Power your planet

Smarter systems for a smarter planet

Minimizing complexity, improving efficiency, and scaling easily

These are the benchmarks that matter on a smarter planet. Clients using IBM Power Systems™ gain lower TCO and higher infrastructure confidence than those who use other UNIX® or x86 systems because Power® delivers:

- An innovative and dependable technology roadmap
- Leadership scale-up and scale-within system capabilities
- Virtualization years ahead of any UNIX or x86 alternative
- Trusted migration expertise for Sun, HP and x86 users

The platform of choice for value with the right technology partner.

From reliability and virtualization features inspired by IBM's unrivaled success in mainframe systems to unique energy savings capabilities—a Power solution can help you get the most from your IT assets so end users are enabled quickly through a cost-effective infrastructure with around-the-clock availability.

Businesses around the world are moving to Power Systems in order to:

- ***Maximize return on investment:*** IBM designs and develops the core technologies in Power Systems and delivers them through a reliable roadmap for both hardware and systems software.
- ***Reduce cost and increase flexibility:*** IBM's unique 40-year history of virtualization leadership is delivered on Power Systems through PowerVM™ technologies that enable clients to dramatically reduce costs by "virtualizing everything" in the data center.
- ***Get consistent and predictable performance:*** Power Systems delivers high performing processors and system scalability with leadership benchmarks achieved in a virtualized environment.

According to IDC, Power Systems leads in worldwide UNIX server revenue share.[1] Businesses migrate to the latest generation of Power Systems in order take advantage of the exceptional performance, scalability and reliability of today's POWER® processor-based servers with the added "plus" of Power Systems Software™ in order to improve flexibility and availability as well as reduce overall infrastructure costs. The predictable delivery of innovation through the POWER processor roadmap and IBM's commitment to investment in AIX®, IBM i and Linux® operating systems on Power—with more than 15,000 supported applications—provides clients with the confidence that Power Systems are the right choice, for now and for the future.

Only IBM builds systems and systems software together, from the ground up

A totally integrated approach to the design, development, and testing of each and every Power server ensures the resiliency required for today's IT infrastructure. All POWER7™ and POWER6® server models include innovative reliability, availability and serviceability features that help you avoid unplanned downtime. And, with Capacity on Demand, Hot-Node Add and Hot-Memory Add—Power Systems enterprise servers ensure you can keep your most important applications available, even as you add capacity to handle new business demands.

Power Systems are also optimized with the ability to securely run multiple applications on AIX, i and Linux operating systems on a single server—so you can manage fewer systems with lower cost and higher utilization. No longer do you need

to manage complex and energy inefficient server farms with each server dedicated to a single application or operating environment. Now you can consolidate workloads and significantly reduce costs throughout your infrastructure, while dramatically improving your ability to meet changing processing demands.

Power Systems software options enable you to manage both physical and virtual environments, including the capability to control data center energy usage and orchestrate processing resources to better meet business goals. And, Power solutions are designed to provide you with a roadmap to continuous availability of mission-critical applications—even when an expected or unexpected interruption occurs.

Power is systems designed for a smarter planet

From online, self-evaluation tools and workshops to comprehensive assessments and complete migration services, IBM experts around the world can help you determine where to begin or how to make your current Power solution more dynamic. Work with IBM Global Finance to learn the financing options most appropriate for your business. For more information on great rates, flexible payment plans and loans, and asset buyback and disposal, visit: **ibm.com**/financing

POWER is built on an open architecture, promoting an open design ecosystem.

Power Architecture: Open, innovative, reliable

Today's POWER6 and POWER7 systems combine industry-leading performance, scalability and modularity to enable you to get the most from your investment and build a flexible, responsive infrastructure that easily adapts and grows based on your business needs. With a virtualization hypervisor built into every Power System, all performance benchmarks are achieved in a virtualized environment, unlike competitive systems that can be subject to lower performance when using third-party virtualization software.

Power is effortlessly balancing hundreds of workloads

POWER7 processor-based systems—the first generation of systems built for a smarter planet—offer balanced systems designs that automatically optimize workload performance and capacity and either a system or virtual machine level. Features include:

- TurboCore™ for maximum per core performance for databases
- MaxCore for incredible parallelization and high capacity throughput
- Intelligent threading technology to utilize more threads when workloads benefit
- Intelligent Cache technology to optimize cache utilization, flowing it from core to core
- Intelligent Energy to maximize performance dynamically when thermal conditions allow
- Active Memory™ Expansion provides more memory for SAP

POWER6 processor-based systems provide outstanding performance per processor core, range of scalability and the ability to incrementally and linearly add performance and capacity. Features include:

- Ultra-high frequency, dual-core processor technology with leading performance across the most-published server benchmarks representing the broadest range of application performance[2]
- Mainframe-inspired reliability with instruction retry on alternate processors and storage keys to deliver higher availability and protect your data from corruption
- Modular growth with near-linear scalability and flexible growth from blade servers to enterprise servers

All Power Systems include EnergyScale™ technology to reduce energy consumption and provide the ability to manage and customize energy usage. Live Partition Mobility and Live Application Mobility sustain system availability during maintenance or rehosting. Concurrent firmware and operating system updates enable applications to remain available.

And, only Power Systems have two integrated hardware accelerators designed to enhance performance: Decimal Floating-Point for business applications and AltiVec™ vectorized math common in support of 3D modeling for high performance computing.

POWER processor technology is an instruction-set architecture that spans applications from consumer electronics to supercomputers. POWER is built on an open architecture, making it an open ecosystem that supports freedom of design. Learn more about the world of POWER at www.power.org.

Power Systems Software: Completing the Power Advantage

Deploying Power Systems Software technologies enables businesses to fully exploit Power Systems servers. Realize the benefits of leadership IBM PowerVM virtualization with AIX, i and Linux operating systems on a single server—as well as IBM PowerHA™ for availability, and IBM Systems Director for energy, security and platform management.

Power is virtualization without limits

As businesses look for ways to maximize their IT infrastructure investment returns, they turn to PowerVM virtualization to consolidate multiple workloads onto fewer systems—increasing server utilization and reducing cost. PowerVM provides a secure and scalable virtualization environment for AIX, i and Linux applications built upon the advanced RAS features and leading performance of the Power Systems platform.

PowerVM offers Micro-Partitioning™ with the ability to run up to 10 partitions per processor core, and dynamically move processor, memory, and I/O resources between partitions to support changing workload requirements. PowerVM Live Partition Mobility enables active partitions to be moved between servers, virtually eliminating planned downtime. Live partition mobility can also be used to upgrade workloads between POWER6 and POWER7 processor-based servers without an application outage.

VMControl™ complements PowerVM by providing automated virtualization management that minimizes time to provision virtual machine images and enables management of system pools. With POWER7, PowerVM and VMControl virtualization software will support up to 1,000 virtual machines on a single system, providing massive consolidation capability for exceptional costs savings.

AIX: the future of UNIX

AIX exploits decades of IBM technology innovation and is designed to provide the highest level of performance and reliability of any UNIX operating system. According to ITIC's 2009 survey, AIX scored the highest reliability ratings among 15 different server operating system platforms.[3]

AIX 6.1 is binary compatible with previous versions of AIX, including AIX 5L™. This means that applications that ran on earlier versions will continue to run on AIX 6.1—guaranteed.[4] AIX 6.1 is an open standards-based UNIX OS designed to comply with the Open Group's Single UNIX Specification Version 3.

IBM i: total integration

IBM i is an integrated operating environment with a more than 20-year reputation for exceptional security and business resilience. IBM i integrates a trusted combination of relational DB2® database, security, Web services, networking and storage management capabilities. ITG reports that costs to use Power Systems and IBM i 6.1 average 41 percent less than x86 servers and Microsoft® Windows®.[5]

IBM i 6.1 includes expanded options for virtualization, upgraded storage and availability management, breakthrough Java™ performance, support for POWER6 and POWER7 and BladeCenter, and a broad range of middleware and tools to help drive application transformation.

Linux: scalable, ready for x86 consolidation

Both Red Hat and Novell SUSE Linux run natively on Power Systems, offering a scalable alternative for open source applications. Reducing x86 server sprawl through consolidation and virtualization is a key priority for many companies today. Linux on Power Systems with PowerVM provide a scalable, virtualized alternative to running Linux on x86 servers.

PowerVM Lx86 cross-platform virtualization technology also enables x86 Linux workloads to run without recompilation and take advantage of the scalability of Power Systems. This means Power Systems clients can immediately benefit from the latest Linux applications.

Power is resiliency without downtime

Power Systems solutions benefit from decades of IBM experience in designing and deploying high availability hardware and software. PowerHA SystemMirror disk clustering solutions are available to help keep your systems—and your business—running 24x7x365.

PowerHA SystemMirror for AIX and IBM i Editions are data center and multisite resiliency solutions designed to help protect critical business applications from outages: planned or unplanned. PowerHA pureScale™ technology delivers levels of database scalability and availability unmatched on UNIX or x86 systems, and is offered as a component of DB2 pureScale.

Power is data protection and compliance

IBM offers tools to protect data from threats and unauthorized access on Power servers running AIX, i and Linux workloads. Data encryption capabilities to protect file systems, data and backup are an integral part of the AIX and i operating systems, both of which also support role-based access control. Whether you want to manage the security of your Power servers, or include other elements in your infrastructure—IBM solutions provide intuitive administration that helps you to define, enforce and audit your business security policy.

Power is dynamic energy optimization

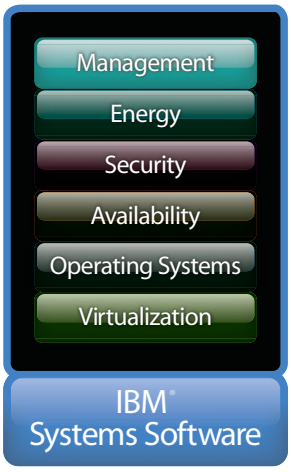
Power Systems energy management solutions monitor and control energy usage to help you manage energy efficiency in your data center. Each Power server has EnergyScale technology built into the POWER6 and POWER7 processor. Through consolidation and virtualization with PowerVM, businesses have realized dramatic energy savings. And, with IBM Systems Director Active Energy Manager™, you can identify trends in your energy usage and thermal profile, turn off processor cores or limit the energy draw across one or a group of Power servers, and track environmental data from applications used to monitor air conditioning units, Uninterruptible Power Supplies and Intelligent Power Distribution Units.

Power is management with automation

With platform management technologies on Power Systems, businesses not only get a complete picture of their systems and how well they are operating, but also the tools to deploy, optimize and maintain these systems at maximum effectiveness and efficiency. The result is optimized workload performance, energy efficiency and cost control. On Power Systems, server virtualization management is integrated with network and storage management for complete resource control.

IBM System Director Editions for Power are sized for every data center. It's now simpler than ever for a single operator to manage both physical assets and virtual resources. With IBM Systems Director for platform management and Tivoli® for enterprise service management solutions, Power Systems offer a unified systems management solution that can improve service delivery. VMControl provides automated virtualization management and minimizes the time it takes to provision virtual images and manage system pools.

Leverage "performance plus" by deploying virtualization, availability and management software to fully exploit Power Systems servers.



IBM POWER7™ Systems Family Quick Reference Guide

				
	Power 750 Express	**Power 755**	**Power 770**	**Power 780**
System package	4U, 19" rack	4U, 19" rack	4U/node, 19" rack (1 - 4 nodes)	4U/node, 19" rack (1 - 4 nodes)
# of POWER7 cores (GHz)	8, 16, 24, 32 (3.0/3.3 GHz) 6, 12, 18, 24 (3.3 GHz) 32 (3.55 GHZ)	32 (3.3 GHZ)	16, 32, 48, 64 (3.1 GHz) 12, 24, 36, 48 (3.5 GHz)	16, 32, 48, 64 (3.8 GHz) 8, 16, 24, 32 (4.1 GHz)[6]
# of sockets	1, 2, 3, 4	4	2, 4, 6, 8	2, 4, 6, 8
Min - max. memory	8[7] - 512 GB (max 128 per proc card)	128 - 256 GB (max 64 per proc card)	32 GB - 2 TB[8,9] (max 512 GB per node)	32 GB - 2 TB[8,9] (max 512 GB per node)
Max CEC disk bays/TB storage	8/2.4 TB	8/2.4 TB	6 per node/1.8 TB Max per sys 24/7.2 TB	6 per node/1.8 TB Max per sys 24/7.2 TB
Max CEC PCI slots	3 PCIe + 2 PCI-X DDR	3 PCIe + 2 PCI-X DDR	6 PCIe per node 24 per sys	16 PCIe per node 24 per sys
Max GX adapters	1 socket 1 GX+ 2 or more sockets 1 GX++ and 1 GX+	1 GX++	2 GX++ per node Max per system = 8	2 GX++ per node Max per system = 8
Max 12X I/O PCIe drawers	4	0	16	16
Max 12X I/O PCI-X drawers	8	0	32	32
Max disk bays w/I/O drawers	584	164	1320	1320
Max PCI slots w/12X PCI X I/O drawers	1 PCIe + 50 PCI-X DDR	3 PCIe + 2 PCI-X DDR	24 PCIe + 192 PCI-X DDR	24 PCIe + 192 PCI-X DDR
Max PCI slots w/12X PCIe I/O drawers	41 PCIe + 2 PCI-X DDR	3 PCIe + 2 PCI-X DDR	184 PCIe	184 PCIe
AIX rPerf Ranges	3.0 GHz: 81.24 - 292.47 3.3 GHz: 70.07 - 313.15 3. 55 GHz: 331.06	N/A	3.1 GHz: 165.30 - 579.39 3.5 GHz: 140.75 - 493.37	3.8 GHz: 195.45 - 685.09 4.1 GHz: 115.86 – 425.50
Capacity on Demand options	N/A	N/A	CUoD, On/Off, Utility, Trial	CUoD, On/Off, Utility, Trial
Warranty	1-yr 9x5, next business day	1-yr 9x5, next business day	1-yr 9x5, next business day	1-yr 24x7, same day
Max partitions AIX+IBM i + Linux	160[10]	32	160[10]	160[10]
IBM i level & tier	6.1.1 P20	N/A	6.1.1 P30	6.1.1 P50
AIX level & group	5.3, 6.1 Small	5.3, 6.1 Small	5.3, 6.1 Medium	5.3, 6.1 Large
Linux support	SLES 10 SP3 SLES 11	SLES 10 SP3 SLES 11	SLES 10 SP3 SLES 11	SLES 10 SP3 SLES 11
PowerVM Express	Option	N/A	N/A	N/A
PowerVM Standard	Option	N/A	Option	Option
PowerVM Enterprise	Option	N/A	Option	Option

IBM POWER6 Systems Family Quick Reference Guide

								
	BladeCenter JS12 Express	**BladeCenter JS22 Express**	**BladeCenter JS23/JS43 Express**	**Power 520 Express**	**Power 550 Express**	**Power 560 Express**	**Power 570**	**Power 595**
System package	BladeCenter Chassis	BladeCenter Chassis	BladeCenter Chassis	4U, 19" rack or tower	4U, 19" rack or tower	4U/node, 19" rack	4U/node, 19" rack	42U, 24" CEC frame
# of cores (GHz & processor)	2 (3.8 GHz POWER6)	4 (4.0 GHz POWER6)	JS23: 4 (4.2 GHz POWER6+™) JS43: 8 (4.2 GHz POWER6+)	1, 2, 4 (4.2 GHz POWER6) 2, 4 (4.7 GHz POWER6+)	2, 4, 6, 8 (3.5,/4.2 GHz POWER6) 2, 4, 6, 8 (5.0 GHZ POWER6+)	4, 8, 16 (3.6 GHz POWER6+)	2 to 16 (3.5/4.4 GHz POWER6, 5.0 GHz POWER6+) 4 to 32 (4.2 GHz POWER6+)	8 to 64 (4.2 GHz POWER6) 16 to 64 (5.0 GHz POWER6)
Min - max GB memory	4 to 64	4 to 32	23: 4 to 64 43: 8 to 128	2 to 64	4 to 256	8 to 384	2 to 768	16 to 4096
Max internal disk bays	2	1	JS23: 1 JS43: 2	8	8	12	24	26 per PCIe I/O drawer
Max internal TB storage	0.29	0.14	JS23: 0.14 JS43: 0.29	2.7	2.7	5.4	10.8	3.8 per PCIe I/O drawer
Max CEC PCI slots	1 PCIe + 1 PCI-X	1 PCIe + 1 PCI-X	1/2 PCIe + 1/2 PCI-X	3 PCIe + 2 PCI-X DDR	3 PCIe + 2 PCI-X DDR	8 PCIe + 4 PCI-X DDR	16 PCIe + 8 PCI-X DDR	20 slots per 24" I/O drawer
AIX rPerf	14.71	30.26	JS23: 36.28 JS43: 68.20	up to 39.73	up to 78.6	up to 100.3	up to 193.25	up to 553.01
IBM i CPW	7,100	13,800	JS23: 14,100 JS43: 26,590	up to 18,300	up to 37,950	up to 48,500	up to 104,800	up to 294,700
Warranty	3-year 9x5 next business day			1-year 9x5 next business day				1-year 24x7
Max partitions	20	40	80	40	80	160	160	254
AIX release	5.3, 6.1	5.3, 6.1	5.3, 6.1	5.3, 6.1	5.3, 6.1	5.3, 6.1	5.3, 6.1	5.3, 6.1
IBM i release	6.1	6.1	6.1	5.4, 6.1	5.4, 6.1	6.1	5.4, 6.1	5.4, 6.1
Linux support	RHEL4.6, 5.1 SLES10/11	RHEL4.6, 5.1 SLES10/11	RHEL4.6, 5.1 SLES10/11	RHEL4.5, 5.1 SLES10/11	RHEL4.5, 5.1 SLES10/11	RHEL4.5, 5.1 SLES10/11	RHEL4.5, 5.1 SLES10/11	RHEL4.6, 5.2 SLES10/11
PowerVM Express				Option	Option			
PowerVM Standard	Standard	Standard	Standard	Option	Option	Option	Option	Option
PowerVM Enterprise	Option	Option	Option	Option	Option	Option	Option	Option

For more information

Contact your IBM representative or IBM Business Partner or visit: **ibm.com**/power

Integrated Marketing Communications
Route 100
Somers, NY 10589

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[1] IDC Quarterly Server Tracker Q309 release, December 2009

[2] More information on Power Systems performance benchmarks can be found at http://www-03.ibm.com/systems/p/hardware/reports/system_perf.html

[3] ITIC 2009 Global Server Reliability Report: **ibm.com**/common/ssi/fcgi-bin/ssialias?infotype=SA&subtype=WH&appname=STGE_PO_PO_USEN&htmlfid=POL03058USEN&attachment=POL03058USEN.PDF

[4] More information on the binary compatibility of AIX 6.1 can be found at http://www-03.ibm.com/systems/p/hardware/reports/system_perf.html

[5] More information on costs to use Power Systems and IBM i 6.1 can be found at http://www.ibm.com/common/ssi/fcgi-bin/ssialias?infotype=SA&subtype=WH&appname=STGE_PO_PO_USEN&htmlfid=POL03062USEN&attachment=POL03062USEN.PDF

[6] The Power 780 processor card (one per node) has 16 POWER7 processor cores. If run in optional TurboCore mode at 4.1 GHz, only half the cores are available.

[7] The 8 GB (2 x 4 GB) memory feature on Power 750 Express and Power 755 is planned for availability April 30, 2010.

[8] The 128 GB (4 x 32 GB) memory feature on Power 770 and Power 780 is planned for availability October 22, 2010.

[9] Maximum memory capacity on Power 770 and Power 780 is 1 TB at 1066 MHz and 2 TB at 800 MHz.

[10] IBM Statement of Direction to increase the maximum number of micropartitions to 320 on the Power 750 server and to 640 on Power 770 and 780 servers.

Please Recycle

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