



IBM System x3500 M2 servers feature fast 2C and 4C Intel Xeon processors with QPI and 4 MB or 8 MB cache, delivering enhanced performance and scalability

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At a glance



The System x3500 M2 servers feature:

- Powerful 2C 1.86 GHz, or 4C 2.0 GHz, 2.26 GHz, 2.4 GHz, 2.66 GHz or 2.93 GHz Intel® Xeon® processors with 4 MB or 8 MB cache
- 2 GB of 1333 MHz DDR3 ECC system memory¹; 128 GB maximum
- Eight port SAS/SATA RAID controller
- One hot-swap 920-watt power supply fitted standard; optional hot-swap redundant power and cooling with hot-swap upgrade
- Integrated management module
- Six PCI-Express slots, and one PCI 32-bit/33 MHz slot
- Eighteen drive bays: SATA DVD-ROM², tape drive option up to full-high, and sixteen hot-swap HDDs
- Up to 4.8 TB³ with HS SFF SAS disk storage
- Dual integrated 5709C Gigabit Ethernet controllers

- SVGA video with 16 MB memory
- Support for Remote Presence function
- 5U tower industry-standard models, rack mount special bid option
- Two USB front and four USB rear ports, one USB internal port, one com port, one d-sub connector, three 10/100/1000 RJ45 ports, one serial port

Overview

The System x3500 M2 servers include:

- 4.8, 5.86, and 6.4 GTS QuickPath Interconnect (QPI) support
- Three hot-swap fans standard and three additional, with Redundant Power and Cooling optional
- Six PCI-Express card slots, and one PCI 32-bit/33 MHz card slot
- Integrated dual Gigabit Ethernet and standard RAID -0, -1, and -1E
- Optional RAID -5, -6, -10, -50, or -60 via PCI-E adapter
- DDR3 ECC DIMMs, combined with an integrated ECC memory controller in core logic that corrects many soft and hard single-bit memory errors and minimizes disruption of service to LAN clients⁴
- Integrated management module with Remote Presence function standard
- Light path diagnostics with a light path panel visible at front of chassis

Powered and scaled for business growth

- These servers contains either a 2C 1.86 GHz/4.8 GTS-4 MB Intel E5502, or a 4C 2.0 GHz/4.8 GTS-4 MB E5504, 2.26 GHz/5.86 GTS-8 MB E5520, 2.4 GHz/5.86- 8 MB GTS E5530, 2.66 GHz/6.4 GTS-8 MB X5550, or 2.93 GHz/6.4 GTS-8 MB X5570 Intel Xeon processor data bus to the system. Data bus to the system delivering up to 10.6 Gb/s data transfer rate
- A 1333 MHz functional speed processor operations to memory and PCI bus
- 2 GB of high-speed, DDR3 - 1333 MHz ECC memory¹, 128 GB maximum
- High-speed, wide-bandwidth slots: Six PCI-E bus slots, and one PCI 32-bit/33 MHz bus slot
- Dual Broadcom 5709C Gigabit Ethernet ports and SAS/SATA support
- Standard SATA DVD-ROM and tape drive bay
- Eight hot-swap drive bays and eight optional hot-swap drive bays providing up to 4.8 TB total capacity, using 300 GB SFF SAS HDD options

High availability for around-the-clock business demands

- Integrated systems management processor and support for the Remote Presence function
- Wake on LAN®
- ECC memory to detect double-bit errors and correct single-bit errors
- Integrated memory mirroring and online spare options

Service and support perfected for business needs

- ServerGuidetm and IBM® Director
- IBM Server support and Web support⁵
- Three-year, customer replaceable unit (CRU) and on-site service⁶, limited warranty⁷; optional warranty service upgrades available

¹ DDR3 1333 RDIMM memory. DDR3 memory stands for double data rate, which means up to twice the data is transferred compared to SDRAM in the same clock cycle.

² Actual playback speed varies and is often less than maximum.

³ When referring to HDD or tape backup capacity, GB stands for 1,000,000,000 bytes and TB stands for 1,000,000,000,000 bytes. User capacity may vary depending on operating environments.

⁴ Chipkill[™] distributes information covered by error correcting code across separate memory chips. If any chip fails, the data can still be reconstructed from the remaining chips and the system can continue running.

⁵ Some programs may not be available in all countries.

⁶ With respect to on-site service, you may be asked certain diagnostic questions before a technician is sent.

⁷ For information on the IBM Statement of Limited Warranty, contact your IBM representative or reseller. Copies are available upon request.

Key prerequisites

- Monitor
- Keyboard (only in EMEA and Americas Group)
- Mouse (only in EMEA and Americas Group)

Planned availability date

June 15, 2009: IBM System x3500 M2

Description

Related options

Intel Xeon processor options

- Intel Xeon Processor E5530 4C 2.4 GHz/5.86 GTS-8 MB (80w) (46D1353)
- Intel Xeon Processor X5550 4C 2.66 GHz/6.4 GTS-8 MB (95w) (46D1355)
- Intel Xeon Processor X5570 4C 2.93 GHz/6.4 GTS-8 MB (95w) (46D1357)

The 4C processors are ideal for data-intensive applications that range from data mining to evolving Web services. Innovative technologies deliver processing speeds of up to 2.93 GHz/6.4 GTS with performance headroom for unpredictable server workloads and escalating computing needs.

Intel Xeon processors with 8 MB cache feature Intel NetBurst microarchitecture with Extended Memory 64 Technology (EM64T) that increases overall throughput via a faster system bus and enhanced cache. They also incorporate Enhanced Intel Speedstep (EIS) technology, allowing them to execute more than one thread per processor. These enhancements add up to faster response times, support for more simultaneous users, and increased transaction workloads.

These Intel DP processors with QuickPath Interconnect (QPI) support SMP applications when installed in the second processor slot of all System x3500 M2 models with similar processors.

IBM PC3-10600R DDR3 Chipkill Memory Option Kit

- IBM 1 GB (1Rx8) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1480)
- IBM 2 GB (2Rx8) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1481)
- IBM 2 GB (1Rx4) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1482)
- IBM 4 GB (2Rx4) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1483)

Note: DDR3 ECC DIMMs, combined with an integrated ECC memory controller, correct many soft and hard single-bit memory errors, and minimize disruption of service to LAN clients. Chipkill distributes information covered by error correction coding across separate memory chips, so if any of the chips fail, the data can still be reconstructed from the remaining chips, and the system can continue running.

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

Note: For additional information on CPUs and memory, refer to [ZG09-0169](#), dated March 30, 2009.

ServeRAID controllers supported

- ServeRAID-BR10i SAS/SATA Controller (provides RAID-0,-1,and -1E, standard in hot-swap models) (44E8689)
- ServeRAID-MR10i SAS/SATA Controller (provides the advanced RAID levels) (43W4296)
- ServeRAID-MR10is VAULT SAS/SATA Controller (same as MR10i with addition of encryption technology) (44E8695)
- ServeRAID-MR10M SAS/SATA Controller (connection to external storage devices) (44E8825)

IBM Redundant Power and Cooling Option (44X0381)

This redundant power supply is designed to supply power for all systems. Fans for power supply cooling are located in the fan cage.

High-performance server subsystems

System x3500 M2 servers are high-throughput, two-way, SMP-capable network servers with excellent performance scalability when you add memory and a second processor. They incorporate powerful Intel Xeon processors with 4 MB or 8 MB cache. These flip-chip, land grid array 6 (FC-LGA6) processors feature advanced transfer caches integrated onto the processor core and run at the same clock speed as the processor core.

Two processor connectors are standard on the system board to support installation of a second processor. High-speed, 1333 MHz DDR3 RDIMMs are optimized for 1333 MHz processor-to-memory subsystem performance. The System x3500 M2 server uses the Intel Tylersburg DP chipset- 36D to maximize throughput from processor to memory and system I/O buses.

Standard System x3500 M2 configurations

Model	Processor	Cache	Memory	SAS Interface	Mechanical
7839-12x	1.86 GHz/4.8 GTS	4 MB	2 GB	HS SFF SAS/SATA	Tower
7839-22x	2.0 GHz/4.8 GTS	4 MB	2 GB	HS SFF SAS/SATA	Tower
7839-32x	2.26 GHz/5.86 GTS	8 MB	2 GB	HS SFF SAS/SATA	Tower

7839-42x	2.4	GHZ/5.86	GTS	8 MB	2 GB	HS SFF SAS/SATA	Tower
7839-62x	2.66	GHZ/6.4	GTS	8 MB	2 GB	HS SFF SAS/SATA	Tower
7839-82x	2.93	GHZ/6.4	GTS	8 MB	2 GB	HS SFF SAS/SATA	Tower

Note: For EMEA x=G.

Additional features:

- Ability to upgrade to two-way SMP processing by adding a second processor of the same speed and processor type
- System board that contains sixteen DIMM connectors supporting 1 GB, 2 GB, 4 GB, and 8 GB DDR3 1333 MHz SDRAMs memory for improved performance
 - Up to 128 GB of system memory (with 8 GB memory RDIMMs installed)
- High-speed, wide-bandwidth, PCI-E and PCI bus slots support
 - Slot 1 : PCIe2 x8 : PCI-E x8 slot with x8 lanes (Gen2, from IOH)
 - Slot 2 : PCIe2 x16 (8,1) : PCI-E x16 slot with x8 lanes (Gen2, from IOH)
 - Slot 3 : PCIe2 x8 (4,1) : PCI-E x8 slot with x4 lanes (Gen2, from IOH)
 - Slot 4 : PCIe2 x8 (4,1) : PCI-E x8 slot with x4 lanes (Gen2, from IOH)
 - Slot 5 : PCIe2 x8 : PCI-E x8 slot with x8 lanes (Gen2, from IOH)
 - Slot 6 : PCI-32 : PCI-32 slot with 32bit/33MHz (from ICH-10)
 - Slot 7 : PCIe x8 (4,1) : PCI-E x8 slot with x4 lanes (Gen1, from ICH-10)
- Eight-port SAS/SATA RAID controller that supports high-speed internal storage solutions
- Dual full-duplex, Gigabit Ethernet controllers that speed network communications to LAN clients

The x3500 M2 subsystems are tuned to provide solid system throughput from processor, to memory, to bus, to disk-intensive I/O. These features, combined with SMP capability, make the System x3500 M2 server an excellent choice for a standalone or clustered general-business application, file, and print server.

High-availability and serviceability features

- Redundant cooling includes:
 - Three hot-swap fans (single replaceable unit) with one hot-swap 920 W power supply option
- One hot-swap power supply standard, and one optional redundant power supply to support robust high-availability applications
- Hot-swap HDD bays with SAS backplane
- Standard SAS controller to support up to eight internal hot-swap SATA or SAS HDD devices
- DDR3 ECC RDIMMs, combined with an integrated ECC memory controller in core logic, to correct many soft and hard single-bit memory errors (using memory mirroring), while minimizing disruption of services to LAN clients
- Memory hardware scrubbing to correct soft memory errors automatically without software intervention
- 8 MB cache processors to improve data integrity and help reduce downtime
- PFA on processors and memory to help alert the system administrator of an imminent component failure
- Six hot-swap redundant system cooling fans to cool system and enable replacement without powering down the server
- Integrated management module that supports:
 - Fan monitoring and control
 - Power supply monitoring
 - Temperature monitoring
 - Voltage monitoring

- Power on/off, reset sequencing
- LED controls (light path diagnostics support)
- IPMI capability that allows you to accept commands and send status
- Remote firmware update
- Automatic server restart (ASR)⁸
- Numeric error logging
- Information LED panel to give visual indications of system health
- Light path diagnostics and onboard diagnostics for an LED map that provide error codes which are explained in the hardware maintenance manual
- Easy access to system board, adapter cards, processor, and memory
- CPU failure recovery in SMP configurations
 - Generates alerts error logs

⁸ The ASR function is currently supported on Microsoft® Windows® 2000 and Windows 2003.

Expandability and growth

The System x3500 M2 server is a 5U tower configuration engineered to meet the compactness of a 5U rack drawer. SVGA video, SAS/SATA, and full-duplex Gigabit Ethernet are integrated on the system board.

Features include:

- System memory expansion to 128 GB (with 8 GB memory RDIMMs installed)
- Seven adapter card slots: six PCI-Express, and one 32-bit/33 MHz card slot
- Eleven drive bays:
 - Eight 2.5-inch, half-high hot-swap drive bays; three 5.25 inch, half-high device bays
 - Internal support for high performance (up to 15,000 rpm) for up to eight SAS HDDs and a high-capacity tape backup device
 - Up to 4.8 TB, using sixteen 300 GB SFF SAS hot-swap HDDs³

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

³ When referring to HDD or tape backup capacity, GB stands for 1,000,000,000 bytes and TB stands for 1,000,000,000,000 bytes. User capacity may vary depending on operating environments.

Systems management

Integrated management module controller (IMM)

The System x3500 M2 server includes an integrated management module controller that provides industry-standard Intelligent Platform Management Interface (IPMI) 2.0-compliant systems management. The IMM comes standard, and has a dedicated onboard Ethernet port for access. IMM can be accessed via software that is compatible with IPMI 2.0 (such as xCAT).

- Features and benefits
 - Monitoring of system and CMOS battery voltages.
 - Monitoring of system temperatures.
 - Fan speed control.
 - Fan tachometer monitor.
 - Power good signal monitor.

- System ID and planar version detection.
- System power control.
- System reset control.
- NMI and SMI detection and generation (System Interrupts).
- Serial port text console redirection.
- System LED control (power, HDD, activity, alerts, and heartbeat).
- An 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 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.

IBM Director

x3500 M2 servers feature IBM Director, a powerful, highly integrated systems management software solution built on industry standards and designed for ease of use. Exploit your existing enterprise or workgroup management environments and use rich security features to access and manage physically dispersed IT assets more efficiently over the Internet.

Potentially reduce costs through:

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

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

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

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

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

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

- Fan monitoring and control; status and presence are monitored. Fan speed is controlled and automatically increased to maintain system cooling if temperature thresholds are exceeded. An alert is generated if:
 - Failure occurs or is predicted.

- Installation or removal occurs.
- Power supply condition changes for the power supply.
 - CPU temperatures are monitored. An alert is generated if (preset) temperature warning thresholds are exceeded or restored, and if critical temperature thresholds are exceeded. Soft and hard system shutdowns are automatically initiated if critical temperature thresholds are exceeded.
 - CPU and power subsystem voltage thresholds are monitored.
 - Light path diagnostics LEDs are illuminated in case of key component errors or failures to enable quick local diagnostics and servicing.
 - Flash update enables updates to the integrated systems management processor firmware.

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

- Access the server regardless of the status
- Inventory and often display detailed system and component information
- View server bootup during POST
- Browse and delete logs of events and errors
- Reset or power cycle the server
- Run diagnostics, SAS/SATA setup, and RAID setup during POST
- Monitor thresholds on server health, including:
 - Operating system load
 - POST time-out
 - Voltage
 - Temperature
- Set proactive alerts for critical server events, including PFA on:
 - Processors
 - Memory
- Define automated actions, such as:
 - Send e-mail or a page to an administrator
 - Execute a command or program
 - Pop up an error message to the Director console
- Monitor flash BIOS
- Monitor and graph the utilization of server resources, such as:
 - Memory
 - Processor
 - HDDs
- Identify potential performance bottlenecks and react to prevent down time
- Monitor, manage, and configure RAID subsystems without taking them offline

Integrated System x Adapter for iSeries , when supported

The System x3500 M2 server is the newest server to be attached to an IBM i5 or iSeries® server. A new Integrated System x Adapter (1519-200) attaches an x3500 to connect to an i5 or iSeries server. You can connect the iSeries family of servers to provide virtual storage, virtual Ethernet, and tape sharing to an attached x3500 server. You can easily integrate security, backup, and operations of a Microsoft Windows and OS/400® environment.

Advanced Configuration and Power Interface (ACPI)

This open industry specification defines a flexible and extensible hardware interface for the system board. Software designers use this specification to integrate power

management features throughout a computer system, including hardware, the operating system, and application software. This integration enables Windows to determine which applications are active, and handles all of the power management resources for computer subsystems and peripherals.

World-class support tools and programs

The System x3500 M2 server includes tools and programs designed to make ownership a positive experience. From the start, IBM programs help you purchase servers, get them running, and keep them running. IBM can help your company maintain ownership of technology leadership network servers.

- Warranty: Three years, customer replaceable unit (CRU) and on-site service, limited warranty; optional warranty service upgrades available.
- The ServerProven⁹ program enables you to configure your server confidently with various devices and operating systems. This Web-based program provides compatibility information from actual testing of the System x3500 M2 server with various adapters and devices.
- The ServerGuide CD includes utilities and drivers for assisted installation of popular network operating systems. Also included is a Broadcom Ethernet CD.
- Electronic support on the Web provides additional support in an easy-to-use format.

⁹IBM makes no warranties, expressed or implied, regarding non-IBM products and services that are ServerProven®, including but not limited to implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

Product positioning

The System x3500 M2 server is positioned above the entry, two-way x3400 M2. These servers contain additional fault tolerance through PCI-Express, and support for PCI-X. They also feature enhanced systems-management control. As universal servers, they are offered in flexible tower models and can be rack-mounted using a tower-to-rack conversion kit (special bids only).

With these servers, two segments can be combined into one departmental and mission-critical space. The System x3500 M2 server is a compact 5U, two-way, SMP-capable Xeon processor-based platform designed with integrated high-availability features for mainstream network server applications.

These servers are ideal for clients who require up to two-way 2.93 GHz/6.4 GTS processing power, significant memory, high availability, and large data storage scalability. High-speed memory, 64-bit and 32-bit PCI buses, eight SAS/SATA hot-swap plus eight optional drive bays, and a device bay for high-capacity tape drives making these servers ideal for mainstream network computing.

Product number

The following feature numbers are automatically added to the 5372-SWX HIPO order whenever one of the hardware system units are configured in an order.

Description	Part Number
Intel Xeon Processor E5530 4C 2.40GHz 8 MB Cache 1066 MHz 80w	46D1353
Intel Xeon Processor X5550 4C 2.66GHz 8 MB Cache 1333 MHz 95w	46D1355
Intel Xeon Processor X5570 4C 2.93GHz 8 MB Cache 1333 MHz 95w	46D1357

Notes

- All geographies except EMEA use the combined machine type/model number as the ordering number.
- All models are GAV except some AP models.

Description	MT	Model	Part number
IBM System x3500 M2	7839	12G	783912G
	7839	22G	783922G
	7839	32G	783932G
	7839	42G	783942G
	7839	62G	783962G
	7839	82G	783982G

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

These options can be ordered with the systems.

Description	Order Number	EAN Number
IBM Enhanced Performance Keyboard - USB Arabic	40K9585	50-50689-87941-6
IBM Enhanced Performance keyboard - USB Arabic / French	42C0101	50-50689-87942-3
IBM Enhanced Performance Keyboard - USB Belgium / French	42C0102	50-50689-87936-2
IBM Enhanced Performance Keyboard - USB Belgium / UK	42C0103	50-50689-87937-9
IBM Enhanced Performance Keyboard - USB Bulgarian	42C0105	50-50689-87939-3
IBM Enhanced Performance Keyboard - USB Czech	42C0107	50-50689-87944-7
IBM Enhanced Performance keyboard - USB Danish	42C0109	50-50689-87946-1
IBM Enhanced Performance keyboard - USB Dutch	42C0110	50-50689-87947-8
IBM Enhanced Performance Keyboard - USB French	42C0111	50-50689-87948-5
IBM Enhanced Performance Keyboard - USB German	42C0114	50-50689-87951-5
IBM Enhanced Performance Keyboard - USB Greek	42C0115	50-50689-87952-2
IBM Enhanced Performance keyboard - USB Hebrew	42C0116	50-50689-87953-9
IBM Enhanced Performance keyboard - USB Hungarian	42C0117	50-50689-87954-6
IBM Enhanced Performance keyboard - USB Iceland	42C0118	50-50689-87955-3
IBM Enhanced Performance Keyboard - USB Italy	42C0119	50-50689-87956-0
IBM Enhanced Performance Keyboard - USB Norway	42C0123	50-50689-87960-7
IBM Enhanced Performance keyboard - USB Poland	42C0124	50-50689-87961-4
IBM Enhanced Performance keyboard - USB Portugal	42C0125	50-50689-87962-1
IBM Enhanced Performance keyboard - USB Romania	42C0126	50-50689-87963-8
IBM Enhanced Performance Keyboard - USB Russian / Cyrillic	42C0128	50-50689-87965-2
IBM Enhanced Performance keyboard - USB Serbian / Cyrillic	42C0129	50-50689-87966-9
IBM Enhanced Performance keyboard - USB Slovak	42C0130	50-50689-87967-6

IBM Enhanced Performance Keyboard - USB Swedish / Finnish	42C0131	50-50689-87968-3
IBM Enhanced Performance Keyboard - USB Swiss F/G	42C0132	50-50689-87969-0
IBM Enhanced Performance Keyboard - USB UK English	42C0133	50-50689-87970-6
IBM Enhanced Performance Keyboard - USB US Euro	42C0137	50-50689-87974-4
IBM Enhanced Performance Keyboard - USB Turkish 440	42C0138	50-50689-87975-1
IBM Enhanced Performance Keyboard - USB Turkish 179	42C0139	50-50689-87976-8

Power Cords

European 10A C13 to CEE 7/7 2.8M Power Cord Option	39Y7917	50-50689-85276-1
Denmark 10A C13 to DK2-5A 2.8M Power Cord Option	39Y7918	50-50689-85277-8
Switzerland 10A C13 to SEV 1011 2.8M Power Cord Option	39Y7919	50-50689-85280-8
Israel 10A C13 to SI 32 2.8M Power Cord Option	39Y7920	50-50689-85282-2
Italy 10A C13 to CEE 7/7 2.8M Power Cord Option	39Y7921	50-50689-85281-5
South Africa 10A C13 to SABS 164/1 2.8M Power Cord Option	39Y7922	50-50689-85278-5
United Kingdom 10A C13 to BS 1363 2.8M Power Cord Option	39Y7923	50-50689-85279-2
Universal Jumper Cord - 1.5 m	39Y7937	50-50689-85287-7
IEC C13 to C20 2.5M Power Jumper Cord Option	39Y7938	50-50689-85290-7

Publications

The following publications and CD-ROMs are shipped with the x3500 M2 servers:

- The *System x3500 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 pictorials to enable you to quickly set up the System x3500 M2 server.
- ServerGuide CD contains drivers to support the System x3500 M2 servers. In addition, it includes a set of easy-to-use utilities for assisted installation via CD of several popular network operating systems.
- Publications CD and a Broadcom Ethernet Driver CD.
- 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 IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center is at

<http://publib14.boulder.ibm.com/infocenter/systems>

IBM Publications Center Portal

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

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

Supplemental information and publications

- System x3500 M2 Installation Guide
- Documentation CD:
 - Option Installation Guide
 - Installation Guide
 - User's Guide
 - Hardware Maintenance Manual and Troubleshooting Guide

All of these publications are available at

<http://publib14.boulder.ibm.com/infocenter/systems>

Displayable softcopy publications

The product books are offered in displayable softcopy form. The displayable manuals are part of the basic machine-readable material at no charge. The files are shipped on the CD-ROM.

These displayable manuals can be used with the BookManager® READ licensed programs in any of the supported environments. Terms and conditions for use of the machine-readable files are shipped with the files.

Source file publications

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

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

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

The x3500 M2

	7839-12x	7839-22x	7839-32x
Processor	Xeon 2C	Xeon 4C	Xeon 4C
Internal speed	1.86 GHz	2.0 GHz	2.26 GHz
External speed	4.8 GTS	4.8 GTS	5.86 GTS
Number standard	1	1	1
Maximum	2	2	2
L2 cache (full-speed)	4 MB	4 MB	8 MB
Memory (PC3-10600-999)	2 GB ECC 2 x 1 GB	2 GB ECC 2 x 1 GB	2 GB ECC 2 x 1 GB
	Chipkill	Chipkill	Chipkill
DIMM sockets	16	16	16
Capacity	128 GB ¹⁰	128 GB ¹⁰	128 GB ¹⁰
Video memory	SVGA 16 MB	SVGA 16 MB	SVGA 16 MB
SAS controller	1	1	1
Connector internal	1	1	1
SFF 8087 (4 ports)			
Connector internal	2	2	2
SATA (single port)			
SAS/SATA RAID controller	1	1	1
Channels	8	8	8
Connector internal	2	2	2
SFF 8087 (4 ports)			
Connector external	0	0	0
HDD	open-bay	open bay	open bay
Total bays	11	11	11
5.25-in	3	3	3
Hot-swap	8	8	8
Internal capacity	2.4 TB ¹¹	2.4 TB ¹¹	2.4 TB ¹¹
Bays available	10	10	10
5.25 in	2	2	3
Hot-swap	8 ¹¹	8 ¹¹	8 ¹¹
Total PCI slots	7	7	7
PCI-E slots	6	6	6
32-bit/33 MHz	1	1	1
Slots available	6	6	6
Integrated management	Standard ¹²	Standard ¹²	Standard ¹²
Ethernet controllers	10/100/1000 Mb	10/100/1000 Mb	10/100/1000 Mb
SATA DVD	1	1	1
Power supply	920 W ¹³	920 W ¹³	920 W ¹³
Number standard	1	1	1
Hot-swap	Yes	Yes	Yes
Redundant power	Optional	Optional	Optional
	7839-42x	7839-62x	7839-82x
Processor	Xeon 4C	Xeon 4C	Xeon 4C
Internal speed	2.4 GHz	2.66 GHz	2.93 GHz
External speed	5.86 GTS	6.4 GTS	6.4 GTS
Number standard	1	1	1
Maximum	2	2	2
L2 cache (full-speed)	8 MB	8 MB	8 MB
Memory (PC2-5300-667)	2 GB ECC 2 x 1 GB	2 GB ECC 2 x 1 GB	2 GB ECC 2 x 1 GB
FBD			
	Chipkill	Chipkill	Chipkill
DIMM sockets	16	16	16
Capacity	128 GB ¹⁰	128 GB ¹⁰	128 GB ¹⁰

Video memory	SVGA 16 MB	SVGA 16 MB	SVGA 16 MB
SAS/SATA RAID controller Channels	1 8	1 8	1 8
Connector internal SFF 8087 (4 ports)	2	2	2
Connector external	0	0	0
HDD	open-bay	open bay	open bay
Total bays	11	11	11
5.25-in	3	3	3
Hot-swap	8	8	8
Internal capacity	2.4 TB ¹¹	2.4 TB ¹¹	2.4 TB ¹¹
Bays available	10	10	10
5.25 in	2	2	3
Hot-swap	8 ¹¹	8 ¹¹	8 ¹¹
Total PCI slots	7	7	7
PCI-E slots	6	6	6
32-bit/33 MHz	1	1	1
Slots available	6	6	6
Integrated management	Standard ¹²	Standard ¹²	Standard ¹²
Ethernet controllers	10/100/1000 Mb	10/100/1000 Mb	10/100/1000 Mb
SATA DVD	1	1	1
Power supply	920 W ¹³	920 W ¹³	920 W ¹³
Number standard	1	1	1
Hot-swap	Yes	Yes	Yes
Redundant power	Optional	Optional	Optional

Note: EMEA x=G.

¹⁰ Sixteen DIMM slots that enable you to deploy up to 128 GB of DDR3 SDRAM Registered DIMM memory, with 2 GB, 4 GB memory standard model dependent) 8 GB DIMM optional. 128 GB maximum is based on 16 x 8GB RDIMMs, which will be available following system Planned Availability.

¹¹ Drive bays provide 2.4 TB using 300 GB SFF SAS HDD options. Special bid models support up to 16 bays with an additional 2.4 TB of HDD capacity for a total of 4.8 TB. For the latest information on supported HDD options, visit

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

¹² These systems contain an integrated management module that provides a set of monitoring and alert features. Refer to the [Description](#) section for details.

¹³ The 920-watt redundant power supply is designed to support all systems.

SATA DVD drive characteristics²

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

² Actual playback speed varies and is often less than maximum.

Video subsystem

- Matrox G200 Video Graphics Controller
- Integrated on planar and connected to the PCI bus

- SVGA compatible video controller (Matrox G200)
- DDR2-250MHz SDRAM video memory controller.
- Video memory is not expandable in this system
- One DVI (Digital Video Interface) is not used

Supported video mode capabilities for the SVGA PCI controller

Resolution	Vertical Refresh Rate	Color Depth
1600 x 1200	60, 65, 70, 75, 85	8, 16
1680 x 1050	60, 75, 85	8, 16
1440 x 900	75, 85	8, 16
1440 x 900	60	8, 16, 32
1280 x 1024	75, 85	8, 16
1280 x 1024	60	8, 16, 32
1152 x 864	60	8, 16, 32
1024 x 768	60, 70, 75, 85	8, 16, 32
800 x 600	56, 60, 72, 75, 85	8, 16, 32
640 x 400	60, 72, 75, 85	8, 16, 32

Notes

- The grayed ones are supported only if the monitor contains this resolution in his EDID.
- The connector is a 15-pin D-shell, A video cable of 1.8 meters is the maximum supported length.

Dimensions

Tower

- Width: 218.0 mm (8.5 in)
- Depth: 767.0 mm (27.6 in)
- Height: 440.0 mm (17.31 in)
- Weight: 20.00 kg (44 lb) (minimum configuration)
- Weight: 38.00 kg (83.6 lb) (maximum configuration)

Rack

- Width: 424.0 mm (16.7 in)
- Depth: 702.0 mm (27.6 in)
- Height: 218.0 mm (8.5 in)
- Weight: 20.00 kg (44 lb) (minimum configuration)
- Weight: 34.00 kg (74.8 lb) (maximum configuration)

Electrical

- 100 to 240 V ac; 50 - 60 Hz; 11 - 5.5 A
- Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: 0.60 kVA
 - Maximum configuration: 1.10 kVA
- Btu output: ship configuration - 2013 Btu/hr (590 watts)
- Btu output: full configuration - 3610 Btu/hr (1056 watts)
- Acoustical noise emission levels:
 - 5.5 bels (idling)
 - 6.0 bels (operating)

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

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

Standards

These systems support or comply with the following standards:

- Multiprocessor Specification (MPS) 1.4
- Peripheral Component Interconnect (PCI) specification 2.2
- Peripheral Component Interconnect (PCI-X) specification v2.1
- PCI-Express specification 1.0
- Hardware-enabled to meet the International Organization for Standardization (ISO) 9241, Part 3

Equipment approvals and safety

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

Physical specifications

Approximate shipping dimensions and weight for rack models:

Single Pack Dimensions	L 27.4 x w 17.31 x H 8.6 in
Single Pack weight	42.5 lbs
Quantity per Pallet	3
Pallet Load Dimensions	L 47.25 x w 39.4 x H 32.5 in
Pallet Load weight	290.4 lbs
Estimated Safe Stacking	4 high

Approximate shipping dimensions and weight for tower models:

Single Pack Dimensions	L 29.4 x w 8.6 x H 17.31 in
Single Pack weight	42.5 lbs
Quantity per Pallet	3
Pallet Load Dimensions	L 47.25 x w 39.4 x H 32.5 in
Pallet Load weight	129.4 lbs
Estimated Safe Stacking	4 high

Operating environment

Environment temperature:

- Server on: 10° C to 35° C (50° F to 95° F); altitude: 0 to 915 m (3,000 ft)
- Server on: 10° C to 32° C (50° F to 90° F); altitude: 915 m (3,000 ft) to 2,134 m (7,000 ft)
- Server on: 10° C to 28° C (50° F to 83° F); altitude: 2,134 m (7,000 ft) to 3,050 m (10,000 ft)
- Server off: 5° C to 45° C (41.0° F to 113° F)
- Shipping: -40° C to 60° C (-40° F to 140° F)

Humidity:

- Server on: 20% to 80%, Max. Dew Point 21° C, Max. rate of change 5° C/hr

- Server off: 8% to 80%, Max. Dew Point 27° C

Maximum altitude: 2,134 m (7,000 ft)

Hardware requirements

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

- Keyboard (only in EMEA and AG)
- Mouse (only in EMEA and AG)
- HDD
- Display (C117, T115, T117 or equivalent)

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

For service, the server requires a compatible:

- Keyboard (only in EMEA and AG)
- Mouse (only in EMEA and AG)
- HDD
- Display

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

Software requirements

Programming requirements

The following network operating systems are supported in the x3500 server:

Microsoft	- windows Server 2003, Standard Edition windows Server 2003, Enterprise Edition windows Server 2003, Web edition windows Server 2008, (32 bit and EM64T)
VMware	- VMware ESX Server 3.5
Linux®	- Red Hat Enterprise Linux 4 AS for x86 Red Hat Enterprise Linux 4 AS for AMD64/EM64T Red Hat Enterprise Linux 4 ES for x86 Red Hat Enterprise Linux 4 ES for AMD64/EM64T Red Hat Enterprise Linux 4 WS for x86 Red Hat Enterprise Linux 4 WS for AMD64/EM64T SUSE Linux Enterprise Server 10 for x86 SUSE Linux Enterprise Server 10 for AMD64/EM64T Red Hat Enterprise Linux 5 Server Edition Red Hat Enterprise Linux 5 Server x64 Edition Red Hat Enterprise Linux 5 Server Edition with Xen Red Hat Enterprise Linux 5 Server with Xen x64 Edition SUSE Linux Enterprise Server 10 with Xen for x86 SUSE Linux Enterprise Server 10 without Xen

Note: Certification is planned for these operating systems. For additional information on support, certification, and versions on network operating systems, visit

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

Compatibility

The System x3500 M2 server systems contain licensed system programs that include set configuration, set features, and test programs. System BIOS is loaded from a "flash" EEPROM into system memory. This BIOS provides instructions and interfaces designed to support the standard features of the x3500 server and to maintain compatibility with many current software programs.

To view detailed information on the Internet about IBM and non-IBM devices, adapters, software, and network operating systems supported with x3500 servers, visit

<http://www.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 x3500 servers. The *Sales Manual* is updated periodically as new features and options are announced that support these servers.

Limitations

- The System x3500 M2 servers support a maximum of 128 GB¹⁰ of system memory when you add a 8 GB memory RDIMMs in each of the sixteen DIMM slots. All supported system memory is addressable through direct memory access (DMA). The x3500 M2 server supports 1 GB, 2 GB, 4 GB, and 8 GB memory synchronized with processor FSB bandwidth. DIMMs must be installed in matched pairs. Refer to the [Planning information](#) section for supported memory options.
- Mixing microprocessors of different speeds or cache size is not supported.
- Use the version of ServerGuide shipped with the system, or a later version, to load software and drivers. Earlier versions of ServerGuide may not be compatible with the server.

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

¹⁰ Sixteen DIMM slots that enable you to deploy up to 128 GB of DDR3 SDRAM Registered DIMM memory, with 2, 4 GB memory standard (model dependent) 8 GB DIMM optional (post system availability).

User group requirements

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

Planning information

Customer responsibilities

Customer setup

The x3500 M2 servers are designated as customer setup. Customer setup instructions are shipped with systems and options.

Bay configuration

The server contains 11 drive bays. The four 3.5-inch hot-swap bays or the eight 2.5-inch bays are located on the lower half of System x3500 tower models. These bays are ready for various supported hot-swap HDD drive option installation. The three bays on the top portion of tower models are designed primarily for removable media devices. One bay contains the DVD-ROM drive, while the remaining two 5.25-inch half-high bays can support tape backup or other devices.

SAS cabling considerations

The x3500 M2 server contains two backplane and each backplane supports four hot-swap SAS/SATA drive bays. The backplanes are connected to the ServeRAID-BR10i controller through two miniSAS cables. (one backplane with one miniSAS cable).

ServeRAID-BR10i is standard offering on system.

The DVD is SATA attached.

External SAS attachment

In the configurations where an external SAS device attachment is required, a support SAS adapter is required.

External serial attachment

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

Processor upgrades

The following processor upgrades are supported:

- Intel Xeon Processor E5502 2C 1.86 GHz/4.8 GTS-4 MB (80w) (46D1350)
- Intel Xeon Processor E5504 4C 2.0 GHz/4.8 GTS-4 MB (80w) (46D1351)
- Intel Xeon Processor E5520 4C 2.26 GHz/5.86 GTS-8 MB (80w)(46D1352)
- Intel Xeon Processor E5530 4C 2.4 GHz/5.86 GTS-8 MB (80w) (46D1353)
- Intel Xeon Processor X5550 4C 2.66 GHz/6.4 GTS-8 MB (95w) (46D1355)
- Intel Xeon Processor X5570 4C 2.93 GHz/6.4 GTS-8 MB (95w) (46D1357)

Supported memory options

The following memory options are supported:

- IBM 1 GB (1Rx8) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1480)
- IBM 2 GB (2Rx8) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1481)
- IBM 2 GB (1Rx4) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1482)
- IBM 4 GB (2Rx4) PC3-10600R-999 DDR3 Chipkill RDIMM 1333 MHz (44T1483)

Note: 8 GB DIMMs become available following system availability with qualification of approximately 90 days.

Power supply requirements

These models contain one 920-watt power supply, which is a hot-swap capable supply. When not using redundancy, one hot-swap supply has enough power to supply a fully loaded box. If redundancy is required, you should install additional power supplies to ensure sufficient power will be available. A fault light illuminates when a power supplies fails.

Optional rack installations

These models are optionally installable as rack units and are designed so they can be installed in an industry-standard 19-inch rack cabinet such as the NetBAY42 or NetBAY25. The x3500 M2 server system requires a rack mount kit for rack installation. In addition, it can also be installed in the deeper NetBAY42 ER.

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

behind the rear flange for cable management; the System x3500 M2 server requires approximately 16.6 cm (6.5 in) in this space.

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

Cable orders

Dual Broadcom 5709C 10/100/1000 Mbps, full-duplex Ethernet PCI controllers, standard with the x3500 M2 server, are connected directly to two independent RJ-45 connectors. The RJ-45 connectors provide a 10BaseT, 100Base-TX, or 1000Base-TX interface for connecting twisted-pair cable to the Ethernet network. Cabling is not included with the server. To connect the Ethernet controller to a repeater or switch, use a UTP cable with RJ-45 connectors at both ends. For 100/1000 Mbps operation, Category 5 cabling must be used. For 10 Mbps operation, Category 3, or better, cabling must be used.

There are no additional cabling requirements, other than for system power, keyboard, mouse, and monitor connections.

Installability

The System x3500 M2 server requires about 30 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional adapters, or features.

Packaging

Product	Package Description	Boxes
System x3500 M2	System Unit Carton	1
	Contents:	
	System Unit	
System x3500 M2	Country Kit Carton	
	Contents:	
	Machine type 7839 x3500 M2 Ship Group	
	- Important Notices Flyer	
	- Machine type 7839 x3500 M2 Doc Browser CD	
	- Director V5.20.3 CD	
	- Ethernet V T4.6.13 CD	

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

Supplies

For end users

IBM System x3500 M2 servers can be purchased through the dealers around the world.

Security, auditability, and control

Security and auditability features include:

- Power-on and remote-control password functions provide controls of who has access to the data and server setup program on the server.

It is a customer's responsibility to ensure that the server is secure to prevent sensitive data from being removed.

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

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.

General product/system description

The x3500 M2 systems are enterprise LAN servers using industry-standard architectures. They contain a 32-bit and 64-bit PCI bus architecture:

- A 32-bit PCI bus supports data transfer rates of up to 132 MB/s and runs at 33 MHz clock speeds.
- A PCI-E bus supports data transfer rates of up to 10.5 GB/s and runs at 133 MHz clock speed.

These servers contains either a Intel 1.86 GHz/4.8 GTS-4 MB 2C E5520, or a 2.0 GHz/4.8 GTS-4 MB E5504 4C, 2.26 GHz/5.86 GTS-8 MB E5520 4C, 2.4 GHz/5.86-8 MB GTS E5530 4C, 2.66 GHz/6.4 GTS-8 MB X5550 4C, or 2.93 GHz/6.4 GTS-8 MB X5570 4C Intel Xeon processor data bus and support for up to 10.5 GB/s data bus to the system

The processors with either a 4.8, 5.86, or 6.4 GTS bus run at 1333 MHz functional speed with 4 MB or 8 MB advanced transfer cache.

Additional standard features include 2 GB of system memory, dual integrated Gigabit Ethernet and eight port SAS/SATA RAID controllers, an integrated management module, an SVGA video controller with 16 MB of video memory, SATA DVD-ROM drive

Model configurations

Model	Xeon Processor	Memory	HDD	SAS Interface	Mechanical
7839-12x	1.86 GHz/4.8 GTS, 4 MB	2 GB	open-bay	HS SFF SAS/SATA	Tower
7839-22x	2.0 GHz/4.8 GTS, 4 MB	2 GB	open-bay	HS SFF SAS/SATA	Tower
7839-32x	2.26 GHz/5.86 GTS, 8 MB	2 GB	open-bay	HS SFF SAS/SATA	Tower
7389-42x	2.4 GHz/5.86 GTS, 8 MB	2 GB	open-bay	HS SFF SAS/SATA	Tower
7389-62x	2.66 GHz/6.4 GTS, 8 MB	2 GB	open-bay	HS SFF SAS/SATA	Tower
7389-82x	2.93 GHz/6.4 GTS, 8 MB	2 GB	open-bay	HS SFF SAS/SATA	Tower

Note: EMEA x=G.

- The x3500 M2 can be upgraded to SMP by adding a second processor of the same type, speed, and cache size.
- System memory can be expanded to 128 GB by installing a 8 GB RDIMM option in each of the sixteen memory DIMM sockets.
- These models contain eight hot-swap bays and are shipped without HDDs to allow customers or remarketers to configure the server to meet various storage requirements depending upon the application.

The x3500 M2 provides eight storage expansion bays and seven PCI/PCI-E expansion slots. These models have one standard 920 watt power supply and can support an optional System x 920 W Hot-Swap Redundant Power Supply for robust applications that require redundancy.

- Eleven bays consist of eight SAS/SATA storage bays, and three 5.25-inch half-high drive bays, allowing access to removable media devices.
- System x3500 contains six PCI-E expansion slots, and one PCI 32-bit/33 MHz expansion slot:
 - Slot 1 : PCIe2 x8 : PCI-E x8 slot with x8 lanes (Gen2, from IOH) support
 - Slot 2 : PCIe2 x16 (8,1) : PCI-E x16 slot with x8 lanes (Gen2, from IOH) support
 - Slot 3 : PCIe2 x8 (4,1) : PCI-E x8 slot with x4 lanes (Gen2, from IOH) support
 - Slot 4 : PCIe2 x8 (4,1) : PCI-E x8 slot with x4 lanes (Gen2, from IOH) support
 - Slot 5 : PCIe2 x8 : PCI-E x8 slot with x8 lanes (Gen2, from IOH) support
 - Slot 6 : PCI-32 : PCI-32 slot with 32bit/33MHz (from ICH-10) support
 - Slot 7 : PCIe x8 (4,1) : PCI-E x8 slot with x4 lanes (Gen1, from ICH-10) support

The x3500 M2 standard features include:

- A 4.8, 5.86, or 6.4 GTS QuickPath interconnect (QPI) Intel Xeon processor with integrated 4 MB or 8 MB ECC advanced transfer cache
- Second socket for Intel Xeon processor
- Memory subsystem consists of ECC DDR3 RDIMMs running at 1333 MHz with an ECC memory controller
- DDR3 ECC RDIMMs, combined with an integrated ECC memory controller, corrects soft and hard single bit memory errors, and minimizes disruption of service to LAN clients
- An SVGA controller with 16 MB video memory
- An integrated management module
- Dual channel, SAS/SATA PC-Express controller
- Dual integrated Broadcom 5709C Gigabit Ethernet controllers
- A SATA DVD-ROM drive
- Time Of Day clock and battery
- Standard Device Ports/Connectors:
 - Keyboard
 - Pointing Device
 - SVGA port
 - One RSA RJ-45 connector
 - One high speed serial/asynchronous port, (NS16550A compatible)
 - Two front and four rear USB ports; one internal USB
 - System management processor port

Note: The Xeon GHz speed is the internal processor speed. External processor operations to system memory run at either 1333 MHz.

Europe considerations

NLS support is provided for many of the System x3500 components in the following languages: U.S. English, Worldwide English (U.K.), French, German, Italian, Spanish, and Japanese.

The NLS support includes national language keyboard support, multilingual nomenclature, and translated documentation as required by the individual countries.

IBM Electronic Services

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

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

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

To learn how Electronic Services can work for you, visit

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

Terms and conditions

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

Warranty period

- System x3500 7839 - 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 has been designated as a consumable or supply item and is, therefore, not covered by this warranty:

- Battery

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:

- System foot kit (rear)
- System foot kit (front)
- Blank filler
- EMC shield kit
- SS EMC Plate Kit
- EMC shield 4x3.5
- 3.5-inch HS EMC Kit
- Cable bracket asm
- Hard disk drive
- Hot-swap fan cage asm
- Hot-swap power supply
- Fan cage/guide arm Asm
- Lift handle kit
- Opt wheel USB
- Cover Top/side
- Side cover asm
- Bottom cover
- Front bezel asm
- 120mm Fan Asm
- DDR3-1333 Memory
- Memory expansion card
- Optical drive
- PCI adapter
- PCI divider
- Power cord
- Service label
- Service processor

- Rack bezel asm
- Air duct
- Key card asm
- W2008 CDs
- Keyboards
- USB/Lightpath cable bracket asm

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

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System x3500 Servicepac Offering	ServicePac Number	Ordering Part Number
7839		
3yr On-site Repair 5 days x 9hr x 4hr Resp Target	PC1139	68Y5335
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4yr On-site Repair 5 days x 9hr x 4hr Resp Target	PC1141	68Y5337
4yr On-site Repair 7 days x 24hr x 4hr Resp Target	PC1142	68Y5338
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