

## IBM @server pSeries 680



IBM @server pSeries 680

---

### Highlights

---

- **Powered by the most advanced IBM copper and SOI chips to run complex e-business applications and to meet future growth and application needs**
- **Availability and reliability to succeed in today's 24x7 global environment**
- **Unique offerings for support, financing, availability and on-demand growth**

### Growth as needed

Today's pace of business transformation requires an enterprise server that offers the flexibility and power needed to quickly adapt to change. The IBM @server pSeries 680 is our most powerful UNIX® symmetric multiprocessor (SMP) system. It excels at many diverse e-business applications, including Web serving

and hosting, mission-critical enterprise resource planning (ERP), supply chain management (SCM) and data warehousing/data mart/decision support.

### The new standard

The pSeries 680 builds on the award-winning<sup>1</sup> design of its predecessor (RS/6000® Model S80), increasing the clock speed to 600 MHz and memory to 96GB. With four to 24 microprocessors, each with 16MB of ECC (error checking and correcting) Level 2 (L2) cache, the p680 has the power, capacity and reliability for the most demanding e-business applications. And for customers with lower performance needs, six to 24 450 MHz processor options are available.

The pSeries 680 is the first UNIX platform to feature RS64 IV microprocessors, based on state-of-the-art copper silicon-on-insulator (SOI) technology from IBM. It delivers more power for business applications with a total aggregate internal bandwidth of 43.2 GB/sec for enhanced throughput.

## **Rapid growth**

The pSeries 680 provides the scalability necessary to handle business growth smoothly, and extend business-critical applications to the Web. Processors, cache and memory are packaged in “books” to protect the sensitive electronics with the first book available with four or six processors.<sup>2</sup> As demands on the system grow, up to three additional processor books—each with six processors—can simply be added and plugged into the system as required. The combination of the p680 system and AIX® helps companies to easily handle unexpected peaks in demand. The Workload Manager function of AIX automatically allocates system resources based on customer-established priorities. This allows critical applications to remain responsive, even if multiple applications are running on a single p680.

The Capacity Upgrade on Demand feature enables businesses to scale the system very quickly to handle requirements for more computing resources. For a fee, one or more

additional processor books may be installed, but initially disabled. When the need for additional capacity arises, an AIX command activates as many of the additional processors as required in increments of two. Workload Manager sees to it that system resources are allocated to accommodate the newly activated processors. And capacity planning is easier to implement with these extremely granular growth options (4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24 processors).

## **Protect your assets**

The pSeries 680 helps leverage and protect current information assets. For example, businesses can manage the evolution of an e-business into 64-bit computing while continuing to support existing 32-bit applications. And, hardware can also be upgraded independently of application software, ensuring business continuity.

The p680 packaging offers exceptional configuration flexibility to meet growth needs, while protecting hardware investments. Packaged in two side-by-side rack units, one houses the processors and memory; the other contains one to four 19-inch I/O drawers. The first drawer includes a

high-performance 9.1GB Ultra SCSI hard drive, CD-ROM, 1.44MB 3.5-inch diskette drive, two Ultra SCSI PCI adapters, a service processor plus 11 available PCI slots, one available media bay and 11 available hot-swappable disk drive bays. Each additional drawer adds 14 PCI slots, two media bays and 12 hot-swappable disk drive bays. 7014 Model T00 or T42 racks may be used for additional storage and communication capability.

A fully configured pSeries 680 system has 24 600 MHz processors with 96GB of system memory, 56 PCI adapter slots (three of which are reserved for the service processor plus the two required Ultra SCSI adapters), 48 hot-swappable disk bays and eight media bays, one of which is reserved for the CD-ROM drive. This is enough capacity for the most demanding applications.

<b>Feature</b>	<b>Benefits</b>
600 MHz RS64 IV microprocessors	<ul style="list-style-type: none"> <li>• Greatly expand performance levels for SMP commercial applications</li> <li>• Provide capacity to grow to 24 processors</li> </ul>
Copper and SOI technology <sup>3</sup>	<ul style="list-style-type: none"> <li>• Offers greater performance and reliability</li> </ul>
16MB ECC L2 cache per processor	<ul style="list-style-type: none"> <li>• Provides increased performance and greater reliability</li> </ul>
Up to 96GB ECC SDRAM memory	<ul style="list-style-type: none"> <li>• Allows faster performance and exploitation of 64-bit addressing as might be used with large database applications</li> <li>• Provides growth options for significantly increased capacity</li> </ul>
Chipkill™ Memory	<ul style="list-style-type: none"> <li>• Significantly lowers number of memory failures that cause system outages, thus increasing system availability</li> <li>• Minimizes the potential for loss of business data</li> </ul>
64-bit system architecture	<ul style="list-style-type: none"> <li>• Improves physical memory use for applications requiring faster access to large amounts of data</li> </ul>
Up to 56 PCI adapter slots	<ul style="list-style-type: none"> <li>• Provide e-business growth options for significantly increased capacity</li> <li>• Support many commonly used adapters for increased availability at lower costs</li> </ul>
Hot-swappable disk drive bays	<ul style="list-style-type: none"> <li>• Provide greater system availability and smooth growth by allowing swapping or adding of disk drives without powering down the system</li> </ul>
Redundant hot-plug power and cooling subsystems	<ul style="list-style-type: none"> <li>• Provide greater system availability since cooling fans or power supplies can be changed without interrupting the system</li> </ul>
Built-in service processor	<ul style="list-style-type: none"> <li>• Continuously monitors system operations and takes preventive or corrective actions for quick problem resolution and high system availability</li> <li>• Allows diagnostics and maintenance to be performed remotely</li> </ul>
Dynamic Processor Deallocation	<ul style="list-style-type: none"> <li>• Automatically deallocates resources when impending processor failures are detected so applications can continue to run uninterrupted</li> </ul>
Concurrent 32- and 64-bit	<ul style="list-style-type: none"> <li>• Allows customers to migrate to 64-bit applications at their own pace</li> </ul>
Application support	<ul style="list-style-type: none"> <li>• Protects customers' 32-bit software investments while allowing them to participate in technology enhancements</li> </ul>
Capacity Upgrade on Demand	<ul style="list-style-type: none"> <li>• Provides a cost-effective growth path in processing capacity</li> <li>• Satisfies new, unanticipated user application demand rapidly</li> </ul>
AIX clustering	<ul style="list-style-type: none"> <li>• Provides centralized management of multiple systems</li> <li>• Provides ability to handle unexpected workload peaks by sharing resources</li> <li>• Allows for more granular growth so user demands can be readily satisfied</li> </ul>
AIX operating system	<ul style="list-style-type: none"> <li>• Maintains branded conformance to The Open Group's XPG4, UNIX 95 and UNIX 98 specifications</li> <li>• Provides an AIX binary-compatible environment that helps assure continuing application availability across AIX Version 4 releases</li> <li>• Integrates IBM AIX Developer Kit, Java™ Technology Edition with IBM Just in Time (JIT) Compiler, allowing Java to load automatically in support of both server-side and client Java applications</li> </ul>

## Availability when you need it

At the heart of the pSeries 680 is a service processor that is designed to continually monitor the system's vital signs. Often, it can determine and recommend actions before a problem arises. If desired, a service call may be automatically placed. Other standard availability functions to help speed system recovery and optimize system availability include: service processor error collection, online concurrent diagnostics, auto restart and remote maintenance and diagnostics.

To maximize system availability, the p680 server has built-in fault and error correction functions. For the main memory, Chipkill Memory technology—developed by IBM for the S/390® enterprise server—can detect multiple bit errors and corrects most of them transparently. If the error rate exceeds the critical threshold, a maintenance action is initiated automatically by the system, to be resolved at the customer's convenience. IBM studies indicate that systems without Chipkill can be up to 100 times more likely to experience an outage due to memory failure.<sup>4</sup>

A unique IBM feature, Dynamic Processor Deallocation, monitors the processors themselves. In the event a processor indicates an impending failure, this feature (working with AIX) is designed to take the faulty processor offline. Work from the failing processor is reassigned automatically to other processors, and replacement of

the failing processor can be scheduled for a convenient time.

Redundant, hot-plug cooling fans and power supplies further enhance reliability and availability by providing backup capability in the event a fan or power supply becomes disabled. Additionally, failing fans or power supplies may be replaced without affecting system operations.

For near-continuous operations, two pSeries 680 servers can be clustered using High Availability Cluster Multiprocessing (HACMP) software, our industry-leading UNIX clustering disaster recovery solution.<sup>5</sup> This solution, when combined with applications that meet IBM ClusterProven™ standards, provides a superior base for high availability, an essential ingredient of business-critical environments.

## Clustering

Clustering is the interconnection of multiple computers into a single computing resource for improved availability, scalability, manageability and performance. Up to 16 pSeries 680s can participate in an AIX cluster of IBM @server pSeries and IBM RS/6000 servers under the control of specialized IBM cluster software—Parallel System Support Programs (PSSP). Such a cluster is an excellent choice for an environment needing horizontal growth—that is, replication of the same application across multiple servers as business needs grow—

and for server consolidation where diverse workloads are desired to be consolidated yet managed from a single point of control. And for the best cluster performance, the p680 may be switch-attached optionally to an RS/6000 SP.™

## The AIX advantage

An unlimited license of AIX—the innovative UNIX operating system from IBM—is included in the base price of the pSeries 680. Providing real value in reliability, availability and security, AIX is tuned for e-business performance and is widely recognized as state of the art in systems and network management.

AIX delivers Java technology, Web performance and scalability enhancements, and is an excellent choice for managing large, complex installations. It offers Web-based remote management tools to control the system and monitor key resources such as adapter and network availability, file system status and processor workload.

## Service and support

The pSeries 680 is backed by worldwide service and support from IBM. Our commitment—behind every system sold—is to provide the highest possible customer satisfaction.

Availability support is enhanced with advanced maintenance and diagnostic capabilities built into the pSeries 680 offerings with a framework for delivery of system and performance information via the Web.

---

## pSeries 680 at a glance

---

**Standard configuration**

Microprocessor: six-way 450 MHz RS64 III or four- or six-way 600 MHz RS64 IV  
RAM (memory): 4GB (Chipkill)  
Level 1 (L1) cache: 128KB data/128KB instruction  
Memory slots: 16 instruction  
Level 2 (L2) cache: 8MB (450 MHz) or 16MB (600 MHz) per processor  
Memory bus width: Quad 512-bit  
PCI bus width: 32- and 64-bit  
Expansion slots: 14 PCI (11 available)  
Media bays: Two (one available)  
Disk drive bays: 12 (11 available)  
Internal disk drive: 9.1GB Ultra SCSI (hot-swappable)  
Ports: One parallel, two serial, one keyboard and one mouse

**Standard features**

CD-ROM drive, service processor, 1.44MB 3.5-inch diskette drive, two Ultra SCSI PCI adapters

**Operating system**

AIX Version 4.3.3 (unlimited user license) or AIX Version 5.1 (unlimited user license)

**System expansion**

SMP configurations: Up to four six-way processor books (450 MHz or 600 MHz)  
RAM: Up to 96GB (Chipkill)  
PCI expansion slots: Up to 56  
Internal disk bays: Up to 48 (hot-swappable)  
Internal disk storage: Up to 873.6GB  
Internal media bays: Up to eight  
Attachment: SP System Attachment feature for use as SP-attached server

**System dimensions**

CEC enclosure: 62" H x 22.3" W x 47.3" D (1577 mm x 565 mm x 1201 mm);  
880 lbs (400 Kg)\*  
I/O rack (36U): 71" H x 25.4" W x 45.2" D (1804 mm x 644 mm x 1147 mm);  
535 lbs (244 Kg)\*\*  
I/O rack (42U): 79.3" H x 25.4" W x 45.2" D (2015 mm x 644 mm x 1147 mm);  
575 lbs (261 Kg)\*\*

**Warranty**

Onsite 24x7 for one year (limited) at no additional cost

---

\* Fully loaded 24-way system with 96GB memory

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



### The bottom line . . .

With its powerful combination of performance, scalable growth options, investment protection, reliability and flexibility, the pSeries 680 offers a comprehensive solution for business-critical computing environments today and into the future. It is a strategic solution for mid- to large-size companies.

### For more information

To learn more about the IBM @server pSeries 680, contact your IBM marketing representative, IBM Business Partner or visit the following Web sites:

**ibm.com/servers/eserver/pseries**

**ibm.com/ibmlink**

**ibm.com/shop\***

\* IBM @server pSeries 680 is available through **ibm.com/shop** in the United States, United Kingdom and Canada only.

© Copyright IBM Corporation 2001

Integrated Marketing Communications,  
Server Group  
Route 100  
Somers, NY 10589

Published in the United States of America  
06-01  
All Rights Reserved

References in this publication to IBM products or services do not imply that IBM intends to make them available in every country in which IBM operates. Consult your local IBM business contact for information on the products, features and services available in your area.

IBM, the IBM logo, the e-business logo, pSeries, AIX, Chipkill, ClusterProven, RS/6000, S/390 and SP are trademarks or registered trademarks of International Business Machines Corporation.

UNIX is a registered trademark of The Open Group. Java-related marks are trademarks or registered trademarks of Sun Microsystems Inc. in the United States and other countries. Other trademarks and registered trademarks are the property of their respective companies.

IBM hardware products are manufactured from new parts, or new and used parts. Regardless, our warranty terms apply. Photographs shown are of engineering prototypes. Changes may be incorporated in production models.

This equipment is subject to all applicable FCC rules and will comply with them upon delivery. Information concerning non-IBM products was obtained from the suppliers of those products. Questions concerning those products should be directed to those suppliers.

Prices subject to change without notice. Contact your IBM representative or IBM Business Partner for the most current pricing in your geography.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

<sup>1</sup>1999 network hardware "Product of the Year," *InfoWorld*, January 2000.

<sup>2</sup>Four-way option available only with 600 MHz RS64 IV processors.

<sup>3</sup>SOI not available on 450 MHz processors.

<sup>4</sup>For more information, visit **ibm.com/pc/us/techlink/wtpapers/chipkill.html**.

<sup>5</sup>*Competitive Analysis of UNIX Cluster HA Functionality*, D.H. Brown Associates, Inc., March 2000.