IBM System x3500 M4 5U tower servers feature fast 8C Intel Xeon processors with QPI and new memory, new power supplies, and HDDs for enhanced performance and scalability

Table of contents

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Overview</td>
</tr>
<tr>
<td>3</td>
<td>Key prerequisites</td>
</tr>
<tr>
<td>3</td>
<td>Planned availability date</td>
</tr>
<tr>
<td>4</td>
<td>Description</td>
</tr>
<tr>
<td>11</td>
<td>Product positioning</td>
</tr>
<tr>
<td>11</td>
<td>Product number</td>
</tr>
<tr>
<td>12</td>
<td>Publications</td>
</tr>
<tr>
<td>13</td>
<td>Technical information</td>
</tr>
<tr>
<td>18</td>
<td>Terms and conditions</td>
</tr>
<tr>
<td>19</td>
<td>Prices</td>
</tr>
<tr>
<td>19</td>
<td>Announcement countries</td>
</tr>
</tbody>
</table>

At a glance

IBM® System x3500 M4 servers feature:

- A 1.86 GHz/8.0 GTS-20 MB 8C Intel® E5-2648L, or a 2.1 GHz/8.0 GTS-20 MB 8C E5-2658 Intel Xeon™ processor data bus to the system with two QPI links.
- 4 GB or 8 GB of 1333 MHz DDR3 ECC system memory; 384 GB maximum or 768 GB maximum when 32 GB DIMMs available.
- Eight-port SAS/SATA with RAID controller.
- One hot-swap 750-watt power supply fitted standard; one hot-swap 900-watt redundant power supply standard, model dependent.
- Integrated management module (IMM2).
- Six PCI-Express card slots standard, two more PCI-Express card slots with dual processors, and one optional PCI-X card slot when using interposer card.
- Support for up to thirty-two 2.5-inch drives plus one standard optical drive and one optional half-height tape drive or up to eight 3.5-inch drives plus one standard optical drive and one optional half-height tape drive.
- Up to 32 TB with 1 TB 2.5-inch HS NL SFF SAS/SATA disk storage.
- Quad Intel I350AM4 integrated Gigabit Ethernet controllers.
- SVGA video with 16 MB memory shared.
- Support for optional Remote Presence function.
• 5U tower industry-standard models, rack mount using special bid or option.
• Two USB front and four USB rear ports, two USB internal port, one d-sub connector, five 10/100/1000 RJ45 ports, one serial port.

Overview

The System x3500 M4 servers include:

• Quickpath Interconnect (QPI) support for 6.4, 7.2, and 8.0 Gigabit transfers per second (GTS), two links.
• Two simple-swap fans standard with single processor or three simple-swap fans standard with dual processors. Optional redundant cooling option and power supplies are available.
• Six PCI-Express card slots standard, two more PCI-Express card slots with dual processors, and one optional PCI-X card slot when using interposer card.
• Integrated quad Gigabit Ethernet and standard RAID-0, RAID-1, RAID-10 (upgradeable), or RAID-0, RAID-1, RAID-1E, RAID-5, RAID-10, and RAID-50, with PCI-E adapter.
• Optional RAID-6 or RAID-60 using feature on demand.
• 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 clients.
• Integrated management module (IMM2) with optional Remote Presence function.
• Light path diagnostics with a light path panel visible at front of chassis.

Powered and scaled for business growth

• These servers contain one of the following:
  - A 1.86 GHz/6.4 GTS-10 MB 4C Intel E5-2603, a 2.4 GHz/6.4 GTS-10 MB 4C E5-2609, a 2.0 GHz/7.2 GTS-15 MB 6C E5-2620, a 2.3 GHz/7.2 GTS-15 MB 6C E5-2630, a 2.5 GHz/7.2 GTS-15 MB 6C E5-2640, a 1.86 GHz/8.0 GTS-20 MB 8C Intel E5-2648L, a 2.0 GHz/8.0 GTS-20 MB 8C E5-2650, a 2.1 GHz/8.0 GTS-20 MB 8C E5-2658, a 2.6 GHz/8.0 GTS-20 MB 8C E5-2670, or a 2.7 GHz/8.0 GTS-20 MB 8C E5-2680 Intel Xeon processor data bus to the system.
• Either an 800 MHz, 1066 MHz, 1333 MHz, or 1600 MHz functional speed processor operations to memory.
• 4 GB or 8 GB of high-speed, DDR3 - 1333 MHz ECC memory’, 384 GB maximum using 16 GB memory DIMMs’, or 768 GB maximum using 32 GB memory DIMMs’. 
• High-speed, wide-bandwidth slots: Six PCI-Express card slots with single processor, two more PCI-Express card slots with dual processors and one optional PCI-X card slot when using interposer card.
• Quad port Intel I350AM4 Gigabit Ethernet ports and SAS or SATA support.
• Standard SATA DVD-ROM and tape drive bay.
• Eight standard SFF hot-swap drive bays and up to thirty-two 2.5-inch bays available using upgrade options with total HDD storage capacity of 32 TB, using 1 TB Near-Line SFF SAS/SATA HDD options.

High availability for around-the-clock business demands

• Integrated systems management (IMM2) and support for the optional Remote Presence function.
• Wake on LAN.
• ECC memory to detect double-bit errors and correct single-bit errors.
• Integrated memory mirroring and sparing.

Service and support perfected for business needs

• ServerGuide and IBM Director.
• IBM Server support and web support.
• Three-year, customer replaceable unit (CRU) and on-site service, limited warranty; optional warranty service upgrades available.

For configurations that support the RAID Battery, the RAID battery will be warranted for 1 year effective on its "Date of Installation." All other product warranty terms for the machine remain unchanged.

Notes:

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 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.

3 Some programs may not be available in all countries.

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

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

6 Twenty-four DIMM slots that enable you to deploy up to 384 GB of DDR3 SDRAM Registered DIMM memory, with 24 slots populated with 16 GB DIMMs optional, 4 GB memory standard

7 Available later in 2012. For the latest information on supported HDD options, visit http://www-03.ibm.com/systems/info/x86servers/serverproven/compat/us/

Key prerequisites

The following options requires an IBM System x® supported server.

• Intel Xeon Processor E5-2648L 8C 1.8 GHz 20 MB Cache 1600 MHz 70W
• Intel Xeon Processor E5-2658 8C 2.1 GHz 20 MB Cache 1600 MHz 95W
• 16 GB (2Rx4 1.5V) 1600 RDIMM (00D4968)
• 146 GB 15K SAS HS 2.5-inch PI SED (90Y8944)
• 300 GB 10K SAS HS 2.5-inch PI SED (90Y8913)
• 250 GB 7.2K SATA 2.5-inch HS (81Y9722)
• 500 GB 7.2K SATA 2.5-inch HS (81Y9726)

Planned availability date

September 14, 2012: System x3500 M4 - 7383 REF2 CPU, Memory, and HDD products.
Description

Related options

IBM memory options

- 16GB (1x16GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz LP RDIMM (00D4968)
- 4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz LP RDIMM (90Y3178)
- 2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1405)
- 4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz LP RDIMM (49Y1559)
- 4GB (1x4GB, 1Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1406)
- 4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1407)
- 8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz LP RDIMM (90Y3109)
- 8GB (1x8GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1397)
- 16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (49Y1400)
- 16GB (1x16GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1563) UDIMM
- 2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP UDIMM (49Y1403)
- 4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP UDIMM (49Y1404) LRDIMM
- 32GB (1x32GB, 4Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP LRDIMM (90Y3105)

IBM processor options

- Intel Xeon Processor E5-2690 8C 2.9GHz 20MB Cache 1600MHz (94Y7343) 135W
- Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz (90Y5950) 130W
- Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz (90Y5955) 115W
- Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache 1600MHz (90Y5951) 130W
- Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz (94Y7442) 115W
- Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache 1600MHz (90Y5949) 95W
- Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz (90Y5948) 95W
- Intel Xeon Processor E5-2643 4C 3.3GHz 10MB Cache 1600MHz (94Y7341) 130W
- Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz (94Y7342) 80W
- Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz (90Y5947) 95W
- Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz (90Y5946) 95W
- Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz (90Y5945) 95W
- Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz (90Y5944) 80W
- Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz (90Y5942) 80W
- Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz (90Y5954) 70W
- Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz (90Y5953) 60W

These 4C, 6C, and 8C processors are ideal for data-intensive applications that range from data mining to evolving web services. Innovative technologies deliver
processing speeds of up to 2.7 GHz/8.0 GTS with performance headroom for unpredictable server workloads and escalating computing needs.

Intel Xeon processors with 10 MB, 15 MB, or 20 MB cache feature Intel Turbo Boost 2.0 Technology that provides maximum turbo mode duration and speed to improved power and thermal management. The new intelligent performance processors adapt to software workload environment, delivering more computing power when needed. The new Intel-integrated I/O integrates PCIe adaptors into the processor for lower latency and power while growing total capacity and bandwidth.

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), with two links, support SMP applications when installed in the second processor slot of all System x3500 M4 models with similar processors.

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.

ServeRAID controllers supported

- IBM 6Gb SAS HBA Controller (46M0907)
- ServeRAID M1115 SAS/SATA Controller for System x (81Y4448)
- ServeRAID M5110 SAS/SATA Controller for IBM System x (81Y4481)
- ServeRAID M5100 Series 512MB Cache/RAID 5 Upgrade for IBM (81Y4484) System x
- ServeRAID M5100 Series 512MB Flash/RAID 5 Upgrade for IBM (81Y4487) System x
- ServeRAID M5100 Series Battery Kit for IBM System x (81Y4508)
- ServeRAID M1100 Series Zero Cache/RAID 5 Upgrade for IBM (81Y4542) System x
- ServeRAID M5100 Series Zero Cache/RAID 5 Upgrade for IBM (81Y4544) System x
- ServeRAID M5100 Series RAID 6 Upgrade for IBM System x (81Y4546)
- ServeRAID M5100 Series 1GB Flash/RAID Upgrade for IBM (81Y4559) System x

IBM support options

- Tower to Rack Conversion Kit (81Y7006)
- PCI-X interposer conversion kit (81Y7012)
- Additional 8 x 2.5" Hot-Swap SAS/SATA Upgrade Kit for 16 (94Y5978) or 24 HDDs
- Additional 8 x 2.5" Hot-Swap SAS/SATA Upgrade Kit for 32 (81Y7010) HDDs
- Redundant Cooling Upgrade Kit (81Y7007)
- IBM System x 900W High Efficiency Platinum AC Power Supply (94Y5973)
- IBM System x 750W High Efficiency Platinum AC Power Supply (94Y5974)
- SAS cable option for Two RAID array (RAID adapter not (00D2607) included)
- 146GB 15K SAS HS 2.5" PI SED (90Y8944)
- 300GB 10K SAS HS 2.5" PI SED (90Y8913)
- 250GB 7.2K SATA 2.5" HS (81Y9722)
• 500GB 7.2K SATA 2.5" HS (81Y9726)

**IBM Redundant power and cooling option**

The redundant power supplies are designed to supply power for all systems.

**High-performance server subsystems**

System x3500 M4 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 10 MB, 15 MB, or 20 MB cache, model dependent. 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.

Three 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 M4 server uses the Intel Patsburg chipset- C600 to maximize throughput from processor to memory and system I/O buses.

**Standard System x3500 M4 configurations**

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>Cache</th>
<th>Memory</th>
<th>SAS Interface</th>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>7383-A2x</td>
<td>1.8 GHz/6.4 GTS</td>
<td>10 MB</td>
<td>4 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-B2x</td>
<td>2.4 GHz/6.4 GTS</td>
<td>10 MB</td>
<td>4 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-C2x</td>
<td>2.0 GHz/7.2 GTS</td>
<td>15 MB</td>
<td>8 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-C4x</td>
<td>2.0 GHz/7.2 GTS</td>
<td>15 MB</td>
<td>8 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-D2x</td>
<td>2.3 GHz/7.2 GTS</td>
<td>15 MB</td>
<td>8 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-F2x</td>
<td>2.5 GHz/7.2 GTS</td>
<td>15 MB</td>
<td>8 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-G2x</td>
<td>2.0 GHz/8.0 GTS</td>
<td>20 MB</td>
<td>8 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-H2x</td>
<td>2.6 GHz/8.0 GTS</td>
<td>20 MB</td>
<td>8 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
<tr>
<td>7383-J2x</td>
<td>2.7 GHz/8.0 GTS</td>
<td>20 MB</td>
<td>8 GB</td>
<td>HS SFF SAS/SATA</td>
<td>Tower</td>
</tr>
</tbody>
</table>

Note: For EMEA x=G

Additional features:

- **System board that contains 12 DIMM connectors and CPU expansion board contains 12 DIMM connectors supporting 2 GB, 4 GB, 8 GB, 16 GB, or 32 GB 1066 MHz, 1333 MHz, or 1600 MHz DDR3 memory, model dependent**
  - System memory expansion to 384 GB with 16 GB memory RDIMMs installed in 24 DIMM slots or 768 GB system memory with 32 GB memory LFF DIMMs installed.

- **Eight-port SAS/SATA RAID controller that supports high-speed internal storage solutions**
• Quad-port Gigabit Ethernet controllers that speed network communications to LAN clients

The x3500 M4 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 M4 server an excellent choice for a stand-alone or clustered business-critical application, storage, file, and print server.

High-availability and serviceability features

• Redundant cooling includes:
  – Three simple-swap fans (single replaceable unit)

• One hot-swap power supply standard, and one optional redundant power supply to support robust high-availability applications

• Hot-swap HDD bays with SAS/SATA 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

• 10 MB, 15 MB, and 20 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

• Up to six simple-swap redundant system cooling fans to cool system

• Integrated management module (IMM2) 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)†
  – Numeric error logging

• Information LED panel to give visual indications of system health

• Light path diagnostics and onboard diagnostics for an LED map that provides error codes (which are explained in the hardware maintenance manual)

• Easy access to system board, adapter cards, processor, and memory

• CPU failure recovery in SMP configurations
  – Generates alerts error logs

† The ASR function is currently supported on Microsoft™ Windows™ 2000 and Windows 2003.
**Expandability and growth**

The System x3500 M4 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 384 GB with 16 GB memory RDIMMs installed in 24 DIMM slots or 768 GB (with 32 GB Memory LRDIMMs installed in 24 DIMM slots)
- Six PCI-E slots with single processor, two more PCI-Express slots with dual processors and one optional PCI-X card slot when using interposer card
- Up to 32 drive bays plus two 5.25-inch, half-high device bays:
  - Eight 2.5-inch, hot-swap drive bays; two 5.25-inch, half-high device bays standard on the C4x model
  - Optional HDD upgrade kits available to increase the number of storage devices from eight to sixteen, to twenty-four, or to thirty-two 2.5-inch hot-swap drive bays
  - Internal support for high performance (up to 15,000 rpm) for up to eight SAS HDDs and a high-capacity half-height tape backup device
  - Up to 32 TB, using 1 TB 2.5-inch NL SFF SAS/SATA hot-swap HDDs

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

2 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 (IMM2)**

The System x3500 M4 server includes an integrated management module controller that provides industry-standard Intelligent Platform Management Interface (IPMI) 2.0-compliant systems management. The IMM2 comes standard, and has a dedicated onboard Ethernet port for access. IMM2 can be accessed using 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 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 email, IPMI PETs, and SNMP.

**IBM Director**

x3500 M4 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, through the use of 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 email or a page to an administrator
  - Run a command or program
  - Deliver 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

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 M4 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 ServerProven® program enables you to configure your server confidently with various devices and operating systems. This web-based program provides compatibility information from actual testing of the System x3500 M4 servers 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.

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

**Emulex 10 GbE VFA III adapter**

The Emulex 10 GbE Virtual Fabric Adapter III for IBM System x is a high-performance, dual-port network adapter for 10 Gb Ethernet (10 GbE) networks. It is available as an optional 10 GbE adapter. They are integrated 10 GbE technology for select IBM System x models.

Features:

• 10 Gb performance
• One adapter to manage all workloads
• Optimized for virtualization
• Integration of Emulex and IBM technology
• Greener data centers

**Product positioning**

The System x3500 M4 server is positioned above the entry, two-way x3500 M3. 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.

With these servers, two segments can be combined into one departmental and mission-critical space. The System x3500 M4 server is a compact 5U two-way, SMP-capable Xeon processor-based platform designed with integrated high-availability features for mainstream network and storage server applications.

These servers are ideal for clients who require up to two-way 2.9 GHz/8.0 GTS processing power, significant memory, high availability, and large data storage scalability. High-speed memory, up to thirty-two SAS/SATA hot-swap drive bays, and a device bay for high-capacity tape drives make these servers ideal for mainstream network and storage computing.

**Product number**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W</td>
<td>00D4473</td>
</tr>
<tr>
<td>Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W</td>
<td>00D4474</td>
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</table>

The following are Pseudo Options.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5&quot; SATA Simple Swap (Single HDD only)</td>
<td>00D2606</td>
</tr>
<tr>
<td>Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W</td>
<td>00D4475</td>
</tr>
</tbody>
</table>
Model conversions

None

Feature conversions

None

Publications

The following publications and CD-ROMs are shipped with the x3500 M4 servers:

- The System x3500 M4 Installation and User's Guide contains an introduction to the computer, installation and setup, installing options, reference information, and problem determination. The installation and user's guide has easy-to-use text and pictorials to enable you to quickly set up the System x3500 M4 server.
- Documentation CD

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 is at

http://www.ibm.com/systems/support/

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.

Additional publications information

- System x3500 M4 Installation and User's Guide
- Documentation CD:
  - Installation and User's Guide
  - Problem Determination and Service Guide

  All of these publications are available at
  http://www.ibm.com/systems/support/

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.

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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


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

Technical information

Specified operating environment

Physical specifications

Refer to Hardware Announcement ZG12-0055, dated March 06, 2012.

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.

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, GOST R 51318.24, GOST R 51317.3.2, GOST R 51317.3.3
- IEC 60950-1 (CB Certificate and CB Test Report)
Hardware requirements
For attended installation of an operating system, this server requires a compatible:

- Keyboard (only in EMEA and Americas Group)
- Mouse (only in EMEA and Americas Group)
- 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 Americas Group)
- Mouse (only in EMEA and Americas Group)
- HDD
- Display

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

Software requirements
Programming requirements
The following network operating systems are supported in the x3500 M4 servers:

- Microsoft
  - Windows Server 2008, (32 bit and EM64T)
  - Windows Server 2008, R2
  - Windows Small Business Server 2008 (Premium and Standard)
- VMware
  - VMware ESX Server 4.1
  - VMware ESXi Server 4.1
  - VMware vSphere 5
  - VMware ESXi 5.0
- Linux
  - SUSE Linux™ Enterprise Server 10 for AMD64/EM64T
  - SUSE Linux Enterprise Server 10 for x86 SP4
  - SUSE Linux Enterprise Server 11 SP2 for x86-64
  - SUSE Linux Enterprise Server 11 for AMD64/EM64T
  - SUSE Linux Enterprise Server 11 with Xen AMD64/ EM64T
  - SUSE Linux Enterprise Server 11 64-bit (includes KVM)
  - Red Hat Enterprise Linux 5 Server Edition
  - Red Hat Enterprise Linux 5 x64 Edition includes KVM
  - Red Hat Enterprise Linux 5.7 SE x64
  - Red Hat Enterprise Linux 5 Server with Xen x64 Edition
  - Red Hat Enterprise Linux 6 Server Edition
  - Red Hat Enterprise Linux 6 Server x64 Edition includes KVM
  - Red Hat Enterprise Linux 6.1 SE x64
Note: Certification is planned for these operating systems. For additional information on support, certification, and versions on network operating systems, visit

http://www-03.ibm.com/systems/info/x86servers/serverproven/compat/us/

Compatibility

The System x3500 M4 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-03.ibm.com/systems/info/x86servers/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 M4 servers support 384 GB of system memory when you add a 16 GB memory RDIMMs in each of 24 DIMM slots. Using 32 GB LRDIMMS in each of the 24 DIMM slots, the x3500 M4 supports maximum system memory of 768 GB. All supported system memory is addressable through direct memory access (DMA). The x3500 M4 server supports 2 GB, 4 GB, 8 GB, 16 GB, and 32 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.

x3500 M4 is shipped standard with one processor which only has 12 DIMM sockets attached. To have all 24 DIMM sockets available, second processor upgrade kit is required.

Refer to the Software requirements section for operating system limitations.

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 M4 servers are designated as customer setup. Customer setup instructions are shipped with systems and options.
Bay configuration
The server contains 10 drive bays. The eight 3.5-inch hot-swap or simple-swap bays or the eight 2.5-inch hot-swap 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 two 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 one 5.25-inch half-high bays can support tape backup or other devices.

SAS cabling considerations
The x3500 M4 server contains one backplane. This backplane supports eight 2.5-inch SAS/SATA drives and is connected with ServeRAID controller through two minSAS cables. The x3500 M4 system can contain four backplanes maximum, two are with expander.

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:

Supported memory options
The following memory options are supported:

- 2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1405)
- 4GB (1x4GB, 1Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1406)
- 4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1407)
- 8GB (1x8GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1397)
- 16GB (1x16GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1563)
- 2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP UDIMM (49Y1403)
- 32 GB (1x32GB, 4Rx4, 1.35V) PC3L-10600 CL9 ECC (90Y3105) DDR3 1333MHz LP LRDIMM (available late 2012)
- 16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (49Y1400)
- 4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz LP RDIMM (90Y3178)

Power supply requirements
These models contain either one 750-watt or one 900-watt power supply, model dependent, 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 M4 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 M4 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

Quad 10/100/1000 Mbps, full-duplex Ethernet PCI controllers, standard with the x3500 M4 server, are connected directly to 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 M4 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

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 M4 servers and options 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.

IBM Electronic Services

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

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

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

To learn how Electronic Services can work for you, visit

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

Terms and conditions

Field installable feature

Yes

Warranty period

One year.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

Customer setup

Yes
**Machine code**
No license terms apply.

**Optional features warranty period**
Optional features - One year.

**Prices**
For all local charges, contact your IBM representative.

**Announcement countries**
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