

IBM System x3550 M2 servers feature new Intel Xeon 5500 Series processors with new, next-generation microarchitecture design featuring QuickPath Interconnect (QPI) technology and Turbo Boost technology

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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® 5500 Series dual- or quad-core processor with new microarchitecture design featuring Quick Path Interconnect (QPI) technology with Intel Extended Memory 64 Technology (EM64T)
- 2 GB, 4 GB, or 8 GB (optional) of high-speed DDR3 SDRAM Registered DIMM memory; sixteen DIMM slots that support up to 128 GB
- Support for hot-swap SAS/SATA HDDs
- Six 2.5-inch hot-swap HDD bays
- Two PCI-Express Gen 2 x16 slots (one full height, half length and one low profile); both slots convertible to PCI-X via riser card option 64-bit/133 MHz
- 675-watt, auto-ranging power supply (redundant power supply optional)
- Integrated systems management processor (Integrated Management Module, or IMM)
- Integrated dual GB Ethernet standard plus two optional on planar for scalable network communication
- One 16550A-compatible serial port (rear), four USB ports (two front and two rear), and two video ports (one front and one rear)

Overview

New models of the System x3550 M2 feature new Intel dual-core and quad-core processors.

This 1U-high, rack-optimized server features superior power-optimized performance and leadership virtualization and systems management for business-critical workloads built on IBM® X-Architecture®.

Optimized for energy efficiency and performance

Apply new, innovative energy-smart design with powerful high-performance processors, a large capacity of high-performing DDR3 memory, and a balanced feature set ideal for many general business applications:

- Powerful Processors:
 - Intel Xeon Processor E5504
 - Intel Xeon Processor E5520
 - Intel Xeon Processor L5520
 - Intel Xeon Processor E5530
 - Intel Xeon Processor L5530
 - Intel Xeon Processor E5540
 - Intel Xeon Processor X5550
 - Intel Xeon Processor X5570
- New energy-efficient design incorporating low 675 W and power supplies rated at up to 92% efficiency, twelve cooling fans (six banks of counter-rotating dual fans), altimeter (barometric pressure sensor), and energy-efficient planar components lower operational costs
- Highly functional chipset optimized for better application computing supporting general business workloads
- Sixteen DIMM slots that enable you to deploy up to 128 GB of DDR3 SDRAM Registered DIMM memory, with 2 GB, 4 GB, or 8 GB (optional) of memory (model dependent)
- SAS and SATA HDDs, and SSD with RAID support
- Integrated dual GB Ethernet standard plus two optional on planar for scalable network communication
- Embedded VMware ESXi 3.5 hypervisor (connector on motherboard) activated with optional 2 GB USB key for leadership virtualization

Manage with efficiency

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

- IBM Systems Director Active Energy Manager™ (AEM) for advanced power management, including real-time monitoring, trending, and reporting of power consumption
- Snoop filters to boost processor performance
- Integrated SAS controller supporting up to six 2.5-inch hot-swap HDD with RAID solutions
- IPMI 2.0-compliant full IMM for enterprise-class systems management to monitor, maintain, and maximize server availability, including full remote systems management
- Optional IBM Virtual Media Key to enable the remote presence and blue-screen capture features
- Predictive Failure Analysis® (PFA) on six selected components that helps warn of problems before they occur
- Fast and easy servicing through innovative light path diagnostics, improved onboard diagnostics, and LED diagnostic panel

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 and SATA HDDs and SSD
- ServerGuide™¹, IBM Director, and Web support
- Three-year, Customer Replaceable Unit (CRU) and on-site labor², limited warranty³; optional warranty service upgrades available

¹ 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.

² You may be asked certain diagnostic questions before a technician is sent.

³ 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

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

Planned availability date

October 9, 2009

Description

System x3550 M2-related options

The System x3550 M2 server features an Intel Xeon dual- or quad-core processor that supports internal processing speeds of up to 2.93 GHz, and processing operations to memory up to 1333 MHz. They contain integrated, full-speed 4 MB or 8 MB ECC L3 cache.

High-performance server subsystems

These servers are high-throughput, network servers with excellent scalability when you add memory and a second processor.

Two Intel Xeon connectors are standard on the system board to support installation of a second processor. High-speed DDR3 SDRAM Registered DIMM memory is optimized for 800 MHz, 1066 MHz, or 1333 MHz processor-to-memory subsystem performance.

Additional features

- System board containing sixteen DIMM connectors, supporting 1 GB, 2 GB, 4 GB, or 8 GB (optional) DDR3 SDRAM Registered DIMM memory, with:
 - Support for up to 128 GB of system memory
 - Support for Chipkill™ memory

- 64-bit SAS controller
- SATA controller supporting one 12.7-mm (0.5-inch) Multiburner optical drive (model dependant)
- SATA drive support that employs high-speed (up to 1.5 Gbps) dual differential pairs to communicate with simple-swap SATA HDDs
- Full-duplex Broadcom 5709 Dual Gigabit Ethernet PCIe controllers speeding network communications to LAN clients

The System x3550 M2 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 M2 server subsystem delivers excellent reliability and serviceability features:

- Six 2.5-inch hot-swap SAS/SATA/SSD HDD bays
- 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 processors, memory, HDD options, voltage regulator modules (VRM), power supplies, and fans, to help alert the system administrator of an imminent component failure
- Dual Broadcom 5709 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 675-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.
 - Six fan sets cool a single processor, memory, and HDD bays.
 - 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
 - Automatic server reboot capability
 - Generates alerts
 - Continues operations with the working processor

Expandability and growth

The System x3550 M2 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
- Sixteen DIMM connectors capable of support for up to 128 GB of system memory
- Six 2.5-inch slim-high, hot-swap SAS/SATA/SSD HDD bays
- Internal data storage up to 3.0 TB (using six 500 GB SAS/SATA 2.5-inch HDDs)
- Multiburner optical drive (model dependant)

Systems management

Integrated Management Module (IMM)

The System x3550 M2 includes an Integrated Management Module that provides industry-standard Intelligent Platform Management Interface (IPMI) 2.0-compliant systems management. The IMM comes standard, and shares one of the two onboard Ethernet ports for access. The IMM can be accessed via software that is compatible with IPMI 2.0 (xCAT, for example).

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).
- An embedded Web server that 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 ability for the administrator to also use the CLI from a Telnet session to perform some of the functions that can be performed from the Web server.
- Secure Sockets Layer (SSL) and Lightweight Directory Access Protocol (LDAP).
- Built-in LAN and serial connectivity that supports virtually any network infrastructure.

- Multiple alerting functions that warn systems administrators of potential problems through e-mail, IPMI PETS, and SNMP.

In addition, you can purchase an optional IBM Virtual Media Key to enable the remote presence and blue-screen capture features. You can add this key to the server through a connector on the planar. This key 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.

IBM Director

The System x3550 M2 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 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:
 - Processor
 - Memory
 - Fans

- Voltage Regulator Module (VRM)
- 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 M2 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 ServerProven⁴ 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 M2 server with various adapters and devices.
- The Web-based ServerGuide 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.

⁴IBM 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.

Standard System x3550 M2 configurations

Model	Processor	Memory	GT/s	HDD interface	HDD	Other
7946-24x	2.0 GHz Cache: 4 MB	4 GB	4.80	SAS/SATA/SSD	2.5-in	Open bay hot-swap
7946-54x	2.4 GHz Cache: 8 MB	4 GB	5.86	SAS/SATA/SSD	2.5-in	Open bay hot-swap
7946-64x	2.53 GHz Cache: 8 MB	8 GB	5.86	SAS/SATA/SSD	2.5-in	Open bay hot-swap
7946-44x	2.26 GHz Cache: 8 MB	4 GB	5.86	SAS/SATA/SSD	2.5-in	Multiburner hot-swap
7946-4Lx	2.26 GHz Cache: 8 MB	4 GB	5.86	SAS/SATA/SSD	2.5-in	Open bay hot-swap
7946-76x	2x2.66 GHz Cache: 8 MB	16 GB	6.4	SAS/SATA/SSD	2.5-in	Multiburner hot-swap
7946-96x	2x2.93 GHz Cache: 8 MB	16 GB	6.4	SAS/SATA/SSD	2.5-in	Multiburner hot-swap

EMEA part numbers x = G

Product positioning

IBM's 3550 M2 is a 1U, dual-socket rack server for single or multiple business critical application hosting built on innovative IBM X-Architecture leveraging Intel Quick Path Interconnect (QPI) technology. Featuring power-optimized, high-performance Intel Xeon 5500 quad- and dual-core processors and a leadership, energy-efficient design with balanced functionality, the x3550 M2 can help reduce cost, improve service, and allow you to manage risk easily and simply.

The x3550 M2 is suitable for large enterprise, mid-market, and SMB rack clients looking to optimize their IT budgets, and is designed for single or multiple business-critical application hosting and virtualized, non-blade environments.

Optimized for speed

The new System x3550 M2 server models offer new levels of fast Intel Xeon dual- and quad-core processors with up to 6.4 GT/s and lower power for datacenter environments and collaboration applications. This server is uniquely optimized for better application computing with a highly functional chipset and sixteen DIMM slots for a maximum of 128 GB of fully buffered DDR3 SDRAM Registered DIMM 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 feature enables you to increase memory reliability.
- Integrated SAS controller with RAID-0, -1, and -10 on hot-swap SAS models helps safeguard your data at no additional cost.
- Simple-swap SATA models support JBOD (Just A Bunch of Disks) and major distributions of 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

GAV models:

Description	Machine	Model	Part
IBM System x3550 M2	7946	24G	794624G
	7946	44G	794644G
	7946	4LG	79464LG
	7946	54G	794654G
	7946	64G	794664G
	7946	76G	794676G
	7946	96G	794696G

Note: Remember that a line cord has to be ordered separately for each model.

Publications

The following publications and CD-ROMs are shipped with the System x3550 M2 server.

- *System x3550 M2 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 M2 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 M2 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 M2 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

7946-24G

7946-54G

Processor	Xeon E5504	Xeon E5530
Quad-core	Yes	Yes
Internal speed	2.0 nGHz	2.4 GHz
External speed	4.8 GT/s	5.86 GT/s
Number standard	1	1
Maximum	2	2
L2 cache(full speed)	4 MB	8 MB
Memory(SDRAM)	4 GB	4 GB
RDIMMs	2 x 2 GB	2 x 2 GB
DIMM sockets	16	16
Address capability	128 GB	128 GB
Video	SVGA	SVGA
Memory	8 MB	8 MB
HDD controller	SAS	SAS
Channels	8	8
Connector internal	2	2
Connector external	0	0
HDD	Open bay 2.5-in	Open bay 2.5-in
Total drive bays	6	6
3.5-in slim	0	0
2.5-in slim	6	6
Hot-swap	6	6
Internal capacity	3.0 TB(5)	3.0 TB(5)
Bays available	6	6
5.25/3.5-in slim	0	0
3.5-in slim	0	0
2.5-in slim	6	6
Hot-swap	6	6
Total slots	2(6)	2(6)
x16 PCI-E slot	0-2	0-2
or		

64bit 133 MHz-PCI-X	0-2	0-2
Slots available	2	2
Management proc.	Standard	Standard
Ethernet controller	2x10/100/1k Mbps	2x10/100/1k Mbps
Optical (SATA)	Open	Multiburner
Diskette drive	0	0
Power supply	675 W	675 W
Number standard	1	1
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes

7946-64G

Processor	Xeon E5540
Quad-core	Yes
Internal speed	2.53 GHz
External speed	5.86 GT/s
Number standard	1
Maximum	2
L2 cache(full speed)	8 MB
Memory(SDRAM)	8 GB
RDIMMs	2 x 4 GB
DIMM sockets	16
Address capability	128 GB
Video	SVGA
Memory	8 MB
HDD controller	SAS
Channels	8
Connector internal	2
Connector external	0
HDD	Open bay 2.5-in
Total drive bays	6
3.5-in slim	0
2.5-in slim	6
Hot-swap	6
Internal capacity	3.0 TB(5)
Bays available	6
5.25/3.5-in slim	0
3.5-in slim	0
2.5-in slim	6
Hot-swap	6
Total slots	2(6)
x16 PCI-E slot	0-2
or	
64bit 133 MHz-PCI-X	0-2
Slots available	2
Management proc.	Standard
Ethernet controller	2x10/100/1k Mbps
Optical (SATA)	Open
Diskette drive	0
Power supply	675 W
Number standard	1
Hot-swap	Yes
Redundant power	Optional
Auto restart	Yes

7946-4LG

7946-44G

Processor	Xeon L5520	Xeon E5520
Quad-core	Yes	Yes
Internal speed	2.26 GHz	2.26 GHz
External speed	5.86 GT/s	5.86 GT/s
Number standard	1	1
Maximum	2	2
L2 cache(full speed)	8 MB	8 MB
Memory(SDRAM)	4 GB	4 GB
RDIMMs	2 x 2 GB	2 x 2 GB
DIMM sockets	16	16
Address capability	128 GB	128 GB
Video	SVGA	SVGA
Memory	8 MB	8 MB
HDD controller	SAS	SAS
Channels	8	8
Connector internal	2	2
Connector external	0	0

HDD	Open bay 2.5-in	Open bay 2.5-in
Total drive bays	6	6
3.5-in slim	0	0
2.5-in slim	6	6
Hot-swap	6	6
Internal capacity	3.0 TB(5)	3.0 TB(5)
Bays available	6	6
5.25/3.5-in slim	0	0
3.5-in slim	0	0
2.5-in slim	6	6
Hot-swap	6	6
Total slots	2(6)	2(6)
x16 PCI-E slot	0-2	0-2

or

64bit 133 MHz-PCI-X	0-2	0-2
Slots available	2	2
Management proc.	Standard	Standard
Ethernet controller	2x10/100/1k Mbps	2x10/100/1k Mbps
Optical (SATA)	Open	Multiburner
Diskette drive	0	0
Power supply	675 W	675 W
Number standard	1	1
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes

7946-76G

Processor	Xeon X5550
Quad-core	Yes
Internal speed	2.66 GHz
External speed	6.4 GT/s
Number standard	2
Maximum	2
L2 cache(full speed)	8 MB
Memory(SDRAM)	16 GB
RDIMMs	4 x 4 GB
DIMM sockets	16
Address capability	128 GB
Video	SVGA
Memory	8 MB
HDD controller	SAS
Channels	8
Connector internal	2
Connector external	0
HDD	Open bay 2.5-in
Total drive bays	6
3.5-in slim	0
2.5-in slim	6
Hot-swap	6
Internal capacity	3.0 TB(5)
Bays available	6
5.25/3.5-in slim	0
3.5-in slim	0
2.5-in slim	6
Hot-swap	6
Total slots	2(6)
x16 PCI-E slot	0-2

or

64bit 133 MHz-PCI-X	0-2
Slots available	2
Management proc.	Standard
Ethernet controller	2x10/100/1k Mbps
Optical (SATA)	Multiburner
Diskette drive	0
Power supply	675 W
Number standard	2
Hot-swap	Yes
Redundant power	Standard
Auto restart	Yes

7946-96G

Processor	Xeon X5570
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Quad-core	Yes
Internal speed	2.93 GHz
External speed	6.4 GT/s
Number standard	2
Maximum	2
L2 cache(full speed)	8 MB
Memory(SDRAM)	16 GB
RDIMMs	4 x 4 GB
DIMM sockets	16
Address capability	128 GB
Video	SVGA
Memory	8 MB
HDD controller	SAS
Channels	8
Connector internal	2
Connector external	0
HDD	Open bay 2.5-in
Total drive bays	6
3.5-in slim	0
2.5-in slim	6
Hot-swap	6
Internal capacity	3.0 TB(5)
Bays available	6
5.25/3.5-in slim	0
3.5-in slim	0
2.5-in slim	6
Hot-swap	6
Total slots	2(6)
x16 PCI-E slot	0-2
or	
64bit 133 MHz-PCI-X	0-2
Slots available	2
Management proc.	Standard
Ethernet controller	2x10/100/1k Mbps
Optical (SATA)	Multiburner
Diskette drive	0
Power supply	675 w
Number standard	2
Hot-swap	Yes
Redundant power	Standard
Auto restart	Yes

⁵ Capacities are based on installation of six 2.5-in 500 GB HS SATA HDDs. For the latest information on supported HDD options, visit

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

⁶ Two Express Gen2 x16 slots (one full height, half length and one low profile); both slots are convertible to PCI-X via riser card option 64-bit/133 MHz (full height, half length).

Video subsystem

- SVGA compatible video controller (Matrox G200)
- Integrated on Integrated Management Module (IMM)
- Integrated on planar and connected to the PCI bus
- Two analog video ports (one front, one rear) that can be connected at the same time
- One DVI (Digital Video Interface) is not used
- Avocent Digital Video Compression (with Virtual Media Key option)
- DDR2-250MHz SDRAM video memory controller (video memory is not expandable)

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)

Refresh

Resolution	Colors	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
1280 x 1024 x 8	256	60, 72, 75
1280 x 1024 x 16	64K	60, 72, 75
1280 x 1024 x 32	16M	60, 72, 75

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 to 127 (nominal) V ac; 50 Hz or 60 Hz; 7.8 A
- 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 3.8 A
- Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: 0.12 kVA
 - Maximum configuration: 0.78 kVA
- Btu output:
 - Minimum configuration: 307 Btu/hr (90 watts)
 - Maximum configuration: 2662 Btu/hr (780 watts)
- Acoustical noise level emission level: Sound power levels
 - 6.1 bels (idling)
 - 6.1 bels (operating)

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

System x3550 M2 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

- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-99,
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A
- TUV-GS (EN60950-1 /IEC60950-1,EK1-ITB2000)

Operating environment

Air temperature:

- Server on: 10 C to 35 C (50.0 F to 95.0 F); altitude: 0 to 914.4 m (3000 ft).
Decrease system temperature by 0.75 C for every 1000-foot increase in altitude.
- Server off: 10 C to 43 C (50.0 F to 109.4 F); maximum altitude: 2133 m (7000 ft).
- Shipment: -40 C to +60 C (-40 F to 140 F); maximum altitude: 2133 m (7000 ft).

Humidity:

- Server on/off: 8% to 80%
- Shipment: 5% to 100%

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 M2.

Operating systems

- Microsoft
 - Windows Server 2008 (Std, Enterprise) 32-bit
 - Windows Server 2008 (Std, Enterprise) 64-bit
 - Windows Server 2003 (Std, Enterprise) 32-bit
 - Windows Server 2003 (Std, Enterprise) 64-bit
- Linux

- SLES 10 32-bit, Linux 4 AS for x86⁸
- SLES 10 64-bit, Linux 4 ES for x86⁸
- SLES 10 64-bit with Xen Support, 64 and Intel EM64T⁸
- RHEL 5.3 Server Edition 32-bit8⁸

⁸ Support and certification is planned for these operating systems.

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 M2 server contains licensed system programs that include set configuration, set features, and test programs. System UEFI 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 M2 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 or 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 M2 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 altering the BIOS. The default configuration 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 M2 servers can address a maximum of 128 GB of system memory. All supported system memory is addressable through direct memory access. The System x3550 M2 server supports 1 GB, 2 GB, 4 GB, and 8 GB DDR3 SDRAM Registered DIMM memory. All supported DIMMs can coexist in the same system. Refer to the [Planning information](#) section for supported memory options.
- To ensure proper air flow for cooling, the System x3550 M2 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 QuickPath Interconnect (QPI) link speed, Integrated Memory Controller frequency, core frequency, power segment, internal cache size, and type. Mixing processors of different stepping levels but same model (as per CPUID instruction) is supported. Mixing microprocessors of different QPI, core speed, cache size, core quantity, and power segment 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 M2 and related options

The System x3550 M2 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 M2 server supports up to six 2.5-in SAS/SATA HDDs. All models are open-bay models.

System x3550 M2 hot-swap models contain a DASD backplane supporting up to six 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 RAID configurations

Additional cabling alternatives

Rack installations

System x3550 M2 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 M2 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 M2 server is an Intel Xeon processor system that supports internal processing speeds of up to 2.93 GHz and processing operations to memory up to 1333 MHz. It contains an integrated, full-speed 8 MB advanced transfer L2 cache. This dual-socket system supports a second processor with the same QuickPath Interconnect (QPI) link speed, Integrated Memory Controller frequency, core frequency, power segment, internal cache size, and type of processor as the first.

Supported processor options

The following processor options are supported:

- Intel Xeon Processor E5504 (46M1078)
- Intel Xeon Processor E5520 (46M1081)
- Intel Xeon Processor L5520 (46M1080)
- Intel Xeon Processor E5530 (46M1083)
- Intel Xeon Processor L5530 (59Y3124)
- Intel Xeon Processor E5540 (46M1084)
- Intel Xeon Processor X5550 (46M1085)
- Intel Xeon Processor X5570 (46M1087)

Supported memory options

The following memory options are supported:

- 1GB (1x1GB) Single Rank (44T1480)
- 2GB (1x2GB) Dual Rank (44T1481)
- 2GB (1x2GB) Single Rank (44T1482)
- 4GB (1x4GB) Dual Rank (44T1483)
- 8GB (1x8GB) Dual Rank (44C7445)

Supported communications options

The following communications option is supported:

- Dual-port 1 GB Ethernet daughter card (46M1076)

Power considerations

The System x3550 M2 server includes a standard 675-watt power supply. This power supply is capable of providing sufficient power to run the server fully configured with supported devices.

Supported power options

The following power option is supported:

- 675 W redundant power supply (46M1075)

Cable orders

The dual 10/100/1000 Mbps, full-duplex, Ethernet PCI controllers, standard with the System x3550 M2 server, are connected directly to independent RJ-45 connectors. The RJ-45 connectors provides a 10/100/1000BASE-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 M2 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

The System x3550 M2 server is shipped in a single package. The country kit carton is contained inside the top portion of the system unit carton.

- 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.
- Integrated Winbond Trusted Platform Module (TPM) version 1.2 (WPCT201BA0WG) security chip performs cryptographic functions and stores private and public security keys. It provides the hardware support for the Trusted Computing Group (TCG) specification. Users can download the software to support the TCG specification when the software is available. The TPM firmware can be upgraded in the field.

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.

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

Terms and conditions

Warranty period

- Machine Type 7946 - Three years
- Optional features - 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.

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

- Battery (System)
- Battery (RAID)

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. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. 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 (mandatory) or a Tier 2 (optional) CRU. Installation of Tier 1 CRUs, as specified in this announcement, 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 parts have been designated as Tier 1 CRUs:

- Top cover (all models)
- DIMM air duct
- Memory
- Virtual media key
- A/C power supply
- Optical drives
- Rack latch kit

- Hard disk drives
- Fillers
- Fan, hot-swap
- ServeRAID-BR10i adapter
- SAS/SATA riser card
- Air baffle kit
- Cable management arm
- System label
- Top cover
- Voltage regulator module
- Cable, hard disk drive configuration
- Cable, operator panel
- Cable, SATA DVD
- EMC fillers
- Ethernet card
- Labels
- Low-profile adapter (varies)
- Riser-card bracket
- Bracket assembly, rear I/O
- SAS adapter retainer
- Video adapters
- Hypervisor™, embedded USB flash device

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-country service delivery is used.

International Warranty Service

International Warranty Service (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 [ZS01-0168](#), dated September 25, 2001.

Licensing

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

IBM hourly service rate classification

Two

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.

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.

Pricing

For all local charges, contact your IBM representative.

ServicePac for Warranty and Maintenance options

The announced products are also eligible for ServicePac® warranty upgrades. ServicePacs provide a higher level of service than that provided under the base IBM Machine Warranty.

ServicePacs can be purchased from your IBM Business Partner and are specific to the machines/products listed.

ServicePac Offering	PC No	Ordering part number
3yr On-site Repair 9hr x 5 days 4hr Resp Target	PC1068 e-ServicePac	- 65Y5214 (2)
3yr On-site Repair	PC1069 e-ServicePac	- 65Y5215 (2)

24hr x 7 days 4hr Resp Target

3yr On-site Repair 24hr x 7 days 6hr Committed Service	PC505 e-ServicePac	- 41W9359 (4)
3yr On-site Repair 24hr x 7 days 6hr Committed Service	PC935 e-ServicePac	- 54Y4501 (UK only)
3yr On-site Repair 24hr x 7 days 8hr Committed Service	PC834 e-ServicePac	- 51J9369 (5)
3yr On-site Repair 24hr x 7 days 24hr Committed Service	PC831 e-ServicePac	- 51J9366 (6)
4yr On-site Repair 9hr x 5 days 4hr Resp Target	PC1070 e-ServicePac	- 65Y5216 (2)
4yr On-site Repair 24hr x 7 days 4hr Resp Target	PC1071 e-ServicePac	- 65Y5217 (2)
5yr On-site Repair 9hr x 5 days 4hr Resp Target	PC1072 e-ServicePac	- 65Y5218 (2)
5yr On-site Repair 24hr x 7 days 4hr Resp Target	PC1073 e-ServicePac	- 65Y5219 (2)
3yr On-site Repair 9hr x 5 days NBD Comm Parts	PC1020 e-ServicePac	- 65Y0986 (Russia only)

ANNOUNCEMENT COUNTRIES FOR SERVICEPACS

Announcement is restricted to the following countries:

e-ServicePac

Austria Belgium Bulgaria Croatia Czech Rep
Denmark Egypt Finland France (1) Germany Greece
Hungary Ireland Israel Italy Luxembourg
Netherlands Norway Pakistan Poland Portugal Romania
Russia (2) S. Africa Serbia Slovakia Slovenia Spain
Sweden Switzerland Turkey UK (3) Ukraine

- (1) Except overseas Territories
- (2) Except Russia
- (3) UK mainland Only
- (4) Austria, Germany, Turkey and South Africa only
- (5) Czech Republic, Hungary, Poland, Russia, Slovakia, Slovenia,
Switzerland, Romania, Croatia and Serbia Only
- (6) Austria, Czech Republic, Germany, Hungary, Poland, Russia,
Slovakia, Slovenia, Turkey, Switzerland,
Romania, Croatia, Serbia and South Africa Only

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

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Announcement countries

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