely new storage solutions with the requisite speeds and feeds leapfrogging, but rather are indicative of a trailing vendor stepping up to the plate with a variety of new technologies and approaches bringing unique capabilities to market. With the TotalStorage DS6000 and DS8000, we see Big Blue vying to change the rules of the game as opposed to simply continuing to compete against the leaders. By offering what is effectively a top-end box produced for an entry-level context (the DS6000), IBM is touting resource efficiency, i.e., one-fifth the power consumption, twice the capacity, half the price, etc. as key differentiators that would allow it to move into new markets beyond the rarified Fortune 1000 or Global 2000. This solution is well positioned to appeal to smaller organizations that through the nature of their business (e.g., physicians, insurance providers, or other imaging-rich users) or regulatory pressures (name your favorite regulator; there are plenty) find themselves in need of significant amounts of storage capacity along with the requisite tools to manage it all without the luxury of skilled IT staff.

For the mid tier and enterprise, the DS8000 represents an interesting commentary on the value of intellectual property and broad-based R&D initiatives. This new solution is casting a lot of gray on the formerly pronounced divisions between servers and storage. Being that the DS8000 is actually a POWER5 based pSeries server in storage clothing, one can begin to ponder a future whereby the somewhat arbitrary notions of what constitutes a server or storage solution begins to blur. By taking advantage of its POWER5 CPU, IBM has introduced firmware level virtualization and logical partitioning, a known concept to server geeks, to world of storage.

As a result, the DS8000 is able to allocate its resources at a rather granular level, which bodes well for raising the overall efficiency of the solution, reducing the need for data center floor space, decreasing power consumption, and thus reducing cooling requirements. At the same time, we suspect that some smart soul will notice that the AIX underpinnings of the DS8000 would make an interesting environment in which to place an application that exercises data stores in a rather demanding fashion. The DS8000 could emerge as a new beast – the storage server – one that for data-intensive applications could possibly outperform the traditional server-plus-SAN environment.

Perhaps what is most striking about these announcements is how they illustrate in a rather profound way the value of intellectual property and R&D. With many of the leading systems, vendors seeming content on

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reselling another's OEM product line with their own logo attached, IBM's investment in the Power Architecture, AIX, partitioning, and the Virtualization Engine clearly differentiate the company's approach providing standards-based leverage across their computing efforts.

So does this spell the end for all other comers in the storage market? Not at all. While these new offerings illustrate a vendor that has reapplied some of its intellectual and market muscle, IBM is challenged by its long-held third place showing in the storage marketplace, a somewhat muted discussion of the ILM value proposition (something being driven in force by EMC and others), and the perception that all things disk from IBM are the size of a shark with the weight of an elephant. All of this will take time to overcome and it is rather unlikely that market leaders HDS and EMC will simply stand by and cede market share to Big Blue. Nevertheless, IBM now has some unique tricks in its pockets, something that will require competitors to differentiate themselves on a different basis.

Overall, we see these announcements as proof that IBM has woken up, smelled the coffee, and decided to reapply itself through innovation to grow its relevance in the storage opportunity. If IBM articulates its value to the current market and successfully drives itself into previously out-of-reach markets, these TotalStorage solutions could prove to be one of the most significant announcements coming from Big Blue in some time. Obviously, this could be a huge opportunity for IBM to not only leapfrog the market, but expand its reach into SMBs and other heretofore non-IBM storage customers. Through its focus on innovation, the company has the opportunity to gain a leadership position in storage while taking the high road to a future where traditional notions of storage and servers may give way to a new interpretation.

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