

e-business is your business.

Your world, your rules.



The engines of e-business

IBM @server™ systems

Customer demand for lightning-fast communication and transactions has driven the need for universal commitment to e-business. For companies conducting business over the Web, success hinges on high-performance hardware that embraces open standards—exactly what you'll find in the IBM @server hardware portfolio:

- Application flexibility—Choices in selecting, building and deploying applications
- New tools for managing e-business—New ways to manage end-to-end growth, risks and costs
- Innovative technology—Extreme performance and scalability with IBM reliability and security

The portfolio features four server categories—IBM @server xSeries,™ iSeries,™ pSeries™ and zSeries™—that interconnect with your existing technology delivering flexible, dynamic solutions. Also, the new IBM @server BladeCenter™ platform delivers scale-out capabilities in a modular design.

Superior design, diverse offering

IBM @server xSeries systems provide critical Intel® processor-based server solutions. xSeries servers give you hands-off reliability through mainframe-inspired technologies and intelligent management tools, available in systems ranging from affordable, edge-of-network servers to enterprise-class servers.

Universal servers deliver design versatility from tower to rack-mount. Affordable value models take small-business serving to new levels of productivity; larger enterprise models combine maximum scalability with high-availability tools to support intense workloads.

Rack-optimized servers help solve the datacenter space dilemma by delivering outstanding performance and manageability in a slim chassis.

Blade servers deliver innovative modular technology that achieves outstanding performance density and affordable availability to create a new e-infrastructure.

Scalable servers continue to revolutionize the industry-standard server platform, with a new breed of Intel-based enterprise server that delivers outstanding levels of availability, upward scalability and transaction performance.

Standout servers let you start small and grow.

Smart solutions for small business

The performance-balanced xSeries 225, 2-way server provides outstanding value to workgroups by combining flexibility and reliability with an affordable price. Performance and availability are enhanced through the latest Intel Xeon™ processors, Gigabit Ethernet capabilities, up to 8GB of IBM Chipkill™ memory and up to six Ultra320 hot-swap hard disk drives (HDDs) with data protecting integrated RAID-1. The x225 comes with advanced technologies to help keep your business up and running, including redundant and hot-swap features—so you can replace critical components without powering down. The optional IBM Remote Supervisor Adapter delivers powerful remote management capabilities that help minimize IT expenses.

More power for enterprise applications

The x255, x360 and x440 now with new Intel Xeon Processors MP at up to 2.0GHz help boost your business capabilities by delivering faster response times and increased transaction capacity—so you can work faster. Improved scalability and manageability features help you keep pace with business needs and growth. Servers incorporating Intel NetBurst™ architecture help improve performance and data exchange rates so you can respond to customer needs quicker.



IBM @server xSeries 225



IBM @server xSeries 255



IBM @server xSeries 360



IBM @server xSeries 440

Blade servers: Take control of your infrastructure

IBM BladeCenter solutions offer manageability, performance and modular scalability. The result is a highly managed infrastructure that helps maximize resource productivity while minimizing IT administrative costs. BladeCenter addresses your most serious issues: manageability, scalability, performance and space constraints. Ideal for enterprise applications, this scale-out architecture lets you add server capacity quickly, delivering modular pay-as-you-grow scalability. BladeCenter can help dramatically reduce your infrastructure costs because it has a fault-tolerant design, takes less time to deploy and fewer people to maintain—allowing you to do more with less.

“After a comparison with other solutions, we determined that for the price, IBM provided first-class hardware and software, as well as better features.”

—Simon Capel, Client Services Director of OC Solutions

Standout servers let you start small and grow

Affordable solutions for a distributed computing environment

Regardless of your business—small, medium or enterprise—there is an xSeries server that can match your requirements and grow to meet your future needs. Systems are priced, sized and powered to match nearly every application workload environment—from the entry-level uni-processor x205 to the enterprise-strength 16-way x440.

Many businesses today require distributed computing topologies that demand multiple and scattered IT resources. Effective operation depends on management from a central site. Businesses such as retail stores, bank branches, insurance offices and corporate workgroups depend on 24x7 IT operations for business-critical functions with one administrative center. IBM solutions help them:

- Work with fewer resources.
- Centrally manage remote IT resources.
- Grow IT capabilities as business demands increase.
- Protect data for on-demand availability.

The xSeries product line includes platforms with servers, storage and backup in a single enclosure, helping keep your business-critical data secure. Each has different abilities to grow along with your business—so the technology you invest in today can continue to serve you into the future. And because hundreds of servers can be deployed, managed and diagnosed remotely by a core IT team, the expense of administering a distributed computing environment can be reduced.

Distributed computing solutions

- **xSeries 205**

This ultra-affordable server delivers outstanding levels of value for small to medium-size businesses. Optional management features make the x205 easy to manage remotely, helping minimize IT expenses.

- **xSeries 225**

This performance-balanced 2-way server provides outstanding value to workgroups by combining scalable performance and availability features at an affordable price. Standard and optional advanced technologies help keep your business up and running.

- **xSeries 235**

This expandable 2-way server delivers maximum performance, availability and manageability in a flexible package appropriate for environments common to businesses with branch or chain locations.

- **xSeries 255**

Loaded with Enterprise X-Architecture™ high-availability features, this 4-way server is a solid foundation for database applications like those used by growing businesses with remote branches, stores or locations.

- **xSeries 440**

Delivers increased 8-way server power for datacenter environments, and when housed in a small rack can accommodate additional storage for mission-critical data. The x440 is designed to expand up to 16-way SMP, making it an optimal platform for performance-hungry, database-serving applications.

Matching challenges with solutions

Companies working in distributed computing environments face three major challenges. They need an IT solution that is affordable; has the features required to meet today's business needs, yet can grow with business demands; and is easy to deploy and manage. xSeries servers are designed with industry-leading technologies that address each challenge:

- Advanced serviceability features such as Active PCI, hot-swap components, Chipkill memory and the Remote Supervisor Adapter let you service and manage servers without powering them down. These features help keep your distributed computing environment affordable and help minimize the need for on-site IT staff.
- Affordability means more than acquisition costs. Enhanced availability features like Light Path Diagnostics, Real Time Diagnostics and Predictive Failure Analysis® provide onboard diagnostic and maintenance that help you avoid downtime. Your business-critical functions are available when you need them.
- xSeries Options help your business grow as your needs change. Processors and memory help provide scalability so you can meet escalating computing needs. HDDs help deliver I/O performance and high-capacity data storage for your enterprise server environment. Tape drives back up and protect your business-critical data.

- IBM systems management tools are simple to use and can reduce the number of system administrators required to manage a network, helping save you time, expense and resources.

Powerful software, simple to use

Distributed server environments require management software that is powerful and easy to use. The IBM Director suite of management tools satisfies both requirements. It helps you deploy and manage servers in multiple sites using either the Internet or a wide area network (WAN). This means IT staff can deploy and manage servers located anywhere in the world—through a single connection. IBM ServeGuide™ software simplifies installation of your xSeries server by configuring the hardware and operating systems, device drivers and other components. These software solutions deliver self-managing capabilities that help save you money, IT resources and time—providing you piece of mind.

Visit ibm.com/pc/us/eserver/xseries for information about distributed computing environment solutions.

Excellent support

No matter where you are, award-winning IBM service and support helps protect your investment with distributed computing 24x7, every day of the year.¹

Visit ibm.com/pc/support for more information.



IBM @server xSeries 225

xSeries Family



	Universal				Rack-optimized
xSeries model	x205	x225	x235	x255	x305
Form factor/height	Tower, Rack/4U	Tower, Rack/4U	Tower, Rack/5U	Tower, Rack/7U	Rack/1U
Intel processor (max)	2.4GHz Pentium 4	2.4GHz Xeon	2.4GHz Xeon	2.0GHz Xeon Processor MP	2.6GHz Pentium 4
Number of processors (std/max)	1/1	1/2	1/2	1/4	1/1
Cache (max)	512KB L2	512KB L2	512KB L2	2MB L3	512KB L2
Memory (max)	2GB PC2100	8GB PC2100 DDR Chipkill	12GB PC2100 DDR Chipkill	12GB PC1600 DDR Chipkill	4GB PC2100
Expansion slots (total/Active PCI)	5/0	5/0	6/2 Active PCI-X	7/6 Active PCI-X	2/0 PCI-X
Disk bays (total/hot-swap)	4 non-hot-swap SCSI, 3 hot-swap SCSI, 3 IDE	6/6, 6 hot-swap SCSI, 4 non-hot-swap SCSI	9/9 with optional 3-pack hot-swap HDD kit	12/12 with optional 6-pack hot-swap HDD kit	2/0
CD-ROM/diskette drive	Yes	Yes	Yes	Yes	Yes
Maximum internal storage	360GB ² IDE 587.2GB SCSI	880.8GB hot-swap, 587.2GB non-hot-swap	1.3TB	1.76TB	240GB IDE or 293.6GB SCSI
Network	Integrated 10/100/1000 Ethernet	Integrated 10/100/1000 Ethernet	Integrated 10/100/1000 Ethernet	Integrated 10/100/1000 Ethernet	Dual integrated 10/100/1000 Ethernet
System Management processor	Supports optional Remote Supervisor Adapter	Supports optional Remote Supervisor Adapter	Integrated (supports Remote Supervisor Adapter)	Integrated (supports Remote Supervisor Adapter)	Supports optional Remote Supervisor Adapter
Power supply (std/max)	340W 1/1	425W or (2) 350W hot-swap	560W 1 or 2/2 hot-swap	370W 2/4 hot-swap	220W 1/1
Hot-swap components	HDDs (select models)	Power supply, HDDs (select models)	Power supply, fans, HDDs, PCI-X	Power supply, fans, HDDs, PCI-X	N/A
Light Path Diagnostics	Limited	Limited	Yes	Yes	N/A
RAID support	Optional	Integrated RAID-1	Integrated RAID-1	Optional	Optional

xSeries Family



	Rack-optimized			Scalable	
xSeries model	x335	x345	x360	x440 Entry	x440
Form factor/height	Rack/1U	Rack/2U	Rack/3U	Rack/4U	Rack/4U
Intel processor (max)	2.8GHz Xeon	2.4GHz Xeon	2.0GHz Xeon Processor MP	2.4GHz Xeon	2.0GHz Xeon Processor MP
Number of processors (std/max)	1/2	1/2	1/4	2/4 or 4/4	2/8 or 4/8
Cache (max)	512KB L2	512KB L2	2MB L3	512KB L2 32MB L4/2-way	2MB L3 32MB L4/4-way
Memory (max)	4GB PC2100 DDR Chipkill	8GB PC2100 DDR Chipkill	8GB PC1600 DDR Chipkill	64GB (32GB/2-way or 64GB/4-way) Chipkill	64GB (32GB/4-way or 64GB/8-way) Chipkill
Expansion slots (total/ Active PCI)	2/0 PCI-X	4/0 PCI-X 1/0 PCI	6/6 Active PCI-X	6/6 Active PCI-X, optional remote I/O	6/6 Active PCI-X, optional remote I/O
Disk bays (total/hot-swap)	2/2	6/6	3/3	2/2	2/2
CD-ROM/ diskette drive	Yes	Yes	Yes	Yes	Yes
Maximum internal storage	240GB IDE or 293.6GB SCSI	880.8GB	220.2GB	146.8GB	146.8GB
Network	Dual integrated 10/100/1000 Ethernet	Dual integrated 10/100/1000 Ethernet	Integrated 10/100 Ethernet	Integrated 10/100/1000 Ethernet	Integrated 10/100/1000 Ethernet
System Management processor	Integrated (supports Remote Supervisor Adapter)	Integrated (supports Remote Supervisor Adapter)	Remote Supervisor Adapter in dedicated slot	Remote Supervisor Adapter in dedicated slot	Remote Supervisor Adapter in dedicated slot
Power supply (std/max)	332W 1/1	350W 1/2 hot-swap	370W 1 or 2/3 hot-swap	1050W 2/2 hot-swap	1050W 2/2 hot-swap
Hot-swap components	HDDs	Power supply, fans, HDDs	Power supply, fans, HDDs	Power supply, fans, HDDs, PCI-X	Power supply, fans, HDDs, PCI-X
Light Path Diagnostics	Yes	Yes	Yes	Yes	Yes
RAID support	Integrated RAID-1	Integrated RAID-1	Optional	Optional	Optional

IBM @server BladeCenter Family



	BladeCenter		BladeCenter HS20	
Form factor/height	Rack/7U	Processor	Intel Xeon processor starting at 2.0GHz	
Blade server bays	14	Number of processors (std/max)	1/2	
Standard media	CD-ROM and diskette drive accessible from each blade server	Level 2 cache	512KB	
Switch modules	4 module bays for FC or Gigabit Ethernet switches	Front side bus	Starting at 400MHz	
Power supply module	Up to 4 hot-swap 1200W with load-balancing and failover capabilities	Memory	Up to 8GB PC2100 DDR Chipkill	
Cooling modules	2 hot-swap and redundant blowers standard	Internal hard disk drives	Up to 2 IDE (and up to 2 hot-swap Ultra320 SCSI drives with optional SCSI storage expansion unit)	
Systems management hardware	Up to 2 management modules	Maximum internal storage	80GB IDE/146.8GB SCSI	
I/O ports	Keyboard, video, mouse, Ethernet, USB	RAID support	Integrated mirroring (with optional SCSI storage expansion unit)	
		Network	Dual integrated 10/100/1000 Ethernet	
		I/O upgrade	1 expansion card connection	
		Systems management hardware	Integrated systems management processor	
		Systems management software	IBM Director with systems management and deployment tools	
		Predictive Failure Analysis	Hard disk drives, processors, blowers, memory	
		Light Path Diagnostics	Blade server, processor, memory, power supplies, blowers, switch module, management module, hard disk drives and expansion card	
		Limited warranty and support	3-year on-site limited warranty	
		External storage	Support for IBM TotalStorage solutions (including FAST and NAS family of products)	
		Operating systems supported	Microsoft Windows® 2000 Server/Advanced Server, Red Hat Linux, SUSE Linux, Novell Netware	

The engines of e-business

IBM BladeCenter solutions

BladeCenter is the latest evolution in the IBM @server product line. This new form factor lets you combine computing resources in cost-effective, high-density enclosures that support hot-swappable, high-performance blade servers.

Innovative technology—BladeCenter's scale-out architecture ideal for enterprise applications—provides you with the convenience and flexibility to add capacity when you need it.

New Tools—Intelligent management tools, like IBM Director, provide integrated and automated systems management through a single graphical console—delivering an easy, cost-effective way to deploy and maintain your infrastructure.

Application flexibility—Built with industry standards, BladeCenter delivers solution flexibility. IBM collaborates with technology leaders, providing you with greater choice of applications.

Solving real-world problems with advanced innovation

BladeCenter delivers performance and manageability—at up to twice the density of 1U servers. The result is a highly manageable infrastructure, with the potential for improved resource productivity and minimized IT expense. BladeCenter is designed to help solve critical IT problems that involve space constraints, manageability, scalability, performance and cost. Advanced management capabilities and a fault-tolerant design help increase overall productivity and reduce system administration costs.



IBM @server BladeCenter

Performance, availability and investment protection

Efficient modular design features leading-edge cooling technology, the Intel Xeon processor and Gigabit Ethernet to help maximize BladeCenter performance. Chassis features, such as high-availability midplanes and redundant hot-swap cooling and power, help provide protection against single points of failure. Tight integration of key components—like networking services, storage connectivity and centralized management—help enable high availability solutions for business-critical applications.

IBM Director, included with every BladeCenter, provides you with comprehensive remote management abilities through a single graphical console. Director automates and simplifies IT tasks, letting you deploy, configure, manage and maintain hundreds of blade servers.



IBM BladeCenter HS20

Take your servers to a higher level

IBM @server xSeries Options are certified for peak performance on xSeries systems, so you can achieve the IT goals that can help drive your business. xSeries Options help you maximize your server investment by integrating easily with complete solutions that support your space, data protection, storage, availability and performance needs.

Tangible business results:

- Doubling memory in a Web server can cut response time by up to 50%.³ That translates into satisfied customers, who repeatedly visit your site to transact business.

- One study measured that 9GB of sales and marketing data is valued at \$7.65 million, 9GB of engineering data at \$44.1 million.⁴ Help keep that data available and readily accessible through an IBM Fibre Channel (FC) SAN configuration.

- Seventy-two percent of businesses that suffer a major data loss disappear within 24 months, a study recently found.⁵ When you back up your data with advanced, automated xSeries tape solutions, you protect your business from catastrophic loss and help build a healthy future.

Series Options multiply the power of your xSeries servers to process, track, protect and share data across your enterprise, so you can realize its full profit potential.

Key IT business protection issues	xSeries Options
<p>Space constraints Increase your computing capacity without driving your company out of space.</p>	<ul style="list-style-type: none"> • Racks make it easy to centralize, organize and access your hardware for servicing, upgrading and managing your infrastructure. IBM racks offer server consolidation and space savings with easy access to components. • IBM ACT Interconnect products help deliver space by reducing cable bulk and volume, give you centralized control of up to 256 servers locally or remotely, and make setup of rack dense solutions easier than ever.
<p>Increasing storage needs 1010Is the e-business environment escalating your storage requirements?</p>	<ul style="list-style-type: none"> • Using an EXP300 SCSI expansion unit, you can load fourteen 146.8GB drives for more than 2TB¹ of storage. • IBM SAN solutions featuring IBM Fibre Array Storage Technology (FAST) support the growing requirement of providing superior performance and high bandwidth for faster data access.
<p>Performance/scalability Does your current storage configuration support your business needs?</p>	<ul style="list-style-type: none"> • The IBM FAST family of storage servers delivers the performance necessary to help optimize data access and delivery. • The IBM RXE-100 Remote Expansion Enclosure gives you true pay as you grow scalability because it eliminates the need to buy an entire new system to increase your I/O capacity.
<p>Data availability Is your network unavailable at times?</p>	<ul style="list-style-type: none"> • IBM offers nine levels of RAID protection for the redundancy you need; both FCI and SCSI RAID adapters are available.
<p>Data protection Are you protecting your business-critical data?</p>	<ul style="list-style-type: none"> • IBM offers a complete family of tape options including tape libraries, autoloaders and internal and external tape drives to help your business run smoothly in critical, data-dependent environments.

Self-managing capabilities

Systems management tools—a combination of hardware instrumentation and advanced software—provide select xSeries servers with self-managing capabilities. These tools can help optimize resources and network performance in the face of fluctuating workloads and help you reduce management costs—while promoting high-availability and proven reliability.

Software

- IBM Director provides a simple graphical interface to remotely manage up to 5,000 Intel processor-based clients.⁶ This award-winning software automates performance planning and preventive maintenance required to help run your networks productively.

For greater system availability and server performance, IBM Director includes these advanced tools:

- *Active PCI Manager* helps optimize server throughput and performance by determining the best placement for PCI cards.
- *Capacity Manager* alerts administrators of future server bottlenecks and automates corrective actions to minimize downtime.

- *Software Rejuvenation* helps predict software failures that could lead to costly downtime and automatically refreshes the software to help ensure optimal operation.
- *System Availability* tracks and provides graphical views of system downtime or uptime for systems or groups of systems, helping save labor costs devoted to remote management and tracking of server performance.
- *Rack Manager* provides a graphical drag-and-drop interface that simplifies rack hardware management.

Deployment and updating

- Remote Deployment Manager gives you the ability to create, maintain and deploy images from a single drag-and-drop user interface. It helps simplify

server installation and reduce cost by remotely deploying and updating platforms.

- IBM UpdateXpress CD updates system firmware locally or remotely, so your server works at peak performance.
- Integrated Systems Management Processors work like computers within xSeries servers to give you around-the-clock remote management.
- The IBM Remote Supervisor Adapter on xSeries servers gives you full out-of-band management. Even if the server is powered down, its independently powered management processor can bring it back under control with a built-in graphical management interface.

“IBM Director is the most organized suite and has the most intuitive interface, superior event management features and the easiest client installation.”

—PC Magazine,
naming IBM Director a 2002 Editors' Choice award winner

For more information:

World Wide Web

IBM @server xSeries	ibm.com/eserver/xseries
IBM @server xSeries Canada	ibm.com/ca/eserver/xseries
IBM @server xSeries Options	ibm.com/pc/us/eserver/xseries/storage
IBM @server xSeries Options Canada	ibm.com/ca/eserver/xseries/storage

Buy Direct

U.S.	1 888 SHOP IBM
Canada	1 888 SHOP IBM

IBM Reseller and general information

U.S.	1 800 426-4968
Canada	1 800 426-2255

Cost-effective server consolidation

VMware™ ESX Server™ 7 allows select xSeries servers to run multiple operating systems and applications in virtual machines, allowing you to centralize IT management. This system partitioning capability had previously been the domain of mainframes and other large, sophisticated servers. Not only is VMware ESX Server great for optimizing hardware usage, it can also give you the added benefits of higher availability and scalability.

Visit ibm.com/xseries/vmware for more information.

IBM Datacenter services

Running large SMP operations on 16-way systems becomes easier, more manageable and more reliable. Stemming from collaboration between IBM and Microsoft, the IBM Datacenter Solution Program offers you an array of services and support for running Microsoft® Windows™ 2000 Datacenter Server⁸, the industry's most scalable operating system.

Visit ibm.com/www/eserver/xseries/windows/datacenter for more information.

- 1 Response time varies. May exclude some holidays.
- 2 When referring to storage capacity, GB equals 1,000,000,000 and TB equals 1,000,000,000,000. Accessible capacity is less.
- 3 "The Ultimate Memory Guide," Kingston Technology Company, 2001
- 4 National Computer Security Association, 2001
- 5 "A Few Facts About Data Security," SkyDesk Inc., 2001
- 6 License fee required for non-IBM hardware.
- 7 IBM makes no warranties, express or implied, regarding non-IBM products and services, and those that are ServerProven, including but not limited to the implied warranties of merchantability and fitness for particular purpose. These products are offered and warranted solely by third parties.
- 8 Some software may differ from its retail version (if any) and may not include user manuals or all program functionality. Warranty, service and support for non-IBM products are provided directly to you by third parties, not IBM. IBM makes no representations or warranties regarding non-IBM products. For non-IBM software, applicable third-party software licenses may apply.



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