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Ask IDEAS: Help Us Help You

A Letter from Stephen Bowhill, CEO

As many of you know, IDEAS has a long history of supplying competitive intelligence to the sell side of the IT industry. For over 20 years, IDEAS has been a premier supplier of tactical and strategic market intelligence to the largest global IT vendors. We are proud to report that our Competitive Profiles service now hosts over 10,000 registered users across vendor, partner, and a growing group of large corporate end-user organizations.

Over the last decade, IDEAS expanded into "end user land" to help corporate customers with their IT decision making. Currently, over 50 of these corporate customers around the world use our Competitive Profiles service to facilitate their system selection. Our server consolidation service, Server CAR, is also growing in popularity with many of these clients across the globe. We are looking forward to introducing new vendor, partner, and end-user services through 2010 to provide more of the "actionable intelligence" services that IDEAS is known for. It is also welcoming that, in addition to a growing base of direct subscription business, we are seeing growth in the reader base of this newsletter as well as increasing activity in our newer Twitter, Facebook, and Linked In communities. In fact, over 800 readers from end-user corporations – as well as over 500 from business partners, resellers, and consultants – follow the trends and analysis that we report on in *Tech Trends Monthly*. These are in addition to the very substantial vendor reader base.

IDEAS is committed to finding new ways to serve our reader community, and increasingly, to address questions that end users may need answered independently. As part of this effort, we are creating a new column in *Tech Trends Monthly* called "Ask IDEAS," in which we invite readers to send in questions to AskIDEAS@ideasinternational.com. We want to know the issues on your mind within the world of datacenter infrastructure. For example:

- » Do you have a deep dive technical question on servers or storage?
- » Do you have a question on storage or server performance?
- » Do you need insight into services pricing?
- » Do you have a broad question on alliances (for instance the recent VCE alliance)?

Each month we will answer the best question that is submitted from our end-user, partner, integrator, or consultant readers – so fire away! Please feel free to advise your colleagues about *Tech Trends Monthly* and this new column and to refer them to the subscription URL (<http://www.ideasinternational.com/Misc/MSC060.aspx>).

"Ask IDEAS" is just the first of several forthcoming IDEAS resources designed specifically for end users and new, targeted communities. These enhancements will be announced in *Tech Trends Monthly* upon launch, so stay tuned. In the meantime, please submit your questions to: AskIDEAS@ideasinternational.com.

Once again we thank you for reading and your continued interest in, and loyalty to, Ideas International.

Sincerely,



Stephen Bowhill
CEO, Ideas International



IBM Introduces First POWER7 Servers

Andrew Dun, Senior Analyst

On February 8, IBM released its next-generation POWER7 processor as well as the first four midrange servers that use it. The new servers are the Power 750 Express, Power 755, Power 770, and Power 780, which roughly replace the POWER6-based 550, 560, and 570 (see Table 1, below, for details). The Power 750 Express is a 4U, four-socket rackmount server, while the Power 755 is an HPC version of the 750. The Power 770 and 780 are new modular servers that scale from two to eight sockets using dual-socket, 4U modular building blocks. The POWER7 processor is initially available with four, six, or eight cores enabled running at speeds from 3 GHz to 4.1 GHz.

POWER7 Processor Details

The new POWER7 processor heralds the first increase in cores per chip on the POWER architecture since IBM introduced dual-core computing with the POWER4 in 2001. The POWER7 has eight cores per chip and a total of 32 MB of L3 cache; it is available with four, six, or all eight cores enabled. In the six-core and eight-core variations of the chip, 4 MB of L3 cache is assigned to each core – meaning that in the six-core

chips there is only 24 MB of L3 cache available to the system. IBM also offers a “TurboCore” option for the Power 780, which has four cores running at 4.1 GHz with 8 MB of L3 cache per core.

New features added with the POWER7 processor include Intelligent Threads SMT optimization and Active Memory Expansion. Intelligent Threads is a workload optimization feature that dynamically manages SMT enablement. SMT operates in three modes – single thread, dual thread, or quad thread per core – and the Intelligent Threads feature is designed to select the best mode for the current workload. Active Memory Expansion, which requires AIX 6.1, uses data compression to increase the effective memory capacity of the server beyond the physical installed capacity.

POWER7 Performance Highlights

According to IBM’s published internal relative performance estimates, the maximum configuration of the Power 750 server improves performance by a factor of 3.2 when compared to the maximum configuration of the POWER6/6+-based Power 550. Compared to the highest configuration of the POWER6/6+-based POWER 570, the new Power 770 improves performance by around 2x, while the Power 780

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Table 1 – Summary of New POWER7 Servers

System	Processors	Max. Chips	Max. Cores	Max. Memory	Size
Power 750 Express	3.3 GHz 6 co	4	24	512 GB	4U
	3 GHz 8 co	4	32		
	3.3 GHz 8 co	4	32		
	3.55 GHz 8 co	4	32		
Power 755	3.3 GHz 8 co	4	32	256 GB	4U
Power 770	3.5 GHz 6 co	8	48	1 TB	4 - 16U
	3.1 GHz 8 co	8	64		
Power 780	3.8 GHz 8 co	8	64	1 TB	4 - 16U
	4.1 GHz 4 co	8	32		

under the same measure shows a 2.5x improvement.

In addition to announcing internal performance estimates, IBM has published a number of benchmark results on its website. One of these is a Power 750 SAP R/3 SD 2-Tier result that – when compared to results recorded by the Power 550 under the same workload – shows performance gains beyond those indicated by the internal IBM metric (see Table 2, below).

Power 750 Express Details

The Power 750 Express is a four-socket, 4U rackmount server. It replaces the current-generation Power 550 server in the IBM Power Systems server family. It supports four POWER7 processor cards with 6 cores active at 3.3 GHz, or 8 cores active at 3 GHz, 3.3 GHz, or 3.55 GHz, thus scaling up to 32 cores per system. The 8-core 3.55 GHz option is only available in a full 32-core configuration while the other options can scale from one to four processor cards. Each processor card supports 256 KB of L2 cache, 4 MB of L3 cache per core, and up to 128 GB of memory for a system maximum memory capacity of 512 GB.

The main Power 750 enclosure has eight disk bays, three PCIe slots, and two PCI-X slots. Disk and I/O capacity can be expanded via the addition of up to four 12 x PCIe drawers or eight 12 x PCI-X drawers. The maximum number of disk bays with all I/O drawers configured is 584.

The Power 750 supports AIX 5.3 and 6.1; IBM i 6.1.1; and SUSE Linux

Enterprise Server 10 (SP3) and 11. Support for Red Hat Enterprise Linux is expected later in the first half of 2010. PowerVM Express, Standard, or Enterprise is optional. Systems Director Express is included; Standard and Enterprise editions are optional. A one-year, 9x5, next-business-day warranty is included in the US.

Power 755 Details

The Power 755 is essentially an HPC version of the Power 750. Housed in the same 4U form factor, it is only available in 32-core configurations at 3.3 GHz. The Power 755 is designed to be integrated into clusters of up to 64 nodes and is intended for applications that require highly parallel processing. It has the same eight drive bays as the base Power 750 but does not offer RAID. The internal I/O slots are also the same as the Power 750's, but external I/O expansion is not supported. Each processor card supports 64 GB of memory for a maximum of 256 GB – half that of the Power 750.

Supported operating platforms at launch are AIX 5.3 and 6.1, as well as SUSE Linux Enterprise Server 10 (SP3) and 11, with Red Hat Linux to follow. IBM i is not supported nor is PowerVM. Systems Director Express is included; Standard and Enterprise editions are optional. A one-year, 9x5, next-business-day warranty is included in the US.

The Power 755 differs considerably from the specialty HPC offerings in previous generations of Power servers. The previous specialty HPC server, the Power 575, is a 16-socket server in a unique,

water-cooled, 2U clamshell form factor. In contrast, the Power 755 uses the 4U Power 750 chassis. IBM may yet release a new POWER7 version of the Power 575 as it completes the rollout of the new processor.

Power 770 Details

The Power 770 is the next-generation replacement of the Power 570. It uses a similar design with up to four 4U building blocks. However, while each building block in the Power 570 houses four processor chips, in the Power 770 there are only two, cutting the total number of processor sockets in half. The increased core count of the POWER7 processor makes up for this, with the maximum number of cores supported reaching 64, compared to 32 in the Power 570.

The Power 770 consists of up to four 4U modular building blocks. Each of these blocks houses a single two-socket processor card with 16 DDR3 DIMM slots. Two different processor options are initially available: a six-core option at 3.5 GHz and an eight-core option at 3.1 GHz. Each core has 256 KB of L2 cache and 4 MB of L3 cache. Maximum memory per building block is 256 GB, for a system maximum of 1 TB; however, this number will double when 32 GB DIMMs become available in November.

Each building block has six hot-swappable disk drive bays and six hot-plug PCIe I/O slots. Additional I/O and storage expansion is available via up to sixteen 12x PCIe expansion drawers or

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Table 2 – Power 550 vs. Power 750 (SAP R/3 SD 2-Tier)

Product	Date	Processor	Clock	Chips	Cores	Memory	Users	SAPS	Steps/Hr
IBM - Power 750	08-Feb-10	POWER7	3.55	4	32	256.00	15,600	85,220	5,113,000
IBM - Power 550	01-Jun-09	POWER6+	5.00	4	8	64.00	3,752	20,520	1,231,000
IBM - Power 550	23-Jan-08	POWER6	4.20	4	8	64.00	3,104	15,630	938,000

thirty-two 12x PCI-X drawers. Additional building blocks can be hot-added without powering down the system. Processor and memory capacity on demand (CoD) is available either as a 30-day trial (Trial CoD), as required (On/Off CoD), or permanently (Capacity Upgrade on Demand [CUoD]).

The Power 770 supports AIX 5.3 and 6.1; IBM i 6.1; and SUSE Linux Enterprise Server 10 (SP3) and 11. Red Hat Linux support is expected later in the first half of 2010. PowerVM Standard or Enterprise are available as options. Systems Director Express is included while Standard Edition and Enterprise Edition are optional. The Power 770 will be available with a one-year, 9x5, next-business-day warranty included in the US.

Power 780 Details

The Power 780 is physically similar to the Power 770 in that it can use one to four of the same two-processor, 4U building blocks. The processor support however, is different. The Power 780 supports an eight-core POWER7 processor running at 3.8 GHz with 4 MB of L3 cache per core or a four-core "TurboCore" option running at 4.1 GHz with 8 MB of L3 cache per core. Two other factors set the Power 780 apart from the Power 770:

- » It has a one-year, 24x7, same-day warranty (compared to 9x5 next business day)
- » AIX and other system software are charged at a "large tier" rate compared to "medium tier" on the 770

Availability and operating system support for the Power 780 is the same as that for the Power 770.

Competitive Landscape

The new IBM servers will initially compete against similar-scaling servers from HP's Integrity Line and from Fujitsu and Oracle's SPARC Enterprise server line. Intel has announced the next-generation Itanium 9300 four-

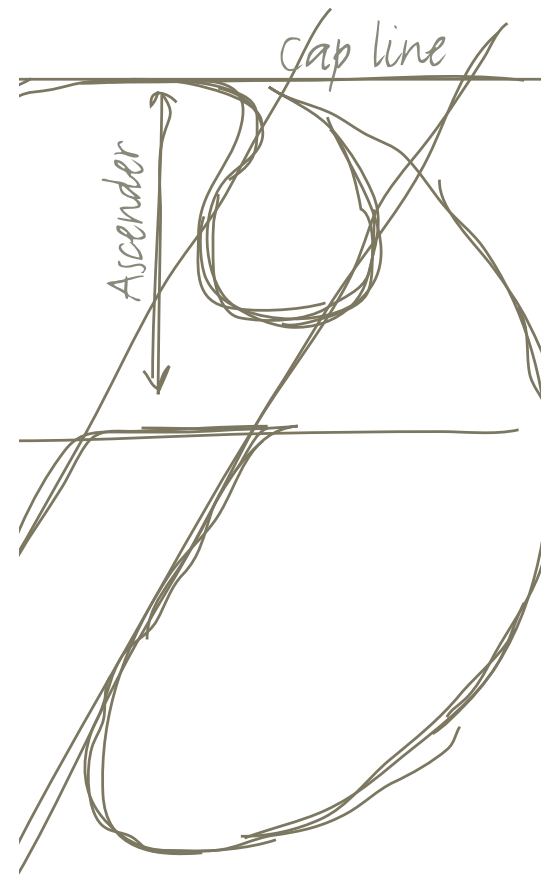
core processors, which are expected to feature in the next-generation HP Integrity servers soon. Also expected soon are Intel "Nehalem-EX" processors, which take Intel's highly successful "Nehalem" architecture into servers with four sockets and above. IDEAS anticipates that the introduction of Nehalem-EX will increase the level of competition between industry-standard x86 servers and high-end UNIX systems.

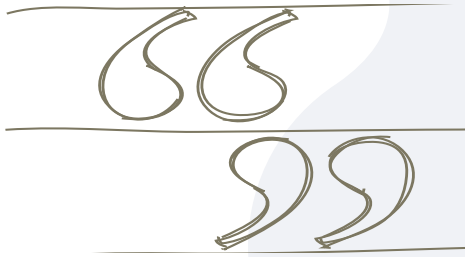
The IDEAS Bottom Line

POWER7 will give IBM's UNIX systems a dramatic push forward at a time when the forces affecting the UNIX market are shifting. Intel's forthcoming Nehalem-EX processor will undoubtedly enable x86-based systems – including IBM's own System x servers – to be considered for a growing range of enterprise workloads that would have been hosted on UNIX servers before. At the same time, traditional UNIX competitors are not standing still. HP is working hard to get its Tukwila-based servers out the door, while Sun's SPARC servers will be reinvigorated by their integration into Oracle's portfolio, and their promotion by Oracle's global sales and marketing resources.

While some may question the future growth of the UNIX market overall, IBM is steering the positioning of POWER7 systems away from any particular market classification, seeking instead to focus on workloads that will achieve the greatest benefit from the core capabilities of POWER7 systems. Thus, IBM draws attention not only to the raw computing power of the POWER7 processor, but also to the ability of POWER7 systems to balance different modes of computing with optimal use of I/O and memory resources. This balance is intended to enable systems to process very large numbers of transactions and huge volumes of data in real time. With these qualifications, IBM will target POWER7 systems at workloads in the areas of transaction processing; analytics, and High Performance

Computing (HPC); business process hosting; and hosting web/collaboration services (whereby the latter two targets may be more opportunistic for POWER servers, and might also be served by other IBM platforms). The UNIX label itself is therefore becoming less relevant. What POWER7 will give customers is confidence that their systems can take on some of the most demanding workloads in the industry with great flexibility. ■





IDEAS Insights

Blog Bites (<http://www.ideasint.blogs.com>)

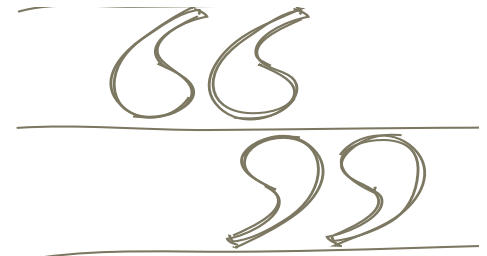
In a poll conducted by **The Green Grid**, 60% of the managers concerned about **power efficiency** were implementing **virtualization** to achieve targets. One speaker discovered that large IT environments follow the 20-80 Pareto principle, with **20% of the servers doing 80%** of the workload. If true, the **potential for virtualization** is obvious.

From “**Green Grid Forum Reveals Progress on Energy Efficiency Metrics**”

Chris Gaun | February 9, 2010

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Although Windows and Linux run on **Itanium**, and other Itanium OEMs are part of the Itanium Solutions Alliance, it appears that Itanium is primarily an HP-UX HP Integrity platform. Since HP-UX does not run on Xeon, the **Common Platform** similarities with Xeon will not likely lead to an exodus from Itanium, but rather **reinvigorate HP Integrity price/performance** competitiveness. Furthermore, the socket-compatibility of **Tukwila/Poulson/Kittson** will offer investment protection for years to come.



From “**Servers Energized by New Crop of Processors**”

Richard Partridge | February 9, 2010

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