IBM System x3650 M4 server model includes Intel Xeon E5-2600 multicore processors

Table of contents
1 Overview
2 Key prerequisites
3 Planned availability date
3 Description
9 Product positioning
10 Product number
11 Publications
12 Technical information
21 Terms and conditions
23 Prices
24 Announcement countries

At a glance

Power, scalability, control, and serviceability for dynamic high performance computing applications:

- Ultrathin, high-availability, rack-optimized, 2U platform.
- High-speed DDR-3 SDRAM Registered DIMMs standard; 24 DIMM slots that support up to 384 GB maximum memory with 16 GB optional DIMMs, or up to 768 GB of memory with LRDIMMs or HyperCloud DIMMs. With the ability to run two DIMMs per channel at 1600 MHz with supported 1600 MHz RDIMMs.
- Support for up to 16 hot-swap SAS/SATA 2.5-inch HDDs or SSDs or up to six hot-swap SAS/SATA 3.5-inch HDDs or up to thirty-two 1.8-inch SSDs.
- Up to six PCIe 3.0 slots on two processor model servers.
- 550-watt ac, 750-watt ac, 900-watt ac, or 750-watt dc auto-ranging power supplies (optional redundant and hot-swap).
- Integrated systems management processor.
- Integrated quad Gigabit Ethernet ports for high I/O capacity, plus two optional embedded 10 GbE ports.
- One serial port (16550A-compatible), eight USB ports (two front, four back, two internal), and two video ports (front and rear).

Overview

This 2U-high, rack-optimized server features extreme frequency, optimized performance, and systems management for business-critical applications and cloud deployments built on IBM® X-Architecture®.

Optimized for performance

New, innovative, energy-smart design with powerful high-performance processors, a large capacity of high-performing DDR3 memory, and an impressive feature set ideal for business-critical applications and cloud deployments:

- Up to two 8-core powerful Intel Xeon™ E5-2600 series processors
- Twenty-four DIMM (RDIMM/UDIMM/LRDIMM/HCDIMM) slots that enable you to deploy up to 384 GB of DDR3 SDRAM Registered DIMM memory, or up to 768 GB of memory with LRDIMMs or HyperCloud DIMMs, fast memory bandwidth with the ability to run two DIMMs per channel at 1600 MHz with supported 1600 MHz RDIMMs
• Integrated IBM ServeRAID M5110e on the motherboard, 6 Gbps hardware RAID-0, RAID-1, RAID-10; optional RAID-5, RAID-50, or RAID-6, RAID-60 (model dependent) and up to 1 GB Flashback cache
• Support for up to 16 hot-swap SAS/SATA 2.5-inch HDDs or SSDs or up to six hot-swap SAS/SATA 3.5-inch HDDs or up to thirty-two 1.8-inch SSDs
• Highly functional chipset optimized for better application computing for general business workloads
• Integrated quad Gigabit Ethernet ports for high I/O capacity, plus two optional embedded 10 GbE ports
• Up to six PCIe 3.0 I/O slots with optional PCI-X and double-width PCIe adapters support, help provide flexibility, greater performance with long-term investment protection
• New energy-efficient design incorporating 550-watt ac, 750-watt ac, 900-watt ac, or 750-watt dc power supplies, up to eight cooling fans (four banks of counter-rotating dual fans), and energy-efficient planar components to help lower operational costs
• Compliant with 80 PLUS Platinum and ENERGY STAR (model dependent)

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 (IBM ServeRAID M5110e) for up to sixteen 2.5-inch hot-swap HDD bays
• Memory mirroring, configurable using Unified Extensible Firmware Interface (UEFI) setup
• Integrated Management Module 2 (iMM2) 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

Excellent RAS and outstanding uptime for an improved business environment

• Redundant, hot-swap components are designed to make it easy to replace failures without taking your system down
• Hot-swap, redundant fans with calibrated vectored cooling keep components cool, and simplified fan replacement
• Hot-swap, redundant power supplies to help reduce downtime
• Hot-swap, RAID protection disk helps secure your data and reduce downtime
• Predictive Failure Analysis provides advanced warning on memory, disks, fans, and power supplies
• Drop-down light path diagnostics panel provides information about a failing component without opening chassis or interrupting system operation; expedites hardware repairs to dramatically reduce service time
• IBM Director and web support
• Three-year, customer replaceable unit (CRU) and on-site labor†, limited warranty‡; optional warranty service upgrades available

IBM is also releasing models that come preinstalled with SAP Discovery System V5. The SAP Discovery System is a fully configured and preintegrated service-oriented architecture (SOA) platform enabler for SAP development environments. The models that include the preinstalled copy of SAP software do not include a license to use
such SAP software. You are not licensed to use the copy of SAP software contained in the IBM system until you have purchased or licensed the use of the SAP software from SAP or its authorized distributors. Usage of the SAP software is subject to the applicable SAP user license supplement. Your purchase of the IBM hardware system does not include a license to use the SAP software or to use any other SAP software. SAP is under no obligation to license the preinstalled SAP software to you. Contact your responsible SAP representative to obtain the appropriate license rights to use the SAP software. SAP Discovery Server is preinstalled on specific models of this product as a convenience only; IBM makes no representation or warranty with respect to SAP software and grants no license to use any preinstalled SAP software.

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

2 For 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

September 19, 2012

Description

System x3650 M4 server

The System x3650 M4 server features Intel Xeon multicore processors that support internal processing speeds of up to 3.3 GHz\(^1\), and processing operations to memory up to 1600 MHz.

High-performance server subsystems The System x3650 M4 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. Up to 20 MB cache, and up to two 8.0 GT/s QuickPath interconnect (QPI) with new Hyper Threading and Intel\textsuperscript{TM} Turbo Boost Technology 2.0. It incorporates powerful Xeon processors with up to 20 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 up to 1600 MHz DRAM clock speed and offer maximum 12800 Mbps bandwidth, processor-to-memory subsystem performance. The x3650 M4 server uses the Intel E5-2600 processor with Chipkill technology to maximize throughput from processors, to memory, to the 32-bit and 64-bit PCI buses.

\(^3\) GHz and MHz denote the internal and/or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.
Standard System x3650 M4 configurations

<table>
<thead>
<tr>
<th>Model number</th>
<th>Processor</th>
<th>Memory</th>
<th>GT/s</th>
<th>Interface</th>
<th>HDD</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>791532x</td>
<td>3.3 GHz</td>
<td>4 GB</td>
<td>8.0</td>
<td>SAS/SATA</td>
<td>2.5-in</td>
<td>Open bay hot-swap 1 x 900W</td>
</tr>
<tr>
<td></td>
<td>Cache: 10 MB</td>
<td></td>
<td></td>
<td>MS110e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7915M2x</td>
<td>2.9 GHz</td>
<td>4 GB</td>
<td>8.0</td>
<td>SAS/SATA</td>
<td>2.5-in</td>
<td>Open bay hot-swap 1 x 900W</td>
</tr>
<tr>
<td></td>
<td>Cache: 20 MB</td>
<td></td>
<td></td>
<td>MS110e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7915GSx</td>
<td>2.0 GHz</td>
<td>32 GB</td>
<td>8.0</td>
<td>SAS/SATA</td>
<td>2.5-in</td>
<td>1x1 TB 7x600 GB hot-swap</td>
</tr>
<tr>
<td></td>
<td>Cache: 20 MB</td>
<td></td>
<td></td>
<td>MS100e+1GB Flash</td>
<td></td>
<td>SAP Disc</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 x 750W</td>
</tr>
</tbody>
</table>

**Note:** The model "x" designation is geography dependent and is spelled out explicitly in the **Product number** section

**Additional features**

- Up to 16-core processing achieved with a second processor of equal speed and processor type
- System board containing 24 DIMM (UDIMM/RDIMM/LRDIMM/HCDIMM) connectors supporting 4 GB, 8 GB, and 16 GB DDR3 PC3-12800 SDRAM ECC RDIMMs with:
  - DDR3 memory for improved performance
  - Up to 384 GB of system memory using 16 GB optional DIMMs, or up to 768 GB of memory with LRDIMM or HyperCloud DIMMs
- Up to six PCIe 3.0 slots
  - With single processor models:
    - Three PCIe 3.0 slots - one x8 full length, full height and two x8 half length, full height (stand models)
    - Two PCIe 3.0 slots - one x16 full length, full height and one x8 half length, full height
    - Two PCI-X Plus one PCIe 3.0 slots - one PCI-X full length, full height and one PCIe half length, full height plus one x8 half length, full height PCIe 3.0
    - One double width plus one PCIe 3.0 slots - one x16 double-width full length, full height for GPU and one x8 half length, full height
  - With dual processor models:
    - Three PCIe 3.0 slots - two x8 full length, full height and one x8 half length, full height
    - Two PCIe 3.0 slots - one x16 full length, full height and one x8 half length, full height
    - Two PCI-X Plus one PCIe 3.0 slots - two PCI-X full length, full height and one x8 half length, full height PCIe 3.0
    - One double width plus one PCIe 3.0 slots - one x16 double-width full length, full height for GPU and one x8 half length, full height

The PCIe riser card offers adjustable length to meet different PCIe length card requirement.

- On standard models, eight 2.5-inch bays or six 3.5-inch bays to support optional SAS/SATA HDDs, one bay to support an optical drive and one bay to support an optional tape drive.
- Intel i350-AM4 Quad-port Gigabit Ethernet on board and embedded 10 GbE Dual-port options (on a reserved connector) (10/100/1000) Ethernet ports, which speed network communications to LAN clients. (The embedded card
supports Emulex, QLogic, and Mellanox with different protocols like 10 Gb SFP+ or Infiniband.)

- Compliant with 80 PLUS Platinum and ENERGY STAR (model dependent).

The System x3650 M4 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 M4 server an excellent choice for a stand-alone or clustered general-business application, file, and print server.

**High-availability and serviceability features**

The System x3650 M4 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 eight hot-swap fans (four pairs)
- Up to sixteen 2.5-inch HS HDDs with optional upgrade kit
- 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 HDD options, memory, power supply, and fans to help alert the system administrator of imminent component failure
- Worldwide voltage-sensing, 550-watt ac, 750-watt ac, 900-watt high-efficiency hot-plug power supply options
- Optional IBM Integrated Management Module Advanced Upgrade (Feature on Demand (FoD)) 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 IBM Integrated Management Module Advanced Upgrade), 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 M4 server packs a lot of function and storage capacity into a 2U 19-inch rack-drawer package, yet it is designed to be 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 30-inch-deep industry-standard rack enclosures
- Up to six PCIe 3.0 adapter card slots available, three PCI-Express slots may be replaced by a riser card option to get two PCI-X plus one PCI-Express slots, two PCIe 3.0 slots, one x16 plus one x8 slots, two PCIe 3.0 slots, one x16 double width plus one x8 slots
- System board optional upgrades (PCI slot not required)
  - IBM Integrated Management Module Advanced Upgrade. Remote presence function can be enabled by FoD.
- Support for up to 18000 GB of internal data storage, using six 3 TB SATA HDDs

**Systems management**

Integrated Management Module 2 (iMM2)

The System x3650 M4 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 four onboard Ethernet ports for access. The IMM can be accessed using software that is compatible with IPMI 2.0 (for example, xCAT). 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 that 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 that supports virtually any network infrastructure.
- Multiple alerting functions to warn systems administrators of potential problems through email, IPMI PETs, and SNMP.
**IBM Integrated Management Module Advanced Upgrade**

The optional IBM Integrated Management Module Advanced Upgrade delivers advanced control and monitoring features to manage your IBM System x3650 M4 server at virtually any time, from virtually any place. The key can be enabled by FoD. 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 M4 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 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:
  - Memory
  - HDDs
  - Power supplies
Fans

- Define automated actions, such as:
  - Send email or page to an administrator
  - Run a command or program
  - Send 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 through 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 the actual amount of power being used and the temperature of the system. The software is available across new IBM 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 Integrated Management Module, the IT administrator achieves 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:
  – Memory
  – Fans
  – HDDs
  – Power supplies
• Define automated actions, such as:
  – Send an email or a page to an administrator
  – Run a command or program
  – Send 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 Microsoft 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 M4 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.

• The server purchase includes a three-year, customer replaceable unit (CRU) and on-site service, limited warranty; optional warranty service upgrades are 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. Visit

**Accessibility by people with disabilities**

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


**Product positioning**

The System x3650 M4 server is a part of the System x rack-optimized server line. This 2-socket server delivers Intel Xeon multicore high speed processors and excellent server function in an ultrathin, rack-optimized, 2U footprint.
**Optimized for speed**

The System x3650 M4 server offers new levels of Intel Xeon multicore processors with up to 8.0 GT/s and lower power for business-critical applications and cloud deployments. This server is uniquely optimized for better application computing with a highly functional chipset and 24 DIMM slots for a maximum of 384 GB of DDR-3 SDRAM Registered DIMM memory, or up to 768 GB of memory with LRDIMM or HyperCloud DIMMs.

**Innovation comes standard**

- Application efficiency increases with snoop filters that free up cache and improve processor performance.
- 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, RAID-1 on hot-swap SAS models helps safeguard your data at no additional cost.

**Target applications**

- General purpose computing
- Database, ERP, Mail, Web 2.0 applications
- Business-critical applications and cloud deployments
- Finance trading applications
- High performance computing

**Product number**

---

**Note:** EMEA are GAV Models.

<table>
<thead>
<tr>
<th>Description</th>
<th>MT</th>
<th>Mod</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM System x3650 M4</td>
<td>7915</td>
<td>32G</td>
<td>791532G</td>
</tr>
<tr>
<td></td>
<td>7915</td>
<td>M2G</td>
<td>7915M2G</td>
</tr>
<tr>
<td></td>
<td>7915</td>
<td>GSG</td>
<td>7915GSG</td>
</tr>
</tbody>
</table>

**Note:** The preinstalled SAP Discovery system V5, SAP Business all-in-one is included with the 7915GSG.

**Options**

<table>
<thead>
<tr>
<th>Option part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00D5004 32GB (1x32GB, 1.5V)PC3-8500 CL7 ECC DDR3 1066MHz LP HyperCloud DIMM</td>
<td></td>
</tr>
<tr>
<td>00D9450</td>
<td>Intel Xeon Processor E5-2658 8C 2.1GHz 20MB 1600MHz 95W W/Fan</td>
</tr>
<tr>
<td>00D9451</td>
<td>Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB 1600MHz 70W W/Fan</td>
</tr>
<tr>
<td>00D9490</td>
<td>x3650 M4 Plus 8 2.5&quot; HS HDD Assembly Option Kit</td>
</tr>
<tr>
<td>00D9492</td>
<td>x3650 M4 16 Plus 16 1.8&quot; SSD Assembly Option Kit</td>
</tr>
<tr>
<td>00D9493</td>
<td>x3650 M4 8 2.5&quot; Plus 16 1.8&quot; SSD Assembly Option Kit</td>
</tr>
<tr>
<td>90Y5085</td>
<td>x3650 M4 PCIe Riser Card 2 (1 x16 for GPU + 1 x8 FH/HL Slots)</td>
</tr>
<tr>
<td>00D9532</td>
<td>x3650 M4 925MM SAS Cable</td>
</tr>
<tr>
<td>00D9501</td>
<td>IBM LLM-SM Dual Port 10Gbe SFP+ Adapter for IBM System x</td>
</tr>
<tr>
<td>90Y6454</td>
<td>Qlogic Dual Port 10Gbe SFP+ Embedded VFA for IBM System x</td>
</tr>
<tr>
<td>90Y5179</td>
<td>Qlogic Embedded VFA FCoE/iSCSI License for IBM System x (FoD)</td>
</tr>
</tbody>
</table>
**Pseudo part numbers**

**Note:** The following Pseudo part numbers cannot be ordered as stand-alone parts and can only be ordered by configurator.

<table>
<thead>
<tr>
<th>Pseudo part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00D9496</td>
<td>x3650 M4 Plus 8 2.5” HS HDD Assembly Kit</td>
</tr>
<tr>
<td>00D9491</td>
<td>x3650 M4 Hot-Swap 16/32 HDD Assembly Kit</td>
</tr>
<tr>
<td>00D9497</td>
<td>x3650 M4 16 Plus 16 1.8” SSD Assembly Kit</td>
</tr>
<tr>
<td>00D9498</td>
<td>x3650 M4 8 2.5” Plus 16 1.8” SSD Assembly Kit</td>
</tr>
<tr>
<td>00D9489</td>
<td>x3650 M4 2.5” Simple Swap Kit</td>
</tr>
<tr>
<td>00D9448</td>
<td>Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W</td>
</tr>
<tr>
<td>00D9449</td>
<td>Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W</td>
</tr>
<tr>
<td>00D5005</td>
<td>32GB (1x32GB, 1.5V) PC3-8500 CL7 ECC DDR3 1066MHz LP HyperCloud DIMM</td>
</tr>
<tr>
<td>00D9538</td>
<td>x3650 M4 820MM SAS Cable</td>
</tr>
</tbody>
</table>

**Publications**

The following CD-ROM is shipped with the x3650 M4 server:

- 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 publications *System x3650 M4 Server Installation and User's Guide* and *Problem Determination and Service Guide*, in US English and translation versions are available from


Multilingual support is provided for many of the System x3650 M4 server components in the following languages:

- Brazilian Portuguese
- Chinese (Simplified and Traditional)
- English (US and UK)
- French
- German
- Italian
- Japanese
- Korean
- Spanish

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

**Displayable softcopy publications**

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

Global Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

http://www.ibm.com/services/

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

http://www.ibm.com/services/continuity

For details on education offerings related to specific products, visit


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

Technical information

Specified operating environment

Physical specifications

System x3650 M4:

<table>
<thead>
<tr>
<th></th>
<th>791532x</th>
<th>7915M2x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Xeon E5-2643 4C (130W)</td>
<td>Xeon E5-2690 8C (135W)</td>
</tr>
<tr>
<td>Internal speed</td>
<td>3.3 GHz</td>
<td>2.9 GHz</td>
</tr>
<tr>
<td>External speed</td>
<td>8.0 GTS</td>
<td>8.0 GTS</td>
</tr>
<tr>
<td>Number standard</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>L3 cache (full-speed)</td>
<td>10 MB</td>
<td>20 MB</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB ECC 1600 MHZ RDIMM</td>
<td>4 GB ECC 1600 MHZ RDIMM</td>
</tr>
<tr>
<td>RDIMMs</td>
<td>1 x 4 GB (2Gb,1Rx4,1.5V)</td>
<td>1 x 4 GB (2Gb,1Rx4,1.5V)</td>
</tr>
<tr>
<td>DIMM sockets</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Capacity GB</td>
<td>768 GB</td>
<td>768 GB</td>
</tr>
<tr>
<td>Video</td>
<td>SVGA</td>
<td>SVGA</td>
</tr>
<tr>
<td>Memory</td>
<td>16 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>HDD controller</td>
<td>SAS/SATA</td>
<td>SAS/SATA</td>
</tr>
<tr>
<td>Channels</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Connector internal</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>RAID controller</td>
<td>M5110e</td>
<td>M5110e</td>
</tr>
<tr>
<td>HDD bays</td>
<td>18 (with upgrade)</td>
<td>18 (with upgrade)</td>
</tr>
<tr>
<td>5.25 slim</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3.5-in tape</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hot-swap (3.5-in)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hot-swap (2.5-in)</td>
<td>16 (with upgrade)</td>
<td>16 (with upgrade)</td>
</tr>
<tr>
<td>Internal capacity</td>
<td>16 TB (with upgrade)</td>
<td>16 TB (with upgrade)</td>
</tr>
<tr>
<td>Bays available</td>
<td>10 standard</td>
<td>10 standard</td>
</tr>
<tr>
<td>5.25 slim</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3.5-in tape</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hot-swap (3.5-in)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Feature</td>
<td>Value 1</td>
<td>Value 2</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>Hot-swap (2.5-in)</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total PCI slots</td>
<td>6 (with upgrade)</td>
<td>6 (with upgrade)</td>
</tr>
<tr>
<td>PCI_E (x8)</td>
<td>3 standard</td>
<td>3 standard</td>
</tr>
<tr>
<td>System management</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Ethernet controller</td>
<td>Four 1 Gb</td>
<td>Four 1 Gb</td>
</tr>
<tr>
<td>Optical drive (SATA)</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Power supply</td>
<td>900 W</td>
<td>900 W</td>
</tr>
<tr>
<td>Number standard</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hot-swap</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Redundant power</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Auto restart</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

7915GSx

Processor: Xeon E5-2650 8C (95w)

- Internal speed: 2.0 GHz
- External speed: 8.0 GTS
- Number standard: 1
- Maximum: 2
- L3 cache (full-speed): 20 MB

Memory: 32 GB ECC 1600 MHz

- RDIMMs: 4 x 8 GB
- DIMM sockets: 24
- Capacity: 768 GB

Video: SVGA

HDD controller: SAS/SATA

- Channels: 8
- Connector internal: 2

HDD:

- Total bays: 18 (with upgrade)
  - 5.25 slim: 1
  - 3.5-in tape: 1
  - Hot-swap (3.5-in): 0
  - Hot-swap (2.5-in): 16 (with upgrade)
- Internal capacity: 16 TB (with upgrade)

Bays available: 2 standard

- 5.25 slim: 1
- 3.5-in tape: 1
- Hot-swap (3.5-in): 0
- Hot-swap (2.5-in): 0 standard 1 x 1 TB and 7 x 600 GB

Total PCI slots: 6 (with upgrade)

- PCI_E (x8): 3 standard
- System management: Standard
- Ethernet controller: Four 1 Gb
- Optical drive (SATA): Optional
- Power supply: 2 (750 W)
- Number standard: 2
- Maximum: 2
- Hot-swap: Yes
- Redundant power: Yes
- Auto restart: Yes

---

4 Maximum of 384 GB by using twenty-four 16 GB optional DIMMs, or up to 768 GB of memory with LRDIMM or HyperCloud DIMMs.

5 The standard system can hold eight 2.5-inch HS HDDs. Maximum capacities are based on installation of sixteen 1 TB SAS HDDs with or by six 3 TB 3.5-inch SATA HDDs.

**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/](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 MHz/33 MHz 32-bit slots. Two processor machines have six PCI slots.
**MultiBurner plus drive**

- **Specifications**
  - DVD-ROM (6.6x-16x CAV, 4.7 GB DVD-ROM read): 9.17 - 22.16 Mbps
  - DVD-ROM (5.0x-126x CAV, 8.5 GB Dual-layer read): 6.8 - 16.62 Mbps
  - DVD-R/+R (3.3x-8X CAV, 4.7 GB DVD-R/+R read): 5.73 - 13.85 Mbps
  - DVD-R/+R (3.3x-8X CAV, 8.5 GB DVD-R/+R read): 4.58 - 11.08 Mbps
  - DVD-RW/+RW (3.3x-8X CAV, 4.7 GB DVD-RW/+RW read): 4.58 to 11.08 Mbps
  - DVD-RAM (6x-12x PCAV, 4.7 GB DVD_RAM read): 8.31 - 16.62 Mbps
  - CD-R/RW/ROM (17-40x CAV, read): 2.6 - 6.0 Mbps
  - DVD-R+/R (1x -16X PCAV, 4.7 GB DVD-R+/R write): 9.9 - 22.16 Mbps
  - DVD-R+/R (2x-8X CLV, 8.5 GB DVD-R+/R Dual-layer write): 5.54 Mbps
  - DVD-RW (2x-6X CLV, 4.7 GB DVD-RW write): 8.31 Mbps
  - DVD+RW (3.3x - 8X ZCLV, 4.7 GB DVD+RW write): 4.57 - 11.08 Mbps
  - DVD-RAM (6x-16x PCAV, 4.7 GB DVD-RAM write): 8.31 - 16.62 Mbps
  - CD-RW (8-32x ZCLV, write): 4.8 Mbps
- Max burst data transfer rate: Ultra DMA Mode 4: 66.6 Mbps
- Average access times:
  - DVD-ROM including latency and error correction: 145 ms
  - DVD-RAM including latency and error correction: 175 ms
  - CD-ROM including latency and error correction: 125 ms

**Video subsystem**

- SVGA compatible video controller (Matrox G200eR2).
- Integrated on Integrated Management Module (iMM2).
- Integrated on planar and connected to the PCI bus.
- DDR3 528 or 504 MHz SDRAM video memory controller.
- Video memory is not expandable.
- One DVI (Digital Video Interface) is not used.
- Avocent Digital Video Compression (with IBM Integrated Management Module Advanced Upgrade).

**Supported video modes**

<table>
<thead>
<tr>
<th>Width</th>
<th>Height</th>
<th>Refresh</th>
<th>Bpp</th>
</tr>
</thead>
<tbody>
<tr>
<td>640</td>
<td>400</td>
<td>60, 72, 75, 85</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>800</td>
<td>600</td>
<td>56, 60, 72, 75, 85</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1,024</td>
<td>768</td>
<td>60, 70, 75, 85</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1,152</td>
<td>864</td>
<td>60</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1,280</td>
<td>1,024</td>
<td>60</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1,280</td>
<td>1,024</td>
<td>75, 85</td>
<td>8, 16</td>
</tr>
<tr>
<td>1,440</td>
<td>900</td>
<td>60</td>
<td>8, 16, 32</td>
</tr>
<tr>
<td>1,440</td>
<td>900</td>
<td>75, 85</td>
<td>8, 16</td>
</tr>
<tr>
<td>1,600</td>
<td>1,200</td>
<td>60, 65, 70, 75, 85</td>
<td>8, 16</td>
</tr>
<tr>
<td>1,680</td>
<td>1,050</td>
<td>60, 75, 85</td>
<td>8, 16</td>
</tr>
</tbody>
</table>

The maximum resolution of the video controller is 1600 x 1200 at 75.

7 The maximum screen resolution is not supported for all Bits per Pixel (color depth) and refresh rates. The maximum Bits per Pixel (color depth) is not supported for all resolutions and refresh rates.
**Dimensions**

2U Rack Drawer
- Width: 445 mm (17.52 in.)
- Depth: 746 mm (29.37 in.)
- Height: 86.5 mm (3.41 in.)

Rack:
- Weight: (minimum configuration) 25 kg (55 lb)
- Weight: (maximum configuration) 30 kg (65 lb)

**Electrical**

Models with 550 W power supplies:
- 100 - 127 (nominal) V ac; 50 Hz or 60 Hz; 6.5 A
- 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 3.3 A
- Input kilovolt-amperes (kVA) (approximately):
  - Minimum configuration: 0.16 kVA
  - Maximum configuration: 0.66 kVA

Models with 750 W power supplies:
- 100 - 127 (nominal) V ac; 50 Hz or 60 Hz; 8.9 A
- 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 4.5 A
  - Minimum configuration: 0.15 kVA
  - Maximum configuration: 0.90 kVA

Models with 900 W power supplies:
- 100 - 127 (nominal) V ac; 50 Hz or 60 Hz; 10.0 A
- 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 5.0 A
  - Minimum configuration: 0.15 kVA
  - Maximum configuration: 1.022 kVA
- Btu output:
  - Minimum configuration: 525.45 Btu/hr (ac 154 watts)
  - Maximum configuration: 3480.24 Btu/hr (ac 1020 watts)
- Noise level: 6.6 bels (operating)
- Noise level: 6.4 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.

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

Air temperature:

- **Server on:** 5°C to 40°C (41.0°F to 104°F); altitude: 0 to 915 m (3,000 ft) for 60W to 95W processors models.
- **Server on:** 10°C to 35°C (50.0°F to 95°F); altitude: 0 to 915 m (3,000 ft) for 115W to 135W processors models.
- **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:

For 115W to 130W processors/135W processors models

- **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

For 60W to 95W processors models

- **Server on:** 8% to 85%, maximum dew point 24°C, maximum rate of change 5°C/hr
- **Server off:** 8% to 80%, maximum dew point 27°C

Design to ASHRAE Class A3, ambient of 40°C, with relaxed support

- Support cloud-like workload with no performance degradation acceptable (Turbo-Off)
- Under no circumstance, can any combination of worst case workload and configuration result in system shutdown or design exposure at 40°C

**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 M4 server.
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 HPC Server 2008
- **Linux™**
  - SUSE LINUX Enterprise Server 11 for AMD64/EM64T
  - Red Hat Enterprise Linux 5 Server x64 Edition

**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 M4 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 M4 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 xSeries® 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 M4 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.

- System x3650 M4 servers can address a maximum of 768 GB of system memory. All supported system memory is addressable through direct memory access. The System x3650 M4 server supports 2 GB, 4 GB, 8 GB, and 16 GB DDR-3 SDRAM Registered DIMMs, 16 GB, 32 GB HyperCloud DIMMs, or 32 GB LRDIMM. Different types of DIMMs can not coexist in the same system. Refer to the PLANNING INFORMATION section for supported memory options.

- To ensure proper air flow for cooling, the System x3650 M4 server requires a rack with a perforated door, such as the 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.
• Regarding the use of solid-state disk drives, solid-state memory cells have an intrinsic, finite number of write cycles that each cell can incur. As a result, each solid-state device has a maximum amount of write cycles to which it can be subjected, documented as TBW (Total Bytes Written). IBM is not responsible for replacement of hardware that has reached the maximum guaranteed number of write cycles. This limit may be revealed as the device failing to respond to system-generated commands or become incapable of being written to. Additional information is available at
  http://www-03.ibm.com/systems/x/options/storage/solidstate/index.html

**Note:** Refer to the Software requirements section for operating system limitations.

**Planning information**

**Customer responsibilities**
The System x3650 M4 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 using Instruction 01R1356
• Integrated Mirroring with HotSpare - Three HDDs required using Instruction 01R1357

**Cabling**

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

**Rack installations**

System x3650 M4 server 2U rack-drawer models should be installed in a 19-inch rack cabinet designed for 30-inch deep devices, such as the NetBAY42U ER. Installation into some of the older Netfinity® racks (9306900, 9306910, 9306200) requires a rack extension kit.

If a System x3650 M4 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 698.5 - 762 mm (27.5 in. - 30 in.).
• The thickness of the mounting flanges must be 1.9 - 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.

**Supported memory options**

The following memory options are supported:

• 00D4964 - 16 GB Hyper Cloud DIMM 16GB (16Gb, 2RX4, 1.5V) PC3L-10600 1333 DDR3 LP HCDIMM
• 49Y1397 - 8 GB 2Rx4 2Gbit PC3L-10600R LP RDIMM 1.35V Capable
• 49Y1399 - 8 GB (2Gb, 4Rx8,1.35V) DDR3-1066 LP RDIMM
• 49Y1405 - 2 GB (2Gb, 1Rx8, 1.35V) PC3L-10600R ECC LP RDIMM
• 49Y1406 - 4 GB (2Gb, 1Rx4, 1.35V) PC3L-10600R ECC LP RDIMM
• 49Y1407 - 4 GB (2Gb, 2Rx8, 1.35V) PC3L-10600R ECC LP RDIMM
• 49Y1559 - 4 GB (2Gb,1Rx4, 1.5V) PC3-12800 DDR3-1600 LP RDIMM
• 90Y3178 - 4 GB (2Gb, 2Rx8, 1.5V) PC3-12800 DDR3 1600 LP RDIMM
• 49Y1563 - 16 GB (4Gb,2Rx4,1.35V) PC3-10600 DDR3-1333 LP RDIMM
• 90Y3109 - 8 GB (2Gb, 2Rx4,1.5V) PC3-12800 DDR3-1600 LP RDIMM
• 49Y1404 - 4 GB (2Gb, 2Rx8, 1.35V) PC3L-10600E LP UDIMM

**Power considerations**

The System x3650 M4 server includes a standard 550-watt, 750-watt, or 900-watt hot-swap power supply. A System x3650 M4 hot-swap power supply upgrade is optionally available to support redundancy.

**Cable orders**

Four 10/100/1000 Mbps, full-duplex Ethernet PCI controllers, standard with the System x3650 M4 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 M4 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**

Ship group

System x3650 M4  System unit carton

Contents:

Important Notices Flyer
The System x3650 M4 server system is shipped as a single package. Other items are in zipped bags or boxes.

**Security, auditibility, and control**

Security and auditibility 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 client's responsibility to ensure that the server is secure to prevent sensitive data from being removed.

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

**Global Technology Services**

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

**IBM Electronic Services**

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

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

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

To learn how Electronic Services can work for you, visit

http://www.ibm.com/support/electronic
Terms and conditions

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

Warranty period

- System - Three years
- Optional features - One year
- ServeRAID M5100 Battery - One year

**Note:** The ServeRAID M5100 Battery has a one year warranty period effective on its "Date of Installation". All other product warranty terms for the machine remain unchanged.

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

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

- Baffles
- Fillers
- Covers
- Tape bezel chassis
- Slide kits and cable management arms or kits
- Misc parts kit
- Fan bracket kit
- Lift handle kit
- Battery trays and holders
- HDD, 4 slot hot swap kit

**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 website. 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 designated for your Machine.

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 or features have been designated as Tier 1 CRUs:

- CMOS batteries
- Hard disk drives
- Hot-swap fan
- Hot-swap AC power supply
- Memory DIMM
- Optical drive
- PCI adapter
- Power cord
- Service label
- System label
- Hyper visor USB key
- PCI riser
- RAID card without Battery
- Tape drive
- Ethernet daughter card
- Backplane

**On-site Service**

At IBM's discretion you will receive CRU service or IBM or your reseller will repair the failing machine at your location and verify its operation. If required, On-site Repair is provided, 9 hours per day, Monday through Friday excluding holidays, NBD response. 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 (IWS)**

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 ZS01-0168, dated September 25, 2001.

**Licensing**

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

**IBM hourly service rate classification**

Two

**Field-installable features**

Yes

**Model conversions**

No

**Machine installation**

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

**Licensed Machine Code**

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


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 website

   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.

**Prices**

For all local charges, contact your IBM representative.
IBM Global Financing

IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit

http://www.ibm.com/financing

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial and government customers. Rates are based on a customer's credit rating, financing terms, offering type, equipment type, and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

Financing solutions from IBM Global Financing can help you stretch your budget and affordably acquire the new product. But beyond the initial acquisition, our end-to-end approach to IT management can also help keep your technologies current, reduce costs, minimize risk, and preserve your ability to make flexible equipment decisions throughout the entire technology lifecycle.

Announcement countries

All European, Middle Eastern, and African countries.

Trademarks

IBM Systems Director Active Energy Manager and Electronic Service Agent are trademarks of IBM Corporation in the United States, other countries, or both.

IBM, X-Architecture, System x, Tivoli, NetView, BladeCenter, ServerProven, xSeries and Netfinity are registered trademarks of IBM Corporation in the United States, other countries, or both.

Intel Xeon and Intel are trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

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

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

Terms of use

IBM products and services which are announced and available in your country can be ordered under the applicable standard agreements, terms, conditions, and prices in effect at the time. IBM reserves the right to modify or withdraw this announcement at any time without notice. This announcement is provided for your information only. Reference to other products in this announcement does not necessarily imply those products are announced, or intend to be announced, in your country. Additional terms of use are located at


For the most current information regarding IBM products, consult your IBM representative or reseller, or visit the IBM worldwide contacts page.