New IBM System x3850 servers include Intel dual-core Xeon MP processors

At a glance

IBM System x3850 servers combine third-generation Enterprise X-Architecture (EXA) with the high performance of 64-bit dual-core Intel Xeon MP processors. They feature:

- Up to 64 GB of high-speed PC2-3200 ECC DDR2 SDRAM system memory
- Four 64-bit Peripheral Component Interconnect-E (PCI-E) x8 slots
- Two high-performance Active 64-bit/266 MHz Peripheral Component Interconnect-X 2.0 (PCI-X 2.0) slots
- Integrated Broadcom 5704 Dual-port 10/100/1000 Gigabit Ethernet
- Remote Supervisor Adapter II (RSAII) SlimLine, enabling full, out-of-band remote systems management
- Two 1300-watt, voltage sensing, hot-swap power supplies
- Standard combo-drive, three USB ports, two serial ports, RS-485 port, SVGA video port, mouse port, and keyboard port in a rack-dense 3 U tool-free chassis
- Optimized for enterprise applications and commercial workloads, such as database, ERP, CRM, and in-house-developed applications, including Web services implementations

Overview

Models of the IBM x3850 server are powered with Intel® dual-core Xeon MP processors at 3.5 GHz.

The IBM x3850 server contains advanced third-generation Enterprise X-Architecture™ (EXA) technologies that combine four-socket SMP power, Active PCI-X 2.0 and PCI-E x8 expansion, high availability, and substantial internal data storage capacity.

Improves performance and reduces latency

- IBM XA-64e third-generation chipset with an integrated processor and memory controller substantially reduces the system latency that bottlenecks commercial applications
- Support for Xcel4v dynamic server cache
- From one to four 64-bit dual-core Intel Xeon MP processors at 3.50 GHz with 2 x 1 MB L2 cache and 16 MB L3 cache support for 32-bit and 64-bit applications with Intel Extended Memory 64 Technology (EM64T)
- Dual-bus architecture plus 667 MHz front-side bus for 3X improvement in CPU bandwidth over the previous generation
- High-availability Active Memory with support for Chipkill™, memory
mirroring, and Memory ProteXion

• 4 GB of high-speed PC2-3200 memory; expandable to 64 GB
• Four 64-bit Active PCI-E x8 and two 64-bit Active PCI-X 2.0 266 MHz slots
• Up to six 2.5-inch Serial Attach SCSI (SAS) HDDs
• ServeRAID™ 8i SAS controller without using a system PCI-X or PCI-E slot
• High-performance integrated dual-gigabit Ethernet
• RSAII SlimLine for advanced remote systems management
• Atmel Trusted Platform Module v1.1b, TCG (Trusted Computing Group) compliant
• 3U rack-optimized, tool-free chassis

Leverages high availability and increased security

• Support for advanced Memory ProteXion at no additional cost
• Active PCI-E x8 and PCI-X 2.0 slots that support hot-add and hot-swap of I/O adapters
• Two 1300-watt, voltage sensing, hot-swap power supplies
• Predictive Failure Analysis® (PFA) on processors, memory, fans, power supply, and HDD options to help warn of problems before they occur
• IPMI-compliant basic hardware monitoring and alerting with the advanced RSAII SlimLine, helping to protect server availability through continuous system monitoring and delivering true remote management capabilities

Service and support optimized for On Demand Business

• ServerGuide™ and IBM Director
• ServerProven® compatibility testing and Web support
• Three-year, on-site¹ limited warranty²

Key prerequisites

• Monitor, keyboard, and mouse
• SAS HDD
• Rack

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

Planned availability date
February 14, 2007

AP announcement countries

AP distribution: To all Asia Pacific countries for release.

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Announced</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASEAN*</td>
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<tr>
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<td>Taiwan</td>
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<td>Korea</td>
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<td>Japan</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand and</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Description

Related options

Intel Xeon Processor 7150N — 3.5 GHz 667 MHz 2 x 1 MB L2 & 16 MB L3 Cache Upgrade (43V4553) supports internal processing speeds of 3.5 GHz and external processing operations to memory at 667 MHz. It contains an integrated, full-speed, 2 MB Level 2 cache and 16 MB Level 3 cache.

These processor options are supported for four-socket SMP applications in the System x3850 server. A Voltage Regulator Module (VRM), specifically designed to support this System x™ server, is included.

2 GB (2 x 1 GB Kit) PC2-3200 CL3 ECC DDR2 SDRAM RDIMM (39M5809) contains two 1 GB DIMMs.

4 GB (2 x 2 GB Kit) PC2-3200 CL3x4 ECC DDR2 SDRAM RDIMM (39M5812) contains two 2 GB DIMMs.

8 GB (2 x 4 GB Kit) PC2-3200 CL3x4 ECC DDR2 SDRAM RDIMM (30R5145) contains two 4 GB DIMMs.

These high-speed DDR2 registered DIMMs are synchronized to the processor so that once addressed, data can be transferred on both edges of the clock signal. This takes advantage of the improved performance of the 667 MHz dual front-side bus architecture of the XA-64e third-generation chipset and the 64-bit Xeon MP processor. The memory bus transfers data at up to 5.3 GB per second.

Active Memory 4-slot Memory Expansion Card (41Y5000) allows you to upgrade your System x3850 server with four memory expansion cards. System memory can be expanded to 64 GB by removing the two standard DIMMs and adding two additional memory expansion card options and a 4 GB PC2-3200 CL3x4 ECC DDR2 SDRAM RDIMM in each of the four DIMM sockets.

Add an additional 1300-watt, voltage sensing, hot-swap power supply.

IBM Director V5.1 supports the System x3850 server. For more detailed information, including operating system support, refer to the IBM Director V5.1 compatibility document at http://www.ibm.com/servers/eserver/serverproven/compat/us/

IBM System x3850 description

Standard IBM System x3850 model configurations

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>L2 Cache</th>
<th>L3 Cache</th>
<th>Memory</th>
<th>HDDs</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>8864-5Rx</td>
<td>2 x 3.50 GHz Xeon 7150N</td>
<td>1 MB/each</td>
<td>2 MB total</td>
<td>16 MB</td>
<td>4 GB ECC</td>
<td>Open bay Two</td>
</tr>
</tbody>
</table>

High-performance server subsystems: IBM System x3850 servers are high-performance, mission-critical servers. They combine breakthrough four-socket performance on a 64-bit x86 server optimized for commercial enterprise applications deployed in the application-serving tier.

These models are equipped with powerful 64-bit dual-core Intel Xeon processors at 3.50 GHz, 2 x 1 MB L2 cache, 16 MB L3 cache. These processors support 64-bit extensions and compatibility with current 32-bit applications and system tools. Four connectors for Xeon MP processors are standard on the system board. High-speed PC2-3200 ECC DDR2 SDRAM memory provides excellent processor-to-memory subsystem performance.

The IBM System x3850 server is fine-tuned and engineered to optimize the powerful 64-bit Xeon MP processors. This architecture consists of the following components:

- 64-bit dual-core Intel Xeon MP processors on a highly reliable, high-performance 667 MHz dual FSB architecture
• IBM XA-64e third-generation chipset with integrated processor and memory controller for reduced latencies and a high-throughput I/O southbridge supporting PCI-E x8 and PCI-X 2.0, up to 266 MHz

• EM64T memory addressability, supporting up to 64 GB of maximum memory to reduce paging and improve overall server performance

• Updated high-performance server technologies, such as serial-attached SCSI (SAS), DDR2-based Active Memory, and XceL4v dynamic server cache

**High-availability and serviceability features:** Many enterprises run mission-critical commercial applications around the clock to supply information across the globe. These environments require “ruggedly” dependable servers designed with features that can tolerate a component failure without total shutdown. IBM x3850 servers pack numerous fault-tolerant and high-availability features into a high-density, rack-optimized package that helps significantly reduce the space needed to support massive network computing operations without sacrificing performance or availability.

These features include:

• Active PCI-E x8 and PCI-X 2.0 slots up to 266 MHz; hot-add and hot-swap adapters in Windows™ and Linux™ environments (refer to the Limitations section)

• Six 2.5-inch SAS HDD bays

• ServeRAID 8i controller supporting up to RAID 0, 1, 5, 1E, 00, 10, 50, 1E0, and 5EE

• ECC DIMMs combined with an integrated advanced ECC memory controller with third-generation Chipkill support to correct many single-, two-, three-, and four-bit memory errors to minimize disruption of service to LAN clients

• Memory ProteXion and memory mirroring support

• Memory hardware scrubbing to correct many soft memory errors automatically without software intervention

• PFA on HDD options, memory, processors, power supply, and fans in conjunction with IBM Director to help alert the system administrator of an imminent component failure

• Two 1300-watt, voltage sensing, hot-swap power supplies

• Eight hot-swap, multispeed fans to provide cooling redundancy and enable individual fan replacement without powering down the server

• RSAII SlimLine enabling diagnostic, reset, POST, and auto recovery functions from remote locations and monitoring of temperature, voltage, and fan speed; alerts generated when thresholds are exceeded without using an I/O slot

• Information LED panel, diagnostics LED panel, and component LEDs for visual indications of system well-being

• Light path diagnostics for an outside view of the potential problem without removing the cover, to help reduce downtime and service costs

• Easy front access to system board, and top access to adapter cards, power supplies, and memory

• CPU failure recovery in SMP configurations, allowing a failed processor to be forced offline, the server rebooted, an alert generated, and operation continued with the working processor

**Performance scalability:** IBM x3850 servers are designed for high performance on complex applications. They feature scalability of memory, I/O, and HDD storage for future growth potential.

The servers include:

• Substantial I/O expansion supporting four 64-bit Active PCI-E x8 and two 64-bit Active PCI-X 2.0 266 MHz slots, including backward compatibility to existing legacy PCI and PCI-X adapters

• Four-socket SMP operations with powerful 64-bit dual-core Xeon MP processors

• 4 GB high-speed PC2-3200 DDR2 ECC memory standard, supporting up to 64 GB of system memory
• Two worldwide, voltage-sensing, 1300-watt, hot-swap power supplies with auto restart
• Six 2.5-inch hot-swap drive bays, supporting up to 440 GB of internal data storage (using six 73.4 GB SAS hot-swap HDDs)
• Terabytes of external data storage with optional storage units, ServeRAID SCSI controllers, and Fibre Channel controllers

**Systems management:** IBM System x3850 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 rich security features to access and manage physically dispersed IT assets more efficiently over the Internet. It can help reduce costs through potentially:

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

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

IBM Director includes IBM Director Extensions, a portfolio of server tools that integrates into the IBM Director interface and works with the RSAlII SlimLine, or other systems-management monitoring functions contained in System x3850 servers. Typical functions and monitoring capabilities can include:

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

The IT administrator gains comprehensive, virtual on-site control of System x3850 servers through the ability to remotely:

• Access the server, in many cases regardless of its status
• Inventory and display detailed system and component information
• View server bootup during POST
• Browse and delete logs of events and errors
• Reset or power cycle the server
• Run diagnostics, SCSI, and RAID setup during POST
• Monitor thresholds on server health, including:
  - Operating system load
  - POST time-out
  - Voltage
  - Temperature
• Set proactive alerts for critical server events, including PFA on:
  - Processors
  - Memory
  - Fans
  - Power supplies
  - HDDs
• Define automated actions, such as:
Send an e-mail or page to an administrator
- Execute a command or program
- Pop up an error message to the IBM Director console

- Flash BIOS
- Monitor and graph the utilization of server resources, such as:
  - Memory
  - Processor
  - HDDs
- Identify potential performance bottlenecks and react to prevent downtime
- Monitor, manage, and configure RAID subsystems without taking them offline

IBM Director Agent provides integration into leading workgroup and enterprise systems management environments, via Upward Integration Modules. This enables the advanced management capabilities built into System x3850 servers to be accessed from

- Tivoli® Enterprise and Tivoli NetView®
- Computer Associates Unicenter TNG
- HP OpenView
- Microsoft™ SMS
- BMC Patrol
- NetIQ

**PowerExecutive™ tools and programs:** The IBM PowerExecutive tool is available on the System x3850 server and allows direct power monitoring through IBM Director. This tool helps customer monitor power consumption to allow better utilization of available power resources.

For more information, refer to


**World-class support tools and programs:** IBM System x3850 servers include 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.

- IBM on-site, three-year limited warranty with next business day (NBD) service (same business day service optionally available) helps protect your investment if a problem occurs. This service also includes replacement of parts identified through PFA.
- The ServerProven® program helps you confidently configure your server with various devices and operating systems. This Web-based program provides compatibility information from actual testing of the IBM x3850 server with various adapters and devices.
- The ServerGuide™ CD library includes online publications and utilities and drivers that help you load popular network operating systems.
- Electronic support on the Web offers additional support in an easy-to-use format.

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>8864-5Rx</td>
<td>2 x 3.50 GHz</td>
<td>1 MB</td>
<td>2 MB(2)</td>
<td>16 MB</td>
<td>46G ECC</td>
<td>Two</td>
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<tr>
<td>Xeon 7150N</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Product positioning**
Drawing upon latency-reducing, mainframe-inspired technologies, this server unleashes breakthrough 64-bit price-performance by combining the performance of the third-generation EXA chipset with the 64-bit capabilities of the latest Intel 64-bit dual-core Xeon MP processors to deliver the premiere industry-standard application server architecture.

These new IBM System x3850 models enhance the high-performance product line by using breakthrough x86 performance and price/performance for the newly emerging segment of x86 64-bit servers targeted at commercial workloads and the application-serving tier.

Positioned between the System x3650 and the System x3950 servers, the IBM System x3850 server features a high-density, 3 U mechanical platform that supports the 64-bit dual-core Intel Xeon MP processors, PCI-E x8, PCI-X 2.0 architecture, and high-speed DDR2 memory.

IBM System x3850 servers deliver additional processing, I/O, memory expandability, and high-availability features over that of the System x3650 server. These features make them ideal for handling complex, business-critical commercial applications typical of the application-serving tier, such as ERP and CRM. The performance of this server also makes it well suited for consolidation of other uni-, two-, and four-socket servers through virtualization.

The IBM x3850 server provides excellent four-socket processing capability with models supporting 3.50 GHz dual-core Xeon MP processors, high-speed DDR2-based Active Memory, and Active PCI bus architecture.

With a focus on reducing latency, increasing bandwidth, and delivering mainstream 64-bit computing on one of the most prevalent server instruction sets in the world (x86 ISA), the IBM x3850 servers are an excellent fit for today and future commercial enterprise applications. The IBM x3850 server also offers potential investment protection to meet the demands of a changing marketplace. It delivers 32-bit compatibility on a 64-bit platform, including dual-core capability. You can migrate with confidence based on your business needs, backed up by IBM, the most trusted name in servers.

These high-density, Xeon-based servers are designed to handle complex commercial 64-bit applications, requiring high-speed computing power and advanced high-availability functions in a minimum amount of rack space. Applications include:

- Enterprise resource planning
- Business intelligence
- Online transaction processing
- In-house-developed applications, such as Web services
- Collaboration applications (Microsoft Exchange and Lotus Notes®)
- Server consolidation, including virtualization
- Database
- Customer relationship management
- Supply chain management

The ServeRAID 8i SAS Controller is a high-performance RAID controller that works with the onboard SAS controller of selected System x3850 servers to provide RAID-5 capability for SAS HDDs.

### Product number

The following are newly announced features on the specified models of the IBM xSeries® 8864 machine type:

**GAV Models**

<table>
<thead>
<tr>
<th>Description</th>
<th>Machine Models</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh, Brunei, Cambodia, Myanmar, India, Indonesia, Laos, Malaysia, Myanmar (Burma), Philippines, Singapore, Sri Lanka, Thailand, Taiwan, Vietnam</td>
<td>IBM System x3850</td>
<td></td>
</tr>
</tbody>
</table>

IBM Asia Pacific Announcement AG07-0016

IBM is a registered trademark of International Business Machines Corporation
<table>
<thead>
<tr>
<th>Description</th>
<th>Machine Models</th>
<th>Order Number</th>
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<tbody>
<tr>
<td>Japan</td>
<td>IBM System x3850</td>
<td>8864 5RJ, 8864 5RE</td>
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<tr>
<td>PRC</td>
<td>IBM System x3850</td>
<td>8864 5RD, 8864 5RC, 8864 5RN</td>
</tr>
<tr>
<td>India, Nepal, Sri Lanka</td>
<td>IBM System x3850</td>
<td>8864 5RQ</td>
</tr>
</tbody>
</table>

1. IBM sends a technician after attempting to diagnose and resolve the problem remotely.
3. The Microsoft Windows Preinstallation Environment software, included as part of ServerGuide software, may be used for boot diagnostic, setup, restoration, installation, configuration, test, or disaster recovery.
purposes only.

**Note:** The Microsoft Windows Preinstallation Environment software contains a security feature that will cause an end user customer's system to reboot without prior notification to the end user customer after 24 hours of continuous use of the Microsoft Windows Preinstallation Environment. During routine usage of ServerGuide, which does not usually require usage of the Microsoft Windows Preinstallation Environment software for such an extended time period, this condition should not occur.

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Intel is a registered trademark of Intel Corporation.

Windows and Microsoft are trademarks of Microsoft Corporation.

Linux is a trademark of Linus Torvalds in the United States, other countries or both.

Other company, product, and service names may be trademarks or service marks of others.

**Memory ProteXion — Redundant bit steering**

- Utilizes unused bits in each memory DIMM (hot spare bits)
- Doubles the number of Chipkill™ corrections sustainable per server
- Included at no additional cost, requires no additional hardware, and works independently of operating system
- Similar to the "hot-spare" of a DASD array

**Memory mirroring**

- Propels Intel®-based servers towards continuous operations
- Dramatically helps to increases uptime and allows scheduled maintenance
- Offers mainframe capability and reliability
- Does not require drivers or operating system support

**Chipkill memory**

- Support integrated into the XA-64e third-generation chipset for using off-the-shelf DIMMs
- Better memory reliability to support in-memory databases
- Increased availability by detecting and helping to correct single-, two-, three-, and four-bit memory errors
- Third-generation Chipkill technology developed by IBM

**Publications**

The following publications and CD-ROMs are shipped with the IBM System x3850 servers:

- IBM System x3850 Installation Guide contains an introduction to the computer, installation and setup, installing options, reference information, and problem determination. The installation guide has easy-to-use text and illustrations to enable you to quickly set up your IBM System
x3850 server.

- ServerGuide™ contains online publications and drivers to support the IBM System x3850 server. In addition, it includes a set of easy-to-use utilities on CD to help you install several popular network operating systems.

**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 System x3850 Installation Guide and the Problem Determination Guide, in U.S. English versions, are available from

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

IBM System x3850 Installation Guide

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### Services

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### 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


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

### Specified operating environment

<table>
<thead>
<tr>
<th>IBM System x3850 88645Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong> Xeon 7150N</td>
</tr>
<tr>
<td><strong>Internal speed</strong> 3.50 GHz</td>
</tr>
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<td><strong>External speed</strong> 667 MHz</td>
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<td><strong>Number standard</strong> 2</td>
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<td><strong>Maxi mum</strong> 4</td>
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<tr>
<td><strong>L2 cache/core (full speed)</strong> 1 MB</td>
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<tr>
<td><strong>L2 cache total (full speed)</strong> 2 MB</td>
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<tr>
<td><strong>L3 cache (full speed)</strong> 16 MB</td>
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<tr>
<td><strong>Memory (PC2-3200 DDR2)</strong> 4 GB ECC</td>
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<td><strong>DIMMs</strong> 2 x 2 GB</td>
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<td><strong>Memory Expansion Card Std</strong> 2</td>
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<tr>
<td><strong>DIMM sockets std</strong> 8 (5)</td>
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<tr>
<td><strong>DIMM sockets max</strong> 16 (5)</td>
</tr>
<tr>
<td><strong>Capacity</strong> 64 GB (6)</td>
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<tr>
<td><strong>Video</strong> SVGA</td>
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<td><strong>Memory</strong> 16 MB</td>
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<tr>
<td><strong>SAS SCSI controller</strong> 3.0 GHz</td>
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<td><strong>Links</strong> 6</td>
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<tr>
<td><strong>Connector internal</strong> 2</td>
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<tr>
<td><strong>Connector external</strong> 0</td>
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<tr>
<td><strong>HDD</strong> 0</td>
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<tr>
<td><strong>Total bays</strong> 7</td>
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<tr>
<td><strong>5.25-inch slim media</strong> 1</td>
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<td><strong>Hot-swap HDD</strong> 6</td>
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<tr>
<td><strong>Accessible</strong> 7</td>
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<td><strong>Internal capacity</strong> 440.4 GB (7)</td>
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<tr>
<td><strong>PCI-X 2.0 slots</strong> 2</td>
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<tr>
<td><strong>PCI-E x8 slots</strong> 4</td>
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<td><strong>Slots available</strong> 6</td>
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<td><strong>Management Processor</strong></td>
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<tr>
<td><strong>BMC</strong> Standard</td>
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<tr>
<td><strong>RSA-II SlimLine</strong> Standard</td>
</tr>
<tr>
<td><strong>ServeRAID(TM) 8i</strong> Standard</td>
</tr>
<tr>
<td><strong>Dual Ethernet</strong> 10/100/1000 Mbps</td>
</tr>
<tr>
<td><strong>controller</strong></td>
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<tr>
<td><strong>CD-ROM / DVD</strong> Optional</td>
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<tr>
<td><strong>Combo Drive</strong> Standard</td>
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<td><strong>Power supply</strong> 1300 Watt</td>
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<td><strong>Number standard</strong> 2</td>
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<td><strong>Maxi mum</strong> 2</td>
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<td><strong>Hot-swap</strong> Yes</td>
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<tr>
<td><strong>Redundant power</strong> Standard</td>
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<tr>
<td><strong>Auto restart</strong> Yes</td>
</tr>
</tbody>
</table>

(5) **Number of sockets are based on installation of the four memory expansion cards (41Y5000)**

(6) **Capacities are based on installation of the four memory expansion cards (41Y5000) and 4x4 GB DIMMs installed in each card**

(7) **Capacities are based on installation of six 73.4 GB 2.5-inch SAS HDDs. For the latest information on supported HDD options, visit**

**Dimensions:** 3 U rack drawer

- Width: 442.0 mm (17.4 in)
- Depth: 701.0 mm (27.6 in)
- Height 128.4 mm (5.05 in)

- Minimum configuration: 28.6 kg (63 lb)
- Maximum configuration: 37.6 kg (83 lb)

**Electrical**

- 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 8.5 A
- 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 8.5 A
- Input kilovolt-amperes (kVA) (approximately)
  - Minimum configuration: 0.318 kVA (two power supplies)
  - Maximum configuration: 1.524 kVA (two power supplies)
- Btu output
  - Ship configuration: 1,086 Btu/hr (318 watts)
  - Full configuration: 5,200 Btu/hr (1524 watts)
- Noise level horizontal position: 6.6 bels

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

**Japan Energy Saving Standard**

Machine type/model 88645Rx

<table>
<thead>
<tr>
<th>Category '05</th>
<th>Category '07</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>B</td>
</tr>
</tbody>
</table>

**Power Consumption**

- (Watts): 343.0
- (AMPS): 3.48
- CTP (MTOPS): 24,951
- Energy Consumption Efficiency: 0.014
- Input Frequency: 60 Hz

**IBM System x3850 configuration idling with Windows™ 2003**

88645Rx

- CPU: 1 CPU — 3.5 GHz
- PSU: 1 standard
- DVD-ROM: 1 standard
- RAM Memory: 16 x 4 GB DIMMs

IBM System x3850 servers are intended for use as rack-drawer servers and are tested and designed to operate in a horizontal position.

**Standards:** These systems support or comply with the following standards:
Multi Processor Specification (MPS) 1.4.

Hardware-enabled to meet the International Organization for Standardization (ISO) 9241, Part 3.

In addition to the above standards, they are compatible with the PCI-X specification 2.0.

**Equipment approvals and safety**

- Japan VCCI, Class A
- IEC-60950 (CB Certificate and CB Test Report)
- Australia and New Zealand C-Tick Mark \ CISPR 22, Class A
- Taiwan BSMI CNS13438, Class A
- Korea — MIC

**Operating environment**

- Temperature
  - 10.0° to 35.0° C (50° to 95° F) at 0 to 914 m (0 to 3,000 ft)
  - 10.0° to 32.0° C (50° to 90° F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Relative humidity: 8% to 80%
- Maximum altitude: 2,133 m (7,000 ft)

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

- Keyboard
- Mouse
- Display

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

For service, the server requires a compatible:

- Keyboard
- Mouse
- 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 have been tested for compatibility with the IBM System x3850 server:

- Microsoft™
  - Windows Server 2003 Enterprise Edition SP1 (32- and 64-bit)
  - Windows 2000 Advanced Server SP4 Hyperthreading Off
- Linux™
- Red Hat Enterprise Linux 3 AS & ES 64-bit Update 8 Hyperthreading Off
- Red Hat Enterprise Linux 3 AS. ES 32-bit Update 8 Hyperthreading Off
- Red Hat Enterprise Linux 4 AS. ES 64-bit Update 4 Hyperthreading Off
- Red Hat Enterprise Linux 4 AS. ES 32-bit Update 4 Hyperthreading Off
- SUSE Linux Enterprise Server 9 (SLES9) SP3 32-bit
- SUSE Linux Enterprise Server 9 (SLES9) SP3 64-bit
- SUSE Linux Enterprise Server 10 (SLES10) 32-bit (Memory limitation of 48 GB)
- SUSE Linux Enterprise Server 10 (SLES10) 64-bit
- VMware ESX Server 3.0 update 1
- NetWare 6.5

**Note:** For information on additional support, certification, and versions of network operating systems, visit


**Compatibility:** The IBM System x3850 server contains licensed system programs that include set configuration, set features, and test programs. IBM 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 IBM x3850 server and to maintain compatibility with many current software programs.

For detailed information about IBM and non-IBM devices, adapters, software, and network operating systems supported with System x3850 servers, visit


Contact your IBM representative, IBM Business Partner, or refer to the IBM Sales Manual for information on the compatibility of hardware and software for System x3850 servers. The Sales Manual is updated periodically as new features and options are announced that support these servers.

**Limitations**

- The System x3850 servers are shipped with 4 GB (2 x 2 GB) of memory. A maximum of up to 64 GB of system memory is supported by adding two additional memory expansion card options and a 4 GB PC2-3200 CL3x4 ECC DDR2 SDRAM RDIMM in each of the four DIMM sockets. All supported system memory is addressable through direct memory access (DMA). This server supports 1 GB, 2 GB, and 4 GB 1.8V, 240-pin, 8-byte RDIMMs. Supported DIMMs can coexist in the same server; however, memory DIMMs of the same capacity must be installed in matched pairs. Refer to the Planning information section or the System x3850 server Web page memory options.
- The IBM x3850 server supports up to six HDDs, which limits the ServeRAID 8i SAS Controller to reach RAID configurations of RAID 0, 1, 1E, 00, 10, 50, 1E0, and 5EE, but not RAID 60.
- Use the version of ServerGuide that is shipped with the system, or a later version, to load software and drivers. Earlier versions of ServerGuide may not be compatible with the server.

Refer to the Software requirements section for operating system limitations.

**Hot-swap limitations**

- PCI hot-plug is not supported in Red Hat Enterprise Linux 3.
- PCI hot-plug support is limited in SLES 9 and Novell NetWare 6.5.
- Also WS & ES versions of RHEL only support up to 2 sockets
- For Linux, multifunction adapters (those that use PCI bridges) are currently not supported.
- For NetWare, only hot-replace of adapters is supported.

**Note:** Active-PCI-E is not supported by current versions of Software updates, if any, will be
released by the appropriate networking operating system.

Planning information

Customer responsibilities: IBM System x3850 Server and Related Options

The IBM System x3850 server is designated as customer setup. Customer setup instructions are shipped with systems.

Configuration information

Bay configuration

The IBM System x3850 server contains seven customer-accessible drive bays on the top front of the server. The top right bay is for the standard combo drive. Six unpopulated 2.5-inch, slim-high, hot-swap drive bays are located to the left of the combo drive.

The IDE Combo Drive is cabled directly to the IDE port. The six hot-swap bays are connected to the integrated Serial-attached SCSI controller through an integrated circuit.

Serial-attached SCSI

The IBM x3850 server contains a DASD backplane supporting up to six hot-swap, SCA-2-compliant drive bays.

ServeRAID 8i controller supports up to RAID 0, 1, 5, 1E, 00, 10, 50, 1E0, and 5EE.

Processor upgrades

The following processor upgrade options are supported:

- Intel Xeon Processor 7150N 3.50 GHz 667 MHz 2x1 MB L2/16 MB L3 Cache Dual-core Processor Upgrade (43V4553)

Memory support

The following memory options are supported:

- 2 GB PC2-3200 ECC DDR2 SDRAM RDIMM (39M5809)
- 4 GB (2 x 2 GB Kit) PC2-3200 CL3x4 ECC DDR2 SDRAM RDIMM (39M5812)
- 8 GB (2 x 4 GB Kit) PC2-3200 CL3x4 ECC DDR2 SDRAM RDIMM (30R5145)

PCI-X 2.0 adapter installations

The IBM System x3850 server contains PCI-X 2.0 and PCI-E x8 architecture. Two 64-bit full-length slots support PCI-X 2.0, PCI-X 1.0, and PCI adapters of various clock speeds and four full length PCI-E x8 slots supporting PCI-E x4 or x8 adapters.

Rack installations

IBM x3850 3 U, rack-drawer models are designed to be installed in a 19-inch rack cabinet designed for 26-inch deep devices, such as the NetBAY42 ER, NetBAY42 SR, NetBAY25 SR, or NetBAY11.

If using a non-IBM rack, the cabinet must meet the EIA-310-D standards with a depth of at least 71.1 cm (28 in). Also, adequate space (approximately 5 cm (2 in) for the front bezel and 2.5 cm (1 in) for air flow) must be maintained from the slide assembly to the front door of the rack cabinet to allow sufficient space for the door to close and provide adequate air flow.

Power considerations

These System x3850 models include two standard 1300-watt, hot-swap power supplies.

Cable orders: The 10/100/1000 Mbps full-duplex, Dual Ethernet PCI-X Controller is standard with IBM System x3850. The RJ-45 connectors provide a 10BaseT or 100/1000Base-TX interface for connecting twisted-pair cable to the Ethernet network. Cabling is not included with the server. To connect the Ethernet controller to a repeater or switch, use an unshielded twisted pair (UTP) cable with RJ-45 connectors at both ends. For 100/1000 Mbps operation, Category 5 cabling must be used. For 10 Mbps operation, Category 3, or better, cabling must be used.

There are no additional cabling requirements, other than for system power, keyboard, mouse, and monitor connections.
Installability: The IBM System x3850 server requires about 20 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional adapters, or features.

Packaging

<table>
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<tr>
<th>Product</th>
<th>Shipment group</th>
<th>Number of boxes</th>
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<tbody>
<tr>
<td>System x3850</td>
<td>System unit carton</td>
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<td></td>
<td>System unit</td>
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<td>Rails</td>
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<td></td>
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<td></td>
<td>Two 9-foot 220 V intra-rack cables</td>
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<td></td>
<td>IBM System x3850 Installation Guide</td>
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<td></td>
<td>On/off switch cover</td>
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</tbody>
</table>

The IBM x3850 system is shipped as a single package. The country kit carton is contained inside the top portion of the system unit carton, while the rack components are contained in the system unit carton.

Related options

Processor upgrades

- 64-bit Xeon MP processor
- VRM and heat sink
- Installation publications/warranty

Supplies: None

Security, auditability, and control

Security and auditability features include:

- Power-on and privileged access password functions control who has access to the data and server setup program on the server.
- A set unattended boot mode allows the system keyboard to be locked to all entries except the password and at the same time allows other computers on the network to access the system disk drive.
- A selectable boot sequence can be used to prevent unauthorized installation of software or removal of data from the diskette drive.
- Atmel Trusted Platform Module V1.1b, TCG (Trusted Computing Group) compliant.

Limitations: The IBM System x3850 server has no security intrusion detection; therefore, it should be installed in a rack environment that provides security through doors that can be locked or other security measures. It is a customer's responsibility to ensure that the server is secure to protect sensitive data.

The system does not support integrity measurements, therefore the TPM only provides Protected Storage and Platform Authentication and Identification. Protected Storage allows material on the operating system disk storage to be protected by the TPM. Platform Authentication and Identification allows for digital signatures or keys which represent the platform's identity. The TPM is TCG V1.1b-compliant, and is ready for use with Software
purchased from third party TPM Ecosystem partners in compliance with the TPM V1.1b specification. The TPM has been implemented on the x366 in addition to the new x3850, from the initial release to the current release.

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

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IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to put you on the road to 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 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.

To learn how Electronic Services can work for you, visit http://www.ibm.com/support/electronic

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Terms and conditions

IBM System x3850

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

Warranty period:

- Three years
- Optional features — 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.

Warranty service: If required, IBM provides repair or exchange service depending on the type of warranty service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations, additional charges may apply outside IBM’s normal service area, contact your local IBM representative or your reseller for country and location specific information.

Customer Replaceable Unit (CRU) (for example, keyboard, mouse, speaker, memory, hard disk drive) service and on-site service.

CRU service: IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 or a Tier 2 CRU. Installation of a Tier 1 CRU is your responsibility. If IBM installs a Tier 1 CRU, at your request, you will be
charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service specified below, on-site service.

Based upon availability, a CRU will be shipped for next business day (NBD) delivery. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, 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.

**On-site service:** On-site repair, 9 hours per day, Monday through Friday excluding holidays, NBD response. IBM or your reseller will repair the failing machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. On-site service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where on-site service is not available, the normal in-county service delivery is used.

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

The warranty service type, for example, on-site repair and customer replaceable unit, and service level, 9x5 NBD and 24x7, provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit


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

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

**Field-installable features:** Yes

**Model conversions:** No

**Machine installation:** Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

**Graduated program license charges apply:** No. This product does not contain Licensed Internal Code or Licensed Machine Code.

**Educational allowance:** None

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**Prices**

For all local charges contact your IBM representative.

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