



Highlights

- For large-scale server consolidation to increase flexibility and lower operational and energy cost
 - For enterprises requiring the highest levels of resiliency for their mission-critical applications
 - For data centers supporting the largest UNIX and IBM i transaction processing and database applications
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IBM Power 795 server

Extraordinary scale, capacity and bandwidth for the most demanding enterprise applications

Every large enterprise relies on critical information. This information is derived from financial data, customer data and enterprise resource data that are held across multiple lines of business. Insights from this enterprise-wide critical information fuel both the core business processes and new services that redefine the customer experience in the large enterprise. To transform the management of this critical information and processes, these organizations rely on enterprise systems that are at the center of their IT infrastructure. These enterprise systems are defined by their ability to deliver trusted information across the enterprise, ensuring continuous transaction availability and enabling real-time business analytics. They provide the highest levels of security, ensuring the integrity of critical information while mitigating risk and meeting regulatory compliance mandates. And they deliver the utmost in infrastructure efficiency at enterprise scale, with flexible delivery models and dynamic resource management that can increase utilization while reducing operational costs.

The IBM® Power® 795 server is one of these enterprise systems. The Power 795 supports large-scale transaction processing and database applications within a highly virtualized system infrastructure, enabling new levels of workload consolidation, resource utilization, resiliency and efficiency. As the most powerful member of the IBM Power Systems™ family, this server provides exceptional performance, massive scalability and bandwidth to efficiently and concurrently support a full range of complex, mission-critical applications.



| Feature | Benefits |
|--|--|
| Exceptional POWER7 performance | <ul style="list-style-type: none"> • Improve response time, transaction processing efficiency and user productivity • Infrastructure cost savings from a reduction in the number of servers and software costs |
| Extraordinary scalability and capacity | <ul style="list-style-type: none"> • Deliver data faster for the needs of large-scale transaction processing and memory-intensive applications • Realize new levels of efficiency in operations from consolidating multiple workloads on fewer systems and enable new applications without adding new servers • High-density 24-inch system frame enables the most efficient, large scale consolidation and maximum growth • Offer flexibility and built-in redundancy so the system can grow with your business |
| Mission-critical reliability | <ul style="list-style-type: none"> • Designed to provide the highest levels of Power architecture reliability, availability and serviceability for 24x7 access to enterprise applications • Increases IT productivity by avoiding costly downtime and recovery • Can enable monitoring, detection and resolution of issues without disruption • Participation in the Power System Pool offering that can dramatically reduce planned downtime |
| Enterprise-class PowerVM virtualization | <ul style="list-style-type: none"> • Improves system efficiency to lower operational expense • Provides flexibility to rapidly respond to changing business requirements, including reallocation of system resources without rebooting affected partitions • Provides the ability to transparently share processing power and memory between partitions and to handle unexpected workload peaks by sharing resources • Enables energy savings and maintains application availability |
| Flexibility with Capacity on Demand | <ul style="list-style-type: none"> • Enables seamless growth by allowing standby processors and memory to be permanently added to meet long term workload growth • Provides temporary access to additional processors and memory to respond rapidly to changing business requirements • Provides the capability to move compute resources from one server to another to accommodate application workload requirements |
| EnergyScale innovation | <ul style="list-style-type: none"> • Helps lower data center energy costs without sacrificing performance or business flexibility • Enables management to understand power and cooling usage and better predict peak requirements |
| Broad business application support | <ul style="list-style-type: none"> • Provides the flexibility to select the right operating system and the right applications to meet needs • Enables enterprises to consolidate applications onto a more scalable, cost-effective system |

Equipped with up to 256 POWER7® processors the Power 795 server can scale rapidly and seamlessly to address the changing needs of today's business climate. Equipped with industry-leading PowerVM® virtualization, EnergyScale™ technology and affordable Capacity on Demand (CoD) options (including a specific number of Elastic CoD processors and memory days, dependent on the configurations that come standard with all new Power 795s), the Power 795 helps enterprises increase their productivity and effectively consolidate multiple UNIX, IBM i and Linux workloads onto a single system. Extensive mainframe-inspired reliability, availability and serviceability (RAS) features in the Power 795 help ensure that mission-critical applications run reliably around the clock. IBM clients with installed Power 595 systems may leverage their current investment in Power technology by upgrading their POWER6® system to a Power 795 to increase capacity and improve performance.

With extensive scalability, a fundamentally reliable design and expansive growth potential, the Power 795 server provides a solid foundation on which to deploy the most important applications in today's large enterprise data centers.

Exceptional POWER7 performance

The Power 795 server capitalizes on IBM's POWER7 processor technology to deliver dramatic improvements in price/performance, scalability, energy savings and virtualization for server consolidation. The performance of each POWER7 core also enables clients to deliver more processing power with fewer processors, resulting in lower per-core software licensing costs.

POWER7 processors feature Intelligent Threads technology, which further enables workload optimization by dynamically switching between threading modes. Each application can be run in the most suitable threading mode—either single thread per core, simultaneous multithread (SMT) with two threads per core, or SMT with four threads per core. As a result, applications can run at their peak performance and systems can increase their workload capacity.

One innovative feature offered on the Power 795 is the ability to switch between its standard MaxCore mode, optimized for throughput, and its unique TurboCore mode, where performance per core is boosted with access to both additional cache

and additional clock speed. Based on the user's configuration option, a Power 795 system can boot in MaxCore mode, enabling up to 256 processor cores running at 4 GHz or in TurboCore mode, enabling up to 128 processor cores running at 4.25 GHz with twice the cache per core, providing increased flexibility to optimize the system to an enterprise's specific application processing demands.

Also with POWER7 is the ability of the processor to run at a higher frequency if environmental conditions permit, resulting in increased performance; or alternatively run at a lower frequency if user settings permit, resulting in greater energy efficiency. Operating in concert with IBM Systems Director Active Energy Manager™, these Intelligent Energy features enables customization for maximum performance, maximum energy savings or a mixture of both.



Power 795 server

Extraordinary scalability and capacity

The Power 795 server is designed to grow with a business by offering extraordinary scalability and configuration flexibility. Processor books, memory, I/O drawers, adapters and disk bays can be easily added to realize the potential power and capacity of the system. The Power 795 server can scale up to an eight-book configuration of 192 or 256 cores by adding additional processor “books.” Each book contains four six-core or eight-core Single Chip Modules (SCMs), 32 memory DIMM slots, four I/O ports and two service processors. Dual service processor packaging per book helps improve reliability and availability by reacting to error conditions quickly and effectively.

A Power 795 system offers tremendous memory capacity and bandwidth, supporting up to 16 TBs of enhanced DDR3 memory. Active Memory™ Expansion is a POWER7 technology, which allows the effective memory capacity of the system to be much larger than the true physical memory. Innovative compression/decompression of memory content can allow memory expansion up to 100 percent. This can allow a partition to do significantly more work with the same physical amount of memory or a server to run more partitions and do more work for the same physical amount of memory. Active Memory Expansion is available for partitions running AIX® 6.1 or later.

Up to three I/O drawers may be installed in the initial system frame, each drawer providing 20 PCIe adapter slots and up to 26 SAS hot-swap Small Form Factor disk bays. To provide ample room for growth and capacity, expansion frames are available to support up to 29 additional I/O drawers.

In addition, two new GX++ adapters provide PCIe Gen2 functionality and performance in extremely dense and efficient packaging for the Power 795. The new GX++ adapter avoids the need for a GX++ 12X adapter, 12X cables, a 12X-attached PCIe I/O drawer and a PCIe adapter. In some cases it may even avoid the need for an expansion rack. Plus it also offers lower latency compared to similar PCIe adapters as it is attached directly to the GX++ port. The two adapters are a 2-port 16 gigabit (Gb) Fibre Channel adapter and a 2-port 10Gb Fibre Channel over Ethernet (FCoE or Converged Network Adapter)

Mission-critical application availability

The Power 795 server includes many innovative RAS features as a fundamental part of its design to help keep the system up and running around the clock. Built upon the successful systems design of the Power 595, the Power 795 utilizes hot-swappable and redundant power and cooling components; sophisticated redundant service processors integrated into each processor book; two system clocks that are both active and support

dynamic failover; IBM Chipkill ECC memory with additional DRAM sparing; First Failure Data Capture mechanisms to log and help prevent the recurrence of intermittent failures that diagnostics cannot reproduce; and dynamic de-allocation of system components, including processors and PCI bus slots, to help reallocate resources when an impending failure is detected so applications can continue to run unimpeded. All of these functions help to increase system availability and allow more work to be processed with less potential for disruption.

In addition, Processor Instruction Retry provides for the continuous monitoring of processor status with the capability to restart a processor if certain errors are detected. And if required, workloads can even be redirected to alternate processors, all without disruption to application execution.

Power 795 logical partitions are designed to be isolated to provide a high level of data security and increased application availability. Dynamic LPAR allows clients to dynamically allocate many system resources to application partitions without rebooting, simplifying overall systems administration and helping to balance workloads and enhance availability. In addition, IBM System Storage® and PowerHA® offerings deliver a range of high-availability options, including mirroring in a clustered server environment for near-continuous system availability.

In addition, a new availability offering for the Power 795 is now available. A Power System Pool is a multisystem IBM Power 795 and 780 infrastructure offering designed to provide a highly resilient and flexible IT environment in support of large-scale server consolidation and your most demanding business application requirements. A Power System Pool allows for the aggregation of compute resources, including processors and memory, across a number of Power 795 and 780 servers, in order to provide greater flexibility to respond to critical application workload requirements as well as to enhance your application availability.

As part of the offering, those Power 795 and 780 servers that participate in a Power System Pool environment are provided with regularly planned maintenance events (up to eight in a calendar year) that enables clients to turn on inactive processors and memory in another participating system in the pool in the event that a system may need to be brought down for some type of maintenance occurrence. In addition, Elastic Capacity on Demand (CoD) enables all processor and memory days, including those that now come standard with all new Power 795s and 780s, to be accumulated and managed at a pool level to effectively and efficiently manage and balance application workload's peak requirements. A Power System Pool can consist of up to ten (10) Power 795s and/or Power 780 systems to enhance flexibility and improve system availability.

Enterprise-class PowerVM virtualization

PowerVM is the family of technologies, capabilities and offerings that deliver industry-leading virtualization on IBM POWER processor-based systems. On the Power 795, PowerVM includes base components provided with IBM Power Systems firmware, which includes logical partitioning (LPAR) technologies. PowerVM allows any individual LPAR or VM to access the maximum amount of memory and CPU cores that are available on the server. In addition, optional components in PowerVM Editions are designed to provide advanced virtualization technologies resulting in improved resource utilization, cost savings and flexibility by enabling workload mobility. These functions are managed through use of a hardware management console (HMC) or through IBM Systems Director software with the VMControl virtualization management plug-in or through PowerVC Virtualization Center.

PowerVM Standard Edition includes Micro-Partitioning® and Virtual I/O Server (VIOS) capabilities, which are designed to allow businesses to increase system utilization, while helping to ensure applications continue to get the resources they need. VIOS allows for the sharing of disk and optical devices as well as communications and Fibre Channel adapters to help drive down complexity and systems/administrative expenses. Also included is support for Multiple Shared Processor Pools, which

allows for automatic nondisruptive balancing of processing power between VMs assigned to the shared pools, and Shared Dedicated Capacity, which helps optimize use of processor cycles. PowerVM Enterprise Edition includes all the features of Standard Edition plus Live Partition Mobility¹ (LPM), PowerVM Active Memory Sharing² and PowerVP (virtualization performance monitoring).

LPM allows a partition to be relocated from one server to another with virtually no impact to the applications running inside the partition. LPM is designed to enable servers to work together to help optimize system utilization and energy savings, improve application availability, balance critical workloads across multiple systems and respond to ever-changing business demands. PowerVM Active Memory Sharing is an advanced memory virtualization technology that intelligently flows memory from one partition to another for increased utilization and flexibility of memory usage. With this memory virtualization enhancement IBM i, AIX, and Linux partitions can share a pool of memory and have PowerVM automatically allocate the memory based on the workload demands of each partition. PowerVP is a virtualization performance monitoring solution for Power Systems that which shows what virtual workloads are using which physical resources on a Power server.

Workload optimization

New for the Power795 is a hardware feature called Dynamic Platform Optimizer. This feature monitors processor and memory affinity and adjusts workload placement to optimize performance in a virtualized consolidated environment. This offering assists in improving operational performance while simplifying operational management.

POWER7 processors also feature Intelligent Threads technology, which enables workload optimization by dynamically switching between threading modes. Each application can be run in the most suitable threading mode; either single thread per core, simultaneous multithread (SMT) with two threads per core, or SMT with four threads per core. As a result, applications can run at their peak performance and systems can increase their workload capacity.

Available with all POWER7 processors is the ability of the processor to run at a higher frequency if environmental conditions permit, resulting in increased performance; or alternatively run at a lower frequency if user settings permit, resulting in greater energy efficiency. Operating in concert with IBM Systems Director Active Energy Manager, this feature enables customization by partition for maximum performance, maximum energy savings or a mixture of both.

Active Memory Expansion, available on the Power 795, allows the effective memory capacity of the system to be much larger than the true physical memory. Innovative compression/decompression of memory content can allow memory expansion up to 100 percent. This can allow a partition to do significantly more work with the same physical amount of memory or a server to run more partitions and do more work for the same physical amount of memory.

| Power 795 server at a glance | |
|------------------------------|---|
| Processor cores (maximum) | 192 POWER7 3.72 GHz processors 256 POWER7 4.00 GHz processors 128 POWER7 4.25 GHz processors (TurboCore) |
| Processor books | Up to eight |
| Sockets | Up to 32 |
| Level 2 (L2) cache | 256 KB L2 cache per core |
| Level 3 (L3) cache | 4 MB L3 cache per core (eDRAM) or 8 MB L3 cache per core (eDRAM) |
| RAM (memory) | 32 DIMMs per processor book Up to 16 TB of 1066 MHz DDR3 |
| PCIe I/O drawers | 24": 1 – 32 |
| Internal disk bays | 26 SAS Small Form Factor bays in each 24" PCIe I/O drawer Up to 832 maximum per system in 24" drawers Up to 2,220 bays in 19" drawers |
| Adapter slots | 20 PCIe in each 24" I/O drawer 640 maximum per system |

| Power 795 server at a glance | |
|---|---|
| I/O ports | 4 GX++ adapter ports per processor book, 32 per system |
| Hardware Management Console ports | Two pairs via redundant Ethernet hubs |
| POWER Hypervisor™ | LPAR, Dynamic LPAR, Virtual LAN |
| PowerVM Standard Edition (optional) | Micro-Partitioning with up to 20 micro-partitions per processor (1,000 maximum); Multiple Shared Processor Pools; Virtual I/O Server; Shared Dedicated Capacity; PowerVM Lx86 |
| PowerVM Enterprise Edition* (optional) | PowerVM Standard Edition plus Live Partition Mobility and Active Memory Sharing |
| RAS features | Processor Instruction Retry Alternate Processor Recovery Selective dynamic firmware updates IBM Chipkill ECC, bit-steering memory ECC L2 cache, L3 cache Redundant service processors with automatic failover Redundant system clocks with dynamic failover Hot-swappable disk bays Hot-plug/blind-swap PCI slots Hot-add I/O drawers Hot-plug power supplies and cooling fans Dynamic Processor Deallocation Dynamic deallocation of logical partitions and PCI bus slots Extended error handling on PCI slots Redundant power supplies and cooling fans Battery backup and redundant battery backup (optional) |
| Capacity on Demand features (optional) | Processor CUoD (in increments of one processor) Memory CUoD (in increments of 1 GB) Elastic Processor CoD Elastic Memory CoD Trial CoD Utility CoD Power Enterprise Pools |
| Operating systems | AIX, IBM i, and Linux for Power† |
| High availability | PowerHA family |
| Power requirements | 200 V to 240 V; 380 V to 415 V; 480 V ac; 550 V dc |
| System dimensions | One frame (slimline doors): 79.3"H x 30.5"W x 58.5"D (201.4 cm x 77.5 cm x 148.6 cm); weight: 2,551 lb (1157.2 kg) One frame (acoustic doors): 79.3"H x 30.5"W x 71.1"D (201.4 cm x 77.5 cm x 180.6 cm); weight: 2,577 lb (1,168.9 kg)‡ |
| Warranty (limited) | 24x7, same day response for one year; on-site (varies by country). Warranty service upgrades and maintenance are available. |

Flexibility with Capacity on Demand

Providing additional capacity to a Power 795 system could not be easier: standby processors and memory may be activated in granular increments through Capacity on Demand (CoD) options.

Several types of Capacity on Demand (CoD) are available. Clients can activate processors (in one processor increments) or memory (in one GB increments) on a day-to-day basis (Elastic CoD), a 30-day trial (Trial CoD), or permanently (Capacity Upgrade on Demand (CUoD)). Additionally, Utility CoD allows clients to install processors and activate them on a minute-to-minute basis. The modular architecture of the Power 795 and its Capacity on Demand offerings enable enterprises to best accommodate growth while maintaining application availability.

In addition, all Power 795s are shipped with a specific number of Elastic CoD processor and memory days, based on the size of the system, for no-charge in order to accommodate those application workload spikes that you might not have anticipated. With the Power Systems Pools offering clients can pool these Elastic COD processor and memory days across a pool of Power 780 and Power 795 systems.

New for the Power 795 is the next evolution of pooling, Power Enterprise Pools. Power Enterprise Pools enhances this capability and brings in the notion of mobile CoD. Mobile activations of processors and memory are provided for use on the Power 770, 780 and 795 systems and are transferable to other systems in a pool by the user with simple HMC commands. No additional paperwork is required and IBM does not need to be notified. The simplicity of operations provides new flexibility when managing large workloads in a pool of systems. This feature is especially appealing when providing continuous operations during maintenance windows. Not only can workloads easily move to alternate systems but now the activations can move as well.

EnergyScale innovation

As the price of energy increases and resources become limited, energy efficiency through better utilization has become increasing vital.

The Power 795 server utilizes an enhanced airflow design and dynamic, deeply integrated power and thermal monitoring. IBM Systems Director Active Energy Manager software exploits EnergyScale technology by monitoring power/thermal utilization and conserving energy through enablement of power management features for improved system utilization and energy efficiency.

Broad application support

The Power 795 is designed to manage growth, complexity and risk by giving clients the flexibility to run the AIX, IBM i, and Linux operating systems concurrently, via logical partitions. AIX, IBM's industrial-strength UNIX environment, is built on a tradition of reliability, availability, security and open standards for business-critical applications.

The IBM i operating system is a highly scalable and virus resistant architecture with a proven reputation for integration, simplicity and exceptional business resiliency. It integrates a trusted combination of relational database, security, web services, networking and management capabilities and provides a broad and highly stable database and middleware foundation for efficiently deploying business processing applications.

The Red Hat and Novell/SUSE Linux operating systems may be ordered from IBM and select Linux distributors and includes many open source applications, tools and utilities. The Power 795 system offers the flexibility and performance to consolidate x86 servers running a mix of web, LAMP (Linux, Apache, MySQL and PHP/Perl/Python) and database workloads, helping clients to better manage growth without adding complexity.

The new Power Integrated Facility on Linux (IFL) enables users to easily acquire processor and memory activations on their Power 795 system for use with their Linux operating systems and do so at pricing that is comparable to x86 systems. This feature allows users to reduce the complexity of operations associated with server sprawl by consolidating disparate, redundant and/or underutilized Linux servers while leveraging enterprise resources, processes and skills that are already in place. Providing a consolidated environment for Linux workloads can improve scaling performance, virtual network connections and security, while providing seamless, non-disruptive growth.

For more information

To learn more about the IBM Power 795 server, please contact your IBM marketing representative or IBM Business Partner, or visit the following websites:

- ibm.com/systems/power/
- ibm.com/systems/power/software/aix
- ibm.com/systems/power/software/i
- ibm.com/linux/power
- ibm.com/common/ssi

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Please Recycle

* Not supported on IBM i 5.4, 6.1.

† See Facts and Features for specific supported operating system levels

‡ Weight will vary when disks, adapters, additional frames and other peripherals are installed.

¹ Live Partition Mobility not supported on IBM i

² Active Memory Sharing requires AIX 5.3-12 SP5, IBM i 6.1 or later, SUSE Linux Enterprise Server 10 SP4 for Power or later or Red Hat Enterprise Linux 6.1 or later.