



IBM @server® xSeries 226 servers feature faster Intel Xeon processor with Intel Extended Memory 64 Technology

Overview

The powerful IBM @server® xSeries® 226, two-way, highly available server can run your business and workgroup functions with ease.

Power and scalability for e-business growth

- Choice of 2.8, 3.0, or 3.2 GHz² Xeon processors with 800 MHz FSB speed and EM64T
- 512 MB of PC2-3200 DDR2 ECC RDIMM memory, 16 GB maximum when 4 GB PC2-3200 ECC DDR2 RDIMM memory becomes available
- Five PCI expansion slots and one PCI Express x16 (supports x1 and x8)
- Integrated single Gigabit Ethernet controller with Alert Standard Format 2.0
- Dual-channel Ultra320 SCSI controller
- Internal, high-speed HDD SCSI storage up to 876 GB³ with six hot-swap SCSI drives
- Hot-swap models with up to six drive bays to improve ease of use and complement data storage protection with integrated mirroring
- Simple-swap models with up to four SATA HDDs (with adapter) and 1 TB of storage
- Integrated IBM ServeRAID™ 7e providing RAID-0 or -1 standard
- Redundant power models
- Preconfigured Express model (OEU) with dual 36 GB 15,000 rpm hot-swap SCSI HDDs and 1 GB memory

Manageability features for better control and superior design points

Diagnose problems quickly with manageability and serviceability features.

- Protect your investment with easy and safe access to internal server

components, including a tool-less planar

- Diagnostic LEDs making servicing easier and faster
- Optional Remote Supervisor Adapter II supported for out-of-band management, remote POST, and setup
- Automatic server restart (ASR) to help reduce downtime by restarting the server in the event of a system hang
- Variable-speed fans that automatically respond to changing thermal requirements
- PXE remote boot, supporting remote deployment and control
- Wake on LAN® to support remote power control
- Alert Standard Format 2.0, providing standard alerts for components such as voltage and thermals and remote secure power-on

At your service

Valuable services, utilities, and systems management tools help improve productivity and get your server up and running quickly.

- IBM Director, managing the xSeries 226 server and other LAN assets
- ServerGuide™ utilities to assist loading of many popular network operating systems
- Remote Deployment Manager (RDM)
- Web support
- Three-year limited warranty⁴ on parts and labor⁵ and optionally available warranty service upgrades

Key prerequisites

- Monitor
- Keyboard
- Mouse

Planned availability date

February 26, 2005

At a glance

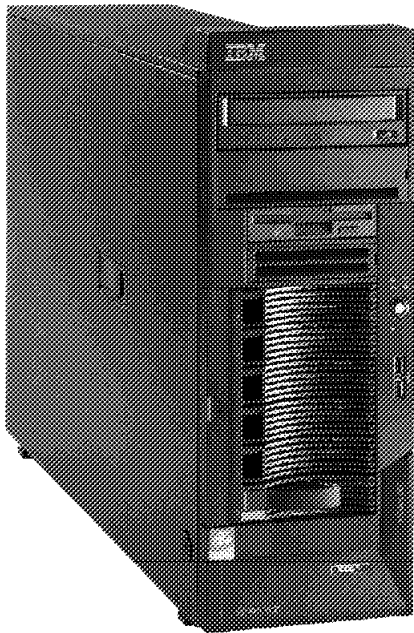
New xSeries 226 servers are highly available 4 U two-way tower servers for distributed environments and small to medium business

Features include:

- Two-way, SMP-capable, high-performance Xeon processors with 800 MHz front-side bus (FSB) and 1 MB ECC L2 advanced transfer cache with Intel™ Extended Memory 64 Technology (EM64T)
- 512 MB of PC2-3200 ECC double data rate 2 (DDR2) SDRAM RDIMM systems memory
- Dual Channel Ultra320 controller and Serial-ATA (SATA)
- 4 U rack-mount option
- Hot-swap SCSI and simple-swap SATA drive bay models
- Five PCI/PCI-X slots (three PCI-X/two PCI) and one PCI Express x16 slot
- Nine drive bays in hot-swap models and seven drive bays in non hot-swap
- Bootable 48x-20x IDE CD-ROM¹, diskette drive and HDD
- Voltage-sensing power supplies
- 530-watt power supply or redundant dual 514-watt supplies with variable speed cooling fans
- Excellent diagnostics and systems management support
- Four USB ports, two high-speed NS16550A software-compatible serial ports, and one high-speed parallel port
- Integrated SVGA controller with 16 MB video memory

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Description



xSeries 226 Server

High-performance server subsystems: These servers are high-throughput, two-way SMP-capable network servers with excellent scalability when adding memory and a second processor. They incorporate powerful Intel Xeon processors with 1 MB advanced transfer L2 cache and EM64T.

Two Intel Xeon 604 connectors are standard on the system board to support installation of a second processor. High-speed, 400 MHz DDR SDRAM is optimized for 133 MHz processor-to-memory subsystem performance.

xSeries 226 options

xSeries 2.8 GHz 800 MHz 1 MB L2 Cache Upgrade with Xeon Processor and EM64T (13N0671)

xSeries 3.0 GHz 800 MHz 1 MB L2 Cache Upgrade with Xeon Processor and EM64T (13N0672)

xSeries 3.2 GHz 800 MHz 1 MB L2 Cache Upgrade with Xeon Processor and EM64T (13N0673)

These processors contain an integrated, full-speed 1 MB ECC L2 cache.

All processors offer 133 MHz of external processing operations to memory and the bus interface. They also support SMP applications through installation of the same processor into the second processor socket of xSeries 226 server models.

Standard xSeries 226 configurations

Model	Processor	Cache	Memory	Interface	HDD
8488 00x	2.8 GHz	1 MB	512 MB		SATA 80 GB, simple swap
8488 0Ax	2.8 GHz	1 MB	512 MB	Ultra320 SCSI	Open, hot swap
8488 0Bx	2.8 GHz	1 MB	512 MB	Ultra320 SCSI	Open, hot swap
8488 10x	3.0 GHz	1 MB	512 MB		SATA 80 GB, simple swap
8488 1Ax	3.0 GHz	1 MB	512 MB	Ultra320 SCSI	Open, hot swap
8488 1Bx	3.0 GHz	1 MB	512 MB	Ultra320 SCSI	Open, hot swap
8488 20x	3.2 GHz	1 MB	512 MB		SATA 80 GB, simple swap
8488 2Ax	3.2 GHz	1 MB	512 MB	Ultra320 SCSI	Open, hot swap
8488 2Bx	3.2 GHz	1 MB	512 MB	Ultra320 SCSI	Open, hot swap

Note: xBx model includes redundant 514-watt power supplies.

Express model

Model	Processor	Cache	Memory	Interface	HDD
8488 0EU	2.8 GHz	1 MB	1 GB	Ultra 320 SCSI	2x36 GB, hot swap

Additional features

- System board contains six DIMM connectors supporting 256 MB, 512 MB, 1 GB, or 2 GB PC2-3200 ECC DDR2 SDRAM RDIMM memory.
 - Supports 16 GB of system memory when 4 GB PC2-3200 ECC DDR2 RDIMM memory becomes available.
 - Memory is interleaved, meaning it must be populated two DIMMs at a time with the same size DIMM.
 - DIMM pair size may vary between the pairs.
- Dual-channel, 64-bit, Ultra320 SCSI controller supports high-speed up to 320 MB/s, Low-Voltage Differential SCSI (LVDS) internal storage solutions with RAID 1 mirroring.
- Economical simple-swap SATA models.
- Full-duplex, Gigabit Ethernet PCI controller speeds network communications to LAN clients.

The xSeries 226 subsystems are maximized to provide solid system throughput from processor, to memory, to bus, to disk-intensive I/O. These features, combined with SMP capability, make this server an excellent choice for departmental workgroups and e-mail collaborative servers.

- Interconnected or stand-alone workgroup file servers
- Entry-application servers
- Internet servers
- Branch office file servers running e-mail and office suites

High-availability and serviceability features: The xSeries 226 server delivers excellent reliability and serviceability features:

- Six hot-swap Ultra320 DASD bays or four simple-swap SATA DASD bays for non-hot swap models
- ECC DIMMs combined with an integrated ECC memory controller correcting many single-bit memory errors, while minimizing disruption of service to LAN clients
- Chipkill™ memory for the detection and correction of most multi-bit memory errors, that can keep the server up and running while taking the inoperative memory offline (when using Chipkill memory)

- ECC L2 cache processors to help improve data integrity and help reduce downtime
- PFA on hot-swap HDDs to alert the system administrator of an imminent component failure
- Integrated IBM ServeRAID 7e providing RAID-0 or -1 standard
- Broadcom 5721 Gigabit Ethernet controllers that support:
 - Failover; adapter fault tolerance (AFT)
 - PXE 2.0 boot agent
 - ASF 2.0 support
 - Wake on LAN
- Worldwide, voltage-sensing 530-watt or redundant 514-watt power supplies with auto restart
- Up to five cooling fans for added reliability
 - Two power supply fans (three in models with dual power supplies)
 - Three system fans for processors, memory, and HDD bays
 - Fan speed controls incorporated to reduce noise while reducing system temperatures
- Diagnostic LEDs providing an LED map to a failing component, helping reduce downtime and service costs
- Easy access to system board, adapter cards, processor, and memory
- CPU failure recovery in SMP configurations:
 - Forces failed processor offline
 - Automatically reboots server
 - Generates alerts

Expansion capacity and standard features: The xSeries 226 server is housed in a tower mechanical package designed to economically handle expansion. These models feature:

- 530-watt or redundant 514-watt worldwide, voltage-sensing power supplies with auto restart
- Speed-controlled fans cool:
 - Power supply
 - Drive bays
 - Microprocessor
 - I/O
- PC2-3200 ECC DDR2 SDRAM RDIMM system memory; six DIMM sockets support up to 16 GB when 4 GB PC2-3200 ECC DDR2 RDIMM memory becomes available
- Six PCI expansion slots
 - Two PCI-X 64-bit (100 MHz)
 - One PCI-X 64-bit (133 MHz)
 - Two PCI 32-bit (33MHz)
 - One PCI Express x16 slot (supports PCI Express x1 and x8 adapters)
- Nine bays (hot-swap models) supporting up to 876 GB of internal HDD storage or four simple-swap SATA models supporting up to 1 TB using the optional SATA RAID adapter:
 - One accessible 5.25-inch, half-high bay with 48x-20x CD-ROM drive
 - One open accessible 5.25/3.5-inch, half-high bay supporting a removable SCSI device, such as tape backup

- One accessible 3.5-inch, slim-high bay with 1.44 MB diskette drive
- One open accessible 3.5-inch, slim-high bay
- Four internal 3.5-inch, slim high bays, non hot-swap or six hot-swap bays (model-dependent)
- 80 GB 7,200 rpm simple-swap SATA HDD on select models
- Integrated dual-channel Ultra320 SCSI controller with Channel A connected to:
 - Hot-swap backplane via a 1-drop LVD SCSI cable on hot-swap models
 - Optional 1-drop SCSI cable (part number 24P7973) to connect Channel B to the back of chassis to support external SCSI devices
- ATI Radeon 7000M graphics controller with 16 MB of video memory

Advanced Configuration and Power Interface (ACPI): ACPI is an open industry specification that defines a flexible and extensible hardware interface for the system board. Software designers use this specification to integrate power management features throughout a computer system, including hardware, the operating system, and application software. This integration enables Windows™ to determine which applications are active and handle all of the power management resources for computer subsystems and peripherals.

IBM manageability tools

Desktop Management Interface (DMI) Service Provider: This tool can help administrators manage and control hardware and software products on desktop computers and servers. Each DMI-compliant component registers its configuration information in a management information format file that follows an industry-standard format. The IntelliStation® system is DMI specification 2.0-compliant. Support documentation is built into the help system.

- DMI BIOS Instrumentation: Retrieves information from the system BIOS, such as memory configuration BIOS version and date, and microprocessor and cache information.
- PC System Monitor Instrumentation: Monitors system-board temperatures, system voltages, and fan speed, and detects removal of the computer cover. Data is reported to the DMI service layer. Systems management software, such as IBM Director Agent, can then be used to send an alert to the user or the system administrator if a problem occurs.

Systems management: The xSeries 226 server also features IBM Director, a powerful, highly integrated, systems management software solution built on industry standards and designed for ease of use.

Exploit your existing enterprise or workgroup management environments and use rich security to access and manage physically dispersed IT assets more efficiently over the Internet.

The xSeries 226 server can help reduce costs through:

- Reduced downtime
- Increased productivity of IT personnel and end users
- Potentially reduced service and support costs

IT administrators can view the hardware configuration of remote systems in detail and monitor the usage and performance of critical components such as processors, HDDs, and memory.

IBM Director includes a portfolio of integrated server tools that work with the Remote Supervisor Adapter or other systems-management monitoring functions.

You can monitor:

- PFA-enabled critical hardware components
- Temperature
- Voltage
- Fan speed
- Diagnostic LEDs

The IT administrator has comprehensive, virtual on-site control of xSeries servers to remotely:

- Access the server often regardless of its status
- Inventory and display detailed system and component information
- View server bootup during POST
- Browse and delete logs of events and errors
- Reset or power cycle the server
- Monitor and set thresholds on server health including:
 - Operating system load
 - POST time-out
 - Voltage
 - Temperature
- Define automated actions such as:
 - Send an e-mail or page to an administrator
 - Execute a command or program
 - Pop up an error message to the IBM Director console
- Flash BIOS
- Monitor and graph the use of server resources such as:
 - Memory
 - Processor
 - HDDs
- Identify potential performance bottlenecks and react to prevent downtime

IBM Director Agent integrates into leading workgroup and enterprise systems management environments via Upward Integration Modules (available from IBM and third parties). Advanced management capabilities built into xSeries servers are available through:

- Tivoli® Enterprise and Tivoli NetView®
- Computer Associates CA Unicenter TNG
- HP OpenView
- Microsoft™ SMS
- BMC Patrol
- NetIQ

World-class support tools and programs: The xSeries 226 server offers tools and programs designed to make ownership a positive experience. From the start, IBM programs help you purchase servers, get them running, and keep them running over time and can help your company maintain ownership of technology leadership network servers.

- IBM on-site, one-year limited warranty with next-business-day (NBD) service (same-business-day service optionally available) protects your investment if a problem occurs. This service also includes replacement of parts identified through PFA.
- The ServerProven®⁶ program lets you confidently configure your server with various devices and operating systems. This program provides compatibility information from actual testing of the xSeries 226 server with various adapters and devices.

- The ServerGuide CD library includes online publications, in addition to utilities and drivers that provide assisted loading of popular network operating systems.
- Electronic support on the Web provides additional support in an easy-to-use format.

Product positioning

These xSeries universal servers are flexible tower servers positioned between the xSeries 206 and the xSeries 236 servers. These servers run entry and workgroup applications.

These two-way, Xeon-based servers are designed for customer installation of features to handle future expansion to meet changing reliability needs. These applications include:

- File and entry-application server environments where a high-performance Xeon single or dual processor meets the needs of the customer
- Enterprise customers whose installations include:
 - Interconnected or stand-alone workgroup file servers
 - Entry-application servers
 - Internet servers
 - Branch office file servers running e-mail and office suites

This function, with attractive price points, makes the xSeries 226 server an excellent choice for small business customers and workgroup applications.

xSeries 226 models include several features that make them easy to install and manage:

- Tool-less easy-access chassis
- Hot-swap HDDs or simple-swap SATA HDDs
- Integrated Ethernet controller with Wake on LAN
- ServerGuide installation utilities
- IBM Director with ASF 2.0
- Remote Deployment Manager (RDM)
- Optional rack-mount capability
- Tool-less PCI card and hard drive installation and removal
- Optionally available Remote Supervisor Adapter II

Reference information

- ¹ Actual playback speed will vary and is often less than the maximum possible.
- ² GHz or MHz denotes the internal and/or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.
- ³ When referring to HDD or tape backup capacity, GB stands for one billion bytes. Total user capacity may vary depending on operating environments.
- ⁴ For information on the IBM Statement of Limited Warranty, visit

http://www.ibm.com/servers/support/machine_warranties/

- ⁵ You may be asked certain diagnostic questions before a technician is sent.
- ⁶ IBM makes no warranties, expressed or implied, regarding non-IBM products and services that are ServerProven, including but not implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBM ID).

BP Attachment for Announcement Letter 105-073

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=105-073>

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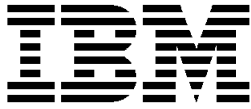
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IBM US Announcement Supplemental Information

February 15, 2005

Publications

The following publications and CD-ROMs are shipped with the xSeries® 226 server.

- *xSeries 226 Installation Guide* contains an introduction to the computer, installation and setup, installing options, reference information, and problem determination. The installation guide has easy-to-use text and pictorials to enable users to quickly set up your xSeries 226 server.
- *Documentation/User's Guide CD* contains translated versions of the product user's guide.
- *ServerGuide™* contains online publications and drivers to support the xSeries 226 server. In addition, it includes a set of easy-to-use utilities to help you install several popular network operating systems.
- IBM Director systems management software is included.
- *ServeRAID™ Manager CD* is an advanced Java™-based RAID management application that easily integrates into IBM Director to provide leading setup, monitoring, and administration features for managing a RAID storage subsystem.

Note: Software versions, features, and functions shipped with these systems may change as new releases become available or may be discontinued at any time.

The *xSeries 226 Installation Guide* and *Hardware Maintenance Manual*, in U.S. English versions, are available from

<http://www.pc.ibm.com/support>

Click servers, then the server family, and then Online Publications.

Services

Integrated Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure for e-business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

Technical information

Physical specifications

xSeries 226

	8488-00x	8488-0Ax	8488-0Bx
Processor	Xeon	Xeon	Xeon
Internal speed	2.8 GHz	2.8 GHz	2.8 GHz
External speed	800 MHz	800 MHz	800 MHz
Number standard	1	1	1
Maximum L2 Cache (full-speed)	2 MB	2 MB	2 MB
Memory (400 MHz SDRAM)	512 MB ECC	512 MB ECC	512 MB ECC
RDIMMs DIMM sockets	2x256 MB	2x256 MB	2x256 MB
Capacity	6	6	6
Video	16 GB ⁷	16 GB ⁷	16 GB ⁷
Memory DASD controller	SVGA	SVGA	SVGA
Channels	16 MB	16 MB	16 MB
Connector internal	SATA	Ultra320	Ultra320
Connector external	1	2	2
HDD	2	1	1
Total bays	0	1	1
5.25/3.5-in HH	80 GB	Open Bay	Open Bay
3.5-in slim	7	9	9
Hot-swap Internal capacity	2	2	2
Bays available	5	1	1
5.25/3.5-in HH	0	6	6
3.5-in slim	0	6	6
Hot-swap	0	6	6
Total slots	6	6	6
PCI 32-bit/33Mhz	6	6	6
PCI-X 64-bit/100MHz	2	2	2
PCI-X 64-bit/133MHz	2	2	2
	1	1	1

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	8488-00x	8488-0Ax	8488-0Bx		8488-10x	8488-1Ax	8488-1Bx
PCI Express x1 and x8	1	1	1	CD-ROM (IDE)	48x-20x	48x-20x	48x-20x
Slots available	6	6	6	Diskette drive	1.44 MB	1.44 MB	1.44 MB
Management processor	Optional	Optional	Optional	Power supply	530 W	530 W	514 W
Ethernet controller	1 GB	1 GB	GB	Number standard	1	1	2
CD-ROM (IDE)	48x-20x	48x-20x	48x-20x	Hot-swap	No	No	Yes
Diskette drive	1.44 MB	1.44 MB	1.44 MB	Redundant power	No	No	Yes
Power supply	530 W	530 W	514 W	Auto restart	Yes	Yes	Yes
Number standard	1	1	2		8488-20x	8488-2Ax	8488-2Bx
Hot-swap	No	No	Yes	Processor	Xeon	Xeon	Xeon
Redundant power	No	No	Yes	Internal speed	3.2 GHz	3.2 GHz	3.2 GHz
Auto restart	Yes	Yes	Yes	External speed	800 MHz	800 MHz	800 MHz
	8488-10x	8488-1Ax	8488-1Bx	Number standard	1	1	1
Processor	Xeon	Xeon	Xeon	Maximum	2	2	2
Internal speed	3.0 GHz	3.0 GHz	3.0 GHz	L2 Cache (full-speed)	1 MB	1 MB	1 MB
External speed	800 MHz	800 MHz	800 MHz	Memory (400 MHz SDRAM)	512 MB ECC	512 MB ECC	512 MB ECC
Number standard	1	1	1	RDIMMs	2x256 MB	2x256 MB	2x256 MB
Maximum	2	2	2	DIMM sockets	6	6	6
L2 Cache (full-speed)	1 MB	1 MB	1 MB	Capacity	16 GB ⁷	16 GB ⁷	16 GB ⁷
Memory (400 MHz SDRAM)	512 MB ECC	512 MB ECC	512 MB ECC	Video	SVGA	SVGA	SVGA
RDIMMs	2x256 MB	2x256 MB	2x256 MB	Memory	16 MB	16 MB	16 MB
DIMM sockets	6	6	6	DASD controller	SATA	Ultra320	Ultra320
Capacity	16 GB ⁷	16 GB ⁷	16 GB ⁷	Channels	1	2	2
Video	SVGA	SVGA	SVGA	Connector internal	2	1	1
Memory	16 MB	16 MB	16 MB	Connector external	0	1	1
DASD	SATA	Ultra320	Ultra320	HDD	80 GB	Open Bay	Open Bay
controller				Total bays	7	9	9
Channels	1	2	2	5.25/3.5-in HH	2	2	2
Connector internal	2	1	1	3.5-in slim	5	1	1
Connector external	0	1	1	Hot-swap	0	6	6
HDD	80 GB	Open Bay	Open Bay	Total slots	6	6	6
Total bays	7	9	9	PCI 32-bit/33Mhz	2	2	2
5.25/3.5-in HH	2	2	2	PCI-X 64-bit/100MHz	2	2	2
3.5-in slim	5	1	1	PCI-X 64-bit/133MHz	1	1	1
Hot-swap	0	6	6	PCI Express x1 and x8	1	1	1
Internal capacity	1 TB ⁸	876 GB ⁸	876 GB ⁸	Slots available	6	6	6
Bays available	5	7	7	Management processor	Optional	Optional	Optional
5.25/3.5-in HH	1 ⁹	1 ⁹	1 ⁹	Ethernet controller	1 GB	1 GB	1 GB
3.5-in slim	4	0	0	CD-ROM (IDE)	48x-20x	48x-20x	48x-20x
Hot-swap	0	6	6	Diskette drive	1.44 MB	1.44 MB	1.44 MB
Total slots	6	6	6	Power supply	530 W	530 W	514 W
PCI 32-bit/33Mhz	2	2	2	Number standard	1	1	2
PCI-X 64-bit/100MHz	2	2	2	Hot-swap	No	No	Yes
PCI-X 64-bit/133MHz	1	1	1	Redundant power	No	No	Yes
PCI Express x1 and x8	1	1	1	Auto restart	Yes	Yes	Yes
Slots available	6	6	6				
Management processor	Optional	Optional	Optional				
Ethernet controller	1 GB	1 GB	1 GB				

Express model xSeries 226

8488-0EU

Processor	Xeon
Internal speed	2.8 GHz
External speed	800 MHz
Number standard	1
Maximum	2
L2 Cache (full-speed)	1 MB
Memory (400 MHz SDRAM)	1 GB ECC
RDIMMs	2 x 512 MB
DIMM sockets	6
Capacity	16 GB(7)
Video	SVGA
Memory	16 MB
DASD controller	Ultra320
Channels	2
Connector internal	1
Connector external	1
HDD	2 X 36 GB 15K
Total bays	9
5.25/3.5-in half-high	2
3.5-in slim	7
Hot-swap	6
Internal capacity	876 GB ⁷
Bays available	5
5.25/3.5-in half-high	1 ⁸
3.5-in slim	4
Hot-swap	4
Total slots	6
PCI 32-bit/33Mhz	2
PCI-X 64-bit/100MHz	2
PCI-X 64-bit/133MHz	1
PCI Express x1 and x8	1
Slots available	6
Management processor	Optional
Ethernet controller	10/100/1000 Mbps
CD-ROM (IDE)	48x-20x
Diskette drive	1.44 MB
Power supply	530 W
Number standard	1
Hot-swap	No
Redundant power	No
Auto restart	Yes

⁷ When 4 GB PC2-3200 ECC DDR2 SDRAM RDIMM memory becomes available.

⁸ SCSI capacities are based on installation of six 146 GB slim-line, SCSI hot-swap HDDs. SATA models are based on the installation of the optional SATA RAID option and four 250 GB SATA HDDs. For the latest information on supported HDD options, visit

<http://www.ibm.com/pc/us/compat>

⁹ This bay does not support HDD options. It can be used for removable media devices such as tape backup.

HDD characteristics: 80 GB SATA HDD

- Formatted capacity: 80,000 MB
- Average read seek time: 9.0 ms
- Average latency: 4.17 ms
- Drive rotation speed (RPM): 7,200 rpm
- PFA/S.M.A.R.T enabled: Yes
- Interface: Serial-ATA

48x-20x CD-ROM drive characteristics

- Formatted capacity: 650 MB
- Average access time including latency: Less than 85 ms
- Sustained data transfer rate: 3000 to 7200 KB/s

- Burst data transfer rate:
 - ATA PIO Mode 4: 16.6 MB/s
 - ATA Multi-Word DMA Mode 2: 16.6 MB/s
- Technology: Full constant angular velocity (CAV)

Video subsystem

- ATI 7000M graphics controller chip
- Integrated on planar and connected to the PCI bus
- 16 MB SDRAM standard/maximum video memory
- 128-bit graphics engine with 8, 16, and 32 bpp mode acceleration
- 32 bpp (4G colors/True Color) support
- Integrated 300 MHz RAMDAC
- DDC2B monitor communications support

Supported video mode capabilities for the SVGA PCI controller:

Resolution	Colors	Refresh rate (Hz)
<i>Microsoft™ Windows™ XP and/or Linux™</i>		
640 x 480 x 8	256	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 16	64K	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 24	16M	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 32	16M	60, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 24	16M	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 32	16M	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
1024 x 768 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 24	16M	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 32	16M	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1280 x 1024 x 8	256	60, 70, 74, 75, 85, 90, 100, 120
1280 x 1024 x 16	64K	60, 70, 74, 75, 85, 90, 100, 120
1280 x 1024 x 24	16M	60, 70, 74, 75, 85, 90, 100, 120
1280 x 1024 x 32	16M	60, 70, 74, 75, 85, 90, 100, 120
1600 x 1200 x 8	256	52, 58, 60, 66, 75, 76, 85, 92, 100
1600 x 1200 x 16	64K	52, 58, 60, 66, 75, 76, 85, 92, 100
1600 x 1200 x 24	16M	52, 58, 60, 66, 75, 76, 85, 92, 100
1600 x 1200 x 32	16M	52, 58, 60, 66, 75, 76, 85, 92, 100

Note: Some modes are not supported by all monitors.

Dimensions

- Height: 467.4 mm (18.4 in)
- Width: 165 mm (6.5 in)
- Depth: 660 mm (26 in)
- Weight: 20 kg (44 lbs) to 25.8 kg (57 lbs)

Minimum clearance for cooling

100 mm (4 in) at the back

Electrical

530-watt supply continuous (non-redundant power supply models)

- 100 to 127 (nominal) V ac; 50 to 60 Hz; 8.0 A (maximum)
- 200 to 240 (nominal) V ac; 50 to 60 Hz; 4.0 A (maximum)

514-watt supply continuous (redundant power supply models)

- 100 to 127 (nominal) V ac; 50 to 60 Hz; 6.2 A (maximum)
- 200 to 240 (nominal) V ac; 50 to 60 Hz; 3.1 A (maximum)
- Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: .18 kVA
 - Maximum configuration:
 - 0.86 kVA (non-redundant power supply models)
 - 0.72 kVA (redundant power supply models)
- Btu output:
 - Minimum configuration: 597 Btu/hr (175 watts)
 - Maximum configuration:
 - 2780 Btu/hr (815 watts)(non-redundant power supply models)
 - 2337 Btu/hr (685 watts)(redundant power supply models)
- Declared acoustical noise emission levels:
 - Non-redundant power supply models:
 - 5.2 bels (idling)
 - 5.3 bels (operating)
 - Redundant power supply models:
 - 5.9 bels (idling)
 - 6.0 bels (operating)

Note: The noise emission level stated is the declared (upper limit) sound power level, in bels, for a random sample of machines, typically configured, and operating in idle mode; that is, powered on, but no disk drive read/write or other I/O activity. All measurements made in accordance with ANSI S12.10 and ISO 7779, and reported in accordance with ISO 9296.

xSeries 226 servers are best used as floor-standing servers and operating in a vertical position.

Standards: These systems support or comply with the following standards:

- Multiprocessor Specification (MPS) 1.4.
- Peripheral Component Interconnect (PCI) specification 2.1.
- These models are ISO 9241-capable. A supplier's declaration is available.

Equipment approvals and safety:

- FCC — Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 3, Class A

- UL 1950¹⁰
- CSA C22.2 No. 950
- NOM-018¹⁰

¹⁰ These servers are certified by the respective UL and NOM agencies.

Operating environment

- Temperature:
 - 10.0° to 35.0°C (50° to 95°F) (Server on)
 - 0.0° to 60.0°C (-32° to 140°F) (Server off)
- Relative humidity: 8% to 80%
- Maximum altitude: 2,133 m (7,000 ft)

Hardware requirements: For attended installation of an operating system, this server requires a compatible:

- Keyboard
- Mouse
- HDD
- Display

Unattended or remote installation may be performed without requiring some or all of these components. Review your unattended software installation program information for specific hardware configuration requirements.

For service, the server requires a compatible:

- Keyboard
- Mouse
- HDD
- Supported display

When having the unit serviced, plan to have these components attached to your server either directly or indirectly via a console switch.

Software requirements: The following network operating systems¹¹ are supported in the xSeries 226:

- Microsoft:
 - Windows 2000 Server
 - Windows 2000 Advanced Server
 - Windows Server 2003 Standard Edition¹¹
 - Windows Server 2003 Enterprise Edition¹¹
 - Windows Server 2003 Web Edition¹¹
- Linux:
 - Red Hat Enterprise Linux 3 Adv Sever¹¹
 - SUSE LINUX Enterprise Server 8¹¹

The following network operating systems are supported as preloads in the xSeries 226 server:

- Microsoft:
 - Windows Small Business Server 2003
 - Windows Server 2003 Standard Edition¹¹
 - Windows Server 2003 Enterprise Edition¹¹
- Linux:
 - Red Hat Enterprise Linux ES 3¹¹
 - Red Hat Enterprise Linux WS 3¹¹

¹¹ Certification is planned for these network operating systems.

Note: For information about additional support, certification, and versions of network operating systems visit

Compatibility: The xSeries 226 systems contain licensed system programs that include set configuration, set features, and test programs. System BIOS is “flashed” to a EEPROM into system memory. This BIOS provides instructions and interfaces designed to support the standard features of the server and to maintain compatibility with many current software programs.

Contact your IBM representative or IBM Business Partner or refer to the IBM Sales Manual for information on the compatibility of hardware and software for xSeries servers.

Limitations

- To achieve 8 GB of system memory, you can add a 2 GB PC2-3200 ECC DDR2 SDRAM RDIMM in the first two DIMM slots and a 1 GB PC2-3200 ECC DDR2 SDRAM RDIMM in the next four. To achieve 16 GB of system memory, when 4 GB PC2-3200 ECC DDR2 RDIMM memory becomes available, you can add a 4 GB PC2-3200 ECC DDR2 SDRAM RDIMM in the first four slots. All supported system memory is addressable through direct memory access (DMA). Today the xSeries 226 server supports 256 MB, 512 MB, 1 GB, and 2 GB PC2-3200 ECC DDR2 SDRAM RDIMM. When 4 GB PC2-3200 ECC DDR2 SDRAM RDIMM becomes available it will be tested and added to the supported list. Memory must be populated in matched pairs. All supported DIMMs can coexist in the same system however Chipkill™ function is only active when Chipkill DIMMs are used. Refer to **Planning information** section for supported memory options.

Note: Maximum memory may require replacement of standard memory with optional maximum memory modules.

- Special Bids will not be accepted for Express models.
- The standard system processor can be upgraded to SMP by adding a second processor of the same type and clock speed. Mixing microprocessors of different speeds or cache size is not supported.
- In hot-swap SCSI models, the first PCI-X slot, which is next to the 32-bit slot, is the only slot that can support the IBM PCI RAID controller card due to SCSI cable length limitation.
- The Remote Supervisor Adapter II is recommended to be installed in slot 2.
- The ServeRAID 6i adapter is only supported in PCI slot 5.
- The 32-bit/33 MHz PCI slot does not support a 64-bit PCI adapter due to physical limitations.
- Wake on LAN3 is not supported if systems are improperly shut down.
- Full-length PCI cards with attached daughter cards will not fit and are not supported in PCI slot 5.
- The open 5.25-inch bay supports removable media devices, such as tape backup devices. It does not support HDD options.
- Use the version of ServerGuide shipped with the system, or a later version, to load software and drivers. Earlier versions of ServerGuide may not be compatible with the server.

Refer to the **Software requirements** section for operating system limitations.

Customer responsibilities

xSeries 226 customer setup: The xSeries 226 and related options are designated as customer setup. Customer setup instructions are shipped with systems and options.

Standard configurations

All xSeries 226 hot-swap models are cabled internally with a two-drop, 16-bit-wide Ultra320 SCSI cable. One end is connected to the internal 80-pin connector of the integrated Ultra320 SCSI controller. The first drop is designed to support a SCSI device in the 3.5-inch non hot-swap bay, while the second drop is connected to the hot-swap SCSI backplane. The SCSI backplane provides termination for the SCSI bus.

RAID configurations

An optional RAID controller can be used to support HDDs installed in hot-swap models of xSeries 226.

Other configuration alternatives

A Netfinity® Two-Drop Internal SCSI Cable (36L9636) is optionally available to support installation of a non-LVD SCSI tape drive in configurations where the five-drop cable is attached to an optional RAID controller. This cable can also be used in hot-swap models to support installation of a non-LVD SCSI tape drive in the open 5.25-inch bay when the standard cable is used to support a RAID controller. For configurations requiring an LVD cable, you can order the optional Netfinity Media Bay Conversion Kit (10K2340).

For external SCSI support, install an optional SCSI adapter or RAID controller and using appropriate external SCSI cabling.

In addition to the SCSI controller, an IDE controller provides the interface for the IDE CD-ROM drive. A two-drop IDE cable connects the IDE controller to the IDE CD-ROM.

Supported memory options

The following memory options are supported:

- 512 MB PC2-3200 (2x256MB) ECC DDR2 Non Chipkill SDRAM RDIMM (73P3523)
- 1 GB PC2-3200 (2x512MB) ECC DDR2 Non Chipkill SDRAM RDIMM (73P3522)
- 1 GB PC2-3200 (2x512MB) ECC DDR2 SDRAM RDIMM (73P2865)
- 2 GB PC2-3200 (2x1GB) ECC DDR2 SDRAM RDIMM (73P2866)
- 4 GB PC2-3200 (2x2GB) ECC DDR2 SDRAM RDIMM (73P2867)

Rack installations

xSeries 226 servers can be converted to rack-mounted units by installing a 4 U Extended Depth Tower to Rack Conversion Kit (26K6095). The 4 U xSeries 226 server can be installed in a 19-inch industry-standard rack such as:

- NetBAY42 Enterprise Rack
- NetBAY42 Rack
- NetBAY25 Rack

If you use a non-IBM rack, the cabinet must meet the EIA™-310-D standards with a depth of at least 28 inches. Also, adequate space (approximately two inches for the front bezel and one inch for air flow) must be maintained from the slide assembly to the front door of the rack cabinet to allow sufficient space for the door to close and provide adequate air flow.

Cable orders: The 10/100/1000 Mbps, full duplex Gigabit Ethernet PCI controller, standard with server, is connected directly to a RJ-45 connector. The RJ-45 connector provides a 10BaseT, 100Base-TX, or 1000BASE TX interface for connecting twisted-pair cable to the Ethernet network. Cabling is not included with the server. To connect the Ethernet controller to a repeater or switch, use an UTP cable with RJ-45 connectors at both ends. For 100 Mbps operation and higher Category 5 cabling, or better, cabling must be used.

There are no additional cabling requirements, other than for system power, keyboard, mouse, and monitor connections.

Installability: The xSeries 226 server requires about 30 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional adapters, or features.

Packaging

- System unit carton: System unit
- Country kit carton:
 - Keyboard with attached cable
 - Two-button mouse with attached cable
 - System unit power cord
 - xSeries 226 Installation Guide
 - ServeRAID Manger CD
 - ServerGuide and IBM Director

xSeries 226 systems are shipped as a single package. The country kit carton is contained inside the top portion of the system unit carton.

Processor upgrade options

- Intel™ Xeon processor
- Heatsink
- Publication/warranty

Security, auditability, and control

Security and auditability features include:

- Power-on password (secured boot).
- A mechanical lock allows you to lock the system cover to prevent unauthorized personnel access to internal components of the server.
- Selectable boot sequence prevents unauthorized installation of software or removal of data from the diskette drive.
- A common U-bolt attached to the back frame ties down the system.
- Operation without a keyboard and display are supported after the server is configured with the appropriate network operating system. This minimizes the risk of unauthorized people tampering with the system software and configuration.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and conditions

IBM Global Financing: No

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM.

In the United States, call 800-IBM-SERV (426-7378), or write to:

Warranty Information
P.O. Box 12195
Research Triangle Park, NC 27709
Attn: Dept JDJA/B203

Warranty period

System hardware — Three years

Optional IBM features initially installed in an IBM system carry the same warranty period as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.

Warranty service: If required, IBM provides repair or exchange service depending on the type of warranty service specified below for the machine. An IBM technician will attempt to resolve your problem over the telephone. You must follow IBM's problem determination and resolution procedures. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country- and location-specific information.

Customer Replaceable Unit (CRU) (for example, keyboard, mouse, speaker, memory, HDD, and other easily replaceable parts) service and on-site for other selected parts.

CRU service: IBM will ship CRU parts to you for your replacement. If IBM instructs you to return the replaced CRU, you are responsible for returning it to IBM in accordance with IBM's instructions. If you do not return the defective CRU, if IBM so instructs, within 30 days of your receipt of the replacement CRU, IBM may charge you for the replacement.

On-site service: IBM On-site Repair (IOR), 9 hours per day, Monday through Friday excluding holidays, next-business-day response. IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose. On-site service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where on-site service is not available, the normal in-county service delivery is used.

Call IBM at 800-IBM-SERV (426-7378), to assist with problem isolation for hardware to determine if warranty service is required. Telephone support may be subject to additional charges, even during the limited warranty period.

International Warranty Service (IWS): International Warranty Service (IWS) is available during the warranty period to customers who travel or relocate to countries where their computer is sold and serviced by IBM or IBM resellers authorized to perform warranty service. Eligible IBM computers are identified by their four-digit machine type.

You can obtain IWS through the method of service, such as CRU, depot, carry-in, or on-site, provided in the servicing country. Service methods and procedures vary by country, and some service or parts may not be available in all countries. Service centers in certain countries may not be able to service all models of a particular machine type. In addition, some countries may have fees and restrictions that apply at the time of service.

To determine the eligibility of your computer and to view a list of countries where service is available, visit:

<http://www-3.ibm.com/pc/support/site.wss/warranty/warranty.vm>

For more information on IWS, refer to Services Announcement 601-034, dated September 25, 2001.

Licensing: Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Maintenance services — ServiceElect and ServiceSuite™

ServiceElect and ServiceSuite provide hardware warranty service upgrades, maintenance, and selected annuity support services in one agreement.

Warranty service upgrade: During the warranty period, warranty service upgrade provides an enhanced level of on-site service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of on-site service acquired by the customer. Service levels are response time objectives and are not guaranteed.

An IBM technician will attempt to resolve your problem over the telephone. You must follow IBM's problem determination and resolution procedures. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable, parts that are considered CRUs will be provided as part of the machine's standard warranty CRU service.

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

The following Warranty Service Upgrade options are available:

- On-site service — IOR, 9 hours per day, Monday through Friday excluding holidays, 4-hour average response
- On-site service — IOR, 24 hours per day, 7 days a week, 4-hour average response
- On-site service — IOR, 24 hours per day, 7 days a week, 2-hour average response

Maintenance service: If required, IBM provides repair or exchange service depending on the type of maintenance service specified below for the machine. An IBM technician will attempt to resolve your problem over the telephone. You must follow IBM's problem determination and resolution procedures. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed.

CRU service: If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, HDD, and other easily replaceable parts), IBM will ship these parts to you for replacement by you. If IBM instructs you to return the replaced CRU, you are responsible for returning it to IBM in accordance with IBM's instructions. If you do not return the defective CRU, if IBM so instructs, within 30 days of your receipt of the replacement CRU, IBM may charge you for the replacement.

On-site service: IOR. IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

The following on-site service options are available:

- On-site service — IOR, 9 hours per day, Monday through Friday excluding holidays, next-business-day response
- On-site service — IOR, 9 hours per day, Monday through Friday excluding holidays, 4-hour average response
- On-site service — IOR, 24 hours per day, 7 days a week, 4-hour average response
- On-site service — IOR, 24 hours per day, 7 days a week, 2-hour average response

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts. The preferred go-to-market offerings are ServiceElect. However, ICA legacy contracts will still be available for current customers until they are withdrawn.

Alternative service (Warranty service upgrades): During the warranty period, warranty service upgrade provides an enhanced level of on-site service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of on-site service acquired by the customer. Service levels are response time objectives and are not guaranteed.

An IBM technician will attempt to resolve your problem over the telephone. You must follow IBM's problem determination and resolution procedures. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable, parts that are considered CRUs will be provided as part of the machine's standard warranty CRU service.

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

The following Warranty Service Upgrade option is available.

ServicePac® offerings

On-site service — IOR, 24 hours per day, 7 days a week, 4-hour average response

Maintenance service: If required, IBM provides repair or exchange service depending on the type of maintenance service specified below for the machine. An IBM technician will attempt to resolve your problem over the telephone. You must follow IBM's problem determination and resolution procedures. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed.

CRU service: If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, HDD, and other easily replaceable parts), IBM will ship these parts to you for replacement by you. If IBM instructs you to return the replaced CRU, you are responsible for returning it to IBM in accordance with IBM's instructions. If you do not return the defective CRU, if IBM so instructs, within 30 days of your receipt of the replacement CRU, IBM may charge you for the replacement.

On-site service: IOR. IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

The following on-site service options are available:

- On-site service — IOR, 9 hours per day, Monday through Friday excluding holidays, next-business-day response
- On-site service — IOR, 24 hours per day, 7 days a week, 4-hour average response

Non-IBM parts support

Warranty service: IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to their customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades and maintenance services: Under certain conditions, IBM Integrated Technology Services repairs selected non-IBM parts at no additional charge for machines that are covered under a warranty service upgrade or maintenance services.

IBM Service provides hardware problem determination on non-IBM parts (adapter cards, PCMCIA cards, disk drives, memory, and so forth) installed within IBM systems covered under warranty service upgrade or maintenance services and provides the labor to replace the failing parts at no additional charge. If IBM has Technical Service Agreements with the manufacturers of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing parts at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or maintenance services.

IBM hourly service rate classification: One

Warranty and maintenance options: The announced products may be eligible for ServicePacs for Warranty and Maintenance Options, convenient prepackaged offerings for warranty service upgrades and maintenance services.

Installation services: The announced products may be eligible for ServicePacs for Installation Services, convenient prepackaged offerings for installation services. Refer to the **Prices** section for information on the availability of ServicePac offerings.

For additional ServicePac information, visit

<http://www-1.ibm.com/services/its/us/servicepac.html>

Field-installable features: Yes

Model conversions: No

Machine installation: Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

Graduated program license charges apply: No. This product does not contain licensed internal code or licensed machine code.

Prices

xSeries 226

Description	Machine type/ model	Part number	IBM list price ¹²
2.8 GHz, 2x256 MB 530 W PS, 80 GB simple-swap	8488-00U	848800U	\$1,229
2.8 GHz, 2x256 MB 530 W PS, Open Bay, hot-swap	8488-0AU	84880AU	1,239
2.8 GHz, 2x256 MB 2x514 W PS, Open Bay, hot-swap	8488-0BU	84880BU	1,529
3.0 GHz, 2x256 MB 530 W PS, 80 GB simple-swap	8488-10U	848810U	1,429
3.0 GHz, 2x256 MB 530 W PS, Open Bay, hot-swap	8488-1AU	84881AU	1,429
3.0 GHz, 2x256 MB 2x514 W PS, Open Bay, hot-swap	8488-1BU	84881BU	1,729
3.2 GHz, 2x256 MB 530 W PS, 80 GB simple-swap	8488-20U	848820U	1,629
3.2 GHz, 2x256 MB 530 W PS, Open Bay, hot-swap	8488-2AU	84882AU	1,629
3.2 GHz, 2x256 MB 2x514 W PS, Open Bay, hot-swap	8488-2BU	84882BU	1,929
Express model			
2.8 GHz, 2x512 MB 530 W PS, 2x36 GB 15K hot-swap	8488-0EU	84880EU	1,779

¹² IBM list price does not include tax or shipping and is subject to change without notice. Reseller prices may vary.

To order direct, call IBM at 877-999-7115 and select option 4.

For the name of the nearest IBM representative or Business Partner, call 800-IBM-4YOU (426-4968).

ServicePac for warranty and maintenance charges

Description	Part number
1-year MA IOR 24 x 7 2-hour average response	69P9385
2-year MA IOR 24 x 7 2-hour average response	96P2104
3-year IOR 24 x 7 2-hour average response	40M7070
4-year IOR 24 x 7 2-hour average response	40M7074
5-year IOR 24 x 7 2-hour average response	40M7078
1-year MA IOR 24 x 7 4-hour average response	69P9384
2-year MA IOR 24 x 7 4-hour average response	96P2103
3-year IOR 24 x 7 4-hour average response	40M7069
4-year IOR 24 x 7 4-hour average response	40M7073
5-year IOR 24 x 7 4-hour average response	40M7077
1-year MA IOR 9 x 5 4-hour average response	69P9383
2-year MA IOR 9 x 5 4-hour average response	96P2102
3-year IOR 9 x 5 4-hour average response	40M7068
4-year IOR 9 x 5 4-hour average response	40M7072
5-year IOR 9 x 5 4-hour average response	40M7076
1-year MA IOR 9 x 5 NBD response	69P9382
2-year MA IOR 9 x 5 NBD response	96P2101
4-year IOR 9 x 5 NBD response	40M7071
5-year IOR 9 x 5 NBD response	40M7075

Maintenance service charges (legacy)(IOR)

Alternative service (Warranty service upgrades)

**IOR
24 x 7**

\$436

Maintenance service

IOR 9 x 5	IOR 24 x 7
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\$840	\$1,260
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For ServiceElect (ESA) Maintenance Service Charges, contact IBM Global Services at 888-IBM-4343 (426-4343).

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