Modular and scalable systems for business flexibility and IT efficiency

IBM Power 570 server

Power 570 modular building blocks

Highlights

- ***For mid-to-large transaction processing such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) applications***
- ***For mid-to-large database serving***
- ***For server consolidation across UNIX®, IBM i (formerly known as i5/OS) and Linux® workloads***
- ***For a complete business system combining all aspects of a company's IT infrastructure.***

For mid-to-large transaction processing workloads, the IBM Power 570 server delivers outstanding performance, mainframe-inspired reliability, modular non-disruptive growth and innovative virtualisation technologies. These features are integrated to enable the simplified management of growth, complexity and risk.

For mid-to-large database serving, the Power 570 provides a system designed for demanding, critical, back-end workloads. Demonstrating outstanding performance across multiple database solutions and multiple operating systems, the 570 shows its true heart and soul when challenged with a company's most treasured IT asset, the database.

For server consolidation, the Power 570 provides the flexibility to simultaneously run any combination of AIX, IBM i, Linux for Power and x86 Linux applications, all on the same

POWER6™
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system. In addition, PowerVM virtualisation enables dynamic resource adjustments across all these environments to optimise performance and efficiency while minimising energy usage. Get control of your environment with the Power 570.

For complete business system needs, the Power 570 provides a unique combination of performance across multiple workloads and availability features to keep your business running. In addition, PowerVM virtualisation helps to maximise your efficiency and non-disruptive growth options are designed to keep your costs in line with your business. With all this coming together in one integrated energy-saving package, the 570 makes a great business solution.

Now available in configurations up to 32 POWER6 processor cores, a new version of the popular 570 design maintains the same modular design with twice the number of processor cores per building block. The result is more performance per system, more performance per footprint and best of all, more performance per watt. This option is the most energy-efficient of the 570 family and ideal for many application environments where overall system throughput is the driving factor.

The IBM Power 570 is a modular server available in four building block, rack-mounted configurations. The system includes the industry-leading IBM POWER6 technology and mainframe-inspired reliability, availability and serviceability (RAS) features as well as innovations like EnergyScale and PowerVM virtualisation technologies. This innovative approach enables secure, non-disruptive growth, while maintaining outstanding performance and maximising your investment.

Feature	Benefits
Industry-leading POWER6 performance	• Better customer satisfaction due to improved response time to your customers • Infrastructure cost savings from a reduction in the number of servers and software costs • Improved efficiency in operations from consolidating multiple workloads on fewer systems
Exceptional PowerVM virtualisation capability	• Improves system efficiency which lowers operational expense • Provides flexibility in responding to changing business requirements • Enables energy savings and maintains application availability • Provides ability to handle unexpected workload peaks by sharing resources • Enables consolidation of multiple AIX, IBM i and Linux workloads
Mainframe-inspired availability features	• Better customer satisfaction due to improved application availability • Get more work done with less disruption to your business • Faster repair when required due to sophisticated system diagnostics
Non-disruptive growth options	• Enables your system to change with your business without forcing everything to stop • Aligns expense with usage without sacrificing performance or future growth options
Frugal EnergyScale energy-saving technology	• Helps lower energy costs without sacrificing performance or business flexibility • Allows business to continue operations when energy is limited
Broad business application support	• Allows clients the flexibility to select the right application to meet their needs • Helps keep you in the mainstream and off the bleeding edge.

Industry-leading POWER6 performance

The leadership performance of the POWER6 processor – makes it possible for applications to run faster and be more responsive which can result in competitive advantages or higher customer satisfaction. In addition, a single system can now run more applications and can reduce the number of required servers, which means cost savings in infrastructure costs. The improved performance with POWER6 also enables clients to get more processing power with fewer processors, resulting in lower per-core software licensing costs.

POWER6 processors feature simultaneous multi-threading, allowing two application 'threads' to be run at the same time, which can significantly reduce the time to complete tasks. Hardware Decimal Floating-Point support is designed into the POWER6 processor, helping to improve the performance of the basic mathematical calculations of financial transactions that occur daily on today's business computers. In addition, the processor includes an AltiVec Single Instruction Multiple Data (SIMD) accelerator, which helps to improve the performance of high performance computing workloads.

Exceptional PowerVM virtualisation capability

PowerVM is the family of technologies, capabilities and offerings that deliver industry-leading virtualisation on IBM POWER processor-based systems. On the Power 570, PowerVM includes base components provided with IBM Power Systems firmware which includes logical partitioning (LPAR) technologies. In addition, optional components, PowerVM Editions, are designed to provide advanced virtualisation technologies resulting in efficiencies in resource utilisation and cost savings. These are managed through use of a hardware management console (HMC).

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[1] includes all the features of Standard Edition plus Live Partition Mobility (LPM) and PowerVM 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. PowerVM 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 for POWER6 processor-based servers, IBM i, AIX and Linux partitions can share a pool of memory and have PowerVM automatically allocate the memory based on the partition's workload demands.

Mainframe-inspired availability features

Among the world-class Reliability, Availability and Serviceability (RAS) capabilities provided in the Power 570 are a sophisticated service processor with a second redundant service processor for systems larger than one building block; hot-plug, hot-swappable, blind-swap and redundant components; IBM Chipkill Error Checking and Correction (ECC) and bit-steering memory; First Failure Data Capture (FFDC) mechanisms; and dynamic de-allocation of system components. These capabilities help to increase system availability and allow more work to be processed with less operational disruption. For enhanced server availability, the Power 570 can be clustered with IBM high-availability software that is designed to provide near-continuous availability.

Processor Instruction Retry (PIR) is designed to enhance application availability and improve the quality of the service provided. PIR comes standard on the Power 570 and 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.

Hot-node Repair is designed to enable repair and replacement of components by de-activating a node without disruption to other nodes or applications in the system. When the repair is complete, the module can be brought back online and the new resources made immediately available for assignment to new or existing application environments. This capability can also be used to add additional memory to system nodes without disruption to the system.[3]

Non-disruptive growth options

IBM's modular design allows clients to start with what they need and grow by adding additional 4-core building blocks, all without disruption to the base system. This is accomplished via a new innovative feature for the 570 referred to as Hot-node Add.

As enhanced growth options, several types of Capacity on Demand (CoD) are optionally available. Clients can install processors or memory and activate them on a 30-day trial (Trial CoD), a day-to-day basis (On/Off 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. Clients may start small and grow with systems designed for continuous application availability.

Frugal EnergyScale energy-saving technology

As the price of energy increases and resources become limited, energy efficiency through better utilisation has become increasingly vital. Leveraging IBM Power Systems and virtualisation technologies, corporations around the world have reduced energy consumption by up to 70 – 80 percent[4], better managed system growth and achieved total operating cost reductions of up to 72 percent.[5]

IBM's PowerVM Editions can help simplify and optimise your IT infrastructure by reducing energy and infrastructure costs. IBM Systems Director Active Energy Manager software exploits EnergyScale technology by monitoring power/thermal utilisation and conserving energy through enablement of power management features for improved system utilisation and energy efficiency.

Broad business application support

The Power 570 is designed to give clients the flexibility to run the AIX, IBM i and Linux operating systems concurrently. The AIX operating system, IBM's industrial-strength UNIX environment, is built on a tradition of reliability, availability, security and open standards for business-critical applications. New security features are designed to be compliant under the Common Criteria of CAPP/EAL4+. The newest version of AIX delivers two new virtualisation features – Workload Partitions (WPAR), which allows consolidation of multiple, isolated workloads inside of a single AIX instance; and Live Application Mobility, the capability to move WPARs between systems or partitions without restarting the applications inside of the WPAR. IBM offers a binary compatibility guarantee for AIX 6[6] to assure clients that applications created on previous versions of AIX will continue to run on AIX 6.

The IBM i operating system is a highly scalable and 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, not just on managing their data centre operations. The IBM i operating system integrates a trusted combination of relational database, security, Web services, networking and management capabilities. It provides a broad and highly stable database and middleware foundation for efficiently deploying business processing applications.

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. When configured with a PowerVM Editions feature, PowerVM Lx86, running on a Linux for Power distribution, the 570 platform offers the flexibility and performance to consolidate x86 servers running a mix of Web, Linux, Apache, MySQL and PHP/Perl/Python (LAMP) and database workloads, helping clients to better manage growth without adding complexity.

IBM Power 570 at a glance

Standard configurations	Per building block	570 (maximum)
Processor cores	Two or four 3.5, 4.4, or 5.0 GHz POWER6 processor cores in the first building block; four identical cores in all others OR Four or eight 4.2 GHz POWER6 processor cores in the first building block; eight identical cores in all others	16 3.5, 4.4, or 5.0 GHz POWER6 processor cores OR 32 4.2 GHz POWER6 processor cores
Cache	4 MB Level 2 (L2) cache per core 32 MB Level 3 (L3) cache shared per two cores	64 MB L2 cache per system and 256 MB L3 cache per system OR 128 MB L2 cache per system and 512 MB L3 cache per system
Random Access Memory (RAM)	• 4 GB to 48 GB of 667 MHz Double Data Rate (DDR)2 or • 16 GB to 96 GB of 533 MHz DDR2 or • 32 GB to 192 GB of 400 MHz DDR2	• 192 GB of 667 MHz DDR2 or • 384 GB of 533 MHz DDR2 or • 768 GB of 400 MHz DDR2
Internal disk drives (CEC)	One to six Serial Attached SCSI (SAS)	24 SAS
Media bays (CEC)	One hot-plug slimline	Four hot-plug slimline
PCI adapter slots (CEC)	Four PCI Express 8x slots; Two PCI-X DDR @ 266 MHz.	16 PCI Express 8x slots; Eight PCI-X DDR @ 266 MHz.
Standard input/output (I/O) adapters		
Ethernet (CEC, excluding PCI slots)	• Standard: – One dual-port Gigabit Ethernet (GbE) or • Optional: – One quad-port GbE or – One dual-port 10 GbE	• Standard: – Four dual-port GbE or • Optional: – Four quad-port GbE or – Four dual-port 10 GbE
Integrated disk (CEC)	One SAS controller	Four SAS controllers
Other ports (CEC)		Eight USB; two HMC; eight SPCN
Expansion features (optional)		
I/O expansion	Up to 12 I/O drawers	Up to 48 I/O drawers
High-performance connectivity	4 Gigabit FC, 10 GbE	
GX slots (I/O loops)	Two (second slot shares space with one PCI Express 8x slot)	Eight (four slots share space with four PCI Express 8x slots)

IBM Power 570 at a glance

PowerVM virtualisation technologies	
POWER Hypervisor	Dynamic LPAR; Virtual Local Area Network (VLAN) (Memory to memory inter-partition communication)[1]
PowerVM Standard Edition (optional)	Micro-Partitioning with up to 10 micro-partitions per processor; Multiple Shared Processor Pools; VIOS; Shared Dedicated Capacity; PowerVM Lx86
PowerVM Enterprise Edition[1] (optional)	PowerVM Standard Edition plus LPM and Active Memory Sharing
CoD features (optional)	Processor and/or Memory CUoD On/Off Processor and/or Memory CoD Trial Processor and/or Memory CoD Utility CoD
Operating systems	AIX V5.3 or later IBM i 5.4 or later SUSE Linux Enterprise Server 10 for POWER (SLES10 SP1) or later Red Hat Enterprise Linux 4.5 for POWER (RHEL4.5) or later RHEL5.1 or later
High availability	IBM PowerHA family
Power requirements	200 v to 240 v AC
System dimensions	570 building block: 6.85"H (4U) x 19.0"W x 32.4"D (174 mm x 483 mm x 824 mm); weight 140.0 lb (63.6 kg)[2]
Warranty (limited)	Nine hours per day, Monday through Friday (excluding holidays), next-business-day for one year at no additional cost; on-site for selected components; customer replaceable unit (CRU) for all other units (varies by country). Warranty service upgrades and maintenance are available.

For more information

To learn more about the IBM Power 570 server, please contact your IBM representative or IBM Business Partner, or visit the following Web sites:

- **ibm.com**/systems/power/
- **ibm.com**/servers/aix
- **ibm.com**/systems/i/advantages/index.html
- **ibm.com**/linux/power
- **ibm.com**/systems/p/solutions
- **ibm.com**/common/ssi

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

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[1] LPM not supported on IBM i 5.4, 6.1. Active Memory Sharing requires AIX 6.1 TL3, IBM i 6.1, or SUSE Linux Enterprise Server 11 for Power.

[2] Weight will vary when disks, adapters and peripherals are installed.

[3] Hot-node Repair is not available for the node that contains the active clock.

[4] Based on joint press release by IBM and PG&E, May 2007 (**ibm.com**/press/us/en/pressrelease/21517.wss); Voith customer case study, April 2007 (www-306.ibm.com/software/success/cssdb.nsf/CS/STRD-72NM7N?OpenDocument&Site=eserverpseries&cty=en_us) and Plala Networks, May 2007 (www-306.ibm.com/software/success/cssdb.nsf/CS/CMPN-732N6Q?OpenDocument&Site=eserverpseries&cty=en_us)

[5] 'Impact of IBM System p Server Virtualisation,' Transforming the IT Value Equation with POWER6 Architecture. International Technology Group, 05/2007. Study methodology: Companies in financial services, manufacturing and retail with £10.3 Billion+ revenues focusing on UNIX large enterprise environments with multiple, broad-ranging applications. Study compared the cost of the company's workloads running on multiple vendor servers and employing minimal virtualisation to the cost of the company's workloads running on System p 570 (POWER6 processor-based) as well as POWER5+ processor-based servers – all using Advanced POWER Virtualisation (APV – now known as PowerVM Standard Edition). This cost analysis was performed for financial services, manufacturing and retail example environments with an overall average savings of up to 72 percent in total operating cost savings by virtualising and consolidating on the Power Systems servers. Total operating cost may not be reduced in each consolidation case. Total operating cost depends on the specific client environment, the existing environments and staff and the consolidation potential.

[6] More information on the binary compatibility of AIX 6.1 can be found at **ibm.com**/systems/p/os/aix/compatibility/index.html.

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