

IBM System x3550 M3 (Withdrawn) Product Guide (withdrawn product)

The IBM® System x3550 M3 builds on the latest Intel Xeon processor technology with extreme processing power and superior energy-management and cooling features. With twice the performance of previous generations and a flexible, energy-smart design that integrates low-wattage components, the x3550 M3 can help you meet demanding workloads at a lower cost per watt.

Suggested uses: customers requiring a highly available, energy-efficient, rack-optimized solution for physical and virtual intensive commercial environments like eBusiness/eCommerce, collaboration, virtualization, database, and enterprise resource planning applications.

Figure 1 shows the IBM System x3550 M3.



Figure 1. The IBM System x3550 M3

Did you know?

The x3550 M3 offers a flexible, scalable design and simple upgrade path to eight HDDs or SSDs, and 288 GB of memory. In addition, a built-in altimeter provides more efficient power utilization and lower noise levels.

Comprehensive systems management tools such as advanced diagnostics, a cable management arm, and the ability to control resources from a single point make it easy to deploy, integrate, service, and manage. The server also offers an upgrade to four built-in Gigabit Ethernet ports without consuming an additional PCI Express slot.

Key features

The challenge of a high-performance business is to do more with less—serve more Web pages, handle more secure connections, support more email users. You need to reduce the costs of doing business and improve the service you deliver to your customers while lowering your overall risk. The dual-socket IBM System x3550 M3 can reduce your costs with its energy-smart design. It can improve service with reduced operational complexity and increased management functionality. It will lower your IT risk with the resiliency that comes from having no single point of failure. And like all IBM servers, the x3550 M3 offers you the trust that comes from IBM global reach, service, and support.

Performance

The x3550 M3 offers numerous features to boost performance and reduce costs:

- Up to two 6-core Xeon 5600 series processors offering superior performance. Xeon 5600 series processors offer up to 54% better performance than the previous generation 5500 series processors (workload dependent).
- Eighteen DIMMs of registered 1333 MHz DDR3 ECC memory provide speed, high availability, and a memory capacity of up to 288 GB.
- High-performance 6 Gbps SAS RAID controllers and 15K RPM 6 Gbps SAS disk drives in a variety of capacities to suit your local storage requirements.
- The use of solid-state drives (SSDs) instead of or along with traditional spinning drives (HDDs) can significantly improve I/O performance. An SSD can support 20,000 I/O operations per second (IOPS) whereas a typical HDD handles fewer than 500 IOPS.

Flexibility and scalability

The x3550 M3 has the ability to grow with your application requirements with these features:

- Very high density computing in a 1U dual-socket server.
- A choice of 4-core or 6-core processors with clock rates from 1.6 GHz to 3.6 GHz.
- 18 DIMM sockets allowing memory expansion of up to 288 GB.
- A choice of power supplies including 460 W, 675 W AC or DC, or energy-efficient 675 W.
- Five USB 2.0 ports available - two front, two rear, and one internal for an embedded hypervisor.
- Storage bay flexibility: Up to eight hot-swap 2.5" drive bays for SAS or SATA HDDs, or solid-state drives (intermixing supported); or four 2.5" bays plus an internal optical drive bay.
- Direct-attach SAS storage with the EXP2512, EXP2524, and EXP3000 storage enclosures is supported. IBM System Storage servers, including network-attached storage (NAS), and iSCSI or Fibre Channel-attached storage, can also be attached.
- The x3550 M3 provides two PCI Express (PCIe) 2.0 x16 I/O slots for increased network or storage connectivity.

Manageability and security

Powerful systems management features simplify local and remote management of the x3550 M3:

- The x3550 M3 includes an Integrated Management Module (IMM) to monitor server availability, perform Predictive Failure Analysis, and trigger IBM Systems Director alerts.
- An optional Virtual Media Key enables additional systems management capabilities, including web-based out-of-band remote control (keyboard video and mouse), remote optical drive support, Windows “blue screen” error capture, and support for LDAP and SSL protocols.
- Text Console Redirection support allows the administrator to remotely view x3550 M3 text messages over Serial or LAN connections.
- Integrated industry-standard Unified Extensible Firmware Interface (UEFI) next-generation BIOS. New capabilities include:
 - Human readable event logs — no more beep codes.

- Complete out-of-band coverage by the Advance Settings Utility to simplify remote setup.
- A complete setup solution, allowing adapter configuration functions to be moved into UEFI.
- Integrated Trusted Platform Module (TPM) 1.2 support.
- Industry-standard AES NI support for faster, stronger encryption.
- Integrated IPMI 2.0 support alerts IBM Systems Director to anomalous environmental factors, such as voltage and thermal conditions. It also supports highly secure remote power control using data encryption.
- IBM Systems Director is included for proactive systems management. IBM Systems Director comes with a portfolio of tools, including IBM Systems Director Active Energy Manager, IBM Service and Support Manager, and others. IBM Systems Director also offers extended systems management tools for additional server management and increased availability. When a problem is encountered, IBM Systems Director can issue administrator alerts via email, pager, and other methods.
- IBM Systems Director Active Energy Manager provides advanced power management features with actual real-time energy monitoring, reporting, and capping features.

Availability and serviceability

The System x3550 M3 provides many features to simplify serviceability and increase system uptime:

- The x3550 M3 servers offer Chipkill ECC memory protection (when using x4 DIMMs). Chipkill memory is up to 16 times better than standard ECC memory at correcting memory errors. This can help reduce downtime caused by memory errors.
- The x3550 M3 offers memory mirroring for redundancy in the event of a non-correctable memory failure.
- Toolless cover removal provides easy access to upgrades and serviceable parts, such as HDDs and memory. Similarly, the Virtual Media Key and the ServeRAID controller can be installed and replaced without tools. This means less time (and therefore less money) spent servicing the x3550 M3.
- The server offers hot-swap and redundant fan modules and power supplies and hot-swap disk drives (redundant when implemented in conjunction with a RAID controller). These features mean greater system uptime.
- Toolless slides ship with the server, together with a cable management arm (CMA), that allows the rack server to easily slide into place.
- The drop-down light path diagnostics panel and individual light path LEDs quickly lead the technician to failed (or failing) components. This simplifies servicing, speeds up problem resolution, and helps improve system availability.
- Solid-state drives (SSDs) offer significantly better reliability than traditional mechanical HDDs for greater uptime.
- The three-year (parts and labor) limited onsite warranty provides peace of mind and greater investment protection than a one-year warranty does.

Energy efficiency

The System x3550 M3 has an energy-efficient design with features including the following:

- Low-voltage processors draw less energy and produce less waste heat than high-voltage processors, thus helping to reduce data center energy costs. Available 4-core Xeon 5600 series processors use only 40 W and 6-core processors consume as little as 60 W.
- Optional solid-state drives (SSDs) use only 2 W of power per drive, compared to 9 - 10 W for 2.5-inch HDDs. This is as much as 80% less power than a 2.5-inch HDD would use, with a corresponding reduction in heat output that further improves the overall bottom line.
- Support for 1.35 V low-voltage DDR3 memory DIMMs that consume 20% less energy.
- Energy-efficient components, including low-voltage transistors and voltage regulator modules, and power supplies that are up to 90% efficient.
- The x3550 M3 uses hexagonal ventilation holes in the chassis. Hexagonal holes can be grouped more densely than round holes, providing more efficient airflow through the system chassis. This ultimately

results in reduced operational costs.

- An altimeter works in conjunction with the IMM to govern fan rotation based on the readings that it delivers. This saves money under normal conditions because the fans do not have to spin at high speed.

Locations of key components

Figure 2 shows the front of the server, with key components identified.

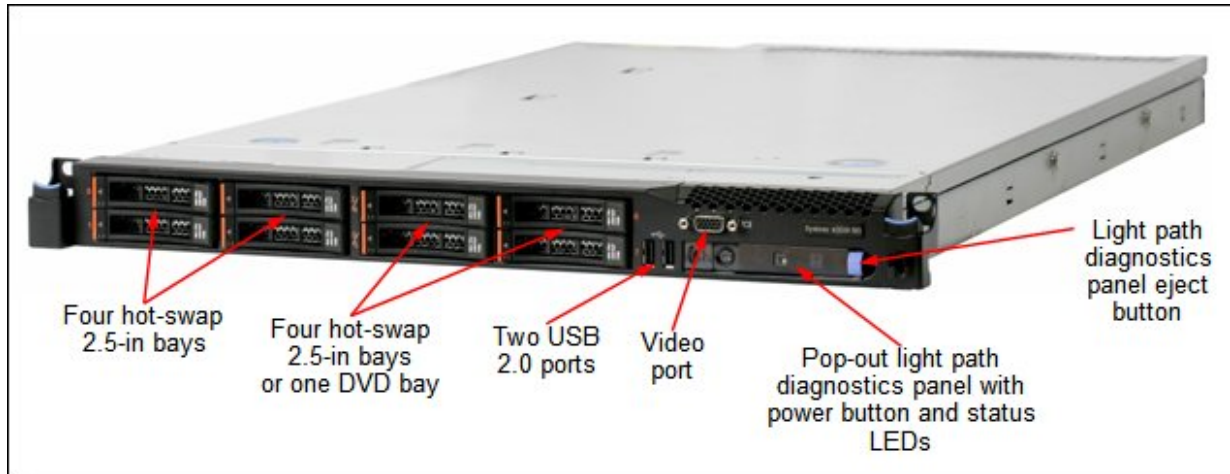


Figure 2. Front view of the IBM System x3550 M3

Figure 3 shows the rear of the server.

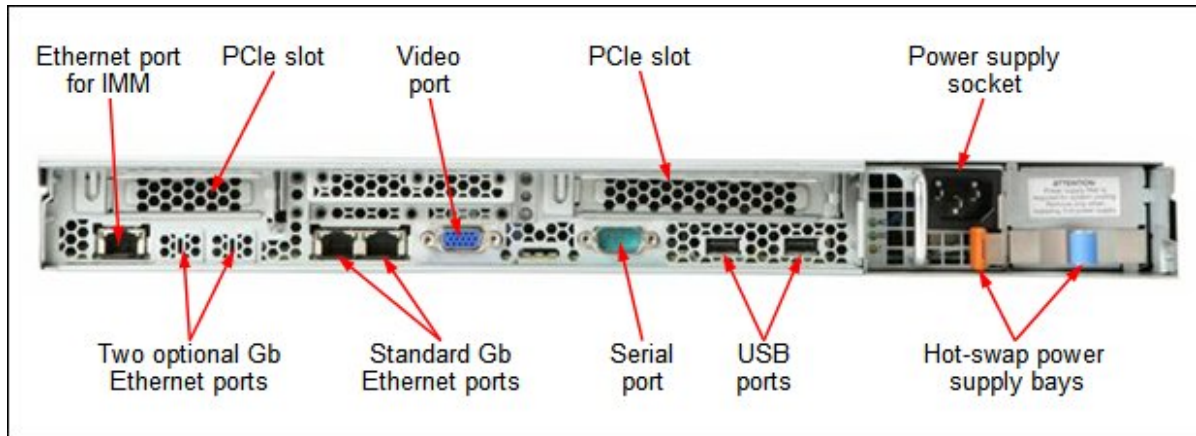


Figure 3. Rear view of the IBM System x3550 M3

Figure 4 shows the locations of key components inside the server.

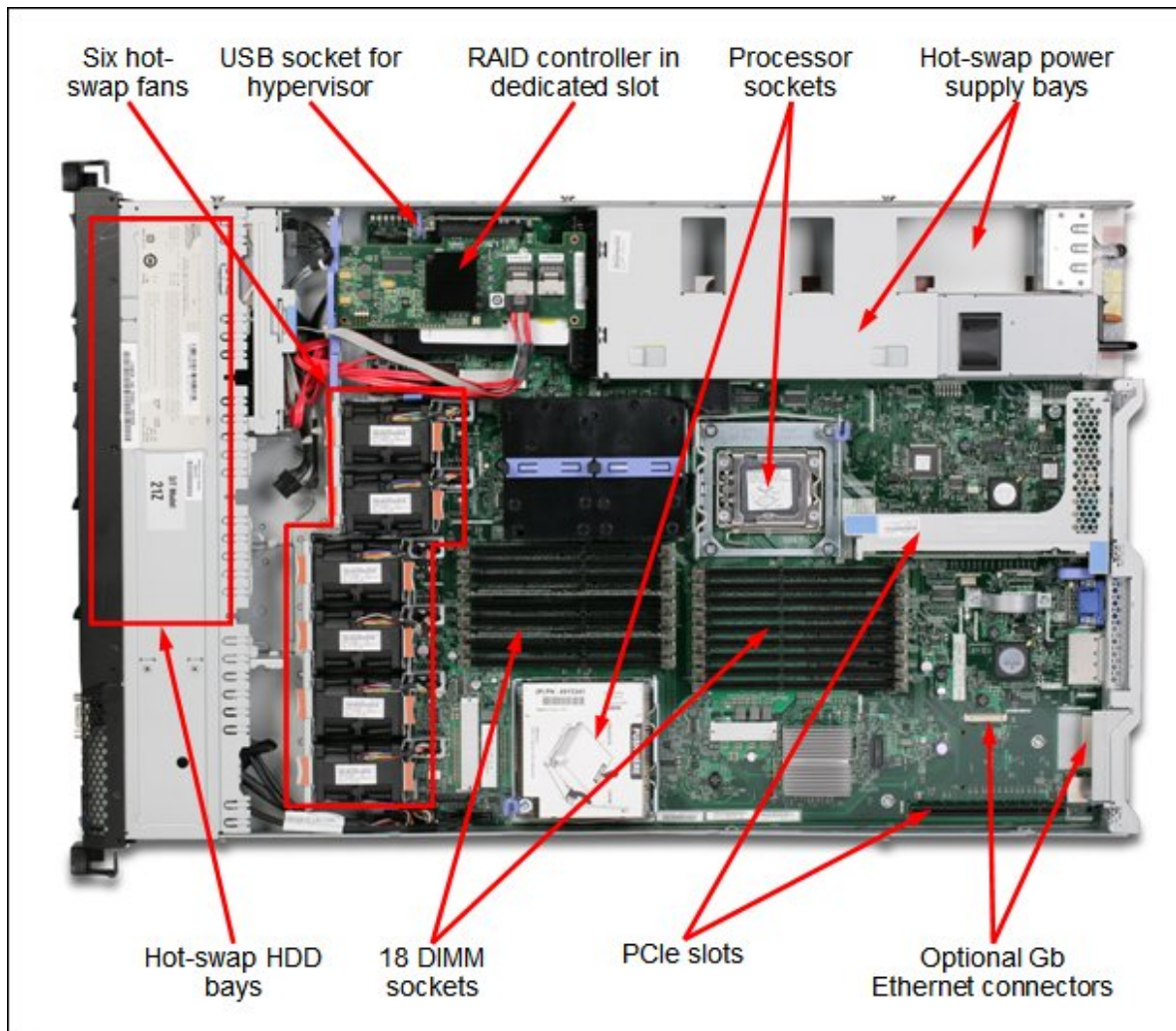


Figure 4. Inside view of the IBM System x3550 M3

Standard specifications

Table 1. Standard specifications

| Components | Specification |
|--------------------------|--|
| Form factor | 1U Rack. |
| Processor | Up to two six-core (up to 3.46 GHz) or quad-core (up to 3.6 GHz) Intel Xeon 5600 series processors with QuickPath Interconnect technology up to 6.4 GT/s, and up to 1333 MHz memory speed. |
| Memory cache | Up to 12 MB L3. |
| Chipset | Intel 5520. |
| Memory | Up to 18 DIMM sockets (9 DIMMs per processor). Up to 288 GB with 16 GB DDR3 RDIMMs and 18 populated DIMM slots (up to 144 GB with 9 DIMMs per processor), or up to 48 GB with 4 GB DDR3 UDIMMs and 12 populated DIMM slots (up to 24 GB with 6 DIMMs per processor). |
| Memory protection | ECC, ChipKill (for x4-based memory DIMMs), Memory Mirroring, and Memory Sparring. |
| Disk drive bays | Up to eight 2.5" hot-swap SAS/SATA HDDs or solid-state drives (SSDs). |
| Maximum internal storage | Up to 7.2 TB with 900 GB SAS HDDs, or up to 8.0 TB with 1 TB SATA HDDs, or up to 1.6 TB with 200 GB SSDs. Intermix of SAS/SATA/SSD is supported. |
| RAID Support | RAID 0, 1, 1E with ServeRAID-BR10iil v2 or M1015; RAID 0, 1, 5, 10, 50 with M5014 or M5015. Optional upgrade to RAID 5 is available for M1015. Optional upgrade to RAID 6, 60 is available for M5014/M5015. |
| Optical drive bays | One with optional Optical Drive Enablement Kit, support for DVD-ROM or Multiburner. If used, the maximum number of HDD bays is limited to 4. |
| Tape drive bays | None. |
| Network interfaces | Integrated 2 Gigabit Ethernet ports, plus 2 ports on optional Gigabit Ethernet with Ethernet Daughter Card (does not consume PCI slot). |
| PCI Expansion slots | Up to 3 slots (up to 2 standard slots are available; one slot is dedicated to RAID controller), dependant on the riser cards used. Standard models have: <ul style="list-style-type: none"> • Slot 1: PCI Express 2.0 x16, Low-profile • Slot 2: PCI Express 2.0 x16, full-height, half-length Each slot is implemented using a riser card. Each PCIe riser card can be replaced with a PCI-X riser card offering one PCI-X 64-bit/133 MHz slot. |
| External ports | Two USB 2.0 and one DB-15 video on front. Two USB 2.0, one DB-15 video, one DB-9 serial, one RJ-45 systems management, up to 4 RJ-45 Gigabit Ethernet network ports (2 standard, 2 optional) on rear. One internal USB port for embedded hypervisor. |
| Cooling | IBM Calibrated Vectored Cooling™ with 6 counter-rotating hot swap fans with N+1 redundancy. Altimeter is to control fan speed based on atmospheric pressure. |
| Power supply | Up to 2 redundant hot-swap 460 W AC or 675 W AC or 675 W high efficiency (HE) AC power supplies with 90%+ efficiency. 675 W -48 V DC models are available via CTO. |
| Hot-swap components | Hard drives, power supplies, fans. |

| | |
|-----------------------------|--|
| Systems management | UEFI, IBM Integrated Management Module (IMM), Predictive Failure Analysis, Light Path Diagnostics, Automatic Server Restart, IBM Systems Director* and IBM Systems Director Active Energy Manager™, IBM ServerGuide. Optional Virtual Media Key for remote presence (graphics, keyboard & mouse). |
| Security features | Power-on password, administrator's password, Trusted Platform Module (TPM). |
| Video | Matrox G200eV with 16 MB memory integrated into the IMM. Maximum resolution is 1280x1024 at 75 Hz with 16M colors. |
| Operating systems supported | Microsoft Windows Server 2003 and 2003 R2, Microsoft Windows Server 2008 R2 and 2008, Microsoft Windows Server 2012, Red Hat Enterprise Linux 4, 5 and 6, Red Hat Enterprise MRG 1.0/2.0 Realtime, SUSE Linux Enterprise Server 10 and 11, VMware ESX 4/4.1 and VMware ESXi 4/4.1 embedded hypervisor, Sun Solaris 10, VMware vSphere 5/5.1. |
| Limited warranty | Three-year customer replaceable unit and onsite limited warranty with 9x5/next business day (NBD) response time. |
| Service and Support | Optional service upgrades are available through IBM ServicePacs®: 24x7/next business day or 4 hours onsite repair, 1-year or 2-year warranty extension, remote technical support for IBM hardware and selected IBM and third-party (Microsoft, Linux, VMware) software. |
| Dimensions | Height: 43 mm (1.7 in), width: 440 mm (17.3 in), depth: 711 mm (28.0 in) |
| Weight | Minimum configuration 12.7 kg (28 lb), maximum configuration 15.9 kg (35.1 lb) |

* Effective October 12, 2012, or until supply is depleted, IBM will discontinue the shipment of IBM Systems Director DVDs with IBM System x servers and IBM BladeCenter chassis. IBM Systems Director Express Edition and IBM Systems Director Standard Edition, which include software subscription and support, continue to be available for IBM System x servers and IBM Blade Centers.

The x3550 M3 servers are shipped with the following items:

- Important Notices and Statement of Limited Warranty documents
- Documentation CD that contains the *Installation and User's Guide*
- Rack Installation Instructions
- IBM Gen 2 Slides Kit
- IBM Gen 2 Cable Management Arm
- 2.8 m C13 - C14 power cord (one for models with one power supply and two for models with two power supplies)

Standard models

The following table lists the standard models. All models are withdrawn from marketing as of June 30, 2013. The System x3550 M4 is a suitable replacement.

Table 2. Standard models

| Model | Intel Xeon processors† (2 maximum) | RAM | RAID | Disk bays | Disks | GbE | DVD | Power supply |
|----------|---------------------------------------|------------|----------|--------------|---------------------|--------|-------|-----------------|
| 7944-DCx | 2x E5620 2.40GHz 4C 12MB 1066MHz | 6x 4 GB | M5015(b) | 4 / 8 | 4x 300GB 10K SAS | 2x GbE | Multi | 2x 675 W |
| 7944-12x | 1x E5603 1.60GHz 4C 4MB 1066MHz | 1x 4 GB | BR10ilv2 | 4 / 8 | Open | 2x GbE | Open | 1x 460 W |
| 7944-22x | 1x E5606 2.13GHz 4C 8MB 1066MHz | 1x 4 GB | M1015 | 4 / 8 | Open | 2x GbE | Open | 1x 460 W |
| 7944-32x | 1x E5607 2.26GHz 4C 8MB 1066MHz | 1x 4 GB | M1015 | 4 / 8 | Open | 2x GbE | Open | 1x 460 W |
| 7944-D4x | 1x E5620 2.40GHz 4C 12MB 1066MHz | 1x 4 GB | M1015 | 4 / 8 | Open | 2x GbE | Open | 1x 460 W |
| 7944-H4x | 1x L5640 2.26GHz 6C 12MB 1333MHz | 1x 4 GB | M5015(b) | 4 / 8 | Open | 2x GbE | Open | 1x 460 W |
| 7944-52x | 1x E5645 2.40GHz 6C 12MB 1333MHz | 1x 4 GB | M5014 | 4 / 8 | Open | 2x GbE | Open | 1x 460 W |
| 7944-54x | 2x E5645 2.40GHz 6C 12MB 1333MHz | 2x 4 GB | M5014 | 4 / 8 | Open | 2x GbE | Open | 2x 675 HE |
| 7944-62x | 1x E5649 2.53GHz 6C 12MB 1333MHz | 1x 4 GB | M5014 | 4 / 8 | Open | 2x GbE | Open | 1x 460 W |
| 7944-J4x | 1x X5650 2.66GHz 6C 12MB 1333MHz | 1x 4 GB | M5015(b) | 4 / 8 | Open | 2x GbE | Open | 1x 675 W |
| 7944-72x | 1x X5675 3.06GHz 6C 12MB 1333MHz | 1x 4 GB | M5015(b) | 4 / 8 | Open | 2x GbE | Open | 1x 675 W |
| 7944-82x | 1x X5690 3.46GHz 6C 12MB 1333MHz | 1x 4 GB | M5015(b) | 4 / 8 | Open | 2x GbE | Open | 1x 675 HE |
| 7944-D2x | 1x E5620 2.40GHz 4C 12MB 1066MHz | 1x 4GB | M1015 | 4 / 8 | Open | 2x GbE | Open | 1x 675 W |

† In the processor column: Standard quantity of processors, processor model, core speed, cores, L3 cache, memory speed.

(b) The ServeRAID M5015 RAID controller in this model includes a battery.

Refer to the Specifications section for information about standard features of the server.

Express models

The following table lists the express models. Express models are typically only available in certain countries. All models are withdrawn from marketing as of June 30, 2013. The System x3550 M4 is a suitable replacement.

Table 3. Express models

| North America (NA) | | | | | | | | | | |
|---|------------------------------------|---------|----------|-----|-----------|--------|-------|---------|--|--|
| 7944-E4U | 1x E5607 2.26GHz 4C 8 MB 1066 MHz | 3x 2 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 1x 460W | | |
| 7944-E5U | 1x E5649 2.53GHz 6C 12 MB 1333 MHz | 3x 2 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 1x 460W | | |
| 7944-E6U | 1x X5650 2.66GHz 6C 12 MB 1333 MHz | 3x 4 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 2x 675W | | |
| Europe Integrated Operating Team (IOT) | | | | | | | | | | |
| 7944-K3Gx | 1x E5620 2.40GHz 4C 12 MB 1066 MHz | 1x 4 GB | M5014 | 8/8 | Open | 2x GbE | Opt | 1x 675W | | |
| 7944-KAG | 1x E5606 2.13GHz 4C 8 MB 1066 MHz | 1x 4 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 1x 460W | | |
| 7944-KEG | 1x E5645 2.40GHz 4C 12 MB 1333 MHz | 2x 4 GB | M5014 | 4/8 | Open | 2x GbE | Multi | 2x 460W | | |
| 7944-KLG | 1x E5640 2.66GHz 4C 12 MB 1333 MHz | 1x 4 GB | M5014 | 4/8 | Open | 2x GbE | Multi | 1x 460W | | |
| Central and Eastern Europe (CEE) and Middle East & Africa (MEA) | | | | | | | | | | |
| 7944-K3G | 1x E5620 2.40GHz 4C 12 MB 1066 MHz | 1x 4 GB | M5014 | 8/8 | Open | 2x GbE | Opt | 1x 675W | | |
| 7944-KAG | 1x E5606 2.13GHz 4C 8 MB 1066 MHz | 1x 4 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 1x 460W | | |
| 7944-KEG | 1x E5645 2.40GHz 4C 12 MB 1333 MHz | 2x 4 GB | M5014 | 4/8 | Open | 2x GbE | Multi | 2x 460W | | |
| 7944-KJG | 1x E5606 2.13GHz 4C 8 MB 1066 MHz | 1x 4 GB | M1015 | 4/8 | 2x 500 GB | 2x GbE | Multi | 1x 460W | | |
| Russia/Commonwealth of Independent States (CIS) | | | | | | | | | | |
| 7944-KDG | 1x E5606 2.13GHz 4C 8 MB 1066 MHz | 1x 4 GB | M5015(b) | 4/8 | Open | 2x GbE | Multi | 1x 675W | | |
| 7944-KFG | 1x E5620 2.40GHz 4C 12 MB 1066 MHz | 2x 4 GB | M5015(b) | 4/8 | Open | 2x GbE | Multi | 1x 675W | | |
| 7944-KGG | 1x E5645 2.40GHz 4C 12 MB 1333 MHz | 2x 4 GB | M5015(b) | 4/8 | Open | 2x GbE | Multi | 2x 675W | | |
| 7944-KHG | 1x E5620 2.40GHz 4C 12 MB 1066 MHz | 3x 4 GB | M5015(b) | 4/8 | 3x 146GB | 2x GbE | Multi | 1x 675W | | |
| Latin America (LA) | | | | | | | | | | |
| 7944-E4U | 1x E5607 2.26GHz 4C 8 MB 1066 MHz | 3x 2 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 1x 460W | | |
| 7944-E5U | 1x E5649 2.53GHz 6C 12 MB 1333 MHz | 3x 2 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 1x 460W | | |
| 7944-E6U | 1x X5650 2.66GHz 6C 12 MB 1333 MHz | 3x 4 GB | M1015 | 4/8 | Open | 2x GbE | Multi | 2x 675W | | |
| 7944-E7U | 1x E5606 2.13GHz 4C 8 MB 1066 MHz | 1x 4 GB | M1015 | 4/8 | 1x 500 GB | 2x GbE | Multi | 1x 460W | | |
| 7944-E8U | 1x E5645 2.40GHz 4C 12 MB 1333 MHz | 2x 4 GB | M5014 | 4/8 | Open | 2x GbE | Multi | 2x 460W | | |

† In the processor column: Standard quantity of processors, processor model, core speed, cores, L3 cache, memory speed.

(b) The ServeRAID M5015 RAID controller in this model includes a battery.

Processor options

Features of the Intel Xeon 5600 processors used in the x3550 M3 include:

- Intel QuickPath Technology (QPI), a platform architecture that provides high-speed (up to 25.6 GBps), and point-to-point connections both between processors and between processors and the I/O hub. Each processor has its own dedicated memory that it accesses directly through an Integrated Memory Controller. In cases where a processor needs to access the dedicated memory of another processor, it can do so through the high-speed QPI that links all the processors.
- Turbo Boost Technology dynamically turns off unused processor cores and increases the clock speed of the cores in use. It will increase the frequency in steps of 133 MHz (to a maximum of three steps or 400 MHz) as long as the processors' predetermined thermal and electrical requirements are still met. For example, with three cores active, a 2.26 GHz processor can run the cores at 2.4 GHz. With only one or two cores active, the same processor can run those cores at 2.53 GHz. All Xeon 5600 processors support Turbo Boost with the exception of L5609, E5607, E5606, and E5603.
- Intel Hyper-Threading Technology, which boosts performance for multi-threaded applications by enabling simultaneous multi-threading within each processor core, up to two threads per core. Hyper-Threading reduces computational latency, thereby making optimal use of every clock cycle. All Xeon 5600 processors support Hyper-Threading Technology with the exception of L5609, E5607, E5606, and E5603.
- Intelligent Power Capability powers individual processor elements on and off as needed, to reduce power draw.
- Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.
- Intel Virtualization Technology integrates hardware-level virtualization hooks that allow operating system vendors to better utilize the hardware for virtualization workloads.

The server supports the processor options listed in the following table. The server supports up to two processors. The table shows which server models have each processor standard. If there is no corresponding *where-used* model for a particular processor, then this model is only available through CTO.

Table 4. Processor options

| Part number | Feature code | Description | Models where used |
|-----------------------------------|--------------|--|-------------------|
| Intel Xeon 5600 series processors | | | |
| 81Y6548 | A0ZN | Intel Xeon E5603 4C 1.60 GHz 4 MB Cache 1066 MHz 80w (with fan) | 12x |
| 81Y6549 | A0ZP | Intel Xeon E5606 4C 2.13 GHz 8 MB Cache 1066 MHz 80w (with fan) | 22x |
| 81Y6550 | A0ZQ | Intel Xeon E5607 4C 2.26 GHz 8 MB Cache 1066 MHz 80 w (with fan) | 32x, E4x |
| 59Y4006 | 4600 | Intel Xeon E5620 4C 2.40 GHz 12 MB Cache 1066 MHz 80 w (with fan) | D2x, D4x |
| 59Y4007 | 4601 | Intel Xeon E5630 4C 2.53 GHz 12 MB Cache 1066 MHz 80 w (with fan) | - |
| 59Y4008 | 4602 | Intel Xeon E5640 4C 2.66 GHz 12 MB Cache 1066 MHz 80 w (with fan) | - |
| 81Y6547 | A0ZM | Intel Xeon E5645 6C 2.40 GHz 12 MB Cache 1333 MHz 80w (with fan) | 52x, 54x |
| 81Y6552 | A0ZS | Intel Xeon E5649 6C 2.53 GHz 12 MB Cache 1333 MHz 80w (with fan) | 62x, E5x |
| 59Y4003 | 4597 | Intel Xeon L5609 4C 1.86 GHz 12 MB Cache 1066 MHz 40 w (with fan) | - |
| 59Y4004 | 4598 | Intel Xeon L5630 4C 2.13 GHz 12 MB Cache 1066 MHz 40 w (with fan) | - |
| 59Y4005 | 4599 | Intel Xeon L5640 6C 2.26 GHz 12 MB Cache 1333 MHz 60 w (with fan) | - |
| 81Y6551 | A0ZR | Intel Xeon X5647 4C 2.93 GHz 12 MB Cache 1333 MHz 130w (with fan) | - |
| 59Y4009 | 4603 | Intel Xeon X5650 6C 2.66 GHz 12 MB Cache 1333 MHz 95 w (with fan) | J4x, E6x |
| 59Y4010 | 4604 | Intel Xeon X5660 6C 2.80 GHz 12 MB Cache 1333 MHz 95 w (with fan) | - |
| 59Y4012 | 4606 | Intel Xeon X5667 4C 3.06 GHz 12 MB Cache 1333 MHz 95 w (with fan) | - |
| 59Y4011 | 4605 | Intel Xeon X5670 6C 2.93 GHz 12 MB Cache 1333 MHz 95 w (with fan) | - |
| 81Y6553 | A0ZT | Intel Xeon X5672 4C 3.20 GHz 12 MB Cache 1333 MHz 95w (with fan) | - |
| 81Y6554 | A0ZU | Intel Xeon X5675 6C 3.06 GHz 12 MB Cache 1333 MHz 95w (with fan) | 72x |
| 59Y4013 | 4607 | Intel Xeon X5677 4C 3.46 GHz 12 MB Cache 1333 MHz 130 w (with fan) | - |
| 59Y4014 | 4608 | Intel Xeon X5680 6C 3.33 GHz 12 MB Cache 1333 MHz 130 w (with fan) | - |
| 81Y6555 | A0ZV | Intel Xeon X5687 4C 3.60 GHz 12 MB Cache 1333 MHz 130w (with fan) | - |
| 81Y6556 | A0ZW | Intel Xeon X5690 6C 3.46 GHz 12 MB Cache 1333 MHz 130w (with fan) | 82x |

| | | | |
|-----------------------------------|------|---|---|
| Intel Xeon 5500 series processors | | | |
| 59Y4001* | 4595 | Intel Xeon E5503 2C 2.0 GHz 4 MB Cache 800 MHz 80 w (with fan) | - |
| 59Y3960 | 7697 | Intel Xeon E5504 4C 2.0 GHz 4 MB L3 Cache 800 MHz 80 w (with fan) | - |
| 59Y3954 | 7731 | Intel Xeon E5506 4C 2.13 GHz 4 MB L3 Cache 800 MHz 80 w (with fan) | - |
| 59Y4002* | 4596 | Intel Xeon E5507 4C 2.26 GHz 4 MB Cache 800 MHz 80 w (with fan) | - |
| 59Y3961* | 7745 | Intel Xeon E5520 4C 2.26 GHz 8 MB L3 Cache 1066 MHz 80 w (with fan) | - |
| 59Y3956* | 7732 | Intel Xeon E5530 4C 2.4 GHz 8 MB L3 Cache 1066 MHz 80 w (with fan) | - |
| 59Y3963 | 7698 | Intel Xeon E5540 4C 2.53 GHz 8 MB L3 Cache 1066 MHz 80 w (with fan) | - |
| 59Y3957* | 7699 | Intel Xeon X5550 4C 2.66 GHz 8 MB L3 Cache 1333 MHz 95 w (with fan) | - |
| 59Y3958* | 7696 | Intel Xeon X5560 4C 2.8 GHz 8 MB L3 Cache 1333 MHz 95 w (with fan) | - |
| 59Y3959* | 7733 | Intel Xeon X5570 4C 2.93 GHz 8 MB L3 Cache 1333 MHz 95 w (with fan) | - |

* Withdrawn from marketing

Memory options

IBM DDR3 memory is compatibility tested and tuned for optimal System x performance and throughput. IBM memory specifications are integrated into the light path diagnostics for immediate system performance feedback and optimum system uptime. From a service and support standpoint, IBM memory automatically assumes the IBM system warranty, and IBM provides service and support worldwide.

The server has 18 DIMM slots. When one processor is installed, then only nine DIMM slots can be used. When two processors are installed, then all 18 DIMM slots can be used. However, the maximum amount of DIMMs that can be installed is also limited by the type and rank of DIMM used, as follows:

- RDIMMs
 - Up to 18 single-rank RDIMMs (nine per processor) for a maximum of 72 GB (18x 4 GB)
 - Up to 18 dual-rank RDIMMs (nine per processor) for a maximum of 288 GB (18x 16 GB)
 - Up to 12 quad-rank RDIMMs (six per processor) for a maximum of 192 GB (12x 16 GB)
- UDIMMs
 - Up to 12 dual-rank UDIMMs (six per processor) for a maximum of 48 GB (12x 4 GB)

Each CPU has three memory channels, and there are three DIMMs per channel. RDIMMs can be populated three per channel. However, UDIMMs can only be populated two DIMMs per channel. That is, you can have up to 18 RDIMMs installed in the server, but only up to 12 UDIMMs. Mixing UDIMMs and RDIMMs is not supported.

Maximum memory speed is limited by memory speed supported by the specific CPU (that is, if the CPU only supports 1066 MHz, then the memory speed cannot exceed 1066 MHz in any case) and by the number and type of DIMMs installed (whatever is lower), as follows:

- Intel Xeon 5600 series processors:
 - 1333 MHz when one or two single-rank or dual-rank RDIMMs per channel are installed or one UDIMM per channel is installed
 - 1066 MHz when one quad-rank RDIMM per channel is installed or two UDIMMs per channel are installed
 - 800 MHz when three single-rank or dual-rank RDIMMs or two quad-rank RDIMMs per channel are installed
- Quad-core Intel Xeon 5500 series processors:
 - 1333 MHz when one single-rank or dual-rank RDIMM per channel is installed or one UDIMM per channel is installed
 - 1066 MHz when two single-rank or dual-rank RDIMMs per channel are installed, or one quad-rank RDIMM per channel is installed, or two UDIMMs per channel are installed
 - 800 MHz when three single-rank or dual-rank RDIMMs or two quad-rank RDIMMs per channel are installed
- Dual-core Intel Xeon 5500 series processors only support memory speed at 800 MHz.

The server supports both 1.5 V and 1.35 V DIMMs. Mixing 1.5 V and 1.35 V DIMMs in the same server is supported for Intel Xeon 5600 series processor-based systems, in such a case all DIMMs operate at 1.5 V. Intel Xeon 5500 series processor-based systems do not support 1.35 V DIMMs.

The following memory protection technologies are supported:

- ECC
- ChipKill (for x4-based RDIMMs)
- Memory Mirroring
- Memory Sparing

If memory mirroring is used then DIMMs must be installed in pairs (minimum of one pair per CPU), and both DIMMs in a pair must be identical in type and size. If memory sparing is used then DIMMs must be installed in sets of three, and all DIMMs in the same set must be identical in type and size. Memory sparing is only supported in systems with Intel Xeon 5600 series processors installed.

The following table lists memory options available for x3550 M3 server.

Table 5. Memory options

| Part number | Feature code | Description | Maximum supported* | Models where used |
|---------------|--------------|---|--------------------|-------------------|
| UDIMMs | | | | |
| 44T1569 | 1914 | 2GB (1x2GB, 2Rx8, 1.5V) PC3-10600 ECC DDR3 1333MHz LP UDIMM | 12 | - |
| 49Y1403 | A0QS | 2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 ECC DDR3 1333MHz LP UDIMM | 12 | - |
| 49Y1404 | 8648 | 4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP UDIMM | 12 | - |

| 1333 MHz RDIMMs | | | | |
|------------------------|------|---|----|--|
| 44T1592 | 1712 | 2GB (1x2GB, 1Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1434 | 8935 | 2GB (1x2GB, 1Rx4, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1405 | 8940 | 2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | E4x, E5x |
| 49Y1433 | 8934 | 2GB (1x2GB, 2Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1392 | 3893 | 2GB (1x2GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1406 | 8941 | 4GB (1x4GB, 1Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | 12x, 22x, 32x, D4x, H4x, 52x, 54x, 62x, J4x, 72x, 82x, E6x |
| 49Y1435 | 8936 | 4GB (1x4GB, 2Rx4, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1394 | 3894 | 4GB (1x4GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | C2x, H2x |
| 44T1599 | 1713 | 4GB (1x4GB, Dual Rankx8) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1407 | 8942 | 4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1436 | 8937 | 8GB (1x8GB, 2Rx4, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1397 | 8923 | 8GB (1x8GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 49Y1563 | A1QT | 16GB (1x16GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM | 18 | - |
| 1066 MHz RDIMMs | | | | |
| 49Y1398 | 8921 | 8GB (1x8GB, 2Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM | 18 | - |
| 49Y1400 | 8939 | 16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM | 12 | - |
| 46C7483 | 1707 | 16GB (1x16GB, 4Rx4, 1.5V) PC3-8500 CL7 ECC DDR3 1066MHz LP RDIMM | 12 | - |

* Maximum supported with two processors installed. With one processor installed, halve the number.

Internal storage

The IBM System x3550 M3 supports the following internal disk storage configurations:

- Four SATA 2.5" SFF Simple-Swap hard drive bays (only available in CTO)
- Four SAS/SATA 2.5" SFF hot-swap hard drive bays, with or without space for an optical disk drive
- Eight SAS/SATA 2.5" SFF hot-swap hard drive bays (optical drive bay not available in this configuration)

The following figure shows these.

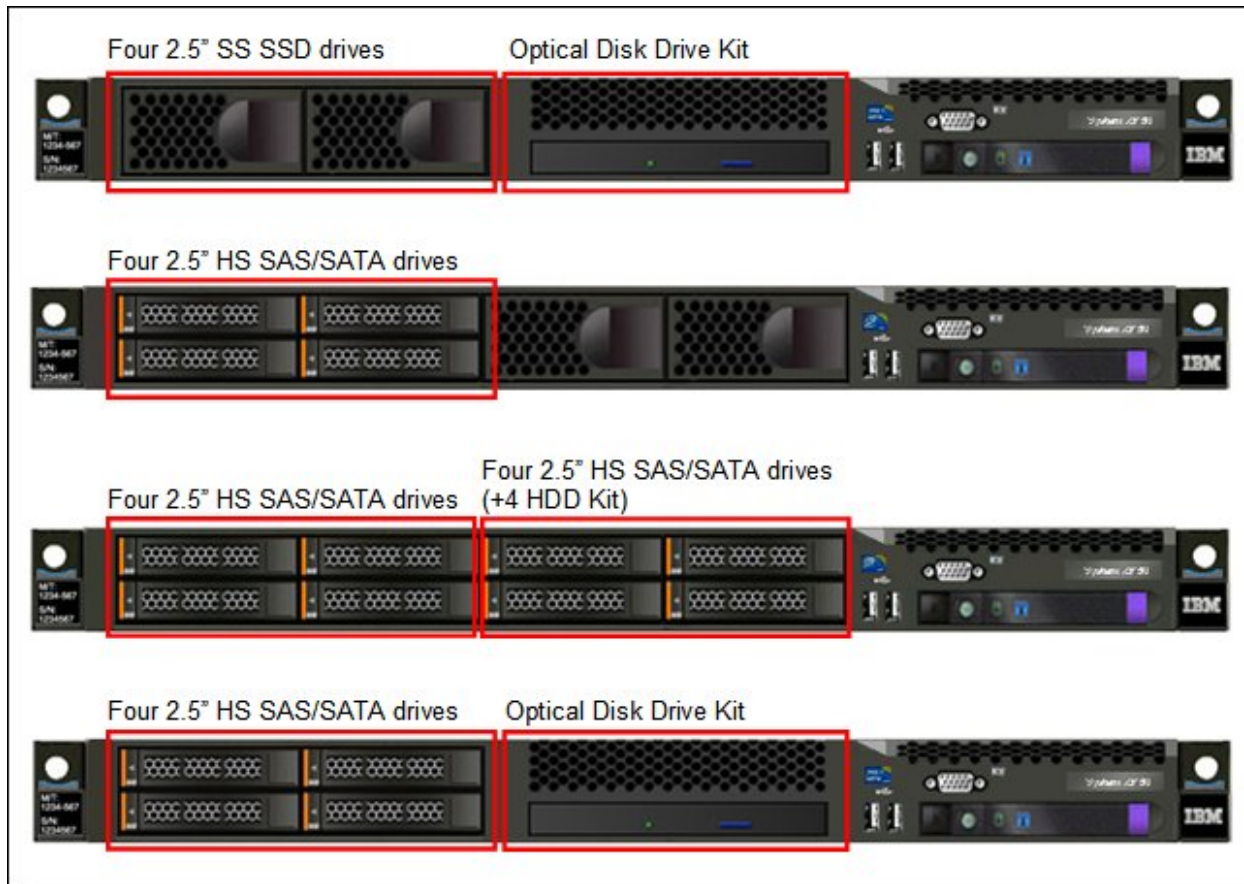


Figure 5. Internal disk storage options

Standard models of x3550 M3 ship with four SAS/SATA 2.5" SFF hot-swap hard drive bays. The following table shows the option available for x3550 M3 server to add four additional hot-swap drive bays.

Option 59Y3992 upgrades models with four hot-swap HDD bays to eight hot-swap HDD bays. If the server already has an optical disk drive installed, the drive must be removed first. For model A2Y, this upgrade also requires a new RAID controller (M1015, M5014, or M5015) to be purchased.

Table 6. Internal storage expansion options

| Part number | Feature code | Description | Maximum supported |
|-------------|--------------|---|-------------------|
| 59Y3992 | 4183 | IBM System x3550 M3 R2 plus 4 HDD Kit with 8HDD Bezel | 1 |

Controllers for internal storage

The following table lists the RAID controllers and additional options used for internal disk storage.

Table 8. RAID controllers for internal storage

| Part number | Feature code | Description | Maximum supported | Models where used |
|-------------|--------------|---|-------------------|--|
| 49Y4731 | 9742 | ServeRAID-BR10il SAS/SATA Controller V2 | 1 | A2x, 12x |
| 81Y4492 | A1XL | ServeRAID H1110 SAS/SATA Controller | 1 | - |
| 46M0831 | 0095 | ServeRAID M1015 SAS/SATA Controller | 1 | B2x, C2x, D2x, H2x, N2x, 22x, 32x, D4x |
| 46M0832 | 9749 | ServeRAID M1000 Series Advance Feature Key | 1 | - |
| 46M0917 | 5744 | ServeRAID M5000 Series Battery Kit | 1 | J2x, M2x, H4x, J4x, 72x, 82x |
| 46M0930 | 5106 | ServeRAID M5000 Series Advanced Feature Key* | 1 | - |
| 81Y4426 | A10C | ServeRAID M5000 Series Performance Accelerator Key* | 1 | - |
| 46M0916 | 3877 | ServeRAID M5014 SAS/SATA Controller | 1 | F2x, G2x, 52x, 54x, 62x |
| 46M0829 | 0093 | ServeRAID M5015 SAS/SATA Controller | 1 | J2x, M2x, H4x, J4x, 72x, 82x |
| 90Y4304 | A2NF | ServeRAID M5016 SAS/SATA Controller | 1 | - |
| 46M0969** | 3889 | ServeRAID B5015 SSD Controller | 1 | - |

* Note: The Advanced Feature Key and Performance Accelerator Key cannot be used at the same time. Only one key can be installed onto the RAID controller.

** Withdrawn from marketing

The RAID controllers listed in the previous table occupy a dedicated PCI-E slot on x3550 M3 and do not consume regular PCI-E slots. Only one RAID controller can be used with the server to support internal HDDs.

The ServeRAID BR10il v2 SAS/SATA Controller has the following specifications:

- One Mini-SAS internal connector
- Supports RAID levels 0, 1, and 1E
- 3 Gbps throughput per port
- Based on the LSI 1064E controller
- PCI Express 2.0 x4 host interface
- Stripe size: 64 KB (fixed)

The ServeRAID H1110 SAS/SATA Controller has the following specifications:

- Four internal 6 Gbps SAS/SATA ports
- One x4 mini-SAS internal connector (SFF-8087)
- 6 Gbps throughput per port
- Based on LSI SAS2004 6 Gbps RAID on Chip (ROC) controller
- x4 PCI Express 2.0 host interface
- Supports RAID 0, 1, 1E, and 10, and up to two integrated volumes
- Supports up to two global hot-spare drives
- Supports drive sizes greater than 2 TB for RAID 0, 1E, and 10 (not RAID 1)
- Fixed stripe size of 64 KB

The ServeRAID M1015 SAS/SATA Controller has the following specifications:

- Two Mini-SAS internal connectors
- Supports RAID levels 0, 1, and 10
- Supports RAID levels 5 and 50 with optional ServeRAID M1000 Series Advanced Feature Key
- 6 Gbps throughput per port
- Based on the LSI SAS2008 6 Gbps RAID on Chip (ROC) controller
- PCI Express 2.0 x8 host interface
- Configurable stripe size up to 64 KB

The ServeRAID M5014 SAS/SATA Controller has the following specifications:

- Two Mini-SAS internal connectors
- Supports RAID levels 0, 1, 5, 10, and 50
- Supports RAID 6 and 60 with the optional M5000 Advanced Feature Key
- Performance optimization for SSD drives with optional M5000 Series Performance Accelerator Key
- 6 Gbps throughput per port
- PCI Express 2.0 x8 host interface
- Based on the LSI SAS2108 6 Gbps ROC controller
- 256 MB of onboard cache
- Optional Intelligent Li-Ion-based battery backup unit with the ServeRAID M5000 Series Battery Kit

The ServeRAID M5015 SAS/SATA Controller has the following specifications:

- Two Mini-SAS internal connectors
- Supports RAID levels 0, 1, 5, 10, and 50
- Supports RAID 6 and 60 with the optional M5000 Advanced Feature Key
- Performance optimization for SSD drives with optional M5000 Series Performance Accelerator Key
- 6 Gbps throughput per port
- PCI Express 2.0 x8 host interface
- Based on the LSI SAS2108 6 Gbps ROC controller
- 512 MB of onboard cache
- Standard Intelligent Li-Ion-based battery backup unit with up to 48 hours of data retention

The ServeRAID B5015 SSD Controller has the following specifications:

- Two Mini-SAS internal connectors
- Supports RAID levels 1 and 5
- 6 Gbps throughput per SAS port
- PCI Express 2.0 x8 host interface
- Based on PMC-Sierra PM8013 maxSAS 6 Gb/s SAS RoC controller
- Performance optimized for SSDs
- Stripe size of up to 1 MB

The ServeRAID M5016 adapter card has the following specifications:

- Eight internal 6 Gbps SAS/SATA ports
- Two Mini-SAS internal connectors (SFF-8087)
- 6 Gbps throughput per port
- 800 MHz dual-core PowerPC® processor with LSI SAS2208 6 Gbps RAID on Chip (ROC) controller

- PCI Express x8 Gen 2 host interface
- 1 GB of onboard data cache (DDR3 running at 1333 MHz)
- CacheVault technology to protect data in cache in case of critical power or server failure
- Supports RAID levels 0, 1, 5, 6, 10, 50, and 60
- Connects to up to 128 SAS or SATA drives
- Intermix of SAS and SATA drives are supported, but the mixing of SAS and SATA drives in the same RAID array is not supported
- Supports up to 64 logical volumes
- Supports LUN sizes up to 64 TB
- Configurable stripe size up to 1 MB
- Compliant with Disk Data Format (DDF) configuration on disk (COD)
- S.M.A.R.T. Support

For more information, see the list of IBM Redbooks Product Guides in the RAID adapters category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=raid>

Internal drive options

The following table lists hard drive options for internal disk storage of x3550 M3 server.

Table 7. Disk drive options for internal disk storage

| Part number | Feature code | Description | Maximum supported |
|-----------------------|--------------|--|-------------------|
| Hot-Swap 15K SAS HDDs | | | |
| 81Y9670 | A283 | IBM 300GB 15K 6Gbps SAS 2.5" SFF HS HDD | 8 |
| 42D0677 | 5536 | IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD | 8 |
| 90Y8926 | A2XB | IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD | 8 |
| 90Y8944 | A2ZK | IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS SED | 8 |
| Hot-Swap 10K SAS HDDs | | | |
| 00AD075 | A48S | IBM 1.2TB 10K 6Gbps SAS 2.5" G2HS HDD | 8 |
| 81Y9650 | A282 | IBM 900GB 10K 6Gbps SAS 2.5" SFF HS HDD | 8 |
| 49Y2003 | 5433 | IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD | 8 |
| 42D0637 | 5599 | IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD | 8 |
| 90Y8872 | A2XD | IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD | 8 |
| 90Y8877 | A2XC | IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD | 8 |
| Hot-swap SAS SEDs | | | |
| 00AD085 | A48T | IBM 1.2TB 10K 6Gbps SAS 2.5" G2HS SED | 8 |
| 81Y9662 | A3EG | IBM 900GB 10K 6Gbps SAS 2.5" SFF G2HS SED | 8 |
| 90Y8908 | A3EF | IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS SED | 8 |
| 90Y8913 | A2XF | IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS SED | 8 |
| 44W2264 | 5413 | IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS SED | 8 |
| 44W2294 | 5412 | IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS SED | 8 |
| Hot-Swap NL SAS HDDs | | | |
| 81Y9690 | A1P3 | IBM 1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD | 8 |
| 42D0707 | 5409 | IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD | 8 |
| 90Y8953 | A2XE | IBM 500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD | 8 |
| Hot-Swap NL SATA HDDs | | | |
| 81Y9730 | A1AV | IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD | 8 |
| 42D0752 | 5407 | IBM 500GB 7200 NL SATA 2.5" SFF Slim-HS HDD | 8 |
| 81Y9726 | A1NZ | IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD | 8 |
| 81Y9722 | A1NX | IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD | 8 |

| Hot-swap SAS-SSD Hybrid Drive | | | |
|------------------------------------|------|---|---|
| 00AD102 | A4G7 | IBM 600GB 10K 6Gbps SAS 2.5" G2HS Hybrid | 8 |
| Hot-Swap Enterprise Value SSDs | | | |
| 49Y5839 | A3AS | IBM 64GB SATA 2.5" MLC HS Enterprise Value SSD | 8 |
| 49Y5844 | A3AU | IBM 512GB SATA 2.5" MLC HS Enterprise Value SSD | 8 |
| 90Y8643 | A2U3 | IBM 256GB SATA 2.5" MLC HS Enterprise Value SSD | 8 |
| 90Y8648 | A2U4 | IBM 128GB SATA 2.5" MLC HS Enterprise Value SSD | 8 |
| Hot-Swap Enterprise SSDs | | | |
| 49Y6195 | A4GH | IBM 1.6TB SAS 2.5" MLC HS Enterprise SSD | 8 |
| 00W1125 | A3HR | IBM 100GB SATA 2.5" MLC HS Enterprise SSD | 8 |
| Simple-Swap Enterprise Value SSDs* | | | |
| 49Y5849 | A3AT | IBM 64GB SATA 2.5" MLC SS Enterprise Value SSD | 4 |
| 49Y5854 | A3AV | IBM 512GB SATA 2.5" MLC SS Enterprise Value SSD | 4 |
| 90Y8663 | A2UC | IBM 256GB SATA 2.5" MLC SS Enterprise Value SSD | 4 |
| 90Y8668 | A2UB | IBM 128GB SATA 2.5" MLC SS Enterprise Value SSD | 4 |
| Simple-Swap Enterprise SSDs* | | | |
| 00W1130 | A3HS | IBM 100GB SATA 2.5" MLC SS Enterprise SSD | 4 |

* Simple-swap drives are only supported in CTO configurations with simple-swap drive bays

Internal backup units

The server does not support internal tape drive options.

Optical drives

The server supports the optical drive options listed in the following table.

Table 9. Optical drives

| Part number | Feature code | Description | Maximum supported | Standard models where used |
|-------------|--------------|--------------------------------------|-------------------|----------------------------|
| 46M0901 | 4161 | IBM UltraSlim Enhanced SATA DVD-ROM | 1 | - |
| 46M0902 | 4163 | UltraSlim Enhanced SATA Multi-Burner | 1 | - |
| 59Y3952 | 4182 | IBM System x3550 M3 R2 ODD Kit | 1 | - |

The x3550 M3 server requires the Optical Drive Kit (ODD Kit), 59Y3952, to be installed to support the optical drive. If the ODD Kit is used, then the maximum number of HDD bays is limited to four.

The IBM UltraSlim Enhanced SATA DVD-ROM (part number 46M0901) supports the following media and speeds for reading:

- CD-ROM 24X
- CD-DA (DAE) 20X
- CD-R 24X
- CD-RW 24X
- DVD-ROM (single layer) 8X
- DVD-ROM (dual layer) 8X
- DVD-R (4.7 GB) 6X
- DVD-R DL 4X
- DVD+R 6X
- DVD+R DL 4X
- DVD-RW (4.7 GB) 4X
- DVD+RW 4X
- DVD-RAM (4.7/9.4 GB) 4X

The IBM UltraSlim Enhanced SATA Multi-Burner (part number 46M0902) supports the same media and speeds for reading as the DVD-ROM (46M0901). In addition, this drive supports the following media and speeds for writing:

- CD-R 24X
- CD-RW 4X
- High Speed CD-RW 10X
- Ultra Speed CD-RW 16X
- Ultra Speed Plus CD-RW 16X
- DVD-R 8X
- DVD-R DL 6X
- DVD+R 8X
- DVD+R DL 6X
- DVD-RW 6X
- DVD+RW 8X
- DVD-RAM 5X

I/O expansion options

The server supports up to two PCI Express slots with different riser cards installed into two riser sockets on the system planar (one riser socket supports installation of one riser card). The slot form factors are as follows:

- Slot 1: Low-profile
- Slot 2: Full-height, half-length

Each slot is implemented using a riser card. Standard models have two riser cards installed, which provide a total of two PCI Express 2.0 x16 slots (one slot per riser card). You can replace each standard riser with a riser card with one PCI-X 64-bit/133 MHz slot (or configure this riser card instead of the standard riser using a special bid or configure-to-order):

The following table lists the PCI riser card options.

Table 10. PCI riser card options

| Part number | Feature code | Description | Maximum supported |
|-------------|--------------|---|-------------------|
| 46M1070 | 5076 | IBM System x3550 M3 PCI-Express (1x16) Riser Card | 2* |
| 46M1071 | 5077 | IBM System x3550 M3 PCI-X Riser Card (one PCI-X 1.0a 64-bit 133 MHz slot) | 2 |

* Two 1x16 riser cards are installed in standard models

The server has an additional PCI Express slot dedicated to the RAID controller.

Network adapters

x3550 M3 supports up to four integrated Gigabit Ethernet ports. Two ports are standard, and two ports can be added by installing an optional Dual-port Gigabit Ethernet Daughter card. This card uses a dedicated connector on the motherboard and does not consume a PCI expansion slot.

Integrated NICs have the following features:

- Broadcom BCM5709 chip
- TCP Offload Engine (TOE) support
- Wake on LAN support
- 802.1Q VLAN tagging support
- NIC Teaming (Load Balancing and Failover)

The following table lists additional supported network adapters.

Table 11. Network adapters

| Part number | Feature code | Description | Maximum supported |
|-----------------------|--------------|--|-------------------|
| 40 Gb Ethernet | | | |
| 00D9550 | A3PN | Mellanox ConnectX-3 40GbE / FDR IB VPI Adapter for IBM System x | 2 |
| 10 Gb Ethernet | | | |
| 42C1820* | 1637 | Brocade 10Gb CNA for IBM System x | 2 |
| 49Y7910 | A18Y | Broadcom NetXtreme II Dual Port 10GBaseT Adapter for IBM System x | 2 |
| 49Y4250 | 5749 | Emulex 10GbE Virtual Fabric Adapter for IBM System x | 2 |
| 49Y7950 | A18Z | Emulex 10GbE Virtual Fabric Adapter II for IBM System x | 2 |
| 95Y3751 | A348 | Emulex Dual Port VFAll Adapter & FCoE/iSCSI License for IBM System x | 2 |
| 49Y7960 | A2EC | Intel x520 Dual Port 10GbE SFP+ Adapter for IBM System x | 2 |
| 49Y7970 | A2ED | Intel X540-T2 Dual Port 10GBaseT Adapter for IBM System x | 2 |
| 81Y9990 | A1M4 | Mellanox ConnectX-2 Dual Port 10GbE Adapter for IBM System x | 2 |
| 00D9690 | A3PM | Mellanox ConnectX-3 10 GbE Adapter for IBM System x | 2 |
| 42C1800 | 5751 | QLogic 10Gb CNA for IBM System x | 2 |
| 1 Gb Ethernet | | | |
| 90Y9370 | A2V4 | Broadcom NetXtreme I Dual Port GbE Adapter for IBM System x | 2 |
| 90Y9352 | A2V3 | Broadcom NetXtreme I Quad Port GbE Adapter for IBM System x | 2 |
| 46M1076 | 3585 | Dual port 1Gb Ethernet Daughter Card | 2 |
| 49Y4230 | 5767 | Intel Ethernet Dual Port Server Adapter I340-T2 for IBM System x | 2 |
| 49Y4240 | 5768 | Intel Ethernet Quad Port Server Adapter I340-T4 for IBM System x | 2 |
| 42C1780 | 2995 | NetXtreme II 1000 Express Dual Port Ethernet Adapter | 2 |
| 42C1750 | 2975 | PRO/1000 PF Server Adapter | 2 |
| 39Y6126 | 2944 | PRO/1000 PT Dual Port Server Adapter by Intel | 2 |
| 39Y6136* | 2974 | PRO/1000 PT Quad Port Server Adapter | 2 |
| InfiniBand | | | |
| 00D9550 | A3PN | Mellanox ConnectX-3 40GbE / FDR IB VPI Adapter for IBM System x | 2 |
| 95Y3750 | A2MY | Mellanox ConnectX-2 Dual-port QSFP QDR IB Adapter for IBM System x | 1 |

* Withdrawn from marketing

For more information, see the list of IBM Redbooks Product Guides in the Networking adapters category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=networkadapters>

Storage host bus adapters

The following table lists storage adapters supported by x3550 M3 server.

Table 12. Storage adapters

| Part number | Feature code | Description | Maximum supported |
|----------------------------|--------------|---|-------------------|
| 16 Gb Fibre Channel | | | |
| 81Y1668 | A2XU | Brocade 16Gb FC Single-port HBA for IBM System x | 2 |
| 81Y1675 | A2XV | Brocade 16Gb FC Dual-port HBA for IBM System x | 2 |
| 81Y1655 | A2W5 | Emulex 16Gb FC Single-port HBA for IBM System x | 2 |
| 81Y1662 | A2W6 | Emulex 16Gb FC Dual-port HBA for IBM System x | 2 |
| 00Y3337 | A3KW | QLogic 16Gb FC Single-port HBA for IBM System x | 2 |
| 00Y3341 | A3KX | QLogic 16Gb FC Dual-port HBA for IBM System x | 2 |
| 8 Gb Fibre Channel | | | |
| 46M6049 | 3589 | Brocade 8 Gb FC Single-port HBA for IBM System x | 2 |
| 46M6050 | 3591 | Brocade 8 Gb FC Dual-port HBA for IBM System x | 2 |
| 42D0485 | 3580 | Emulex 8 Gb FC Single-port HBA for IBM System x | 2 |
| 42D0494 | 3581 | Emulex 8 Gb FC Dual-port HBA for IBM System x | 2 |
| 42D0501 | 3578 | QLogic 8 Gb FC Single-port HBA for IBM System x | 2 |
| 42D0510 | 3579 | QLogic 8 Gb FC Dual-port HBA for IBM System x | 2 |
| 4 Gb Fibre Channel | | | |
| 59Y1987 | 3885 | Brocade 4 Gb FC Single-port HBA for IBM System x | 2 |
| 59Y1993 | 3886 | Brocade 4 Gb FC Dual-port HBA for IBM System x | 2 |
| 42C2069* | 1698 | Emulex 4 Gbps FC Single-Port PCI-e HBA for IBM System x | 2 |
| 42C2071* | 1699 | Emulex 4 Gbps FC Dual-Port PCI-e HBA for IBM System x | 2 |
| 39R6525* | 3567 | QLogic 4 Gb FC Single-Port PCIe HBA for IBM System x | 2 |
| 39R6527 | 3568 | QLogic 4 Gb FC Dual-Port PCIe HBA for IBM System x | 2 |
| iSCSI | | | |
| 39Y6146* | 2976 | QLogic iSCSI Single-Port PCIe HBA for IBM System x | 2 |
| 42C1770 | 2977 | QLogic iSCSI Dual-Port PCIe HBA for IBM System x | 2 |
| SAS | | | |
| 46M0912 | 3876 | IBM 6Gb Performance Optimized HBA | 1 |
| 46M0907 | 5982 | IBM 6 Gb SAS HBA Controller | 2 |
| 44E8700* | 3583 | IBM 3 Gb SAS HBA v2 | 2 |

* Withdrawn from marketing

PCIe SSD adapters

The server supports the High IOPS SSD adapters listed in the following table.

Table 13. SSD adapters

| Part number | Feature code | Description | Maximum supported |
|-------------|--------------|---|-------------------|
| 46M0877* | 0096 | IBM 160GB High IOPS SS Class SSD PCIe Adapter | 1 |
| 46M0898* | 1649 | IBM 320GB High IOPS MS Class SSD PCIe Adapter | 1 |
| 46M0878* | 0097 | IBM 320GB High IOPS SD Class SSD PCIe Adapter | 1 |

* Withdrawn from marketing

Power supplies

The server supports up to two redundant power supplies, providing N+N redundancy. Standard models come with one or two power supplies (model dependent). -48V DC models are only available through CTO. The following table lists the power supplies.

Table 14. Power supplies

| Part number | Feature code | Description | Maximum supported | Models where used |
|-------------|--------------|--|-------------------|------------------------------|
| 46M1075 | 2100 | IBM 675 W Redundant Power Supply | 2* | All others |
| 69Y1510 | 4780 | IBM -48V DC Input 675 W Redundant Power Supply | 2 | - |
| 81Y6557 | A0ZG | IBM 675W High Efficiency Redundant AC Power Supply | 2* | 54x, 82x |
| 81Y6558 | A0ZH | IBM 460W Redundant AC Power Supply | 2* | 12x, 22x, 32x, D4x, H4x, 52x |

* At least 1 power supply comes standard with some models.

An AC power supply ships standard with one 2.8 m C13 - C14 power cord. A DC power supply ships without power cords.

Integrated virtualization

The server supports VMware ESXi installed on a USB memory key. The key is installed in a USB socket inside the server. The following table lists the virtualization options.

Table 15. Virtualization options

| Part | Feature | Description | Maximum |
|---------|---------|--|---------|
| 41Y8298 | A2G0 | IBM Blank USB Memory Key for VMware ESXi Downloads | 1 |
| 41Y8278 | 1776 | IBM USB Memory Key for VMware ESXi 4 | 1 |
| 41Y8287 | 3033 | IBM USB Memory Key for VMware ESXi 4.1 | 1 |
| 41Y8296 | A1NP | IBM USB Memory Key for VMware ESXi 4.1 Update 1 | 1 |
| 41Y8300 | A2VC | IBM USB Memory Key for VMware ESXi 5.0 | 1 |
| 41Y8307 | A383 | IBM USB Memory Key for VMware ESXi 5.0 Update 1 | 1 |
| 41Y8311 | A2R3 | IBM USB Memory Key for VMware ESXi 5.1 | 1 |
| 41Y8382 | A4WZ | IBM USB Memory Key for VMware ESXi 5.1 Update 1 | 1 |
| 41Y8385 | A584 | IBM USB Memory Key for VMware ESXi 5.5 | 1 |

Remote management

The server contains IBM Integrated Management Module (IMM), which provides advanced service-processor control, monitoring, and an alerting function. If an environmental condition exceeds a threshold or if a system component fails, the IMM lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. Optionally, the IMM also provides a virtual presence capability for remote server management capabilities.

The IMM provides remote server management through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3
- Common Information Model (CIM)
- Web browser

The optional virtual media key, listed in the following table, is required to enable the remote presence and blue-screen capture features. The remote presence feature provides the following functions:

- Remotely viewing video with graphics resolutions up to 1280x1024 at 75 Hz
- Remotely accessing the server, using the keyboard and mouse from a remote client
- Mapping the CD or DVD drive, diskette drive, and USB flash drive on a remote client, and mapping ISO and diskette image files as virtual drives that are available for use by the server
- Uploading a diskette image to the IMM memory and mapping it to the server as a virtual drive

The blue-screen capture feature captures the video display contents before the IMM restarts the server when the IMM detects an operating-system hang condition. A system administrator can use the blue-screen capture to assist in determining the cause of the hang condition.

Table 16. Remote management option

| Part number | Feature code | Description | Maximum supported |
|-------------|--------------|-----------------------|-------------------|
| 46C7526 | 5080 | IBM Virtual Media Key | 1 |

Supported operating systems

The server supports the following operating systems:

- Microsoft Windows HPC Server 2008
- Microsoft Windows Server 2003 Compute Cluster Edition
- Microsoft Windows Server 2003 R2 x64 Datacenter Edition Unlimited Virtualization
- Microsoft Windows Server 2003, Web Edition
- Microsoft Windows Server 2003/2003 R2, Datacenter x64 Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise x64 Edition
- Microsoft Windows Server 2003/2003 R2, Standard Edition
- Microsoft Windows Server 2003/2003 R2, Standard x64 Edition
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Datacenter x64 Edition
- Microsoft Windows Server 2008, Datacenter x86 Edition
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Enterprise x86 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Standard x86 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Microsoft Windows Server 2008, Web x86 Edition
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2
- Microsoft Windows Small Business Server 2003/2003 R2 Premium Edition
- Microsoft Windows Small Business Server 2003/2003 R2 Standard Edition
- Microsoft Windows Small Business Server 2008 Premium Edition
- Microsoft Windows Small Business Server 2008 Standard Edition
- Red Hat Enterprise Linux 4 AS for AMD64/EM64T
- Red Hat Enterprise Linux 4 AS for x86
- Red Hat Enterprise Linux 4 ES for AMD64/EM64T
- Red Hat Enterprise Linux 4 ES for x86
- Red Hat Enterprise Linux 4 WS/HPC for AMD64/EM64T
- Red Hat Enterprise Linux 4 WS/HPC for x86
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- Red Hat Enterprise Linux 6 Server Edition
- Red Hat Enterprise Linux 6 Server x64 Edition
- Red Hat Enterprise MRG 1.0 Realtime (x64)
- Red Hat Enterprise MRG 2.0 Realtime (x64)
- Solaris 10 Operating System
- SUSE LINUX Enterprise Real Time 11 AMD64/EM64T
- SUSE LINUX Enterprise Server 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 for x86

- SUSE LINUX Enterprise Server 10 with Xen for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for x86
- SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- VMware ESX 4.0
- VMware ESX 4.1
- VMware ESXi 4.0
- VMware ESXi 4.1
- VMware vSphere 5.0 (ESXi)
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.5 (ESXi)

See the IBM ServerProven® website for the latest information about the specific versions and service levels supported and any other prerequisites:

<http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/nos/matrix.shtml>

Physical and electrical specifications

Dimensions:

- Height: 43 mm (1.7 in)
- Width: 440 mm (17.3 in)
- Depth: 711 mm (28.0 in)
- Weight:
 - Minimum configuration 12.7 kg (28 lb)
 - Maximum configuration 15.9 kg (35.1 lb)

Supported environment:

- Air temperature:
 - Server on: 10 to 35° C (50.0 to 95.0° F); altitude: 0 to 914.4 m (3,000 ft).
- Decrease system temperature by 0.75° C for every 1,000-foot increase in altitude.
 - Server off: 5 to 45° C (41.0 to 113° F);
 - Shipment: -40 to +60° C (-40 to 140° F);
- Humidity:
 - Server on: 20 to 80% , maximum dew point 21° C, maximum rate of change 5° C/hr
 - Server off: 8 to 80%, maximum dew point 27° C

Electrical:

- Models with 675 W power supply
 - 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 7.8 A
 - 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 3.8 A
 - Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: 0.12 kVA
 - Maximum configuration: 0.78 kVA
- Models with 460 W power supply
 - 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 5.3 A
 - 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 2.6 A
 - Input kilovolt-amperes (kVA) (approximately):
 - Minimum configuration: 0.12 kVA
 - Maximum configuration: 0.53 kVA

BTU heat output:

- Minimum configuration: 307 Btu/hr (90 watts)
- Maximum configuration: 2660 Btu/hr (780 watts)

Acoustical noise level emission level:

- 6.1 bels (idling)
- 6.1 bels (operating)

Warranty options

The IBM System x3550 M3 has a 3-year onsite warranty with 9x5/next business day terms. IBM offers the following warranty service upgrades through IBM ServicePacs. The IBM ServicePac is a series of prepackaged warranty maintenance upgrades and post-warranty maintenance agreements with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

IBM ServicePac offerings are country-specific. That is, each country might have its own service types, service levels, response times, and terms and conditions. Not all covered types of ServicePacs might be available in a particular country. For more information about IBM ServicePac offerings available in your country, see the IBM ServicePac Product Selector at: <https://www-304.ibm.com/sales/gss/download/spst/servicepac>.

In general, the types of IBM ServicePacs are as follows:

- Warranty and maintenance service upgrades
 - 1, 2, 3, 4, or 5 years of 9x5 or 24x7 service coverage
 - Onsite repair from next business day to 4 or 2 hours (selected areas)
 - One year or 2 years of warranty extension
- Remote technical support services
 - One year or 3 years with 24x7 coverage (severity 1) or 9x5/next business day for all severities
 - Installation and startup support for System x® servers
 - Remote technical support for System x servers
 - Software support - Support Line
 - Microsoft or Linux software
 - VMware
 - IBM Systems Director

The following table explains warranty service definitions in more detail.

Table 17. Warranty service definitions

| Term | Description |
|-------------------------|---|
| IBM onsite repair (IOR) | A service technician will come to the server's location for equipment repair. |
| 24x7x2 hour | A service technician is scheduled to arrive at your customer's location within two hours after remote problem determination is completed. We provide service around the clock, every day, including IBM holidays. |
| 24x7x4 hour | A service technician is scheduled to arrive at your customer's location within four hours after remote problem determination is completed. We provide service around the clock, every day, including IBM holidays. |
| 9x5x4 hour | A service technician is scheduled to arrive at your customer's location within four business hours after remote problem determination is completed. We provide service from 8:00 a.m. to 5:00 p.m. in their local time zone, Monday through Friday, excluding IBM holidays. If after 1:00 p.m. it is determined that onsite service is required, the customer can expect the service technician to arrive the morning of the following business day. For noncritical service requests, a service technician will arrive by the end of the following business day. |
| 9x5/next business day | A service technician is scheduled to arrive at your customer's location on the business day after we receive your call, following remote problem determination. We provide service from 8:00 a.m. to 5:00 p.m. in their local time zone, Monday through Friday, excluding IBM holidays. |

Regulatory compliance

The server conforms to the following international standards:

- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 4, Class A
- UL/IEC 60950-1
- CSA C22.2 No. 69950-1-03
- NOM-019
- Argentina IEC60950-1
- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22:2006, Class A
- IEC-60950-1:2001 (CB Certificate and CB Test Report)
- Taiwan BSMI CNS 13438, Class A; CNS 14336
- China CCC (4943-2001), GB 9254-2008 Class A, GB 17625.1:2003
- Korea KN22, Class A; KN24
- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-99
- 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)

External disk storage expansion

The external disk storage expansion enclosures listed in the following table are available.

Table 18. External storage expansion enclosures

| Part number | Description | Maximum quantity supported per one M5025 |
|-------------|------------------------------------|--|
| 172701X | IBM System Storage® EXP3000 | 18 (9 per port) |
| 174712X | IBM System Storage EXP2512 Express | 18 (9 per port) |
| 174724X | IBM System Storage EXP2524 Express | 9 (9 per port) |

The RAID controllers listed in the following table are supported and connect to external expansion enclosures.

Table 19. RAID controllers for external storage expansion enclosures

| Part number | Feature code | Description | Maximum supported |
|-------------|--------------|---|-------------------|
| 46M0830 | 0094 | ServeRAID M5025 SAS/SATA Controller | 1 |
| 46M0930 | 5106 | ServeRAID M5000 Series Advance Feature Key* | 1 per one M5025 |
| 81Y4426 | A10C | ServeRAID M5000 Series Performance Accelerator Key* | 1 per one M5025 |

* Note: The Advanced Feature Key and Performance Accelerator Key cannot be used at the same time. Only one key can be installed onto the RAID controller.

The ServeRAID M5025 SAS/SATA Controller has the following specifications:

- Two Mini-SAS external connectors

- Supports RAID levels 0, 1, 5, 10, and 50
- Supports RAID 6 and 60 with the optional M5000 Advanced Feature Key
- Performance optimization for SSD drives with optional M5000 Series Performance Accelerator Key
- 6 Gbps throughput per port
- PCI Express 2.0 x8 host interface
- Based on the LSI SAS2108 6 Gbps ROC controller
- 512 MB of onboard cache
- Intelligent Li-Ion-based battery backup unit with up to 48 hours of data retention
- Supports connectivity to the EXP3000, EXP2512, and EXP2524 storage expansion enclosures

For more information about the M5025, see the *ServeRAID M5025 SAS/SATA Controller for IBM System x* Product Guide: <http://www.redbooks.ibm.com/abstracts/tips0739.html?Open>

The hard disk drives listed in the following table are supported inside the above-supported external expansion enclosures.

Table 20. Hard drive options for external expansion enclosures

| Part number | Description | Maximum quantity supported per one enclosure |
|---|---|--|
| EXP3000 Hot-Swap SATA 3.5" Hard Drives | | |
| 43W7630 | 1000 GB Dual Port Hot Swap SATA | 12 |
| 49Y1940 | IBM 2 TB 7200 Dual Port SATA 3.5" HS HDD | 12 |
| EXP3000 Hot-Swap SAS 3.5" Hard Drives | | |
| 44W2234 | IBM 300 GB 15K 6 Gbps SAS 3.5" Hot-Swap HDD | 12 |
| 44W2239 | IBM 450 GB 15K 6Gbps SAS 3.5" Hot-Swap HDD | 12 |
| 44W2244 | IBM 600 GB 15K 6Gbps SAS 3.5" Hot-Swap HDD | 12 |
| EXP2512 Hot-Swap SAS 3.5" Hard Drives | | |
| 49Y1899 | 300 GB 15,000 rpm 6 Gb SAS 3.5" HDD | 12 |
| 49Y1900 | 450 GB 15,000 rpm 6 Gb SAS 3.5" HDD | 12 |
| 49Y1901 | 600 GB 15,000 rpm 6 Gb SAS 3.5" HDD | 12 |
| 49Y1903 | 1 TB 7,200 rpm 6 Gb SAS NL 3.5" HDD | 12 |
| 49Y1902 | 2 TB 7,200 rpm 6 Gb SAS NL 3.5" HDD | 12 |
| EXP2524 Hot-Swap SAS 2.5" Hard Drives | | |
| 49Y1896 | 146 GB 15,000 rpm 6 Gb SAS 2.5" HDD | 24 |
| 49Y1895 | 300 GB 10,000 rpm 6 Gb SAS 2.5" HDD | 24 |
| 81Y9596 | 600 GB 10,000 rpm 6 Gb SAS 2.5" HDD | 24 |
| 49Y1898 | 500 GB 7,200 rpm 6 Gb SAS NL 2.5" HDD | 24 |

The external SAS cables listed in the following table are supported with external expansion enclosures and M5025 RAID controllers.

Table 21. External SAS cables for external storage expansion enclosures

| Part number | Description | Maximum quantity supported per enclosure* |
|-------------|-------------------|---|
| 39R6531 | IBM 3 m SAS Cable | 1 |
| 39R6529 | IBM 1 m SAS Cable | 1 |

* Note: The EXP3000 and EX2500 series can be chained with each other. In such a case, one cable is used to connect first EXP25xx or EXP3000 to the RAID controller, and every consecutive EXP unit is connected to the previous one by one cable.

External disk storage systems

The following table lists the external storage systems that are supported by x3550 M3 and can be ordered through System x sales channel. The server may support other IBM disk systems that are not listed in this table. Refer to IBM System Storage Interoperability Center for further information, <http://www.ibm.com/systems/support/storage/ssic>.

Table 22. External disk storage systems

| Part number | Description |
|-------------|--|
| 1746A2D | IBM System Storage DS3512 Express Dual Controller Storage System |
| 1746A2S | IBM System Storage DS3512 Express Single Controller Storage System |
| 1746A4D | IBM System Storage DS3524 Express Dual Controller Storage System |
| 1746A4S | IBM System Storage DS3524 Express Single Controller Storage System |
| 181494H | IBM System Storage DS3950 Model 94 |
| 181498H | IBM System Storage DS3950 Model 98 |
| 181492H | IBM System Storage EXP395 Expansion Unit |
| 1746A2E | IBM System Storage EXP3512 Express Storage™ Expansion Unit |
| 1746A4E | IBM System Storage EXP3524 Express Storage Expansion Unit |

For more information, see the list of IBM Redbooks Product Guides in the Storage Systems category: <http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=externalstorage>

External backup units

The server supports the external backup attachment options listed in the following table.

Table 23. External backup options

| Part number | Description |
|--|---|
| External tape expansion enclosures for internal tape drives | |
| 87651UX | 1U Tape Drive Enclosure |
| 8767HHX | Half High Tape Drive Enclosure |
| 87651NX | 1U Tape Drive Enclosure (with Nema 5-15P LineCord) |
| 8767HNX | Half High Tape Drive Enclosure (with Nema 5-15P LineCord) |
| Tape enclosure adapters (with cables) | |
| 44E8869 | USB Enclosure Adapter Kit |
| 40K2599 | SAS Enclosure Adapter Kit |
| Internal backup drives supported by external tape enclosures | |
| 46C5364 | IBM RDX Removable Hard Disk Storage System - Internal USB 160 GB Bundle |
| 46C5387 | IBM RDX Removable Hard Disk Storage System - Internal USB 320 GB Bundle |
| 46C5388 | IBM RDX Removable Hard Disk Storage System - Internal USB 500 GB Bundle |
| 46C5399 | IBM DDS Generation 5 USB Tape Drive |
| 39M5636 | IBM DDS Generation 6 USB Tape Drive |
| 43W8478 | IBM Half High LTO Gen 3 SAS Tape Drive |
| 44E8895 | IBM Half High LTO Gen 4 SAS Tape Drive |
| 49Y9898 | IBM Half High LTO Gen 5 Internal SAS Tape Drive |

| External backup units* | |
|------------------------|---|
| 362516X | IBM RDX Removable Hard Disk Storage System - External USB 160 GB Bundle |
| 362532X | IBM RDX Removable Hard Disk Storage System - External USB 320 GB Bundle |
| 362550X | IBM RDX Removable Hard Disk Storage System - External USB 500 GB Bundle |
| 3628L3X | IBM Half High LTO Gen 3 External SAS Tape Drive (with US line cord) |
| 3628L4X | IBM Half High LTO Gen 4 External SAS Tape Drive (with US line cord) |
| 3628L5X | IBM Half High LTO Gen 5 External SAS Tape Drive (with US line cord) |
| 3628N3X | IBM Half High LTO Gen 3 External SAS Tape Drive (without line cord) |
| 3628N4X | IBM Half High LTO Gen 4 External SAS Tape Drive (without line cord) |
| 3628N5X | IBM Half High LTO Gen 5 External SAS Tape Drive (without line cord) |
| 3580S3V | System Storage TS2230 Tape Drive Express Model H3V |
| 3580S4V | System Storage TS2240 Tape Drive Express Model H4V |
| 3580S5E | System Storage TS2250 Tape Drive Express Model H5S |
| 3580S5X | System Storage TS2350 Tape Drive Express Model S53 |
| 3572S4R | TS2900 Tape Library with LTO4 HH SAS drive & rack mount kit |
| 3572S5R | TS2900 Tape Library with LTO5 HH SAS drive & rack mount kit |
| 35732UL | TS3100 Tape Library Model L2U Driveless |
| 35734UL | TS3200 Tape Library Model L4U Driveless |
| 46X2682† | LTO Ultrium 5 Fibre Channel Drive |
| 46X2683† | LTO Ultrium 5 SAS Drive Sled |
| 46X2684† | LTO Ultrium 5 Half High Fibre Drive Sled |
| 46X2685† | LTO Ultrium 5 Half High SAS Drive Sled |
| 46X6912† | LTO Ultrium 4 Half High Fibre Channel Drive Sled |
| 46X7117† | LTO Ultrium 4 Half High SAS DriveV2 Sled |
| 46X7122† | LTO Ultrium 3 Half High SAS DriveV2 Sled |

* Note: The external tape drives listed can be ordered through System x sales channel. Server may support other IBM tape drives that are not listed in this table. Refer to IBM System Storage Interoperability Center for further information.

† Note: These part numbers are the tape drives options for 35732UL and 35734UL.

For more information, see the list of IBM Redbooks Product Guides in the Backup units category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=tape>

Top-of-rack Ethernet switches

The server supports the top-of-rack Ethernet switches from IBM System Networking listed in the following table.

Table 24. IBM System Networking - Top-of-rack switches

| Part number | Description |
|---|--|
| IBM System Networking - 1 Gb top-of-rack switches | |
| 0446013 | IBM System Networking RackSwitch G8000R |
| 7309CFC | IBM System Networking RackSwitch G8000F |
| 7309CD8 | IBM System Networking RackSwitch G8000DC |
| 7309G52 | IBM System Networking RackSwitch G8052R |
| 730952F | IBM System Networking RackSwitch G8052F |
| 427348E | IBM Ethernet Switch J48E |
| 6630010 | Juniper Networks EX2200 24 Port |
| 6630011 | Juniper Networks EX2200 24 Port with PoE |
| 6630012 | Juniper Networks EX2200 48 Port |
| 6630013 | Juniper Networks EX2200 48 Port with PoE |
| IBM System Networking - 10 Gb top-of-rack switches | |
| 7309DRX | IBM System Networking RackSwitch G8264CS (Rear to Front) |
| 7309DFX | IBM System Networking RackSwitch G8264CS (Front to Rear) |
| 7309BD5 | IBM System Networking RackSwitch G8124DC |
| 7309BR6 | IBM System Networking RackSwitch G8124ER |
| 7309BF7 | IBM System Networking RackSwitch G8124EF |
| 7309G64 | IBM System Networking RackSwitch G8264R |
| 730964F | IBM System Networking RackSwitch G8264F |
| 7309CR9 | IBM System Networking RackSwitch G8264TR |
| 7309CF9 | IBM System Networking RackSwitch G8264TF |
| 0719410 | Juniper Networks EX4500 - Front to Back Airflow |
| 0719420 | Juniper Networks EX4500 - Back to Front Airflow |
| IBM System Networking - 40 Gb top-of-rack switches | |
| 8036BRX | IBM System Networking RackSwitch G8332 (Rear to Front) |
| 8036BFX | IBM System Networking RackSwitch G8332 (Front to Rear) |
| 8036ARX | IBM System Networking RackSwitch G8316R |
| 8036AFX | IBM System Networking RackSwitch G8316F |

For more information, see the list of IBM Redbooks Product Guides in the Top-of-rack switches category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=tor>

Uninterruptible power supply units

The server supports attachments to the uninterruptible power supply (UPS) units listed in the following table.

Table 25. Uninterruptible power supply units

| Part number | Description |
|------------------|--|
| Rack-mounted UPS | |
| 21304RX | IBM UPS 10000XHV |
| 53951AX | IBM 1500VA LCD 2U Rack UPS (100V/120V) |
| 53951KX | IBM 1500VA LCD 2U Rack UPS (230V) |
| 53952AX | IBM 2200VA LCD 2U Rack UPS (100V/120V) |
| 53952KX | IBM 2200VA LCD 2U Rack UPS (230V) |
| 53953AX | IBM 3000VA LCD 3U Rack UPS (100 V/120 V) |
| 53953JX | IBM 3000VA LCD 3U Rack UPS (200 V/208 V) |
| 53956AX | IBM 6000VA LCD 4U Rack UPS (200 V/208 V) |
| 53956KX | IBM 6000VA LCD 4U Rack UPS (230 V) |

For more information, see the list of IBM Redbooks Product Guides in the Power infrastructure category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=power>

Power distribution units

The server supports attachments to the power distribution units (PDUs) listed in the following table.

Table 26. Power distribution units

| Part number | Description |
|------------------------------------|---|
| Switched and Monitored PDUs | |
| 46M4002 | IBM 1U 9 C19/3 C13 Active Energy Manager DPI® PDU |
| 46M4003 | IBM 1U 9 C19/3 C13 Active Energy Manager 60A 3 Phase PDU |
| 46M4004 | IBM 1U 12 C13 Active Energy Manager DPI PDU |
| 46M4005 | IBM 1U 12 C13 Active Energy Manager 60A 3 Phase PDU |
| 46M4167 | IBM 1U 9 C19/3 C13 Switched and Monitored 30A 3 Phase PDU |
| 46M4116 | IBM 0U 24 C13 Switched and Monitored 30A PDU |
| 46M4119 | IBM 0U 24 C13 Switched and Monitored 32A PDU |
| 46M4134 | IBM 0U 12 C19/12 C13 Switched and Monitored 50A 3 Phase PDU |
| 46M4137 | IBM 0U 12 C19/12 C13 Switched and Monitored 32A 3 Phase PDU |
| Enterprise PDUs | |
| 71762MX | IBM Ultra Density Enterprise PDU C19 PDU+ (WW) |
| 71762NX | IBM Ultra Density Enterprise PDU C19 PDU (WW) |
| 71763MU | IBM Ultra Density Enterprise PDU C19 3 phase 60A PDU+ (NA) |
| 71763NU | IBM Ultra Density Enterprise PDU C19 3 phase 60A PDU (NA) |
| 39M2816 | IBM DPI C13 Enterprise PDU without linecord |
| 39Y8923 | DPI 60A Three Phase C19 Enterprise PDU with IEC309 3P+G (208 V) fixed line cord |
| 39Y8941 | DPI Single Phase C13 Enterprise PDU without line cord |
| 39Y8948 | DPI Single Phase C19 Enterprise PDU without line cord |
| Front-End PDUs | |
| 39Y8934 | DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd connector |
| 39Y8935 | DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd connector |
| 39Y8938 | 30amp/125V Front-end PDU with NEMA L5-30P connector |
| 39Y8939 | 30amp/250V Front-end PDU with NEMA L6-30P connector |
| 39Y8940 | 60amp/250V Front-end PDU with IEC 309 60A 2P+N+Gnd connector |

| Universal PDUs | |
|----------------|---|
| 39Y8951 | DPI Universal Rack PDU w/ US LV and HV line cords |
| 39Y8952 | DPI Universal Rack PDU w/ CEE7-VII Europe LC |
| 39Y8953 | DPI Universal Rack PDU w/ Denmark LC |
| 39Y8954 | DPI Universal Rack PDU w/ Israel LC |
| 39Y8955 | DPI Universal Rack PDU w/Italy LC |
| 39Y8956 | DPI Universal Rack PDU w/South Africa LC |
| 39Y8957 | DPI Universal Rack PDU w/UK LC |
| 39Y8958 | DPI Universal Rack PDU with AS/NZ LC |
| 39Y8959 | DPI Universal Rack PDU w/China LC |
| 39Y8962 | DPI Universal Rack PDU (Argentina) |
| 39Y8960 | DPI Universal Rack PDU (Brazil) |
| 39Y8961 | DPI Universal Rack PDU (India) |
| 0U Basic PDUs | |
| 46M4122 | IBM 0U 24 C13 16A 3 Phase PDU |
| 46M4125 | IBM 0U 24 C13 30A 3 Phase PDU |
| 46M4128 | IBM 0U 24 C13 30A PDU |
| 46M4131 | IBM 0U 24 C13 32A PDU |
| 46M4140 | IBM 0U 12 C19/12 C13 60A 3 Phase PDU |
| 46M4143 | IBM 0U 12 C19/12 C13 32A 3 Phase PDU |

For more information, see the list of IBM Redbooks Product Guides in the Power infrastructure category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=power>

Racks cabinets

The server supports the rack cabinets listed in the following table.

Table 27. Rack cabinets

| Part number | Description |
|-------------|---|
| 201886X | IBM 11U Office Enablement Kit |
| 93072PX | IBM 25U Static S2 Standard Rack |
| 93072RX | IBM 25U Standard Rack |
| 14102RX | IBM 25RU standard rack |
| 14104RX | IBM 42U S2 standard rack |
| 93074RX | IBM 42U Standard Rack |
| 93074XX | IBM 42U Standard Rack Extension |
| 93084EX | IBM 42U Enterprise Expansion Rack |
| 93084PX | IBM 42U Enterprise Rack |
| 93604EX | IBM 42U 1200 mm Deep Dynamic Expansion Rack |
| 93604PX | IBM 42U 1200 mm Deep Dynamic Rack |
| 93614EX | IBM 42U 1200 mm Deep Static Expansion Rack |
| 93614PX | IBM 42U 1200 mm Deep Static Rack |
| 93624EX | IBM 47U 1200 mm Deep Static Expansion Rack |
| 93624PX | IBM 47U 1200 mm Deep Static Rack |
| 99564RX | IBM S2 42U Dynamic Standard Rack |
| 99564XX | IBM S2 42U Dynamic Standard Expansion Rack |

For more information, see the list of IBM Redbooks Product Guides in the Rack cabinets and options category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=rack>

Rack options

The server supports the rack console switches and monitor kits listed in the following table.

Table 28. Rack options

| Part number | Feature code | Description |
|---------------------------------|-----------------|---|
| Monitor kits and keyboard trays | | |
| 17238BX | 1723HC1 fc A3EK | IBM 1U 18.5" Standard Console |
| 17238EX | 1723HC1 fc A3EL | IBM 1U 18.5" Enhanced Media Console |
| 172317X | 1723HC1 fc 0051 | 1U 17in Flat Panel Console Kit |
| 172319X | 1723HC1 fc 0052 | 1U 19in Flat Panel Console Kit |
| Console switches | | |
| 3858D3X | 3858HC1 fc A4X1 | Avocent Universal Management Gateway 6000 for IBM |
| 1754D2X | 1754HC2 fc 6695 | IBM Global 4x2x32 Console Manager (GCM32) |
| 1754D1X | 1754HC1 fc 6694 | IBM Global 2x2x16 Console Manager (GCM16) |
| 1754A2X | 1754HC4 fc 0726 | IBM Local 2x16 Console Manager (LCM16) |
| 1754A1X | 1754HC3 fc 0725 | IBM Local 1x8 Console Manager (LCM8) |
| Console cables | | |
| 00AK142 | A4X4 | UM KVM Module VGA+SD Dual RJ45 |
| 43V6147 | 3757 | IBM Single Cable USB Conversion Option (UCO) |
| 39M2895 | 3756 | IBM USB Conversion Option (4 Pack UCO) |
| 39M2897 | 3754 | IBM Long KVM Conversion Option (4 Pack Long KCO) |
| 46M5383 | 5341 | IBM Virtual Media Conversion Option Gen2 (VCO2) |
| 46M5382 | 5340 | IBM Serial Conversion Option (SCO) |

For more information, see the list of IBM Redbooks Product Guides in the Rack cabinets and options category:
<http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=rack>

IBM Global Financing

IBM Global Financing can help you obtain the IT solution you need while preserving funding for other strategic investments and optimizing cash flow. Our Fair Market Value (FMV) lease helps ensure that you have the latest IBM technology and with our mid-lease upgrade capability, you can increase the capacity of the system with little to no change in monthly payments. At the end of the lease, take advantage of our flexible end-of-lease options to fit your changing business needs. IBM Global Financing has the breadth and depth of offerings, longevity, proven success and global reach to help you develop a robust financing and asset management strategy that provides you the opportunity to leverage new technologies and turn your ambitious vision into a tangible solution.

Here are some other reasons why working with us makes solid financial sense:

- Expand your purchasing power—Affordable monthly payments allow you to change the technology acquisition discussion from “what can I afford right now” to “what solution is really right for my business.” IBM Global Financing allows you to expand your purchase power to get you the right solution.
- Accelerate your project’s cash flow break-even point—Acquire your IBM technology today and begin to realize its benefits now. An FMV lease can help you get the solution you need now, with low monthly payments that better align upfront costs with the anticipated return on investment from the technology.
- Easy to acquire with affordable rates—We offer one-stop shopping for a total IT solution, so you can acquire IBM hardware, software, services and the financing you need—from one IT provider.

Plus, we provide simple, easy-to-understand contracts and quick approvals. As the world’s largest IT financing provider, with an asset base of US\$35.8 billion and over 125,000 customers, IBM Global Financing offers highly competitive rates that promote low total cost of ownership and low monthly payments.

IBM Global Financing operates in more than 50 countries. Go to <http://ibm.com/financing> for financing options in your country and to contact a local financing specialist.

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 clients. Rates and availability subject to client’s credit rating, financing terms, offering type, equipment and product type and options, and may vary by country. Non-hardware items must be one-time, non-recurring charges and are financed by means of loans. Other restrictions may apply. Rates and offerings are subject to change, extension or withdrawal without notice and may not be available in all countries. Please contact your local IBM Global Financing representative for additional detail.

Related publications and links

For more information see the following documents:

- IBM System x3550 M3 product page
<http://www.ibm.com/systems/x/hardware/rack/x3550m3/index.html>
- *Installation and User's Guide - IBM System x3550 M3 (Type 4254, 7944)*
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5083597>
- *Problem Determination and Service Guide - IBM System x3550 M3 (Type 4254, 7944)*
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5083598>
- ServerProven hardware compatibility page for the x3550 M3
<http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/xseries/7944.html>
- Product Guides for IBM System x options
<http://www.redbooks.ibm.com/portals/systemx?Open&page=atagance>
- *IBM System x® Configuration and Options Guide*
<http://www.ibm.com/systems/xbc/cog/>
- xREF: IBM x86 Server Reference
<http://www.redbooks.ibm.com/xref>
- IBM System x Support Portal
<http://ibm.com/support/entry/portal/>
http://ibm.com/support/entry/portal/Downloads/Hardware/Systems/System_x/System_x3550_M3

Related product families

Product families related to this document are the following:

- [2-Socket Rack Servers](#)

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service. Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.
1009 Think Place - Building One
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk. Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

© Copyright Lenovo 2019. All rights reserved.

This document, TIPS0804, was created or updated on March 14, 2014.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:
<http://lenovopress.com/TIPS0804>
- Send your comments in an e-mail to:
comments@lenovopress.com

This document is available online at <http://lenovopress.com/TIPS0804>.

Trademarks

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo in the United States, other countries, or both. A current list of Lenovo trademarks is available on the Web at <https://www.lenovo.com/us/en/legal/copytrade/>.

The following terms are trademarks of Lenovo in the United States, other countries, or both:

BladeCenter®

Lenovo®

RackSwitch

ServeRAID

ServerGuide

ServerProven®

System x®

The following terms are trademarks of other companies:

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

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

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

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