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IBM eServer p5: Performance and Virtualization at New Heights

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The IBM eServer p5 590 and 595 are the latest offerings in the pSeries with a level of raw computing and virtualization performance that is unprecedented in the marketplace. The p5 595 features the performance of up to sixty-four POWER5 processors (p5 590 up to thirty-two processors) with Capacity on Demand (CoD), the flexibility and efficiency of IBM's Virtualization Engine and Hypervisor, and support for multiple operating systems including AIX 5L, Linux, and i5/OS. The TPC-C benchmark illustrates the ability of the p5 to achieve high levels of throughput while providing state-of-the-art computational prowess. The p5 595 is an ideal platform for UNIX and Linux workload consolidation that provides enterprises with management and operational cost savings through a simplified, high-performance, low-risk, and cost-effective solution. The p5 590 is just as capable as the p5 595, but is a price performer scaled to meet the needs of those with smaller computational workloads.

Sizing Up the p5 590 and 595: Price Performance and Unbridled Performance

Over time, the market has witnessed the evolution and growth of applications to proportions that a decade ago would have been unfathomable. The advent of the Internet, continued demands for high-performance scientific and research computing, and large-scale commercial investments in IT have shaped a marketplace that demands innovative, high-performance solutions that are also simple, offer positive ROI, and reduce operational costs and headaches. At the same the evolving value chain between the enterprise and its customers, partners, and suppliers requires that IT resources be flexible and robust, and respond in real time to the needs of the enterprise as well as its partners and customers. IT must not only support existing applications, but also provide a future proof environment on which to cost-effectively deploy applications as needed while being able scale over time.

The IBM eServer p5 590 and 595 raise the bar for high-performance and cost-conscious computing. With the capability to host up to sixty-four processors (thirty-two through CoD), the p5 595 is a capable player for the enterprise or datacenter marketplace. The smaller p5 590 is no performance slouch, as it scales up to thirty-two processors, and still offers the same mainframe-inspired technologies as the p5 595, including the Virtualization Engine and Hypervisor. These latest eServers are able to consolidate multiple servers and workloads throughout the enterprise onto a single, centrally managed resource. Even though these systems scale handsomely, the reality is that for most there will be few, if any, single image 64-way applications. The power of these systems' scaling is the unique capability to share resources through the Virtualization Engine with CPU increments as small as one-tenth of a processor.

The p5 590 features eight to thirty-two POWER5 1.65GHz processors and up to 1TB of memory, whereas the p5 595 features sixteen to sixty-four POWER5 1.65GHz or 1.9GHz processors and up to 2TB of memory. All of this computing power is made available to applications executing in up to 254 logical partitions within the system. Compared to the previous generation pSeries 690, these p5 eServers at a 32-way configuration offer 50% higher performance at 40% lower price point with eight times the number of partitions and 50% more I/O capacity.

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Consolidating Multiple Systems onto a Single Virtual Solution

With the continued focus on cost rationalization throughout the business, IT managers have the option to reduce their cost structure through consolidation and simplification of their IT footprint. While there are several virtualization schemes available in the marketplace, the "virtualization from the onset" design of the POWER5 processor allows pSeries solutions to achieve virtualization with a granularity and manageability that surpasses that of other Open Systems and x86-based solutions. The eServer p5's ability to be dynamically partitioned to support multiple instantiations of OS environments provides IT managers the ability to run Linux, AIX 5L, and even i5/OS, all within the context, manageability, and simplicity of a single server. This translates into utilization rates (read improved ROI) that most enterprises have never experienced with their UNIX or Linux installations. The IBM eServer p5 590 and p5 595 offer organizations the opportunity to consolidate, simplify, and lay the groundwork for future expansions while leveraging existing software. The combination of sheer compute power with unprecedented virtualization in a non-mainframe environment positions the eServer p5 as the consolidation with flexibility platform to beat.

The TPC-C Benchmark: Seeing is Believing

The TPC-C benchmark is an industry standard for measuring a server's ability to process complex queries and large volumes of business data. The IBM eServer p5 595 achieved a benchmark 3,210,540 transactions per minute (tpmC). At present, this is the highest benchmark achieved by any server in the marketplace posting TPC results. The following table summarizes the eServer environment that established the new benchmark:

System	IBM eServer p5 595
Processors	Sixty-four POWER5 processors (1.9 GHz)
Database	DB2 Universal Database v8.2
Operating System	AIX 5L V5.3
TpmC (TPC-C Version 5.0)	3.21 million transactions per minute
Cost per tpmC	$5.19

The POWER5-based eServer pSeries has unique firmware and hardware capabilities including the Hypervisor and LPARs. The high benchmark achievement is made possible by the combination of the p5 595 hardware with AIX 5L Version 5.3 and its simultaneous multi-threading and Virtualization Engine technology. The IBM DB2 Universal Database v8.2 provides autonomic computing features including its ability to automatically manage and optimize the fastest path to business data without human intervention.

What Does It All Mean?

The eServer p5 590 and p5 595 offer price-competitive and unbridled performance. Enterprises with UNIX and Linux workloads that are seeking to consolidate existing IT footprints may find the eServer p5's support for multiple OS partitions and resource allocations an intriguing solution with demonstrable benefit. The enhancements to CoD with this latest eServer provide organizations a simple and straightforward option to tap additional computational resources to react to spikes in demand, or to scale IT resources to fit the needs of the business. This highly scalable virtualized environment can provide organizations with substantial cost savings in their IT operations through physical consolidation and simplicity as well as state-of-the-art management facilities.

Whether it is infrastructure simplification or the ability to expand and meet new computational demands, enterprises will likely find that the eServer p5 595 is an ideal way to meet both requirements. The IBM eServer p5 offers solutions for today's IT issues — such as consolidation and simplification — while also providing a stable and extensible foundation for meeting tomorrow's needs. Enterprises seeking a competitive edge in their IT operations are well advised to consider the value proposition offered by the IBM eServer p5 595.