Lenovo System x3550 M5 servers include Intel Xeon multi-core processors, delivering power, scalability, control, and serviceability for dynamic high-performance computing applications

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At a glance

The Lenovo® System x3550 M5 server features:

- Ultrathin size, high availability, and rack-optimization
- High-speed 2133 MHz DDR4 SDRAM Registered DIMMs standard; 24 DIMM slots that support up to 384 GB maximum memory optional 16 GB RDIMMs, or up to 1.5 TB of memory with LRDIMMs
- Support for up to 12 hot-swap 2.5-inch SAS/SATA HDDs or SSDs or up to four hot-swap SAS/SATA 3.5-inch HDDs
- Up to three x16 PCIe 3.0 slots on two-processor servers
- 550-watt, 750-watt, 900-watt, or 1500-watt auto-ranging power supplies (optional redundant and hot-swap)
- Integrated systems management processor
- Integrated Broadcom NetXtreme 1 quad Gigabit Ethernet (GbE) ports for high I/O capacity, plus one gigabit Management Port
- One serial port (16550A-compatible)
- USB ports
  - 2.5-inch model has seven ports (two front, four back, and one internal)
  - 3.5-inch model has seven ports (three front, three back, and one internal)
- Two video ports (front and rear)

For ordering, contact your Lenovo representative, a Lenovo Business Partner, or Americas Call Centers at 800-426-2255 (Reference: SE001).

Overview

These 1U-high, rack-optimized servers feature increased frequency, optimized performance, and improved systems management for business-critical applications and cloud deployments built on Lenovo X-architecture.
Optimized for performance

New, innovative, energy-smart design with powerful high-performance processors, a large capacity of high-performing DDR4 memory, and an improved feature set ideal for business-critical applications and cloud deployments:

- Up to two 18-core powerful Intel Xeon™ E5-2600 v3 series processors
- Twenty-four DIMM (RDIMM/LRDIMM) slots that enable you to deploy up to 1.5 TB of DDR4 LRDIMM memory, and fast memory bandwidth with the ability to support 2133 MHz¹ RDIMMs
- Dedicated slotless 12 Gbps hardware RAID 0, RAID 1, and RAID 10 or optional RAID 5, RAID 50, RAID 6, or RAID 60 (model dependent) and up to 4 GB Flashback cache
- Support for up to 12 hot-swap 2.5-inch SAS/SATA HDDs or SSDs or up to four hot-swap SAS/SATA 3.5-inch HDDs
- Highly functional chipset optimized for better application computing for general business workloads
- Integrated Broadcom NetXtreme 1 quad Gigabit Ethernet ports for high I/O capacity, and optional Broadcom, Emulex, Intel™, Mellanox, and QLogic 2x10 GbE ports supported in the Mezzanine LOM Gen2 form factor
- Up to three PCIe 3.0 x16 slots to help provide flexibility and greater performance with long-term investment protection
- Optional Broadcom 10 GbE adapter supported in SFP+ and 10GbaseT, and Broadcom 2-port and 4-port GbE adapters. Broadcom enables low-cost migration to 10 GbE for applications such as analytics, public and private cloud, and virtualization
- New energy-efficient design incorporating 750-watt Titanium power supplies, up to eight cooling fans, and energy-efficient planar components to help lower operational costs

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 data center power notification and management to help achieve lower heat output and reduced cooling needs
- Snoop filters to boost processor performance
- Dedicated slotless SAS controller for up to twelve 2.5-inch, hot-swap HDD bays
- Memory mirroring, configurable using Unified Extensible Firmware Interface (UEFI) setup
- IMM2 systems management processor with optional Feature on Demand (FoD) remote presence
- 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 designed to make it easy to replace failures without taking your system down
  - Hot-swap, redundant fans with calibrated vectored cooling to keep components cool, and simplified fan replacement
  - Hot-swap, redundant power supplies to help reduce downtime
  - Hot-swap, RAID protection disk to help secure your data and reduce downtime
• Predictive Failure Analysis, which provides advanced warning on processors, memory, disks, fans, power supplies, and VRMs
• Optional LCD light path diagnostics panel, which provides information about a failing component without requiring opening of the chassis or interruption of system operation, and expedites hardware repairs to dramatically reduce service time
• IBM Director and web support
• Three-year, customer replaceable unit (CRU) and on-site labor\(^2\), limited warranty\(^1\); optional warranty service upgrades available

\(^1\) 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.

\(^3\) To obtain copies of the Lenovo Statement of Limited Warranty, contact your Lenovo representative or reseller.

### Feature exchanges

None

### Key prerequisites

Monitor, USB keyboard, and USB mouse

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

### Planned availability date

June 12, 2015

### Description

**System x3550 M5 server**

The System x3550 M5 server features Intel Xeon multi-core processors that support internal processing speeds of up to 3.5 GHz\(^1\), and memory speeds up to 2133 MHz.

**High-performance server subsystems**

The System x3550 M5 expands the new server line by adding a higher level of processor power. This high-throughput, two-way multi-core server offers excellent performance and scalability when you add memory and a second processor. It incorporates powerful Xeon processors with up to 45 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, up to 45 MB cache, and up to two 8.0 GT/s QuickPath Interconnects (QPIs) with new Hyper Threading and Intel Turbo Boost Technology 2.0. High-speed PC3 DDR4 Advanced Memory Feature DIMMs run at up to 2133 MHz DRAM clock speed and offer maximum 14900 Mbps bandwidth, processor-to-memory subsystem performance. The x3550 M5 server uses the Intel Xeon E5-2600 v3 processor with Chipkill technology to maximize throughput from processors, to memory, to the 32-bit and 64-bit PCI buses.
**Additional features**

- Up to 36-core processing achieved with a second processor of equal speed and processor type.
- System board containing 24 DIMM (RDIMM/LRDIMM) connectors supporting 4 GB, 8 GB, 16 GB, 32 GB, and 64 GB DDR4 PC3-14900 SDRAM ECC DIMMs with:
  - DDR4 memory for improved performance
  - Up to 384 GB of system memory using optional 16 GB RDIMMs or up to 1.5 TB of memory with 64 GB LRDIMMs
- Up to three PCIe 3.0 slots. Clients ordering a single-processor model can:
  - Select three PCIe 3.0 slots: one PCIe 3.0 x16 low profile, one x8 low profile or half length, full height; and one x8 low profile.
  - With second CPU population, optionally buy two x16 low profile or half length, full height PCIe 3.0 slots to replace two x8 low profile or half length, full height slots.
- On standard models, four 2.5-inch bays or four 3.5-inch bays to support optional SAS/SATA HDDs and one bay to support an optical drive.
- Broadcom 5719 Quad-port GbE on board.

The System x3550 M5 offers solid system throughput from processor, to memory, to bus, to disk-intensive I/O. These features, combined with multi-core capability, make the x3550 M5 server an excellent choice for a stand-alone or clustered general-business application, file, and print server.

**High-availability and serviceability features**

The System x3550 M5 subsystem delivers excellent reliability and serviceability features:

- Support for light path diagnostics with viewable drop-down panel, Wake on LAN, and Preboot Execution Environment (PXE)
- Up to eight hot-swap dual-motor cooling fans
- Up to twelve 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
- PFA on HDD options, memory, power supply, and fans (when Remote Supervisor Adapter is installed), to help alert the system administrator of imminent component failure
- 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 some configurations, which:
  – Forces the failed processor offline
  – Reboots the server automatically
  – Generates alerts
  – Continues operations with the working processor

Expandability and growth

The System x3550 M5 includes a lot of function and storage capacity in a 1U 19-inch rack-drawer package, yet it is designed to be easy to upgrade and service. Functions such as SVGA video and SAS 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
• Up to three PCIe 3.0 adapter card slots available; one PCIe x16 plus slot, plus two PCIe x8 (16 with second processor)
• System board optional upgrades (PCI slot not required)
  – IBM Integrated Management Module Advanced Upgrade. Remote presence function can be enabled by Feature on Demand (FoD).
• Support for up to 24 TB of internal data storage, using four 6 TB 3.5-inch SAS/SATA HDDs

Systems management

Integrated Management Module (IMM2): The System x3550 M5 includes an Integrated Management Module that provides industry-standard Intelligent Platform Management Interface (IPMI) 2.0-compliant systems management. The IMM2 comes standard, and shares one of the four onboard Ethernet ports for access. The IMM2 can be accessed using software that is compatible with IPMI 2.0 (for example, xCAT). The IMM2 is implemented using industry-leading Open Systems Adapter (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 Sockets 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.

With video compression now built into the adapter hardware, it is designed to allow 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.

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

**Integrated Management Module Advanced Upgrade (FoD)**

The optional Integrated Management Module Advanced Upgrade delivers advanced control and monitoring features to manage your Lenovo System x3550 M5 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.

**IBM Director**

The System x3550 M5 server is supported by 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 an email or a 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 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 data center. 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 the new Lenovo System x servers, as well as the BladeCenter line of systems. With Active Energy Manager, the user can understand the actual power draw.

With the addition of the optional IBM Integrated Management Module Advanced Upgrade, 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:
  - 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 x3550 M5 tools and programs can make ownership a positive experience. From the start, Lenovo programs help you purchase servers, get them running, and keep them running. Lenovo 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 x3550 M5 server with various adapters and devices.
- Electronic support on the web offers additional support in an easy-to-use format.

Visit

**Standard System x3550 M5 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>5463P2x</td>
<td>E5-2660 v3 (10C)</td>
<td>2.6 GHz</td>
<td>8.0</td>
<td>SAS/SATA</td>
<td>2.5-in</td>
<td>Open bay, 1 x 750W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 GB</td>
<td></td>
<td>MS210</td>
<td></td>
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<td></td>
<td>25 MB</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>5463Q2x</td>
<td>E5-2667 v3 (8C)</td>
<td>3.2 GHz</td>
<td>8.0</td>
<td>SAS/SATA</td>
<td>2.5-in</td>
<td>Open bay, 1 x 750W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 GB</td>
<td></td>
<td>MS210</td>
<td></td>
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<td></td>
<td></td>
<td>20 MB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5463N2x</td>
<td>E5-2697 v3 (14C)</td>
<td>2.6 GHz</td>
<td>8.0</td>
<td>SAS/SATA</td>
<td>2.5-in</td>
<td>Open bay, 1 x 750W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 GB</td>
<td></td>
<td>MS210</td>
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<td>35 MB</td>
<td></td>
<td></td>
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</table>

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

**Accessibility by people with disabilities**


**Product positioning**

The System x3550 M5 server is a part of the System x rack-optimized server line. This 2-socket server delivers Intel Xeon multi-core high-speed processors and excellent server function in an ultrathin, rack-optimized, 1U footprint.

**Optimized for speed**

The System x3550 M5 server offers new levels of fast Intel Xeon multi-core 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-4 SDRAM Registered DIMM memory, or up to 1.5 TB of memory with LRDIMM.

**Innovation comes standard**

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

**Optimized fault-tolerant protection**

- A memory mirroring feature enables you to increase memory reliability.
- A SAS controller with RAID 0, RAID 1, RAID 10, RAID 5, and RAID 50 on hot-swap SAS models helps safeguard your data at no additional cost.

**Target applications**

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

**Statement of general direction**

Lenovo plans to add the following enhancements to the x3550 M5 offering in the future:

- Support for DDR4 64 GB LRDIMM
- Support for IBM Enterprise Value io3 Flash Adapter for System x
- Support for IBM Enterprise io3 Flash Adapter for System x
- Support for additional brands and networking protocols on our ML2 or PCIe cards (for example: 10 GbE, SFP+, BaseT, and Infiniband) from many manufactures (for example: Broadcom, Emulex, Intel, Mellanox, and QLogic).
- ENERGY STAR compliance.

All statements regarding Lenovo's plans, directions, and intent are subject to change or withdrawal without notice. Any reliance on these statements of general direction is at the relying party's sole risk and will not create liability or obligation for Lenovo.

Lenovo's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at Lenovo's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

**Product number**

The following are features already announced for the 5463 machine type:

<table>
<thead>
<tr>
<th>Description</th>
<th>MT</th>
<th>Model</th>
<th>Feature</th>
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</thead>
<tbody>
<tr>
<td>Broadcom NetXtreme 2xGbE BaseT Adapter for IBM System x</td>
<td>5463</td>
<td>AC1</td>
<td>2995</td>
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<tr>
<td>2U Bracket for NetXtreme II 1000 Express® Dual Port Ethernet Adapter</td>
<td>5463</td>
<td>AC1</td>
<td>4055</td>
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<tr>
<td>Intel X540-T2 Dual Port 10GBaseT Adapter for IBM System x</td>
<td>5463</td>
<td>AC1</td>
<td>A2ED</td>
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<tr>
<td>Solarflare SFN5162F 2x10GbE SFP+ Perfomant Adapter for IBM System x</td>
<td>5463</td>
<td>AC1</td>
<td>A47H</td>
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<td>2U Bracket for Solarflare Dual Port 10GbE SFP+ Adapter</td>
<td>5463</td>
<td>AC1</td>
<td>A48R</td>
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<td>IBM SD Media Adapter for System x</td>
<td>5463</td>
<td>AC1</td>
<td>A5KJ</td>
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<td>32GB TruDDR4 Memory (2Rx4, 1.2V) PC4-17000 CL15</td>
<td>5463</td>
<td>AC1</td>
<td>A5UJ</td>
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<tr>
<td>Blank SD Media for System x</td>
<td>5463</td>
<td>AC1</td>
<td>A52V</td>
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<tr>
<td>RAID Adapter for SD Media w/ VMware ESXi 5.1 U2 (2 SD Media, RAIDed)</td>
<td>5463</td>
<td>AC1</td>
<td>A54B</td>
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<tr>
<td>RAID Adapter for SD Media w/ VMware ESXi 5.5 U2 (2 SD Media, RAIDed)</td>
<td>5463</td>
<td>AC1</td>
<td>A54C</td>
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<td>AC1</td>
<td>ASCH</td>
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<tr>
<td>NVIDIA Quadro K420</td>
<td>5463</td>
<td>AC1</td>
<td>ASPN</td>
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<tr>
<td>NVIDIA Quadro K620</td>
<td>5463</td>
<td>AC1</td>
<td>ASPP</td>
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<tr>
<td>System x 1500W High Efficiency Platinum AC Power Supply</td>
<td>5463</td>
<td>AC1</td>
<td>ASPQ</td>
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<tr>
<td>System x 900W High Efficiency -48 V DC Power Supply</td>
<td>5463</td>
<td>AC1</td>
<td>ASPR</td>
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The following are features already announced for the 3331 machine type:

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<thead>
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<th>Description</th>
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<th>Model</th>
<th>Feature</th>
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<tbody>
<tr>
<td>System x 1500W High Efficiency Platinum AC Power Supply</td>
<td>3331</td>
<td>HC1</td>
<td>AT0R</td>
</tr>
<tr>
<td>System x 900W High Efficiency -48 V DC Power Supply</td>
<td>3331</td>
<td>HC1</td>
<td>ASPR</td>
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**Single Entity Offerings (SEOs)**

<table>
<thead>
<tr>
<th>Description</th>
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<tr>
<td>Lenovo System x3550 M5</td>
<td>5463P2U, 5463Q2U, 5463N2U</td>
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**Options**

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<tr>
<th>Description</th>
<th>Type</th>
<th>Mod</th>
<th>Feature</th>
<th>SEO</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>25MB 2133MHz 160W System x 1500W High Efficiency Platinum AC Power Supply</td>
<td>3331</td>
<td>HC1</td>
<td>AT0R</td>
<td>00MV211, 00MV211</td>
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<tr>
<td>System x 900W High Efficiency -48 V DC Power Supply</td>
<td>3331</td>
<td>HC1</td>
<td>ASPR</td>
<td>00MV212, 00MV212</td>
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</tbody>
</table>

**Business Partner information**

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


**Publications**

The following publications and CD-ROMs are shipped with the System x3550 M5.

- **System x3550 M5 Installation and Service Guide** contains an introduction to the computer, installation and setup, installing options, reference information, and problem determination. The installation guide has easy-to-use text and illustrations to enable you to quickly set up your System x3550 M5.

- **Documentation/Installation and Service Guide CD** contains translated versions of the product Installation and Service Guide.

- **ServerGuide** contains online publications and drivers to support the System x3550 M5. In addition, it includes a set of easy-to-use utilities to help you install the system using CDs of several popular network operating systems.

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

The publication **System x3550 M5 Installation and Service Guide** in US English and translation versions is available from

http://www.ibm.com/support
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®

Lenovo 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 Lenovo and many non-Lenovo offerings. Lenovo is your one-stop shop for IT support needs.

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


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


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

System x and BladeCenter support services

Recommended core technical support

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

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

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

- **Software technical support**
  Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

http://www.ibm.com/servers/eserver/xseries/services.html
## Technical information

### Specified operating environment

#### Physical specifications

<table>
<thead>
<tr>
<th>System x3550 M5:</th>
<th>5463P2x</th>
<th>5463Q2x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Xeon E5-2660 v3 (105W)</td>
<td>Xeon E5-2667 v3 (135W)</td>
</tr>
<tr>
<td>Internal speed</td>
<td>2.6 GHz</td>
<td>3.2 GHz</td>
</tr>
<tr>
<td>External speed</td>
<td>8.0 GTS</td>
<td>8.0 GTS</td>
</tr>
<tr>
<td>Number cores</td>
<td>10</td>
<td>8</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>Cache (full-speed)</td>
<td>25 MB</td>
<td>20 MB</td>
</tr>
<tr>
<td>Memory</td>
<td>16 GB ECC 2133 MHz RDIMM</td>
<td>16 GB ECC 2133 MHz RDIMM</td>
</tr>
<tr>
<td>DIMMs</td>
<td>1 x 16 GB</td>
<td>1 x 16 GB</td>
</tr>
<tr>
<td>(2Rx4,1.2V)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIMM sockets</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Capacity</td>
<td>1536 GB</td>
<td>1536 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>
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<tr>
<td>Connector internal</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>RAID controller</td>
<td>M5210(2GB Flash)</td>
<td>M5210(2GB Flash)</td>
</tr>
<tr>
<td>HDD Total bays</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>5.25 slim</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3.5-in tape</td>
<td>0</td>
<td>0</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>8</td>
<td>8</td>
</tr>
<tr>
<td>Internal capacity</td>
<td>30.72 TB</td>
<td>30.72 TB</td>
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<tr>
<td>Bays available</td>
<td>5 standard</td>
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<td>5.25 slim</td>
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<td>3.5-in tape</td>
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<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Total PCI Gen3 slots</td>
<td>3 (with upgrade)</td>
<td>3 (with upgrade)</td>
</tr>
<tr>
<td>PCI-E Gen3 x16 LP</td>
<td>1 standard</td>
<td>1 standard</td>
</tr>
<tr>
<td>PCI-E Gen3 x8 or x16</td>
<td>2 (with upgrade)</td>
<td>2 (with upgrade)</td>
</tr>
<tr>
<td>Slots available</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>System management</td>
<td>Standard (dedicated port)</td>
<td>Standard (dedicated port)</td>
</tr>
<tr>
<td>Advanced LCD Lightpath</td>
<td>standard</td>
<td>standard</td>
</tr>
<tr>
<td>Ethernet controller</td>
<td>Four 1 Gb</td>
<td>Four 1 Gb</td>
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<tr>
<td>Optical drive (SATA)</td>
<td>Optional</td>
<td>Optional</td>
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<tr>
<td>Power supply</td>
<td>750 W</td>
<td>750 W</td>
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<tr>
<td>Number standard</td>
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<td>1</td>
</tr>
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<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>

| Processor       | Xeon E5-2697 v3 (145W) |
| Internal speed  | 2.6 GHz |
| External speed  | 8.0 GTS |
| Number cores    | 14      |
| Number standard | 1       |
| Maximum         | 2       |
| Cache (full-speed) | 35 MB |
| Memory          | 16 GB ECC 2133 MHz RDIMM |

Lenovo United States Hardware Announcement 115-066

Lenovo is a registered trademark of Lenovo Corporation
**Video**

- SVGA compatible video controller (Matrox G200eR2).
- Integrated on Integrated Management Module (IMM2).
- Integrated on planar and connected to the PCI bus.

---

**Notes:**

1. Maximum of 768 GB by using 24 optional 32 GB RDIMMs, or up to 1.5 TB of memory using twenty-four 64 GB LRDIMMs.
2. Capacity can be doubled with front 4x 2.5-inch HDD expansion option fitted. Maximum capacity is based on installation of 8x 2.5-inch 3.84 TB 6 Gb SAS Enterprise Capacity G3HS MLC SSDs with 4x 2.5-inch HDD expansion fitted.
3. The standard system can hold four 2.5-inch HS HDDs. Capacity can be doubled with 4x 2.5-inch HDD expansion option fitted.
4. Maximum capacity is based on installation of 8x 2.5-inch with 4x 2.5-inch HDD expansion fitted.
5. For the latest information about supported HDD options, refer to the Sales Manual or visit http://www.ibm.com/servers/eserver/serverproven/compat/us/.
6. Standard models have 1x PCI-E Gen3 x16 HHHL LP slot as standard when 1x processor is fitted, plus 1x dedicated slotless RAID slot.
7. RAID card is fitted to dedicated slotless RAID slot.
8. With 2x processors fitted, up to 3x PCI-E slots are possible when optional Riser card is fitted. This adds a further two slots to the 1x PCI-E Gen3 x16 HHHL LP slot fitted as standard:

   - 2x PCI-E Gen3 x16 HH/HL
• DDR4 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>
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<tr>
<td>1,280</td>
<td>1,024</td>
<td>60</td>
<td>8, 16, 32</td>
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<td>1,280</td>
<td>900</td>
<td>60</td>
<td>8, 16, 32</td>
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<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.

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**

1U Rack Drawer:
• Width: 429 mm (16.9 in.)
• Depth: 734 mm (28.9 in.)
• Height: 43 mm (1.7 in.)

Rack:
• Weight: (minimum configuration) 12.7 kg (28 lb)
• Weight: (maximum configuration) 15.9 kg (35 lb)

**Electrical**

Models with 550 W Platinum 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: 0.14 kVA
  – Maximum configuration: 0.732 kVA

Models with 750 W Platinum power supplies:
• 100 - 127 (nominal) V ac; 50 Hz or 60 Hz; 8.6 A
• 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 4.2 A
  – Minimum configuration: 0.14 kVA
  – Maximum configuration: 1.015 kVA

Models with 750 W Titanium power supplies:
• 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 4.2 A
  – Minimum configuration: 0.14 kVA
– Maximum configuration: 0.967 kVA

Models with 900 W Platinum power supplies:

• 100 - 127 (nominal) V ac; 50 Hz or 60 Hz; 10.3 A
• 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 5.0 A
  – Minimum configuration: 0.14 kVA
  – Maximum configuration: 1.194 kVA

Models with -48 V dc 900 W power supplies:

• -48 to -60 (nominal) V dc; 25.8 A
  – Minimum configuration: 0.14 kVA
  – Maximum configuration: 1.237 kVA

Models with 1500 W Platinum power supplies:

• 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 8.35 A
  – Minimum configuration: 0.14 kVA
  – Maximum configuration: 1.967 kVA

• Btu output:
  – Minimum configuration: 460.62 Btu/hr (ac 135 watts)
  – Maximum configuration: 6667 Btu/hr (ac 1954 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.

Standards

These systems support or comply with the following standards:

• Multiprocessor Specification (MPS) 1.4
• Peripheral Component Interconnect (PCI) specification 2.3
• Hardware-enabled to meet the International Organization for Standardization (ISO) 9241, Part 3

Equipment agency approvals and safety

• FCC - Verified to comply with Part 15 of the FCC Rules, Class A
• Canada ICES-003, issue 5, Class A
• UL/IEC 60950-1
• CSA C22.2 No. 60950-1
• NOM-019
• Argentina IEC60950-1

Operating environment

Power on:

• Temperature: 5°C to 40°C (41°F to 104°F) up to 950 mm (3,117 ft); above 950 m, de-rated maximum air temperature 1°C / 175 m.
• Humidity, noncondensing: -12°C dew point (10°F) and 8% to 85% relative humidity
• Maximum dew point: 24°C (75°F)
• Maximum altitude: 3,050 m (10,000 ft) and 5°C to 28°C (41°F to 82°F)
• Maximum rate of temperature change: 5°C/hr (41°F/hr) for tape drive, 20°C/hr (68°F/hr) for HDDs

Power off:
• Temperature: 5°C to 45°C (41°F to 113°F)
• Relative humidity: 8% to 85%
• Maximum dew point: 27°C (80.6°F)

Storage (non-operating):
• Temperature: 1°C to 60°C (33.8°F to 140°F)
• Altitude: 3,050 m (10,000 ft)
• Relative humidity: 5% to 80%
• Maximum dew point: 29°C (84.2°F)

Shipment (non-operating):
• Temperature: -40°C to 60°C (-40°F to 140°F)
• Altitude: 10,700 m (35,105 ft)
• Relative humidity: 5% to 100%
• Maximum dew point: 29°C (84.2°F)

Attention
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.

Specific processors supported environment:

• Processor E5-2699 v3, E5-2698 v3, E5-2697 v3, E5-2690 v3, E5-2667 v3, E5-2643 v3, and E5-2637 v3 are not supported with rear HDD installed.
• Processor E5-2699 v3, E5-2698 v3, E5-2697 v3, E5-2667 v3, E5-2643 v3, and E5-2637 v3 are not supported at 3.5-inch HDD configuration.

Notes:

1. Chassis is powered on.
2. A3 - Derate maximum allowable temperature 1°C/175 m above 950 m.
3. The minimum humidity level for class A3 is the higher (more moisture) of the -12°C dew point and the 8% relative humidity. These intersect at approximately 25°C. Below this intersection (25°C) the dew point (-12°C) represents the minimum moisture level, while above it relative humidity (8%) is the minimum.
4. Moisture levels lower than 0.5°C DP, but not lower -10°C DP or 8% relative humidity, can be accepted if appropriate control measures are implemented to limit the generation of static electricity on personnel and equipment in the data center. All personnel and mobile furnishings and equipment must be connected to ground by an appropriate static control system. The following items are considered the minimum requirements:
   a. Conductive materials (conductive flooring, conductive footwear on all personnel that go into the data center, all mobile furnishings and equipment will be made of conductive or static dissipative materials).
   b. During maintenance on any hardware, a properly functioning wrist strap must be used by any personnel who contacts IT equipment.
5. 5°C/hr for data centers employing tape drives and 20°C/hr for data centers employing disk drives.
6. Chassis is removed from original shipping container and is installed but not in use, for example, during repair, maintenance, or upgrade.
7. The equipment acclimation period is 1 hour per 20°C of temperature change from the shipping environment to the operating environment.
8. Condensation is acceptable, but not rain.

**Homologation**
This product is not certified for direct connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact a Lenovo representative or reseller for any questions.

**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 by way of a console switch.

**Software requirements**
The following software products have been tested by Lenovo 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 x3550 M5 server.

Operating systems:

- Microsoft:
  - Microsoft Windows Server 2008 R2
  - Microsoft Windows Server 2012 R2
- Linux™:
  - SUSE Linux Enterprise Server 12
  - Red Hat Enterprise Linux 5 Server x64 Edition
  - SUSE Linux Enterprise Server 12 with XEN
  - SUSE LINUX Enterprise Server 11 for AMD64/EM64T
  - SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
  - Red Hat Enterprise Linux 6 Server x64 Edition
  - Red Hat Enterprise Linux 7
- VMware:
- VMware vSphere 5.5 (ESXi)
- VMware vSphere 5.1 (ESXi)

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

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

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

**Compatibility**

The System x3550 M5 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 x3550 M5 and to maintain compatibility with many current software programs.

For detailed information about Lenovo and non-Lenovo devices, adapters, software, and network operating systems supported with xSeries servers, visit

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

Contact your Lenovo representative or Lenovo Business Partner, or refer to the Sales Manual for information about 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 x3550 M5 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 x3550 M5 servers can address a maximum of 1.5 TB of system memory. All supported system memory is addressable through direct memory access. The System x3550 M5 server supports 4 GB, 8 GB, and 16 GB DDR4 SDRAM Registered DIMMs or 32 GB or 64 GB LRDIMMs. Different types of DIMMs cannot coexist in the same system. Refer to the Planning information section for supported memory options.
- To ensure proper air flow for cooling, the System x3550 M5 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.
- 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 Total Bytes Written (TBW). Lenovo 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 becoming 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 x3550 M5 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 eight 2.5-inch or four 3.5-inch simple-swap non-RAID SATA drives. It does not contain any backplane.

Rack installations
System x3550 M5 server 1U rack-drawer models should 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, and 9306200) requires a rack extension kit.

If a System x3550 M5 is mounted in a non-Lenovo 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 - 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:
- 46W0784 - 4GB (1Rx8 4Gbit 1.2V) PC4-17000 2133MHz DDR4 RDIMM LP RDIMM
- 46W0788 - 8GB (1Rx4 4Gbit 1.2V) PC4-17000 2133MHz DDR4 RDIMM LP RDIMM
- 46W0792 - 8GB (2Rx8 4Gbit 1.2V) PC4-17000 2133MHz DDR4 RDIMM LP RDIMM
- 46W0796 - 16GB (2Rx4 4Gbit 1.2V) PC4-17000 2133MHz DDR4 RDIMM LP RDIMM
- 46W0800 - 32GB (4Rx4 4Gbit 1.2V) PC4-17000 2133MHz DDR4 LR-DIMM LR-DIMM
- 95Y4812 - 64GB (4Rx4 8Gbit 1.2V) PC4-17000 2133MHz DDR4 LR-DIMM LR-DIMM

**Power considerations**

The System x3550 M5 server includes a standard 550-watt ac or 750-watt ac or 900-watt ac hot-swap power supply.

**Note:** For information about additional support, certification, version information, compatibility, or network operating systems, visit

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

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

**Cable orders**

Four ports of 10/100/1000 Mbps is standard with the System x3550 M5 server. They are supported with a RJ-45 connector. The RJ-45 connector provides a 10BASE-T, 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 x3550 M5 requires about 20 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional adapters, or features.

**Packaging**

<table>
<thead>
<tr>
<th>Product</th>
<th>Package description</th>
<th>Boxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>System x3550 M5</td>
<td>System unit carton</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Contents:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>System unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rack kit</td>
<td></td>
</tr>
<tr>
<td>System x3550 M5</td>
<td>System ship group</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Contents:</td>
<td></td>
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<tr>
<td></td>
<td>Important Notices Flyer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rack Installation Instructions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CD - Documentation (installation and Service Guides)</td>
<td></td>
</tr>
</tbody>
</table>

The System x3550 M5 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.

Terms and conditions

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

In the United States, write to:

Warranty Information
1009 Think Place
B1/4B23
Morrisville, NC 27560
Attn: Lenovo Services

Lenovo Financial Services
No

Warranty period

- Machine type 0724: Three years
- Optional features: One year

Note: For configurations that support the RAID Battery, the RAID battery will be warranted for one year effective on its date of installation. All other product warranty terms for the machine remain unchanged.

A Lenovo part or feature installed during the initial installation of a Lenovo machine is subject to a full warranty effective on the date of installation of the machine. A Lenovo part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. A Lenovo 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:

- Rack front door
- Rack filler plate
- DDN battery
- Mellanox blanks
**Warranty service**

If required, Lenovo provides repair or exchange service, depending on the type of warranty service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with Lenovo. You must follow the problem determination and resolution procedures that Lenovo specifies. Following problem determination, if Lenovo 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 Lenovo's normal service area. Contact your local Lenovo representative or your reseller for country-specific 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**

Lenovo provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo 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 Lenovo 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 Lenovo 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. Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. 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 Lenovo 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

**On-site Service**

At Lenovo's discretion you will receive CRU service; or Lenovo 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 Lenovo 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 a Lenovo service center. In those locations where On-site Service is not available, the normal in-country service delivery is used.

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

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

**International Warranty Service (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


**Licensing**

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

**Maintenance services**

**ServiceSuite®, ServiceElect, and ServiceElite**

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

**Warranty service upgrade**

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

Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with Lenovo. You must follow the problem determination and resolution procedures that Lenovo specifies. Following problem determination, if Lenovo determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

CRUs will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 2 CRU yourself or request Lenovo installation, at no additional charge, under one of the On-site Service levels specified below.
Lenovo 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 Lenovo machine. The area must be clean, well lit, and suitable for the purpose.

**Maintenance service**

If required, Lenovo provides repair or exchange service, depending on the type of maintenance service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with Lenovo. You must follow the problem determination and resolution procedures that Lenovo specifies. Following problem determination, if Lenovo determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed.

**CRU Service**

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), Lenovo will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request.

Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. 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 Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

**On-site Service**

Lenovo 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 Lenovo machine. The area must be clean, well lit, and suitable for the purpose.

**Maintenance service (ICA)**

Maintenance services are available for ICA legacy contracts.

**Alternative service (warranty service upgrades)**

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

Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with Lenovo. You must follow the problem determination and resolution procedures that Lenovo specifies. Following problem determination, if Lenovo determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

A CRU will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service designated for your machine.
Lenovo 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 Lenovo machine. The area must be clean, well lit, and suitable for the purpose.

**Maintenance service**

If required, Lenovo provides repair or exchange service, depending on the type of maintenance service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with Lenovo. You must follow the problem determination and resolution procedures that Lenovo specifies. Following problem determination, if Lenovo determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed.

**CRU Service**

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), Lenovo will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request.

Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. 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 Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

**On-site Service**

Lenovo 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 Lenovo machine. The area must be clean, well lit, and suitable for the purpose.

**Non-Lenovo parts support**

**Warranty service**

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

**Warranty service upgrades and maintenance services**

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

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

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

Graduated program license charges apply
No

Licensed Internal Code and Licensed Machine Code
This product does not contain Licensed Internal Code or Licensed Machine Code.

Machine Code License Acceptance Requirement
Acceptance-By-Use Machine: Yes, acceptance of the Machine Code license terms is conveyed through the user's initial use of the machine.

Educational allowance
None

Prices

For current prices, contact Lenovo at 888-746-7426 or visit http://www-03.ibm.com/systems/x/

To locate the web price, search on the feature number in the Search field.

The following are features already announced for the 5463 machine type:

<table>
<thead>
<tr>
<th>Description</th>
<th>Model Number</th>
<th>Feature Number</th>
<th>Both/ Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcom NetXtreme 2xGbE BaseT Adapter for IBM System x</td>
<td>AC1</td>
<td>2995</td>
<td>Initial</td>
</tr>
<tr>
<td>2U Bracket for NetXtreme II 1000 Express Dual Port Ethernet Adapter</td>
<td>AC1</td>
<td>4055</td>
<td>Initial</td>
</tr>
<tr>
<td>Intel X540-T2 Dual Port 10GbBaseT Adapter for IBM System x</td>
<td>AC1</td>
<td>A2ED</td>
<td>Initial</td>
</tr>
<tr>
<td>Solarflare SFNS162F 2x10GbE SFP+ Performant Adapter for IBM System x</td>
<td>AC1</td>
<td>A47H</td>
<td>Initial</td>
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<tr>
<td>2U Bracket for Solarflare Dual Port 10GbE SFP+ Adapter</td>
<td>AC1</td>
<td>A48R</td>
<td>Initial</td>
</tr>
<tr>
<td>IBM SD Media Adapter for System x</td>
<td>AC1</td>
<td>A5TJ</td>
<td>Initial</td>
</tr>
<tr>
<td>Description</td>
<td>Model</td>
<td>Feature Number</td>
<td>Support</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
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</tr>
<tr>
<td>32GB TruDDR4 Memory (2Rx4, 1.2V) PC4-17000 CL15</td>
<td>AC1</td>
<td>A5UJ</td>
<td>Initial</td>
</tr>
<tr>
<td>Blank SD Media for System x</td>
<td>AC1</td>
<td>A52V</td>
<td>Initial</td>
</tr>
<tr>
<td>RAID Adapter for SD Media w/ VMware ESXi 5.1 U2 (2 SD Media, RAIDed)</td>
<td>AC1</td>
<td>A54B</td>
<td>Initial</td>
</tr>
<tr>
<td>RAID Adapter for SD Media w/ VMware ESXi 5.5 U2 (2 SD Media, RAIDed)</td>
<td>AC1</td>
<td>A54C</td>
<td>Initial</td>
</tr>
<tr>
<td>RAID Adapter for SD Media w/ VMware ESXi 5.1 U2 (1 SD Media)</td>
<td>AC1</td>
<td>ASCG</td>
<td>Initial</td>
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<tr>
<td>NVIDIA Quadro K420</td>
<td>AC1</td>
<td>ASCH</td>
<td>Initial</td>
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<tr>
<td>NVIDIA Quadro K620</td>
<td>AC1</td>
<td>ASPN</td>
<td>Initial</td>
</tr>
<tr>
<td>System x 1500W High Efficiency Platinum AC Power Supply</td>
<td>AC1</td>
<td>ASPQ</td>
<td>Initial</td>
</tr>
<tr>
<td>System x 900W High Efficiency -48 V DC Power Supply</td>
<td>AC1</td>
<td>ASPR</td>
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</table>

The following are features already announced for the 3331 machine type:

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<th>Description</th>
<th>Model</th>
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<tr>
<td>System x 1500W High Efficiency Platinum AC Power Supply</td>
<td>HC1</td>
<td>ATOR</td>
<td>MES</td>
</tr>
<tr>
<td>System x 900W High Efficiency -48 V DC Power Supply</td>
<td>HC1</td>
<td>ASPR</td>
<td>MES</td>
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</table>

Option SEO

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<tr>
<td>System x 1500W High Efficiency Platinum AC Power Supply</td>
<td>00MV211</td>
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<tr>
<td>System x 900W High Efficiency -48 V DC Power Supply</td>
<td>00MV212</td>
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</table>

Maintenance charges

For additional information on maintenance and pricing, please contact your Lenovo Sales representative or your Lenovo Business Partner, or call 1-800-426-2255.

For ServiceElect (ESA) maintenance service charges, contact Lenovo Services at 888-426-4343.
To order, contact the Americas Call Centers or your local Lenovo representative, or your Lenovo Business Partner.

To identify your local Lenovo representative or Lenovo Business Partner, call 800-426-4968.

Phone: 800-426-2255  
Fax: 800-242-6329  
Email: callserv@ca.ibm.com  
Mail: Teleweb Customer Support  
IBM.com® Sales Execution Center, Americas North  
3500 Steeles Ave. East, Tower 3/4  
Markham, Ontario  
Canada  
L3R 2Z1

Reference: SE001

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

**Note:** Shipments will begin after the planned availability date.

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