



# IBM @server xSeries 330 – New MXT Memory Technology Yields Higher Performance

## Overview

This new xSeries 330 is the highest performing 1.4 GHz<sup>3</sup> Intel® Pentium® III model of the xSeries 330 line. Using Memory eXpansion Technology (MXT), significant improvements in performance can be achieved in certain memory-constrained server application environments. MXT is based on an advanced memory controller that uses a highly efficient data storage format to store information in main memory. This delivers:

- Better performance than standard memory technology for equal memory configurations in certain memory-constrained environments
- Equal performance with less required memory — Helps reduce costs
- Chipkill™ ECC memory support — High levels of availability and data integrity

## High-Performance and Scalability for e-business

- 1.4 GHz Pentium III processor with 512 KB advanced transfer (full-speed) cache
- 133 MHz Front-Side Bus (FSB) processor — Operations to memory and the PCI bus interface at 133 MHz
- 512 MB of high-speed 133 MHz memory and MXT controller — Synchronized to the 133 MHz FSB processor
- Two 64-bit PCI buses supports a:
  - 64-bit/66 MHz full-length adapter
  - 64-bit/33 MHz half-length adapter
- High-performance integrated server function:
  - Dual 10/100 Mbps, 32-bit Ethernet controllers
  - Single-channel, Ultra160 SCSI (160 MB/s) and EIDE controllers

## High Availability for Around-the-Clock e-business

- Integrated Advanced System Management Processor — Supports remote POST, setup, and diagnostics so your service technician, or HelpCenter®, can put your xSeries 330 back online quickly (refer to the **Limitations** section for restrictions)
- Advanced Chipkill ECC memory support — Detects and corrects single-bit, two-, three-, and four-bit memory errors without disruption to users
- xSeries Cable Chaining Technology — Up to 42 servers can be chained to a single console to simplify cable management and control
- Two hot-swap, HDD bays and eight cooling fans
- Predictive Failure Analysis® (PFA) on processors, voltage regulator module (VRM), memory, fans, power supply, and HDD options — Can warn of problems before they occur
- Servicing is fast and easy — Innovative Light Path Diagnostics, improved on-board diagnostics, and LED diagnostic panel

## Service and Support Perfected for e-business

- ServerGuide and IBM Director
- ServerProven™ compatibility testing and Web support
- Three-year, on-site<sup>4</sup>, limited warranty<sup>5</sup>

## Key Prerequisites

- Monitor, keyboard, mouse, and rack
- One C2T cable chain kit per chain of servers

## Planned Availability Date

February 28, 2002

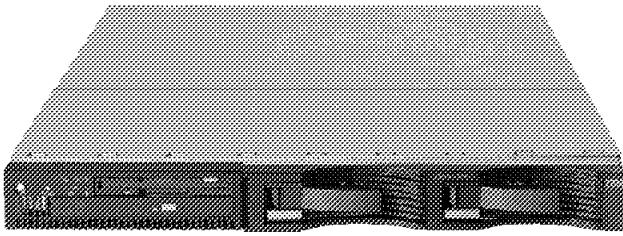
## At a Glance

The new xSeries 330 with Memory eXpansion Technology (MXT) helps boost performance without increasing memory.

- X-Architecture-based, advanced memory controller:
  - Creates unique memory caching — Improves system performance
  - Enables Chipkill ECC memory — Improves availability
- Ultra-thin, rack-optimized, 1 U high — Up to 42 servers per rack
- Powerful 1.4 GHz/133 MHz Pentium III processor with 512 KB ECC L2 cache
- 512 MB of 133 MHz system memory — 4 GB capability
- Ultra160 SCSI controller — Supports high-speed, internal disk storage solutions up to 146.8 GB<sup>1</sup>
- Two 64-bit PCI slots (one full- and one half-length slot)
- Four drive bays — 1.44 MB diskette drive, 24x-10x<sup>2</sup> CD-ROM, and two hot-swap drive bays
- A 200-watt, auto-ranging power supply
- Integrated Advanced System Management Processor
- Integrated dual 10/100 Mbps Ethernet
- One serial port (16550A compatible), two USB ports, two RS-485 ports, and two console ports incorporating a mouse, keyboard, and video port
- xSeries Cable Chaining Technology Cable Kit — Supports multiple servers in a rack to single console

*This announcement is provided for your information only. For additional information, contact your IBM representative, call 800-IBM-4YOU, or visit the IBM home page at: <http://www.ibm.com>.*

## Description



### Related Options

**xSeries 1.4 GHz/133 MHz-512 KB Cache Upgrade with Pentium III Processor** (48P7466) is a 1.4 GHz Pentium III processor that supports internal processing speeds of 1.4 GHz and external processing operations to memory at 133 MHz.

It contains:

- An integrated, full-speed, 512 KB L2 ECC cache
- Voltage regulator module (VRM)
- Heat sink

This option is supported in the second processor slot of xSeries 330 (8674-4xx and 8675-4xx) for SMP applications. It can also be used to upgrade xSeries 330 model 3xx to higher processor speeds.

### High-Performance Server Subsystems

This server is a high-throughput, two-way, SMP-capable Pentium III-based network server that provides excellent scalability when adding memory and a second processor. It incorporates a powerful 1.4 GHz Pentium III processor with 512 KB advanced transfer L2 cache. These flip-chip, pin grid array 2 (FC-PGA2) processors feature advanced transfer L2 caches that are integrated onto the processor core and run at the same clock speed as the processor core. The advanced transfer cache is a result of a "backside bus" that is 256 bits wide. It features a quad-wide cache line that can transfer four 64-bit cache line segments at one time to deliver full-speed capability. The cache is eight-way set associative.

Two Intel Pentium III connectors are standard on the system board to support installation of a second processor. High-speed, 133 MHz SDRAM is optimized for 133 MHz processor-to-memory subsystem performance. The xSeries 330 uses the ServerWorks ServerSet III HE (CNB3.0HE) chipset to maximize throughput from processors to memory, and PCI buses. The server contains a 33 MHz, 64-bit primary PCI bus and a 66 MHz, 64-bit secondary PCI bus. Each bus supports a single PCI expansion slot.

### Standard xSeries 330 Configurations

Model	Processor	Cache	Memory	Interface/HDD
8675-4MX	1.4 GHz	512 KB	512 MB	Ultra160 SCSI Open bay, hot-swap

### Additional Features

- System board containing four DIMM connectors supporting 256 MB, 512 MB, and 1 GB 133 MHz SDRAM ECC RDIMMs
  - Up to 4 GB of system memory
  - Memory sizes must be installed in matched pairs
- Single-channel, 64-bit, Ultra160 SCSI PCI controller (Adaptec 7892) supporting high-speed (160 MB/s), Low-Voltage Differential SCSI (LVDS) internal storage solutions
- Two full-duplex, 10/100 Mbps Ethernet, 32-bit, PCI controllers speeding network communications to LAN clients

The xSeries 330 subsystems are tuned to provide solid system throughput from processor, to memory, to bus, to disk-intensive I/O. These features combined with SMP capability, make the xSeries 330 an excellent choice for:

- Web caching
- Front-end Web serving
- Server farms
- Telecommunications
- Active directory services

### High-Availability and Serviceability Features

The xSeries 330 delivers excellent reliability through high-availability and serviceability features:

- Two hot-swap HDD bays (hot-swap models) with SCA-2 connectors — Support SAF-TE functions
- ECC DIMMs combined with an integrated Chipkill ECC memory controller - Corrects all single-, two-, three- and four-bit memory errors, that occur within a single x4 memory chip within a DIMM pair
- Memory hardware scrubbing — Corrects soft memory errors automatically without software intervention
- ECC L2 cache processors — Helps improve data integrity and reduce downtime
- PFA on HDD options, memory, processors, VRMs, and fans alerts the system administrator of an imminent component failure
- Dual Intel 10/100 PCI Ethernet controllers support:
  - Failover — Adapter Fault Tolerance (AFT)
  - PXE 2.0 Boot Agent
  - Wake on LAN®
  - Load balancing, or teaming
- A worldwide, voltage-sensing 200-watt power supply — Features auto restart
- Eight cooling fans — Provide excellent cooling for added reliability
  - Two power supply fans
  - Six system fans for processors, memory, and HDD bays
  - Fan speed controls incorporated to reduce noise while reducing system temperatures
- An integrated Advanced System Management Processor for diagnostic, reset, POST, and auto recovery functions from remote locations; monitoring temperature, voltage, and fan speed — Alerts generated when thresholds are exceeded (Refer to the **Limitations** section for restrictions.)
- Information LED panel — Provides visual indications of system well-being
- Light Path Diagnostics and on-board diagnostics — Acts as an LED map to a failing component to help 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
  - Continues operations with the working processor

### **Expandability and Growth**

The xSeries 330 contains high levels of function and storage capacity for a 1 U, 19-inch rack-drawer package. It supports customer installation of adapters, processors, memory, and HDD options. Functions (such as SVGA video, Ultra160 SCSI, EIDE, and dual 10/100 Mbps Ethernet controllers) are integrated on the system board. Features include:

- Rack optimized design for 19-inch wide, industry-standard rack cabinets — Supported in the NetBAY42 and NetBAY25
- C2T chaining cable — Supports xSeries Cable Chaining Technology Cable Kit that greatly simplifies cable management and control of up to 42 xSeries 330 servers
- Four DIMM connectors — Support up to 4 GB of system memory
- Two available 64-bit, PCI adapter card slots
  - One 66 MHz, full-length slot
  - One 33 MHz, half-length slot
- Two slim-high, hot-swap HDDs bays
- Internal data storage up to 146.8 GB (using two 73.4 GB Ultra160 HDDs)
- A 24x-10x IDE CD-ROM and 1.44 MB diskette drive
- An SVGA controller with 8 MB of video memory

### **System Management**

xSeries 330 servers feature IBM Director, a powerful, highly integrated, system management software solution built on industry standards and designed for ease-of-use. Now you can exploit your existing enterprise or workgroup management environments and use the Internet to securely access and manage physically dispersed IT assets more efficiently. It can help reduce costs through:

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

IBM Director lets IT administrators view the hardware configuration of remote systems in detail and monitor the usage and performance of critical components such as processors, hard disks, and memory.

IBM Director includes Universal Manageability (UM) Server Extensions, a portfolio of server tools, that integrates into the IBM Director interface and work with the Remote Supervisor Adapter or other system management monitoring functions contained in xSeries servers. Typical functions and monitoring capabilities can include:

- PFA-enabled critical hardware components
- Temperature
- Voltage
- Fan speed
- Light Path Diagnostics

This gives the IT administrator comprehensive, virtual on-site control of xSeries servers through the ability to remotely:

- Access the server
- 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
- Run diagnostics, SCSI, RAID setup during POST
- Monitor and set threshold on server health including:
  - Operating system load
  - POST time-out
  - Voltage
  - Temperature
- Proactive alerts for critical server events including PFA on:
  - Processors
  - Voltage regulator modules
  - Memory
  - Fans
  - Power supplies
  - HDDs
- 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 Netfinity® Director console
- Flash BIOS
- Monitor and graph the utilization of server resources such as:
  - Memory
  - Processor
  - HDDs
- Identify potential performance bottlenecks and react to prevent downtime
- Monitor, manage, and configure RAID subsystems without taking them offline

IBM Director provides integration into leading workgroup and enterprise system management environments, via Upward Integration Modules. This enables the advanced management capabilities built into xSeries servers to be accessed from:

- Tivoli® Enterprise and Tivoli Netview
- Computer Associates CA Unicenter TNG Framework
- Microsoft™ SMS
- Intel LANDesk™ Management Suite

### **World-Class Support Tools and Programs**

The xSeries 330 provides a number of 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 the long haul. IBM can help your company maintain ownership of technology leadership network servers.

- IBM on-site, three-year limited warranty with next-business-day 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® program lets you confidently configure your server with various devices and operating systems. This Web-based program provides compatibility information from actual testing of the xSeries 330 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

---

This new xSeries 330 MXT model is the highest performing 1.4 GHz Pentium III server in the xSeries 330 line. Through its innovative, advanced memory controller technology, increases in application performance can be achieved in certain memory-constrained applications over that of similar models containing the same memory capacity.

These high-density, two-way, Pentium III-based servers are designed for customer installation of features to handle future expansion to meet changing needs. At the same time they can handle emerging applications requiring maximum computing power and function in the least amount of rack space. These applications include:

- Web caching
- Front-end Web serving
- Server farms
- Telecommunications
- Active directory services

These powerful servers also meet traditional enterprise network server requirements, but with an added benefit of requiring less space.

---

## Reference Information

---

- <sup>1</sup> When referring to hard drive or tape backup capacity, GB stands for 1,000,000,000 bytes. Total user capacity may vary depending on operating environments.
- <sup>2</sup> 24x-10x CD-ROM variable read rate. Actual playback speed will vary and is often less than the maximum possible.
- <sup>3</sup> GHz and MHz denote the internal and/or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.
- <sup>4</sup> With respect to on-site service, the customer may be asked certain diagnostic questions before a technician is sent.
- <sup>5</sup> For information on the IBM Statement of Limited Warranty, call 800-772-2227 or contact your IBM representative or reseller. Copies are available upon request.
- <sup>6</sup> 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.

### **Trademarks**

xSeries is a trademark of International Business Machines Corporation in the United States or other countries or both.

The e-business logo is a trademark of International Business Machines Corporation in the United States or other countries or both.

Chipkill and ServerProven are trademarks of International Business Machines Corporation in the United States or other countries or both.

HelpCenter, Predictive Failure Analysis, Wake on LAN, and Netfinity are registered trademarks of International Business Machines Corporation in the United States or other countries or both.

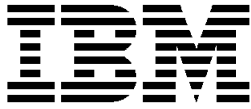
LANDesk is a trademark of Intel Corporation.

Intel and Pentium are registered trademarks of Intel Corporation.

Microsoft is a trademark of Microsoft Corporation.

Tivoli is a registered trademark of International Business Machines Corporation or Tivoli Systems Inc. in the United States or other countries or both.

Other company, product, and service names may be trademarks or service marks of others.



# IBM US Announcement Supplemental Information

February 12, 2002

## Publications

The following publications and CD-ROMs are shipped with the xSeries 330.

- xSeries 330 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 their xSeries 330.
- ServerGuide contains online publications and drivers to support the xSeries 330. In addition, it includes a set of easy-to-use utilities that provides assisted installation via CD of several popular network operating systems.
- IBM Director systems management software is included.

**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 330 Installation Guide and Hardware Maintenance Manual (HMM)*, in U.S. English versions, are available from our Web site:

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

Click servers, then the server family, and then IBM Publications Center.

## Technical Information

### Physical Specifications

#### 8675-4MX

Processor	
Internal speed	Pentium® III
External speed	1.4 GHz
Number standard	133 MHz
Maximum	1
L2 Cache (full-speed)	2
Memory (133 MHz SDRAM)	512 KB
RDIMMs	512 MB ECC
DIMM sockets	2 x 256 MB
Capacity	4
Video	4 GB
Memory	SVGA
SCSI controller	8 MB
Channels	Ultra160
Connector internal	1
Connector external	1
IDE controller	0
Channels	EIDE ATA-33
Connector internal	1
Connector external	0
Fixed disk	Open Bay

#### 8675-4MX

Total bays	4
5.25/3.5-inch slim	1
3.5-inch slim	1
Hot-swap	2
Accessible	4
Internal capacity	146.8 GB <sup>7</sup>
Bays available	2
5.25/3.5-inch slim	0
3.5-inch slim	0
Hot-swap	2
Total slots	2 <sup>8</sup>
PCI	2
64-bit/66 MHz	1
64-bit/33 MHz	1
Slots available	2
Management processor	Standard
Ethernet controller	2 x 10/100 Mbps
CD-ROM (IDE)	24x-10x
Diskette drive	1.44 MB
Power supply	200 W
Number standard	1
Hot-swap	No
Redundant power	No
Auto restart	Yes

<sup>7</sup> Capacities are based on installation of two 73.4 GB slim-high, Ultra160 HDDs. For the latest information on supported HDD options, visit: <http://www.ibm.com/pc/us/compat>

<sup>8</sup> The 66 MHz adapter slot is a full-length slot, the 33 MHz slot is a half-length slot, supporting cards not exceeding 180 mm in length.

### 24x-10x CD-ROM Drive Characteristics

- Formatted capacity: 650 MB
- Average access time: 110 ms
- Burst data transfer rate — 16.6 MB/s (ATA PIO Mode 4)
- Technology: Full constant angular velocity (CAV)
- Buffer size: 1 MB

### Video Subsystem

- S3 Savage4 Graphics Accelerator
- Integrated on planar and connected to the PCI bus
- 8 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:

This announcement is provided for your information only. For additional information, contact your IBM representative, call 800-IBM-4YOU, or visit the IBM home page at: <http://www.ibm.com>.

## Microsoft™ Windows® 2000

Resolution	Colors	Refresh Rate (Hz)
640 x 480 x 8	256	60, 72, 75, 85
640 x 480 x 16	64K	60, 72, 75, 85
640 x 480 x 32	4G	60, 72, 75, 85
800 x 600 x 8	256	56, 60, 72, 75, 85
800 x 600 x 16	64K	56, 60, 72, 75, 85
800 x 600 x 32	16G	56, 60, 72, 75, 85
1024 x 768 x 8	256	60, 70, 75, 85
1024 x 768 x 16	64K	60, 70, 75, 85
1024 x 768 x 32	4G	60, 70, 75, 85
1152 x 864 x 8	256	60, 70, 75
1152 x 864 x 16	64K	60, 70, 75
1152 x 864 x 32	4G	60
1280 x 1024 x 8	256	60, 75, 85
1280 x 1024 x 16	64K	60, 75, 85
1600 x 1200 x 8	256	60
1600 x 1200 x 16	64K	60

**Note:** For optimum operation when chaining, it is suggested that resolutions no larger than 1024 x 768 x 32 be used.

### **Dimensions:** 1 U Rack Drawer

- Width: 439.9 mm (17.3 in)
- Depth: 653.3 mm (25.7 in)
- Height: 43.7 mm (1.72 in)
- Rack weight:
  - Minimum configuration: 11.8 kg (26 lb)
  - Maximum configuration: 12.9 kg (28.4 lb)

### **Electrical**

- 100-127 (nominal) V ac; 50 Hz or 60 Hz; 2.2 A
- 200-240 (nominal) V ac; 50 Hz or 60 Hz; 1.1 A
- Input kilovolt-amperes (kVA) (approximately):
  - Minimum configuration: 0.08 kVA
  - Maximum configuration: 0.22 kVA
- Btu output:
  - Shipment configuration — 273 Btu/hr (80 watts)
  - Full configuration — 751 Btu/hr (220 watts)
- Noise level: (horizontal position): 6.1 bels (operating)

**Note:** The noise emission level stated is the declared (upper limit) sound power level, in bels, for a random sample of machines. All measurements made in accordance with ISO 7779 and reported in conformance with ISO 9296.

xSeries 330 servers are intended for use as rack-drawer servers and are tested and designed to operate in a horizontal position.

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

- Multi Processor Specification (MPS) 1.4
- Hardware-enabled to meet the International Organization for Standardization (ISO) 9241, Part 3

### **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 1950<sup>9</sup>
- CSA C22.2 No. 950
- NOM-018

<sup>9</sup> These servers are certified by the respective UL and NOM agencies.

### **Operating Environment:**

- Temperature:
  - 10.0° to 35.0°C (50° to 95°F) at 0 to 914 m (0 to 3,000 ft)
  - 10.0° to 32.0°C (50° to 90°F) at 914 to 2,133 m (3,000 to 7,000 ft)
- 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 (E54, E74, T540, or equivalent)

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
- Display (E54, E74, T540, or equivalent)

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

**Software Requirements:** The following network operating systems are supported in the xSeries 330:

- Microsoft
  - Windows 2000 Advanced Server
  - Windows 2000 Server
- Linux — Red Hat 7.2

**Note:** Additional support, certification, and version information on network operating systems can be accessed:

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

**Compatibility:** The xSeries 330 systems contain licensed system programs that include set configuration, set features, and test programs. IBM system BIOS is loaded from a "flash" EEPROM into system memory. This BIOS provides instructions and interfaces designed to support the standard features of the xSeries 330 and to maintain compatibility with many current software programs.

To view detailed information on the Internet about IBM and non-IBM devices, adapters, software, and network operating systems supported with xSeries servers, enter:

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

Customers can contact their IBM representative, IBM Business Partner, the HelpCenter®, or refer to the IBM Sales Manual for information on the compatibility of hardware and software for xSeries servers. The Sales

Manual is updated periodically as new features and options are announced that support these servers.

### Limitations

- xSeries 330 contains a single, configurable serial port. It can be configured to be operating-system controlled, service-processor controlled, or shared between the two. You can set the configuration by changing the header location to which the internal serial cable is plugged. The default location from the factory is in the shared position. In the shared position, the service processor controls the port until the operating system is running, then the operating system takes control. The service processor can regain control of the port for user configured dial-out situations or if the operating system is not available, but operating system control cannot be reestablished without resetting the server.
- The xSeries 330 servers support a maximum of 4 GB of system memory by adding a 1 GB PC133 ECC SDRAM RDIMM in each of the four DIMM slots. All supported system memory is addressable through direct memory access (DMA). The xSeries 330 supports 256 MB, 512 MB, and 1 GB 133 MHz ECC SDRAM registered DIMMs. Memory must be installed in matched pairs. Refer to **Planning Information** for supported memory options.
- To ensure proper air flow for cooling, the xSeries 330 requires a rack with a perforated door, such as the NetBAY42 SR or NetBAY25 SR. An alternative is to remove the front door of rack cabinets where the door panel is of solid construction.
- Microprocessor SMP upgrades must be of the same type and clock speed. Mixing microprocessors of different speeds or cache size is not supported.
- Chaining xSeries 330 servers is supported through a console. Chaining through a console switch is not currently supported.
- Customers should use the version of ServerGuide that ships 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.

### Planning Information

#### Customer Responsibilities

**xSeries 330 and Related Options:** The xSeries 330 and related option are designated as customer setup. Customer setup instructions are shipped with the system.

### Configuration Information

**Bay Configuration:** The xSeries 330 contains four drive bays. The top bay on the left contains the standard 1.44 MB, 3.5-inch, slim-high diskette drive, the bay beneath contains the standard CD-ROM drive. Two 3.5-inch, slim-high, hot-swap bays located side-by-side from the center to the right side of the server support various hot-swap HDD installation.

The 24x-10x IDE CD-ROM is cabled directly to the IDE port.

**Cabling — Standard Non-RAID Configurations:** xSeries 330 hot-swap models contain a DASD backplane supporting two hot-swap, SCA-2 compliant drive bays. The backplane is connected to the internal connector of the integrated Ultra160 SCSI controller through a 16-bit LVD SCSI cable.

**Additional Cabling Alternatives:** xSeries 330 supports various ServeRAID™ controllers. If internal RAID is required, the cable connecting the standard Ultra160 SCSI controller can be attached to the internal connector of the ServeRAID controller. This provides RAID protection for the hot-swap HDDs installed in the xSeries 330 backplane.

In configurations where external SCSI device attachment is required, a supported SCSI adapter or ServeRAID controller must be installed.

**Rack Installations:** xSeries 330 1 U, rack-drawer models are designed to be installed in a 19-inch rack cabinet designed for 25-inch deep devices, such as the Netfinity® Rack model 910.

#### xSeries Cable Chaining Technology Cable Kit (06P4792)

— **Cabling Considerations:** Single or multiple xSeries 330 servers can be connected to a console through the use of the xSeries Cable Chaining Technology Cable Kit. A C2T chaining cable is standard with each xSeries 330. This 10-inch (245-mm) jumper cable is used to “chain” one server to another. The xSeries Cable Chaining Technology Cable Kit provides the interface to attach a keyboard, mouse, or monitor to the last xSeries 330 of the chain.

The xSeries Cable Chaining Technology Cable Kit supports the following devices:

- IBM Two-Button Mouse — (28L3673)
- IBM 84-Key Space Saver Cost Reduced Keyboard — (28L3644)
- IBM T540 Compact Flat Panel TFT Display — (9511)

**Supported Memory Options:** The following memory options are supported:

- 256 MB PC133 ECC SDRAM RDIMM (33L3322)
- 512 MB PC133 ECC SDRAM RDIMM (33L3324)
- 1 GB PC133 ECC SDRAM RDIMM (33L3326)

**Power Considerations:** The xSeries 330 includes a standard 200-watt power supply. This power supply is capable of providing sufficient power to run the server fully configured with supported devices.

**Cable Orders:** The dual 10/100 Mbps, full-duplex, Ethernet PCI controllers, standard with the xSeries 330, are connected directly to independent RJ-45 connectors. The RJ-45 connectors provides a 10BaseT or 100Base-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 unshielded twisted pair (UTP) cable with RJ-45 connectors at both ends. For 100 Mbps operation, Category 5 cabling must be used. For 10 Mbps operation, Category 3, 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 330 requires about 20 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:** One box

- System Unit Carton: System Unit
- Country Kit Carton
  - Power cord
    - One 9-foot 110 V intra-rack or wall cable with NEMA plug
    - One 9-foot universal intra-rack HV cable with IEC plug
  - ServerGuide and IBM Director
  - xSeries 330 Installation Guide
  - C2T chaining cable (10-inch/245-mm)
  - Velcro/cable tie package
  - CD-ROM packages

The xSeries 330 is shipped in a single package. The country kit carton is contained inside the top portion of the system unit carton.

### **Processor Upgrade Options**

- Pentium III processor
- Heat sink and VRM
- Safety instructions/warranty

### **Security, Auditability, and Control**

Security and auditability features include:

- Power-on and privileged-access password functions provide controls of who has access to the data and server setup program on the server.
- A set unattended boot mode allows the system keyboard to be locked to all entries except the password and at the same time allows other computers on the network to access the system disk drive.
- A selectable boot sequence can be used to prevent unauthorized installation of software or removal of data from the diskette drive.

These servers are intended to be installed and secured in a rack. It is the customer's responsibility to ensure that the server and rack installation are secure to prevent sensitive data from being removed.

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**

---

This product is available for purchase under the terms of the IBM Customer Agreement (ICA).

IBM hardware products are manufactured from new parts. In some cases, the hardware product may have been previously installed.

Regardless, IBM warranty terms apply.

**IBM Credit Corporation Financing:** Yes

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or call IBM. In the United States, call IBM at 800-772-2227. In Canada, call IBM at 800-565-3344.

### **Warranty Period**

- System hardware — Three years on parts and labor
- Optional features — Three years

## **Warranty Service**

### **System Hardware**

IBM On-site Repair (IOR), 9 hours a day, Monday through Friday excluding holidays, next-business-day response.

**Optional Features:** Optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR).

IBM optional features initially installed with an xSeries server carry the same warranty 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.

The HelpCenter at 800-772-2227 in the U.S. will assist with problem isolation for hardware to determine if warranty service or parts exchange is required. Some parts of the system, such as the keyboard, mouse, and memory, are considered customer replaceable units (CRUs).

**International Warranty Service (IWS):** 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 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.ibm.com/pc/support>

Click on the Warranty Lookup tab.

For more information on IWS, refer to Service 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 service for an additional charge. This enhanced level of service provides a higher level of on-site service labor for all three years of the original warranty period. Parts are covered for three years by the original warranty.

The following Warranty Service Upgrade options are available:

- IOR, 9 hours a day, Monday through Friday excluding holidays, 4-hour average response
- IOR, 24 hours a day, 7 days a week, 4-hour average response



- IOR, 24 hours a day, 7 days a week, 2-hour average response

**Maintenance Service**

- IOR, 9 hours a day, Monday through Friday excluding holidays, next-business-day response
- IOR, 9 hours a day, Monday through Friday excluding holidays, 4-hour average response
- IOR, 24 hours a day, 7 days a week, 4-hour average response
- IOR, 24 hours a 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 service for an additional charge. This enhanced level of service provides a higher level of on-site service labor during the original warranty period.

The following Warranty Service Upgrade option is available.

IOR, 24 hours a day, 7 days a week, 4-hour average response

**Maintenance Service**

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

**Mid-Range System Option:** The xSeries 330 is an eligible machine for the Mid-Range System Option of the ICA.

Eligible Type	Discount	
	Three-Year	Five-Year
xSeries 330	5%	5%

**Corporate Service Option:** The announced product is eligible for the Corporate Service Option of the ICA.

Option	Discount	
	Three-Year	Five-Year
Network	17%	22%
System	25%	30%

**Extended Maintenance Option:** No

**Central Facility Maintenance Service (CFMS) Option:** No

**Non-IBM Parts Support**

**Warranty Service:** IBM is now shipping IBM machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts, parts with an IBM FRU label, 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 (ITS) services selected non-IBM parts at no additional charge for IBM 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 provide 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, the customers are responsible for sourcing the parts, and installation labor will be provided at no additional charge, if the machine is covered under a warranty service upgrade or maintenance services.

**IBM Hourly Service Rate Classification:** One

**ServicePac® Services Information**

**ServicePac for Warranty and Maintenance Options:** The announced products may be eligible for ServicePac for Warranty and Maintenance Options which provide convenient prepackaged offerings for warranty service upgrades and maintenance services. Refer to the **Prices** section for information on the availability of ServicePac offerings.

**ServicePac Installation Services:** The announced products may be eligible for ServicePac for Installation Services which provide 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>

**Rental Offering:** No

**Field-Installable Features:** Yes

**Model Conversions:** No

**Customer Setup:** Yes

**Graduated Charges:** No

**Prices**

Description	Machine Type/Model	Part Number	IBM List Price <sup>10</sup>
xSeries 330 — 1.4 GHz, MXT, 512 MB, hot-swap open bay	8675-4MX	86754MX	\$2,449
xSeries 1.4 GHz Upgrade		48P7466	1,199

<sup>10</sup> IBM list price does not include tax or shipping and is subject to change without notice. Reseller prices may vary.

## **ServicePac for Warranty and Maintenance**

<b>Description</b>	<b>Part Number</b>
3-year IOR 7 x 24 2-hour average response	21P2074
3-year IOR 7 x 24 4-hour average response	21P2073
3-year IOR 9 x 5 4-hour average response	21P2072

These ServicePac offerings are valid for models announced in the U.S.

For ServicePac prices, visit:

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

### **Maintenance Service (IOR) Charges**

#### **Alternative Service (Warranty Service Upgrades)**

**IOR  
24 x 7**

\$450

#### **Maintenance Service**

**IOR                      IOR  
9 x 5                      24 x 7**

\$600

\$900

For ServiceElect (ESA) Maintenance Service Charges, please contact IBM Global Services at 888-IBM-4343 (426-4343).

**Customer Financing:** IBM Global Financing offers attractive financing to credit-qualified commercial and government customers and Business Partners in more than 40 countries. IBM Global Financing is provided by the IBM Credit Corporation in the United States. Offerings, rates, terms, and availability may vary by country. Contact your local IBM Global Financing organization. Country organizations are listed on the Web at:

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

#### **Trademarks**

ServeRAID and ServiceSuite are trademarks of International Business Machines Corporation in the United States or other countries or both.

HelpCenter, Netfinity, and ServicePac are registered trademarks of International Business Machines Corporation in the United States or other countries or both.

Pentium is a registered trademark of Intel Corporation.

Microsoft is a trademark of Microsoft Corporation.

Windows is a registered trademark of Microsoft Corporation.

Other company, product, and service names may be trademarks or service marks of others.