

IBM System x3650 M3 server models have Intel Xeon 5500 and 5600 series processors with new microarchitecture design featuring Quick Path Interconnect technology

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At a glance



Power, scalability, control, and serviceability for dynamic Web-serving and On Demand Business applications:

- Ultrathin, high-availability, rack-optimized, 2U platform
- 2 GB, 4 GB or 8 GB¹ of high-speed DDR-3 SDRAM Registered DIMM memory; 18 DIMM slots that support up to 144 GB maximum memory with 8 GB optional DIMMS, or support up to 24 GB of DDR3 SDRAM Unbuffered DIMM memory via 12 DIMM slots
- Support for up to sixteen 2.5-inch hot-swap SAS or hot-swap SATA HDDs or SSDs
- Four PCI-Express x8 Gen 2 slots:
 - Two x8 - full length, full height
 - One x8 - half length, full height
 - One x8 - low profile

Slots 1 and 2 are convertible either to 2 PCI-X or 1 x16 PCI-E depending on optional riser. Slots 3 and 4 are convertible either to two PCI-X or one x16 PCI-E depending on optional riser are convertible to two x16 via optional risers.

- 675-watt, auto-ranging power supply
- Integrated systems management processor
- Integrated dual Gigabit Ethernet ports (standard) for high I/O capacity, plus two additional GbE ports (option) with failover capability
- One serial port (16550A-compatible), four USB ports (front and rear), and two video ports (front and rear)

Overview

New models of the System x3650 M3 feature Intel® multicore processors.

This 2U-high, rack-optimized server features superior power, optimized performance, and leadership virtualization and systems management for business-critical workloads built on IBM® X-Architecture®.

Optimized for energy efficiency and performance

Apply a new, innovative, energy-smart design with powerful high-performance processors, a large capacity of high-performing DDR3 memory, and a no-compromise feature set ideal for most general business applications:

- Powerful processors:
 - Quad-Core Intel Xeon® Processor E5506
 - Quad-Core Intel Xeon Processor E5507
 - Quad-Core Intel Xeon Processor E5620
 - Quad-Core Intel Xeon Processor E5630
 - Quad-Core Intel Xeon Processor L5630
 - Six-Core Intel Xeon Processor L5640
 - Six-Core Intel Xeon Processor X5650
 - Six-Core Intel Xeon Processor X5660
 - Six-Core Intel Xeon Processor X5670
 - Six-Core Intel Xeon Processor X5680
 - Quad-Core Intel Xeon Processor E5640
 - Quad-Core Intel Xeon Processor L5609
 - Quad-Core Intel Xeon Processor X5667
 - Quad Core Intel Xeon Processor X5677
- New energy-efficient design incorporating low 675 W and very efficient power supplies, six cooling fans (three banks of counter-rotating dual fans), altimeter (barometric pressure sensor), and energy-efficient planar components to help lower operational costs
- Highly functional chipset optimized for better application computing for general business workloads
- Eighteen DIMM slots that enable you to deploy up to 144 GB of DDR3 SDRAM Registered DIMM memory, with 4 GB memory standard or support up to 24 GB of DDR3 SDRAM Unbuffered DIMM memory via 12 DIMM slots
- Standard SAS/SATA HDDs or SSDs with RAID support on hot-swap models
- Support for up to 16 hot-swap SAS/SATA HDDs or SSDs
- Integrated Dual Gigabit Ethernet ports (standard) for high I/O capacity, and two additional GbE ports (optional) with failover capability
- Support for Embedded VMware ESXi 4 hypervisor (connector on an internal SAS riser card activated with optional 2 GB USB key)
- Four PCI-Express x8 high-performance Gen 2 I/O slots that help provide greater network performance with long-term investment protection (4 PCIe x8 convertible to 2 x16 PCI-e or 4 PCI-X 64-bit slots)

Manage with efficiency

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

- IBM Systems Director Active Energy Manager™ for advanced datacenter power notification and management to help achieve lower heat output and reduced cooling needs

- Snoop filters to boost processor performance
- Integrated SAS controller supporting up to sixteen 2.5-inch hot-swap HDD bays (four or eight bays standard, four-bay kits upgrade from four to eight bays or eight-bay kits upgrade from eight to sixteen bays optional) with five RAID alternatives, helping to safe-guard your data either with the standard RAID controller at no additional cost or an optional RAID controller for enhanced support.
- Memory mirroring, configurable using UEFI (Unified Extensible Firmware Interface) setup
- Integrated Management Module (IMM) systems management processor
- Monitoring and control of operating status and key server components
- Predictive Failure Analysis® (PFA) on selected components that warns of problems before they occur
- Fast and easy servicing through innovative light path diagnostics, improved onboard diagnostics, and LED diagnostic panel

Ultimate fault tolerant protection

- Hot-swap, redundant fans with calibrated vectored cooling to keep components cool, and simplified fan replacement
- Optional hot-swap, redundant power supplies to help reduce downtime
- IBM Director and Web support
- Three-year, customer replaceable unit (CRU) and on-site labor², limited warranty³; optional warranty service upgrades available

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.

¹ GHz and MHz denote the internal and/or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.

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

³For information on IBM's Statement of Limited Warranty, contact your IBM representative or reseller. Copies are available upon request.

Key prerequisites

- Monitor, USB keyboard, and USB mouse

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

Planned availability date

Description	Part number	Availability date
IBM System x3650 M3	7945A2x	March 31, 2010
	7945B2x	March 31, 2010
	7945C2x	April 23, 2010
	7945D2x	March 31, 2010
	7945F2x	March 31, 2010
	7945G2x	March 31, 2010
	7945H2x	April 23, 2010

7945J2x	March 31, 2010
7945L2x	March 31, 2010
7945M2x	March 31, 2010
7945N2x	March 31, 2010

All options will be available on March 31, 2010, except the following:

Intel Xeon Processor L5609	59Y4031	April 23, 2010
Intel Xeon Processor L5630	59Y4032	April 23, 2010
Intel Xeon Processor L5640	59Y4033	April 23, 2010
Intel Xeon Processor X5677	59Y4042	April 23, 2010
IBM System x3650 M3 R2 plus 8 HDD Kit	59Y3825	June 16, 2010

Description

System x3650 M3 server

The System x3650 M3 server features Intel Xeon multicore processors that support internal processing speeds of up to 3.46 GHz, and processing operations to memory up to 1333 MHz.

High-performance server subsystems

The System x3650 M3 server expands the new server line by adding a higher level of processor power. This high-throughput, two-way multicore network server offers excellent performance and scalability when you add memory and a second processor. It incorporates powerful Xeon processors with up to 12 MB L3 cache. The advanced transfer L3 cache is integrated onto the processor and runs at the same clock speed. The advanced transfer cache is a result of a "backside bus" 256 bits wide. It features a quad-wide cache line that can transfer four 64-bit cache line segments at one time to deliver full-speed capability. The cache is eight-way set associative.

Two Intel Xeon processor connectors are standard on the system board to support installation of a second processor. High-speed PC3 DDR3 Advanced Memory Feature DIMMs run at 1333 MHz DRAM clock speed and offer maximum 10667 MB/s bandwidth, processor-to-memory subsystem performance. The x3650 M3 server uses the Intel 5500 chipset with Chipkill™ technology to maximize throughput from processors, to memory, to the 32-bit and 64-bit PCI buses.

Standard System x3650 M3 configurations

Note: The model "x" designation is geography dependent and is spelled out explicitly in the [Product number](#) section.

Model	Processor	Memory	HDD		HDD	Other
			GT/s	Interface		
7945-A2x	2.13 GHz Cache: 4 MB	4 GB	4.8	SAS/SATA	2.5-in	Open bay hot-swap 1 x 675W
7945-B2x	2.26 GHz Cache: 4 MB	4 GB	4.8	SAS/SATA	2.5-in	Open bay hot-swap 1 x 675W
7945-C2x	2.13 GHz Cache: 12 MB	4 GB	5.86	SAS/SATA	2.5-in	Open bay hot-swap 1 x 675W
7945-D2x	2.40 GHz Cache: 12 MB	4 GB	5.86	SAS/SATA	2.5-in	Open bay hot-swap 1 x 675W
7945-F2x	2x2.53 GHz Cache: 12 MB	8 GB	5.86	SAS/SATA M5014	2.5-in	Open bay hot-swap 2 x 675W
7945-G2x	2.66 GHz Cache: 12 MB	4 GB	5.86	SAS/SATA M5014	2.5-in	Open bay hot-swap 1 x 675W

7945-H2x	2.26 GHz Cache: 12 MB	4 GB	5.86	SAS/SATA	2.5-in	Open bay hot-swap 1 x 675W
7945-J2x	2.66 GHz Cache: 12 MB	12 GB	6.4	SAS/SATA M5015	2.5-in	Open bay hot-swap 1 x 675W
7945-L2x	2.80 GHz Cache: 12 MB	12 GB	6.4	SAS/SATA M5015	2.5-in	Open bay hot-swap 1 x 675W
7945-M2x	2.93 GHz Cache: 12 MB	12 GB	6.4	SAS/SATA M5015	2.5-in	Open bay hot-swap 1 x 675W
7945-N2x	3.33 GHz Cache: 12 MB	12 GB	6.4	SAS/SATA	2.5-in	Open bay hot-swap 1 x 675W

Additional features

- Up to twelve-core processing achieved with a second processor of equal speed and processor type
- System board containing 18 DIMM connectors supporting 2 GB, 4 GB, and 8 GB DDR3 PC3-10600 SDRAM ECC RDIMMs with:
 - DDR3 memory for improved performance
 - Up to 144 GB of system memory using 8 GB optional DIMMs
 - Up to 24 GB of system memory using 2 GB DDR3 PC3-10600 SDRAM ECC UDIMM memory
- High-speed, wide-bandwidth PCI-Express or PCI/PCI-X bus slots
- On standard models, either four or eight 2.5-inch bays to support optional SAS HDDs and one bay to support optical drive (optical standard in some models)
- Dual Broadcom 5709 chip that supports dual Gigabit (10/100/1000) Ethernet ports, which speed network communications to LAN clients

The System x3650 M3 server offers solid system throughput from processor, to memory, to bus, to disk-intensive I/O. These features, combined with multicore capability, make the x3650 M3 server an excellent choice for a standalone or clustered general-business application, file, and print server.

High-availability and serviceability features

The System x3650 M3 server subsystem delivers excellent reliability and serviceability features:

- Support for light path diagnostics with viewable drop-down panel, Wake on LAN®, and PXE
- Up to six hot-swap fans (three pairs)
- Up to sixteen 2.5-inch HS HDDs with optional upgrade kit levels
- Chipkill memory that basically distributes information covered by error correction coding across separate memory chips; if any of the chips fail, the data can in many cases still be reconstructed from the remaining chips, and the system can continue running
- ECC L3 cache processors to help improve data integrity and help reduce downtime
- Predictive Failure Analysis (PFA) on processors, HDD options, memory, voltage regulator models (VRMs), power supply, and fans (when Remote Supervisor Adapter is installed), to help alert the system administrator of imminent component failure
- Worldwide voltage-sensing, 675-watt, hot-plug power supply
- Optional 675-watt, hot-swap power supply upgrade
- Optional Virtual Media Key to enable the remote presence and blue-screen capture features
- Integrated Management Module systems management processor that supports:
 - Automatic server restart (ASR)
 - Fan monitoring and control

- Power supply monitoring
- Temperature monitoring
- Voltage monitoring
- Power on/off, reset sequencing
- LED controls (onboard diagnostics support with light path LED)
- Remote power control
- Local firmware update
- Error logging
- Information LED panel for visual indications of system well-being
- Onboard diagnostics with an LED map to locate a failing component, helping reduce downtime and service costs
- Support for virtual floppy (with optional Virtual Media Key), which enables a user to easily direct a remote host to boot, and use standard instructions stored anywhere on the network
- Easily accessible system board, adapter cards, processor, and memory
- CPU failure recovery in configurations, which:
 - Forces the failed processor offline
 - Reboots the server automatically
 - Generates alerts
 - Continues operations with the working processor

Expandability and growth

The System x3650 M3 server packs a lot of function and storage capacity into a 2U 19-inch rack-drawer package, yet it is amazingly easy to upgrade and service. Functions such as SVGA video, SAS, and full-duplex 10/100/1000 Mbps Ethernet are integrated on the system board. Features include:

- Rack-drawer models designed for 19-inch-wide by 28-inch-deep industry-standard rack enclosures, such as the NetBAY42 SR
- Four PCI/PCI-Express adapter card slots available (2 x PCI-Express slots may be replaced by a riser card option to get two PCI-X slots)
- System board optional upgrades (PCI slot not required)
 - IBM Virtual Media Key
- Support for up to 8000 GB of internal data storage, using sixteen 500 GB SAS/SATA HDDs

Systems management

Integrated Management Module (IMM)

The System x3650 M3 includes an integrated Management Module that provides industry-standard Intelligent Platform Management Interface (IPMI) 2.0-compliant systems management. The IMM comes standard, and shares one of the two onboard Ethernet ports for access. The IMM can be accessed via software that is compatible with IPMI 2.0 (xCAT, for example). The IMM is implemented using industry-leading OSA firmware and applications in conjunction with the Integrated Management Module.

Features and benefits:

- Monitoring:
 - System voltages
 - Battery voltage
 - System temperatures
 - Fan speed control

- Fan tachometer monitor
- Good Power signal monitor
- System ID and planar version detection
- System power and reset control
- NMI detection (system interrupts)
- SMI detection and generation (system interrupts)
- Serial port text console redirection
- System LED control (power, HDD, activity, alerts, and heartbeat)
- An embedded Web server gives you remote control from any standard Web browser. No additional software is required on the remote administrator's workstation.
- For users who are accustomed to a command-line interface (CLI), the ability of the administrator to use the CLI from a Telnet session to perform some of the functions that can be performed from the Web server.
- Secure Socket Layer (SSL) and Lightweight Directory Access Protocol (LDAP).
- Built-in LAN and serial connectivity supports virtually any network infrastructure.
- Multiple alerting functions to warn systems administrators of potential problems through e-mail, IPMI PEs, and SNMP.

With video compression now built into the adapter hardware, the adapter allows the greater screen sizes and refresh rates that are becoming common in the marketplace. This feature helps enable the user to display server activities from power-on to full operation remotely with remote user interaction at virtually any time.

IBM Virtual Media Key

The optional Virtual Media Key delivers advanced control and monitoring features to manage your IBM System x3650 M3 server at virtually any time, from virtually any place. The key can be added to the server through a connector on the planar. This key enables easy console redirection with text and graphics, and keyboard and mouse (operating system must support USB) support over the system management LAN connections.

With video compression now built into the adapter hardware, it is designed to allow the greater screen sizes and refresh rates that are becoming standard in the marketplace. This feature allows the user to display server activities from power-on to full operation remotely, with remote user interaction at virtually any time.

IBM Director

The System x3650 M3 server also features IBM Director, a powerful, highly integrated, systems-management software solution built on industry standards and designed for ease of use. Exploit your existing enterprise or workgroup-management environments, and use rich security to access and manage physically dispersed IT assets more efficiently over the Internet. It can help reduce costs through potentially:

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

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

IBM Director includes a portfolio of integrated server tools that work with the systems management monitoring functions. Typical functions and monitoring capabilities can include:

- PFA-enabled critical hardware components

- Temperature
- Voltage
- Fan speed
- Light path diagnostics

IT administrators have comprehensive, virtual on-site control of System x servers with the ability to remotely:

- Access the server, often regardless of its status
- Inventory and display detailed system and component information
- View server bootup during POST
- Browse and delete logs of events and errors
- Reset or power cycle the server
- Monitor and set thresholds on server health including:
 - Operating system load
 - POST time-out
 - Voltage
 - Temperature
- Set proactive alerts for critical server events including PFA on:
 - Processors
 - Memory
 - HDDs
 - Voltage regulator modules (VRM)
 - Power supplies
 - Fans
- Define automated actions, such as:
 - Send e-mail or page to an administrator
 - Execute a command or program
 - Pop up an error message to the IBM Director console
- Flash UEFI
- Monitor and graph the use of server resources, such as:
 - Memory
 - Processor
 - HDDs
- Identify potential performance bottlenecks and react to prevent downtime

IBM Director Agent integrates into leading workgroup and enterprise systems management environments via upward integration modules (available from IBM and third parties). Advanced management capabilities built into System x® servers are available through:

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

IBM Active Energy Manager

IBM Active Energy Manager offers direct monitoring of power consumption and thermal load of your server through IBM Director. You can monitor power

consumption to track utilization of energy resources. IBM Active Energy Manager is a leading solution on the market providing users with the combination of intelligence and features needed to effectively monitor power consumption in the datacenter. Active Energy Manager, an extension to IBM Director systems management software, allows clients to "meter" actual power usage and trend data for any single physical system or group of systems. Developed by IBM Research, Active Energy Manager utilizes IBM-developed monitoring circuitry to help identify how much actual power is being used and the temperature of the system. The software is available across IBM's new System x servers, as well as its BladeCenter® line of systems. With Active Energy Manager, the user is able to understand the actual power draw.

With the addition of the optional IBM Virtual Media Key, the IT administrator achieves comprehensive, virtual on-site control of System x servers through the ability to remotely:

- Access the server, in many cases regardless of the 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
 - HDDs
 - Voltage regulator modules (VRM)
 - Power supplies
- 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 director console
- Manage flash UEFI
- 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 off line

Advanced Configuration and Power Interface (ACPI)

ACPI is an open industry specification that defines a flexible and extensible hardware interface for the system board. Software designers use this specification to integrate power management features throughout a computer system, including hardware, the operating system, and application software. This integration enables Windows to determine which applications are active, and handle all of the power management resources for computer subsystems and peripherals.

World-class support tools and programs

The System x3650 M3 server tools and programs can 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.

- Three years, customer replaceable unit (CRU) and on-site service, limited warranty; optional warranty service upgrades available.
- The ServerProven® 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 System x3650 server with various adapters and devices.
- Electronic support on the Web offers additional support in an easy-to-use format.

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

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Product positioning

The System x3650 M3 servers are a part of the System x rack-optimized server line. These two-socket servers deliver Intel Xeon multicore power and excellent server function in an ultrathin, rack-optimized, 2U footprint.

Optimized for speed

The System x3650 M3 server offers new levels of fast Intel Xeon multicore processors with up to 6.4 GT/s and lower power for datacenter environments and collaboration applications. This server is uniquely optimized for better application computing with a highly functional chipset and eighteen DIMM slots for a maximum of 144 GB of DDR-3 SDRAM Registered DIMM memory.

Innovation comes standard

- Application efficiency increases with snoop filters that free up cache and improve processor performance.
- Supercharged TOE optimizes system performance by offloading protocol processing.
- A drop-down light path diagnostics panel improves in-rack manageability and allows easy problem identification.

Ultimate fault-tolerant protection

- A memory mirroring feature enables you to increase memory reliability.
- A SAS controller with RAID-0, -1, and -1E on hot-swap SAS models helps safeguard your data at no additional cost.

Target applications

- Database
- E-mail collaboration
- File/print
- Virtualization
- Linux® clustering
- Scientific and technical computing

These powerful servers also meet traditional enterprise network server requirements, but with an added benefit of requiring less space.

Product number

Note: All models are GAV except for C and N models.

Description	MT	Mod	Part number
IBM System x3650 M3	7945	A2V	7945A2V
	7945	A2B	7945A2B
	7945	A2A	7945A2A
	7945	A2M	7945A2M
	7945	A2K	7945A2K
	7945	A2R	7945A2R
	7945	A2Q	7945A2Q
	7945	A2J	7945A2J
	7945	A2E	7945A2E
	7945	A2C	7945A2C
	7945	A2N	7945A2N
	IBM System x3650 M3	7945	B2V
7945		B2B	7945B2B
7945		B2A	7945B2A
7945		B2M	7945B2M
7945		B2K	7945B2K
7945		B2R	7945B2R
7945		B2Q	7945B2Q
7945		B2J	7945B2J
7945		B2E	7945B2E
7945		B2C	7945B2C
7945		B2N	7945B2N
IBM System x3650 M3		7945	C2V
	7945	C2B	7945C2B
	7945	C2A	7945C2A
	7945	C2M	7945C2M
	7945	C2K	7945C2K
	7945	C2R	7945C2R
	7945	C2Q	7945C2Q
	7945	C2J	7945C2J
	7945	C2E	7945C2E
	7945	C2C	7945C2C
	7945	C2N	7945C2N
	IBM System x3650 M3	7945	D2V
7945		D2B	7945D2B
7945		D2A	7945D2A
7945		D2M	7945D2M
7945		D2K	7945D2K
7945		D2R	7945D2R
7945		D2Q	7945D2Q
7945		D2J	7945D2J
7945		D2E	7945D2E
7945		D2C	7945D2C
7945		D2N	7945D2N
IBM System x3650 M3		7945	F2V
	7945	F2B	7945F2B
	7945	F2A	7945F2A
	7945	F2M	7945F2M
	7945	F2K	7945F2K
	7945	F2R	7945F2R
	7945	F2Q	7945F2Q
	7945	F2J	7945F2J
	7945	F2E	7945F2E
	7945	F2C	7945F2C
	7945	F2N	7945F2N

Description	MT	Mod	Part number
IBM System x3650 M3	7945	G2V	7945G2V
	7945	G2B	7945G2B
	7945	G2A	7945G2A
	7945	G2M	7945G2M
	7945	G2K	7945G2K
	7945	G2R	7945G2R
	7945	G2Q	7945G2Q
	7945	G2J	7945G2J
	7945	G2E	7945G2E
	7945	G2C	7945G2C
	7945	G2N	7945G2N

IBM System x3650 M3	7945	H2V	7945H2V
	7945	H2B	7945H2B
	7945	H2A	7945H2A
	7945	H2M	7945H2M
	7945	H2K	7945H2K
	7945	H2R	7945H2R
	7945	H2Q	7945H2Q
	7945	H2J	7945H2J
	7945	H2E	7945H2E
	7945	H2C	7945H2C
	7945	H2N	7945H2N

IBM System x3650 M3	7945	J2V	7945J2V
	7945	J2B	7945J2B
	7945	J2A	7945J2A
	7945	J2M	7945J2M
	7945	J2K	7945J2K
	7945	J2R	7945J2R
	7945	J2Q	7945J2Q
	7945	J2J	7945J2J
	7945	J2E	7945J2E
	7945	J2C	7945J2C
	7945	J2N	7945J2N

Description	MT	Mod	Part number
IBM System x3650 M3	7945	L2V	7945L2V
	7945	L2B	7945L2B
	7945	L2A	7945L2A
	7945	L2M	7945L2M
	7945	L2K	7945L2K
	7945	L2R	7945L2R
	7945	L2Q	7945L2Q
	7945	L2J	7945L2J
	7945	L2E	7945L2E
	7945	L2C	7945L2C
	7945	L2N	7945L2N

IBM System x3650 M3	7945	M2V	7945M2V
	7945	M2B	7945M2B
	7945	M2A	7945M2A
	7945	M2M	7945M2M
	7945	M2K	7945M2K
	7945	M2R	7945M2R
	7945	M2Q	7945M2Q
	7945	M2J	7945M2J
	7945	M2E	7945M2E
	7945	M2C	7945M2C
	7945	M2N	7945M2N

IBM System x3650 M3	7945	N2V	7945N2V
	7945	N2B	7945N2B
	7945	N2A	7945N2A
	7945	N2M	7945N2M

7945	N2K	7945N2K
7945	N2R	7945N2R
7945	N2Q	7945N2Q
7945	N2J	7945N2J
7945	N2E	7945N2E
7945	N2C	7945N2C
7945	N2N	7945N2N

Note:

- xxJ = Japan (Japanese)
- xxE = Japan (Japanese/English)
- xxK = Korea (Korea)
- xxR = Korea (Korea/English)
- xxC = PRC (Simple Chinese)
- xxN = PRC (English/Chinese)
- xxV = Taiwan
- xxB = Hong Kong
- xxA = Hong Kong, Singapore, Brunei, Malaysia, Myanmar, Burma
- xxM = Australia, New Zealand
- xxQ = India, Nepal, Sri Lanka

Starting Point models:

Description	Part number
System x 3650 M3 Starting Point	7945-FT1

The following are new unique option part numbers for System x3650 M3 server.

Description	Option part number
IBM System x3650 M3 R2 plus 8 HDD Kit	59Y3825
IBM System x3650 M3 Tape Enablement Kit	59Y3806
Addl Intel Xeon Processor E5503 2C 2.0GHz 4MB Cache 800MHz 80w	59Y4015
Addl Intel Xeon Processor E5507 4C 2.26GHz 4MB Cache 800MHz 80w	59Y4016
Addl Intel Xeon Processor L5609 4C 1.86GHz 12MB Cache 1066MHz 40w	59Y4017
Addl Intel Xeon Processor L5630 4C 2.13GHz 12MB Cache 1066MHz 40w	59Y4018
Addl Intel Xeon Processor L5640 6C 2.26GHz 12MB Cache 1333MHz 60w	59Y4019
Addl Intel Xeon Processor E5620 4C 2.40GHz 12MB Cache 1066MHz 80w	59Y4020
Addl Intel Xeon Processor E5630 4C 2.53GHz 12MB Cache 1066MHz 80w	59Y4021
Addl Intel Xeon Processor E5640 4C 2.66GHz 12MB Cache 1066MHz 80w	59Y4022
Addl Intel Xeon Processor X5650 6C 2.66GHz 12MB Cache 1333MHz 95w	59Y4023
Addl Intel Xeon Processor X5660 6C 2.80GHz 12MB Cache 1333MHz 95w	59Y4024
Addl Intel Xeon Processor X5670 6C 2.93GHz 12MB Cache 1333MHz 95w	59Y4025
Addl Intel Xeon Processor X5667 4C 3.06GHz 12MB Cache 1333MHz 95w	59Y4026
Addl Intel Xeon Processor X5677 4C 3.46GHz 12MB Cache 1333MHz 130w	59Y4027
Addl Intel Xeon Processor X5680 6C 3.33GHz 12MB Cache 1333MHz 130w	59Y4028
IBM System x3650 M3 Hot-swap SAS/SATA 4 Pac HDD Upgrade Option	69Y4236

Description	Pseudo Part Number
IBM 500GB 7200 6Gbps SAP SAS 2.5" SFF slim-HS HDD(Jap)	69Y4330
System Documentation and Software-US English	59Y3858
System Documentation and Software-Japanese	59Y3864
System Documentation and Software-Japanese English	59Y3865
System Documentation and Software-Simplified Chinese (China)	59Y3866
System Documentation and Software-Traditional Chinese (Taiwan)	59Y3867
System Documentation and Software-Korean	59Y3868
System Documentation and Software-Korea (English)	59Y3869
System Documentation and Software-Traditional Chinese(Hong Kong)	59Y3871
IBM 500GB 7200 6Gbps SAP SAS 2.5" SFF slim-HS HDD	69Y4329
Emulex 10Gb Dual-port Ethernet Adapter for IBM System x	59Y3872
System code Group BOM	59Y3848
IBM System x3650 M3 R2 riser bracket	59Y3852
System Common Planar for 1U/2U	59Y3846
IBM System x3650 M3 R2 PCI-Express (2x8) Riser Card 1	59Y3853
IBM System x3650 M3 R2 PCI-Express (2x8) Riser Card 2	59Y3854
IBM System x3650 M3 R2 Simple Swap kit	59Y3856
IBM System x3650 M3 R2 Riser Filler	59Y3857
IBM x3650-M3 R2 RDX and DDS Internal Enablement kit	59Y3823
IBM System x3650 M3 R2 8/16 HDD Kit	59Y3824
IBM System x3650 M3 R2 4 HDD KIT	69Y4287
4 pack 2.5" HDD Filler	59Y3907
Intel Xeon Processor E5503 2C 2.0GHz 4MB Cache 800MHz 80w	59Y4029
Intel Xeon Processor E5507 4C 2.26GHz 4MB Cache 800MHz 80w	59Y4030
Intel Xeon Processor L5609 4C 1.86GHz 12MB Cache 1066MHz 40w	59Y4031
Intel Xeon Processor L5630 4C 2.13GHz 12MB Cache 1066MHz 40w	59Y4032
Intel Xeon Processor L5640 6C 2.26GHz 12MB Cache 1333MHz 60w	59Y4033
Intel Xeon Processor E5620 4C 2.40GHz 12MB Cache 1066MHz 80w	59Y4034
Intel Xeon Processor E5630 4C 2.53GHz 12MB Cache 1066MHz 80w	59Y4035
Intel Xeon Processor E5640 4C 2.66GHz 12MB Cache 1066MHz 80w	59Y4036
Intel Xeon Processor X5650 6C 2.66GHz 12MB Cache 1333MHz 95w	59Y4037
Intel Xeon Processor X5660 6C 2.80GHz 12MB Cache 1333MHz 95w	59Y4038
Intel Xeon Processor X5670 6C 2.93GHz 12MB Cache 1333MHz 95w	59Y4039
Intel Xeon Processor X5667 4C 3.06GHz 12MB Cache 1333MHz 95w	59Y4040
Intel Xeon Processor X5677 4C 3.46GHz 12MB Cache 1333MHz 130w	59Y4041
Intel Xeon Processor X5680 6C 3.33GHz 12MB Cache 1333MHz 130w	59Y4042
IBM USB Memory Key for Hypervisor™	46M4994

Publications

The following publications and CD-ROMs are shipped with the x3650 M3 server:

- The x3650 M3 Installation Guide contains an introduction to the computer, installation and setup, installing options, reference information, and problem determination. The installation guide has easy-to-use text and pictorials to enable you to quickly set up the System x3650 M3 server servers.
- 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 discontinued at any time.

The *System x3650 M3 server Installation Guide* and *Problem Determination and Service Guide*, in U.S. English versions, are available from

<http://www-304.ibm.com/jct01004c/systems/support/>

Select "Product Support," "System x," then "Product family," and then click "Publications lookup."

The 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.

The following publication is available immediately:

The System x3650 M3 server Installation Guide and Problem Determination Service Guide (PDSG) in U.S. English versions, are available from our Web site

<http://www-304.ibm.com/jct01004c/systems/support/>

Select "Product Support," "System x," then "Product family," and then click "Publications lookup."

Displayable softcopy publications

The product books are offered in displayable softcopy form. All books are included. The displayable manuals are part of the basic machine-readable material. The files are shipped on DVD-ROM. Terms and conditions for use of the machine-readable files are shipped with the files.

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<http://www.ibm.com/services/learning/index.html>

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Technical information

Specified operating environment

Physical specifications

	7945-A2x	7945-B2x
Processor	Xeon 4C E5506 (80 w)	Xeon 4C E5507 (80 w)
Internal speed	2.13 GHZ	2.26 GHZ
External speed	4.8 GT/s	4.8 GT/s
Number standard	1	1
Maximum	2	2
L3 cache (full-speed)	4 MB	4 MB
Memory	4 GB ECC	4 GB ECC
RDIMMs	1 x 4 GB	1 x 4 GB
DIMM sockets	18	18
Capacity ⁴	144 GB	144 GB
Video	SVGA	SVGA
Memory	16 MB	16 MB
SATA controller	SATA	SATA
Channels	4	4
Connector internal	4	4
HDD ⁵		
Total bays	5 (standard)	9 (standard)
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	4 standard	8 standard
Internal capacity	8 TB (with upgrade kit)	8 TB (with upgrade kit)
Bays available	5	9
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	4	8
Total PCI slots	4	4
PCI_E (x8) ⁶	4	4
System management	Standard	Standard
Ethernet controller	Two 1 Gb	Two 1 Gb
Optical drive (SATA)	Optional	Optional
Power supply	675 w	675 w
Number standard	1	1
Maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes
	7945-C2x	7945-D2x
Processor	Xeon 4C L5630 (40w)	Xeon 4C E5620 (80w)
Internal speed	2.13 GHZ	2.40 GHZ
External speed	5.86 GTS	5.86 GTS
Number standard	1	1
Maximum	2	2
L3 cache (full-speed)	12 MB	12 MB
Memory	4 GB ECC	4 GB ECC
RDIMMs	1 x 4 GB	1 x 4 GB
DIMM sockets	18	18
Capacity ⁴	144 GB	144 GB
Video	SVGA	SVGA
Memory	16 MB	16 MB
SATA controller	SATA	SATA
Channels	4	4
Connector internal	4	4
HDD ⁵		
Total bays	9 (standard)	9 (standard)
5.25 slim	1	1

3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8 standard	8 standard
Internal capacity	8 TB (with upgrade kit)	8 TB (with upgrade kit)
Bays available	9	9
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8	8
Total PCI slots	4	4
PCI_E (x8) ⁶	4	4
System management	Standard	Standard
Ethernet controller	Two 1Gb	Two 1Gb
Optical drive (SATA)	Optional	Optional
Power supply	675 W	675 W
Number standard	1	1
Maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes

7945-F2x

7945-G2x

Processor	Xeon 4C E5630 (80w)	Xeon 4C E5640 (80w)
Internal speed	2.53 GHz	2.66 GHz
External speed	5.86 GTS	5.86 GTS
Number standard	2	1
Maximum	2	2
L3 cache (full-speed)	12 MB	12 MB
Memory	8 GB ECC	4 GB ECC
RDIMMs	2 x 4 GB	1 x 4 GB
DIMM sockets	18	18
Capacity ⁴	144 GB	144 GB
Video	SVGA	SVGA
Memory	16 MB	16 MB
SATA controller	SATA	SATA
Channels	4	4
Connector internal	4	4
HDD ⁵		
Total bays	9 (standard)	9 (standard)
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8 standard	8 standard
Internal capacity	8 TB (with upgrade kit)	8 TB (with upgrade kit)
Bays available	9	9
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8	8
Total PCI slots	4	4
PCI_E (x8) ⁶	4	4
System management	Standard	Standard
Ethernet controller	Two 1Gb	Two 1Gb
Optical drive (SATA)	Optional	Optional
Power supply	675 W	675 W
Number standard	2	1
Maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Standard	Optional
Auto restart	Yes	Yes

7945-H2x

7945-J2x

Processor	Xeon 6C L5640 (60w)	Xeon 6C X5650 (95w)
Internal speed	2.26 GHz	2.66 GHz
External speed	5.86 GTS	6.4 GTS
Number standard	1	1
Maximum	2	2

L3 cache (full-speed)	12 MB	12 MB
Memory	4 GB ECC	12 GB ECC
RDIMMs	1 x 4 GB	3 x 4 GB
DIMM sockets	18	18
Capacity ⁴	144 GB	144 GB
Video	SVGA	SVGA
Memory	16 MB	16 MB
SATA controller	SATA	SATA
channels	4	4
Connector internal	4	4
HDD ⁵		
Total bays	9 (standard)	9 (standard)
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8 standard	8 standard
Internal capacity	8 TB (with upgrade kit)	8 TB (with upgrade kit)
Bays available	9	9
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8	8
Total PCI slots	4	4
PCI_E (x8) ⁶	4	4
System management	Standard	Standard
Ethernet controller	Two 1Gb	Two 1Gb
Optical drive (SATA)	Optional	Optional
Power supply	675 w	675 w
Number standard	1	1
Maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes

7945-L2x

Processor	Xeon 6C X5660 (95w)
Internal speed	2.80 GHz
External speed	6.4 GTS
Number standard	1
Maximum	2
L3 cache (full-speed)	12 MB
Memory	12 GB ECC
RDIMMs	3 x 4 GB
DIMM sockets	18
Capacity ⁴	144 GB
Video	SVGA
Memory	16 MB
SATA controller	SATA
Channels	4
Connector internal	4
HDD ⁵	
Total bays	9 (standard)
5.25 slim	1
3.5-in tape	0
Hot-swap (3.5-in)	0
Hot-swap (2.5-in)	8 standard
Internal capacity	8 TB (with upgrade kit)
Bays available	9
5.25 slim	1
3.5-in tape	0
Hot-swap (3.5-in)	0
Hot-swap (2.5-in)	8
Total PCI slots	4
PCI_E (x8) ⁶	4
System management	Standard
Ethernet controller	Two 1Gb
Optical drive (SATA)	Optional
Power supply	675 w
Number standard	1
Maximum	2

Hot-swap	Yes	
Redundant power	Optional	
Auto restart	Yes	
	7945-M2x	7945-N2x
Processor	Xeon 6C X5670 (95w)	Xeon 6C X5680 (130w)
Internal speed	2.93 GHz	3.33 GHz
External speed	6.4 GTS	6.4 GTS
Number standard	1	1
Maximum	2	2
L3 cache (full-speed)	12 MB	12 MB
Memory	12 GB ECC	12 GB ECC
RDIMMs	3 x 4 GB	3 x 4 GB
DIMM sockets	18	18
Capacity ⁴	144 GB	144 GB
Video	SVGA	SVGA
Memory	16 MB	16 MB
SATA controller	SATA	SATA
Channels	4	4
Connector internal	4	4
HDD ⁵		
Total bays	9 (standard)	9 (standard)
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8 standard	8 standard
Internal capacity	8 TB (with upgrade kit)	8 TB (with upgrade kit)
Bays available	9	9
5.25 slim	1	1
3.5-in tape	0	0
Hot-swap (3.5-in)	0	0
Hot-swap (2.5-in)	8	8
Total PCI slots	4	4
PCI_E (x8) ⁶	4	4
System management	Standard	Standard
Ethernet controller	Two 1Gb	Two 1Gb
Optical drive (SATA)	Optional	Optional
Power supply	675 w	675 w
Number standard	1	1
Maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes

⁴ Maximum of 144 GB by using 18 x 8 GB optional DIMMs.

⁵ The standard system can hold four or eight 2.5-inch HS HDDs. Max capacities are based on installation of sixteen 500 GB slim-high, SAS/SATA HDDs with one or two optional 8-Bay HDD expansion options.

Note: For the latest information on supported HDD options, refer to the *Sales Manual* or visit

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

⁶ PCI_E is the standard feature for PCI or you may replace it with the PCI Riser Card PCI-X Option for PCI/PCI-X 133 MHz/100 MHz 64-bit, or 66/33 MHz/32 bit slots.

Video subsystem

- SVGA compatible video controller (Matrox G200)
- Integrated on Integrated Management Module (IMM)
- Integrated on planar and connected to the PCI bus
- DDR2-250MHz SDRAM video memory controller.
- Video memory is not expandable

- One DVI (Digital Video Interface) is not used
- Avocent Digital Video Compression (with Virtual Media Key option)

Supported video mode capabilities for the SVGA PCI controller with a 200 MHz memory clock:

Microsoft windows 2000 or windows 2003 (32- and 64-bit) and Linux (all distributions)

Resolution	Colors	Refresh Rate (Hz)
640 x 480 x 8	256	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 16	64K	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 32	16M	60, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 32	16M	60, 70, 72, 75, 85, 90, 100, 120, 160
1024 x 768 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 32	16M	60, 70, 72, 75, 85, 90, 100
1280 x 1024 x 8	256	60, 72, 75
1280 x 1024 x 16	64K	60, 72, 75
1280 x 1024 x 32	16M	60, 72, 75

Note: Some modes are not supported by all monitors.

Dimensions

2U Rack Drawer

- Width: 443.6 mm (17.5 in)
- Depth: 698.0 mm (27.5 in)
- Height: 85.4 mm (3.36 in)

Rack:

- Weight: (minimum configuration) 21.1 kg (46.5 lb)
- Weight: (maximum configuration) 25.0 kg (55 lb)

Electrical

- 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 7.8 A
- 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 3.8 A
- Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: 0.12 kVA
 - Maximum configuration: 0.78 kVA
- Btu output:
 - Minimum configuration: 307 Btu/hr (90 watts)
 - Maximum configuration: 2260 Btu/hr (780 watts)
- Noise level (horizontal position): 6.5 bels (operating)
- Noise level (horizontal position): 6.3 bels (idle)

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

System x3650 M3 server are intended for use as rack-drawer servers and are tested and designed to operate in a horizontal position.

- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22:2006, Class A
- IEC 60950-1(CB Certificate and CB Test Report)
- China CCC (GB4943-2001), GB9254-2008 Class A, GB17625.1-2003
- Taiwan BSMI CNS13438, Class A; CNS14336
- Korea KN22, Class A; KN24

Operating environment

Air temperature:

- Server on: 10° C to 35° C (50.0° F to 95.0° F); altitude: 0 to 914.4 m (3,000 ft).
Decrease system temperature by 0.75° C for every 1,000-foot increase in altitude.
- Server off: 5° C to 45° C (41.0° F to 113° F)
- Shipment: -40° C to +60° C (-40° F to 140° F)

Humidity:

- Server on: 20% to 80%, maximum dew point 21° C, Maximum rate of change 5° C/hr
- Server off: 8% to 80%, maximum dew point 27° C

Japan energy saving standard

Energy value tables - X3650 M3

Machine Type/Model	Category 2005/2007	Power (Watts) Consumption	CTP MTOPS	Energy Consumption Efficiency	Input (Hz) Frequency
7945A2x	B/C	56	64610	0.000997	60
7945B2x	B/C	57	68705	0.000954	60
7945D2x	B/C	45	72800	0.000711	60
7945F2x	B/C	73	76743	0.000547	60
7945G2x	B/C	46	80687	0.000656	60
7945J2x	B/C	61	80687	0.000869	60
7945L2x	B/C	61	84933	0.000826	60
7945M2x	B/C	58	88877	0.000750	60
7945N2x	B/C	59	101010	0.000672	60
7945C2x	B/C	43	64610	0.000765	60
7945H2x	B/C	47	72800	0.000742	60

Hardware requirements

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

- Keyboard
- Mouse
- HDD
- Display

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

For service, the server requires a compatible:

- Keyboard
- Mouse
- HDD
- Display

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

Software requirements

The following software products have been tested by IBM and software publishers in the latest available versions, and where appropriate, are or will soon be certified by the publisher to be compatible with the System x3650 M3.

Operating systems

- Microsoft
 - Microsoft Windows Server 2008 R2
 - Microsoft Windows Server 2008, Datacenter x64 Edition
 - Microsoft Windows Server 2008, Enterprise x64 Edition
 - Microsoft Windows Server 2008, Standard x64 Edition
 - Microsoft Windows Server 2008, Web x64 Edition
 - Windows Small Business Server 2008 Premium Edition
 - Windows Small Business Server 2008 Standard Edition
- Linux
 - SUSE LINUX Enterprise Server 11 for AMD64/EM64T
 - SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- VMware
 - VMware ESX 4.0
 - VMware ESXi 4.0

Note: For information on additional support, certification, version information, or network operating systems, visit

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

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

Compatibility

The System x3650 M3 server systems contain licensed system programs that include set configuration, set features, and test programs. System UEFI is loaded from a "flash" EEPROM into system memory. This UEFI provides instructions and interfaces designed to support the standard features of the x3650 M3 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 x servers, visit

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

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

Limitations

- The System x3650 M3 server contains a single, configurable serial port. It can be configured to be operating-system-controlled, service-processor-controlled, or shared between the two. You can set the configuration by UEFI configuration. The default configuration from the factory is in the shared position. In the shared position, the service processor controls the port until the operating system is running, then the operating system takes control. The service processor can regain control of the port for user-configured dial-out situations or if the operating system is not available, but operating system control cannot be reestablished without resetting the server.

- To ensure proper air flow for cooling, the System x3650 M3 server requires a rack with a perforated door, such as the NetBAY42 SR or NetBAY25 SR. An alternative is to remove the front door of rack cabinets where the door panel is of solid construction.
- Microprocessor upgrades must be of the same type and clock speed. Mixing microprocessors of different speeds or cache size is not supported.

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

Planning information

Customer responsibilities

The System x3650 M3 server is designated as customer setup. Customer setup instructions are shipped with each system.

Configuration information

Integrated RAID-1 configuration

There are two manufacturing instructions (MI) available to allow the user to set up a RAID-1 configuration.

The two instructions are:

- Integrated Mirroring - Two HDDs required via Instruction 01R1356
- Integrated Mirroring with HotSpare - Three HDDs required via Instruction 01R1357

Cabling - Standard non-RAID configurations

Cabling - Simple-swap non-RAID configuration contains cables supporting up to four simple-swap non-RAID SATA drives. It does not contain any backplane.

Rack installations

System x3650 M3 server 2U rack-drawer models are designed to be installed in a 19-inch rack cabinet designed for 28-inch deep devices, such as the NetBAY42U ER and NetBAY42U SR. Installation into some of the older Netfinity® racks (9306900, 9306910, 9306200) requires a rack extension kit.

If a System x3650 M3 is mounted in a non-IBM rack, the rack must satisfy the following specifications:

- The rack must meet EIA-310-D standards for mounting flanges and hole locations.
- The front to rear distance of the mounting flanges must be between 698.5 mm - 762 mm (27.5 in - 30 in).
- The thickness of the mounting flanges must be between 1.9 mm - 3.3 mm.
- The mounting flanges must have either 7.1 mm (.28 in) diameter holes or 9.6 mm (.38 in) square holes on the standard EIA hole spacing.
- The rack must have a minimum depth of 70 mm (2.76 in) between the front mounting flange and inside of the front door for appropriate cooling.
- The rack must have a minimum depth of 157 mm (6.2 in) between the rear mounting flange and inside of the rear door to install the server and make space for cable management.
- The minimum side-to-side clearance in the rack between the front and rear mounting flanges must be 467 mm (18.2 in) to accommodate the width of the server and the slide mounting brackets.
- The minimum side-to-side clearance in the rack between each door and the mounting flanges must be 484 mm (19.1 in) to accommodate the slide mounting brackets.
- The rack must include perforated front and rear doors and must not prevent the flow of cool air into or out of the rack.

- The weight-handling capacity of the rack must be able to support the maximum rack configuration, including all servers, external cables, and PDUs.
- The rack must provide proper stabilization so that the rack does not become unstable when servers are pulled out for service.

Processor upgrade options

Intel Xeon Processor E5503	2C	2.0GHz	4M	Cache	800MHz	80w	59Y4015
Intel Xeon Processor E5506	4C	2.13GHz	4M	Cache	800MHz	80w	46M1079
Intel Xeon Processor E5507	4C	2.26GHz	4M	Cache	800MHz	80w	59Y4016
Intel Xeon Processor E5620	4C	2.40GHz	12M	Cache	1066MHz	80w	59Y4020
Intel Xeon Processor E5630	4C	2.53GHz	12M	Cache	1066MHz	80w	59Y4021
Intel Xeon Processor E5640	4C	2.66GHz	12M	Cache	1066MHz	80w	59Y4022
Intel Xeon Processor L5630	4C	2.13GHz	12M	Cache	1066MHz	40w	59Y4018
Intel Xeon Processor L5640	6C	2.26GHz	12M	Cache	1333MHz	60w	59Y4019
Intel Xeon Processor L5609	4C	1.86GHz	12M	Cache	1066MHz	40w	59Y4017
Intel Xeon Processor X5650	6C	2.66GHz	12M	Cache	1333MHz	95w	59Y4023
Intel Xeon Processor X5660	6C	2.80GHz	12M	Cache	1333MHz	95w	59Y4024
Intel Xeon Processor X5667	4C	3.06GHz	12MB	Cache	1333MHz	95w	59Y4025
Intel Xeon Processor X5670	6C	2.93GHz	12MB	Cache	1333MHz	95w	59Y4026
Intel Xeon Processor X5677	4C	3.46GHz	12M	Cache	1333MHz	130w	59Y4027
Intel Xeon Processor X5680	6C	3.33GHz	12M	Cache	1333MHz	130w	59Y4028
Addl Intel Xeon Processor E5504	4C	(2.00GHz	4MB	Cache	800MHz	80w	46M1078
Addl Intel Xeon Processor E5520	4C	(2.26GHz	8MB	L3 Cache	1066MHz	80w)	46M1081
Addl Intel Xeon Processor E5530	4C	(2.4GHz	8MB	L3 Cache	1066MHz	80w)	46M1083
Addl Intel Xeon Processor E5540	4C	2.53GHz	8MB	Cache	1066MHz	80w	46M1084
Addl Intel Xeon Processor X5550	4C	2.66GHz	8MB	Cache	1333MHz	95w	46M1085
Addl Intel Xeon Processor X5560	4C	2.80GHz	8MB	Cache	1333MHz	95w	46M1086
Addl Intel Xeon Processor X5570	4C	(2.93GHz	8MB	L3 Cache	1333MHz	95w)	46M1087

Supported memory options

The following memory options are supported:

- 44T1569 - 2 GB (1x2GB) 2Rx8 1Gbit PC3-10600 DDR3-1333 LP UDIMM
- 46C7449 - 8 GB PC3-10600 CL9 ECC DDR3 1333MHz Chipkill LP RDIMM
- 49Y1392 - 2 G2GB 2Rx8 1Gbit PC3L-10600R LP RDIMM 1.35V Capable
- 49Y1394 - 4 GB 2Rx4 1Gbit PC3L-10600R LP RDIMM 1.35V Capable
- 49Y1433 - 2 GB (1x2GB, 2Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP DIMM
- 49Y1434 - 2 GB (1x2GB, 1Rx4, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP DIMM
- 49Y1435 - 4 GB (1x4GB, 2Rx4, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP DIMM
- 49Y1436 - 8 GB (1x8GB, 2Rx4, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP DIMM

Power considerations

The System x3650 M3 server includes a standard 675-watt hot-swap power supply. This power supply supplies sufficient power to run the server.

Cable orders

Two 10/100/1000 Mbps, full-duplex Ethernet PCI controllers, standard with the System x3650 M3 server, are connected directly to an independent RJ-45 connector. The RJ-45 connector provides a 10BaseT, 100Base-TX, and 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 System x3650 M3 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	Package description	Boxes
System x3650 M3	System unit carton	1
	Contents:	
	System unit Rack kit	
System x3650 M3	System unit carton	1
	Contents:	
	Flyer - Important Notices Rack Installation Instructions CD - Documentation V1.0 (installation and User Guides) CD - Director V6.1 IBM Director CD - Ethernet VT	

The System x3650 M3 server system is shipped as a single package. Other items are in zipped bags or boxes.

Security, auditability, and control

Security and auditability features include:

- Power-on and privileged access password functions control access to the data and server setup program on the server.
- 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.
- Selectable boot sequence can be used to prevent unauthorized installation of software or removal of data from the diskette drive.

The servers are intended to be installed in a rack and secured in a rack. It is a customer's responsibility to ensure that the server is secure to prevent sensitive data from being removed.

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

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a Web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service

and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

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

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

To learn how Electronic Services can work for you, visit

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

Terms and conditions

IBM System x3650 M3

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

Warranty period

- System Unit - 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:

- System batteries
- RAID batteries

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:

- Air baffles
- Blank filler
- Cable-management arm
- Hard disk drives
- Hot-swap fan
- Hot-swap AC power supply
- Lift handle kit
- Memory DIMM
- Memory expansion card
- Optical drive
- PCI adapter
- PCI divider
- Power cord
- Service label
- System label
- Top cover
- Fan Bracket
- Hyper visor USB Key
- PCI Riser
- RAID Card w/o Battery
- Tape Drive
- Virtual Media Key
- Ethernet Daughter Card

On-site Service

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

those locations where On-site Service is not available, the normal in-country service delivery is used.

International Warranty Service

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

The warranty service type and the service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

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

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

<http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/warrantyform?brandind=5000008>

For more information on IWS, refer to Services Announcement [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.

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.

Warranty service upgrades

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.

Educational allowance

None

Prices

For all local charges, contact your IBM representative.

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AP distribution

Country/Region	Announce	Announce Date
AP IOT		
ASEAN*	Yes	March 16, 2010
India/South Asia**	Yes	March 16, 2010
Australia	Yes	March 16, 2010
People's Republic of China	Yes	March 16, 2010
Hong Kong S.A.R of the PRC	Yes	March 16, 2010
Macao S.A.R of the PRC	Yes	March 16, 2010
Taiwan	Yes	March 16, 2010
Korea	Yes	March 16, 2010
New Zealand	Yes	March 16, 2010
Japan IOT		
Japan	Yes	March 17, 2010

* Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, and Vietnam

** Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, and Afghanistan

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