High-density system for space constrained applications

IBM System p5 505 Express server

IBM p5-505 Express rack-mount drawer

Highlights

- ***First IBM POWER5™ server in a high-density 1U package***
- ***Ideal for infrastructure and clustered HPC workloads***
- ***Capability to support Linux® and UNIX® applications simultaneously***
- ***Three-year warranty coupled with security and reliability features to help give peace of mind***
- ***Easy to acquire, deploy, integrate and manage***

In today's competitive world, the difference between winning and losing could be determined by how efficiently a company, be it large or small, manages its servers. That's why IBM has developed the System p5™ Express family of flexible, affordable servers designed with exceptional security and reliability features and built on the successful heritage of the IBM @server® p5 Express product line. As the lowest cost member of the System p5 Express family, the p5-505 Express entry server is built with proven POWER5 technology and provides exceptional value in a 1U (one EIA Unit) high-density system. It offers on demand computing without compromising availability, flexibility or security features—at a value price. In addition, the new OpenPower™ Edition supports popular distributions of the Linux operating system (OS) and the new AIX 5L™ Edition supports AIX 5L,

IBM's industrial-strength UNIX OS. These technological and operational features coupled with a competitive price make the p5-505 Express server an outstanding choice for small, mid-sized and large businesses running infrastructure and clustered high performance computing (HPC) workloads.

Flexibility, reliability, security features

The System p5 505 Express server is available in a 19" 1U rack-mount drawer. It is a 1- or 2-way symmetric multiprocessing (SMP) system with 1.5 GHz or 1.65 GHz POWER5 processors featuring simultaneous multithreading[1] designed for increased system utilization and improved performance. As a result, up to 40 2-way servers can be installed in a single 42U IBM or OEM 19" rack. Memory starts at 1GB and can be upgraded to 32GB. Also available are two PCI-X 2.0 slots (one of which is low-profile), dual gigabit Ethernet I/O ports, one slimline optical drive media bay and up to 600GB of disk storage. For the ultimate in server availability, the p5-505 Express server can be clustered with IBM High Availability Cluster Multiprocessing (HACMP™) for AIX 5L software designed to provide near continuous availability. Also available is 4x InfiniBand® connectivity for clustered workloads and applications.

The p5-505 Express server utilizes logical partitioning (LPAR) technology implemented via IBM Virtualization Engine™ systems technologies and the operating system. LPAR allows processors to run separate workloads, 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 model 505 Express server optionally offers Advanced POWER™ Virtualization including Micro-Partitioning™ technology and Virtual I/O Server (VIOS) which can result in 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 with increments as small as 1/100th of a processor. Using the new Integrated Virtualization Manager (IVM) included with 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 p5-505 Express server is designed to give clients the flexibility to run the AIX 5L and Linux operating systems simultaneously in micro-partitions. AIX 5L 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 p5-505 Express platform features many of the same world-class reliability, availability and serviceability (RAS) features as larger System p5 Express models, helping keep the system up and running around the clock. It extends IBM's 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. Especially important is the availability of redundant cooling as standard and redundant power as an optional feature. The resulting increase in system availability means minimal interruptions to infrastructure (file/print, Web serving, networking, security, systems management) and HPC / floating-point scientific workloads. The p5-505 Express includes a three (3)-year hardware service warranty, further adding to its value.

Security is no longer just desirable; it is an absolute requirement. The p5-505 Express server can ease the worry associated with providing a secure operating environment. The system is designed to prevent applications running in logical partitions from violating the security and privacy policies across partitions, and also comes with enhanced network filtering for better network security and intrusion detection.

Linux delivers freedom of choice

The p5-505 Express is tuned not only for the AIX 5L operating system but also for the Linux OS. It takes advantage of inherent performance-enhancing characteristics of IBM Power Architecture™ technology, including improved memory and data access. In addition, for even greater uptime and scalability, the Linux kernel leverages the performance features of POWER5 processors—including support of large SMPs and RAS capabilities such as First Failure Data Capture (FFDC) and hardware diagnostics. Linux also exploits the optional hardware-based Virtualization Engine capabilities such as Micro-Partitioning technology, VIOS and more—all designed to help improve utilization and lower operational costs.

Easy to acquire, deploy, integrate and manage

The cost of managing and deploying systems can be a key decision criterion for any company. 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 p5-505 Express platform is available in specially priced packages that include the hardware platform and OS and are designed to meet the needs of many mission-critical applications while delivering outstanding business value. The System p5 505 Express, AIX 5L Edition includes a p5-505 Express server and an AIX 5L OS license; the System p5 505 Express, OpenPower Edition includes a p5-505 Express server and a Linux OS license. These

IBM rack populated with p5-505 Express servers

easy to order pre-configured packages provide financial incentives on the hardware as well as a discounted operating system. 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 p5-505 Express server 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 disk drives, communications and Fibre Channel adapters to help drive down complexity and systems/administrative expense. This technology, coupled with the powerful POWER5 processors, helps reduce complexity and costs (fewer processors, less electrical power, lower cooling requirements, less rack space).

Infrastructure, HPC and industry-specific solutions

IBM has committed resources and integrated testing to develop relevant Infrastructure, HPC 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. These solutions provide a set of recommended and pre-tested p5-505 Express configurations along with blueprints on how to design, set-up, install and deploy an optimal infrastructure for common IT and industry-specific tasks.

System p5 505 Express: Ideal for the bottom line

The System p5 505 Express server is complemented by a network of IBM Business Partners who provide thousands of applications that address the needs of many smaller and mid-sized businesses. Solutions for the p5-505 Express span a wide range of industries including education, government, transportation, construction, wholesale and retail distribution, light manufacturing, services and professional groups. The p5-505 Express server is an ideal fit for these companies because it has the functions, solutions and support needed at a competitive price.

The p5-505 Express platform is also available as a part of the IBM Express Portfolio™ offerings and has the features and functionality needed to meet technology needs of mid-sized businesses, including hardware, software, services and financing. Priced right, it can deliver more value for your investment.

IBM System p5 505 Express server at a glance

Standard configurations	
Microprocessors	One or two 64-bit 1.65 GHz POWER5 or two 64-bit 1.5 GHz POWER5
Level 2 (L2) cache	1.9MB
Level 3 (L3) cache	36MB (on 2-way systems)
RAM (memory)	1GB to 32GB of 533 MHz DDR2 SDRAM
Internal disk storage	Up to 600GB
Processor-to-memory bandwidth (peak)	21.3 GBps
L2 to L3 cache bandwidth (peak)	26.4 GBps
Internal SCSI disk bays	Two (10K or 15K rpm disks)
Media bays	One slimline for optical device
Adapter slots	PCI-X 2.0 (two 266 MHz (DDR)); one long and one short low-profile
Standard features	
I/O ports	Dual channel Ultra320 SCSI controller (external SCSI port) Dual ported Ethernet 10/100/1000 Mbps controller Two USB, two HMC, two system ports
Expansion features	
Connectivity support	2 Gigabit Fibre Channel, 10 Gigabit Ethernet, 4x InfiniBand
Virtualization Engine system technologies	
POWER Hypervisor™	Dynamic LPAR, Virtual LAN[1]
Advanced POWER Virtualization[1] (options)	Micro-Partitioning, Shared processor pool, VIOS, IVM, Partition Load Manager (AIX 5L only)
Operating systems	AIX 5L Edition: AIX 5L Version 5.2 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	Rack drawer: 1.7"H x 17.3"W x 28.0"D; weight: 37.4 lb[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 505 Express server, please contact your IBM marketing representative or IBM Business Partner, or visit the following Web sites:

- **ibm.com**/eserver/pseries
- **ibm.com**/servers/aix
- **ibm.com**/linux/power
- **ibm.com**/common/ssi
- www.express-portfolio.com/ibm

All performance information was determined in a controlled environment. Actual results may vary. Performance information is provided "AS IS" and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of a system they are considering buying.

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.

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Produced in the United States
October 2005

PSD01351-USEN-00