IBM System x3650 server features fast, powerful quad-core 3.00 GHz/1333 MHz, 2 x 4 MB (8 MB) L2 cache Intel Xeon processors

At a glance

System x3650 server features are optimized for performance, availability, and flexibility for collaboration applications and virtualization opportunities:

- Powerful 3.0 GHz Intel Xeon processor with 1333 MHz and 8 MB L2 cache (each processor is quad core and comes with 2 x 4 MB L2 cache)
- Two 1 GB PC2-5300 DDR2 DIMMs 667 MHz with advanced memory features
- Integrated SAS SCSI HDD controller with integrated mirroring
- 835-watt voltage auto-sensing hot-plug power supply
- Up to 10 hot-swap fans, supporting redundant cooling
- Integrated systems management processor
- Four available PCI slots: two PCI-Express low-profile card slots, two PCI-Express card slots (or, optionally, two PCI-X 64-bit, 133MHz slots): one full and one half length, both full height
- Ten drive bays in 2.5-inch configuration, 8x-24x CD-RW/DVD-ROM Combo Drive, eight hot-swap HDDs
- Two integrated gigabit Ethernet controllers using Broadcom chips and featuring TCP Offload Engine (TOE)
- ATI RN50 video controller with 32 MB video memory and two video ports
- One serial port, seven USB ports, two Ethernet (RJ-45) ports, one systems management connector, one external SAS connector, and two video ports

Overview

The System x3650 server enhances rack-optimized server applications with:

- Powerful, two-socket multi-core Intel® Xeon processing
- 64-bit memory addressing — Up to 48 GB memory using 4 GB DIMM
- PCI-Express architecture: PCI-X optional, up to 133 MHz
- Serial Attach SCSI (SAS) technology
- High-availability and manageability features

The server is available with a quad-core 3.00 GHz/1333 MHz (X5365) processor with 8 MB (2 x 4 MB) L2 cache. These Xeon processors come with Enhanced Intel Speedstep (EIS) technology for more...
efficient program execution. All models have quad-core processors with 8 MB (2 x 4 MB L2 cache).

With a compact 2 U footprint, the rack-optimized System x3650 server helps save valuable rack space and resources. It is packed with highly integrated, advanced server features designed for compute-intensive, Web-based, or enterprise network applications, where space is a primary consideration.

**Optimized for solid performance**

The System x3650 server applies powerful processors, large amounts of memory, and high-bandwidth PCI-Express for business-critical applications. Features include:

- A 1333 MHz (quad-pumped 333) FSB processor with 8 MB (2 x 4 MB) L2 cache, enabling up to 10.66 GB/s data transfer rates
- Two 1 GB PC2-5300 DDR2 DIMMs 667 MHz with advanced memory features (AMF)
- High-speed, wide-bandwidth, PCI-Express bus
- Support for four PCI slots:
  - Two PCI-Express low-profile card slots
  - Two PCI-Express card slots (or optionally, two PCI-X 64 bit, 133 MHz slots): one full and one half length, both full height.

High-performance integrated controllers, including:
- Two Broadcom Gigabit Ethernet controllers with integrated TCP Offload Engine technology (TOE)
- SAS SCSI host controller

**Fully integrated enterprise-class management**

Consolidate workloads and optimize more advanced solutions architectures at incredible IT savings and lower power levels.

- IBM PowerExecutive™ for advanced datacenter power notification and management to achieve lower heat output and reduced cooling needs
- Integrated Systems Management processor for improved manageability and uptime
- Optional RSA II SlimLine system management with no PCI slot used
- Front, rear, and remote KVM that delivers easy hands-on management for any IT environment
- Drop-down light path diagnostic panel for improved in-rack manageability and easy problem identification, Wake on LAN®, and PXE
- Standard 8x-24x CD-RW/DVD-ROM Combo Drive for ease of imaging and application loading
- Support for virtual floppy to enable easy remote host booting, using standard instructions stored anywhere on the network

**Protect your IT investment**

- Hot-swap, redundant components: HDD, power, and cooling
- Support for internal tape drive options to protect and secure data
- Scalable memory and I/O design that responds to your future business needs
- Advanced memory protection: memory mirroring, online hot-spare, and Chipkill™ memory
- Calibrated Vectored Cooling with hot swap fans
- Integrated SAS RAID 0, 1, 10 with RAID 5 upgrade via daughter card — No PCI slot used
- Three-year limited warranty on parts and labor

GHz and MHz denote the internal or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.

PC2-5300 DDR2 advanced memory features DIMM indicates a 240-pin DDR2 (double data rate and effectively providing 2x data in the same clock cycle) DIMM running at 333 MHz DRAM clock speed and...
offering maximum 5333 MB/s bandwidth.

Actual playback speed varies and is often less than the maximum possible.

Connectors function only when RSA II SlimLine option installed.

Enhanced Intel Speedstep (EIS) Technology allows the system to dynamically adjust processor voltage and core frequency, which results in decreased power consumption, which results in decreased heat production, which in turn allows improved acoustics because fans do not need to spin as quickly.

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.

For information on IBM's Statement of Limited Warranty, contact your IBM representative or reseller. Copies are available upon request.

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

Note: The information in IBM announcement letters is subject to change without notice, consult the IBM Sales Manual, or your IBM representative or reseller, for the most current information regarding IBM products.

Key prerequisites

- Monitor, USB keyboard, and USB mouse
- SAS SCSI HDD
- Rack

PS/2® style keyboard and mouse are not supported

Product Number

For details, refer to the Product number section in this announcement.

Planned availability date

September 21, 2007

AP distribution

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* Brunei Darussalam, Indonesia, Cambodia, Laos, People’s Democratic Republic, Malaysia, Philippines, Singapore, Thailand, Vietnam

** Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, Afghanistan
System x3650 server

Intel Xeon processor options

- Additional Quad-core Intel Xeon Processor X5365 3.00 GHz/1333 MHz FSB 2 x 4 MB L2 Cache — 44E5033

These processors are ideal for data-intensive applications that range from data mining to evolving Web services. Innovative technologies deliver a processing speed of up to 3.0 GHz with a 1333 MHz FSB and 8 MB (2 x 4 MB) L2 cache for unpredictable server workloads and escalating computing needs.

These Intel Xeon processors with 8 MB L2 cache feature Intel Core microarchitecture with increased overall performance, greater energy efficiency, and more responsive multitasking. They help reduce thermal burdens in server datacenters.

All x3650 models that come with quad-core processors will have 8 MB (2 x 4 MB) L2 cache.

ServeRAID™ 8k adapter

This device provides 256 MB of battery-backed 533 MHz DDR2 standard power memory in a fixed mounting arrangement. It attaches directly to the IBM planar, which can provide full RAID capability.

Most models come with the ServeRAID 8k controller, which features:

- 256 MB DDR2 533 MHz
- Up to 72 hours of battery life for 3 years at 45°C

RAID features:

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

IBM System x™ Hot-Swap Power Supply Options

- IBM System x 3650 835W Hot-Swap Power Supply (WW) (40K1905)
- IBM System x 3650 835W Hot-Swap Power Supply (NA) (40K1906)

IBM System x3650 DC Power Supply Option

- 700W 48V DC Power Supply (43W5902)

High-performance server subsystems

The x3650 server expands the new server line by adding a higher level of processor power. This high-throughput, four-way multi-core network server offers excellent performance and scalability when you add memory and a second processor. It incorporates powerful Xeon processors with 8 MB L2 cache. The advanced transfer L2 cache is integrated onto the processor in quad cores and runs at the same clock speed. The advanced transfer cache is a result of a "backside bus" 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 Xeon processor connectors are standard on the system board to support installation of a second processor. High-speed PC2-5300 DDR2 Advanced Memory Feature DIMMs run at 667 MHz DRAM clock speed and offer maximum 5333 MB/s bandwidth, processor-to-memory subsystem performance. The x3650 server uses the Intel 5000P chipset with Chipkill technology.
to maximize throughput from processors, to memory, to the 32-bit and 64-bit PCI buses.

**Standard x3650 configurations**

<table>
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<tr>
<th>Model</th>
<th>Processor</th>
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<th>Memory</th>
<th>SCSI Interface</th>
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<td>8 MB</td>
<td>2 GB ECC</td>
<td>HS SAS</td>
<td>2.5 in</td>
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</table>

**Note:** The System x3650 models use a Serial Attachment SCSI (SAS) controller for HDDs.

**Additional features**

- Eight-core processing achieved with a second processor of equal speed and processor type
- System board containing twelve DIMM connectors supporting 512 MB, 1 GB, 2 GB, and 4 GB 667 MHz DDR2 PC2-5300 SDRAM ECC DIMMs with:
  - Advanced memory features for improved performance (memory must be installed in matched pairs)
  - Up to 48 GB of system memory (using 4 GB DIMMs)
- High-speed, wide-bandwidth PCI-Express or PCI/PCI-X bus slots:
  - Two PCI-Express low-profile card slots
  - Two PCI-Express card slots (or optionally, two PCI-X 64 bit, 133 MHz slots): one full and one half length, both full height
- Up to seven bays to support up to six 3.5-inch SAS HDDs, and a CD-RW/DVD-ROM drive, or ten bays to support eight 2.5-inch SAS HDDs, plus an internal tape drive and a CD-R/CD-RW/DVD drive
- Two Broadcom Chips for Gigabit (10/100/1000) Ethernet PCI, which speed network communications to LAN clients

The x3650 servers offer solid system throughput from processor, to memory, to bus, to disk-intensive I/O. These features, combined with multi-core capability, make the x3650 server an excellent choice for a stand-alone or clustered general-business application, file, and print server.

**High-availability and serviceability features**

- Support for light path diagnostics with viewable drop-down panel, Wake on LAN, and PXE
- Up to ten hot-swap fans
- Up to six 3.5-inch HS HDDs or up to eight 2.5-inch HS HDDs, model dependent
- IBM ServeRAID SAS 8k-l controller on most models that supports 0, 1, and 10 as standard
- Chipkill memory that basically 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
- ECC L2 cache processors to help improve data integrity and help reduce downtime
- Predictive Failure Analysis® (PFA) on HDD options (when ServeRAID 8k is installed), memory, VRMs, processors, and fans (when Remote Supervisor Adapter is installed), to help alert the system administrator of imminent component failure
- Support for optional Remote Supervisor Adapter II SlimLine, which enables remote systems management through a Web-based browser
- Worldwide voltage-sensing, 835-watt, hot-plug power supply featuring auto restart
- Optional 835-watt, hot-swap power supply upgrade for high-availability requirements
- Integrated systems-management processor that supports:
  - Automatic server restart (ASR)
  - Fan monitoring and control
  - Power supply monitoring
- Temperature monitoring
- Voltage monitoring
- Power on/off, reset sequencing
- LED controls (onboard diagnostics support with light path LED)
- Remote power control
- Local firmware update
- Error logging

- Information LED panel for visual indications of system well-being
- Onboard diagnostics with an LED map to locate a failing component helping reduce downtime and service costs
- Support for virtual floppy, which enables user to easily direct a remote host to boot, and use standard instructions stored anywhere on the network
- Easily accessible system board, adapter cards, processor, and memory
- CPU failure recovery in two socket configurations, which:
  - Forces failed processor offline
  - Reboots server automatically
  - Generates alerts
  - Continues operations with the working processor

Expandability and growth
The x3650 server packs a lot of function and storage capacity into a 2 U, 19-inch rack-drawer package, yet it is amazingly easy to upgrade and service. Functions such as SVGA video, SAS SCSI, and full-duplex 10/100/1000 Mbps Ethernet are integrated on the system board. Features include:

- Rack-drawer models designed for 19-inch-wide by 28-inch-deep industry-standard rack enclosures, such as the NetBAY42 SR
- Four PCI/PCI-Express adapter card slots available (2 x PCI-Express slots may be replaced by a riser card option to get two PCI-X slots)
- System board optional upgrades (PCI slot not required)
  - Remote Supervisor Adapter II SlimLine (RSA II SlimLine)
- One ServeRAID connector
- Support for up to 1168 GB of internal data storage, using eight 146 GB SAS hot-swap or support for up to 1.8 TB of internal data storage, using six 300 GB SAS hot-swap HDDs (model dependent)
- 8x-24x CD-R/CD-RW DVD COMBO Drive
- ATI RN50 controller with 32 MB of embedded DDR1 video memory

Systems management

Integrated BMC: The System x3650 includes 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 one of the two onboard Ethernet ports for access. The BMC can be accessed via software that is compatible with IPMI 2.0 (xCAT, and more). The BMC is implemented using industry-leading OSA firmware and applications in conjunction with the integrated baseboard management controller.

- Features and benefits:
  - Monitoring of system voltages
  - Monitoring of battery voltage
– Monitoring of 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 detection (system interrupts)
– SMI detection and generation (system interrupts)
– Serial port text console redirection
– System LED control (power, HDD, activity, alerts, heartbeat)
– Support for IPMI V2.0-compliant management software (for example, xCAT)

In addition you can purchase an optional Remote Supervisor Adapter II SlimLine to provide additional systems management functionality.

Optional Remote Supervisor Adapter II SlimLine (39Y9566): The optional RSA II Slimline adds accelerated graphics and delivers advanced control and monitoring features to manage your IBM System x3650 server at virtually any time, from virtually any place. The adapter card can be added to the server through a connector that connects 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 system management LAN connections.

With video compression now built into the adapter hardware, it is designed to allow the greater screen sizes and refresh rates that are becoming standard in the marketplace. This feature allows the user to 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 those users who are accustomed to a command line interface, the administrator can also use the provided CLI from a Telnet session to perform some of the functions that they can perform from the Web server. The Remote Supervisor Adapter 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.

• Features and benefits:
  – The adapter continuously monitors system environmentals (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 and floppy is designed to provide the user with the ability to configure and diagnose a server remotely, without a visit from your IT staff.
  – 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, over e-mail, pager support, LAN, or SNMP.
  – The adapter installs on the system planar using a dedicated connector, and eliminates the need to take a PCI-X slot.

The RSA II SlimLine features are similar to the RSA II with exception of following features:

• Reset button is not accessible from back of system.
• Mini USB cable (no longer required) uses internal USB bus. System has designated Systems Management Ethernet port, activated only when RSA II SlimLine is installed.
• External ac adapter not required (device uses standby power from system power supplies).
• Status LEDs are not external viewable.
• The RSA II SlimLine no longer supports the prior RSA II interconnect function.

IBM Director: The x3650 server features IBM Director, a powerful, highly integrated systems management software solution built on industry standards, and designed for ease of use.

You can exploit your existing enterprise or workgroup management environments and use rich security features that access and manage physically dispersed IT assets efficiently over the Internet.

It can help reduce costs through:

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

IBM Director integrates leading workgroup and enterprise systems management environments via upward integration modules. This integration enables the advanced management capabilities built into the System x3650 server to be accessed from:

• Tivoli® Enterprise and Tivoli NetView®
• Computer Associates Unicenter TNG Framework
• NetIQ — BMC Patrol
• Microsoft SMS
• Intel LANDesk™ Management Suite

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 self-management features and a portfolio of proactive predictive tools that enable advanced xSeries® server management, resulting in higher server availability and reliability.

Its industry-standard foundation enables heterogeneous hardware support. It works with the integrated systems-management processor to access environmental system information.

The integrated systems management processor monitors and controls operating status for critical errors.

• ASR monitors the operating system status and automatically restarts the server if the operating system fails to respond. An alert is then generated if the system has been restarted through ASR.
• Fan monitoring and control manages fan speed and automatically increases to maintain system cooling if temperature thresholds are exceeded. An alert is generated if a fan:
  – Fails, or failure is predicted (with Remote Supervisor II Adapter card installed)
  – Is installed or removed
• Power supply monitoring monitors for voltage ranges of supply.
• Temperature monitoring provides CPU and HDD backplane temperatures. 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.
• Voltage monitoring provides CPU and power subsystem voltage thresholds. An alert is generated if abnormal voltages are detected.
• Power on/off and reset sequencing are supported through system monitoring.
• Text console redirect features keyboard and mouse control.
• LED controls (light path support) provide onboard diagnostics with an LED map, which is 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 Remote Supervisor Adapter II SlimLine for full out-of-band and in-band remote management.

**IBM PowerExecutive**

IBM PowerExecutive offers direct monitoring of power consumption and thermal load of your server through IBM Director. You can monitor power consumption to track utilization of energy resources. IBM PowerExecutive is the first solution on the market that provides customers with the intelligence needed to effectively monitor power consumption in the datacenter. PowerExecutive, an extension to IBM Director systems management software, allows clients to "meter" actual power usage and trend data for any single physical system or group of systems. Developed by IBM Research, PowerExecutive utilizes IBM-developed monitoring circuitry to help identify how much actual power is being used and the temperature of the system. The software is available across IBM's new System x servers, as well as its BladeCenter® line of systems. With PowerExecutive, the user is able to understand the actual power draw.

**Remote Supervisor Adapter II SlimLine**

Features:

• Easy-to-use, Web-based management from standard Web browsers
• Multimode alerts including e-mail with log, paper, SNMP, and LAN
• Graphical console redirection; keyboard and mouse control
• Remote management, in many cases independent of the server status
• Support for virtual floppy, which enables you to easily direct a remote host to boot and use standard instructions stored anywhere on the network
• Full remote control of hardware and graceful shutdown of operating system
• Remote update of the xSeries server and Remote Supervisor Adapter II SlimLine firmware

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

• Access the server, in many cases regardless of the status
• Inventory and display detailed system and component information
• View server bootup during POST
• Browse and delete logs of events and errors
• Reset or power cycle the server
• Run diagnostics, SCSI, and RAID setup during POST
• Monitor thresholds on server health, including:
  – Operating system load
  – POST time-out
  – Voltage
  – Temperature
• Set proactive alerts for critical server events, including PFA on:
  – Processors
  – VRMs
  – Memory
  – Fans (when Remote Supervisor Adapter II SlimLine is installed)
  – Power supplies
- HDDs (when ServeRAID 8k is installed)

- Define automated actions, such as:
  - Send e-mail or page to an administrator
  - Execute a command or program
  - Pop-up an error message to the director console

- Manage 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

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

**World-class support tools and programs**
The x3650 server tools and programs can 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.

- IBM customer replaceable unit (CRU) and on-site, three-year limited warranty with next business day (NBD) service (same business day service optionally available) helps protect 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 System x3650 server with various adapters and devices.
- The ServerGuide CD includes utilities and drivers for assisted loading of popular network operating systems.
- Electronic support on the Web offers additional support in an easy-to-use format


**Product positioning**
This two-socket, multi-core capable server is positioned between the System x 3550 and System x 3850 servers.

The 2 U System x3650 server offers more PCI adapter expansion than the 1 U-high System x 3550 server. The System x 3850 server supports up to four Intel Xeon processors MP, driving large memory configurations, and requires 3 U of rack space.

This high-density, highly integrated server is designed for customer installation of features to handle future expansion to meet changing needs. At the same time, it can handle emerging applications that require maximum computing power and function in the least amount of rack space.

Applications include:
This powerful server also meets traditional enterprise network server requirements, but with an added benefit of requiring less space.

### Product number

**Note:** Following models are GAV.

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<th>Description</th>
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**Note:** All models are MTM.

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**Processor option description**

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**Model conversions:** None

**Feature conversions:** None

**Trademarks**

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Publications

The following publications and CD-ROMs are shipped with the x3650 server:

- The x3650 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 x3650 server.

- The ServerGuide™ contains utilities and drivers to support the x3650 servers. In addition, it includes a set of easy-to-use utilities for 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 discontinued at any time.

x3650 Installation Guide and Problem Determination and Service Guide, in U.S. English versions, are available from

http://www-304.ibm.com/jct01004c/systems/support/

Select Product Support, System x™, then Product family, and then click on Publications lookup

The IBM Publications Center Portal

http://www.ibm.com/shop/publications/order

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options, via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

The following publication is available immediately.

<table>
<thead>
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<th>Title</th>
<th>Part number</th>
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<tr>
<td>System x3650 Installation Guide</td>
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</tr>
<tr>
<td>System x3650 User Guide</td>
<td>42C5013</td>
</tr>
<tr>
<td>Problem Determination and Service Guide</td>
<td>43V9260</td>
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Displayable softcopy publications

The product books are offered in displayable softcopy form. All books are included. The displayable manuals are part of the basic machine-readable material. The files are shipped on DVD-ROM.

Terms and conditions for use of the machine-readable files are shipped with the files.

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

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http://www.ibm.com/services/continuity

For details on education offerings related to specific products, visit


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

---

**Technical information**

### Specified operating environment

**Physical specifications:** The x3650:

<table>
<thead>
<tr>
<th>Specification</th>
<th>7979- C4x</th>
<th>7979- CDx</th>
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</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Xeon Quad-Core</td>
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<tr>
<td>Internal speed</td>
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<tr>
<td>External speed</td>
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<td>1333 MHz</td>
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<tr>
<td>Maxi mum</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>L2 cache (full-speed)</td>
<td>8 MB</td>
<td>8 MB</td>
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<tr>
<td>Memory</td>
<td>2 GB ECC</td>
<td>2 GB ECC</td>
</tr>
<tr>
<td>RDIMMs</td>
<td>2 x 1 GB</td>
<td>2 x 1 GB</td>
</tr>
<tr>
<td>DIMM sockets</td>
<td>12</td>
<td>12</td>
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<tr>
<td>Capacity (13)</td>
<td>48 GB</td>
<td>48 GB</td>
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<tr>
<td>Video</td>
<td>SVGGA</td>
<td>SVGGA</td>
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<tr>
<td>Memory</td>
<td>32 MB</td>
<td>32 MB</td>
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<tr>
<td>SC6I controller</td>
<td>SAS</td>
<td>SAS</td>
</tr>
<tr>
<td>Channels</td>
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<td>Connect or internal</td>
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<td>1</td>
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<tr>
<td>Connect or external</td>
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<td>Connect or external</td>
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<td>1</td>
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<tr>
<td>HcDx (12)</td>
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<td>open-bay</td>
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<tr>
<td>Total bays</td>
<td>7</td>
<td>10</td>
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<tr>
<td>5.25 slim</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3.5-in tape</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hot-swap (3.5-in)</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Hot-swap (2.5-in)</td>
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</tr>
<tr>
<td>Internal capacity</td>
<td>1.8 GB(10)</td>
<td>1168 GB(9)</td>
</tr>
<tr>
<td>Bays available</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>5.25 slim</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.5-in tape</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hot-swap (3.5-in)</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Hot-swap (2.5-in)</td>
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<td>8</td>
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<tr>
<td>Total PCI slots</td>
<td>4</td>
<td>4</td>
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<tr>
<td>PCI_E (x4 LP)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>PCI_E (x8) (11)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>64-bit/133 MHz (11)</td>
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<td>2</td>
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<tr>
<td>System management</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Ethernet controller</td>
<td>Two Gb</td>
<td>Two Gb</td>
</tr>
<tr>
<td>CD-R/CD-RW DVD drive</td>
<td>8x-24x</td>
<td>8x-24x</td>
</tr>
<tr>
<td>Power supply</td>
<td>835 W</td>
<td>835 W</td>
</tr>
<tr>
<td>Number standard</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maxi mum</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hot-swap</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Redundant power  Yes  Yes
Auto restart  Yes  Yes

(9) The system can hold eight 2.5-inch HS HDDs plus an internal tape drive. Capacities are based on installation of eight 146 GB slim high, SAS HDDs.

(10) The system can hold six 3.5-inch HS HDDs. Capacities are based on installation of six 300 GB slim high, SAS HDDs.

(11) PCI-E is standard feature for PCI or you may replace with PCI Riser Card PCI-X Option for PCI/PCI-X 133 MHz/100 MHz 64-bit, or 66/33 MHz/32 bit slots

For latest information on supported HDD options, refer to the Sales Manual or visit


(12) When referring to HDD or tape backup capacity, GB stands for one billion bytes. TB is 1,000,000,000,000 bytes. Total user capacity may vary depending on operating environments.

(13) Maximum of 48 GB by using twelve 4 GB DIMMs.

8x-24x\textsuperscript{14} CD-RW/DVD-ROM drive characteristics

- Formatted capacity: 650 MB
- Average access time: 120 ms
- Burst data transfer rate — 16.6 MB/s (ATA PIO Mode 4)
- Technology: Full constant angular velocity (CAV)
- Buffer size: 2 MB

\textsuperscript{14} 8x-24x CD-ROM variable read rate. Actual playback speed will vary and is often less than the maximum possible.

Video subsystem

- ATI RN50 video controller
- 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 230 MHz RAMDAC
- Display Data Channel Bi-Directional (DDC2B) monitor communications support

Supported video mode capabilities for the SVGA PCI controller:

\textbf{Microsoft\textsuperscript{TM} Windows\textsuperscript{TM} 2000 and Windows 2003}

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

Notes
• The maximum resolution of the local monitor is limited to 1024 x 768 by the remote video capability of RSA-II SlimLine.

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

Dimensions

• 2 U Rack Drawer
  – Width: 443.6 mm (17.5 in)
  – Depth: 698.0 mm (27.5 in)
  – Height: 85.4 mm (3.36 in)

• Rack:
  – Weight: (minimum configuration) 21.1 kg (46.5 lb)
  – Weight: (maximum configuration) 29.6 kg (65 lb)

Electrical

• 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 10 A
• 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 5 A
• Input kilovolt-amperes (kVA) (approximately): 1 kVA
  – Minimum configuration: 0.325 kVA
  – Maximum configuration: 1 kVA

• Btu output:
  – Ship configuration: 1108 Btu/hr (325 watts)
  – Full configuration: 3308 Btu/hr (970 watts)
• Noise level (horizontal position): 6.8 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.

Japan

Energy Value Tables — x3650

<table>
<thead>
<tr>
<th>Machine type/model</th>
<th>7979- C4x</th>
<th>7979- CDx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2005</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td>Category 2007</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td>Power Consumption (watts)</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td>CTP (MIPS)</td>
<td>90762.0</td>
<td>90762.0</td>
</tr>
<tr>
<td>Energy Consumption Efficiency</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td>Input (Hz) Frequency</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

x3650 Configuration Idling with Windows 2006

CPU 1 CPU - - Xeon
PSU 1 standard
HDD 2 x 36 GB, 15K rpm
DVD-ROM 1 standard
RAM 12 x 2 GB DIMMs

x3650 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:

- Multiprocessor Specification (MPS) 1.4
- Peripheral Component Interconnect (PCI) specification 2.3
- PCI-X specification V1.0a
- Hardware-enabled to meet the International Organization for Standardization (ISO) 9241, Part 3

Equipment approvals and safety

- Japan VCCI, Class A
- IEC-60950-1 (CB Certificate and CB Test Report)
- Australia/New Zealand C-Tick Mark CISPR 22, Class A
- BSMI — Taiwan CNS 13438 (Class A), Taiwan CNS 14336 (Pending)

- Width: 443.6 mm (17.5 in)
- Depth: 698.0 mm (27.5 in)
- Height: 85.4 mm (3.36 in)
- Weight:
  - (minimum configuration) 21.1 kg (46.5 lb)
  - (maximum configuration) 29.6 kg (65 lb)

To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

Operating environment

- Temperature: — Server on
  - 10.0° to 35.0°C (50° to 95°F) at 0 to 914.4 m (0 to 3,000 ft)
  - Decrease system temperature by 0.75°C for every 1000 feet increase in altitude.
- Temperature: — Server off — 10° to 43°C (50.0° to 109.4°F)
- Temperature: — Shipment: -40° to 60°C (-40° to 140°F)
- Relative humidity: 8% to 80%
- Maximum altitude: 2,133 m (7,000 ft)

Systems

- Product Category (2005): Exempt
- Product Category (2007): Exempt
- Computer Energy Consumption Efficiency — 2005 (Watts/MTOPS): NA
  - 7979-C4x — NA
  - 7979-CDx — NA
  - 7979-C4x — NA
  - 7979-CDx — NA

OEM disk drives

- Product Category (2005): NA-Exempt
Hardware requirements: For attended installation of an operating system, this server requires a compatible:

- Keyboard
- Mouse
- HDD
- Display (E51, E54, P76, G78, LCD, 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, P76, 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 on the x3650 server:

- Microsoft®
  - Windows Server 2003, Enterprise Edition
  - Windows Server 2003, Enterprise x64 Edition
  - Windows Server 2003, Standard Edition
  - Windows Server 2003, Standard x64 Edition
  - Windows Server 2003 R2 Enterprise Edition
  - Windows Server 2003 R2 Enterprise x64 Edition
  - Windows Server 2003 R2 Standard Edition
  - Windows Server 2003 R2 Standard x64 Edition
  - Windows 2000 Advanced Server
  - Windows 2000 Server
- Novell — NetWare 6.5
- Linux™
  - SUSE Linux Enterprise Server 9
  - Red Hat Enterprise Linux 4AS
  - Red Hat Enterprise Linux 4ES
  - Red Hat Enterprise Linux 4.0 for AMD64 and Intel® EM64T

Note: Certification is planned for all supported operating systems.

Note: For information on additional support, certification, and versions, visit http://www.ibm.com/servers/eserver/serverproven/compat/us/

The following network operating systems are supported as preloads in the System x3650 server:
• SUSE Linux Enterprise Server 9
• Red Hat Enterprise Linux ES 4 AS
• Red Hat Enterprise Linux ES 4

Compatibility: The x3650 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 x3650 and to maintain compatibility with many current software programs.

Contact your IBM representative, IBM Business Partner, or refer to the IBM Sales Manual for information on the compatibility of hardware and software for System servers. The Sales Manual is updated periodically as new features and options are announced that support these servers.

Limitations

• The x3650 server supports a maximum of 48 GB of system memory by adding a 4 GB Advance Memory Features DIMM in each of the twelve DIMM slots. All supported system memory is addressable through direct memory access. The server supports 512 MB, 1 GB, 2 GB, and 4 GB PC2-5300 Advanced Memory Features DIMMs. DIMMs must be installed in matched pairs. Refer to the Planning information section for supported memory options.

• Microprocessor upgrades must be of the same type and clock speed. 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 cannot be used with the server.

Refer to the Software requirements section for operating system limitations.

User group requirements: This announcement satisfies or partially satisfies the 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: The System x3650 server is designated as customer setup. Customer setup instructions are shipped with each system.

Configuration Information

Integrated RAID one Configuration

There are two manufacturing instructions (MI) available to allow the customer to setup a RAID one (1) configuration. These instructions enable configuration via Odyssey (ibm.com).

The two instructions are:

• Integrated Mirroring — Two HDDs required via Instruction 01R1356
• Integrated Mirroring with HotSpare — Three HDDs required via Instruction 01R1357

Bay Configuration

The x3650 server 3.5-inch HDDs models contain seven bays. The lower left bay on the system contains the slim-high CD-RW/DVD-ROM drive. Six slim-high, hot-swap bays at right on the server are ready for various supported hot-swap HDD drive options installation.

The x3650 server 2.5-inch HDDs models contain ten bays. The lower left bay on the system contains the slim-high CD-RW/DVD-ROM drive. One tape drive bay, eight hot-swap bays on the server are ready for various supported hot-swap HDD drive options installation.

The 8x-24x CD-R/CD-RW DVD drive is connected to the IDE port through an interposer card.

Cabling — Standard Non-RAID Configurations

The System x3650 server contains a DASD backplane supporting hot-swap, SAS compliant drive bays. The backplane is connected to the one internal connector of the integrated SAS.
SCSI controller through a cable. One external SAS connector is for external use.

**Rack installations**

System x3650 server 2 U rack-drawer models are designed to be installed in a 19-inch rack cabinet designed for 28-inch deep devices, such as the NetBAY42U ER and NetBAY42U SR. Installation into some of the older Netfinity® racks (9306900, 9306910, 9306200) requires a rack extension kit.

If a System x3650 is mounted in a non-IBM rack, the rack must satisfy the following specifications:

- The rack must meet EIA-310-D standards for mounting flanges and hole locations.
- The front to rear distance of the mounting flanges must be between 698.5 mm and 762 mm (27.5 and 30 inches).
- The thickness of the mounting flanges must be between 1.9-3.3 mm.
- The mounting flanges must have either 7.1-mm (.28-inch) diameter holes or 9.6-mm (.38-inch) square holes on the standard EIA hole spacing.
- The rack must have a minimum depth of 70 mm (2.7 inch) between the front mounting flange and inside of the front door for appropriate cooling.
- The rack must have a minimum depth of 157 mm (6.2 inch) between the rear mounting flange and inside of the rear door to install the server and make space for cable management.
- The minimum side-to-side clearance in the rack between the front and rear mounting flanges must be 467 mm (18.2 inch) to accommodate the width of the server and the slide mounting brackets.
- The minimum side-to-side clearance in the rack between each door and the mounting flanges must be 484 mm (19.1 inch) to accommodate the slide mounting brackets.
- The rack must 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 must be able to support the maximum rack configuration, including all servers, external cables, and PDUs.
- The rack must provide proper stabilization so that the rack does not become unstable when servers are pulled out for service.

**Processor upgrade options**

- Quad-core Intel Xeon Processor X5365 3.00 GHz/1333 MHz FSB 2 x 4 MB (8 MB) L2 Cache — 44E5033

**Supported memory options**

The following memory options are supported:

- IBM 1GB PC2-5300 AMF — (39M5782) (2 x 512 MB AMF)
- IBM 2GB PC2-5300 AMF — (39M5785) (2 x 1 GB AMF)
- IBM 4GB PC2-5300 AMF — (39M5791) (2 x 2 GB AMF)
- IBM 8GB PC2-5300 AMF — (39M5797) (2 x 4 GB AMF)

**Power considerations**

The System x3650 server includes a standard 835-watt, hot-swap power supply. This power supply supplies sufficient power to run the server. A System x3650 835-watt, hot-swap power supply upgrade is optionally available to support redundancy.

**Cable orders:** Two 10/100/1000 Mbps, full-duplex Ethernet PCI controllers, standard with the System x3650 server, are connected directly to an independent RJ-45 connector. The RJ-45 connector provides a 10BaseT, 100Base-TX, and 1000Base-TX interface for connecting twisted-pair cable to the Ethernet network. Cabling is not included with the server. To connect the Ethernet controller to a repeater or switch, use an unshielded twisted pair (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 x3650 server 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**

<table>
<thead>
<tr>
<th>Product</th>
<th>Package description</th>
<th>Boxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>System x3650</td>
<td>System unit carton</td>
<td>1</td>
</tr>
<tr>
<td>Contents:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System x3650 server</td>
<td>System unit carton</td>
<td>1</td>
</tr>
<tr>
<td>Contents:</td>
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<td></td>
</tr>
<tr>
<td>System unit power cord</td>
<td>(1)</td>
<td></td>
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<tr>
<td>PDU style power cord</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>System x3650 Installation Guide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety booklet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ServerGuide and IBM Director CD-ROM package</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media mounting kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On/off switch cover</td>
<td>(1)</td>
<td></td>
</tr>
</tbody>
</table>

The System x3650 server system is shipped as a single package. Other items are in zipped bags or boxes.

**Power supply upgrade option**

- xSeries 835-watt, hot-swap power supply
- Five fans
- C13/14 rack jumper cord
- Safety instructions/warranty

**Supplies: For end users:** IBM System x3650 can be purchased through dealers around the world.

**Security, auditability, and control**

Security and auditability features include:

- Power-on and privileged access password functions control access to the data and server setup program on the server.
- 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.
- Selectable boot sequence can be used to prevent unauthorized installation of software or removal of data from the diskette drive.

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 facilities.

**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

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

Warranty period

- Systems — Three year
- Options — One year

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 below 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, and additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country and location specific information.

Customer replaceable unit (CRU) (for example, keyboard, mouse, speaker, memory, hard disk drive) 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 below, on-site service.

Based upon availability, a CRU will be shipped for next business day (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, (1) return instructions and a container are shipped with the replacement CRU, and (2) 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 have been designated as a Tier 1 CRU:

- Battery
- Blank filler
- Cable management arm
On-site service: On-site repair, 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.

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

The warranty service type, for example, on-site repair and CRU, and service level, 9x5 NBD and 24x7, provided in the servicing country 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 servicing 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 where service is available, visit http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/warrantyform?brandind=5000008

For more information on IWS, refer to Services Announcement AA01-3100, dated September 28, 2001.

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

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

For all local charges contact your IBM representative.

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