No compromise entry server for an on demand world

IBM @server pSeries 615

pSeries 615 Model 6C3

pSeries 615 Model 6E3

Highlights

- ***High-end reliability, availability and serviceability features at an attractive entry price***
- ***Autonomic capabilities enhance manageability and remote systems management***
- ***Innovative, high-performance POWER4+ processors***

At any given time, a market is always open somewhere in the world—and e-business is there. Massive global networks allow companies to conduct transactions 24 hours a day, 7 days a week. Customers insist on personalized service and customized products—and businesses must respond instantaneously, delivering information and solutions tailored for individuals.

Science fiction? Not anymore. Based on innovative technologies developed throughout IBM, computing infrastructures that can be quickly adapted to changes in the environment exist today. Competing in the world of e-business on demand™ means an organization must anticipate shifts in the market, then leverage the power and flexibility of its IT architecture to respond to changes as they occur. With the IBM @server® pSeries® 615 server, small- and medium-sized businesses can harness the power, speed and versatility of a UNIX® or Linux system to support enterprise-class on demand computing with the packaging and value price of an entry-level server.

Well-suited for both application and small database serving, the pSeries 615 combines the performance and sophistication of advanced POWER4™ architecture with a broad range of features designed to help improve reliability, availability and serviceability (RAS).

Its unique combination of mainframe-inspired reliability, exceptional price/performance and remote systems management capabilities makes the pSeries 615 an excellent choice for distributed environments such as remote stores, branches, regional offices or kiosks.

Small footprint, big power

With a choice of one or two 1.2 GHz or two 1.45 GHz POWER4+™ processors and up to 16GB of memory and 8MB of L3 cache, the pSeries 615 offers outstanding performance at an affordable entry price. It incorporates the POWER4+ microprocessor, which showcases the latest advancements in copper and silicon-on-insulator (SOI) chip technology from IBM. The POWER4+ 64-bit technology contributes to top performance by supporting large amounts of memory—allowing applications to keep more information accessible in high-speed memory, and enabling them to run faster by reducing the need to retrieve data from online storage.

The pSeries 615 offers two different form factors to provide flexibility in building a computing infrastructure. The pSeries 615 Model 6E3 features a compact deskside design with a small footprint—23 inches (584mm) deep and 7.9 inches (201mm) wide. The pSeries 615 Model 6C3 offers a four EIA Unit (4U) drawer[1] designed for "racking and stacking," so it can be easily installed in an industry-standard 19-inch rack such as the IBM 7014 Model T00 (36U) or Model T42 (42U).

High-performance 10/100 and 10/100/1000 Mbps Ethernet and two Ultra320 SCSI controllers are integrated into each pSeries 615. This integration can eliminate the need for additional controllers, which saves space and costs. Up to two internal RAID options are available, thereby improving performance and data availability while avoiding the need for expensive external storage devices.

The pSeries 615 offers excellent expandability with four standard and four optionally available hot-swappable disk bays. The disk bays can accommodate 36.4GB, 73.4GB or 146.8GB disk drives, providing more than one terabyte of available internal hot-swappable disk storage.

Six hot-plug PCI-X I/O slots support 64-bit adapters and offer compatibility with most pSeries 32-bit expansion cards. Three media bays are available for attachment of DVD-ROM, DVD-RAM, diskette or tape drive devices.

Keeping business processes running

Several innovations stemming from the IBM autonomic computing initiative—a blueprint for self-managing systems—help contribute to uncompromising reliability, manageability and serviceability features. In fact, the pSeries 615 includes many of the RAS capabilities found on the flagship IBM UNIX server, the pSeries 690.

To boost availability, an integrated service processor in every server monitors system health. This feature can detect error conditions within the hardware and automatically place a service call to IBM, often before the problem becomes apparent to users. Then, if repairs are necessary, the service processor can initiate dynamic reconfiguration to correct the failure. In this manner, automated monitoring helps businesses minimize costly outages and reduce administrative overhead and support costs.

The service processor also allows administrators to perform remote shutdowns and reboots. It provides systems management services for installing application enhancements, software upgrades and operating system patches from remote locations—saving administrative time when managing branch offices, multiple store sites or servers in hard-to-access locations.

Feature	Benefits
POWER4+ microprocessors with L3 cache	• Provide improved system and application performance and higher reliability for commercial applications in a smaller, more efficient package
Copper and SOI technology	• Improves processor performance and reliability while using less power and producing less heat to help conserve energy and help lower operational costs
Up to 16GB memory	• Allows exploitation of 64-bit addressing for database applications • Provides growth options for greater throughput
ECC Chipkill™ bit-steering memory	• Helps significantly lower number of memory failures that cause system outages, thus increasing system availability • Automatically activates memory spares when multiple memory errors are encountered
Front-mounted serial port	• Offers convenient connection of handheld devices for easy systems management
Wireless systems management	• Allows remote personnel to perform system maintenance and monitor performance • Enables server farms to be managed more easily
Six hot-plug PCI-X adapter slots	• Provide growth options for increased capacity • Support many commonly used adapters for increased availability at a lower cost • Allow adapters to be added or removed without interrupting the system
Hot-swappable disk bays	• Provide greater system availability and smooth growth by allowing swapping or adding of disk drives without powering down the system
RAID support for internal disks	• Provides the ability to transparently survive an internal disk failure thereby improving data availability • Increases disk I/O performance in selected configurations
Built-in service processor	• Continuously monitors system operations and takes preventive or corrective action for quick problem resolution and high system availability • Allows diagnostics and maintenance to be performed remotely
Redundant hot-plug power and cooling subsystems	• Enhance system availability since cooling fans and power supplies can be changed without interrupting operations • Provide backup power and cooling if primary unit fails
Dynamic processor and PCI bus slot deallocation	• Automatically deallocates resources when impending failure is detected, so applications can continue to run uninterrupted
IBM @server Cluster 1600	• Provides centralized management of multiple interconnected systems • Provides ability to handle unexpected workload peaks by sharing resources • Allows for more granular growth so user demands can be readily satisfied
Linux operating system	• Enables access to 32- and 64-bit Open Source applications • Provides a common operating environment across IBM @server platforms
AIX 5L™ operating system	• Delivers maximum throughput for mixed workloads without complex system configuration or tuning • Provides upward binary compatibility to help preserve software investments • Extends application choices with Linux affinity

IBM 7014 Model T00 rack with nine pSeries 615 Model 6C3 drawers.

First Failure Data Capture (FFDC) identifies and logs the source and root cause of system failures to help prevent the reoccurrence of intermittent failures that diagnostics cannot reproduce. Designed to prevent outages and reduce repair time by identifying failing components in real time, FFDC contributes to outstanding pSeries system availability.

IBM Chipkill memory technology allows detection and correction of most multi-bit memory errors. This protection from memory failures helps prevent costly system memory crashes and improve pSeries reliability. In fact, IBM studies show that systems with Chipkill memory are up to 100 times less likely to have outages caused by memory failure.[2]

To help prevent system shutdowns caused by main memory and cache errors, error checking and correcting (ECC) memory detects both single- and double-bit errors and can correct all single-bit errors dynamically—complementing Chipkill memory to improve reliability. In addition, the pSeries 615 includes redundant, spare main memory chips. Through a technique known as bit-steering, these spares can be dynamically activated and replace a failing memory chip if multiple memory bit errors exceed a threshold.

The pSeries 615 server also features the ability to deallocate critical system resources, including the processors (2-way) and PCI-X bus slots. In the unlikely event that one of these components fails or indicates an impending failure, this capability—working with the AIX 5L operating system and the service processor—can dynamically take the faulty component offline. The system automatically reassigns the workload to other resources to avoid interruption. If the system must be rebooted, previously deallocated components will not be included to avoid repetition of the error condition. Failing components can be replaced during normal service to minimize system and application downtime.

Reliability and availability features also include redundant hot-plug cooling fans and optional redundant hot-plug power supplies, which can be easily replaced without affecting system operations. Environmental monitoring functions—such as temperature monitoring that increases the fan speed in response to above-normal temperatures—boost reliability by helping to maintain the correct conditions for stable system operation.

Management features for serviceability

The pSeries 615 has service indicator lights in both the front and rear of the server to help on-site technicians quickly locate the system requiring attention. A built-in, front-accessible serial interface for handheld devices, such as the IBM WorkPad® or Palm®, enables fast system setup, network, configuration and performance monitoring using specialized IBM no-charge System Networking, Analysis, and Performance Pilot software—facilitating rapid deployment of the server within a network environment.

Another powerful feature, Wireless System Management (WSM), simplifies server administration using wireless handheld devices such as the Palm VII or a cell phone. Designed to work with a browser on several types of wireless devices, WSM allows customers to manage these systems from anywhere, anytime—on demand.

pSeries clustering

Clustering—an advanced computing technique designed to promote higher performance, scalability, availability and manageability—allows multiple pSeries servers to be interconnected to form a single unified computing resource. Clusters of pSeries servers, which may include the pSeries 615, are known as the IBM @server Cluster 1600. Using software that has been designed to simplify and streamline the management of tens or hundreds of pSeries AIX 5L or Linux servers or server partitions, the Cluster 1600 can help reduce the cost of data center administration and consolidate UNIX and Linux workloads, while ensuring continuous access to business-critical data applications. Diverse workloads such as Web serving and hosting, enterprise resource planning (ERP), enterprise resource management (ERM) and supply chain management (SCM) can all benefit from the increased performance scalability, availability and manageability offered by pSeries clusters.

With the Cluster 1600, companies can manage up to 128 operating system images from a single point-of-control. A higher scalability limit of 512 is available by special order. Up to 64 pSeries 615 AIX 5L or Linux servers can be included in a Cluster 1600. Each pSeries 615 server can be clustered with an industry standard Ethernet interconnection.

Open standards for e-business

The pSeries 615 system is matched with AIX 5L—the advanced, open, scalable UNIX operating system from IBM. Providing real value in reliability, availability and security, AIX 5L is tuned for e-business application performance and is recognized as state-of-the-art in systems and network management.

AIX 5L delivers Java™ technology, Web performance and scalability enhancements for managing systems of all sizes—from single servers to large, complex installations. Web-based remote management tools give administrators centralized control of the system, enabling them to monitor key resources such as adapter and network availability, file system status and processor workload. AIX 5L also incorporates Workload Manager, a tool that can help companies ensure that applications remain responsive even during periods of peak system demand.

The pSeries 615 exemplifies the IBM @server commitment to true application flexibility through open standards. In addition to including enhanced Java scalability and performance, AIX 5L provides Application Programming Interfaces (APIs) that allow popular Linux Open Source applications to run on AIX 5L with a simple recompilation. The AIX® Toolbox for Linux Applications provides utilities, editors, debuggers and other application development tools to aid in this recompilation.

The Linux advantage

The Linux operating system is available for the pSeries 615 from one or more Linux distributors, offering packages that include a complement of Open Source tools and applications. Linux does not require the use of AIX 5L. Linux applications can run natively and benefit from many of

pSeries 615 at a glance

Minimum configuration	
Microprocessor:	1-way or 2-way 1.2 GHz POWER4+; 2-way 1.45 GHz POWER4+
Level 3 (L3) cache:	8MB (ECC)
RAM (memory):	1GB (ECC, Chipkill)
Internal disk drive:	One 36.4GB Ultra320 SCSI
Internal disk bays:	Four hot-swappable (36.4GB, 73.4GB and 146.8GB disk drives available; up to 587.2GB)
Media bays:	Three
Expansion slots:	Six hot-plug PCI-X (64-bit) 3.3v (speeds up to 133 MHz)
Bus width:	32- and 64-bit
Standard features	
I/O adapters:	Intergrated 10/100 and 10/100/1000 Mbps Ethernet controllers Two integrated Ultra320 SCSI controllers
Ports:	One parallel and three serial ports Two ports for connecting the Hardware Management Console for pSeries
System expansion	
RAM:	Up to 16GB (ECC, Chipkill)
Disk bays:	Four additional hot-swappable disk bays (36.4GB, 73.4GB and 146.8GB disk drives available; up to 587.2GB additional)
Cluster features	
Cluster management:	Cluster Systems Management (CSM) v1.3 with AIX 5L v5.2
Cluster interconnect:	Ethernet (CSM v1.3 with AIX 5L v5.1/5.2 or Linux)
RAS features	Copper, SOI microprocessors Chipkill ECC, bit-steering memory ECC L2 cache, L3 cache Service processor Hot-swappable disk bays Hot-plug PCI-X slots, power supplies and cooling fans Dynamic Processor Deallocation (2-way) Dynamic deallocation of PCI bus slots Redundant hot-plug cooling fans and optional power supplies
Operating systems	AIX 5L Versions 5.1/5.2 Selected Linux distributions*
Power requirements	100 to 127 or 200 to 240 V ac (auto-ranging)
System dimensions	7.0"H x 17.2"W x 20.0"D (178mm x 437mm x 508mm)—standard 4U rack-mount 21.0"H x 7.9"W x 23.0"D (533mm x 201mm x 584mm)—deskside Weight: 94.8 lb (43.1 kg)**
Warranty:	8 A.M to 5 P.M., next-business-day for one year (limited) at no additional cost; on-site for selected components, CRU for all others (vary by country); warranty service and maintenance upgrades are available

* Details on supported Linux distributions may be found at **ibm.com**/servers/eserver/pseries/linux/whitepapers/linux_pseries.html

** Weight will vary when disks, adapters and other peripherals are installed

the performance features of the pSeries 615.[3] IBM Global Services, and Linux distributors offer services and support for Linux.

Greater application choice

The IBM @server product line offers uncompromising flexibility in selecting, building and deploying the applications businesses need to succeed in today's on demand world. Toward that end, IBM offers one of the industry's broadest ranges of platforms and operating systems. IBM is committed to industry-standard, cross-platform technologies that form the core of a flexible e-business infrastructure.

Support for these standards in key middleware—including IBM DB2® Universal Database™, WebSphere® and MQSeries®—means that companies need not get locked into a single platform as their businesses grow. By embracing open standards, companies gain the flexibility to deploy applications in a highly cost-effective way.

Value and simplicity

Preconfigured Express Configurations for pSeries 615 systems are easy to order and offer extensive features to meet the needs of mission-critical environments. They are available for AIX 5L or Linux operating environments.

Managing an on demand e-business

The IBM @server product line is backed by a comprehensive suite of offerings and resources that provide value at every stage of IT implementation. These can help companies test possible solutions, obtain financing, plan and implement applications and middleware, manage capacity and availability, improve performance and obtain technical support across their entire infrastructure. The result is an easier way to help businesses handle complexities and rapid growth in an on demand world.

IBM Global Financing offers a wide range of financing options to help manage the bottom-line and meet the varying needs of e-business on demand.

In addition, IBM Global Services experts can help with business and IT consulting, business transformation and total systems management services, as well as customized e-business solutions.

Backed by IBM

pSeries 615 systems are backed by worldwide service and support from IBM. The end-to-end, one-year basic warranty includes AIX 5L operating system support, hardware fixes, manned phone hardware support and call tracking.

The basic hardware warranty provides 8 A.M. to 5 P.M., next-business-day service. Some components are customer replaceable units (CRU) with the remainder requiring on-site service. Service upgrades, including 24x7x365 coverage, are available. The warranty terms and conditions may be different in some countries. Please consult your local IBM marketing representative or IBM Business Partner for country-specific terms and conditions.

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Summary

By incorporating technology from IBM's most advanced enterprise servers, the pSeries 615 server helps

eliminate the compromises of most entry-level systems. In fact, it delivers the reliability, performance and scalability features commonly associated with much larger systems in smaller, more affordable deskside or rack packages.

Many small- to mid-sized businesses may find that they can easily handle all their business-critical computing tasks with the pSeries 615. For others, it provides a perfect building-block for creating a scalable, rack-dense foundation for application solutions. And the power, capacity and enterprise-class capabilities of the pSeries 615 make it an ideal choice for any company looking to strengthen its e-business infrastructure with highly reliable, highly available components.

In short, the pSeries 615 server is one of the most innovative entry servers available today, a no compromise solution that helps companies better align their IT infrastructure with their on demand business needs—today and tomorrow.

For more information

To learn more about the IBM @server pSeries 615, 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**/eserver/pseries/linux
- **ibm.com**/servers/solutions
- **ibm.com**/ibmlink

All performance estimates are 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.

[1] One EIA Unit is 1.75 inches (4.5cm) and is the industry standard for rack measurements.

[2] IBM Study by Timothy J. Dell, "A White Paper on the Benefits of Chipkill-Correct ECC for PC Server Main Memory," (November 19, 1997) available at: **ibm.com**/servers/eserver/pseries/campaigns/chipkill.pdf

[3] Many of the pSeries 615 features described in this document are operating system dependent and may not be available with the Linux operating system. For more information, please check: **ibm.com**/servers/eserver/pseries/linux/whitepapers/linux_pseries.html

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