

IBM System x3950 M2 server features the latest Intel Xeon MP processors

Table of contents

1	At a glance	9	Highlights
2	Overview	9	Publications
3	Key prerequisites	10	Services
3	Planned availability date	11	Technical information
3	Description	18	Terms and conditions
8	Product positioning	23	Pricing
8	Reference information	24	Order now
9	Product number		

At a glance



New IBM® System x3950 M2 server incorporates high-performance, Xeon® MP processors:

- Two quad-core Intel® Xeon MP processors at 2.40 GHz with 6 MB of L2 cache and 16 MB of L3 cache
- Up to 256 GB of high-speed, lower-power, PC2-5300 ECC double data rate 2 (DDR2) SDRAM per chassis memory with the ability to scale to 1 TB
- Seven 2.5 Gb PCIE x8 I/O slots (two are hot-plug) per chassis with the ability to scale to 28 slots in a 4-chassis configuration
- Serial Attached SCSI (SAS) controller
- Integrated Broadcom 5709 Dual-port 10/100/1000 Gigabit Ethernet
- Four 2.5-inch hot-swap bays for flexible installation of HDDs, supporting up to 584 GB¹ internal data storage
- Standard Remote Supervisor Adapter II Slimline, enabling remote, full-band systems management
- Two 1440-watt, voltage sensing, rear access, hot-swap power supplies
- UltraSlim Enhanced SATA CD-RW / DVD-ROM Combo drive
- Five USB ports (two can be used for USB keyboard and mouse), SVGA video port, one serial port, and two Gb Ethernet ports per chassis

Warranty: Three years, Customer Replaceable Unit (CRU) and on-site² service, limited warranty³; optional warranty service upgrades available.

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: SE001).

This model of the x3950 M2 server is powered with two quad-core Intel Xeon MP processors at 2.40 GHz with 6 MB of L2 cache and 16 MB of L3 cache.

The x3950 M2 server is the fourth generation of the Enterprise X-Architecture®. It delivers innovation with enhanced reliability and availability features to enable optimal performance for databases, enterprise applications, and virtualized environments.

Potential benefits include:

- Increased performance
- Memory reliability and availability
- Scalability up to 16 available sockets (number of usable sockets will vary by OS).
- Low-power cost-effective memory with Advanced Buffer eXecution chip
- Enhanced systems management capabilities
- Power management savings
- High efficiency power supplies
- Quad-core processing performance

Power and scalability

- Fourth-generation EXA chipset powering XpandOnDemand up to 16-socket (64-core) (use of all available cores is OS dependent)
- Active Memory™ with hot-swap support: Memory ProteXion, Chipkill™ memory mirroring, and hot-swap and hot-add memory, for high performance with 256 MB XceL4v cache per chassis
- Up to 32 DIMM slots per chassis delivering up to 256 GB of high-speed PC2-5300 DDR2 per chassis; expandable to 1 TB in a 16-socket (64-core) complex (use of all available cores is OS dependent)
- Serial Attach SCSI (SAS) plus RAID to maximize throughput and ease installation of a RAID card
- Four 2.5-inch SAS HDDs, up to 584 GB of maximum internal storage
- High-performance integrated dual Gigabit Ethernet built-in, high-speed networking with support for latest technologies
- Integrated Remote Supervisor Adapter II Slimline
- 4U rack-optimized, tool-free chassis that strikes the balance between rack density and ease of maintenance
- Rear access power supplies for easy access
- High efficiency power supplies

Fourth-generation EXA features

- Advanced fourth-generation Chipkill ECC memory controller to help correct single-, two-, three-, and four-bit memory errors
- Memory ProteXion and memory mirroring support
- Active PCIe x8 I/O slots, as well as hot-add and hot-swap adapters
- Four hot-swap drive bays and redundant fans to replace select components without powering down the server
- Two hot-swap, rear access, redundant power supplies
- Predictive Failure Analysis® (PFA) on processors, memory, fans, power supply, and HDD options to help warn of problems before they occur
- Innovative light path diagnostics and top access design; easy to service and configure

¹ When referring to hard drive or tape backup capacity, GB stands for one billion bytes. Total user capacity may vary depending on operating environments.

² IBM sends a technician after attempting to diagnose and resolve the problem remotely.

³ For information on the IBM Statement of Limited Warranty, visit

http://www.ibm.com/servers/support/machine_warranties/

Alternatively, this information is also available by contacting your IBM representative or reseller. Copies are available upon request.

⁴ IBM makes no warranties, expressed or implied, regarding non-IBM products and services that are ServerProven®, including but not implied warranties and of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

⁵ 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.

Key prerequisites

Refer to the [Hardware requirements](#) section for details.

Planned availability date

April 17, 2009

Description

Related options

Intel Xeon Processor E7440 - 2.40 GHz 6 MB L2 Cache 1066 MHz Intel Quad Core Processor Upgrade (44E4471) supports internal processing speeds of 2.40 GHz and external processing operations to memory at 1066 MHz. It contains an integrated, full-speed, 6 MB level 2 cache and 16 MB of L3 cache.

This processor option supports up to 16-socket (64-core) SMP applications in the x3950 M2 (use of all available cores is OS dependent). A VRM and heatsink, specifically designed to support this, are included.

2 GB (2x1GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (41Y2762)

4 GB (2x2GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (41Y2771)

8 GB (2x4GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (41Y2768)

16 GB (2x8GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (43V7356)

For information on support, visit

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

These high-speed, DDR2 registered DIMMs are synchronized to the processor. Once addressed, data can be transferred on both edges of the clock signal. This significantly improves performance of the 1066 MHz front-side bus Xeon MP processor.

IBM Director CD with 20 agent license proofs of entitlement includes support for the IBM System x3950 M2 server.

IBM System x3950 M2 Express Model server description

High-performance server subsystems

The x3950 M2 Express Model server is a high-throughput, scalable SMP-capable quad-core Xeon-based network server. It delivers excellent scalability for adding memory, adapter cards, or multiple processors.

The Express Model is powered with two quad-core Intel Xeon MP processors at 2.40 GHz with 6 MB of L2 cache and 16 MB of L3 cache that uses 64-byte cache lines. EMT64T architecture supports 64-bit extensions. Four sockets for Xeon MP processors are standard on the system board. High-speed PC2-5300 ECC SDRAM provides excellent processor-to-memory subsystem performance.

The x3950 M2 system architecture is fine tuned and engineered to optimize the powerful Xeon MP processors. This architecture consists of the following components:

- Quad-core Xeon MP processors
- Fourth-generation EXA-64e chipset
- System memory cards
- PCI-E host-bridge controllers

These Xeon MP processors use 1066 MHz common clock speed for external operations. The chipset supports eight 533 MHz buses to the memory controller, for a total of 34.1 GB/s of memory bandwidth.

The memory I/O controller (MIOC) supports:

- Data flow between the processor and memory, and to the PCIE host-bridge controller
- Chipkill ECC memory function

The two PCIE host-bridge controllers reside between the PCI buses and memory controller.

High-availability and serviceability features

Many enterprise on demand environments run around the clock to supply information around the globe. These environments require ruggedly dependable servers designed with features that can tolerate a component failure without total shutdown. The System x3950 M2 Express Model server packs 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.

Features include:

- Seven 2.5 Gb PCIE x8 I/O slots (two are hot-plug); hot-add and hot-swap adapters in Microsoft Windows and Linux® environments
- Four Serial Attach SCSI (SAS) HDD bays
- ECC DIMMs combined with an integrated advanced ECC memory controller with fourth-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 hot-add and hot-swap memory support
- Memory hardware scrubbing to correct many soft memory errors automatically without software intervention downtime
- 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 1440-watt power supplies that support typical configuration redundancy or full configurations requiring redundancy when operating with 240 V ac
- Six hot-swap, multispeed fans to provide cooling redundancy and enable individual fan replacement without powering down the server, plus one fan in each of the two hot-swap power supplies
- Standard Remote Supervisor Adapter II 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 utilizing 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 top access to system board, adapter cards, 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

XpandOnDemand scalability

The x3950 M2 Express Model server is designed for complex applications. It features XpandOnDemand scalability from fourth-generation Enterprise X-Architecture technology for future growth potential.

The server includes:

- Massive I/O expansion options supporting up to 28 PCIE x8 I/O card slots with a 4-chassis configuration
- Up to 16-socket (64-core) SMP operations with powerful Xeon MP processors (use of all available cores is OS dependent)
- 4 GB high-speed PC2-5300 DDR2 ECC memory standard, supporting up to 512 GB of system memory per chassis and up to 1 TB in a 4-chassis configuration
- Two worldwide, voltage-sensing 1440-watt, hot-swap power supplies with auto restart, standard
- Four hot-swap drive bays, supporting up to 584 GB of internal data storage (using four 146 GB SAS Hot-Swap HDDs)
- Terabytes of external data storage supporting optional storage units, ServeRAID[™] SCSI controllers, and Fibre Channel controllers and storage units

Configurations

XpandOnDemand scalability

Modular building-block scalability delivers the flexibility to optimize your system for your business and application needs.

Scalable Partition Web Interface

The Scalable Partition Web Interface, an extension of the Remote Supervisor Adapter II (RSA II) Slimline Web interface, is used to create, delete, control, and view scalable partitions. This Web interface is in the RSA II Slimline service processor.

The scalable partition defines a multinode configuration that interconnects two, three, or four servers for up to 16-way operation. With this configuration you can individually power on and power off each node. The multinode configuration uses a single, contiguous memory space, and provides access to all associated adapters. Each multinode configuration can have one or more scalable partitions.

Systems management

The System x3950 M2 Express Model server features IBM Director, a powerful, highly integrated, systems-management software solution built on industry standards and designed for ease of use.

With IBM Director, a network administrator can perform the following tasks:

- View the hardware configuration of remote systems in detail
- Monitor the usage and performance of critical components such as microprocessors, disks, and memory
- Centrally manage individual or large groups of IBM and non-IBM Intel-based servers, desktop computers, workstations, and mobile computers on a variety of platforms

IBM Director provides a comprehensive entry-level workgroup hardware manager. It includes the following key features:

- Advanced self-management capabilities for maximum system availability.
- Support for multiple operating systems, including Microsoft Windows 2003 Server, Windows XP Professional, Red Hat Linux, SUSE Linux, and Novell NetWare. For a complete list of operating systems that support IBM Director, visit

http://publib.boulder.ibm.com/infocenter/eserver/v1r2/index.jsp?topic=/di_ricinfo_5.20/fqm0_r_supported_operating_systems.html

The list is updated periodically.

- Support for IBM and non-IBM servers, desktop computers, workstations, and mobile computers. (Not all IBM Director features are supported on non-IBM servers.)
- Support for systems-management industry standards.
- Integration into leading workgroup and enterprise systems-management environments.
- Ease of use, training, and setup.

IBM Director also provides an extensible platform that supports advanced server tools that are designed to help reduce the total cost of managing and supporting networked systems. By deploying IBM Director, you may achieve reductions in ownership costs through the following potential benefits:

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

For more information about IBM Director, refer to the CD that comes with the server or the IBM Director documentation on the CD, or visit

<http://www.ibm.com/systems/management/director/resources/>

IBM Director includes IBM Director Extensions, a portfolio of server tools that integrates into the IBM Director interface and works with the Remote Supervisor Adapter II Slimline or other systems-management monitoring functions contained in IBM System x3950 M2 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 IBM System x3950 M2 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 a 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 system management environments, via Upward Integration Modules. This enables the advanced management capabilities built into IBM System x3950 M2 servers to be accessed from:

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

Active Energy Manager tools and programs

The IBM Active Energy Manager tool is available on the System x3950 M2 server and allows direct power monitoring through IBM Director. This tool helps you monitor power consumption to allow better utilization of available power resources.

For more information see

http://www-03.ibm.com/servers/eserver/xseries/systems_management/ibm_director/extensions/powerexec.html

World-class support tools and programs

The System x3950 M2 Express Model 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.

- IBM Customer Replaceable Unit (CRU) and On-site Service (optional warranty service upgrades available) protects your investment if a problem occurs. This service also includes replacement of parts identified through PFA.

- The ServerProven⁴ program lets you confidently configure your server with various devices and operating systems. This Web-based program provides compatibility information from actual testing of the x3950 M2 server with various adapters and devices.
- The ServerGuide⁵ 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.

System x3950 M2 configuration

System number	SEO	Processor	L2 cache	L3 cache	Memory	HDD i face	HDD	Power supply
7233-4Sx		2 x 2.40 GHz Xeon E7440 Quad-core	6 MB	16 MB Scalable	4x1 GB w/2 memory cards	SAS	open bay	two

Product positioning

This new IBM System x3950 M2 model enhances the server line by providing new levels of performance and price/performance. The IBM System x3950 M2 server features a high-density, 4U mechanical platform that supports quad-core Xeon MP processors, PCI-E architecture, and high-speed DDR2 memory.

The IBM System x3950 M2 server delivers additional processing, expandability, and high-availability features. These features make it ideal for handling complex, business-critical On Demand Business applications that must be supported by space-saving, rack-optimized servers.

The IBM System x3950 M2 server is designed for extremely complex, compute-intensive applications requiring six-socket plus processing power and large memory support.

The IBM System x3950 M2 server provides excellent scalable processing capability supporting high-speed memory, PCI-E bus architecture, and quad-core Intel Xeon MP processors at 2.40 GHz with 6 MB of L2 cache and 16 MB L3 cache.

This makes the IBM System x3950 M2 server an excellent fit for current and future enterprise on demand applications.

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

Applications include:

- On Demand Business
- Business intelligence
- Transaction processing
- Enterprise resource planning
- Collaboration applications (Microsoft Exchange and Lotus Notes®)
- Server consolidation
- Internet or intranet front-end serving
- Web content serving
- Database storage as a SAN solution

Reference information

For information on ServicePacs, refer to Services Announcement [606-013](#), dated August 07, 2006, and Hardware Announcement [106-700](#), dated September 26, 2006.

Product number

The following are newly announced features on the specified models of the IBM xSeries® 7233 machine type:

Description	MT	Model
7233-AC2	7233	AC2
7233-MC2	7233	MC2

The Single Entity Offerings (SEO)

Configured System SEOs

Description	SEO number
System x3950 M2 Scalable Model - 3 year warranty	
System x3950 M2 - - 2 x 2.40 GHz/6 MB L2/16B L3, 4 core, E7440, 90W, 4x1 GB w/2 memory cards	72334SU

Highlights

Memory ProteXion -- Redundant bit steering

- Utilizes unused bits in each memory DIMM (hot-spare bits)
- Doubles the amount of Chipkill memory 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 toward continuous operations
- Dramatically helps to increase uptime and allows scheduled maintenance
- Provides capability and reliability approaching a mainframe
- Operating system independent; does not require drivers or operating system support

Chipkill memory

- Integrated XA-64e chipsets for using off-the-shelf DIMMs
- Better memory reliability to support in-memory databases
- Increased availability by detecting and helping to many correct single-, two-, three-, and four-bit memory errors
- Fourth-generation Chipkill design

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=109-240>

Publications

The following publications and CD-ROMs are shipped with the x3950 M2 servers:

- *x3950 M2 Installation Guide* contains an introduction to the computer, installation and setup, installing options, reference information, and problem determination. The installation guide has easy-to-use text and illustrations to enable you to quickly set up your x3950 M2 server.
- *ServerGuide* contains online publications and drivers to support the x3950 M2 server. In addition, it includes a set of easy-to-use utilities on CD to help you install several popular network operating systems.
- IBM Director systems-management software is included.

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

The *x3950 M2 Installation Guide* and the *Problem Determination Guide*, in U.S. English versions, are available from

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

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.

System x and BladeCenter support services

Recommended core technical support

When you buy IBM System x® technology, include the support services you need - to help keep both your hardware and software working for you, day after day, at peak performance. It's your first step toward helping to protect your investment and sustain high levels of system availability. We offer service-level and response-time options to fit your business needs. And we'll help you get started with a core support package that includes:

- **Continuous system monitoring**

Electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.

- **Hardware maintenance**

World-class remote and on-site hardware problem determination and repair services.

- **Software technical support**

Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

<http://www.ibm.com/servers/eserver/xseries/services.html>

Technical information

Specified operating environment

Physical specifications

x3950 M2

	72334Sx
Processor	Xeon E7440
Quad-core	
Internal speed	2.40 GHz
External speed	1066 MHz
Number standard	2
Maximum	4
L2 cache total	6 MB
L3 cache total	16 MB
Memory (PC2-5300 DDR2)	4 GB ECC
DIMMs	4 x 1 GB
DIMM sockets standard	16
DIMM sockets maximum	32
Capacity	256 GB ⁶
Memory Expansion Card	
Number standard	2
Maximum	4
ScaleExpander kit (2 - 3 node)	Standard
Video	SVGA
Memory	16 MB
SAS SCSI controller	3.0 GHz
Ports	8
Connector internal	4
Connector external	1
HDD standard	0
Bays available	4
5.25-inch slim	0
3.5-inch slim	0
Hot-swap	4
Internal capacity	584 GB ⁷
PCIE x8 slots	7
Hot-swap	2
Management processor	
BMC	Standard
RSA-II	Standard
RAID 0/1	Standard
Server RAID-MR10k	Optional
Dual Ethernet controller	10/100/1000 Mbps
UltraSlim Enhanced SATA	Standard
CD-RW / DVD-ROM Combo drive	
Power supply	1440 w
Number standard	2

Maximum	2
Hot-swap	Yes
Redundant power	Standard
Auto restart	Yes

⁶ Capacities are based on 8 x 8 GB DIMMs installed in the standard four memory expansion cards.

⁷ Capacities are based on installation of four 146 GB 2.5-in SAS HDDs. For the latest information on supported HDD options, visit

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

Supported video mode capabilities for the SVGA PCI controller:

Microsoft windows 2000 and windows 2003

Resolution	Colors	Refresh Rate (Hz)
640 x 480 x 8	256	60, 72, 75, 85
640 x 480 x 16	64K	60, 72, 75, 85
640 x 480 x 32	16 million	60, 72, 75, 85
800 x 600 x 8	256	60, 72, 75, 85
800 x 600 x 16	64K	60, 72, 75, 85
800 x 600 x 32	16 million	60, 72, 75, 85
1024 x 768 x 8	256	60, 70, 75, 85
1024 x 768 x 16	64K	60, 70, 75, 85
1024 x 768 x 32	16 million	60, 70, 75, 85

Dimensions

4U rack drawer

- Width: 443.6 mm (17.46 in)
- Depth: 720.2 mm (28.35 in)
- Height: 172.8 mm (6.80 in)
- Weight:
 - Minimum configuration: 31.75 kg (70 lb)
 - Maximum configuration: 43.2 kg (95 lb)

Electrical

- 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; System 17.2A (8.6A/PS)
- 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; System 8A
- Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: 0.30 kVA (two power supplies)
 - Typical configuration: 0.82 kVA (two power supplies)
 - Maximum configuration: 1.65 kVA (two power supplies)
- Btu output:
 - Ship configuration: 990 Btu/hr (290 watts)
 - Typical configuration: 2,730 Btu/hr (800 watts)
 - Full configuration: 5,527 Btu/hr (1620 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.

Standards

These systems support or comply with the following standards:

- Multiprocessor Specification (MPS) 1.4

- Hardware-enabled to meet ISO 9241, Part 3

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

Equipment approvals and safety

- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 4, Class A
- IEC/UL 60950-1, 1st Edition
- CAN/CSA - C22.2 No. 60950-1-03
- NOM-019⁸

⁸ This server is certified by the respective UL and NOM agencies.

Operating environment

- Temperature:
 - 10.0 to 35.0 degrees C (50 to 95 degrees F) at 0 to 914 m (0 to 3,000 ft)
 - 10.0 to 32.0 degrees C (50 to 90 degrees 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

The following network operating systems have been tested for compatibility with the x3950 M2 server:

Network operating systems

- Microsoft
 - Windows Server 2003 R2 (64-bit)
 - Windows Server 2003 R2 (32-bit)
 - Windows Server 2008 (64-bit)
- Linux
 - Red Hat EL 5 Server for 32-bit
 - Red Hat EL 5 Server for 32-bit (with Xen)

- Red Hat EL 5 Server for 64-bit
- Red Hat EL 5 Server for 64-bit (with Xen)
- Red Hat EL 4 AS, ES for 64-bit
- SUSE Linux ES 10 for 32-bit
- SUSE Linux ES 10 for 64-bit
- SUSE Linux ES 10 for 64-bit (with Xen)
- SUSE Linux ES 9 for 64-bit
- Other
 - VMware ESX Server 3.5

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

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

IBM makes no representation or warranty regarding third-party products, including those designated as ServerProven.

Compatibility

The IBM System x3950 M2 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 System x3950 M2 server and to maintain compatibility with many current software programs.

For detailed information about IBM and non-IBM devices, adapters, software, and network operating systems supported with IBM System x3950 M2 servers, visit

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

Contact your IBM representative or IBM Business Partner, or refer to the IBM Sales Manual for information on the compatibility of hardware and software for IBM System x3950 M2 servers. The Sales Manual is updated periodically as new features and options are announced that support these servers.

Limitations

Memory

The x3950 M2 servers are shipped with 4 GB (4 x 1 GB) of memory. A maximum of up to 256 GB of system memory is supported by adding an 8 GB PC2-5300 CL4 ECC DDR2 SDRAM RDIMM in each of the eight DIMM sockets. This capacity is based on installation of the four memory expansion cards (44E4252) and 4 x 8 GB DIMMs installed in each card. All supported system memory is addressable through direct memory access (DMA). This server supports 1 GB, 2 GB, 4 GB, and 8 GB 1.8 V, 240-pin, PC2-5300 ECC DDR-2 SDRAM 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 IBM System x3950 M2 server Web page memory options.

The x3950 M2 has RAID 0 and 1 standard. The optional ServeRAID-MR10k SAS/SATA Controller provides additional RAID levels.

ServerGuide

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.

For the configurations, *ServerGuide* can help you:

- Set up and configure the system
- Set up and configure any ServeRAID adapters as well as the onboard SAS chipset

- Perform an unattended install of Windows 2003 with SP2 integrated CD (32-bit only)

The *ServerGuide* cannot help you perform unattended Windows installations (32-bit).

5709 native support limitations

5709 support will not be native to RHEL5.0 and that network installs would be impacted until RHEL5.1 when native 5709 would be included in the bnx2 driver, that are shipping at the launch of the product. The software updates necessary will be released by the appropriate networking operating system.

Hot-swap limitations

- Active-PCI-E currently is not supported by Linux versions that are shipping at the launch of the product. The software updates necessary will be released by the appropriate networking operating system.
- PCI hot-plug support is limited in SLES9.
- For Linux, multifunction adapters (those that use PCI bridges) are currently not supported.

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

Planning information

Customer responsibilities

x3950 M2 server and related options

The x3950 M2 server is designated as customer setup. Customer setup instructions are shipped with systems.

Configuration information

Bay configuration

The x3950 M2 server contains five customer-accessible drive bays on the front of the server. The top right bay is for the slim combo drive. Four unpopulated 2.5-inch, slim-high, hot-swap drive bays are located beneath this bay.

The UltraSlim Enhanced SATA CD-RW / DVD-ROM Combo drive is cabled directly to the SATA port. The four hot-swap bays are connected to the integrated SAS SCSI controller through an integrated circuit.

Internal SCSI cabling

The x3950 M2 server contains a DASD backplane supporting four hot-swap, SCA-2-compliant drive bays. The x3950 M2 has RAID 0 and 1 standard. The optional ServeRAID-MR10k SAS/SATA Controller provides additional RAID levels.

Processor upgrade

The following processor upgrade option is supported:

- Intel Xeon Processor E7440 - 2.40 GHz 6 MB L2 Cache 1066 MHz Intel Quad Core Processor Upgrade (44E4471) supports internal processing speeds of 2.40 GHz and external processing operations to memory at 1066 MHz. It contains an integrated, full-speed, 6 MB level 2 cache and 16 MB of L3 cache.

Memory support

The following memory options are supported:

- 2 GB (2x1GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (41Y2762)
- 4 GB (2x2GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (41Y2771)
- 8 GB (2x4GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (41Y2768)

- 16 GB (2x8GB Kit) PC2-5300 CL4 ECC DDR2 SDRAM RDIMM (43V7356)

For information on support, visit

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

The 256 MB XceL4v cache, in multi-chassis configurations, uses system memory for this function. The total system memory as seen by the operating system is reduced by 256 MB per chassis for configurations of more than four sockets.

PCI-E adapter installations

The x3950 M2 server contains PCI-E architecture and seven 2.5 Gb PCIE x8 I/O slots (two are hot-plug).

Rack installations

x3950 M2 4U, 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 x3950 M2 models include two standard 1440-watt, hot-swap power supplies which have redundancy for all configurations when powered at 200 to 240 V ac.

Cable orders

The 10/100/1000 Mbps full-duplex, Dual Ethernet PCI-E Controller is standard with the x3950 M2 server. 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 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 x3950 M2 server requires about 20 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional adapters, or features.

Packaging

Product	Shipment group	Number of boxes
IBM System x3950 M2	System unit carton	1
	Contents:	
	System unit	
	Rack components:	
	Rails	
	Cable management hardware	
IBM System x3950 M2	Country kit carton	1
	Contents:	

Two 9-foot 220 v intra-rack cables
IBM System x3950 M2 Installation Guide
Safety booklet
SCSI cable
Rack install template
IBM Director
ServerGuide
CD-ROM Packages
On/off switch cover

The x3950 M2 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

- 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 provide controls of who has access to the data and server setup program on the server.
- A set unattended boot mode allows the system keyboard to be locked to all entries except the password and at the same time allows other computers on the network to access the system disk drive.
- A selectable boot sequence can be used to prevent unauthorized installation of software or removal of data from the diskette drive.
- Winbond Trusted Platform Module V1.2, Trusted Computing Group (TCG) compliant.
 - Secure Boot

Limitations

The x3950 M2 server has no security intrusion detection; therefore, it should be installed in a rack environment that provides security through lockable doors or other security measures. It is a customer's responsibility to ensure that the server is secure to protect sensitive data.

The system supports integrity measurements. The TPM is TCG V1.2-compliant, and is ready for use with software purchased from third-party TPM Ecosystem partners in compliance with the TPM V1.2 specification.

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

Terms and conditions

IBM Global Financing

Yes

IBM System x3950 M2

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

In the United States, call 800-IBM-SERV (426-7378), or write to:

Warranty Information
P.O. Box 12195
Research Triangle Park, NC 27709
Attn: Dept JDJA/B203

Warranty period

- Three years
- Optional features - One year

Optional IBM features initially installed in an IBM machine carry the same warranty period as the machine. If installed after the initial machine installation, they carry the balance of the machine warranty or the optional feature warranty, whichever is greater.

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

- ServeRAID-MR10k battery pack
- CMOS Battery, 3.0 volt

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:

- Blank filler
- Cable-management arm
- Hard disk drive
- Hot-swap fan
- Hot-swap power supply
- Memory DIMM
- Memory expansion card
- Memory card guide
- Fan cage
- Bezel
- RAID controller
- ScaleXpander Key
- ScaleXpander Cable
- System Label
- Optical drive
- PCI adapter
- PCI divider
- Power cord
- Service label
- Service processor
- Top cover
- Voltage regulator module

On-site Service

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

Call IBM at 1-800-IBM-SERV (426-7378) to assist with problem isolation for hardware to determine if warranty service is required. Telephone support may be subject to additional charges, even during the limited warranty period.

Calls must be received by 5:00 p.m. local time in order to qualify for NBD service.

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

For more information on IWS, refer to Services Announcement 601-034, 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.

Maintenance services

ServicePac , ServiceSuite , ServiceElect, and ServiceElite

ServicePac®, ServiceSuite™, ServiceElect, and ServiceElite provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

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.

CRUs will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified below.

IBM 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.

See the [Pricing](#) section for specific offerings.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance 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.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the 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.

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

IBM 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.

See the [Pricing](#) section for specific offerings.

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Alternative service (warranty service upgrades)

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

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.

A CRU will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service specified below, On-site Service.

IBM 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.

See the [Pricing](#) section for specific offerings.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance 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.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the 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.

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

IBM 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.

See the [Pricing](#) section for specific offerings.

Non-IBM parts support

Warranty service

IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to its customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades and maintenance services

Under certain conditions, IBM Integrated Technology Services repairs selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

IBM Service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, or memory) installed within IBM machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

IBM hourly service rate classification

One

Field-installable features

Yes

Model conversions

No

Machine installation

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

Graduated program license charges apply

No

Licensed machine code

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

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

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

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

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

Pricing

For current prices, contact IBM at 888-Shop-IBM (746-7426) or visit

<http://www-03.ibm.com/systems/x/>

The following are newly announced features on the specified models of the IBM xSeries 7233 machine type:

Description	Model number
IBM System x3950 M2	AC2
IBM System x3950 M2	MC2

Description	SEO number	CSU
x3950 M2 - 2x2.40 GHz/6 MB L2 cache Xeon E7440 Quad-Core Scalable	72334SU	Yes

ServicePac for Warranty and Maintenance

Machine type/Model	Description	ServicePac part number
7233-XXX	3 YR onsite repair 9x5x4 hour average response	10N3058
7233-XXX	3 YR onsite repair 24x7x4 hour average response	10N3059
7233-XXX	3 YR onsite repair 24x7x2 hour average response	10N3060
7233-XXX	4 YR onsite repair 9x5/next day average response	10N3061
7233-XXX	4 YR onsite repair 9x5x4 hour average response	10N3062
7233-XXX	4 YR onsite repair 24x7x4 hour average response	10N3063
7233-XXX	4 YR onsite repair 24x7x2 hour average response	10N3064
7233-XXX	5 YR onsite repair 9x5/next day average response	10N3065
7233-XXX	5 YR onsite repair 9x5x4 hour average response	10N3066

7233-XXX	5 YR onsite repair 24x7x4 hour average response	10N3067
7233-XXX	5 YR onsite repair 24x7x2 hour average response	10N3068
7233-XXX	1-year MA IOR 9 x 5 Next Business Day average response	10N3069
7233-XXX	1-year MA IOR 9 x 5 4-hour average response	10N3070
7233-XXX	1-year MA IOR 24 x 7 4-hour average response	10N3071
7233-XXX	1-year MA IOR 24 x 7 2-hour average response	10N3072
7233-XXX	2-year MA IOR 9 x 5 Next Business Day average response	10N3073
7233-XXX	2-year MA IOR 9 x 5 4-hour average response	10N3074
7233-XXX	2-year MA IOR 24 x 7 4-hour average response	10N3075
7233-XXX	2-year MA IOR 24 x 7 4-hour average response	10N3076

These ServicePac offerings are valid for models announced in the United States.

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

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Order now

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To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

Phone: 800-IBM-CALL (426-2255)
 Fax: 800-2IBM-FAX (242-6329)
 Internet: callserv@ca.ibm.com
 Mail: IBM Teleweb Customer Support
ibm.com® Sales Execution Center, Americas North

3500 Steeles Ave. East, Tower 3/4
Markham, Ontario
Canada
L3R 2Z1

Reference: SE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

Note: Shipments will begin after the planned availability date.

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