

**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. Most companies now conduct some facet of 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 and its commitment to e-business excellence:

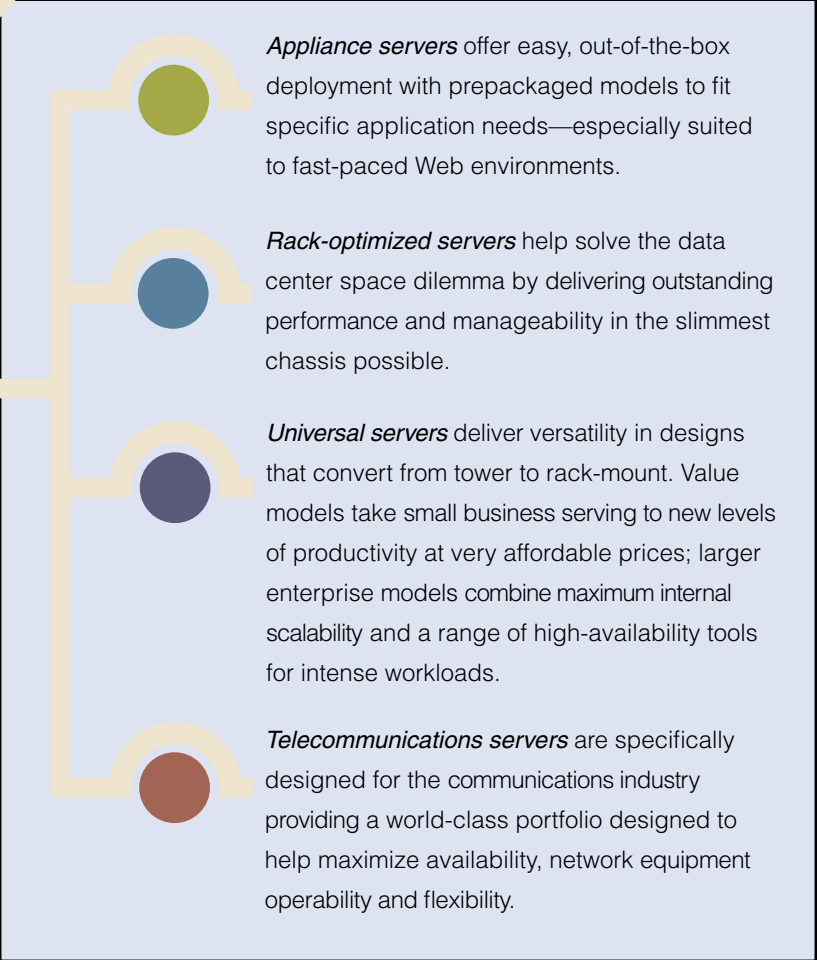
- **Application flexibility**—Choices in selecting, building and deploying applications
- **New tools for managing e-business**—New ways to manage end-to-end growth, risks and costs
- **Innovative technology**—Extreme performance and scalability with IBM reliability and security

At the core of the portfolio are four server categories—IBM @server xSeries™, iSeries™, pSeries™ and zSeries™—that interconnect and merge smoothly with your existing technology for flexible, dynamic solutions. IBM @server xSeries systems provide the critical Intel® processor-based component of these solutions.



### Superior design, diverse offering

Through a combination of mainframe-inspired technologies and intelligent management tools, xSeries servers give you real hands-off reliability. This sophisticated functionality is available in a wide range of systems, from appliances to enterprise-class servers, engineered to fit any environment:



**Appliance servers** offer easy, out-of-the-box deployment with prepackaged models to fit specific application needs—especially suited to fast-paced Web environments.

**Rack-optimized servers** help solve the data center space dilemma by delivering outstanding performance and manageability in the slimmest chassis possible.

**Universal servers** deliver versatility in designs that convert from tower to rack-mount. Value models take small business serving to new levels of productivity at very affordable prices; larger enterprise models combine maximum internal scalability and a range of high-availability tools for intense workloads.

**Telecommunications servers** are specifically designed for the communications industry providing a world-class portfolio designed to help maximize availability, network equipment operability and flexibility.

*“The attractive price-to-performance ratio of the IBM @server platform and its high availability, security and compatibility with our software quickly won me over.”*

—Jose Monteagudo, Chief Information Officer, s.Oliver

## New technology introduces a revolutionary economic model

### IBM X-Architecture innovation

xSeries servers deliver on the IBM @server commitment to e-business excellence via X-Architecture™ technology: a blueprint for building IBM mainframe muscle into Intel processor-based servers. What you get is enhanced availability, scalability and systems management—on industry-standard hardware. Over the past several years, IBM has been an industry leader with such innovative technologies as Active™ PCI, C2T Interconnect™ cabling, Chipkill™ memory, Predictive Failure Analysis®, Light Path Diagnostics™ and IBM Director, to name a few. Visit [ibm.com/eserver/xarchitecture](http://ibm.com/eserver/xarchitecture) for more information.

Now IBM unleashes its greatest surge of X-Architecture innovation to date. Called Enterprise X-Architecture technology, this new phase brings revolutionary advancements to I/O, memory and processors, as well as a true “pay as you grow” approach to buying Intel architecture 32- and 64-bit high-end xSeries systems. The result: highly reliable hardware in servers that can be scaled quickly, easily and inexpensively, allowing you to do more with your IT dollars. Visit [ibm.com/eserver/enterprise\\_xarchitecture](http://ibm.com/eserver/enterprise_xarchitecture) for more information.



### Enterprise X-Architecture technology

#### Uncompromising availability

**Chipkill memory**—Corrects multiple errors using industry-standard ECC memory

**Memory mirroring**—Writes data simultaneously to two memory cards for redundancy without a performance penalty

**Memory ProteXion™**—Uses spare bits to automatically reroute data in the event of an on-DIMM chip failure

**Active™ PCI-X**—Enables hot add and hot swap of adapters with failover protection

#### Pay as you grow scalability

**XpandOnDemand™ scalability**—Supports upgrading processors, I/O slots and other resources via modules so you can scale according to your exact needs

**Remote I/O**—Lets you increase I/O by adding up to 12 adapter slots with the IBM RXE-100 Remote Expansion Enclosure

**System partitioning**—Maximizes resources by running multiple operating systems and applications concurrently

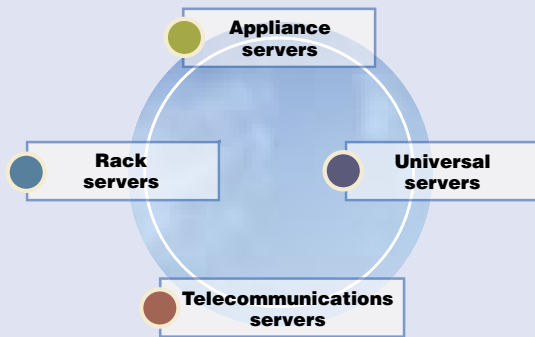
#### High-octane performance

**Xcel4™ Server Accelerator Cache**—Helps increase throughput by providing up to 64MB of high-speed L4 cache

**Double data rate (DDR) memory**—Designed to double data throughput over previous generation SDRAM technology for speedier system response time

**400MHz front side bus**—Enables fast data movement between devices

## Standout servers for dynamic solutions



*“We selected IBM @server because we could get more power in less rack space. This option was not available with other vendors...”*

—Chris Hindy, IT Director, Grocery Gateway

### Appliance servers: *Simplicity, speed and security*

The powerful **xSeries Hosting Appliance** provides a dynamic solution for shared Web hosting that helps increase performance while lowering administrative costs. Preloaded with Sphera HostingDirector™ software, this appliance gives you a scalable and feature-rich platform to host up to hundreds of Web sites on a single server.



IBM @server xSeries Hosting Appliance

### Rack-optimized servers: *Perfect for the space-constrained environment*

The groundbreaking **xSeries 440** exploits the gamut of Enterprise X-Architecture technologies for pay as you grow scalability. This 4U, 8-way system allows you to expand up to 16-way SMP when you are ready, revolutionizing the economics of enterprise computing. Exceptional availability, plus configuration and application flexibility, make it an optimal platform for server consolidation and clustering.



IBM @server xSeries 440

The sleek **xSeries 360**, now with open bay models, can help you save considerable space and money by packing 4-way, high-performance processing power into a 3U chassis. As with the x440, Enterprise X-Architecture technology allows it to leverage remote I/O along with software partitioning for high-availability SANs and clusters.



IBM @server xSeries 360



IBM @server xSeries 235

### Universal servers: *Smart solutions for small business and beyond*

**The feature-rich xSeries 235** is a 2-way server using Intel's latest Xeon™ processors and speedy double data rate memory to provide you with power and performance at an affordable price. Offering maximum expandability and flexibility to meet your custom space needs, the x235 comes in both tower models and models that convert to fit neatly into a standard rack to free up precious floor space. X-Architecture features help keep your server available when you need it. And the x235 is the first xSeries server to deliver integrated RAID-1 functionality, which gives you the ability to mirror hard disk drives for data protection—for even higher server availability.



IBM @server xSeries 255

**The powerful xSeries 255** 4-way server offers impressive memory, internal storage and I/O capacity so you can expand quickly as workloads increase. A solid foundation for database applications, the x255 is packed with Intel Xeon processors and standard gigabit Ethernet to provide speedy access to information, helping to virtually eliminate bottlenecks. And with a flexible, simple-to-setup chassis that converts from tower to rack-mount, you can easily redeploy this server as your environment evolves. Loaded with X-Architecture high-availability features like hot-swap PCI-X adapter capability and Hot Spare Memory technology, and priced for worldwide deployment, the x255 provides long-life IT investment protection.

### Telecommunications servers: *Ideal for the communication environment*



IBM @server xSeries 343

**The premier rack-optimized xSeries 343** is a 2-way carrier-grade Intel processor-based Linux® platform designed for the telecommunications industry. This 2U NEBS-3 compliant server with a sub-20" deep chassis is ideal for the space-constrained telecommunications environment. Dual, redundant -48V DC power supplies plus an external alarm panel provide high availability and surveillance of system outages. Complete with a systems management processor and support for IBM Director Agent systems management software, the x343 is a smart choice for serving a telecommunications environment.

*“We appreciate the reduction in size, scalability possibilities and modular design of the x440. The x440 should be easier to service, and has improved redundancy features. We look forward to working with this new server.”*

—John Gayer, Senior Integration Architect,  
Ford Motor Company

#### Included software<sup>1</sup> (most models)

- IBM Director and IBM Director Extensions
- IBM ServerGuide™

#### Operating systems supported (select models)

- Microsoft® Windows® 2000
- Microsoft Windows NT®
- Novell NetWare
- SCO UnixWare
- Linux (Red Hat, SuSE, Caldera, Turbolinux)
- IBM OS/2®



	Appliance	Universal	
xSeries model	Hosting Appliance	x200	x220
<b>Form factor/height</b>	Rack/1U	Tower, Rack/4U	Tower, Rack/4U
<b>Intel processor (max)</b>	950MHz Celeron®	1.26GHz Pentium® III	1.4GHz Pentium III
<b>Number of processors (std/max)</b>	1/1	1/1	1/2
<b>Cache (max)</b>	128KB L2	512KB L2	512KB L2
<b>Memory (max)</b>	1.5GB	1.5GB	4GB
<b>Expansion slots (total/Active PCI)</b>	2/0	5/0	5/0
<b>Disk bays (total/hot-swap)</b>	2/0	4/0 (IDE or SCSI)	4/3
<b>CD-ROM/diskette drive</b>	Yes	Yes	Yes
<b>Maximum internal storage</b>	80GB <sup>2</sup>	293.6GB	293.6GB
<b>Network</b>	Dual integrated 10/100 Ethernet	Integrated 10/100 Ethernet	Integrated 10/100 Ethernet
<b>System Management processor</b>	N/A	N/A	N/A (supports Remote Supervisor Adapter)
<b>Power supply (std/max)</b>	220W 1/1	330W 1/1	330W 1/1
<b>Hot-swap components</b>	N/A	N/A	HDDs (select models)
<b>Light Path Diagnostics</b>	N/A	Limited	Limited
<b>RAID support</b>	Optional	Optional	Optional
<b>For more information or to purchase now, go to <a href="http://ibm.com">ibm.com</a> and enter this NavCode™</b>	<b>w413</b>	<b>x200</b>	<b>x220</b>

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			Rack-optimized				
x232	x235	x255	x300	x330	x342	x350	x360
Tower, Rack/5U	Tower, Rack/5U	Tower, Rack/7U	Rack/1U	Rack/1U	Rack/3U	Rack/4U	Rack/3U
1.4GHz Pentium III	2.4GHz Xeon	1.6GHz Xeon Processor MP	1GHz Pentium III	1.4GHz Pentium III	1.4GHz Pentium III	900MHz Pentium III Xeon	1.6GHz Xeon Processor MP
1/2	1/2	1/4	1/1	1/2	1/2	1/4	2/4
512KB L2	512KB L2	1MB L3	256KB L2	512KB L2	512KB L2	2MB L2	1MB L3
4GB	6GB Chipkill DDR	12GB Chipkill DDR	1.5GB	4GB Select model with MXT	4GB	16GB Chipkill	8GB Chipkill DDR
5/0	6/2 Active PCI-X	7/6 Active PCI-X	2/0	2/0	5/0	6/6	6/6 Active PCI-X
9/9 with optional 3-pack hot-swap HDD kit	9/9 with optional 3-pack hot-swap HDD kit	12/12 with optional 6-pack hot-swap HDD kit	2/0	2/2	6/6 with optional 3-pack hot-swap HDD kit	6/6 with optional 3-pack hot-swap HDD kit	3/3
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
660.6GB	660.6GB	880.8GB	160GB	146.8GB	440.4GB	440.4GB	220.2GB
Integrated 10/100 Ethernet	Integrated 10/100/1000 Ethernet	Integrated 10/100/1000 Ethernet	Dual integrated 10/100 Ethernet	Dual integrated 10/100 Ethernet	Integrated 10/100 Ethernet	Integrated 10/100 Ethernet	Integrated 10/100 Ethernet
Integrated (supports Remote Supervisor Adapter)	Integrated (supports Remote Supervisor Adapter)	Integrated (supports Remote Supervisor Adapter)	N/A	Integrated (supports Remote Supervisor Adapter)	Integrated (supports Remote Supervisor Adapter)	Integrated	Remote Supervisor Adapter in dedicated slot
250W or 385W 1 or 2/3 hot-swap	560W 1 or 2/2 hot-swap	370W 2/4 hot-swap	200W 1/1	200W 1/1	270W 1/2 hot-swap	270W 1/3 hot-swap	370W 1 or 2/3 hot-swap
Power supply, fans, HDDs	Power supply, fans, HDDs, PCI-X	Power supply, fans, HDDs, PCI-X	N/A	HDDs	Power supply, fans, HDDs	Power supply, fans, HDDs	Power supply, fans, HDDs
Yes	Yes	Yes	N/A	Yes	Yes	Yes	Yes
Optional	Integrated RAID-1	Optional	Optional	Optional	Optional	Optional	Optional
x232	x235	x255	x300	x330	x342	x350	x360



		Telecommunications		
<b>x380</b>	<b>x440</b>	<b>x300 DC-power</b>	<b>x330 DC-power</b>	<b>x343</b>
Rack/7U	Rack/4U	Rack/1U	Rack/1U	Rack/2U
800MHz Itanium™	1.6GHz Xeon Processor MP	800MHz Celeron	1.26GHz Pentium III	1.26GHz Pentium III
1/4	2/8	1/1	1 or 2/2	2/2
1MB L3	1MB L3 32MB L4	128KB L2	512KB L2	512KB L2
64GB	32GB Chipkill (16GB/4-way or 32GB/8-way)	1.5GB	4GB	6GB
8/8*	6/6 Active PCI-X	2/0	2/0	6/0
2/2	2/2	2/0	2/2	2/0
Yes/LS-120	Yes	Yes	Yes	Yes
72.8GB	146.8GB	160GB	146.8GB	72GB
Integrated 10/100 Ethernet	Integrated 10/100/1000 Ethernet	Dual integrated 10/100 Ethernet	Dual integrated 10/100 Ethernet	Dual integrated 10/100 Ethernet
Yes** (ISC required)	Remote Supervisor Adapter in dedicated slot	N/A	Integrated (supports Remote Supervisor Adapter)	Integrated
800W 4/4 hot-swap	1050W 2/2 hot-swap	200W 1-48V DC/1	200W 1-48V DC/1	350W 2-48V DC/2
Power supply, fans, HDDs	Power supply fans, HDDs, PCI-X	N/A	HDDs	Power supply
No	Yes	N/A	Yes	No
Optional	Optional	Optional	Optional	Optional
<b>x380</b>	<b>x440</b>	<b>x300DC</b>	<b>x330DC</b>	<b>x343</b>

\*Hot-swap operation requires operating system support and installation of the required device drivers (not included).

\*\*Intel Server Control (ISC) required—tool provided and supported by Intel at an additional cost.



## Take your servers to a higher level

IBM @server xSeries Options maximize your server investment by integrating easily into complete solutions for your storage and performance needs. xSeries options are certified for peak performance on xSeries servers so you can achieve the IT goals that can help drive your business forward.

### Tangible business results:

- *Doubling memory in a Web server can cut response time by more than 50%<sup>3</sup>.* That translates into satisfied customers who repeatedly visit your site to transact business.
- *Upgrading your servers with Intel Xeon processors can increase throughput up to 47%<sup>4</sup>.* That can translate into more e-commerce orders processed.
- *9GB of sales and marketing data is valued at \$7.65 million, 9GB of engineering data at \$44.1 million<sup>5</sup>.* Help keep that data available and readily accessible through an IBM Fibre Channel SAN configuration. Tap into your data with the superior speed and bandwidth of IBM Fibre Channel products accelerating your networks.
- *72% of businesses that suffer a major data loss disappear within 24 months, a study recently found<sup>6</sup>.* When you back up your data with advanced, automated xSeries tape solutions, you protect your business from catastrophic loss and help ensure a healthy future.

xSeries 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
<b>Increasing storage needs</b> Is the e-business environment escalating your storage requirements? Is your data your most valuable asset?	<ul style="list-style-type: none"><li>• Using an EXP300 SCSI expansion unit, you can load fourteen 73.4GB drives for more than 1TB<sup>2</sup> of storage.</li><li>• IBM SAN solutions featuring IBM Fibre Array Storage Technology (FASiT) support the growing requirement of providing superior performance and high bandwidth for faster data access.</li></ul>
<b>Data availability</b> Is your network unavailable at times?	<ul style="list-style-type: none"><li>• IBM offers nine levels of RAID protection for the redundancy you need; both Fibre Channel and SCSI RAID adapters are available.</li></ul>
<b>Data protection</b> How much is your data worth, and are your data backup systems adequate?	<ul style="list-style-type: none"><li>• IBM offers a complete family of tape options including tape libraries, autoloaders and rackable tape automation products to help your business run smoothly in critical, data-dependent environments.</li></ul>
<b>Space constraints</b> How do you increase your computing capacity without driving your company out of its current space?	<ul style="list-style-type: none"><li>• 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.</li><li>• IBM 42U rack enables 14TB of storage—or string eight together for 112TB of storage.</li></ul>
<b>Performance/scalability</b> Does your current storage configuration provide sufficient data access to support your business needs?	<ul style="list-style-type: none"><li>• The IBM FASiT family of storage servers delivers the performance necessary to help optimize data access and delivery.</li><li>• 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.</li></ul>

## Exceptional investment protection

### Excellent support

The acclaimed **service and support** you expect from IBM offers enhanced value, peace of mind and confidence.

- **Limited warranty\***—Includes parts and onsite labor.
- **ServerGuide**—Enables rapid loading of major network operating systems and simplifies hardware configuration.
- **IBM High Availability Services for Business-Critical Systems<sup>7</sup>**—Uniquely tailored optional solutions available on certain xSeries servers to help meet your business availability objectives.
- **IBM Global Services**—Providing end-to-end service suites that improve your ability to conduct business.
- **Education**—Key information training available through classroom, Internet and video media.

Visit [ibm.com/pc/support](http://ibm.com/pc/support) for more information.

### Cost-effective server consolidation

System partitioning—the ability of one server to run multiple operating systems simultaneously—has traditionally been the domain of mainframes and other large, sophisticated servers.

But with **VMware™ ESX Server™<sup>8</sup>**, you can enable dynamic, logical partitioning on your IBM **@server** xSeries 330, 350, 360, 370 and 440 systems. Instead of deploying multiple servers scattered around your company and running a single application on each, you can consolidate servers. VMware allows each of your xSeries servers to run multiple operating systems and applications in virtual machines—allowing you to centralize IT management. This means that not only is VMware ESX Server software great for optimizing hardware usage, it can also give you the added benefits of higher availability and scalability.

Visit [ibm.com/eserver/xseries/vmware](http://ibm.com/eserver/xseries/vmware) for more information.

### Validated solutions

Help reduce your cost of ownership by lowering integration risks, helping ensure smooth installation and decreasing the need for post-implementation support.

The **IBM ServerProven®** program<sup>9</sup> is based on a simple idea: give customers the confidence that all parts of their solution—hardware, software and middleware—install quickly, start up easily and run reliably. When you see the ServerProven emblem, you'll know that the software application you're looking for is part of a complete business solution that has been identified, validated, optimized and documented by the ServerProven partner to run reliably on IBM servers.

Visit [ibm.com/eserver/xseries/serverproven](http://ibm.com/eserver/xseries/serverproven) for more information.

### Data center services

Running large SMP operations on 8-way systems becomes easier, more manageable and more reliable.

Stemming from collaboration between IBM and Microsoft, the **IBM Datacenter Solution Program** offers you a wide array of services and support for running Microsoft Windows 2000 Datacenter Server<sup>1</sup>, the industry's most scalable operating system.

Visit [ibm.com/eserver/xseries/datacenter](http://ibm.com/eserver/xseries/datacenter) for more information.

\*See page 12 for limited warranty information<sup>9</sup>.

## Intelligent systems management, rock-solid reliability

### Self-managing capabilities

Systems management tools—a combination of hardware instrumentation and advanced software—endow select xSeries servers with actual self-managing capabilities. They optimize resources and network performance in the face of fluctuating workloads and help reduce management costs—for high-availability and rock-solid reliability. Visit [ibm.com/pc/ww/eserver/xseries/systems\\_management](http://ibm.com/pc/ww/eserver/xseries/systems_management) for more information.

### Hardware

- *Predictive Failure Analysis (PFA)* provides advanced notification of an impending failure so that corrective action may be taken to avoid unplanned downtime. IBM offers PFA on hard disk drives, memory, power supplies, fans, processors and voltage regulators.
- *Light Path Diagnostics* provides an illuminated path to the component requiring maintenance, helping to expedite repairs and minimize downtime.
- *IBM Integrated System Management Processors (ISMP)* are literally individual computers within xSeries servers that give you around-the-clock remote management, including comprehensive monitoring and troubleshooting capabilities.
- *IBM Remote Supervisor Adapters* augment ISMP capability on select xSeries servers by giving you full out-of-band management functionality. Even if the server is powered down or otherwise non-responsive, its independently powered management processor can bring it back under your control with a Web-based graphical management interface.

### Software

- *IBM Director 3.1* provides a simple graphical interface to remotely manage up to 5,000 Intel processor-based clients. It automates many of the processes required to run your networks productively, including performance planning and preventive maintenance. As part of your xSeries hardware purchase, IBM Director delivers a wide range of management tools, whereas other vendors charge extra for most of their tools.
- *IBM Director Extensions* are a bundled collection of software utilities that integrate with IBM Director to extend the manageability of your xSeries hardware. They deliver advanced, predictive, self-healing technologies.



NetBAY42™ Enterprise Rack

*“We found IBM’s management suite to be comprehensive, easy to get up to speed on and effortless to administer from. IBM gets an A+ rating for manageability....”*

—InternetWeek, October 2001



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U.S.	1 888 SHOP IBM
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U.S.	1 800 426-4968
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- <sup>2</sup> When referring to storage capacity, GB equals 1,000,000,000 and TB equals 1,000,000,000,000. Accessible capacity is less.
- <sup>3</sup> "The Ultimate Memory Guide," Kingston Technology Company, 2001
- <sup>4</sup> "Performance Guide for Servers, Intel Xeon Processor with 512KB L2 Cache," Intel Corporation, February 2002
- <sup>5</sup> National Computer Security Association, 2001
- <sup>6</sup> "A Few Facts About Data Security," SkyDesk Inc., 2001
- <sup>7</sup> The High Availability Services for Business-Critical Systems offering is an optional service in the U.S. only. It is offered for only selected xSeries models at this time. IBM reserves the right to change the terms and conditions of the offering at any time without notice.
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- <sup>9</sup> For a copy of the IBM Statement of Limited Warranty, call 1 800 772-2227. Telephone support may be subject to additional charges. For onsite service, IBM sends a technician after attempting to diagnose and resolve the problem remotely.

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