

IBM System x3550 servers feature a new Intel quad-core processor -- Application density for power-managed datacenters

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At a glance



Power, scalability, control, and serviceability for dynamic Web-serving and On Demand Business applications:

- Ultrathin, high-availability, rack-optimized, 1U platform
- Powerful Intel® Xeon® X5470 quad-core processor with 1333 MHz front side bus (FSB) and Intel Extended Memory 64 Technology (EM64T)
- 2 GB (2 x 1 GB) of high-speed PC2-5300 667 MHz ECC Chipkill™ DDR2 FBDIMM memory; eight DIMM slots that support up to 32 GB
- Support for hot-swap SAS, simple-swap SATA, and hot-swap SATA HDDs
- Choice of open bay HDD configurations:
 - Two 3.5-inch HS SAS/SATA or simple-swap SATA
 - Four 2.5-inch hot-swap SAS
- Two PCI-Express x8 slots (full height, half length); one slot convertible to PCI-X via riser card option 64-bit/133 MHz (full height, half length)
- Optional support for PCI-X adapters
- 670-watt, auto-ranging power supply
- Integrated systems management processor
- Integrated dual Gigabit Ethernet
- One serial port (16550A-compatible), two USB ports, and two video ports (front and rear)

Overview

New models of the System x3550 feature a new Intel quad-core processor.

This highly manageable, ultrathin, 1U-high, rack-optimized server features ultimate application density for power-managed datacenters.

Optimized for speed

Apply powerful processors, large amounts of high-performing memory, and high-bandwidth PCI buses to datacenter applications:

- 3.33 GHz¹ Intel Xeon quad-core processor (120W) with 1333 MHz FSB and 12 MB advanced transfer L2 cache
- 2.66 GHz Intel Xeon quad-core processor (50W) with 1333 MHz FSB and 12 MB advanced transfer L2 cache
- 3.33 GHz Intel Xeon dual-core processor (80W) with 1333 MHz FSB and 6 MB advanced transfer L2 cache
- Eight DIMM slots that enable you to deploy up to 32 GB of PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM memory, with 2 GB (2 x 1 GB) of memory standard
- Integrated SAS and SATA HDDs with RAID support
- Support for hot-swap SAS, simple-swap SATA, and hot-swap SATA HDDs
- Dual Gigabit Ethernet controllers for high I/O capacity, plus failover capability
- Highly functional chipset optimized for better application computing

Manage with efficiency

High availability, manageability, and serviceability features help diagnose problems quickly, even from remote locations:

- IBM® Active Energy Manager for advanced datacenter power notification and management to help achieve lower heat output and reduced cooling needs
- TCP Offload Engine (TOE) standard for optimized system performance by offloading protocol processing
- Snoop filters to boost processor performance
- Integrated SAS controller supporting up to four channels with RAID-0, 1, 10 on 3.5 inch and 2.5 inch hot-swap HDD models and optional RAID 5 on 2.5 inch hot-swap HDD models, helping to safeguard your data at no additional cost
- RAID support for simple-swap SATA models via HostRAID (integrated firmware support) and software drivers for Microsoft® Windows® and Linux® operating systems
- Memory mirroring and spare memory, configurable using BIOS setup
- Integrated systems management processor
- Monitoring and control of operating status and key server components
- Predictive Failure Analysis® (PFA) on selected components that warns of problems before they occur
- Fast and easy servicing: Innovative light path diagnostics, improved onboard diagnostics, and LED diagnostic panel
- Optional Remote Supervisor Adapter II Slimline card for full, out-of-band systems management

Ultimate fault tolerant protection

- Hot-swap, redundant fans with calibrated vectored cooling, to keep components cool, and simplified fan replacement
- Optional hot-swap, redundant power supplies to help reduce downtime
- High-performance hot-swap SAS HDDs
- ServerGuide™², IBM Director, and Web support
- Three-year, customer replaceable unit (CRU) and on-site labor³, limited warranty⁴; optional warranty service upgrades available

¹ GHz and MHz denote the internal and/or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.

² 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.

³ You may be asked certain diagnostic questions before a technician is sent.

⁴ For information on IBM's Statement of Limited Warranty, contact your IBM representative or reseller. Copies are available upon request.

Key prerequisites

- Monitor
- USB keyboard
- USB mouse
- EIA-310D compatible rack

Note: PS/2 style keyboard and mouse are not supported.

Planned availability date

November 7, 2008

Description

System x3550-related options

The System x3550 server features an Intel Xeon dual- or quad-core processor that supports internal processing speeds of up to 3.33 GHz, and processing operations to memory and the PCI bus at 133 MHz. They contain an integrated, full-speed 12 MB ECC L2 cache.

High-performance server subsystems

These servers are high-throughput, network servers with excellent scalability when you add memory and a second processor. Data transfer across the system bus is at a 4X rate (four data transfers per clock) for an effective data transfer rate of up to 1333 MHz.

Two Intel Xeon connectors are standard on the system board to support installation of a second processor. High-speed PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM memory is optimized for 667 MHz processor-to-memory subsystem performance.

Standard System x3550 configurations

Model	Processor	Memory	FSB MHz	HDD Interface	HDD	Other
7978-82x	3.33 GHz	2 GB	1333	SAS/SATA	3.5-in	Open bay
	L2 Cache: 12 MB					hot-swap
7978-8Bx	3.33 GHz	2 GB	1333	SFF SAS	2.5-in	Open bay
	L2 Cache: 12 MB					hot-swap

Note: All models contain a CD-RW/DVD Combo drive.

Additional features

- System board contains eight DIMM connectors, supporting 512 MB, 1 GB, 2 GB, or 4 GB PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM memory, with:
 - Support for up to 32 GB of system memory
 - Interleaved memory populated with two DIMMs at a time with the same size DIMM
 - Support for mixed memory sizes in pairs
 - Support for Chipkill memory
- Four-channel, 64-bit SAS controller
- IDE controller supporting 12.7-mm (0.5-inch) CD-RW/DVD Combo V drive
- SATA drive support that employs high-speed (up to 1.5 Gbps) dual differential pairs to communicate with simple-swap SATA HDDs
- Two full-duplex Broadcom 5708 Gigabit Ethernet PCI controllers speeding network communications to LAN clients

The System x3550 subsystems are tuned to provide solid system throughput from processor, to memory, to bus, to disk-intensive I/O. These features combined with multicore capability make this server an excellent choice for:

- Database
- E-mail collaboration
- Linux clusters
- File/print
- Virtualization

High-availability and serviceability features

The System x3550 server subsystem delivers excellent reliability and serviceability features:

- Two 3.5-inch or four 2.5-inch hot-swap SAS HDD bays (hot-swap models)
- Hot-swap, redundant cooling fans
- Optional hot-swap, redundant power supplies
- ECC DIMMs combined with an integrated ECC memory controller correcting many soft and hard single-bit memory errors, while minimizing disruption of service to LAN clients
- Chipkill memory to detect and correct many multibit memory errors, helping keep the server up and running, while taking the inoperative memory offline
- ECC L2 cache processors to improve data integrity and help reduce downtime
- PFA on HDD options, memory, processors, VRDs, and fans, to help alert the system administrator of an imminent component failure
- Dual Broadcom 5708 Gigabit Ethernet controllers that support:
 - Failover, Adapter Fault Tolerance (AFT)
 - PXE 2.0 Boot Agent
 - IPMI 2.0 (Microsoft Windows only)
 - Wake on LAN®
 - Load balancing or teaming
 - TOE
- Worldwide, voltage-sensing 670-watt power supply with auto restart
- Up to six sets (two fans per set) of counter-rotating fans that provide excellent cooling for added reliability:
 - Each power supply comes with its own internal cooling fans.
 - Five fan sets cool a single processor, memory, and HDD bays.
 - Sixth fan set is included with second CPU option.
 - Fan speed controls are incorporated to reduce noise, while reducing system temperatures.

- Integrated systems management processor for diagnostic, reset, POST, and auto recovery functions; monitoring temperature, voltage, and fan speed; alerts generated when thresholds are exceeded (refer to the [Limitations](#) section for restrictions)
- Information LED panel giving visual indications of system well-being
- Light path diagnostics and onboard diagnostics providing an error log that can help find a failing component, helping reduce downtime and service costs
- Easy access to system board, adapter cards, processor, and memory
- CPU failure recovery in dual-socket configurations:
 - Forces failed processor offline
 - Automatically reboots server
 - Generates alerts
 - Continues operations with the working processor

Expandability and growth

The System x3550 server contains high levels of function and storage capacity for a 1U, 19-inch rack-drawer package. It supports customer installation of adapters, processors, memory, and HDD options. Functions such as SVGA video, SAS, and two Gigabit Ethernet controllers are integrated on the system board. Features include:

- Rack-optimized design for 19-inch wide, industry-standard rack cabinets supported in the NetBAY42 and NetBAY25
- Eight DIMM connectors capable of support for up to 32 GB of system memory
- Choice of:
 - Two 3.5-inch slim-high, hot-swap SAS HDD bays
 - Four 2.5-inch slim-high, hot-swap SAS bays
 - Two simple-swap SATA HDD bays
- Internal data storage up to:
 - 1.5 TB (using two 750 GB SATA 3.5-inch HDDs)
 - 594 GB (using four 146 GB SAS 2.5-inch HDDs)
- 12.7-mm (0.5-inch) CD-RW/DVD Combo V drive
- ATI RN50 controller with 16 MB of video memory

Systems management

Integrated baseboard management controller (BMC)

The System x3550 includes an integrated BMC 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, for example). The BMC is implemented using industry-leading OSA firmware and applications in conjunction with the integrated BMC.

Features and benefits:

- Monitoring:
 - System voltages
 - Battery voltage
 - System temperatures
- Fan speed control
- Fan tachometer monitor
- Good Power signal monitor
- System ID and planar version detection
- System power and reset control
- NMI detection (system interrupts)

- SMI detection and generation (system interrupts)
- Serial port text console redirection
- System LED control (power, HDD, activity, alerts, and heartbeat)

In addition, you can purchase an optional Remote Supervisor Adapter (RSA) II Slimline for additional systems management function.

The RSA II Slimline adds accelerated graphics and delivers advanced control and monitoring features to enable management of your System x™ server (select models) at virtually any time, from virtually any place on the network. You can add this card to the server through a connector that connects to the planar or through a riser for selected models. This adapter enables easy console redirection with text and graphics, keyboard, and mouse support (operating system must support USB) over the system management LAN connections.

With video compression now built into the adapter hardware, the adapter allows the greater screen sizes and refresh rates that are usually in the marketplace. This feature helps enable 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 gives you remote control from any standard Web browser. No additional software is required on the remote administrator's workstation. For users who are accustomed to a command-line interface (CLI), the administrator can also use the CLI from a Telnet session to perform some of the functions that can be performed from the Web server. The RSA II Slimline enables 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, VRDs, memory, fans, power supplies, and power backplanes (where supported by the system).
- Video compression hardware is built in, thus eliminating drivers.
- Faster graphics support makes monitoring and control more efficient.
- Virtual CD and diskette enable you to configure and diagnose a server remotely without a visit from your IT staff.
- RSA II Slimline supports Secure Socket Layer (SSL) and Lightweight Directory Access Protocol (LDAP).
- It 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, and SNMP.
- It can be installed 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 except for the following features:

- Reset button is not accessible from the back of the system.
- Mini USB cable is no longer required; it uses an internal USB bus. The system has a designated systems management Ethernet port, activated only when RSA II Slimline is installed.
- External ac adapter is not required; it uses standby power from system power supplies.
- Status LEDs are not viewable externally.
- The RSA II Slimline no longer supports the RSA II interconnect function.

IBM Director

The System x3550 server also features IBM Director, a powerful, highly integrated, systems-management software solution built on industry standards and designed for ease of use. Exploit your existing enterprise or workgroup-management environments, and use rich security to access and manage physically dispersed IT assets more efficiently over the Internet. It can help reduce costs through potentially:

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

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

IBM Director includes a portfolio of integrated server tools that work with the RSA or other systems management monitoring functions. Typical functions and monitoring capabilities can include:

- PFA-enabled critical hardware components
- Temperature
- Voltage
- Fan speed
- Light path diagnostics

IT administrators have comprehensive, virtual on-site control of System x servers with the ability to remotely:

- Access the server, often regardless of its status
- Inventory and display detailed system and component information
- View server bootup during POST
- Browse and delete logs of events and errors
- Reset or power cycle the server
- Monitor and set thresholds on server health including:
 - Operating system load
 - POST time-out
 - Voltage
 - Temperature
- Set proactive alerts for critical server events including PFA on:
 - Processors
 - VRDs
 - Memory
 - Fans
 - Power supplies
 - HDDs
- 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 IBM Director console
- Flash BIOS
- Monitor and graph the use of server resources, such as:
 - Memory
 - Processor
 - HDDs
- Identify potential performance bottlenecks and react to prevent downtime

IBM Director Agent integrates into leading workgroup and enterprise systems management environments via upward integration modules (available from IBM and third parties). Advanced management capabilities built into System x servers are available through:

- Tivoli® Enterprise and Tivoli NetView®

- Computer Associates Unicenter TNG
- HP OpenView
- Microsoft SMS
- BMC Patrol
- NetIQ

World-class support tools and programs

The System x3550 server includes a number of tools and programs designed to make ownership a positive experience. From the start, IBM programs help you purchase servers, get them running, and keep them running over the long haul. IBM can help your company maintain ownership of technology leadership network servers.

- IBM 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 Predicted Failure Analysis (PFA).
- The ServerProven⁵ program lets you confidently configure your server with various devices and operating systems. This program provides compatibility information from actual testing of the System x3550 server with various adapters and devices.
- The ServerGuide CD library includes online publications, in addition to utilities and drivers that enable assisted loading of popular network operating systems.
- Electronic support on the Web provides additional support in an easy-to-use format.

⁵IBM makes no warranties, expressed or implied, regarding non-IBM products and services that are ServerProven®, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

Product positioning

The new System x3550 servers are a part of the System x rack-optimized server line. These two-socket servers deliver Intel Xeon dual- and quad-core power and excellent server function in an ultra-thin, rack-optimized, 1U footprint.

Optimized for speed

The new System x3550 server offers new levels of fast Intel Xeon dual- and quad-core processors with up to 1333 MHz FSB and lower power for datacenter environments and collaboration applications. This server is uniquely optimized for better application computing with a highly functional chipset and eight DIMM slots for a maximum of 32 GB of fully buffered DDR2 PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM memory.

Innovation comes standard

- Boost application efficiency with snoop filters that free up cache and improve processor performance.
- Supercharged TOE optimizes system performance by offloading protocol processing.
- A drop-down light path diagnostics panel improves in-rack manageability and allows easy problem identification.

Ultimate fault tolerant protection

- Memory mirroring and hot-spare memory features enable you to increase memory reliability.
- Integrated single channel SAS controller with RAID-0, -1, and -10 on SAS models helps safeguard your data at no additional cost.
- RAID support for simple-swap SATA models is accomplished via HostRAID (integrated firmware support) and software drivers for Windows and Linux operating systems.

Target applications

- Database
- E-mail collaboration
- File/print
- Virtualization
- Linux clustering
- Scientific and technical computing

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

Product number

New product structure

Note: All xSeries® models are GAV, except some AP models (as indicated).

Description	Machine	Models	Part number
GAV Models			
IBM System x3550	7978	82V	797882V
	7978	82A	797882A
	7978	82B	797882B
	7978	82M	797882M
	7978	82K	797882K
	7978	82R	797882R
IBM System x3550	7978	8BV	79788BV
	7978	8BA	79788BA
	7978	8BB	79788BB
	7978	8BM	79788BM
	7978	8BK	79788BK
	7978	8BR	79788BR

xxV = Taiwan
xxB = Hong Kong
xxA = Taiwan, Thailand, Phillipines
Hong Kong, Singapore, Brunei,
Malaysia, Myanmar(Burma)
Vietnam, Indonesia, Laos,
Cambodia
xxM = Australia, New Zealand
xxK = Korea
xxR = Korea

MTM Models - Order by Part Number

Note:

xxJ = Japan
xxE = Japan
xxC = PCR
xxN = PCR
xxQ = India, Nepal, Sri Lanka

Description	Machine	Models	Part number
IBM System x3550	7978	82J	797882J
	7978	82E	797882E
	7978	82C	797882C
	7978	82N	797882N
	7978	82Q	797882Q
IBM System x3550	7978	8BJ	79788BJ
	7978	8BE	79788BE
	7978	8BC	79788BC

7978	8BN	79788BN
7978	8BQ	79788BQ

Description	Part Number
Quad-Core Intel Xeon Processor X5470 3.33 GHz/1333 MHz (120W)	46M1031
Quad-Core Intel Xeon Processor L5430 2.66 GHz/1333 MHz (50W)	46M1068
Dual-Core Intel Xeon Processor X5260 3.33 GHz/1333 MHz (80W)	44E5162

Publications

The following publications and CD-ROMs are shipped with the System x3550 server.

- *System x3550 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 illustrations to enable you to quickly set up your System x3550 server.
- *Documentation/User's Guide CD* contains translated versions of the product user's guide.
- *ServerGuide* contains online publications and drivers to support the System x3550 server. In addition, it includes a set of easy-to-use utilities to help you install the system using CDs of several popular network operating systems.
- IBM Director systems management software is included.

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

The *System x3550 Installation Guide* and *Problem Determination and Service Guide (PDSG)*, in U.S. English versions, are available from

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

Under Product Support, select System x, and under Popular links, select Publications lookup. Select the Product family and click on continue.

Services

Global Technology Services

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

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

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

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

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

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

For details on education offerings related to specific products, visit

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

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

Technical information

Specified operating environment

Physical specifications

	7978-82x	7978-8Bx
Processor	Xeon X5470 (120W)	Xeon X5470 (120W)
Quad-core	Yes	Yes
Internal speed	3.33 GHz	3.33 GHz
External speed	1333 MHz	1333 MHz
Number standard	1	1
Maximum	2	2
L2 cache(full speed)	12 MB	12 MB
Memory(667 MHz SDRAM)	2 GB ECC	2 GB ECC
RDIMMs	2 x 1 GB	2 x 1 GB
DIMM sockets	8	8
Address capability	32 GB	32 GB
Video	SVGA	SVGA
Memory	16 MB	16 MB
HDD controller	SAS/SATA	SAS
Channels	2	4
Connector internal	2	4
Connector external	0	0
HDD	Open bay 3.5-in	Open bay 2.5-in
Total drive bays	2	4
3.5-in slim	2	0
2.5-in slim	0	4
Hot-swap	2	4
Internal capacity	1.5 TB ⁶	594 GB ⁶
Bays available	2	4
5.25/3.5-in slim	0	0
3.5-in slim	2	0
2.5-in slim	0	4
Hot-swap	2	4
Total slots	2 ⁷	2 ⁷
PCI	2	2
x8 PCI-E slot	1	1
64bit 133 MHz-PCI-X / -E slot	1	1
Slots available	2	2
Management proc.	Standard	Standard
Ethernet controller	2x10/100/1k Mbps	2x10/100/1k Mbps
Optical (IDE)	CD-RW/DVD Combo	CD-RW/DVD Combo
Diskette drive	0	0
Power supply	670 W	670 W
Number standard	1	1
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes

⁶ Capacities are based on installation of two 3.5-in 750 GB HS SATA or four 146 GB 2.5-in HS SAS HDD's. For the latest information on supported HDD options, visit

<http://www-03.ibm.com/servers/eserver/serverproven/compat/us/>

⁷ Two PCI-Express x8 slots (full height, half length); one slot is convertible to PCI-X via riser card option 64-bit/133 MHz (full height, half length).

Video subsystem

- ATI RN50 graphics controller chip
- Integrated on planar and connected to the PCI bus
- Support for DDR1, DDR2 SDRAM, or SGRAM external memory

- 128-bit graphics engine with 8, 16, and 24 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 with a 200 MHz memory clock:

Microsoft windows 2000 or windows 2003 (32- and 64-bit) and
Linux (all distributions)

Resolution	Colors	Refresh Rate (Hz)
640 x 480 x 8	256	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 16	64K	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 32	16M	60, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 32	16M	60, 70, 72, 75, 85, 90, 100, 120, 160
1024 x 768 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 32	16M	60, 70, 72, 75, 85, 90, 100

Note: Some modes are not supported by all monitors.

Dimensions

- Width: 440 mm (17.3 in)
- Depth: 711 mm (28.0 in)
- Height: 43 mm (1.7 in)
- Weight:
 - Minimum configuration 12.7 kg (28 lb.)
 - Maximum configuration 15.6 kg (35.5 lb.)

Electrical

- 100 - 127 (nominal) V ac; 47 Hz or 63 Hz; 7.1 A
- 200 - 240 (nominal) V ac; 47 Hz or 63 Hz; 3.5 A
- Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: 0.24 kVA
 - Maximum configuration: 0.70 kVA
- Btu output:
 - Minimum configuration: 819 Btu/hr (240 watts)
 - Maximum configuration: 2390 Btu/hr (700 watts)
- Acoustical noise level emission level: Sound power levels
 - 6.9 bels (idling)
 - 6.9 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.

System x3550 servers are intended for use as rack-drawer servers and are tested and designed to operate in a horizontal position.

Standards

These systems support or comply with the following standards:

- Multi Processor Specification (MPS) 1.4
- 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-950 (CB Certificate and CB Test Report)
- BSMI - Taiwan CNS 13438 (Class A), Taiwan CNS 14336 (Pending)
- CCC - China GB 17625.1:2003, China GB 4943:1995, China GB 9254:1998 (Class A) (Pending)

Operating environment

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

Japan energy saving standard

Energy value tables - x3550

Machine Type/Model	7978-82x	7978-8Bx
Category 2005	Exempt	Exempt
Category 2007	Exempt	Exempt
Power Consumption (watts)	Exempt	Exempt
CTP (MTOPS)	100522	100522
Energy Consumption Efficiency	Exempt	Exempt
Input (Hz) Frequency	60	60

- Product Category (2007):
 - 7978- 82x, 8Bx - Exempt
- Computer Energy Consumption Efficiency - 2005 (Watts/MTOPS):
 - 7978- 82x, 8Bx - Exempt
- Computer Energy Consumption Efficiency - 2007 (Watts/MTOPS):
 - 7978- 82x, 8Bx - Exempt

Hardware requirements

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

- USB keyboard
- USB mouse
- HDD

- Display

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

For service, the server requires a compatible:

- USB keyboard
- USB mouse
- HDD
- Display

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

Software requirements

The following software products have been tested by IBM and software publishers in the latest available versions, and where appropriate, are or will soon be certified by the publisher to be compatible with the System x3550.

Operating systems

- Microsoft
 - Windows Server 2003, Web Edition)
 - Windows Server 2003, R2 Standard Edition
 - Windows Server 2003, R2 Enterprise Edition
 - Windows Small Business Server R2 Standard Edition
 - Windows Small Business Server R2 Premium Edition
- Linux
 - Red Hat Enterprise Linux 4 AS for x86*
 - Red Hat Enterprise Linux 4 ES for x86*
 - Red Hat Enterprise Linux 4 for AMD64 and Intel EM64T*
 - SUSE Linux Enterprise Server 10 for x86*
 - SUSE Linux Enterprise Server 10 for AMD64 and EM64T*

* Support and certification is planned for these operating systems.

The following software is supported as preloads:

- Windows Server 2003 R2 Standard Edition
- Windows Server 2003 R2 Enterprise Edition
- Windows Server 2003 R2 Standard x64 Edition
- Windows Server 2003 R2 Enterprise x64 Edition
- Red Hat Enterprise Linux AS 4 Standard**
- Red Hat Enterprise Linux ES 4 Standard**
- Red Hat Enterprise Linux WS 4 Standard**
- SUSE Linux Enterprise Server 9**

** Drop in box

Note: For information on additional support, certification, version information, or network operating systems, visit

<http://www-03.ibm.com/servers/eserver/serverproven/compat/us/>

Compatibility

The System x3550 server contains 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 System x3550 server and to maintain compatibility with many current software programs.

For detailed information about IBM and non-IBM devices, adapters, software, and network operating systems supported with xSeries servers, visit

<http://www-03.ibm.com/servers/eserver/serverproven/compat/us/>

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

Limitations

- The System x3550 server contains a single, configurable serial port. It can be configured to be operating-system-controlled, service-processor-controlled, or shared between the two. You can set the configuration by changing the header location to where the internal serial cable is plugged. The default location from the factory is in the shared position. In the shared position, the service processor controls the port until the operating system is running, then the operating system takes control. The service processor can regain control of the port for user-configured dial-out situations or if the operating system is not available, but operating system control cannot be reestablished without resetting the server.
- System x3550 servers can address a maximum of 32 GB of system memory when you add a 4 GB PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM in each of the eight DIMM slots. All supported system memory is addressable through direct memory access. The System x3550 server supports 512 MB, 1 GB, 2 GB, and 4 GB PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM memory. All supported DIMMs can coexist in the same system. Memory must be populated in pairs. Refer to the [Planning information](#) section for supported memory options.
- To ensure proper air flow for cooling, the System x3550 server requires a rack with a perforated door, such as the NetBAY42 SR or NetBAY25 SR. An alternative is to remove the front door of rack cabinets where the door panel is of solid construction.
- Microprocessor 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 that is shipped with the system, or a later version, to load software and drivers. Earlier versions of ServerGuide may not be compatible with the server.

Refer to the [Software requirements](#) section for operating system limitations.

Planning information

Customer responsibilities

System x3550 and related options

The System x3550 server and related options are designated as customer setup. Customer setup instructions are shipped with system and options.

Configuration information

Bay configuration

The System x3550 server supports up to two 3.5-in SAS HDDs in 3.5-in models and up to four 2.5-in SAS HDDs in 2.5-in models. All models come with a CD-RW/DVD Combo drive. All models are open bay models.

System x3550 hot-swap models contain a DASD backplane supporting up to four hot-swap, SAS compliant drive bays. The backplane is connected to the internal connector of the integrated SAS controller through a SAS cable.

Cabling - Standard non-RAID configurations

Additional cabling alternatives

Rack installations

System x3550 1U rack-drawer models are designed to be installed in a 19-inch rack cabinet designed for 711.1-mm (28-in) deep devices, such as the NetBAY42U ER and NetBAY42U SR. Installation into some of the older Netfinity® racks (9306900, 9306910, 9306200) will require a rack extension kit for proper cable bend radius and cooling.

If a System x3550 server 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 635 mm and 788 mm (25 and 31 in) if not using a cable management arm.
- The front to rear distance of the mounting flanges must be between 716 mm and 744 mm (28 and 29 in) if using a cable management arm.
- The thickness of the mounting flanges must be between 1.9 mm and 3.3 mm (0.08 and 0.13 in).
- The mounting flanges must have either 7.1-mm (0.28-in) diameter holes or 9.6-mm (0.38-in) square holes on the standard EIA hole spacing.
- The rack must have a minimum depth of 50 mm (1.97 in) between the front mounting flange and inside of the front door for appropriate cooling.
- The rack must have a minimum depth of 166 mm (6.53 in) between the rear mounting flange and inside of the rear door to install the server and provide cable management space.
- The minimum side-to-side clearance in the rack between the front and rear mounting flanges must be 467 mm (18.2 in) 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 in) 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, power distribution units, and so on.
- The rack must provide proper stabilization so that the rack does not become unstable when servers are pulled out for service.

Processor options

The System x3550 server is an Intel Xeon processor system that supports internal processing speeds of up to 3.33 GHz and processing operations to memory and the PCI bus at 133 MHz. It contains an integrated, full-speed 12 MB advanced transfer L2 cache. This dual-socket system supports a second processor with the same type, speed, and cache size of processor as the first.

Supported processor options

The following processor options are supported:

- Quad-Core Intel Xeon Processor X5470 46M1031

Supported memory options

The following memory options are supported:

- 1 GB (2 x 512 MB) PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM (39M5782)
- 2 GB (2 x 1 GB) PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM (39M5785)
- 4 GB (2 x 2 GB) PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM (39M5791)
- 8 GB (2 x 4 GB) PC2-5300 667 MHz ECC Chipkill DDR2 FBDIMM (39M5797)

Power considerations

The System x3550 server includes a standard 670-watt power supply. This power supply is capable of providing sufficient power to run the server fully configured with supported devices.

Cable orders

The dual 10/100/1000 Mbps, full-duplex, Ethernet PCI controllers, standard with the System x3550 server, are connected directly to independent RJ-45 connectors. The RJ-45 connectors provides a 10/100/1000 Base-T interface (either at half- or full-duplex) 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 Mbps, or higher, Category 5e, 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 x3550 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

One box

- System unit carton: System unit
- Country kit carton
 - System x3550 Installation Guide
 - Rack Installation Guide
 - ServerRAID Support Package
 - CD-ROM packages:
 - IBM Director CD
 - IBM ServeRAID™ Application CD
 - HostRAID2 CD
 - ServerGuide CD
 - Ethernet CD

The System x3550 server is shipped in a single package. The country kit carton is contained inside the top portion of the system unit carton.

Processor upgrade options

- Intel Xeon processor
- Safety instructions and warranty

Supplies

None

Security, auditability, and control

Security and auditability features include:

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

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

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

Warranty period

- Three years

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.

The following have been designated as consumables or supply items; therefore, not covered by this warranty:

- None

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

The type of service is Customer Replaceable Unit (for example, keyboard, mouse, speaker, memory, or hard disk drive) Service and On-site Service.

Customer Replaceable Unit (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, 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 have been 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

This provides 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 a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. On-site Service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where On-site Service is not available, the normal in-county service delivery is used.

International Warranty Service (IWS)

IWS is available in selected countries or regions.

The warranty service type and the service level 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.

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

Licensed machine code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative or visiting

http://www-304.ibm.com/servers/support/machine_warranties/machine_code.html

IBM may release changes to the Machine Code. IBM plans to make the Machine Code changes available for download from the IBM System x technical support Web site

<http://www-304.ibm.com/systems/support/>

If the machine does not function as warranted and your problem can be resolved through your application of downloadable Machine Code, you are responsible for downloading and installing these designated Machine Code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable Machine Code changes; however, you may be charged for that service.

Educational allowance

None

Pricing

For all local charges, contact your IBM representative.

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AP distribution

Country/Region	Announced
AP IOT	
ASEAN*	Yes
India/South Asia**	Yes
Australia	Yes
People's Republic of China	Yes
Hong Kong S.A.R of the PRC	Yes
Macao S.A.R of the PRC	Yes
Taiwan	Yes
Korea	Yes
New Zealand	Yes
Japan IOT	
Japan	Yes

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