



FACT SHEET: IBM POWER6 VIRTUALIZATION

The IBM POWER6 processor, the world's fastest computer chip, features industry leading virtualization capabilities. With the new processor, IBM is heralding performance advances including live partition mobility, enhanced performance, scalability, flexibility, dynamic reallocation of resources and power and cooling benefits. These advancements extend the virtualization capabilities and benefits of the POWER6 chip which will run in IBM's System p, BladeCenter, System i and Storage offerings as early as June, 2007.

Live Partition Mobility

As an industry first for enterprise class UNIX platforms, the Live Partition Mobility (LPM) feature allows clients to move running partitions automatically from one POWER6 server to another, without application downtime. This unique capability allows virtual servers to be moved without powering down the server and allows administrators to utilize large groups of POWER6 enabled servers as one fluid pool of computing resources instead of thinking of each virtual server as its own resource with a dedicated purpose. The feature also reduces potential downtime that may otherwise be experienced when performing hardware maintenance or physical server relocation. Users can save as much as 50 percent of the cost of unplanned downtime over a five year period with LPM.

Enhanced Performance

The fastest microprocessor ever built, POWER6 has hit speeds of 6 GHz in the lab and, for the first time ever, holds all three major benchmark speed records for business and technical performance. This speed and performance is important for clients seeking to virtualize their infrastructures because the additional speed translates into greater available computing power for enterprise applications running in virtualized environments.

Expanded Scalability

POWER6 is considered the world's "most powerful consolidation machine." With the new POWER6 processor, clients can create up to 160 virtual servers (up to 10 virtual machines on each of the sixteen core processors) in a single box. The processor also allows unprecedented granular control of the chip allowing access to areas as small as one one-hundredth of a processor. Users can also create virtual machines which span the entire system, thus affording much greater flexibility over the size of each virtual machine to ensure proper handling of enterprise applications. These capabilities allow clients to run all kinds of different workloads – from large scale database transactions to web servers to LAMP stacks (Linux, Apache, MySQL® and PHP/Perl/Python), all on the same server while also meeting user "on-demand" changes for spikes and drops in workloads on individual virtual machines. Users can optimize their environment for scalability when workloads increase and decrease.

Increased Flexibility

The POWER6 chip allows greater flexibility in how the chip and its resources such as processor or memory are used. Clients decide what resources to share and what resources to dedicate and can even split resources and host shared and dedicated environments on the same system. POWER6 has virtualization capabilities through the system's POWER hypervisor firmware (pHYP) that makes virtualization a priority for hardware and allows the chip's full range of capabilities to be utilized by each virtual machine while allowing for a mix of capped and uncapped partitions within a virtualized environment. These capabilities, combined with scalability to the hundredth-of-a-server level, allow far greater freedom and flexibility than any other offering on the market.

Dynamic Reallocation of Resources

As part of the overall flexibility of the POWER6 chip, IBM has built dynamic reallocation capabilities into the chip allowing much greater freedom for the user, and in some cases the chip itself, to reallocate and reassign computing resources within the shared environment. POWER6 server clients, unlike those using competitor servers, can modify their memory and I/O configurations in real time, without downtime, to ensure enough speed and computing resources are available to individual virtual machines when and where they are needed. This capability can accommodate workload spikes and gives users greater confidence to run larger "enterprise applications" and more dynamic workloads within a virtualized environment.

Improved Power and Cooling Benefits

The newest addition to IBM's Project Big Green initiative, the POWER6 chip allows users unparalleled power savings on mid-range servers. The dual-core POWER6 processor drops to 35 percent of usual power consumption when idle and, when active, doubles previously available speed while using the same amount of electricity to run and cool it. Therefore, simply by upgrading to the new processor (not including taking advantage of the other power saving features of the chip) customers can cut their power consumption in half. Also through Live Partition Mobility and virtualization, customers can save energy by relocating and consolidating active workloads to free up and potentially power down unneeded servers.