Flagship UNIX and Linux server designed to drive business innovation

IBM @server p5 595 server

Highlights

- ***Provides the power for mission-critical workloads with up to 64 IBM POWER5 processors***
- ***Helps to lower costs and ease administration by consolidating UNIX, Linux and i5/OS environments***
- ***Offers mainframe-inspired reliability, availability and serviceability features for an on demand world***

To succeed in an on demand world, enterprises need computer systems with the power to compete in a global marketplace, the reliability to operate around the clock, the agility to react swiftly to changing market conditions and the flexibility to run the applications required to meet their goals. The IBM @server p5 595 server is designed to help companies conquer those challenges to achieve a competitive edge.

As the most powerful IBM @server p5 system, the p5-595 server can deliver exceptional performance, reliability, scalability and flexibility—enabling businesses to tackle workloads that were previously beyond the reach of a single UNIX® system. Equipped with advanced 64-bit IBM POWER5™ processors in up to 64-way symmetric multiprocessing (SMP) configurations, this server was built to provide the processing power for a full range of complex, mission-critical applications with demanding processing requirements, including business intelligence (BI), enterprise resource planning (ERP), transaction processing and ultra high performance computing (HPC). With twice the number of processors, twice the memory capacity and nearly three times the commercial performance of the previous top-of-the-line IBM @server pSeries 690 server,[1] the p5-595 can ultimately help companies make decisions faster and drive business innovation.

Delivering advanced IBM Virtualization Engine™ systems technologies such as Micro-Partitioning™ capabilities and offering Capacity on Demand (CoD) options, this server can scale rapidly and seamlessly to address the changing needs of an on demand environment. The p5-595 can execute the AIX 5L™, Linux® and i5/OS™ operating systems simultaneously to offer the flexibility to run the applications businesses need to achieve their goals. And, extensive mainframe-proven reliability, availability and serviceability (RAS) features can help ensure that the system will be ready for business 24 hours a day, 7 days a week.

Fast processors tackle complex workloads

The **@server** p5 595 features advanced fifth-generation POWER5 microprocessors, with lightning-fast speeds of 1.9 GHz or 1.65 GHz, to deliver exceptional performance. With these powerful processors, the p5-595 can process larger, more complex workloads, in less time, than the previous generation of IBM UNIX and Linux servers.

Built with 64-bit capabilities, POWER5 processors can run tomorrow's 64-bit applications today, while concurrently supporting 32-bit applications to enhance flexibility. The POWER5 processor also features simultaneous multi-threading capabilities, allowing the processor to run two application "threads", at the same time, which can significantly reduce the time to complete tasks. With the p5-595, you have the freedom to choose the operating environment and applications that best fit business needs, and you can have the confidence that this server will be ready to handle future requirements as well.

Innovative server packaging enhances performance and reliability

The p5-595 uses advanced Multichip Modules (MCMs) to accelerate performance and help ensure system reliability. Each dense MCM contains eight microprocessors in an area that could fit in the palm of your hand. By decreasing the physical distance between processors, MCMs enable faster movement of information and increase reliability.

MCMs are assembled in "books", each containing two eight-way MCMs. This form of packaging helps to insulate components from physical damage and improves reliability. With up to four books per server, the p5-595 offers up to 64-way processing, providing significant performance gains over predecessor servers.

Capacity on Demand enables exceptional scalability

The p5-595 starts with a 16-way entry server configuration, but it can be scaled seamlessly to a 64-way server. Adding processor power could not be easier: whenever an organization needs to improve performance, it can activate additional inactive processors (in one processor increments) or memory (in 1GB increments), already installed in the system frame, through Capacity on Demand (CoD) options. With CoD, you can respond transparently to either temporary spikes in demand or long-term increases in workloads.

Several types of CoD options are available for the p5-595. These options use resources already installed in the system but not activated at the time of the original purchase:

- ***Capacity Upgrade on Demand (CUoD)*** *allows companies to purchase additional permanent processor or memory capacity that can be activated when needed.*
- ***Trial CoD*** *offers a one-time, 30-day trial at no additional charge to allow clients to explore the uses of added processor or memory capacity on their server.*

- ***Reserve CoD*** *allows companies to purchase processor features in prepaid blocks of 30 processor days and activate them in full day increments in response to workload demand. They can then deactivate the processors automatically when demand subsides.*
- ***On/Off CoD*** *enables processors or memory to be activated in full day increments as needed.*
- ***Capacity BackUp on Demand*** *will provide inactive CoD processors activated using On/Off CoD in disaster recovery situations. This function is planned for availability in the first quarter of 2005.*[2]

Virtualization and partitioning capabilities help consolidate servers and workloads

Advanced IBM Virtualization Engine system technologies with Micro-Partitioning capabilities bring a new dimension to UNIX and Linux computing. Using the IBM Virtualization Engine technology (a standard feature for this server), the p5-595 can run multiple operating systems on the same server. Dynamic Micro-Partitioning capabilities enable processors to be subdivided to handle multiple workloads at once. The p5-595 can handle 10 micro-partitions per processor, or up to 254 total per server.

[2] All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

IBM logical partitioning (LPAR) technology enhances the security of applications with Evaluation Assurance Level 4+ (EAL4+) and Controlled Access Protection Profile (CAPP) certification. The system is designed to shield application data running in one partition from data in another partition to provide a high level of data security and increased application availability.

All of these capabilities allow server resources to be readjusted so that companies can respond more readily to changes in requirements. In addition, more services can be consolidated on each server—which can lower licensing costs and reduce the complexity of server management.

The p5-595 offers extensive configuration options

The p5-595 is designed to grow with a business. Add processors, memory, I/O drawers, adapters and disk bays to realize the potential power and capacity of the p5-595.

Equipped with 8GB of memory in its basic configuration, the p5-595 can be scaled to 2TB. The server also features 7.6MB L2 and 144MB L3 caches in each MCM to help stage information more effectively from processor memory to applications. These caches help the p5-595 to run workloads significantly faster than predecessor servers.

The processor MCMs, L3 cache and memory books are packaged into a 24-inch frame. This frame, which contains 42 EIA units (42U) of rack space, uses a bulk power subsystem with redundant hot-plug bulk power assemblies to provide power for other p5-590 components.

At least one I/O drawer is required with 20 PCI or PCI-X adapter slots and 16 hot-swappable Ultra3 SCSI disk bays for 36.4GB or 73.4GB 15K rpm disk drives. With support for 64-bit adapters and backward compatibility for 32-bit cards, these slots provide investment protection and ample room for growth. Hot-plug/blind-swap slots also allow administrators to insert and remove adapters with the I/O drawer in place, which helps prevent system interruption and improves availability.

Up to four I/O drawers and a primary and redundant optional integrated battery backup feature may be installed in the system frame. For more capacity, up to two expansion frames are available allowing a maximum of 12 I/O drawers. This results in a maximum of 240 PCI-X slots and 192 disk storage bays accommodating up to 14TB of disk storage.

RAS features help ensure availability of mission-critical applications

The p5-595 is designed to provide new levels of proven, mainframe-inspired reliability, availability and serviceability for mission-critical applications. It comes equipped with multiple resources to identify and help resolve system problems rapidly. During ongoing operation, error checking and correction (ECC) checks data for errors and can correct them in real time. First Failure Data Capture (FFDC) capabilities log both the source and root cause of problems to help prevent the recurrence of intermittent failures that diagnostics cannot reproduce. Meanwhile, Dynamic Processor Deallocation and dynamic deallocation of PCI bus slots help to reallocate resources when an impending failure is detected so applications can continue to run unimpeded. If problems do arise, a finely grained L2 cache and improved L3 cache line delete capabilities are designed to protect data.

The p5-595 also includes structural elements to help ensure outstanding availability and serviceability. The 24-inch system frame includes hot-swappable disk bays and PCI slots that allow administrators to repair, replace or install components without interrupting the system. Redundant hot-pluggable power and cooling subsystems provide power and cooling backup in case units fail, and they allow for easy replacement. In the event of a complete power failure, Early Power Off Warning capabilities are designed to perform an orderly shutdown. In addition, both primary and redundant battery backup power subsystems are optionally available.

Future planned capabilities will enhance RAS features.[3] A redundant service processor will help the available service processor prevent outages and identify failing components by continuously monitoring system operations and taking preventive action for quick problem resolution. Dynamic firmware update capabilities will allow administrators to update servers without taking them offline.

The p5-595 is also backed by worldwide IBM service and support. The one-year end-to-end warranty includes AIX 5L operating system support, hardware fixes, staffed phone hardware support and call tracking.

[3] All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

The p5-595 has the flexibility to run needed applications

The p5-595 can run the AIX 5L, Linux and i5/OS operating systems (OS) simultaneously on the same server, giving the flexibility to support an extensive range of applications while also saving money.

AIX 5L is an industrial-strength IBM UNIX environment specially tuned for mission-critical applications and loaded with exceptional security, reliability and availability features. The AIX 5L operating system delivers enhancements to Java™ technology, Web performance and scalability for managing systems of all sizes—from single servers to large, complex e-business installations. Web-based remote management tools give administrators centralized control of the system, enabling them to monitor key resources, including adapter and network availability, file system status and processor workload.

The AIX 5L OS also incorporates AIX 5L Workload Manager, a resource management tool that specifies the relative importance of workloads to balance the demands of competing workloads and enhance system resources. Workload Manager can help ensure that critical applications remain responsive even during periods of peak system demand.

i5/OS is the next generation of OS/400®, building on and extending the capabilities of that operating system. i5/OS can help streamline processes and deploy business applications faster with its integrated, pretested database and middleware. By supporting a comprehensive set of open and SQL standards, i5/OS also allows outstanding flexibility and code portability. Extended data partitioning allows you to perform scheduled maintenance and switch database objects to other systems easily, helping to minimize interruptions to normal operations.

By supporting the Linux operating system, the p5-595 offers important cost-saving opportunities. Because Linux is an open source technology, it is much less expensive to license than many proprietary operating systems. With a growing list of Linux applications available, it offers businesses the freedom to use the right applications for their needs. The Linux OS is available from one or more Linux distributors in packages that include a range of open source tools and applications. With the extensive IBM commitment to Linux, you have access to expert service and support.

The new IBM flagship for UNIX and Linux computing

With the p5-595 server, you can achieve outstanding, leading-edge performance, scalability, reliability and flexibility at an extremely attractive price. Using innovative POWER5 processors in partitioned configurations and accessing advanced IBM Virtualization Engine system technologies with Micro-Partitioning capabilities, this server can help complete more transactions, solve even larger problems and conduct more complex queries than predecessor servers. This can be accomplished with a smaller footprint, allowing you to consolidate your server infrastructure, reduce the complexity of systems administration and optimise required resources. With the ability to use multiple operating systems simultaneously, you have great flexibility to run a variety of applications you need. Extensive RAS features are designed to help applications run reliably around the clock.

With its expansive growth potential, extraordinary power and proven IBM technology, the IBM **@server** p5 595 is ready to take your business to the next level.

IBM @server p5 595 server at a glance

Minimum configuration	
Microprocessors	16-way SMP (two eight-way MCMs); 1.65GHz or 1.9GHz POWER5 microprocessor
L2 cache	7.6MB/MCM
L3 cache	144MB/MCM
RAM (memory)	8GB
Disk bays	16 hot-swappable via one I/O drawer
I/O Drawers	One
Expansion slots	20 hot-plug/blind-swap PCI-X via one I/O drawer
PCI bus width	32- and 64-bit
Standard features	
I/O adapters	Two integrated dual Ultra3 SCSI controllers
Ports	Two serial ports for connecting Hardware Management Console
System expansion	
SMP configurations	32-, 48- and 64-way SMP (four-, six- or eight MCMs); 1.65GHz or 1.9GHz POWER5
RAM	Up to 2TB of DDR1[1] memory; up to 256GB of DDR2[2]
PCI-X expansion slots	Up to 240 adapters via 12 I/O drawers
Connectivity support	2 Gigabit Fibre Channel
Disk bay expansion	Up to 192 hot-swappable disk bays via 12 I/O drawers; up to 14TB of total disk storage (36.4GB and 73.4GB 15K rpm disk drives available)
Logical partitioning support	Dynamic LPAR
IBM Virtualization Engine technology	Micro-Partitioning
	Shared processor pool
	Virtual LAN
	Virtual I/O
Battery backup	Up to two (optional)
RAS features	Copper, silicon-on-insulator (SOI) microprocessors
	Dynamic firmware updates (planned for 1Q2005)
	IBM Chipkill™ ECC, bit-steering memory
	ECC L2 cache, L3 cache
	Service processor
	Redundant service processor (planned for 1H2005)
	Redundant system clock requiring system reboot
	Hot-swappable disk bays
	Hot-plug/blind-swap PCI-X slots
	Hot-plug power supplies and cooling fans
	Dynamic Processor Deallocation
	Dynamic deallocation of logical partitions and PCI bus slots
	Redundant power supplies and cooling fans
	Battery backup and redundant battery backup (optional)

IBM @server p5 595 server at a glance

Capacity on Demand features (optional)	Processor CUoD Memory CUoD* Reserve CoD On/Off Processor CoD On/Off Memory CoD* Trial CoD BackUp CoD (planned for 1Q 2005)
Operating systems	AIX 5L Versions 5.2/5.3 i5/OS V5.3 Linux • SUSE LINUX Enterprise Server 9 for POWER™ • Red Hat Enterprise Linux AS 3 for POWER Update 3
Power requirements	200v to 240v; 380v to 415v; 480v AC
System dimensions	One frame: 79.2" H x 30.9" W x 66.2" D (2,025mm x 785mm x 1,681mm) Weight: 2,887 lb (1,310 kg) Two frames: 79.2" H x 62.0" W x 66.2" D (2,025mm x 1,575mm x 1,681mm) Weight: 5,420 lb (2,458 kg)**
Warranty	24x7, same day service for one year (limited) at no additional cost; on-site for selected components; CRU (customer replaceable units) for all other units (varies by country).

* Using DDR1 266MHz memory

** With acoustic door and integrated battery backup. Weight will vary when disks, adapters and other peripherals are installed.

For more information

To learn more about the IBM @server p5 595 server contact your IBM marketing representative, IBM Business Partner or visit the following Web sites:

- **ibm.com**/eserver/pseries
- **ibm.com**/common/ssi

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

[1] Based on estimate of commercial performance of a 32-way p690 with 1.9GHz POWER4+™ processors compared with a 64-way p5-595 with 1.9GHz POWER5 processor.

IBM Systems and Technology Group
Route 100
Somers, NY 10589

Produced in the United States
October 2004

All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. Contact your local IBM office or IBM authorized reseller for the full text of the specific Statement of Direction.

Information contained herein may address anticipated future capabilities. Such information is not intended as a definitive statement of a commitment to specific levels of performance, function or delivery schedules with respect to any future products. Such commitments are only made in IBM product announcements. The information is presented here to communicate IBM's current investment and development activities as a good faith effort to help with our customers' future planning.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may not be new and may have been previously installed. Regardless, IBM warranty terms apply.

PSD00756-USEN-01