



Highlights

- Ideal for both application and database workloads
 - Designed for secure application availability
 - Compact, economically efficient design
 - Virtualised from within for better integration
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IBM Power 750 Express server

Secure, reliable performance at an affordable price

Everyone needs at least one of these. It is the kind of system that seems to do everything, that is always up, that runs your application and fits into your budget. Some people use these systems for their database engines, some people for their applications, some for their development and test. It is the type of system that answers questions, like those found on Jeopardy. It is the type of system that solves problems, like those waiting for you at the office. Whatever your need, the new IBM® Power 750 packs plenty of horsepower in a compact package and is a sure way to get a good night's sleep.

The new IBM Power 750 Express has been completely redesigned to leverage the leadership performance of the POWER7+ processor. The resulting combination of secure, reliable computing and energy efficient virtualisation make it an ideal system for application consolidation or transaction processing.

As a consolidation server, the Power 750 Express offers tremendous configuration flexibility to meet demanding capacity and growth requirements. Utilise the full capability of the system by leveraging industrial-strength PowerVM virtualisation for AIX, IBM i and Linux®. PowerVM offers the capability to dynamically adjust system resources based on workload demands so that each partition gets the resources it needs. Active Memory Expansion with hardware assist is a new POWER7+ technology that enables the effective maximum memory capacity to be much larger than the true physical memory. Innovative compression/decompression of memory content can enable memory expansion up to 125 percent. This can enable a partition to do significantly more work or enable a server to run more partitions with the same physical amount of memory.



For database servers, the leadership performance of the POWER7+ processor with over twice the L3 cache of POWER7 makes it possible for applications to run faster with fewer processors, resulting in lower per core software licensing costs. The POWER7+ processor contains innovative technologies that maximise performance based on client workloads and computing needs. **Intelligent Threads** technology enables workload optimisation by selecting the most suitable threading mode: Single Thread (per core) or Simultaneous Multi Thread-2 or 4 modes. Consequently, **Intelligent Threads** technology can provide improved application performance. The Power 750 server can deliver up to 128 simultaneous compute threads. In addition, POWER7+ processors can maximise cache access to cores, improving performance, using **Intelligent Cache** technology. These capabilities are designed to satisfy even the most demanding processing environments and can deliver business advantages and higher client satisfaction. A new intelligent optimising feature called **Dynamic Platform Optimiser** comes built in and ready to use at no additional charge. This feature assists with getting the most performance out of a system that was designed for leadership.

The Power 750 Express is a one- to four-socket server that supports up to 32 cores with outstanding energy efficiency and diagnostic features in a 5U (EIA Units) package. The Power 750 is designed with features to help clients become more energy efficient. New energy saving techniques with POWER7+ technology, now enable **Intelligent Energy** management features to dynamically conserve power, which can save you money. These **Intelligent Energy** features enable the POWER7+ processor to operate at a higher frequency if environmental conditions permit, for increased performance and performance per watt; or alternatively operate at a reduced frequency if user settings permit, for significant energy savings. The Power 750 also implements Light Path diagnostics, which provide an obvious and intuitive means to positively identify failing components.



Come and see why so many clients are moving to IBM Power Systems. Whether you need a reliable and efficient server consolidation platform or a high-performing database server, the Power 750 Express server can fulfil your requirements while using technology that provides innovation that sets your business apart from the competition. The Power 750 Express offers outstanding performance, industrial-strength PowerVM virtualisation and a choice of AIX, IBM i or Linux operating systems.

Leadership POWER7+ performance

The POWER7+ processor serves up several new and unique innovations to continue the long history of leadership performance that now serves as the standard for the industry. New with POWER7+ are a larger L3 cache and two built-in accelerators for additional performance, the Active Memory Expansion hardware accelerator and the AIX cryptographic accelerator. L3 cache on POWER7+ processors has been increased to 10 MB per core, 2.5 times that found on previous POWER7 processors. Imbedded accelerators for memory compression and AIX file encryption now offload processors from these tasks and improve performance of those functions.

Increased clock speeds provide additional performance gains to make the POWER7+ processor a continued workhorse for critical workloads. What this means is that applications can run faster and be more responsive, which can result in competitive advantages and higher customer satisfaction. In addition, a single system can now run more applications, which can drive utilisation even higher and result in infrastructure cost savings. The improved performance with POWER7+ also enables you to get more processing power with fewer processors, resulting in lower per-core software licensing costs.

PowerVM virtualisation

PowerVM dynamically adjusts system resources to partitions based on workload demands, enabling a dynamic infrastructure that dramatically increases system utilisation and reduces costs. PowerVM represents the family of technologies, capabilities and offerings that deliver industry-leading virtualisation on IBM POWER processor-based systems. On the Power 750, PowerVM includes base components provided with IBM Power Systems firmware, which includes logical partitioning (LPAR) technologies. PowerVM allows any individual LPAR to access the maximum amount of memory and CPU cores that are available on the server.

PowerVM Standard Edition includes Micro-Partitioning and Virtual I/O Server (VIOS) capabilities, which are designed to allow businesses to increase system utilisation, 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 (FC) adapters to help drive down complexity and systems/administrative expenses. Also included is support for Multiple Shared Processor Pools, which allows for automatic, non-disruptive balancing of processing power between partitions assigned to the shared pools, and Shared Dedicated Capacity, which helps optimise use of processor cycles.

PowerVM Enterprise Edition includes all the features of Standard Edition plus Live Partition Mobility (LPM) and Active Memory Sharing. 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 optimise system utilisation and energy savings, improve application availability, balance critical workloads across multiple systems and respond to ever-changing business demands. Active Memory Sharing is an advanced memory virtualisation technology that intelligently flows memory from one partition to another for increased utilisation and flexibility of memory usage. With this memory virtualisation 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.

Security

Security and compliance are intrinsic to today's business processes, development and daily operations and should be factored in to the initial design of any IT or critical infrastructure solution, not bolted on after the fact. By building security and compliance into the overall design of a system, an application or a cloud delivery model, businesses are better able to create agile solutions that reduce risk while cost-effectively addressing audit requirements. POWER7+ systems architecture has security designed into each layer of the stack from the hardware to the firmware and through the systems software. PowerSC, a key security and compliance offering, is integrated with this stack to lower the cost of maintaining compliance and security.

Innovative technologies

The introduction of POWER7+ servers includes several new innovative technologies that provide the flexibility to maximise performance based on client workloads and computing needs potentially delivering business advantages and higher client satisfaction.

Active Memory Expansion with hardware assist enables the effective maximum memory capacity to be much larger than the true physical memory for AIX partitions. Innovative compression/decompression of memory content can enable memory expansion up to 125 percent depending on your application and data. For example, a server with 1 TB of physical memory could be expanded up to effectively 2.25 TB. This can enhance virtualisation and server consolidation by enabling a partition to do significantly more work or enabling a server to run more partitions with the same physical amount of memory.

AIX file encryption capabilities are now built into every POWER7+ processor. This feature can help you ensure that files are safe, while performance stays strong. Also included with every POWER7+ system is the capability to **securely generate random numbers**.

POWER7 **Intelligent Threads** technology enables workload optimisation by selecting the most suitable threading mode: Single Thread (per core) or Simultaneous Multi Thread-2 or 4 modes. Consequently, Intelligent Threads technology can provide improved application performance. In addition, POWER7 processors can maximise cache access to cores, improving performance, using **Intelligent Cache** technology.

EnergyScale Technology offers **Intelligent Energy** management features, which can dramatically and dynamically conserve power and further improve energy efficiency. These **Intelligent Energy** features enable the POWER7+ processor to operate at a higher frequency if environmental conditions permit, for increased performance and performance per watt; or alternatively operate at a reduced frequency if user settings permit, for significant energy savings.

Delivering on RAS and Diagnostics

The Power 750 Express is designed with capabilities to deliver leading edge application availability and allow more work to be processed with less operational disruption. RAS capabilities include recovery from intermittent errors or failover to redundant components, detection and reporting of failures and impending failures and self-healing hardware that automatically initiates actions to effect error correction, repair or component replacement. In addition, the Processor Instruction Retry feature provides for the continuous monitoring of processor status with the capability to restart a processor if certain errors are detected. If required, workloads can be redirected to alternate processors, all without disruption to application execution. The Power 750 Express implements Light Path diagnostics, which provide an obvious and intuitive means to positively identify failing components. This allows system engineers and administrators to easily and quickly diagnose hardware problems. Hardware failures that may have taken hours to locate and diagnose can now be detected in minutes, avoiding or significantly reducing costly downtime. IBM Systems Director 'Call-home' capability enables proactive service that may result in higher system availability and performance.

Enhanced energy efficiency

The leadership performance of the IBM Power 750 Express with POWER7+ technology also translates into outstanding performance per watt. Combine this leadership performance with PowerVM Editions to virtualise your infrastructure and improve server utilisation and energy efficiency. PowerVM provides an innovative set of system technologies that are designed to easily aggregate and manage virtualised resources across AIX, IBM i and Linux operating systems.

IBM Systems Director Active Energy Manager exploits EnergyScale technology enabling advanced energy management features to dramatically and dynamically conserve power and improve energy efficiency.

EnergyScale Technology offers management features, which can dramatically and dynamically conserve power and further improve energy efficiency. These features enable the POWER7+ processor to operate at a higher frequency if environmental conditions permit, for increased performance and performance per watt; or alternatively operate at a reduced frequency if user settings permit, for significant energy savings.

Broad business application support

The Power 750 Express is designed to give clients the flexibility to run multiple operating systems concurrently, maintaining binary compatibility with existing applications. The AIX operating system, IBM's industrial-strength UNIX® environment, has delivered exceptional reliability, availability and security for business-critical applications. AIX systems are consistently recognised for delivering the best availability of any server platform outside the mainframe. AIX is designed to be

compliant under the Common Criteria of CAPP/EAL4+ and has a history of receiving that certification for AIX including certification for the VIOS and Workload Partitions virtualised environments. The most recent version of AIX includes substantial security, availability, manageability and virtualisation features that are designed to deliver even more capability to provide a secure, efficient platform for your most demanding workloads.

IBM i is the integrated operating system for Power Systems that is built for efficiently deploying business processing applications. IBM i integrates a trusted combination of relational database, security, web services, networking and management capabilities. It is a highly scalable operating system, delivering the capability to run multiple applications on a single instance of the operating environment. IBM i offers a virus-resistant architecture with a proven reputation for exceptional business resiliency. Running applications based on this platform has helped companies over many years to focus on innovation and delivering new value to their business, in addition to efficiently managing their data centre operations.

The Red Hat and Novell/SUSE Linux for Power operating systems may be ordered from IBM and select Linux distributors and include many open source applications, tools and utilities. IBM is firmly committed to Linux and has enabled many of the unique Power Architecture technologies into the Linux kernel. The Power 750 Express platform offers the flexibility and performance to consolidate x86 servers running a mix of web, application and database workloads, helping clients to better manage growth without adding complexity.

Feature	Benefits
Leadership POWER7+ performance	<ul style="list-style-type: none"> • Do more work with smaller systems which reduces the cost of software licenses • Improve efficiency in operations from consolidating more work onto fewer systems • Access data faster and improve response time
PowerVM virtualisation	<ul style="list-style-type: none"> • Easily add workloads as your business grows • Utilise the full capability of the system to improve efficiency and reduce costs • Provides ability to handle unexpected workload peaks by sharing resources
Active Memory Expansion	<ul style="list-style-type: none"> • Can expand physical memory over 2X to reduce the cost of require memory
RAS features	<ul style="list-style-type: none"> • Keep applications up and running so you can focus on growing your business • Improves customer satisfaction
Light Path diagnostics	<ul style="list-style-type: none"> • Easily and quickly diagnose hardware problems
EnergyScale technology	<ul style="list-style-type: none"> • Dynamically improve energy efficiency and lower energy costs with innovative energy management capabilities • Enables business to continue operations when energy is limited

Power 750 Express at a glance

Configuration options

POWER7+ processor options	8 to 32 x 3.5 GHz POWER7+ processor cores or 8 to 32 x 4.0 GHz POWER7+ processor cores
Sockets	1 to 4
Level 2 (L2) cache	256 KB L2 cache per core
Level 3 (L3) cache	10 MB L3 cache per core (eDRAM)
Memory	Up to 1 TB of 1066 MHz DDR3 plus Active Memory Expansion with hardware assist
Integrated SAS bays for Solid State Drives (SSD) or Hard Disk Drives	Six SFF SAS drive bays
Integrated media bays	One slimline for SATA DVD-RAM
Integrated PCI adapter slots	Six PCIe (8x) Gen2 slots
Standard ethernet ports	Dual 10 Gb plus a choice of two additional 10 Gb or two additional 1 Gb
Integrated SAS controller	Two SAS DASD/SSD controllers
Other integrated ports	Three USB, two HMC, two SPCN, one serial port
GX slots(12X)	Two

Power 750 Express at a glance

Expansion features (optional)

I/O expansion	Up to 4 PCIe 12X I/O drawers
Comprehensive set of PCI adapters, including	6 Gb and 3 Gb SAS RAID 16 Gb, 8 Gb and 4 Gb Fibre Channel 10 Gb and 1 Gb Ethernet 10 Gigabit Converged Network (Fibre Channel over Ethernet) 40 Gb QDR IB WAN/Async, USB, Cryptographic, SSD
I/O expansion: SAS SFF bays for HDD/SSD	Up to 1334 bays in storage drawers (max 56 drawers) Up to 72 bays in PCIe 12X I/O drawers
I/O expansion: EXP30 Ultra SSD Drawers	Up to 2 drawers (up to 960k IOPS read only) Up to 60 SSD (up to 23.2 TB capacity)

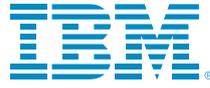
PowerVM technologies

POWER Hypervisor	LPAR, Dynamic LPAR, Virtual LAN (Memory-to-memory interpartition communication)
PowerVM Standard Edition (optional)	PowerVM Express Edition plus Micro-Partitioning with up to 20 micropartitions per processor; Multiple Shared Processor Pools; Shared Dedicated Capacity; Virtual I/O Server
PowerVM Enterprise Edition (optional)	PowerVM Standard Edition plus LPM and Active Memory Sharing (AMS)
RAS features	Processor Instruction Retry Alternate Processor Recovery Selective dynamic firmware updates Chipkill memory ECC L2 cache, L3 cache Service processor with fault monitoring Hot-swappable disk bays Hot-plug/blind swap PCI slots Hot-plug and redundant power supplies and cooling fans Dynamic Processor deallocation Extended error handling on PCI slots
Operating systems ¹	AIX, IBM i and Linux for POWER
High availability	IBM PowerHA family
Power requirements	200 V to 240 V ac, single phase
System dimensions	Rack Drawer: 8.55"H x 17.6"W x 33.78"D (217 mm x 447 mm x 858 mm); weight: 155 lb (70.3 kg) ²
Warranty and service (limited)	9 hours per day, Monday through Friday (excluding holidays), next business day for one year; on site for selected components; CRU (customer-replaceable unit) for all other units (varies by country); two additional years of service included at no additional charge (varies by country); warranty service upgrade to around the clock included at no additional charge (varies by country).

For more information

To learn more about the IBM Power 750 Express server, please contact your IBM marketing representative or IBM Business Partner, or visit the following websites:

- ibm.com/systems/power/
- <http://www-03.ibm.com/systems/power/software/i/>
- <http://www-03.ibm.com/systems/power/software/aix/>
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IBM United Kingdom Limited

PO Box 41
North Harbour
Portsmouth
Hampshire
PO6 3AU
United Kingdom

IBM Ireland Limited

Oldbrook House
24-32 Pembroke Road
Dublin 4

IBM Ireland Limited registered in Ireland under company number 16226.

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