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IBM Announces New POWER7 Servers

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IBM has announced its latest generation of Power-based servers, the new POWER7 system, which is designed to manage demanding emerging applications such as smart electrical grids and realtime analytics for financial markets, which rely on processing an enormous number of concurrent transactions and data while analyzing that information in real time. The new systems enable clients to manage applications and services at lower cost through technology breakthroughs in virtualization, energy savings, more cost-efficient use of memory, and price performance.

The new systems and management software announced include:

- ◇ IBM Power 780, a new category of scalable, high-end servers, featuring an advanced modular design with up to 64 POWER7 cores, and the new TurboCore workload optimizing mode. TurboCore can deliver up to two times the per-core performance of POWER6-based systems.
- ◇ IBM Power 770, a modular enterprise system with up to 64 POWER7 cores, featuring higher per-core performance over POWER6 processors while using up to 70% less energy for the same number of cores as in the IBM Power 570.
- ◇ IBM Power 755, a high-performance computing cluster node with 32 POWER7 cores that is Energy Star qualified.
- ◇ IBM Power 750 Express, an Energy Star qualified server targeting mid-market organizations by offering four times the processing capacity of its predecessor, the IBM Power 550 Express, in the same energy envelope.
- ◇ IBM Systems Director Express, Standard, and Enterprise Editions, which offer newly simplified packaging of management software including the advanced virtualization management capabilities of VMControl. VMControl permits the management of multiple Power servers as one entity, which can reduce management cost and complexity.

The company also indicated that it has significantly increased the parallel processing capabilities of POWER7 systems across both hardware and software in order to support managing the millions of concurrent transactions in transaction processing and database workloads as well as delivering “throughput” computing, that is optimized for running massive Internet workloads.

Availability

The Power 750 Express and 755 planned volume ship date is February 19 and the Power 770 and 780 planned volume availability is March 16. The IBM Systems Director Editions, supporting both POWER7 and POWER6 models, planned availability is March 5.

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The sheer size of this announcement cannot be underestimated; just one glance at the press release shows a litany of technology and product detail that is not easily dismissed as “just another upgrade.” The announcement of POWER7 is much more than a bigger, better, cheaper POWER6, even though there are numerous

technological achievements to challenge even the most technically adroit. But despite all this technical celebration, the overall positioning of POWER7 is that the latest and greatest POWER systems are focused on meeting the needs of business through enhanced financial, not technical, performance. What irony.

To adequately discuss all of the technical achievement of POWER7 would take far more than this forum permits; however, there are a few items which we believe illustrate why POWER7 should prove appealing to its target market. These are the number of cores and the degree of multithreading delivered by the POWER7, improvement in energy efficiency, the holistic solutions focus afforded by IBM, and an overall market message about financial/business efficiency.

The new POWER7 processor has eight cores with four threads each, which is 4x the maximum number of cores in POWER6 systems and 8x the number of threads per chip. With the TurboCore mode, four cores are deemed active and most of the resources backing all eight cores are put behind the four active cores thus increasing the cache and memory bandwidth, and allowing the clock speed to be increased, which can result in significant per-core performance gains. From a purely computational and transaction processing perspective, this achievement of POWER7 is admirable. However, this is only part of the story.

Through POWER7's Intelligent Energy technology, organizations can power up or shut down various sections of the server as well as dynamically adjust processor clock speeds based on thermal conditions and system utilization, on a single server or across a pool of multiple servers. The integration of energy management spanning the processor, firmware, PowerVM virtualization, OS, up through IBM Active Energy Manager Software (included in Systems Director Standard and Enterprise Editions) allows organizations to tune not only their systems performance and overall energy usage but also the specific price/performance yield of each processor and by extension applications supported by each processor. This degree of energy management flexibility illustrates the energy efficiency on a performance per-watt basis afforded by the POWER7 over competitive platforms such as x86, SPARC, and Itanium-based solutions.

In the press release, IBM stated that the new POWER7 systems can manage millions of realtime transactions and analyze the associated volumes of data typical of emerging applications such as the smart electrical grid. This is an interesting for a couple of reasons. While there has been an increasing focus on improved energy efficiency in the datacenter, the reality is that improved energy efficiency across the board would benefit not only data centers, but any business or consumer connected to the grid as each pays to support the considerable overhead involved in the creation, management, and delivery of electricity. Unlike the historic grid where control and reporting points are limited and their data only accessible to the system operator, the smart grid requires realtime data from orders of magnitude more data points, all of which needs to be collected, analyzed, and reported not only to the system operator, but to the entire customer base as well. A major utility moving to a smart grid pilot could go from processing less than one million meter reads per day to tens of millions meter reads per day in a smart grid.

Being able to collect, analyze, and execute on the volume of information inherent in a smart grid would allow a utility to achieve a higher utilization of its generation, distribution, and billing assets. It would also permit more flexibility in determining which assets would be pressed into service; given each has unique price/performance characteristics. However, when one stops to think about it, this quest for utilization and efficiency is shared by most any organization. Achieving the maximum utilization and hence leverage of corporate resources is all about achieving maximum ROI. The notion of the Smarter Planet intersects with the Smarter Pocketbook and for more than just those who are deploying smart grids or financial marketplaces.

In order to thrive, if not just survive, in the new economic reality of the 2010s, organizations of all stripes will have to maximize their efficiency on several fronts. A Smarter Planet that drives more data collection and information generation will challenge organizations to respond to market forces more rapidly than ever before. At the same time, the potential for more closely matching supply with demand, cost with revenue, etc. has never been greater, in turn providing the opportunity for new-found business efficiency. This is where the efficiency theme of the POWER7 resonates so very well.

Through TurboCore mode, clever organizations could maximize their ROI on software licenses that are charged on a per-core basis. An organization could turbocharge the core to get more performance, yet

maintain or even possibly reduce the number of cores licensed in order to support the application's users. With POWER7's ability to support ten virtual machines per core, the number of servers made available per IT management professional could rise substantially and these servers would be more energy efficient than in the past. While each of these examples is made possible due to a technical improvement, the real value is in the business and financial improvement that the technology offers.

Overall, we are impressed by the technical and business acumen demonstrated by IBM in its latest POWER systems offerings. The technology is impressive and serves notice that the venerable Power architecture is not at all in danger of becoming a stagnating dinosaur any time soon. But more impressive is how Big Blue has wrapped this technological achievement into a much larger and more sophisticated narrative about achieving more with less, and positioning financial efficiency on an even footing with energy efficiency and hardware utilization. In addition, IBM has done this on a sliding scale with solutions that are appropriate for the mid market while scaling up to enterprise class solutions and beyond. While the march of technological advancement will continue to amaze even the most jaded onlooker, the challenge for vendors is how to capture the mindset of their customers and unequivocally demonstrate how their customers' technology investments will drive business performance and ultimately financial success. To our way of thinking, Smarter Planet, holistic systems management, and POWER7 are great examples of this in action.