IBM System x3400 servers feature fast quad-core 2.0 GHz/1333 MHz, 2.33 GHz/1333 MHz, 2.5 GHz/1333 MHz, and 2.66 GHz/1333 MHz — 12 MB L2 Intel Xeon processors, delivering high performance.

At a glance

The System x3400 servers feature:

- Powerful quad-core 2.0 GHz/1333 MHz\(^1\), Intel Xeon E5405 processor, 2.33 GHz/1333 MHz Intel E5410 processor, 2.5 GHz/1333 MHz Intel E5420, and a 2.6 GHz/1333 MHz Intel E5430 processor, all with 12 MB L2 cache
- 1 GB of 667 MHz DDR2 ECC system memory\(^2\), 64 GB maximum
- Eight-port SAS/SATA controller or four-port native SATA controller
- System offers one 670-watt power supply, or one hot-swap 835-watt power supply; optional hot-swap redundant power and cooling for hot-swap models
- Integrated systems management processor
- Six PCI slots: two 64-bit/133 MHz PCI-X slots, three PCI-Express slots, and one PCI 33 MHz slot
- Eleven drive bays: 16x\(^3\) DVD-ROM, tape drive (option), and eight hot-swap HDDs or four simple-swap HDDs
- Up to 3.0 TB\(^4\) hot-swap SAS, 6.0 TB hot-swap SATA disk storage, or 3.0 TB simple-swap SATA storage
- Integrated Broadcom 5721 KFB3 Gigabit Ethernet controller
- 5 U tower industry-standard models, rack mount optional
- Four USB and two serial ports, and one integrated system management, one parallel, one mouse, one keyboard, and one 10/100/1000 RJ45 port

For ordering, contact:

Your IBM representative or the Americas Call Centers at 800-IBM-CALL Reference: YE001

Overview

With hot-swap power or fixed power, hot-swap cooling fans, and greater systems management control, the System x3400 servers feature:

- 1333 MHz front-side bus (FSB) support
- Three hot-swap fans standard and three additional, with Redundant Power and Cooling Option
- Three PCI-Express card slots (2 x 8, 1 x 4), two PCI-X 133 MHz slots, and one 32-bit/33 MHz card slot
- Integrated single Gigabit Ethernet
- Hot swap models with Standard Integrated ServeRAID™ 8k-I for RAID-0, 1, and 10 support
- Simple Swap SATA models with native SATA controller
- AMF DDR2 ECC DIMMs, combined with an integrated ECC memory controller in core logic, that correct many soft and hard single-bit memory errors, and minimize disruption of service to LAN clients
- Integrated systems management with an optional upgrade to Remote Supervisor Adapter II SlimLine

**Powered and scaled for needed business growth**

- Powerful quad-core 2.0 GHz/1333 MHz, Intel® Xeon E5405 processor, 2.33 GHz/1333 MHz Intel E5410 processor, 2.50 GHz/1333 MHz Intel E5420, and a 2.6 GHz/1333 MHz Intel E5430 processor, all with 12 MB L2 cache
- 667 MHz FSB functional speed for processor operations to memory and PCI bus
- 1 GB of high-speed, two-way interleaved, PC2-5300 — 667 MHz ECC memory
- Two high-speed, wide-bandwidth, full-length PCI-X bus slots at 133 MHz, three PCI-E bus slots, and one PCI 33 MHz slot
- Broadcom 5721 KFB3 Gigabit Ethernet ports and SAS/SATA support
- Eight hot-swap drive bays or four simple-swap drive bays, up to 3.0 TB total capacity using 750 GB SAS HDD options for 7973 and 7974 models, up to 6.0 TB total capacity using 750 GB SATA HDD options in 7975 and 7976 models, or up to 2.4 TB capacity using 300 GB HS SAS HDDs in 7975 and 7976 models

**High availability for around-the-clock business demand**

- Integrated systems management processor and support for the RSA II SlimLine option
- Wake on LAN®
- ECC memory to detect many double-bit errors and correct many single-bit errors
- Integrated memory mirroring and online spare options

**Service and support perfected for needs of business**

- ServerGuide™, which includes utilities and drivers for assisted installation of popular network operating systems
- IBM Director, a powerful, highly integrated systems management software solution
- IBM Server support and Web support
- Three-year, customer replaceable unit (CRU) and on-site service, limited warranty, 7974, and 7976 machine models or
- One year, CRU, on-site service, limited warranty, 7973 and 7975 machine models
- Optional warranty service upgrades available

**Key prerequisites**

- Monitor
- Keyboard
- Mouse

**Planned availability date**

December 28, 2007
Intel Xeon processors with 12 MB L2 cache feature Intel NetBurst microarchitecture with Extended Memory 64 Technology (EM64T), which increases overall throughput via a faster 667 MHz system bus and enhanced level 2 cache. These enhancements add up to a faster response time.

**IBM PC2-5300 CL5 DDR2 Chipkill™ Memory Option Kit**

- IBM 1 GB PC2-5300 CL5 ECC DDR2 Chipkill AMF DIMM 667 MHz (39M5782)
- IBM 2 GB PC2-5300 CL5 ECC DDR2 Chipkill AMF DIMM 667 MHz (39M5785)
- IBM 4 GB PC2-5300 CL5 ECC DDR2 Chipkill AMF DIMM 667 MHz (39M5791)
- IBM 8 GB PC2-5300 CL5 ECC DDR2 Chipkill AMF DIMM 667 MHz (39M5797)

**Note:** DDR2 ECC DIMMs, combined with an integrated ECC memory controller, correct many soft and hard single-bit memory errors and minimize disruption of service to LAN clients. Chipkill distributes information covered by error correction coding across separate memory chips, so if any of the chips fail, the data can still be reconstructed from the remaining chips and the system can continue running.

Increased processor performance coupled with DDR memory enables you to retrieve and process information faster and more efficiently. DDR memory executes twice the number of operations per cycle than traditional SDRAM memory, effectively doubling the data exchange rate between memory and processors.

**IBM Redundant Power & Cooling Option — (39Y8487)**

The redundant power supply is designed to supply power for hot-swap power systems. This option contains three rear hot-swap fans for redundant cooling.

**ServeRAID 8k SAS Controller (25R8064)**

- 256 MB DDR2 533 MHz
- 72 hours of battery life for 3 years at 45°C (113°F)

RAID features:

- RAID-0, 1, 1E, 10, 5, 6,
- Copyback
- FlashCopy®
- Stripe-unit size: 16k, 32k, 64k, 128k, 256k, 512k, and 1024k

**RSA II SlimLine Adapter (39Y9566)**

The optional RSA II SlimLine card enables an additional server management feature, when it is installed on a reserved connector. The adapter adds accelerated graphics and delivers advanced control and monitoring features to enable management of your System x™ server at virtually any time, from any place on the network. You can add this adapter card to the server through a connector that connects to the planar. It enables easy console redirection with text and graphics and keyboard and mouse (operating system must support USB) support over the systems management LAN connections. The RSA II SlimLine provides remote management and control of the system independent of the server status, in many cases even if the server is powered off or otherwise disabled.

With video compression now built into the adapter hardware, it enables greater screen sizes and refresh rates that are becoming standard in the marketplace. With this feature you can display server activities from power-on to full operation remotely — with remote user interaction at virtually any time.

Features and benefits

- Adapter continuously monitors system environmental (temperatures and voltages), operating system status, and critical system components, such as processors, VRMs, memory, fans, power supplies, and power backplanes (where supported by the system).
• Video compression hardware is built in, eliminating drivers.
• Faster graphics support makes monitoring and control more efficient.
• Virtual CD enables you to configure and diagnose a server remotely without a visit from your IT staff.
• RSA II SlimLine supports Secure Sockets Layer (SSL) and Lightweight Directory Access Protocol (LDAP).
• The adapter is integrated with IBM Director and Director Agent.
• Built-in LAN and serial connectivity supports virtually any network infrastructure.
• Multiple alerting functions warn systems administrators of potential problems, through e-mail, pager support, LAN, or SNMP.
• The adapter can be installed on the system planar using a dedicated connector.

**High-performance server subsystems**

System x3400 servers are high-throughput, two-way, SMP-capable network servers with excellent performance scalability when you add memory and a second processor. They incorporate powerful Intel Xeon processors with 12 MB L2 cache. These flip-chip, land grid array 6 (FC-LGA6) processors feature advanced transfer L2 caches integrated onto the processor core and run at the same clock speed as the processor core. Both caches feature eight-way set associative cache.

Two processor connectors are standard on the system board to support installation of a second processor. High-speed, 1333 MHz (bus speed runs at 333 MHz, but data is clocked on four edges, yielding a transfer rate of 1333 MHz) PC2-5300 DDR2 AMF DIMMs are optimized for 667 MHz processor-to-memory subsystem performance. The System x3400 servers use the Intel Blackford chipset to maximize throughput from processor to memory, and System i™/O buses.

**Standard x3400 configurations**

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>Cache</th>
<th>Memory</th>
<th>HDD Interface</th>
<th>Mechanical</th>
</tr>
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<tbody>
<tr>
<td>7973-A2x</td>
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<td>12 MB</td>
<td>1 GB</td>
<td>S/S SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7973-D2x</td>
<td>2.33 GHz/1333 MHz</td>
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<td>7975-ABx</td>
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<td>Tower</td>
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<td>7975-DBx</td>
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**Additional features**

• Ability to upgrade to two-way SMP processing by adding a second processor of the same speed and processor type
• System board that contains eight DIMM connectors supporting 512 MB, 1 GB, 2 GB, and 4 GB AMF DDR II-667 MHz SDRAMs
Two-way interleaved memory for improved performance (memory must be installed in matched pairs)

Up to 32 GB of system memory (with 4 GB memory DIMMs installed)

- High-speed, wide-bandwidth, full-length PCI bus slots
  - Slot 1: PCI-E x8 slot, x4 links; 2 GB/s bandwidth, half-length card support
  - Slot 2: PCI-E x8 slot, x8 links; 4 GB/s bandwidth, full-length card support
  - Slot 3: PCI-E x8 slot, x8 links; 4 GB/s bandwidth, full-length card support
  - Slot 4: PCI-X 64/133 slot, not hot-plug, full-length card support
  - Slot 5: PCI-X 64/133 slot, not hot-plug, full-length card support
  - Slot 6: PCI 33 slot, half-length card support

- Eight-port SAS/SATA controller that supports high-speed internal storage solutions or four-port native SATA controller that supports high-speed internal storage solutions

- Single full-duplex, Gigabit Ethernet controller that speeds network communications to LAN clients

The x3400 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 System x3400 servers an excellent choice for a stand-alone or clustered general-business application, file, and print server.

High-availability and serviceability features

- Redundant cooling — Three hot-swap fans (single replaceable unit), with one hot-swap 835-watt power supply option available on select models
- One 670-watt power supply, or one optional redundant power supply to support robust high-availability applications
- Hot-swap HDD bays with SAS connectors or simple-swap HDD bays with native SATA controller
- SAS or SATA controller to support up to eight internal SAS or SATA HDD devices
- AMF DDR2 ECC DIMMs, combined with an integrated ECC memory controller in core logic, to correct many soft and hard single-bit memory errors (using memory mirroring), while minimizing disruption of services to LAN clients
- Memory hardware scrubbing to correct many soft memory errors automatically without software intervention
- L2 cache processors to improve data integrity and help reduce downtime
- PFA on processors and memory to help alert the system administrator of an imminent component failure
- Support for optional Remote Supervisor Adapter for remote systems management through a Web-based browser
- Six hot-swap redundant system cooling fans to cool the system and enable replacement without powering down the server
- Integrated systems management processor that supports:
  - Fan monitoring and control
  - Power supply monitoring
  - Temperature monitoring
  - Voltage monitoring
  - Power on/off, reset sequencing
  - LED controls (Diagnostics support)
  - IPMI capability that allows you to accept commands and send status
  - Remote firmware update
– Numeric error logging
– Information LED panel to give visual indications of system health
– Onboard diagnostics LED map that provides error codes, which are explained in the hardware maintenance manual
– Easy access to system board, adapter cards, processor, and memory
– CPU failure recovery in SMP configurations; generates alerts error logs

Expandability and growth
The System x3400 server is a 5 U tower configuration engineered to meet the compactness of a 5 U rack drawer. SVGA video, SAS, and full-duplex Gigabit Ethernet are integrated on the system board.

Features include:

• System memory expansion to 32 GB (with 4 GB memory DIMMs installed)
• Six adapter card slots: two 64-bit/133 MHz PCI-X, three PCI-Express, and one 32-bit/33 MHz card slot
• Eleven drive bays
  – Eight 3.5-inch, HDD, hot-swap drive bays; three 5.25 inch, half-high device bays
  – Internal support for high performance (up to 15,000 rpm) for up to eight SAS/SATA HDDs and a high-capacity tape backup device
  – Up to 2.4 TB of internal data storage, using eight 300 GB SAS HDDs, or 6.0 TB using eight 750 GB SATA hot-swap HDDs

These servers can handle applications for today and expand for future growth.

Systems management: Integrated baseboard management controller (BMC)
The System x3400 servers include an integrated baseboard management controller that provides industry-standard Intelligent Platform Management Interface (IPMI) 2.0-compliant systems management. The BMC comes standard, and shares onboard Ethernet ports for access. It can be accessed via software that is compatible with IPMI 2.0 (such as xCAT). The BMC is implemented using industry-leading OSA firmware and applications.

• Features and benefits
  – Monitor of system and CMOS battery voltages
  – Monitor system temperatures
  – Fan speed control
  – Fan tachometer monitor
  – Good Power signal monitor
  – System ID and planar version detection
  – System power control
  – System reset control
  – NMI and SMI detection and generation (system interrupts)
  – Serial port text console redirection
  – System LED control (power, HDD, error, and heartbeat)

In addition, you can purchase an optional RSA II SlimLine adapter for additional systems management function.

RSA II SlimLine adds accelerated graphics and delivers advanced control and monitoring features to manage your System x server (select models) at virtually any time, from virtually any place. You can add this card to your server using a connector to the planar. This adapter enables easy console redirection with text and graphics, and keyboard and mouse (operating system must support USB) support over the systems management LAN connections.
With video compression now built into the adapter hardware, you can have greater screen sizes and refresh rates that are standard in the marketplace. With this feature you can display server activities from power-on to full operation remotely with remote user interaction at virtually any time.

The embedded Web server provides remote control from any standard Web browser. No additional software is required on the remote administrator's workstation. For users accustomed to a command-line interface (CLI), administrators can also use the CLI from a Telnet session to perform some of the functions that they can perform from the Web server. RSA II SlimLine delivers remote management and control of the system independent of the server status, in many cases even if the server is powered off or otherwise disabled.

The RSA II SlimLine features are similar to the RSA II except for the following features:

- The reset button is not accessible from the back of the system.
- A mini-USB cable is no longer required; the adapter uses internal USB bus. The system has a designated systems management Ethernet port, activated only when RSA II SlimLine is installed.
- An external ac adapter is not required, the adapter uses standby power from system power supplies.
- Status LEDs are not viewable externally.
- The RSA II SlimLine no longer supports the previous RSA II interconnect function.
- The RSA II SlimLine is required for use with the Integrated System x Adapter for iSeries™, when used.

IBM Director: x3400 servers feature 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 features to access and manage physically dispersed IT assets more efficiently over the Internet.

Potentially reduces cost through:

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

IBM Director provides integration into leading workgroup and enterprise systems management environments, via upward integration modules. The advanced management capabilities built into System x servers can be accessed from:

- IBM Tivoli® Enterprise and IBM Tivoli NetView®
- Computer Associates CA Unicenter TNG Framework
- NetIQ
- BMC Patrol
- Microsoft® SMS
- Intel LANDesk™ Management Suite
- HP OpenView Network Node Manager

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 IBM Director Extensions, a portfolio of server tools that integrate into the Director framework and work with the integrated systems management processor to access environmental system information.

The processor supervises the operating system status and the following system components, and alerts the IT administrator to critical errors:

- Fan monitoring and control; fan status and fan presence are monitored. Fan speed is controlled and automatically increased to maintain system cooling if temperature thresholds are exceeded. An alert is generated if:
– Failure occurs or failure is predicted.
– Installation or removal occurs.
– Power supply condition changes for the power supply.
– CPU temperatures are monitored. An alert is generated if (preset) temperature warning thresholds are exceeded or restored and if critical temperature thresholds are exceeded. Soft and hard system shutdowns are automatically initiated if critical temperature thresholds are exceeded.
– CPU and power subsystem voltage thresholds are monitored. An alert is generated if over or under voltages occur.
– Diagnostics LEDs are illuminated in case of key component errors or failures, to enable quick local diagnostics and servicing.
– Flash update enables updates to the integrated systems management processor firmware.

The integrated systems management processor supports upgrading to the optionally available RSA for full, out-of-band remote management.

Installation of an optional RSA provides the following systems management capabilities:

• PFA-enabled critical hardware components
• Temperature
• Voltage
• Fan speed
• Diagnostics LED
• Power supply

The IT administrator has comprehensive, virtual on-site control of System x servers and can remotely:

• Access the server almost regardless of the status
• Inventory and often 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, SAS/SATA setup, and RAID setup during POST
• Monitor thresholds on server health including:
  – Operating system load
  – POST time-out
  – Voltage
  – Temperature
• Alert critical server events proactively, including PFA on:
  – Processors
  – Memory
• Define automated actions, such as:
  – Send e-mail or a page to an administrator
  – Execute a command or program
  – Pop up an error message to the Director console
• Monitor flash BIOS
• Monitor and graph the utilization of server resources, such as:
  – Memory
- Processor
- HDDs

- Identify potential performance bottlenecks and react to prevent down time
- Monitor, manage, and configure RAID subsystems without taking them offline

**Integrated System x Adapter for iSeries, when supported**

The System x3400 server is the newest server to be attached to an IBM i5 or iSeries server. A new Integrated System x Adapter (1519-200) attaches an x3400 to connect to an i5 or iSeries server. You can connect the iSeries family of servers to provide virtual storage, virtual Ethernet, and tape sharing to an attached x3400 server. You can easily integrate security, backup, and operations of a Microsoft Windows® and OS/400® environment.

**Advanced Configuration and Power Interface (ACPI)**

This open industry specification 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.

**World-class support tools and programs**

The System x3400 server includes 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. IBM can help your company maintain ownership of technology leadership network servers.

- Support is available by calling 800-IBM SERV (426-7378) in the U.S. and Canada for problem determination or placement of service calls for warranty.
- IBM CRU and on-site, one-year or three-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® program enables you to configure your server confidently with various devices and operating systems. This Web-based program provides compatibility information from actual testing of the System x3400 server with various adapters and devices.
- The ServerGuide CD includes utilities and drivers for assisted installation of popular network operating systems. Also included is a Broadcom Ethernet CD.
- Electronic support on the Web provides additional support in an easy-to-use format.

**Product positioning**

The System x3400 servers are positioned above the entry, two-way, x3200 and below the four-way departmental tower x3500. These servers contain additional fault tolerance through hot-swap redundant cooling, redundant power, PCI-X, and support for PCI-Express. They also feature enhanced systems-management control. As universal servers, they are offered in flexible tower models and can be rack-mounted using a tower-to-rack conversion kit.

With these servers, two segments will be combined into one departmental and mission-critical space. The System x3400 servers form a compact 5 U, two-socket, SMP-capable Xeon processor-based platform designed with integrated high-availability features for mainstream network server applications.

These servers are ideal for clients who require up to two-socket 2.66 GHz/1333 MHz processing power, significant memory, high availability, and large data-storage scalability. High-speed memory, 64-bit and 32-bit PCI buses, eight SAS, hot-swap drive bays, or four SATA simple-swap drive bays and a device bay, for high-capacity tape drives, make these servers ideal for mainstream network computing.
GHz and MHz denote the internal and/or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.

PC2-5300-333 DDR2 AMF SDRAM memory. DDR2 memory stands for double data rate, which means up to twice the data is transferred in the same clock cycle. Actual data transfer is at 667 MHz.

Actual playback speed varies and is often less than maximum.

When referring to HDD or tape backup capacity, GB stands for 1,000,000,000 bytes and TB stands for 1,000,000,000,000 bytes. User capacity may vary depending on operating environments.

Chipkill distributes information covered by error correcting code across separate memory chips. If any chip fails, the data can still be reconstructed from the remaining chips and the system can continue running.

Some programs may not be available in all countries.

With respect to on-site service, you may be asked certain diagnostic questions before a technician is sent.

For information on the IBM Statement of Limited Warranty, visit http://www.ibm.com/servers/support/machine_warranties/

This information is also available by calling 800-426-7378 or contacting your IBM representative or reseller. Copies are available upon request.

IBM makes no warranties, expressed or implied, regarding non-IBM products and services that are ServerProven, including but not limited to 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 107-678


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**Publications**

The following publications and CD-ROMs are shipped with the x3400 servers:

- The System x3400 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 you to quickly set up the System x3400.
- The ServerGuide™ CD contains drivers to support the System x3400 servers. In addition, it includes a set of easy-to-use utilities for assisted installation via CD of several popular network operating systems.
- A Publications CD and a Broadcom Ethernet Driver CD are included.
- IBM ServeRAID™ 8k CD included.
- 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 x3400 Installation Guide and Hardware Maintenance Manual, in U.S. English, are available at


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**Source file publications:** The product books are offered in source file form as a no-charge feature. The source files are shipped on the same media type as the basic machine-readable material.

These files can be used with the BookMaster® and DCF-licensed programs to create unmodified printed copies of the manuals. The source files can also be used with the BookManager® BUILD licensed program to create unmodified displayable softcopy manuals. Terms and conditions for use of the machine-readable files are shipped with the files.

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  Exclusive electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.

- **Hardware maintenance**
  World-class remote and on-site hardware problem determination and repair services.

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  Unlimited help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

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**Technical information**

**Specified operating environment**

**Physical specifications**

<table>
<thead>
<tr>
<th>Rack -- 5U</th>
<th>7973-A2x</th>
<th>7973-D2x</th>
<th>7973-J2x</th>
</tr>
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<tbody>
<tr>
<td>Width: 424.0 mm (16.7 in)</td>
<td>2.0 GHz</td>
<td>2.33 GHz</td>
<td>2.5 GHz</td>
</tr>
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<td>1333 MHz</td>
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<td>12 MB</td>
<td>12 MB</td>
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<tr>
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<td>1 GB ECC</td>
<td>1 GB ECC</td>
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<td>670 W</td>
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<tr>
<td>Hot-swap</td>
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<td>No</td>
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<tr>
<td>Redundant power</td>
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<td>No</td>
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</table>

IBM United States Announcement 107-678
Memory (PC2-5300-667) 1 GB ECC 1 GB ECC 1 GB ECC
FBD 2 x 512 MB 2 x 512 MB 2 x 512 MB
DIMM sockets 8 8 8
Capacity 32 GB (10) 32 GB (10) 32 (10)
Video SVGA SVGA SVGA
memory 32 MB 32 MB 32 MB
SAS/ SATA controller 1 1 1
Channels 2 2 2
Connector internal 4+4 4+4 4+4
Connector external 0 0 0
HDD Open bay Open bay Open bay
Total bays 11 11 11
5.25-in 3 3 3
Hot-swap 4+4 (14) 4+4 (14) 4+4 (14)
Internal capacity 6.0 TB (11) 6.0 TB (11) 6.0 TB (11)
Bays available 10 10 10
5.25 in 2 2 2
Hot-swap 4+4 4+4 4+4
Total PCI slots 6 6 6
64-bit/133 MHz 2 2 2
PCI-E slots 3 3 3
32-bit/33 MHz 1 1 1
Slots available 6 6 6
Ethernet controllers 10/100/1000 Mb 10/100/1000 10/100/1000
DVD-ROM (IDE) 16x 16x 16x
Power supply 670 W (D2) 670 W (J2) 670 W (L2)
835 W (DB) (13) 835 W (JB) (13) 835 W (LB) (13)
Number standard 1 1 1
Hot-swap No (D2) No (J2) No (L2)
Yes (DB) Yes (JB) Yes (LB)
Redundant power No (D2) No (J2) No (L2)
Yes (DB) Yes (JB) Yes (LB)
(10) System memory capacity is 32 GB when 4 GB DIMMs are installed in the eight memory DIMM slots.
(11) Eight hot-swap drive bays for 7975 and 7976 models, or four simple-swap drive bays for 7973 and 7974 models, 3.0 TB total using 750 GB SATAA HDD options for 7973 and 7974 models, 6.0 TB total using 750 GB SATA HDD options in 7975 and 7976 models, or 2.4 TB using 300 GB HS SAS HDDs in 7975 and 7976 models.
(12) These systems contain an integrated system management processor that provides a set of monitoring and alert features. Refer to the Description section for details. For higher levels of system management support the Remote Supervisor Adapter is optionally available.
(13) The 835-watt redundant power supply is designed to support hot-swapping and redundancy on DB, JB and LB models.
(14) Optional backplane upgrade kit with SAS/SATA 4 Pac HDDs required to add additional hot-swap HDDs

**DVD-ROM drive characteristics**

- Formatted capacity: 650 MB
- Average access time including latency: Less than 85 ms
- Sustained data transfer rate: 3,000 to 7,200 KB/s
- Burst data transfer rate
  - ATA PIO mode 4: 16.6 MB/sec
  - ATA Multiword DMA Mode 2: 16.6 MB/sec
- Technology: Full constant angular velocity (CAV)

**Video subsystem**
ATI ES1000 Graphics Accelerator

- Integrated on planar and connected to the PCI bus
- 32 MB of embedded DDR1 video memory
- 128-bit graphics engine with 8, 16, and 32 bpp mode acceleration
- 32 bpp (4G colors/True Color) support
- Integrated 350 MHz RAMDAC
- DDC2B monitor communications support

Supported video mode capabilities for the SVGA PCI controller

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Colors</th>
<th>Refresh Rate (Hz)</th>
</tr>
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<tbody>
<tr>
<td>640 x 480 x 8</td>
<td>256</td>
<td>60, 72, 75, 85</td>
</tr>
<tr>
<td>640 x 480 x 16</td>
<td>64K</td>
<td>60, 72, 75, 85</td>
</tr>
<tr>
<td>640 x 480 x 32</td>
<td>16 million</td>
<td>60, 72, 75, 85</td>
</tr>
<tr>
<td>800 x 600 x 8</td>
<td>256</td>
<td>60, 72, 75, 85</td>
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<tr>
<td>800 x 600 x 16</td>
<td>64K</td>
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<td>800 x 600 x 32</td>
<td>16 million</td>
<td>60, 72, 75, 85</td>
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<tr>
<td>1024 x 768 x 8</td>
<td>256</td>
<td>60, 70, 75, 85</td>
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<tr>
<td>1024 x 768 x 16</td>
<td>64K</td>
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<tr>
<td>1024 x 768 x 32</td>
<td>16 million</td>
<td>60, 70, 75, 85</td>
</tr>
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</table>

**Note:** NetWare and SCO drivers are contained in the respective operating system packages or bulletin boards.

Dimensions

- **Tower**
  - Width: 218.0 mm (8.6 in)
  - Depth: 747.0 mm (29.4 in)
  - Height: 440.0 mm (17.31 in)
  - Weight: 20 kg (42 lb) (minimum configuration)
  - Weight: 38 kg (84 lb) (maximum configuration)

- **Rack — 5U**
  - Width: 424.0 mm (16.7 in)
  - Depth: 696.0 mm (27.4 in)
  - Height: 218.0 mm (8.6 in)
  - Weight: 20 kg (42 lb) (minimum configuration)
  - Weight: 38 kg (84 lb) (maximum configuration)

Electrical

**7973 and 7974 MTM**

- 100 to 240 V ac; 50 Hz — 60 Hz; 10 — 5 A
- Input kilovolt-amperes (kVA) (approximately)
  - Minimum configuration: 0.22 kVA
  - Maximum configuration: 0.59 kVA
- Btu output
  - Ship configuration: 747 Btu/hr (219 watts)
  - Full configuration: 1959 Btu/hr (574 watts)
• Acoustical noise emission levels
  – 5.5 bels (idling)
  – 6.0 bels (operating)

7975 and 7976 MTM
• 100 to 240 V ac; 50 Hz — 60 Hz; 10 — 5 A
• Input kilovolt-amperes (kVA) (approximately)
  – Minimum configuration: 0.22 kVA
  – Maximum configuration: 0.68 kVA
• Btu output
  – Ship configuration: 747 Btu/hr (219 watts)
  – Full configuration: 2259 Btu/hr (662 watts)
• Acoustical noise emission levels
  – 5.5 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. All measurements made in accordance with ISO 7779 and reported in conformance with ISO 9296.

These servers are intended for use as floor-standing servers and are tested and designed to operate in a horizontal position. These servers can also be used as a rack model with the optional rack install kit.

Standards: These systems support or comply with the following standards:
• Multiprocessor Specification (MPS) 1.4
• Peripheral Component Interconnect (PCI) specification 2.2
• Peripheral Component Interconnect (PCI-X) specification v2.0
• PCI-Express specification 1.0
• 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 4, Class A
• UL/IEC 60950-1(13)
• CSA C22.2 No. 60950-1-03
• NOM-019\textsuperscript{15}

\textsuperscript{15} This server model is certified by the respective UL and NOM agencies.

Operating environment
• Temperature
  – 10° to 35°C (50° to 95°F) at 0 to 914 m (0 to 3,000 ft)
  – 10° to 32°C (50° to 90°F) at 914 to 2,133 m (3,000 to 7,000 ft)
• Relative humidity: 8% to 80%
• Maximum altitude: 2,134 m (7,000 ft)
**Hardware requirements:** For attended installation of an operating system, this server requires a compatible:

- Keyboard
- Mouse
- HDD
- Display (C117, T115, T117 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 (E51, E54, E74, G78, LCD, or equivalent)

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 systems are supported in the x3400 server:

- Microsoft
  - Windows Server 2003, Standard Edition
  - Windows Server 2003, Enterprise Edition
- Novell: NetWare 6.5
- Santa Cruz Operation, Inc.
  - SCO OpenServer 6.0.0
  - SCO UnixWare 7.1.4
- VMware: VMware ESX 3.0
- Linux™
  - Red Hat Enterprise Linux 4 AS for x86
  - Red Hat Enterprise Linux 4 AS for AMD64/EM64T
  - Red Hat Enterprise Linux 4 ES for x86
  - Red Hat Enterprise Linux 4 ES for AMD64/EM64T
  - Red Hat Enterprise Linux 4 WS for x86
  - Red Hat Enterprise Linux 4 WS for AMD64/EM64T
  - Red Hat Enterprise Linux 3 AS for x86
  - Red Hat Enterprise Linux 3 AS for AMD64/EM64T
  - Red Hat Enterprise Linux 3 ES for x86
  - Red Hat Enterprise Linux 3 ES for AMD64/EM64T
  - Red Hat Enterprise Linux 3 WS for AMD64/EM64T
  - SUSE Linux Enterprise Server 9 for AMD64/EM64T
  - SUSE Linux Enterprise Server 9 for x86
- SUSE Linux Enterprise Server 10 for x86
- SUSE Linux Enterprise Server 10 for AMD64/EM64T
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- Red Hat Enterprise Linux 5 Server Edition with Xen
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- SUSE Linux Enterprise Server 10 with Xen for x86
- SUSE Linux Enterprise Server 10 with Xen for AMD64/EM64T

**Note:** Certification is planned for these operating systems. For additional information on support, certification, and versions on network operating systems, visit [http://www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat)

**Preload option**

The following network operating systems are supported as preloads in the System x™ 3400 server:

**Microsoft**

[16] The Microsoft Windows Preinstallation Environment software, included as part of ServerGuide software, may be used for boot, diagnostic, setup, restoration, installation, configuration, test, or disaster recovery purposes only.

[Note: The Microsoft Windows Preinstallation Environment software contains a security feature that will cause an end user customer's system to reboot without prior notification to the end user customer after 24 hours of continuous use of the Microsoft Windows Preinstallation Environment. During routine usage of ServerGuide, which does not usually require usage of the Microsoft Windows Preinstallation Environment software for such an extended time period, this condition should not occur.]

**Compatibility:** The System x3400 server systems contain licensed system programs that include set configuration, set features, and test programs. 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 x3400 server 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 x3400 servers, visit [http://www.ibm.com/servers/eserver/serverproven/compat/us/](http://www.ibm.com/servers/eserver/serverproven/compat/us/)

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 x3400 servers. The Sales Manual is updated periodically as new features and options are announced that support these servers.

**Limitations**

- The System x3400 servers support a maximum of 64 GB of system memory when you add a 8-GB memory DIMM in each of the eight DIMM slots. All supported system memory is addressable through direct memory access (DMA). The x3400 server supports 512 MB, 1 GB, 2 GB, 4 GB, and 8 GB DDR2 ECC SDRAM DIMMs which are synchronized with processor FSB bandwidth (bus speeds run at 166 MHz but data is clocked on four edges, yielding a transfer rate of 667 MHz). DIMMs must be installed in matched pairs. Refer to the Planning information section for supported memory options.
- Mixing microprocessors of different speeds or cache size is not supported.
- 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.

**User group requirements**: This announcement satisfies or partially satisfies requirements from one or more of the worldwide user group communities. Groups include COMMON, COMMON Europe, Guide Share Europe (GSE), InterAction (Australia/New Zealand), Japan Guide Share (JGS), and SHARE Inc.

**Planning information**

**Customer responsibilities**

**Customer Setup**: The x3400 servers are designated as customer setup. Customer setup instructions are shipped with systems and options.

**Configuration Information**:

**Integrated RAID One Configuration**

Two manufacturing instructions (MI) enable you to setup a RAID-1 configuration. These instructions enable configuration via Odyssey (IBM.com).

**Bay configuration**: The server contains 11 (or seven) drive bays. The eight 3.5-inch hot-swap bays are located on the lower half of xSeries 3400 tower models. These bays are ready for various supported hot-swap or simple-swap drive option installation. The three bays on the top portion of tower models are designed primarily for removable media devices. One bay contains the CD-ROM drive, while the remaining two 5.25-inch half-high bays can support tape backup or other devices.

**SAS cabling considerations**: Some x3400 server models contain one backplane that supports four hot-swap SAS drive bays. The backplane is connected to the integrated SAS eight-port controller through one mini SAS cables.

ServeRAID 8k-l is a standard offering on hot-swap models.

The DVD-ROM is cabled directly to the IDE port.

**External SAS attachment**: In the configurations where an external SAS device attachment is required, a support SAS adapter is required (25R8060).

**External serial attachment**: To attach an external serial cable RS-232, use the serial connector at the rear of the system.

**Processor upgrades**: The following processor upgrades are supported:

- Intel® 2.0 GHz/1333 MHz, 12 MB L2 Cache Xeon Processor (44R5630)
- Intel 2.33 GHz/1333 MHz, 12 MB L2 Cache Xeon Processor (44R5631)
- Intel 2.5 GHz/1333 MHz, 12 MB L2 Cache Xeon Processor (44R5632)
- Intel 2.66 GHz/1333 MHz, 12 MB L2 Cache Xeon Processor (44R5633)

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

- IBM 1 GB Kit PC2-5300 CL5 ECC DDR2 Chipkill AMFDIMM 667 MHz (39M5782)
- IBM 2 GB Kit PC2-5300 CL5 ECC DDR2 Chipkill AMFDIMM 667 MHz (39M5785)
- IBM 4 GB Kit PC2-5300 CL5 ECC DDR2 Chipkill AMFDIMM 667 MHz (39M5791)
- IBM 8 GB Kit PC2-5300 CL5 ECC DDR2 Chipkill AMFDIMM 667 MHz (39M5797)

**Power supply requirements**: These models contain either one 670-watt fixed power supply, or one 835-watt hot-swap power supply which has redundancy, model dependent. One power supply has enough power to supply a fully loaded box. If redundancy is required, you should install additional power supply to ensure sufficient power will be available. A fault light illuminates when a power supply fails.
**Optional rack installations:** These models are optionally installable as rack units and are designed so they can be installed in an industry-standard 19-inch rack cabinet such as the NetBAY42 or NetBAY25. The x3400 server system requires a rack mount kit for rack installation. In addition, it can also be installed in the deeper NetBAY42 ER.

If you choose not to use an IBM rack, the cabinet must meet EIA-310-D standards for mounting flanges and hole clearances with front to rear mounting of 70 to 73 cm (27.5 to 28.5 in). The rack must provide sufficient room in front of the forward EIA flange to allow for bezel attachment. The standard for 310-D suggests 49 mm (1.9 in) clearance. It must also provide adequate room at the rear of the rack, behind the rear flange for cable management; the xSeries 236 server requires approximately 16.6 cm (6.5 in) in this space.

The rack should include perforated front and rear doors and must not prevent the flow of cool air into or out of the rack. The weight handling capacity of the rack is 22.7 kg (50 lb). Finally, the rack must provide proper stabilization so that the rack does not become unstable when servers are pulled out of service.

**Cable orders:** Broadcom 5721 KFB3 10/100/1000 Mbps, full-duplex Ethernet PCI-Express controllers, standard with the x3400 server, are connected directly to one independent RJ-45 connectors. The RJ-45 connectors provide 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 a UTP cable with RJ-45 connectors at both ends. For 100/1000 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 System x3400 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:** One box

- System unit
- Country kit carton
  - Keyboard with attached cable
  - Mouse with attached cable
  - System unit power cord
  - System x3400 Installation Guide
  - System x3400 Users Guide
  - ServerGuide and IBM Director
  - DVD-ROM Packages
  - Publications CD
  - New Broadcom Ethernet Driver CD
  - IBM ServeRAID 8k CD

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

**Supplies**

**For end users:** System x3400 servers can be purchased through dealers worldwide.

**Security, auditability, and control**

This product uses the security and auditability features of host hardware, host software, application software.

It is a customer’s responsibility to ensure that the server is 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.
IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a Web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit http://www.ibm.com/support/electronic

Terms and conditions

IBM credit corporation financing: Yes

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

- System hardware
  - x3400 — 7973 S/S SATA — One-year service
  - x3400 — 7974 S/S SATA — Three-year service
  - x3400 — 7975 Hot-swap SAS/SATA — One-year service
  - x3400 — 7976 Hot-swap SAS/SATA — Three-year service

Optional IBM features initially installed in an IBM machine carry the same warranty period as the machine. If installed after the initial machine installation, they carry the balance of the machine 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 for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. 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.

CRU (keyboard, mouse, speaker, memory, HDD) service and on-site service.
**CRU service:** IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 or a Tier 2 CRU. Installation of a Tier 1 CRU is your responsibility. If IBM installs a Tier 1 CRU, at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge under the type of warranty service specified.

Based upon availability, a CRU will be shipped for NBD delivery. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following are designated as a Tier 1 CRU:

- Battery
- Blank filler
- Cable-management arm
- Hard disk drive
- Hot-swap fan
- Hot-swap power supply
- Lift handle kit
- Memory DIMM
- Memory expansion card
- Optical drive
- PCI adapter
- PCI divider
- Power cord
- Service label
- Service processor
- System label
- Top cover
- Voltage regulator module

**On-site service:** On-site repair (IOR), 9 hours per day, Monday through Friday excluding holidays, NBD response. IBM or your reseller will repair the failing machine at your location and verify its operation. You must provide 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.

Calls must be received by 5:00 p.m. local time in order to qualify for NBD service.

**International Warranty Service (IWS):** IWS is available in selected countries.

The warranty service type, for example, IOR and CRU and service level, 9 x 5 NBD and 24 x 7, provided in the servicing co may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the service country and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries which service is
available, visit


For more information on IWS, refer to 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**

**ServicePac®, ServiceSuite™, ServiceElect, and ServiceElite:** ServicePac, ServiceSuite, ServiceElect, and ServiceElite provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

**Warranty service upgrade:** During the warranty period, a 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.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability.

CRUs will be provided as part of the Machine's standard warranty CRU service except that you may install a Tier 1 CRU yourself or request IBM installation, at no additional charge, under one of the on-site service levels specified.

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.

Refer to the Prices section for specific offerings.

**Maintenance service:** If required, IBM provides repair or exchange service depending on the type of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. 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 (keyboard, mouse, speaker, memory, HDD), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

**On-site 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.

Refer to the Prices section for specific offerings.

**Maintenance service (ICA)**

Maintenance services are available for ICA legacy contracts.

**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.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability.

A CRU will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM to install it, at no additional charge under the type of warranty service specified.

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.

Refer to the Prices section for specific offerings.

**Maintenance service:** If required, IBM provides repair or exchange service depending on the type of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. 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 (keyboard, mouse, speaker, memory, HDD), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your Machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

**On-site 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.

Refer to the Prices section for specific offerings.

**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 warranty service upgrades or maintenance services.

IBM service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer 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 part 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 a maintenance service.

**IBM hourly service rate classification:** One

**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.

Educational allowance: None

Prices

The following are newly announced features on the specified models of the IBM xSeries 7973, 7974, 7975 and 7976 machine type:

<table>
<thead>
<tr>
<th>Description</th>
<th>Model number</th>
<th>Feature number</th>
<th>IBM list price (17) CSU</th>
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<td>AC1</td>
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<td>7974-AC1</td>
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<td>7975-AC1</td>
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<td></td>
<td>7976-AC1</td>
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<tr>
<td></td>
<td>7973-MC1</td>
<td>MC1</td>
<td>0 Yes</td>
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<td></td>
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<tr>
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<tr>
<td></td>
<td>7976-MC1</td>
<td></td>
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(17) List price does not include tax or shipping and is subject to change without notice. Reseller prices may vary.

The following are for MT 7973, 7974, 7975, 7976 AC1 and MC1:

<table>
<thead>
<tr>
<th>Description</th>
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<th>IBM list price</th>
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<tbody>
<tr>
<td>Quad-Core Intel Xeon Processor E5405</td>
<td>3078</td>
<td>$559</td>
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<tr>
<td>Additional Quad-Core Intel Xeon Processor E5405</td>
<td>3492</td>
<td>559 Initial</td>
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<tr>
<td>(2.0 GHz/1333 MHz 12 MB L2 Cache)</td>
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<tr>
<td>Quad-Core Intel Xeon Processor E5410</td>
<td>3079</td>
<td>659 Initial</td>
<td></td>
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<tr>
<td>(2.33 GHz 1333 MHz 12 MB L2 Cache)</td>
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</tr>
<tr>
<td>Additional Quad-Core Intel Xeon Processor E5410 2.33 GHz/1333 MHz FSB 12 MB L2 Cache</td>
<td>3493</td>
<td>659 Initial</td>
<td></td>
</tr>
<tr>
<td>Quad-Core Intel Xeon Processor E5420</td>
<td>3080</td>
<td>789 Initial</td>
<td></td>
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<tr>
<td>(2.50 GHz 1066 MHz 12 MB L2 Cache)</td>
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<td></td>
</tr>
<tr>
<td>Additional Quad-Core Intel Xeon Processor E5420 2.50 GHz/1066 MHz FSB 12 MB L2 Cache</td>
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<td>789 Initial</td>
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<tr>
<td>Quad-Core Intel Xeon Processor E5430</td>
<td>3081</td>
<td>1,099 Initial</td>
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<tr>
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<tr>
<td>Additional Quad-Core Intel Xeon Processor E5430 2.66 GHz/1066 MHz FSB 12 MB L2 Cache</td>
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<td>Ref. 5 Planar</td>
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Single Entity Offerings (SEOs)
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<th>Description</th>
<th>SEO number</th>
<th>IBM list number</th>
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<tbody>
<tr>
<td>System x 3400</td>
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<td></td>
</tr>
<tr>
<td>2.00 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM S/S SATA</td>
<td>7973A2U</td>
<td>974A2U</td>
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</tr>
<tr>
<td>2.00 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM HS SAS/SATA</td>
<td>7975A2U</td>
<td>7975ABU</td>
<td>$1,515</td>
</tr>
<tr>
<td>2.00 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM S/S SATA</td>
<td>7976A2U</td>
<td>7976ABU</td>
<td>$1,715</td>
</tr>
<tr>
<td>2.33 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM S/S SATA</td>
<td>7973D2U</td>
<td>7974D2U</td>
<td>$1,415</td>
</tr>
<tr>
<td>2.33 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM HS SAS/SATA</td>
<td>7975D2U</td>
<td>7975DBU</td>
<td>$1,615</td>
</tr>
<tr>
<td>2.33 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM S/S SATA</td>
<td>7976D2U</td>
<td>7976DBU</td>
<td>$1,865</td>
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<tr>
<td>2.5 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM S/S SATA</td>
<td>7973J2U</td>
<td>7974J2U</td>
<td>$1,715</td>
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<tr>
<td>2.5 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM HS SAS/SATA</td>
<td>7975J2U</td>
<td>7975JB2U</td>
<td>$1,865</td>
</tr>
<tr>
<td>2.5 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM HS SAS/SATA</td>
<td>7976J2U</td>
<td>7976JB2U</td>
<td>$2,055</td>
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<tr>
<td>2.66 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM S/S SATA</td>
<td>7973L2U</td>
<td>7974L2U</td>
<td>$2,465</td>
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<tr>
<td>2.66 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM HS SAS/SATA</td>
<td>7975L2U</td>
<td>7975LB2U</td>
<td>$2,615</td>
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<tr>
<td>2.66 GHz/1333 MHz/12 MB L2, 2 x 512 MB, CD-ROM HS SAS/SATA</td>
<td>7976L2U</td>
<td>7976LB2U</td>
<td>$2,815</td>
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</tbody>
</table>

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

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

**ServicePac for warranty and maintenance**

Hardware models announcing with this release will utilize existing ServicePacs.

Reference the following IBM Web site for applicable ServicePac information


For ServiceElect (ESA) maintenance service charges, contact IBM Global Services at 888-IBM-4343 (426-4343).

**IBM Global Financing:** IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit

http://www.ibm.com/financing

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial and government customers. Rates are based on a customer's credit rating, financing terms, offering type, equipment type, and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

Financing solutions from IBM Global Financing can help you stretch your budget and affordably acquire the new product. But beyond the initial acquisition, our end-to-end approach to IT management can also help keep your technologies current, reduce costs, minimize risk, and
preserve your ability to make flexible equipment decisions throughout the entire technology life cycle.

Order now

To order, contact the Americas Call Centers or your local IBM representative.

To identify your local IBM representative, call 800-IBM-4YOU (426-4968).

Phone: 800-IBM-CALL (426-2255)
Fax: 800-2IBM-FAX (242-6329)
Internet: call@serv@ca.ibm.com
Mail: IBM Teleweb Customer Support
      ibm.com Sales Execution Center, Americas North
      3500 Steeles Ave. East, Tower 3/4
      Markham, Ontario
      Canada
      L3R 2Z1

Reference: YE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

Note: Shipments will begin after the planned availability date.

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