

IBM System p5 520 and 520Q Express servers



System p5 520 or 520Q Express rack-mount and desktop servers

Highlights

- **Proven 5th generation IBM POWER™ technology**
- **Unique IBM Quad-Core Module technology—ideal for HPC Linux® operating system clusters**
- **Point, click and consolidate for even greater levels of individual system utilization with optional low-cost virtualization features**

Take back control of your transaction processing environment with the IBM System p5™ 520 and 520Q Express servers designed for reliability, flexibility and security. A 3-year warranty, special IBM financing and a choice of attractively-priced preconfigured Editions (for AIX 5L™ or Linux operating systems) make these systems easy to buy, install and manage. Both the p5-520 and p5-520Q Express are designed with simultaneous multi-threading¹ for increased system

utilization and improved application performance. The new browser-based Integrated Virtualization Manager makes it easier than ever to achieve increased utilization by adding low-cost Advanced POWER Virtualization features to your system.

The System p5 520Q Express platform is a new breed of 4-core Java™ and Web application server designed to deliver superior system throughput and configurability for demanding eCommerce and Web infrastructure applications. Powered by IBM's latest Quad-Core Module (QCM) 1.5 GHz POWER5+™ processors, the p5-520Q Express delivers outstanding performance at compelling low prices for high transaction environments based on the Java platform or for compute-intensive database applications.



System p5 520 or 520Q Express rack drawer

The leadership performance and manageability position the System p5 520 Express platform with its 1.65 or 1.9 GHz POWER5+ processors for use as a small database server, a branch application server, and for highly secure e-business and business intelligence (BI) / high performance computing (HPC) applications for enterprises of all sizes.

Flexible, expandable with reliability/ security features

The System p5 520 and 520Q Express servers are available as either a 19-inch 4U (four EIA units) rack drawer or deskside unit. The p5-520 Express is a 1- or 2-core symmetric multiprocessing (SMP) system with next generation 1.65 or 1.9 GHz POWER5+ processors. The p5-520Q Express server is a 4-core SMP system with 1.5 GHz QCM POWER5+ processors. DDR2 memory starts at 1GB and can be upgraded to 32GB. Clients have extensive growth potential from the base six PCI-X slots

and up to 2.4TB of internal disk storage. The attachment of up to four optional I/O drawers can add 28 slots and 14.4TB of storage providing significant expandability. For the ultimate in server availability, the 520 and 520Q Express servers can be clustered with IBM High Availability Cluster Multiprocessing (HACMP™) for AIX 5L™ software designed to provide near continuous availability.

The 520 and 520Q Express servers utilize logical partitioning (LPAR) technology implemented via IBM Virtualization Engine™ systems technologies and the operating system (OS). LPAR allows the processors to run separate workloads in different partitions on the same server, thereby helping lower costs. Partitions are shielded from each other to provide a high level of data security and application availability. Dynamic LPAR allows clients to dynamically allocate system resources to application partitions without rebooting enhancing availability.

The 520 and 520Q Express servers optionally offer Advanced POWER Virtualization including Micro-Partitioning™ technology and Virtual I/O

Server (VIOS) which can deliver increased system utilization while helping to ensure applications continue to get the resources they need. Micro-Partitioning technology helps lower costs by allowing the system to be finely tuned to consolidate multiple independent workloads. Micro-partitions can be defined as small as 1/10th of a processor and be changed in increments as small as 1/100th of a processor. Using the new Integrated Virtualization Manager (IVM) included with the VIOS, companies can cost-effectively consolidate multiple partitions onto a single server. With its intuitive browser-based interface, IVM is easy to use and helps reduce the time and effort required to manage virtual devices and partitions.

The 520 and 520Q Express platforms are designed to give clients the flexibility to run the AIX 5L and Linux operating systems concurrently in micro-partitions. AIX 5L, IBM's industrial-strength UNIX® OS, is built on a tradition of reliability, availability, security and open standards for business-critical applications. The Linux OS is known for its extensive set of open source applications and ability to rapidly deploy new or customized solutions. Linux distributions from Red Hat, Inc. and SUSE LINUX are supported.

The 520 and 520Q Express servers include many of the reliability, availability and serviceability (RAS) features of larger IBM System p5 systems, helping keep the system up and running around the clock. They extend IBM's world-class RAS capabilities to an entry system by including a sophisticated service processor; hot-plug, hot-swappable and redundant components; Chipkill™ ECC and bit-steering memory; and dynamic deallocation of system components. The resulting increase in system availability allows more work to be processed.

Security is no longer just desirable; it is an absolute requirement. The 520 and 520Q Express servers can ease the worry associated with providing a secure operating environment. The systems are designed to prevent applications running in logical partitions from violating the security and privacy policies across partitions. They also come with enhanced network filtering for better network security and intrusion detection.

Easy to acquire, deploy, integrate, manage

The cost of managing and deploying systems can be a key decision criterion for many companies. IBM and IBM Business Partners can work with a client every step of the way from acquisition, to design, to turnkey installation and migration and even to running the systems.

The 520 and 520Q Express platforms are available in specially priced packages—Express Editions—designed to deliver outstanding business value to smaller and mid-sized businesses while meeting the needs of many mission-critical applications. The System p5 520 Express, AIX 5L Edition and the System p5 520 Express, OpenPower™ Edition include popular, easy to order configurations with financial incentives on the hardware as well as the ability to order a discounted AIX 5L or Linux OS. Additional memory, disk drives or adapters—or displays or external storage—can be easily added to the package without impacting the original savings.

The automated management tools of the 520 and 520Q Express systems are designed to free the system operator from repetitive activities and potential disruptions, making it easier to manage. Features are provided for both UNIX and Linux environments to simplify the management of IT infrastructures and to help cut costs and improve application performance. Proven technology like VIOS allows the sharing of expensive disk drives, communications and Fibre Channel adapters to help drive down complexity and systems/administrative expense. This, coupled with the powerful POWER5+ processors, helps reduce complexity and cost (fewer processors, less electrical power, lower cooling requirements, less rack space).

IBM also supports the evolution of the Linux OS on the 520 and 520Q Express servers through its Linux Technology Centers, virtual centers for expertise interconnected over the Internet. This worldwide team of IBM engineers works with the open source community to accelerate the growth of the Linux OS by improving the Linux kernel, documentation and

development tools.

IT infrastructure and industry-specific offerings

IBM has committed resources and performed integration testing to develop relevant IT Infrastructure and industry-specific solutions with outstanding performance and technological innovations. System p5 Express servers, middleware platforms, business partner and open source applications, and services are being combined to help clients quickly, easily, safely, and cost-effectively solve pressing problems. With support across the entire System p5 family including the System p5 520 and 520Q Express, these integrated offerings recommend starter configurations to cover a range of user requirements and provide blueprints on how to design, set-up, install and deploy an optimal infrastructure for

common IT and industry-specific tasks.

Clients needing highly available and powerful storage to support their System p5 Express servers can realize benefits derived from using IBM System Storage™ and TotalStorage® solutions. IBM conducts comprehensive testing in System Storage laboratories under stress environments, including clustered configurations, to help ensure combined server and storage systems solutions have high reliability, interoperability and streamlined, efficient implementation. With an IBM TotalStorage, System Storage and System p5 520 or 520Q Express server solution, you can be assured your IT environment will meet today's and tomorrow's demanding needs.

System p5 520 and 520Q Express: Perfect for the bottom line

Choose System p5 520 or 520Q Express servers for branch office appli-

cations or database serving and gain piece of mind with a proven solution from thousands of Independent Software Vendors (ISVs) who support their AIX 5L and Linux applications on the high performing and flexible System p5 platform. Use the deskside or rack-mount models for your processing needs in the areas of transportation, construction, wholesale, retail, distribution, light manufacturing, services and professional groups.

The 520 and 520Q Express platforms are also available as a part of the IBM Express Portfolio™ of offerings and have the features and functionality needed to meet the needs of smaller to mid-sized businesses. Priced right, they deliver more value for your investment—like when you select the low-cost optional Advanced POWER Virtualization features and get the browser-based Integrated Virtualization Manager included at no additional charge.

System p5 520 and 520Q Express at a glance

Standard configurations

Microprocessors	p5-520 Express: one or two 64-bit 1.65 GHz or two 1.9 GHz POWER5+ processors p5-520Q Express: Four 64-bit 1.5 GHz POWER5+ processors
Level 2 (L2) cache	1.9MB per processor pair
Level 3 (L3) cache	36MB per processor pair (no L3 cache on 1-core system)
RAM (memory)	1GB to 32GB of 528 MHz DDR2 SDRAM
Internal disk storage	Up to 2.4TB (16.8TB with optional disk drawers)
Processor-to-memory bandwidth (peak)	21.1 GBps
L2 to L3 cache bandwidth (peak)	p5-520 Express: 30.4 GBps; p5-520Q Express: 48.0 GBps
RIO-2 I/O subsystem bandwidth (peak)	p5-520 Express: 5.1 GBps; p5-520Q Express: 4.0 GBps
Internal SCSI disk bays	Four standard plus four optional (10K or 15K rpm disks)
Media bays	Two slimline and one half-high
Adapter slots	Six PCI-X (2 – 66 MHz; 3 – 133 MHz; 1 – 266 MHz (DDR))

Standard features

I/O ports	Dual channel Ultra320 SCSI controller (internal; RAID optional) Dual ported Ethernet 10/100/1000 Mbps controller Two USB, two HMC, two system ports
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Expansion features

I/O expansion (optional)	Up to four 7311-D20 I/O drawers, each providing seven 64-bit PCI-X slots and up to 12 disk bays (10K or 15K rpm disks)
Connectivity support (optional)	2 Gigabit Fibre Channel; 10 Gigabit Ethernet; 4x InfiniBand

Virtualization Engine system technologies

POWER Hypervisor	Dynamic LPAR; Virtual LAN ¹
Advanced POWER Virtualization ¹ (optional)	Micro-Partitioning; Shared processor pool; VIOS with IVM; Partition Load Manager (AIX 5L only)

Operating systems

AIX 5L Edition: AIX 5L V5.2 or later
OpenPower Edition: SUSE LINUX Enterprise Server 9 for POWER (SLES 9) or later; Red Hat Enterprise Linux AS 4 for POWER (RHEL AS 4) or later

Power requirements

100v to 127v or 200v to 240v AC

System dimensions

Deskside: 21.1"H x 7.5"W x 23.2"D (535mm x 190mm x 590mm); weight: 78.1 lb (35.5kg)²
Rack drawer: 6.8"H (4U) x 17.4"W x 22.6"D (172mm x 442mm x 573mm); weight: 78.1 lb (35.5 kg)²
7311-D20 I/O drawer: 7.0"H (4U) x 19.0"W x 24.0"D (178mm x 482mm x 610mm); weight: 101.0 lb (45.9 kg)²

Warranty

8 A.M. to 5 P.M., next-business-day for three years (limited) at no additional cost; on-site for selected components; CRU (customer replaceable unit) for all other units (varies by country).
Warranty service upgrades and maintenance are available.

For more information

To learn more about the IBM System p5 520 and 520Q Express servers, please contact your IBM marketing representative or IBM Business Partner, or visit the following Web sites:

- ibm.com/systems/p/
- ibm.com/servers/aix
- ibm.com/linux/power
- ibm.com/systems/p/solutions
- ibm.com/common/ssi
- www.express-portfolio.com/ibm



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Systems and Technology Group
Route 100
Somers, NY 10589

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When referring to storage capacity, 1TB equals total GB divided by 1000; accessible capacity may be less.

Many of the features described in this document are operating system dependent and may not be available on Linux. For more information, please check: ibm.com/servers/eserver/pseries/linux/whitepapers/linux_pseries.html.

¹ Not supported on AIX 5L V5.2

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