System x3750 M4 (8722)
Product Guide (withdrawn product)

The System x3750 M4 is a 4-socket server featuring a streamlined design, optimized for price and performance, with best-in-class flexibility and expandability. Models of the x3750 M4, machine type 8722, are powered with Intel Xeon E5-4600 processors, up to 8 cores each, for an entry-level 4-socket solution. The x3750 M4 provides maximum storage density, with flexible PCI and 10 Gb Ethernet networking options in a 2U form factor.

Suggested uses: High performance computing (HPC), workloads with floating-point computations, and small to medium databases requiring fast I/O; applications that require 4-socket performance without needing the scalability that the eX5 systems provide.

Figure 1. The System x3750 M4

Did you know?

The x3750 M4 has outstanding memory performance that is achieved by supporting three-RDIMM-per-channel configurations at speeds up to 25% faster than the Intel specification, while still maintaining world-class reliability. LR-DIMM speeds are also 25% beyond the Intel specification for 1.35 V DIMMs, and this speed improve not only performance, but reduces overall system power at the same time.

The x3750 M4 offers a flexible, scalable design and simple upgrade path to 16 hard-disk drives (HDDs) or 32 eXFlash solid-state drives (SSDs), with up to eight PCIe Gen 3 slots and up to 1.5 TB of memory. The flexible embedded Ethernet solution provides two standard Gigabit Ethernet ports onboard, along with a dedicated 10 GbE slot that allows for a choice of either two copper or two fiber optic connections. Comprehensive systems management tools with the next-generation Integrated Management Module II (IMM2) make it easy to deploy, integrate, service, and manage.

Key features

The System x3750 M4 blends outstanding flexibility and expandability. The x3750 M4 2+2 socket design enables pay-as-you-grow processing with the new Intel Xeon E5-4600 series processors and memory scalability to help lower cost and manage growth. The 5+3 PCIe socket design allows you to pay for PCIe capabilities as needed.

With the capability to support up to 48 DIMMs, four sockets, mix and match internal storage with up to 16 HDDs or 32 eXFlash SSD drives, 6 hot-swap dual rotor fans, two power supplies, and integrated 10 GbE networking with options for fiber or copper, the x3750 M4 provides unmatched features and capabilities in a dense 2U design.

Scalability and performance

The x3750 M4 offers numerous features to boost performance, improve scalability, and reduce costs:

- The Intel Xeon processor E5-4600 product family improves productivity by offering superior system performance with 8-core processors and up to 2.9 GHz core speeds, up to 20 MB of L3 cache, and up to two 8 GTps QPI interconnect links.
- The x3750 M4 2+2 processor socket design enables pay-as-you-grow processing with the Intel Xeon E5-4600 series processors and memory scalability to help lower cost and manage growth.
- Up to four processors, 32 cores, and 64 threads maximize the concurrent execution of multithreaded applications.
- Intelligent and adaptive system performance with Intel Turbo Boost Technology 2.0 allows processor cores to run at maximum speeds during peak workloads by temporarily going beyond processor TDP.
- Intel Hyper-Threading Technology boosts performance for multithreaded applications by enabling simultaneous multithreading within each processor core, up to two threads per core.
- Intel Virtualization Technology integrates hardware-level virtualization hooks that allow operating system vendors to better use the hardware for virtualization workloads.
- Intel Advanced Vector Extensions (AVX) improve floating-point performance for compute-intensive technical and scientific applications compared to Intel Xeon 5600 series processors.
- The outstanding RDIMM memory performance of the x3750 M4 is achieved by supporting three DIMMs per channel configurations at speeds up to 25% faster than the Intel specification.
- 48 Load Reduced DIMMs (LRDIMMs) of 1333 MHz DDR3 ECC memory provide speed, high availability, and a memory capacity of up to 1.5 TB.
- LR-DIMM speeds implemented in the x3750 M4 are also 25% beyond the Intel specification at 1.35 V for one, two, and three DIMM per channel configurations. This configuration improves performance and reduces overall system power at the same time, all while maintaining reliability
- The use of eXFlash solid-state drives (SSDs) instead of, or along with, traditional spinning drives (HDDs), can improve I/O performance. An SSD can support up to 100 times more I/O operations per second (IOPS) than a typical HDD.
- Up to 16 HDDs or 32 eXFlash SSDs, together with an optical drive at the same time, provide a flexible and scalable all-in-one platform to meet your increasing demands.
- The server offers a SAS switch backplane option (88Y7421) to allow up to 16 SFF devices to attach to a single controller.
- The server has two integrated Gigabit Ethernet ports and two optional 10 Gb Ethernet ports that do not consume PCIe slots.
- The 5+3 PCI Express socket design of the server allows you to pay for PCIe capabilities as needed.
- The server offers PCI Express 3.0 I/O expansion capabilities that improve the theoretical maximum bandwidth by almost 100% (8 GTps per link using 128b/130b encoding) compared to the previous generation of PCI Express 2.0 (5 GTps per link using 8b/10b encoding).

- With Intel Integrated I/O Technology, the PCI Express 3.0 controller is integrated into the Intel Xeon processor E5 family. This integration reduces I/O latency and increases overall system performance.

Availability and serviceability

The x3750 M4 provides many features to simplify serviceability and increase system uptime:

- The server offers Chipkill, memory mirroring and memory rank sparing for redundancy in the event of a memory failure.
- The server provides restart recovery for any failed processor. In the event of a failure of processor 1, the server connects the southbridge to processor 2 for reboot.
- Tool-less cover removal provides easy access to upgrades and serviceable parts, such as the processor, memory, and adapter cards.
- The server offers hot-swap drives, supporting RAID redundancy for data protection and greater system uptime.
- The server has up to two redundant hot-swap power supplies and six hot-swap dual-rotor N+N redundant fans to provide availability for business-critical applications.
- The power source independent light path diagnostics panel and individual light path LEDs lead the technician to failed (or failing) components, which simplifies servicing, speeds up problem resolution, and helps improve system availability.
- The x3750 M4 provides error checking and/or Predictive Failure Analysis (PFA) on the following components. Alerts are generated in advance of a possible failure, therefore increasing uptime.
    - Memory ECC correction (Chipkill technology)
    - Microprocessor built-in self test (BIST) and internal error checking
    - PCIe Bus parity checking
    - SAS Bus Parity
    - HDD and SSD drive CRC checking
    - Diskette CRC checking
    - USB CRC checking
    - Over temperature detection
    - Over/under voltage detection
    - Power supply error checking
    - Fan failure detection
    - Serial interface parity, overrun, and frame checking
- Solid-state drives (SSDs) offer more reliability than traditional mechanical HDDs for greater uptime.
- The built-in Integrated Management Module Version II (IMM2) continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Built-in diagnostics, using Dynamic Systems Analysis (DSA) Preboot, speed up troubleshooting tasks to reduce service time.
- Three-year customer-replaceable unit and on-site limited warranty, 9 x 5 next business day. Optional service upgrades are available.

Manageability and security

Powerful systems management features simplify local and remote management of the x3750 M4:

- The server includes an Integrated Management Module II (IMM2) to monitor server availability and perform remote management. Remote presence support is standard.
- The integrated industry-standard Unified Extensible Firmware Interface (UEFI) enables improved setup, configuration, and updates, and simplifies error handling.
- Integrated Trusted Platform Module (TPM) 1.2 support enables advanced cryptographic functionality, such as digital signatures and remote attestation.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.

- IBM Systems Director is included for proactive systems management. It offers comprehensive systems management tools that increases uptime, reduces costs, and improves productivity through advanced server management capabilities.
- Intel Execute Disable Bit functionality can prevent certain classes of malicious buffer overflow attacks when combined with a supported operating system.
- Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks, allowing an application to run in its own isolated space, protected from all other software running on a system.

Energy efficiency

The x3750 M4 offers the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to a green environment:

- Energy-efficient planar components help lower operational costs.
- Highly efficient 750 W DC, 900 W AC, and 1400 W AC power supplies. 80 PLUS Platinum certification at high voltage AC.
- The Intel Xeon processor E5-4600 product family offers better performance over the previous generation while fitting into the same thermal design power (TDP) limits.
- Intel Intelligent Power Capability powers individual processor elements on and off as needed, to reduce power draw.
- Low-voltage Intel Xeon processors draw less energy to satisfy the demands of power and thermally constrained data centers and telecommunication environments.
- Low-voltage 1.35 V DDR3 memory RDIMMs consume 19% less energy compared to 1.5 V DDR3 RDIMMs.
- Solid-state drives (SSDs) consume as much as 80% less power than traditional spinning 2.5-inch HDDs.
- The server uses hexagonal ventilation holes, which is a part of Calibrated Vectored Cooling™ technology. Hexagonal holes can be grouped more densely than round holes, providing more efficient airflow through the system.
- IBM Systems Director Active Energy Manager™ provides advanced data center power notification and management to help achieve lower heat output and reduced cooling needs.

Locations of key components and connectors

The following figure shows the front of the server.

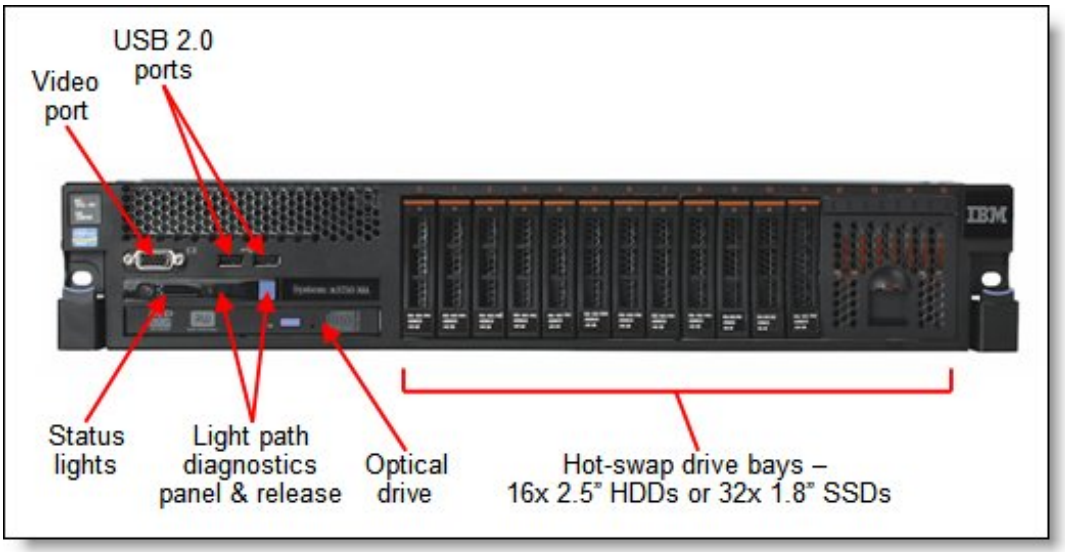

Figure 2. Front view of the System x3750 M4

The following figure shows the rear of the server.

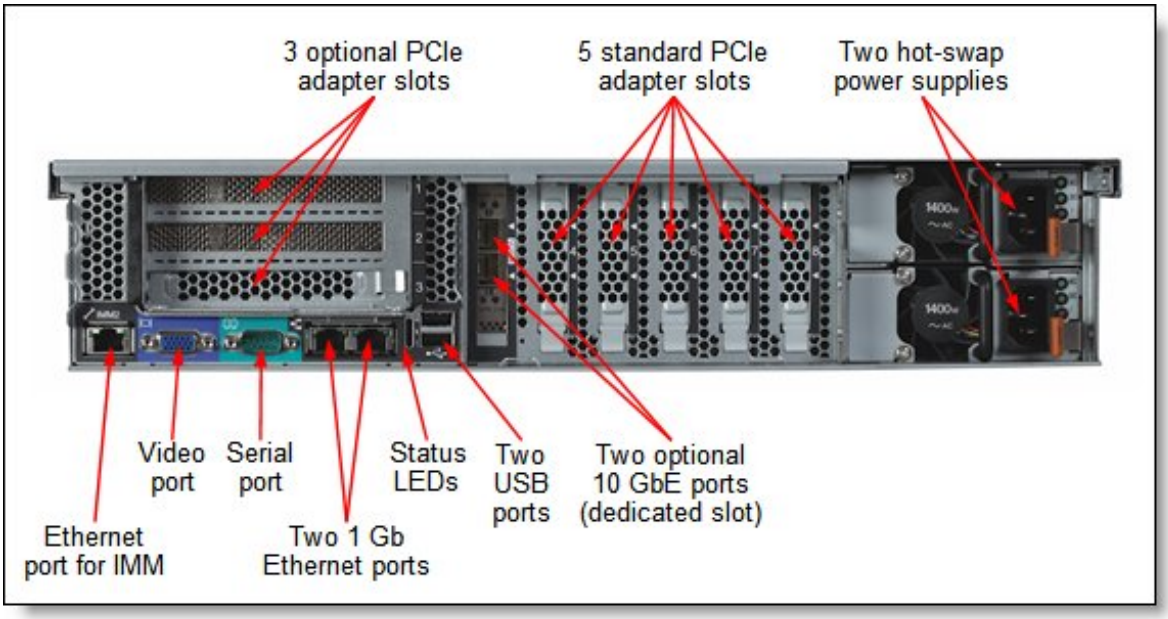

Figure 3. Rear view of the System x3750 M4

The following figure shows the locations of key components inside the server.

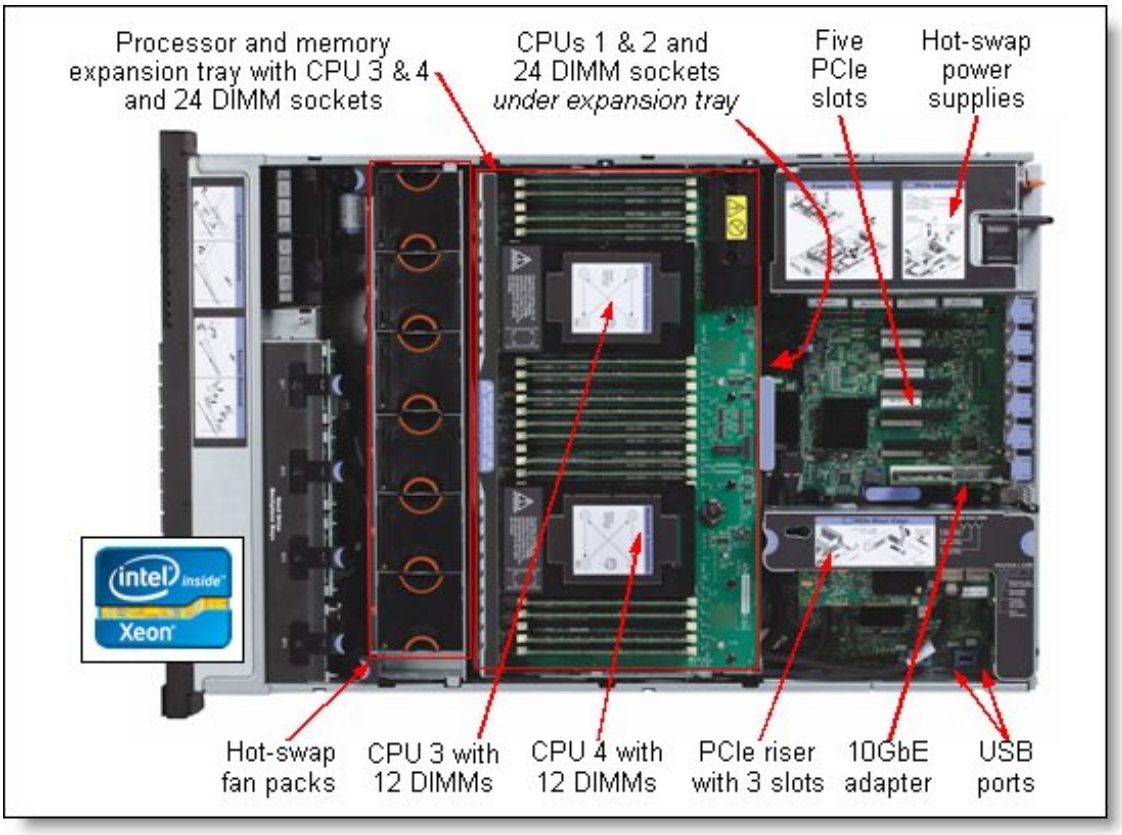

Figure 4. Inside view of the System x3750 M4

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine type	8722
Form factor	2U rack.
Processor	Up to four Intel Xeon processor E5-4600 product family processors, each with eight cores (up to 2.7 GHz), six cores (up to 2.9 GHz), or four cores (up to 2.0 GHz). Two processor sockets on the system board and two processors on the processor and memory expansion tray (standard on most models). Two QPI links up to 8.0 GTps each. Up to 1600 MHz memory speed. Up to 20 MB L3 cache per processor.
Chipset	Intel C600 series.
Memory	Up to 48 DIMM sockets (12 DIMMs per processor). RDIMMs and LRDIMMs (Load Reduced DIMMs) are supported, but memory types cannot be intermixed. The memory speed is up to 1600 MHz. There are 24 DIMM sockets on the system board. There are an additional 24 DIMM sockets on the processor and memory expansion tray (standard on most models).
Memory maximums	With RDIMMs: Up to 768 GB with 48x 16 GB RDIMMs and four processors, With LRDIMMs: Up to 1.5 TB with 48x 32 GB LRDIMMs and four processors.
Memory protection	ECC, Chipkill (for x4-based memory DIMMs), memory mirroring, and memory sparing.

Components	Specification
Disk drive bays	Up to 16 2.5-inch hot-swap SAS/SATA bays or up to 32 1.8-inch hot-swap solid-state drive (SSD) eXFlash bays. Drive bays can be in any combination of four 2.5-inch drives or eight 1.8-inch eXFlash SSD drives.
Maximum internal storage	Up to 25.6 TB with 1.6 TB 2.5” SSDs, up to 19.2 TB with 1.2 TB 2.5" SAS HDDs, up to 16 TB with 1 TB 2.5" NL SAS/SATA HDDs. Intermix of SAS/SATA supported.
RAID support	RAID 0, 1, 10 with integrated ServeRAID M5110e with LSI SAS2208 6 Gbps RAID on Chip (ROC) controller. Optional upgrades to RAID 5 and 50 are available (zero-cache is 512 MB and battery-backed cache is 512 MB or 1 GB flash-backed cache). There is an optional upgrade to RAID 6 and 60 for a 512 MB or 1 GB cache.
Optical drive bays	There is one bay for an optional Multiburner drive.
Tape drive bays	None internal. Use a supported external tape drive.
Network interfaces	Emulex BE3 controller with two standard integrated Gigabit Ethernet 1000BASE-T ports (RJ-45) and two optional 10 Gb ports through an adapter in a dedicated slot. The 10 GbE options are 10Base-T dual port (copper) or SFP+ dual port (fiber).
PCI Expansion slots	Up to eight slots, five on the system board, three on an optional riser card. The slots are as follows: • Slot 1: PCIe 3.0 x8; full-height, half-length (optional with riser card, requires processor 2) • Slot 2: PCIe 3.0 x8; full-height, half-length (optional with riser card, requires processor 2) • Slot 3: PCIe 3.0 x8; full-height, half-length (optional with riser card, requires processor 2) • Slot 4: PCIe 3.0 x8; low profile (requires processor 2) • Slot 5: PCIe 3.0 x8; low profile (requires processor 2) • Slot 6: PCIe 3.0 x8; low profile • Slot 7: PCIe 3.0 x8; low profile • Slot 8: PCIe 3.0 x8; low profile Slots 1, 2, and 3 are physically x16 slots.
Ports	Front: Two USB 2.0 and one DB-15 video on front. Rear: Two USB 2.0, one DB-15 video, one DB-9 serial, one RJ-45 systems management ports, two RJ-45 1 GbE network ports, two optional RJ-45 or SFP+ 10 GbE network ports. Internal: Two internal USB ports (for the embedded hypervisor).
Cooling	Calibrated Vectored Cooling with up to six N+N redundant hot swap fans (all six standard); each fan has two rotors.
Power supply	Up to two hot-swap redundant 1400 W AC power supplies (80 PLUS Platinum certification). 900 W AC and 750W DC power supplies also available through CTO or Special Bid. A second power supply requires that the processor expansion tray (88Y7365) or the power interposer card (88Y7367) be installed.
Video	Matrox G200eR2 with 16 MB memory integrated into the IMM2. Maximum resolution is 1600x1200 at 75 Hz with 16 M colors.
Hot-swap parts	Hard drives, power supplies, and fans.
Systems management	UEFI, Integrated Management Module II (IMM2), Predictive Failure Analysis, Light Path Diagnostics, Automatic Server Restart, IBM Systems Director and Active Energy Manager, and the ServerGuide. Advanced Upgrade software feature for remote presence are standard with the x3750 M4.
Security features	Power-on password, administrator's password, Trusted Platform Module (TPM).

Components	Specification
Operating systems supported	Microsoft Windows Server 2008 R2 and 2008, Red Hat Enterprise Linux 5 and 6, SUSE Linux Enterprise Server 10 and 11, VMware ESX 4.1 and VMware ESXi 4.1 embedded hypervisor, and VMware vSphere 5.
Limited warranty	Three-year customer-replaceable unit and on-site limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through warranty offerings: Four-hour or two-hour response time, eight-hour fix time, one-year or two-year warranty extension, remote technical support for hardware and some Lenovo and third-party applications.
Dimensions	Height: 86 mm (3.4 in.), width: 445 mm (17.5 in.), depth: 746 mm (29.4 in.)
Weight	Minimum configuration: 25 kg (55 lb.), maximum: 30 kg (65 lb.)

The x3750 M4 servers are shipped with the following items:

- Statement of Limited Warranty
- Important Notices
- Rack Installation Instructions
- Documentation CD that contains the *Installation and User's Guide*
- System x® Gen-III Slides Kit
- System x Gen-III Cable Management Arm (CMA)
- 2.8 m (9.2 ft.) 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.

Table 2. Standard models

Model	Intel Xeon processor† (four maximum)*	Memory	RAID controller	Hot-swap disk bays	Disks	PCIe	GbE	Power supply
Models announced May 2012								
8722-A1x	2x E5-4617 6C 2.9 GHz 15 MB 1600 MHz 130W	2x 8 GB RDIMM 1600 MHz	M5110e	4x 2.5" 16 max	Open	5 / 8	2	1x 1400W
8722-A2x	1x E5-4603 4C 2.0 GHz 10 MB 1066 MHz 95W*	1x 8 GB RDIMM 1333 MHz	M5110e	Open	Open	5 / 8	2	1x 1400W
8722-A3x	2x E5-4607 6C 2.2 GHz 12 MB 1066 MHz 95W	2x 8 GB RDIMM 1333 MHz	M5110e	4x 2.5" 16 max	Open	5 / 8	2	1x 1400W
8722-B1x	2x E5-4610 6C 2.4 GHz 15 MB 1333 MHz 95W	2x 8 GB RDIMM 1333 MHz	M5110e	4x 2.5" 16 max	Open	5 / 8	2	1x 1400W
8722-B2x	2x E5-4620 8C 2.2 GHz 16 MB 1333 MHz 95W	2x 8 GB RDIMM 1333 MHz	M5110e	8x 1.8" 32 max	Open	8 / 8	2	1x 1400W
8722-C1x	2x E5-4640 8C 2.4 GHz 20 MB 1600 MHz 95W	2x 8 GB RDIMM 1333 MHz	M5110e (1 GB,F,R5)‡	4x 2.5" 16 max	Open	8 / 8	2	1x 1400W
8722-C2x	2x E5-4650 8C 2.7 GHz 20 MB 1600 MHz 130W	2x 8 GB RDIMM 1333 MHz	M5110e (1 GB,F,R5)‡	4x 2.5" 16 max	Open	5 / 8	2	1x 1400W
8722-D1x	4x E5-4610 6C 2.4 GHz 15 MB 1333 MHz 95W	24x 8 GB RDIMM 1333 MHz	M5110e + 1xM5110 (512,B,R5,SSD)§	16x 1.8" 32 max	16x 200G SSD	8 / 8	2	2x 1400W
8722-D2x	4x E5-4650 8C 2.7 GHz 20 MB 1600 MHz 130W	24x 16GB LRDIMM 1333 MHz	M5110e + 3xM5110 (512,B,R5,SSD)§	32x 1.8" 32 max	32x 200G SSD	8 / 8	2	2x 1400W

† Processor detail: Processor quantity and model, cores, core speed, L3 cache, memory speed, and power consumption.
* All models except for 8722-A2x include the processor and memory expansion tray containing sockets for processors 3 and 4 and 24 DIMMs. For model A2x, order part number 88Y7365.
‡ **Models C1x** and **C2x** include the 1 GB Flash/RAID 5 Upgrade (part number 81Y4559) which is a 1 GB flash-backed cache with support for RAID 5.
§ **Model D1x** has two RAID controllers, **D2x** has four RAID controllers total. **D1x and D2x** include the 512 MB Cache/RAID 5 Upgrade (81Y4484), plus the Battery Kit (81Y4508), plus the SSD Performance Key (90Y4273) for each controller.

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

Processor options

The x3750 M4 supports the processor options listed in the following table. The server supports up to four processors. Two processors are installed in sockets on the system board. Processors 3 and 4 are installed on the processor and memory expansion tray. Most models (with the exception of A2x, as listed in Table 2) have the expansion tray installed as standard. For model A2x, order part number 88Y7365 for the processor and memory expansion tray.

The following processor quantities are supported:

- One processor, installed in socket 1
- Two processors, installed in sockets 1 and 2
- Four processors, installed in all four sockets

The following table also shows which server models have each processor standard. If there is no corresponding *where-used* model for a particular processor, this processor is only available through CTO.

Table 3. Processor options

Part number	Description	Standard models where used
88Y7365	System x3750 M4 processor and memory expansion tray	All except A2x
88Y7446	Intel Xeon E5-4603 4C 2.0 GHz 10 MB 1066 MHz 95 W	A2x
88Y7342	Intel Xeon E5-4607 6C 2.2 GHz 12 MB 1066 MHz 95 W	A3x
88Y7336	Intel Xeon E5-4610 6C 2.4 GHz 15 MB 1333 MHz 95 W	B1x and D1x
88Y7354	Intel Xeon E5-4617 6C 2.9 GHz 15 MB 1600 MHz 130 W	A1x
88Y7330	Intel Xeon E5-4620 8C 2.2 GHz 16 MB 1333 MHz 95 W	B2x
88Y7348	Intel Xeon E5-4640 8C 2.4 GHz 20 MB 1600 MHz 95 W	C1x
88Y7324	Intel Xeon E5-4650 8C 2.7 GHz 20 MB 1600 MHz 130 W	C2x and D2x
88Y7458	Intel Xeon E5-4650L 8C 2.6 GHz 20 MB 1600 MHz 115 W	-

Memory options

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

The System x3750 M4 supports DDR3 memory. The server supports up to 48 DIMMs when four processors are installed, with 12 DIMMs for each processor. 24 DIMM sockets (for processors 1 and 2) are located on the system board. The remaining DIMM sockets (for processors 3 and 4) are located on the processor and memory expansion tray. Each processor has four memory channels, and there are three DIMMs per channel.

The x3750 M4 memory system has been carefully tuned so that the server supports higher memory frequencies than the Intel processor specification. You can, for example, use low-voltage DIMMs but still operate them at the rated speed.

The following table lists the memory options that are available for the x3750 M4 server.

Table 4. Memory options

Part number	Feature code	Description	Maximum supported	Models where used
RDIMMs				
49Y1406	8941	4 GB (1x 4 GB, 1Rx4, 1.35 V) PC3L-10600 CL9 ECC DDR3 1333 MHz LP RDIMM	48 (12 per CPU)	-
49Y1559	A28Z	4 GB (1x 4 GB, 1Rx4, 1.5 V) PC3-12800 CL11 ECC DDR3 1600 MHz LP RDIMM	48 (12 per CPU)	-
49Y1397	8923	8 GB (1x 8 GB, 2Rx4, 1.35 V) PC3L-10600 CL9 ECC DDR3 1333 MHz LP RDIMM	48 (12 per CPU)	All other models
90Y3109	A292	8 GB (1x 8 GB, 2Rx4, 1.5 V) PC3-12800 CL11 ECC DDR3 1600 MHz LP RDIMM	48 (12 per CPU)	A1x
49Y1563	A1QT	16 GB (1x 16 GB, 2Rx4, 1.35 V) PC3L-10600 CL9 ECC DDR3 1333 MHz LP RDIMM	48 (12 per CPU)	-
00D4968	A2U5	16 GB (1x 16 GB, 2Rx4, 1.5 V) PC3-12800 CL11 ECC DDR3 1600 MHz LP RDIMM	48 (12 per CPU)	-
LRDIMMs				
49Y1567	A290	16 GB (1x 16 GB, 4Rx4, 1.35 V) PC3L-10600 CL9 ECC DDR3 1333 MHz LP LRDIMM	48 (12 per CPU)	D2x
90Y3105	A291	32 GB (1x 32 GB, 4Rx4, 1.35 V) PC3L-10600 CL9 ECC DDR3 1333 MHz LP LRDIMM	48 (12 per CPU)	-

The following rules apply when selecting the memory configuration:

- The server supports RDIMMs and LRDIMMs. UDIMMs are not supported.
- Mixing different types of memory (RDIMMs and LRDIMMs) is not supported.
- Mixing 1.5 V and 1.35 V DIMMs in the same server is supported; in such a case, all DIMMs operate at 1.5 V.
- The maximum number of ranks per one channel is eight (with the exception of Load Reduced DIMMs, where more than eight ranks are supported, because one quad-rank LRDIMM provides the same electrical load on a memory bus as a single-rank RDIMM).
- The maximum quantity of DIMMs that can be installed in the server depends on the number of processors installed. The table shows the maximum when all four processors are installed. When two processors are installed, the maximum quantity supported is a half of the quantity that is shown.
- All DIMMs in the server operate at the same speed, which is determined as the lowest value of:
    - Memory speed that is supported by the specific processor.
    - Lowest of maximum operating speeds for selected memory configuration that depends on rated speed, operating voltage, and quantity of DIMMs per channel, as shown under "Max. operating speed" section in the table.

Table highlighting:

- The memory speeds highlighted in **bold text** indicate that the System x3750 M4 supports higher memory frequencies than the Intel processor specification. In some instances, this configuration also results larger memory capacity that the specification recommends.
- Tables cells highlighted with a grey background indicate when the specific combination of DIMM voltage and number of DIMMs per channel still allows the DIMMs to operate at rated speed

Table 5. Maximum memory speeds

DIMM specification	**RDIMM**						**LRDIMM**	
Ranks	Single-rank DIMMs			Dual-rank DIMMs			Quad-rank LRDIMMs	
Part numbers	49Y1406 (4 GB)		49Y1559 (4 GB)	49Y1397 (8 GB) 49Y1563 (16 GB)		90Y3109 (8 GB) 00D4968 (16 GB)	49Y1567 (16 GB) 90Y3105 (32 GB)	
Rated speed	1333 MHz		1600 MHz	1333 MHz		1600 MHz	1333 MHz	
Rated voltage	1.35 V		1.5 V	1.35 V		1.5 V	1.35 V	
Operating voltage	1.35 V	1.5 V	1.5 V	1.35 V	1.5 V	1.5 V	1.35 V	1.5 V
Max. qty supported*	**48**	48	48	**48**	48	48	48	48
Max. DIMM capacity	4 GB	4 GB	4 GB	16 GB	16 GB	16 GB	32 GB	32 GB
Max. mem. capacity	**192 GB**	192 GB	192 GB	**768 GB**	768 GB	768 GB	1.5 TB	1.5 TB
Max memory at maximum speed	128 GB	128 GB	128 GB	512 GB	**768 GB**	512 GB	**1.5 TB**	**1.5 TB**
Max operating speed (MHz)								
1 DIMM per channel	1333 MHz	1333 MHz	1600 MHz	1333 MHz	1333 MHz	1600 MHz	**1333 MHz**	1333 MHz
2 DIMMs per channel	1333 MHz	1333 MHz	1600 MHz	1333 MHz	1333 MHz	1600 MHz	**1333 MHz**	1333 MHz
3 DIMMs per channel	**1066 MHz**	1066 MHz	1066 MHz	**1066 MHz**	**1333 MHz**	**1333 MHz**	**1333 MHz**	**1333 MHz**

* Maximum quantity supported is shown for four processors installed. When two processors are installed, the maximum quantity supported is a half of the quantity that is shown. When one processor is installed, the quantity is one quarter of that shown.

The following memory protection technologies are supported:

- ECC
- Chipkill (for x4-based memory DIMMs -- look for "x4" in the DIMM description)
- Memory mirroring
- Memory rank 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 rank sparing is used, then a minimum of one quad-rank DIMM or two single-rank or dual-rank DIMMs must be installed per populated channel (the DIMMs do not need being identical). In rank sparing mode, one rank of a DIMM in each populated channel is reserved as spare memory. The size of a rank varies depending on the DIMMs installed.

Internal storage

The server can support up to 16x 2.5-inch drives, up to 32x 1.8-inch drives, or a combination of both 2.5-inch and 1.8-inch hot-swap drives, using the supported SAS/SATA backplane configurations. The server supports 2.5-inch hot-swap SAS or hot-swap SATA hard disk drives, 2.5-inch hot-swap SATA solid-state drives, or 1.8-inch hot-swap SATA solid-state drives. You can mix drives in the same server as long as you do not mix drives on the same array.

Backplanes

System x3750 M4 server supports a variety of internal storage configurations based on four different backplanes:

- 4-drive backplane for 2.5-inch drives: Up to four backplanes can be installed, each requiring one SAS connection to a supported controller. One RAID controller can connect to two of these backplanes.
- 8-drive backplane for 2.5-inch drives: Up to two backplanes can be installed, each requiring two SAS connections. One RAID controller per backplane.
- 8-drive backplane with a SAS expander for 2.5-inch drives: Use in conjunction with the other 2.5-inch drive backplanes (8-drive or one 4-drive or two 4-drive backplanes) which will result in being able to connect up to 16 2.5-inch drive bays to the one RAID controller.
- 8-drive backplane for 1.8-inch solid-state drives (eXFlash Pack): Up to four backplanes can be installed, each requiring two SAS connections. One RAID controller per backplane. Cannot be connected to the 8-drive backplane with a SAS expander.

When building drive backplane configurations, all 1.8-inch SSD drive backplanes must be installed to the right of all 2.5-inch HDD or 2.5-inch SSD drive backplanes (when looking at the front of the server). Every four drives uses a SAS signal cable except when the 8-drive backplane with SAS expander is used. When the 8-drive backplane with SAS expander is used, the other backplanes connect to the SAS expander backplane with the supplied cables and then the SAS expander backplane is connected to the single RAID controller with two cables. All backplane options include the necessary cables.

See the *System x3750 M4 Installation and Service Guide* for a description of all supported backplane combinations.

Standard models (all models except A2x) ship with at least one backplane; see Table 2 for details. The following table shows the backplane options that are available for a x3750 M4 server.

Table 6. Internal storage expansion options

Part number	Feature code	Name	Maximum supported
88Y7418	A2A3	4x 2.5" HS SAS/SATA/SSD HDD Backplane	4*
88Y7419	A2A4	8x 2.5" HS SAS/SATA/SSD HDD Backplane	2
88Y7421	A2A2	8x 2.5" HS SAS/SATA/SSD HDD Backplane with controller expansion (SAS expander)	1**
88Y7422	A2XR	eXFlash 8x 1.8" HS SAS SSD Backplane	4

* When a server is ordered via CTO, only one 4-drive backplane can be selected. If the order has more than 4 drive bays, 8-drive backplanes will be selected instead.
** Only one backplane with SAS expander (88Y7421) can be installed in a server and can be used connected to a single 8-drive backplane (88Y7419), a single 4-drive backplane (88Y7418), or two 4-drive backplanes (88Y7418). The SAS expander backplane cannot be used with the eXFlash backplane.

Controllers for internal storage

The following table lists the RAID controllers and SAS HBAs used for the internal disk storage of the x3750 M4 server.

Table 7. RAID controllers for internal storage

Part number	Feature code	Description	Maximum supported	Models where used
Integrated	A2N2	ServeRAID M5110e SAS/SATA Controller	1 (integrated)	All
81Y4481	A347	ServeRAID M5110 SAS/SATA Controller	3	D1x (1 standard) D2x (3 standard)
81Y4448	A1MZ	ServeRAID M1115 SAS/SATA Controller	1	-
46M0912	3876	6Gb Performance Optimized HBA	3	-
46C8988	A3MW	N2115 SAS/SATA HBA for System x	3	-

The integrated ServeRAID M5110e SAS/SATA Controller is a chip on the system board. The ServeRAID M5110 is a PCIe low-profile, half-length (MD2) form factor adapter. Both controllers have the following specifications:

- Two Mini-SAS internal connectors.
- 6 Gbps throughput per port.
- PCIe x8 2.0 host interface.
- Based on the LSI SAS2208 6 Gbps ROC controller.
- Supports RAID levels 0, 1, and 10.
- Supports RAID levels 5 and 50 with optional M5100 Series RAID 5 upgrades (see below).
- Supports RAID 6 and 60 with the optional M5100 Series RAID 6 Upgrade (see below).
- Supports 512 MB battery-backed cache or 512 MB or 1 GB flash-backed cache (see below).

The ServeRAID M1115 offers a low-cost RAID 0/1/10 solution that can be upgraded to a cacheless RAID 5 with a Features-on-Demand license upgrade. It has the following specifications:

- PCI Low Profile, Half-length - MD2 form factor
- Two internal Mini-SAS connectors (SFF-8087)
- Eight internal 6 Gbps SAS/SATA ports
- 6 Gbps throughput per port
- 533 MHz PowerPC® processor with LSI SAS2008 6 Gbps RAID on Chip (ROC) controller
- PCI Express 2.0 x8 host interface
- Support for RAID levels 0, 1, and 10 standard; support for RAID 5 and 50 with an optional upgrade (81Y4542)
- Zero Controller Cache, no battery/flash backup

For more information, see the list of Product Guides in the RAID adapters category https://lenovopress.com/servers/options/raid

Note: The supported adapters for internal storage need to be installed in slots 1, 2 and 3 because of cable routing requirements. The x3750 M4 PCIe 3x8 riser (88Y7371) must be installed. These slots also require that Processor 2 be installed.

The following table lists the optional upgrades supported with the ServeRAID controllers.

Table 8. RAID controller upgrades

Part number	Feature code	Description	Maximum supported	Models where used
81Y4544	A1X2	ServeRAID M5100 Series Zero Cache/RAID 5 Upgrade	1	-
81Y4484	A1J3	ServeRAID M5100 Series 512 MB Cache/RAID 5 Upgrade	4	D1x (2 standard) D2x, (4 standard)
81Y4487	A1J4	ServeRAID M5100 Series 512 MB Flash/RAID 5 Upgrade	4	-
81Y4559	A1WY	ServeRAID M5100 Series 1 GB Flash/RAID 5 Upgrade	4	C1x (1 standard) C2x (1 standard)
81Y4508	A22E	ServeRAID M5100 Series Battery Kit	4*	D1x (2 standard) D2x, (4 standard)
81Y4546	A1X3	ServeRAID M5100 Series RAID 6 Upgrade**	1†	-
90Y4273	A2MC	ServeRAID M5100 Series SSD Performance Key**	1	D1x, D2x
90Y4318	A2MD	ServeRAID M5100 Series SSD Caching Enabler **	1	-
81Y4542	A1X1	ServeRAID M1100 Series Zero Cache/RAID 5 Upgrade	1	-

* The ServeRAID M5100 Series Battery Kit (81Y4508) is only supported with ServeRAID M5100 Series 512 MB Cache/RAID 5 Upgrade (81Y4484).
† The ServeRAID M5100 Series RAID 6 Upgrade (81Y4546) requires RAID 5 upgrades with cache (81Y4484, 81Y4487, or 81Y4559 only).
** Only one ServeRAID Feature on Demand upgrade is required per system, regardless of the number of adapters installed.

Internal drive options

The following table lists the hard disk drive options for the internal disk storage of the x3750 M4 server.

Table 9. 1.8-inch SSDs

Part number	Feature	Description	Maximum supported
1.8-inch hot-swap SSDs - 6 Gb SATA - Enterprise Mainstream (3-5 DWPD)			
00AJ335	A56V	120GB SATA 1.8" MLC Enterprise Value SSD	32
00AJ340	A56W	240GB SATA 1.8" MLC Enterprise Value SSD	32
00AJ345	A56X	480GB SATA 1.8" MLC Enterprise Value SSD	32
00AJ350	A56Y	800GB SATA 1.8" MLC Enterprise Value SSD	32

Table 10. 2.5-inch hot-swap 6 Gb SAS/SATA HDDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap HDDs - 6 Gb SAS 10K			
90Y8877	A2XC	300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	16
90Y8872	A2XD	600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	16
81Y9650	A282	900GB 10K 6Gbps SAS 2.5" SFF HS HDD	16
00AD075	A48S	1.2TB 10K 6Gbps SAS 2.5" G2HS HDD	16
2.5-inch hot-swap HDDs - 6 Gb SAS 15K			
90Y8926	A2XB	146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	16
81Y9670	A283	300GB 15K 6Gbps SAS 2.5" G2HS HDD	16
00AJ300	A4VB	600GB 15K 6Gbps SAS 2.5" G2HS HDD	16
2.5-inch hot-swap HDDs - 6 Gb NL SAS			
90Y8953	A2XE	500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	16
81Y9690	A1P3	1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	16
2.5-inch hot-swap HDDs - 6 Gb NL SATA			
81Y9726	A1NZ	500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	16
81Y9730	A1AV	1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	16
2.5-inch hot-swap SED HDDs - 6 Gb SAS 10K			
90Y8913	A2XF	300GB 10K 6Gbps SAS 2.5" SFF G2HS SED	16
90Y8908	A3EF	600GB 10K 6Gbps SAS 2.5" SFF G2HS SED	16

Table 11. 2.5-inch hot-swap 6 Gb SAS/SATA SSDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap SSDs - 6 Gb SAS - Enterprise Performance (10+ DWPD)			
49Y6129	A3EW	200GB SAS 2.5" MLC HS Enterprise SSD	16
49Y6134	A3EY	400GB SAS 2.5" MLC HS Enterprise SSD	16
49Y6139	A3F0	800GB SAS 2.5" MLC HS Enterprise SSD	16
49Y6195	A4GH	1.6TB SAS 2.5" MLC HS Enterprise SSD	16
2.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Mainstream (3-5 DWPD)			
00AJ355	A56Z	120GB SATA 2.5" MLC HS Enterprise Value SSD	16
00AJ360	A570	240GB SATA 2.5" MLC HS Enterprise Value SSD	16
00AJ365	A571	480GB SATA 2.5" MLC HS Enterprise Value SSD	16
00AJ370	A572	800GB SATA 2.5" MLC HS Enterprise Value SSD	16

Internal backup units

The server does not supports any internal backup units, such as tape drives or RDX drives.

Optical drives

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

Table 12. Optical drives

Part number	Feature code	Description	Maximum supported	Models where used
46M0902	4163	UltraSlim Enhanced SATA Multi-Burner	1	-

The UltraSlim Enhanced SATA Multi-Burner (46M0902) 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 drive also 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 eight PCIe slots. Five slots are on the system board and three are through a riser card. The riser card is standard on some models as shown in the table below. It is optional on all other models. The use of slots 1 - 5 require processor 2 to be installed. The slot specifics are as follows:

- Slot 1: PCIe 3.0 x8 (x16 mechanical): Full-height, half-length (optional with riser card, requires processor 2)
- Slot 2: PCIe 3.0 x8 (x16 mechanical): Full-height, half-length (optional with riser card, requires processor 2)
- Slot 3: PCIe 3.0 x8 (x16 mechanical): Full-height, half-length (optional with riser card, requires processor 2)
- Slot 4: PCIe 3.0 x8: Low profile, half-length (requires processor 2)
- Slot 5: PCIe 3.0 x8: Low profile, half-length (requires processor 2)
- Slot 6: PCIe 3.0 x8: Low profile, half-length
- Slot 7: PCIe 3.0 x8: Low profile, half-length
- Slot 8: PCIe 3.0 x8: Low profile, half-length

The following table lists the ordering information for the riser card.

Table 13. PCI riser card options

Part number	Feature code	Description	Standard models where used	Maximum supported
88Y7371	A2A1	x3750 M4 PCIe 3 x8 riser	B2x, C1x, D1x, D2x	1

Network adapters

x3750 M4 supports two integrated Gigabit Ethernet ports. Optionally, two 10 Gb Ethernet ports can be added by installing one of the available dual-port 10 Gb Ethernet cards listed in Table 12 (88Y7429 or 88Y7427). These cards use a dedicated connector on the system board and do not consume a PCI expansion slot. The onboard Emulex BE3 controller provides both the Gigabit Ethernet ports and the 10 Gb Ethernet ports. The optional cards are used route the ports to external RJ45 or SFP+ ports.

The integrated controller has the following features:

- Emulex BE3 chip
- Two Gigabit Ethernet ports and two 10 Gb Ethernet ports with optional adapter (1 Gb and 10 Gb auto-negotiation)
- Full-duplex (FDX) capability
- Supports IPv6
- Optional 10 Gb ports that operate in either a virtual NIC (vNIC) or physical NIC (pNIC) mode:
  - vNIC mode: Up to six vNICs (up to three vNICs per one 10 Gb port):
    - Virtual Fabric mode or Switch Independent operational mode
    - Virtual port bandwidth allocation in 100 Mbps increments
    - Up to two vNICs can be configured as an iSCSI or FCoE vNICs (one per port) with optional Advanced Upgrade (90Y9310)
  - pNIC mode: Dual-port 1/10 Gb Ethernet adapter
- IEEE 802.1Q VLAN tagging
- VLAN insertion and extraction
- Jumbo frames up to 9000 bytes.
- Load balancing and failover teaming support, including adapter fault tolerance (AFT), switch fault

tolerance (SFT), adaptive load balancing (ALB), and IEEE 802.3ad

- Supports Serial over LAN (SoL) and concurrent KVM (cKVM)
- Wake On LAN support (1 Gb ports only)
- Message Signal Interrupt (MSI-X) support
- IPv4/IPv6 offload:
  - IPv4 TCP Chimney Offload
  - TCP, UDP checksum offload
  - Large send offload (LSO)
  - Large receive offload (LRO)
  - Receive side scaling (RSS)
- Enhanced Ethernet (draft) support:
  - Enhanced Transmission Selection (ETS) (P802.1Qaz)
  - Priority-based Flow Control (PFC) (P802.1Qbb)
  - Data Center Bridging eXchange Protocol (DCBX) (P802.1Qaz)

The following table lists the adapters that are supported in the dedicated networking slot.

Table 14. Adapters for the integrated 10 GbE controller (machine type 8722 only)

Part number	Feature code	Description	Maximum supported#
10 Gb Ethernet (does not consume a PCI expansion slot)			
88Y7427	A294	x3750 M4 Dual port 10 GB-T Ethernet Adapter Card	1†
88Y7429	A295	x3750 M4 Dual port 10 GB SFP+ Ethernet Adapter Card	1†
95Y3760	A2U2	Emulex VFA III FCoE/iSCSI License for System x (FoD) (An upgrade for 88Y7429 which provides FCoE and iSCSI support)	1

† The x3750 M4 Dual port 10 GB-T Ethernet Adapter Card and x3750 M4 Dual port 10 GB SFP+ Ethernet Adapter Card occupy the same dedicated slot and are mutually exclusive

The following table lists additional supported network adapters.

Table 15. Network adapters

Part number	Feature	Description	Maximum supported#
1 Gb Ethernet			
49Y4230	5767	Intel Ethernet Dual Port Server Adapter I340-T2 for IBM System x	8
49Y4240	5768	Intel Ethernet Quad Port Server Adapter I340-T4 for IBM System x	8
00AG500	A56K	Intel I350-F1 1xGbE Fiber Adapter for IBM System x	8
00AG510	A56L	Intel I350-T2 2xGbE BaseT Adapter for IBM System x	8
00AG520	A56M	Intel I350-T4 4xGbE BaseT Adapter for IBM System x	8
10 Gb Ethernet			
49Y7960	A2EC	Intel X520 Dual Port 10GbE SFP+ Adapter for IBM System x	8
49Y7970	A2ED	Intel X540-T2 Dual Port 10GBaseT Adapter for IBM System x	8
81Y3520	AS73	Intel X710 2x10GbE SFP+ Adapter for IBM System x	8
00D9690	A3PM	Mellanox ConnectX-3 10 GbE Adapter for IBM System x	8
42C1800	5751	QLogic 10Gb CNA for IBM System x	8
90Y4600	A3MR	QLogic 8200 Dual Port 10GbE SFP+ VFA for IBM System x	8
47C9952	A47H	Solarflare SFN5162F 2x10GbE SFP+ Performant Adapter for IBM System x	8
47C9960	A47J	Solarflare SFN6122F 2x10GbE SFP+ Onload Adapter for IBM System x	8
47C9977	A522	Solarflare SFN7122F 2x10GbE SFP+ Flareon Ultra for IBM System x	8
40 Gb Ethernet			
00D9550	A3PN	Mellanox ConnectX-3 40GbE / FDR IB VPI Adapter for IBM System x	8

Maximum quantity is achieved with processor 2 installed and the 3-slot riser card (88Y7371). With one processor, the maximum quantity is three (this maximum does not apply to the 10 Gb cards in the dedicated slot).

For more information, see the list of Product Guides in the Networking adapters category https://lenovopress.com/servers/options/ethernet

Storage HBAs and external RAID controllers

The following table lists storage HBAs supported by x3750 M4 server. The maximum quantity is achieved with processor 2 and the 3-slot riser card (88Y7371) installed. With one processor, the maximum quantity is three (this configuration does not apply to the 10 Gb cards in the dedicated slot).

Table 16. Storage adapters

Part number	Feature code	Description	Maximum supported#
Fibre Channel - 16 Gbps			
81Y1675	A2XV	Brocade 16Gb FC Dual-port HBA for System x	8
81Y1668	A2XU	Brocade 16Gb FC Single-port HBA for System x	8
81Y1662	A2W6	Emulex 16Gb FC Dual-port HBA for System x	8
81Y1655	A2W5	Emulex 16Gb FC Single-port HBA for System x	8
00Y3341	A3KX	QLogic 16Gb FC Dual-port HBA for System x	8
00Y3337	A3KW	QLogic 16Gb FC Single-port HBA for System x	8
Fibre Channel - 8 Gbps			
46M6050	3591	Brocade 8Gb FC Dual-port HBA for System x	8
46M6049	3589	Brocade 8Gb FC Single-port HBA for System x	8
42D0494	3581	Emulex 8Gb FC Dual-port HBA for System x	8
42D0485	3580	Emulex 8Gb FC Single-port HBA for System x	8
42D0510	3579	QLogic 8Gb FC Dual-port HBA for System x	8
42D0501	3578	QLogic 8Gb FC Single-port HBA for System x	8
SAS			
46M0907	5982	6 Gb SAS HBA Controller	8
46C9010	A3MV	N2125 SAS/SATA HBA for System x	8

Maximum quantity is achieved with processor 2 and the 3-slot riser card (88Y7371) installed. With one processor, the maximum quantity is three.
* The 6 Gb Performance Optimized HBA (46M0912) is for use only with internal disk storage and requires the x3750 M4 PCIe 3x8 riser (88Y7371) and a second processor to be installed.

For more information, see the list of Product Guides in the Host bus adapters category: https://lenovopress.com/servers/options/hba

The RAID controllers listed in the following table are supported with external expansion enclosures.

Table 17. RAID controller and options for external storage expansion enclosures

Part number	Feature code	Description	Maximum supported
81Y4478	A1WX	ServeRAID M5120 SAS/SATA Controller	8
81Y4484	A1J3	ServeRAID M5100 Series 512MB Cache/RAID 5 Upgrade	1 per one M5120
81Y4487	A1J4	ServeRAID M5100 Series 512MB Flash/RAID 5 Upgrade	1 per one M5120
81Y4559	A1WY	ServeRAID M5100 Series 1GB Flash/RAID 5 Upgrade	1 per one M5120
81Y4508	A22E	ServeRAID M5100 Series Battery Kit	1 per one M5120
81Y4546	A1X3	ServeRAID M5100 Series RAID 6 Upgrade	1 per server
90Y4273	A2MC	ServeRAID M5100 Series SSD Performance Accelerator	1 per server
90Y4318	A2MD	ServeRAID M5100 Series SSD Caching Enabler	1 per server

The ServeRAID M5120 SAS/SATA Controller has the following specifications:

- Eight external 6 Gbps SAS/SATA ports

- Two external x4 mini-SAS connectors (SFF-8088)
- Supports RAID levels 0, 1, and 10
- Supports RAID levels 5 and 50 with optional M5100 Series RAID 5 upgrades
- Supports RAID 6 and 60 with the optional M5100 Series RAID 6 Upgrade
- Supports 512 MB battery-backed cache or 512 MB or 1 GB flash-backed cache
- 6 Gbps throughput per port
- PCIe 3.0 x8 host interface
- Based on the LSI SAS2208 6 Gbps ROC controller
- Supports connectivity to the EXP2512 and EXP2524 storage expansion enclosures

PCIe SSD adapters

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

Note: The server supports a maximum quantity of three of the full-height adapters, which must be installed in slots 1, 2, and 3. These slots require the second processor and the 3-slot riser card, 88Y7371.

Table 18. SSD adapters

Part number	Feature code	Description	Maximum supported
46M0877	0096	160GB High IOPS SS Class SSD PCIe Adapter	8
46M0878	0097	320GB High IOPS SD Class SSD PCIe Adapter	3
46M0898	1649	320GB High IOPS MS Class SSD PCIe Adapter	8
81Y4539	A1ND	640GB High IOPS SLC Duo Adapter For System x	3
81Y4535	A1NE	320GB High IOPS SLC Adapter For System x	8
90Y4377	A3DY	1.2TB High IOPS MLC Mono Adapter	7
90Y4397	A3DZ	2.4TB High IOPS MLC Duo Adapter	3
46C9078	A3J3	365GB High IOPS MLC Mono Adapter	7
46C9081	A3J4	785GB High IOPS MLC Mono Adapter	7
90Y4361*	A3MZ	300GB High IOPS MLC Modular Adapter	3
90Y4365*	A3N0	600GB High IOPS MLC Modular Adapter	3
90Y4369*	A3N1	800GB High IOPS MLC Modular Adapter	3
90Y4373*	A3N2	300GB High IOPS SLC Modular Adapter	3

* These modular adapters are not available via CTO or Special build. The adapter cannot be shipped installed and instead must be shipped in its option box and configured at the final installation location. For more information, see https://ibm.com/support/entry/myportal/docdisplay?lndocid=SERV-IOMA

Power supplies

The server supports up to two redundant power supplies. Standard models come with one or two 1400 W power supplies (model dependent; see Table 2). 900 W AC and 750 W DC power supplies also available through CTO or Special Bid.

Installing a second power supply requires that the processor and memory expansion tray (88Y7365) or the power interposer card (88Y7367) be installed. The power interposer card option enables redundancy power support when the processor and memory expansion tray is not installed. If you do not have the processor and memory expansion tray installed and want to install two power supplies, then the power interposer card must be installed.

Table 19. Power supplies

Part number	Feature code	Description	Maximum supported	Models where used
88Y7373	A2A6	1400 W HE Redundant Power Supply	2	All models
88Y7431	A2A7	900 W Power Supply	2	-
88Y7433	A2EA	System x 4S- 750W High Efficiency -48 V DC Power Supply	2	-
88Y7367	A2A0	Power Interposer for Redundant Power Supply	1*	-

* The power interposer is not needed if the processor and memory expansion tray (88Y7365) is installed.

Each AC power supply ships standard with one 2.8 m C13 - C14 power cord.

Two installed 1400 W power supplies form a redundant pair. Under extreme configurations, it may be possible to exceed 1400 W DC output. If this condition exists and a power supply fails, the server caps power at 1400 W until the second power supply is back online.

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 20. Virtualization options

Part number	Feature code	Description	Maximum supported
41Y8298	A2G0	Blank USB Memory Key for VMware ESXi Downloads	1
41Y8300	A2VC	USB Memory Key for VMware ESXi 5.0	1
41Y8307	A383	USB Memory Key for VMware ESXi 5.0 Update 1	1
41Y8311	A2R3	USB Memory Key for VMware ESXi 5.1	1
41Y8382	A4WZ	USB Memory Key for VMware ESXi 5.1 Update 1	1
41Y8385	A584	USB Memory Key for VMware ESXi 5.5	1

Remote management

The server contains Integrated Management Module II (IMM2), which provides advanced service-processor control, monitoring, and alerting functions. If an environmental condition exceeds a threshold or if a system component fails, the IMM2 lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. A virtual presence capability also comes standard in this server for remote server management.

Remote server management is provided 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 server also supports virtual media and remote control features, which provide the following functions:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 23 bits per pixel, regardless of the system state
- 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 IMM2 memory and mapping it to the server as a virtual drive
- Capturing blue-screen errors

Supported operating systems

The server supports the following operating systems:

- Microsoft Windows Server 2008 HPC Edition
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Datacenter x64 Edition
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Microsoft Windows Server 2012
- Microsoft Windows Small Business Server 2008 Premium Edition
- Microsoft Windows Small Business Server 2008 Standard 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 x64 Edition
- SUSE LINUX Enterprise Server 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- VMware ESX 4.1
- VMware ESXi 4.1
- VMware vSphere 5.0 (ESXi)
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.5 (ESXi)

For the latest information about the specific versions and service levels supported and any other prerequisites, See the Operating System Interoperability Guide:
http://lenovopress.com/osig

Physical and electrical specifications

Dimensions and weight:

Width: 446 mm (17.5 in.)
Depth: 734 mm (28.9 in.)
Height: 87 mm (3.4 in.)
Approximate weight, fully configured: 31.1 kg (68.5 lb.)

Supported environment:

- Air temperature:
  - 5 - 40 °C (41 - 104 °F) at 0 - 3048 m (10,000 ft); ASHRAE A3 compliant
- Humidity: 8% - 80%
- Electrical:
  - 100 - 127 (nominal) V AC, 50 Hz or 60 Hz, and System 20 A (10 A per power supply)
  - 200 - 208 (nominal) V AC, 50 Hz or 60 Hz, and System 10 A
  - 200 - 240 (nominal) V AC, 50 Hz or 60 Hz, and System 9 A
  - Minimum configuration: 0.20 kVA (one power supply)
  - Minimum configuration: 0.26 kVA (two power supplies)
  - Typical configuration: 1.12 kVA (two power supplies)
  - Maximum configuration: 2.16 kVA (two power supplies)
- BTU output:
  - Minimum configuration: 648 BTU/hr (190 watts)
  - Maximum configuration: 7,336 BTU/hr (2150 watts)
- Noise level:
  - Idle: 6.5 bels
  - Operating: 6.6 bels

Warranty options

The system has a three-year warranty with 24x7 standard call center support and 9x5 Next Business Day onsite coverage. Also available are Lenovo Services 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.

Lenovo warranty service upgrade offerings are region-specific. Not all warranty service upgrades are available in every region. For more information about Lenovo warranty service upgrade offerings that are available in your region, go to the Data Center Advisor and Configurator website http://dcsc.lenovo.com, then do the following:

1. In the Customize a Model box in the middle of the page, select the **Services** option in the Customization Option dropdown menu
2. Enter in the machine type & model of the system
3. From the search results, you can click either **Deployment Services** or **Support Services** to view the offerings

The following table explains warranty service definitions in more detail.

Table 21. Warranty service definitions

Term	Description
On-site service	A service technician will arrive at the client's location for equipment service.
24x7x2 hour	A service technician is scheduled to arrive at the client's location within two hours after remote problem determination is completed. Lenovo provides service around the clock, every day, including Lenovo holidays.
24x7x4 hour	A service technician is scheduled to arrive at the client's location within four hours after remote problem determination is completed. Lenovo provides service around the clock, every day, including Lenovo holidays.
9x5x4 hour	A service technician is scheduled to arrive at the client's location within four business hours after remote problem determination is completed. Lenovo provides service 8:00 am - 5:00 pm in the client's local time zone, Monday-Friday, excluding Lenovo holidays. For example, if a customer reports an incident at 3:00 pm on Friday, the technician will arrive by 10:00 am the following Monday.
9x5 next business day	A service technician is scheduled to arrive at the client's location on the business day after remote problem determination is completed. Lenovo provides service 8:00 am - 5:00 pm in the client's local time zone, Monday - Friday, excluding Lenovo holidays. Calls received after 4:00 pm local time require an extra business day for service dispatch. Next business day service is not guaranteed.
Committed Repair	Problems receive priority handling so that repairs are completed within the committed time of 6, 8, or 24 hours. Lenovo provides service 24 hours/day, every day, including Lenovo holidays.

The following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
  - Three, four, or five years of 9x5 or 24x7 service coverage
  - Onsite response from next business day to 2 or 4 hours
  - Committed repair service
  - Warranty extension of up to 5 years
  - Post warranty extensions
- Committed Repair Service
  Committed Repair Services enhances the level of Warranty Service Upgrade or Post Warranty/Maintenance Service offering associated with the selected systems. Offerings vary and are available in select countries.
  - Priority handling to meet defined time frames to restore the failing machine to good working condition
  - Committed repair service levels are measured within the following coverage hours:
    - 24x7x6: Service performed 24 hours per day, 7 days per week, within 6 hours
    - 24x7x8: Service performed 24 hours per day, 7 days per week, within 8 hours
    - 24x7x24: Service performed 24 hours per day, 7 days per week, within 24 hours
- Hard Disk Drive Retention
  Lenovo's Hard Disk Drive Retention (HDDR) service is a multi-drive hard drive retention offering that ensures your data is always under your control, regardless of the number of hard drives that are installed in your Lenovo server. In the unlikely event of a hard drive failure, you retain possession of your hard drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The Hard Drive Retention service can be purchased in convenient bundles with our warranty upgrades and extensions.
- Microcode Support
  Keeping microcode current helps prevent hardware failures and security exposure. There are two levels of service: analysis of the installed base and analysis and update where required. Offerings vary by region and can be bundled with other warranty upgrades and extensions.

- Remote Technical Support Services (RTS)
  RTS provides comprehensive technical call center support for covered servers, storage, operating systems, and applications. Providing a single source for support of hardware and software issues, RTS can reduce problem resolution time, decreasing the cost to address technical problems and increasing uptime. Offerings are available for Windows, Linux, IBM Systems Director, VMware, Microsoft business applications, and Lenovo System x storage devices, and IBM OEM storage devices.

Regulatory compliance

The server conforms to the following standards:

- ASHRAE A3
- 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. 60950-1
- NOM-019
- Argentina IEC60950-1
- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22, Class A
- IEC 60950-1(CB Certificate and CB Test Report)
- China CCC (GB4943), GB9254 Class A, GB17625.1
- Taiwan BSMI CNS13438, Class A; CNS14336-1
- Korea KN22, Class A; KN24
- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22, GOST R 51318.24, GOST R 51317.3.2, and GOST R 51317.3.3
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, and EN61000-3-3)
- CISPR 22, Class A
- TUV-GS (EN60950-1 /IEC60950-1,EK1-ITB2000)
- RoHS compliance (Directive 2002/95/EC)

External drive enclosures

The server supports attachment to external drive enclosures using a RAID controller with external ports or a SAS host bus adapter. Adapters supported by the server are listed in the SAS adapters for external storage section.

The following table lists the 6 Gbps SAS external drive enclosures that are offered by Lenovo that can be used with the server for storage expansion.

Table 22. E1012 and E1024 external drive enclosure models

Part number	Description
64111B1	Lenovo Storage E1012 LFF Disk Expansion Single SAS IO Module, Rail Kit, 9x5 NBD
64111B2	Lenovo Storage E1012 LFF Disk Expansion Dual SAS IO Module, Rail Kit, 9x5 NBD
64111B3	Lenovo Storage E1024 SFF Disk Expansion Single SAS IO Module, Rail Kit, 9x5 NBD
64111B4	Lenovo Storage E1024 SFF Disk Expansion Dual SAS IO Module, Rail Kit, 9x5 NBD

For details about supported drives and cables for the Lenovo Storage E1012 and E1024, see the Lenovo Press Product Guide:
http://lenovopress.com/lp0043

The following table lists the 12 Gbps SAS external drive enclosures offered by Lenovo that can be used with the server for storage expansion.

Note: Information provided in this section is for ordering reference purposes only. For the operating system and adapter support details, refer to the interoperability matrix for a particular storage enclosure that can be found on the Lenovo Data Center Support web site:
http://datacentersupport.lenovo.com

Table 23. External drive enclosures

Description	Part number		
	Worldwide	Japan	PRC
Lenovo Storage D1212 LFF Disk Expansion with Dual SAS IO Modules	4587A11	4587A1J	4587A1C
Lenovo Storage D1224 SFF Disk Expansion with Dual SAS IO Modules	4587A31	4587A3J	4587A3C
Lenovo Storage D3284 4TB x 84 HD Expansion Enclosure	641311F		
Lenovo Storage D3284 6TB x 84 HD Expansion Enclosure	641312F		
Lenovo Storage D3284 8TB x 84 HD Expansion Enclosure	641313F		
Lenovo Storage D3284 10TB x 84 HD Expansion Enclosure	641314F		

For details about supported drives, adapters, and cables, see the following Lenovo Press Product Guides:

- Lenovo Storage D1212 and D1224
  http://lenovopress.com/lp0512
- Lenovo Storage D3284
  http://lenovopress.com/lp0513

External storage systems

Lenovo offers the ThinkSystem DE Series and ThinkSystem DM Series external storage systems for high-performance storage. See the DE Series and DM Series product guides for specific controller models, expansion enclosures and configuration options:

- ThinkSystem DE Series Storage
  https://lenovopress.com/storage/thinksystem/de-series#rt=product-guide
- ThinkSystem DM Series Storage
  https://lenovopress.com/storage/thinksystem/dm-series#rt=product-guide
- ThinkSystem DG Series Storage
  https://lenovopress.com/storage/thinksystem/dg-series#rt=product-guide

External backup units

The following table lists the external backup options that are offered by Lenovo.

Table 24. External backup options

Part number	Description
External RDX USB drives	
4T27A10725	ThinkSystem RDX External USB 3.0 Dock
External SAS tape backup drives	
6160S7E	IBM TS2270 Tape Drive Model H7S
6160S8E	IBM TS2280 Tape Drive Model H8S
6160S9E	IBM TS2290 Tape Drive Model H9S
External SAS tape backup autoloaders	
6171S7R	IBM TS2900 Tape Autoloader w/LTO7 HH SAS
6171S8R	IBM TS2900 Tape Autoloader w/LTO8 HH SAS
6171S9R	IBM TS2900 Tape Autoloader w/LTO9 HH SAS
External tape backup libraries	
6741A1F	IBM TS4300 3U Tape Library-Base Unit
6741A3F	IBM TS4300 3U Tape Library-Expansion Unit
Full High 8 Gb Fibre Channel for TS4300	
01KP938	LTO 7 FH Fibre Channel Drive
01KP954	LTO 8 FH Fibre Channel Drive
02JH837	LTO 9 FH Fibre Channel Drive
Half High 8 Gb Fibre Channel for TS4300	
01KP936	LTO 7 HH Fibre Channel Drive
01KP952	LTO 8 HH Fibre Channel Drive
02JH835	LTO 9 HH Fibre Channel Drive
Half High 6 Gb SAS for TS4300	
01KP937	LTO 7 HH SAS Drive
01KP953	LTO 8 HH SAS Drive
02JH836	LTO 9 HH SAS Drive

For more information, see the list of Product Guides in the Backup units category:
https://lenovopress.com/servers/options/backup

Top-of-rack Ethernet switches

The following table lists the Ethernet LAN switches that are offered by Lenovo.

Table 25. Ethernet LAN switches

Part number	Description
1 Gb Ethernet Rack switches	
7Y810011WW	Lenovo ThinkSystem NE0152T RackSwitch (Rear to Front)
7Z320O11WW	Lenovo ThinkSystem NE0152TO RackSwitch (Rear to Front, ONIE)
7159BAX	Lenovo RackSwitch G7028 (Rear to Front)
7159CAX	Lenovo RackSwitch G7052 (Rear to Front)
7159G52	Lenovo RackSwitch G8052 (Rear to Front)
7165H1X	Juniper EX2300-C PoE Switch
7165H2X	Juniper EX2300-24p PoE Switch
1 Gb Ethernet Campus switches	
7Z340011WW	Lenovo CE0128TB Switch (3-Year Warranty)
7Z360011WW	Lenovo CE0128TB Switch (Limited Lifetime Warranty)
7Z340012WW	Lenovo CE0128PB Switch (3-Year Warranty)
7Z360012WW	Lenovo CE0128PB Switch (Limited Lifetime Warranty)
7Z350021WW	Lenovo CE0152TB Switch (3-Year Warranty)
7Z370021WW	Lenovo CE0152TB Switch (Limited Lifetime Warranty)
7Z350022WW	Lenovo CE0152PB Switch (3-Year Warranty)
7Z370022WW	Lenovo CE0152PB Switch (Limited Lifetime Warranty)
10 Gb Ethernet switches	
7159A1X	Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)
7159B1X	Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)
7Z330O11WW	Lenovo ThinkSystem NE1064TO RackSwitch (Rear to Front, ONIE)
7159C1X	Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)
7159CRW	Lenovo RackSwitch G8272 (Rear to Front)
7159GR6	Lenovo RackSwitch G8296 (Rear to Front)
7159BR6	Lenovo RackSwitch G8124E (Rear to Front)
25 Gb Ethernet switches	
7159E1X	Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)
7Z210O21WW	Lenovo ThinkSystem NE2572O RackSwitch (Rear to Front, ONIE)
7Z330O21WW	Lenovo ThinkSystem NE2580O RackSwitch (Rear to Front, ONIE)
100 Gb Ethernet switches	
7159D1X	Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)
7Z210O11WW	Lenovo ThinkSystem NE10032O RackSwitch (Rear to Front, ONIE)

For more information, see the list of Product Guides in the following switch categories:

- 1 Gb Ethernet switches: http://lenovopress.com/networking/tor/1gb?rt=product-guide
- 10 Gb Ethernet switches: http://lenovopress.com/networking/tor/10gb?rt=product-guide
- 25 Gb Ethernet switches: http://lenovopress.com/networking/tor/25gb?rt=product-guide
- 40 Gb Ethernet switches: http://lenovopress.com/networking/tor/40gb?rt=product-guide
- 100 Gb Ethernet switches: https://lenovopress.com/networking/tor/100Gb?rt=product-guide

Fibre Channel SAN switches

Lenovo offers the ThinkSystem DB Series of Fibre Channel SAN switches for high-performance storage expansion. See the DB Series product guides for models and configuration options:

- ThinkSystem DB Series SAN Switches:
  https://lenovopress.com/storage/switches/rack#rt=product-guide

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo.

Table 26. Uninterruptible power supply units

Part number	Description
55941AX	RT1.5kVA 2U Rack or Tower UPS (100-125VAC)
55941KX	RT1.5kVA 2U Rack or Tower UPS (200-240VAC)
55942AX	RT2.2kVA 2U Rack or Tower UPS (100-125VAC)
55942KX	RT2.2kVA 2U Rack or Tower UPS (200-240VAC)
55943AX	RT3kVA 2U Rack or Tower UPS (100-125VAC)
55943KX	RT3kVA 2U Rack or Tower UPS (200-240VAC)
55945KX	RT5kVA 3U Rack or Tower UPS (200-240VAC)
55946KX	RT6kVA 3U Rack or Tower UPS (200-240VAC)
55948KX	RT8kVA 6U Rack or Tower UPS (200-240VAC)
55949KX	RT11kVA 6U Rack or Tower UPS (200-240VAC)
55948PX	RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55949PX	RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55943KT†	ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55943LT†	ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55946KT†	ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)
5594XKT†	ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)

† Only available in China and the Asia Pacific market.

For more information, see the list of Product Guides in the UPS category:
https://lenovopress.com/servers/options/ups

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo.

Table 27. Power distribution units

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
0U Basic PDUs															
00YJ776	ATZY	0U 36 C13/6 C19 24A 1 Phase PDU	N	Y	Y	N	N	N	N	N	N	Y	Y	Y	N
00YJ779	ATZX	0U 21 C13/12 C19 48A 3 Phase PDU	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
00YJ777	ATZZ	0U 36 C13/6 C19 32A 1 Phase PDU	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y
00YJ778	AU00	0U 21 C13/12 C19 32A 3 Phase PDU	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y
0U Switched and Monitored PDUs															
00YJ783	AU04	0U 12 C13/12 C19 Switched and Monitored 48A 3 Phase PDU	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
00YJ781	AU03	0U 20 C13/4 C19 Switched and Monitored 24A 1 Phase PDU	N	N	Y	N	Y	N	Y	N	N	Y	Y	Y	N
00YJ782	AU02	0U 18 C13/6 C19 Switched and Monitored 32A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
00YJ780	AU01	0U 20 C13/4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
1U Switched and Monitored PDUs															
4PU7A90808	C0D4	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 ETL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A81117	BNDV	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - ETL	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7A90809	C0DE	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 CE	N	N	N	N	N	Y	Y	N	N	N	N	N	N
4PU7A81118	BNDW	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
4PU7A90810	C0DD	1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A77467	BLC4	1U 18 C19/C13 Switched and Monitored 80A 3P Delta PDU	N	N	N	N	N	N	N	N	N	Y	N	Y	N
4PU7A90811	C0DC	1U 12 C19/C13 Switched and monitored 32A 3P WYE PDU V2	N	N	N	N	N	Y	Y	N	N	N	N	N	N
4PU7A77468	BLC5	1U 12 C19/C13 switched and monitored 32A 3P WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A90812	C0DB	1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2	N	N	N	N	N	N	N	N	N	Y	N	N	N
4PU7A77469	BLC6	1U 12 C19/C13 switched and monitored 60A 3P Delta PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
46M4002	5896	1U 9 C19/3 C13 Switched and Monitored DPI PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4004	5894	1U 12 C13 Switched and Monitored DPI PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4003	5897	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4005	5895	1U 12 C13 Switched and Monitored 60A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)															
71763NU	6051	Ultra Density Enterprise C19/C13 PDU 60A/208V/3PH	N	N	Y	N	N	N	N	N	N	Y	Y	Y	N
71762NX	6091	Ultra Density Enterprise C19/C13 PDU Module	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
1U C13 Enterprise PDUs (12x IEC 320 C13 outlets)															
39M2816	6030	DPI C13 Enterprise PDU Plus Module (WW)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8941	6010	DPI C13 Enterprise PDU Module (WW)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U C19 Enterprise PDUs (6x IEC 320 C19 outlets)															
39Y8948	6060	DPI C19 Enterprise PDU Module (WW)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8923	6061	DPI Three-phase 60A/208V C19 Enterprise PDU (US)	N	N	Y	N	N	N	Y	N	N	N	Y	Y	N
1U Front-end PDUs (3x IEC 320 C19 outlets)															
39Y8938	6002	DPI Single-phase 30A/120V Front-end PDU (US)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8939	6003	DPI Single-phase 30A/208V Front-end PDU (US)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8934	6005	DPI Single-phase 32A/230V Front-end PDU (International)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8940	6004	DPI Single-phase 60A/208V Front-end PDU (US)	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
39Y8935	6006	DPI Single-phase 63A/230V Front-end PDU (International)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U NEMA PDUs (6x NEMA 5-15R outlets)															
39Y8905	5900	DPI 100-127V NEMA PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Line cords for 1U PDUs that ship without a line cord															
40K9611	6504	4.3m, 32A/380-415V, EPDU/IEC 309 3P+N+G 3ph wye (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	4.3m, 32A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	4.3m, 63A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	4.3m, 30A/208V, EPDU to NEMA L6-30P (US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9615	6501	4.3m, 60A/208V, EPDU to IEC 309 2P+G (US) Line Cord	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
40K9617	6505	4.3m, 32A/230V, Souriau UTG Female to AS/NZ 3112 (Aus/NZ) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9618	6506	4.3m, 32A/250V, Souriau UTG Female to KSC 8305 (S. Korea) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

For more information, see the Lenovo Press documents in the PDU category:
https://lenovopress.com/servers/options/pdu

Rack cabinets

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

Table 28. Rack cabinets

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

For more information, see the list of Product Guides in the Rack cabinets category:
https://lenovopress.com/servers/options/racks

KVM console options

The following table lists the supported KVM consoles, keyboards, and KVM switches.

Table 29. Console keyboards

Part number	Description
Consoles	
17238BX	1U 18.5" Standard Console (without keyboard)
Console keyboards	
00MW310	Lenovo UltraNav Keyboard USB - US Eng
46W6713	Keyboard w/ Int. Pointing Device USB - Arabic 253 RoHS v2
46W6714	Keyboard w/ Int. Pointing Device USB - Belg/UK 120 RoHS v2
46W6715	Keyboard w/ Int. Pointing Device USB - Chinese/US 467 RoHS v2
46W6716	Keyboard w/ Int. Pointing Device USB - Czech 489 RoHS v2
46W6717	Keyboard w/ Int. Pointing Device USB - Danish 159 RoHS v2
46W6718	Keyboard w/ Int. Pointing Device USB - Dutch 143 RoHS v2
46W6719	Keyboard w/ Int. Pointing Device USB - French 189 RoHS v2
46W6720	Keyboard w/ Int. Pointing Device USB - Fr/Canada 445 RoHS v2
46W6721	Keyboard w/ Int. Pointing Device USB - German 129 RoHS v2
46W6722	Keyboard w/ Int. Pointing Device USB - Greek 219 RoHS v2

Part number	Description
46W6723	Keyboard w/ Int. Pointing Device USB - Hebrew 212 RoHS v2
46W6724	Keyboard w/ Int. Pointing Device USB - Hungarian 208 RoHS v2
46W6725	Keyboard w/ Int. Pointing Device USB - Italian 141 RoHS v2
46W6726	Keyboard w/ Int. Pointing Device USB - Japanese 194 RoHS v2
46W6727	Keyboard w/ Int. Pointing Device USB - Korean 413 RoHS v2
46W6728	Keyboard w/ Int. Pointing Device USB - LA Span 171 RoHS v2
46W6729	Keyboard w/ Int. Pointing Device USB - Norwegian 155 RoHS v2
46W6730	Keyboard w/ Int. Pointing Device USB - Polish 214 RoHS v2
46W6731	Keyboard w/ Int. Pointing Device USB - Portuguese 163 RoHS v2
46W6732	Keyboard w/ Int. Pointing Device USB - Russian 441 RoHS v2
46W6733	Keyboard w/ Int. Pointing Device USB - Slovak 245 RoHS v2
46W6734	Keyboard w/ Int. Pointing Device USB - Spanish 172 RoHS v2
46W6735	Keyboard w/ Int. Pointing Device USB - Swed/Finn 153 RoHS v2
46W6736	Keyboard w/ Int. Pointing Device USB - Swiss F/G 150 RoHS v2
46W6737	Keyboard w/ Int. Pointing Device USB - Thai 191 RoHS v2
46W6738	Keyboard w/ Int. Pointing Device USB - Turkish 179 RoHS v2
46W6739	Keyboard w/ Int. Pointing Device USB - UK Eng 166 RoHS v2
46W6740	Keyboard w/ Int. Pointing Device USB - US Euro 103P RoHS v2
46W6741	Keyboard w/ Int. Pointing Device USB - Slovenian 234 RoHS v2
Console switches	
1754D2X	Global 4x2x32 Console Manager (GCM32)
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
Console switch cables	
43V6147	Single Cable USB Conversion Option (UCO)
39M2895	USB Conversion Option (4 Pack UCO)
46M5383	Virtual Media Conversion Option Gen2 (VCO2)
46M5382	Serial Conversion Option (SCO)

For more information, see the list of Product Guides in the KVM Switches and Consoles category:
http://lenovopress.com/servers/options/kvm

Related publications and links

For more information, see these resources:

- US Announcement Letter
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS112-074
- *System x3750 M4 Installation and Service Guide*:
  http://ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5090828
- *Integrated Management Module II User's Guide*
  http://ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5086346
- ServerProven hardware compatibility page for the x3750 M4:
  http://www.lenovo.com/us/en/serverproven/xseries_old/8722_8733.shtml
- *Configuration and Option Guide*:
  https://support.lenovo.com/documents/SCOD-3ZVQ5W
- xREF - System x Reference:
  http://lenovopress.com/xref
- System x Support Portal:
  http://ibm.com/support/entry/portal/
  http://ibm.com/support/entry/portal/Downloads/Hardware/Systems/System_x/System_x3750_M4

Related product families

Product families related to this document are the following:

- 4-Socket Rack Servers

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