Lenovo System x3850 X6 (6241)
Product Guide (withdrawn product)

The Lenovo System x3850 X6 server, machine type 6241, is a four-socket 4U rack-mounted server that represents the sixth generation of the Enterprise X-Architecture. With Intel Xeon E7 v4 processors, the x3850 X6 delivers fast application performance, is based on an agile system design, and is a resilient platform that is needed for mission-critical databases, enterprise applications, and virtualized environments.

The x3850 X6 packs numerous fault-tolerant and high-availability features into a high-density, 4U rack-optimized lid-less package that helps reduce the space that is needed to support massive network computing operations and simplify servicing. The x3850 X6 supports up to four Intel Xeon E7 high-performance processors and up to 12 TB of memory.

Suggested use: mission-critical scalable databases, business analytics, virtualization, enterprise applications, and cloud applications.

The following figure shows the Lenovo System x3850 X6.

Figure 1. Lenovo System x3850 X6, machine type 6241

Did you know?

The x3850 X6 server employs a lid-less design where all serviceable components are front- and rear-accessible. In addition, each major subsystem is implemented as modular "book" design, such as the Compute Books and I/O Books. This configuration means that components are easy to upgrade and service, which translates to greater uptime of applications to your users. The x3850 X6 offers enterprise scalability and advanced RAS features to support the most demanding mission-critical applications that require 24x7 operations.

Key features

The increasing demand for cloud-computing and analytics workloads by enterprises to meet social, mobile, and Big Data requirements drives innovation to find new ways to build informational systems. Clients are looking for cost-optimized fit-for-purpose IT solutions that manage large amounts of data, easily scale performance, and provide enterprise class reliability.

Built on decades of innovation, Lenovo introduces the sixth generation of Enterprise X-Architecture technology, Lenovo X6 servers. Lenovo X6 servers are fast, agile, and resilient:

- *Fast* application performance means immediate access to actionable information.
- *Agile* system design helps to reduce acquisition costs and provide the ability to upgrade processor and memory technology at each refresh within the same chassis.
- *Resilient* platforms maximize application uptime and promote easy integration in virtual environments.

Lenovo X6 servers continue to lead the way as the shift toward mission-critical scalable databases, business analytics, virtualization, enterprise applications, and cloud-computing applications accelerates.

Fast application performance

The server offers numerous features to boost performance:

- Based on the Intel Xeon E7 family of processors:
    - Models based on E7-4800 v4 and E7-8800 v4 processors
    - Supports up to four E7 v4 processors with a total of 96 cores and 192 threads to maximize the concurrent running of multi-threaded applications.
    - Improves productivity by offering superior system performance with processors up to 24 cores, core frequencies up to 3.2 GHz core speeds, L3 cache of up to 60 MB, and three QPI interconnect links at up to 9.6 GTps.
- Supports DDR4 memory at speeds up to 1866 MHz, or DDR3 memory at speeds up to 1600 MHz
- Supports up to 96 DIMM sockets, with 24 DIMMs per processor.
- 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 thermal design power (TDP).
- Intel Hyper-Threading Technology boosts performance for multi-threaded applications by enabling simultaneous multi-threading 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) improves floating-point performance for compute-intensive technical and scientific applications.
- Supports a 12 Gbps SAS RAID portfolio.
- The usage of 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.
- Optional support for high-performance PCIe-attached NVMe Flash Storage solid-state drives (SSDs) can significantly improve I/O performance.
- PCI Express 3.0 I/O adapter slots 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. This integration helps reduce I/O latency and increase overall system performance.
- Support for up to two graphics processing units (GPUs) and co-processors to maximize computing power.

- Energy-efficient electronic components help lower operational costs, including highly efficient 900 W AC and 1400 W AC power supplies with 80 PLUS Platinum certification.
- The server is Energy Star 2.0 compliant

Agile system design

The server provides many scalability and flexibility features:

- Innovative module "book" design for each of the three subsystems: Compute Books, Storage Book, and I/O Books. Front and rear access means that you can easily scale the system by adding components without removing the entire server from the rack.
- The modular book design also allows clients to create the configuration that fits their application and environment needs, which reduces acquisition costs while giving them the flexibility to grow and modify their configuration later.
- The book design also means that subsystem upgrades are simpler, quicker to perform, and have a lower impact on the rest of the server.
- Using 128 GB 3DS RDIMMs, the server supports up to 12 TB of memory.
- Up to 16x 1.8-inch SSD bays, or up to eight 2.5-inch bays, provide a flexible and scalable all-in-one platform to meet your increasing demands.
- Offers up to 11 PCIe slots plus a dedicated Mezzanine LOM (ML2) adapter slot. Most slots are PCIe 3.0 to maximize I/O scalability.
- PCIe slots are implemented in I/O Books to maximize modularity. Choose from Half-length I/O Books or Full-length I/O Books, depending on the adapters that you need to deploy.
- Most components are common between the four-socket x3850 X6 and eight-socket x3950 X6, making for a simple upgrade path with minimal parts on the floor.

Resilient platform

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

- Upward Integration Modules for standard hypervisors enable the creation and management of policies to maintain high availability of virtual machines and concurrent updating of the system firmware, with no impact on application performance or availability.
- Advanced Processor Recovery allows the system to automatically switch access and control of networking, management, and storage in the event of a processor 1 failure, providing higher availability and productivity.
- Advanced Page Retire proactively protects applications from corrupted pages in memory, which is crucial for scaling memory to terabytes.
- Redundant bit steering, memory mirroring, and memory rank sparing for redundancy in the event of a non-correctable memory failure.
- Intel Execute Disable Bit functionality can help 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, which is protected from all other software running on a system.
- Redundant Intel Platform Controller Hub (PCH) connections to the processors allow the platform to maintain access to networking, storage, and server management during a processor failure.
- Hot-swap drives support RAID redundancy for data protection and greater system uptime.
- Hot-swap I/O Books enabling you to install or replace adapters while the server is still running.
- Tool-less lid-less design provides front and rear access for easy upgrades and serviceability. There is no need to pull the server out of the rack to access internal components.

- Hot-swap power supplies and hot-swap dual-motor redundant fans provide availability for mission-critical applications.
- An LCD diagnostics panel that is combined with individual light path diagnostic LEDs quickly lead the technician to failed (or failing) components, which simplifies servicing, speeds up problem resolution, and helps improve system availability.
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (SAS/SATA HDDs and SSDs, NVMe SSDs, flash storage adapters), fans, power supplies, RAID controllers, and server ambient and sub-component temperatures. Alerts can be surfaced through the system IMM to managers such as Lenovo XClarity Administrator, VMware vCenter, and Microsoft System Center. These proactive alerts let you take appropriate actions in advance of possible failure, thereby increasing server uptime and application availability.
- Built-in Integrated Management Module Version II (IMM2) continuously monitors system parameters, triggers alerts, and performs recovering actions in case of failures to minimize downtime.
- Includes a special Mezzanine LOM (ML2) adapter slot with support for adapters with either two 10 Gb ports or four 1 Gb ports. Supports direct connectivity to the IMM2 service processor for out-of-band systems management.
- Integrated industry-standard Unified Extensible Firmware Interface (UEFI) enables improved setup, configuration, and updates, and simplifies error handling.
- Integrated Trusted Platform Module (TPM) supporting TPM 2.0 and TPM 1.2 enables advanced cryptographic functionality, such as digital signatures and remote attestation.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster and stronger encryption.
- Lenovo XClarity Administrator provides proactive systems management. It offers comprehensive systems management tools that help increase uptime, reduce costs, and improve productivity through advanced server management capabilities.
- Solid-state drives (SSDs) offer better reliability than traditional mechanical HDDs for greater uptime.
- Built-in diagnostic tests, using Dynamic Systems Analysis (DSA) Preboot, speed up troubleshooting tasks to reduce service time.
- Three-year customer-replaceable unit and onsite limited warranty, 9x5 next business day. Optional service upgrades are available.

Locations of key components and connectors

The following figure shows the front of the x3850 X6 server.

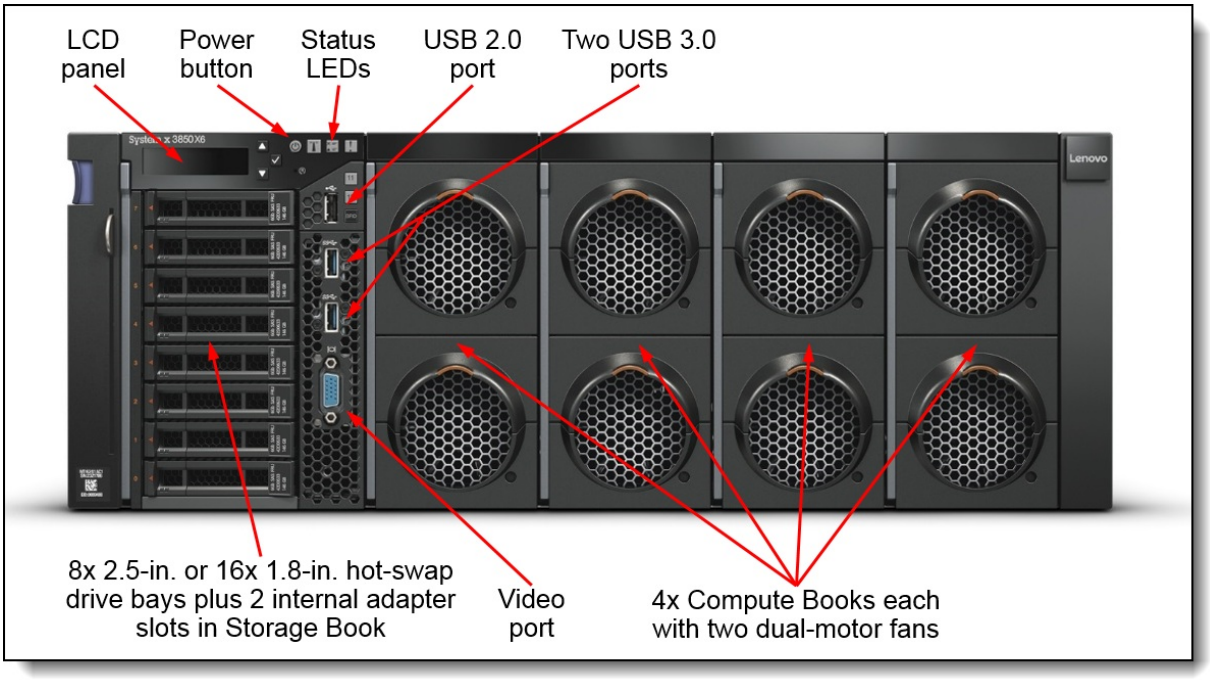

Figure 2. Front view of the Lenovo System x3850 X6

The following figure shows the rear of the x3850 X6 server.

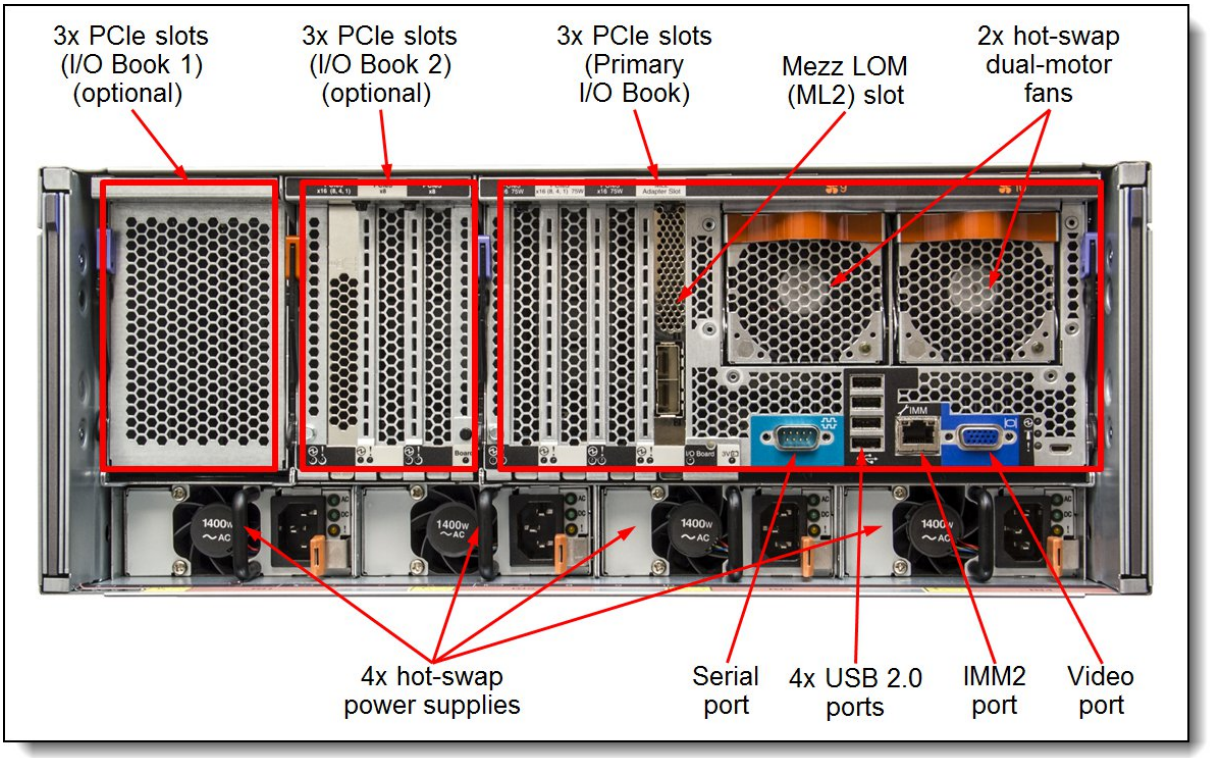

Figure 3. Rear view of the Lenovo System x3850 X6

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine type	6241
Firmware	Lenovo-signed firmware
Form factor	4U rack.
Processor	One, two or four Intel Xeon E7-4800 v4 or E7-8800 v4 processors, each in a Compute Book. Processor options have between 4 and 24 cores with core frequencies up to 3.2 GHz. Three QPI links up to 9.6 GT/s each. Compute Books have TruDDR4 memory up to 1866 MHz, but cannot be mixed. Up to 60 MB L3 cache. Intel C602J chipset.
Memory	Up to 96 DIMM sockets (24 DIMMs per processor, installed in the Compute Book). RDIMMs and LRDIMMs (Load Reduced DIMMs) are supported, but memory types cannot be intermixed. Memory is either TruDDR4 memory (up to 1866 MHz) or DDR3 memory (up to 1600 MHz), depending on the Compute Book selected. DDR3 memory and TruDDR4 memory cannot be mixed in the same Compute Book. Compute Books with DDR3 memory and Compute Books with TruDDR4 memory cannot be mixed in the same system.
Memory maximums	• With RDIMMs: Up to 3 TB with 96x 32 GB RDIMMs and four processors • With LRDIMMs: Up to 6 TB with 96x 64 GB LRDIMMs and four processors • With 3DS RDIMMs: Up to 12 TB with 96x 128 GB RDIMMs and four processors
Memory protection	ECC, Chipkill, RBS, memory mirroring, and memory rank sparing.
Disk drive bays	Up to 16 1.8" SSD bays, or up to 8 2.5" hot-swap SAS/SATA bays, or up to 4x 2.5” hot-swap PCIe NVMe SSD drive bays.
Maximum internal storage	Up to 61.44 TB with 8x 7.68 TB 2.5-inch SAS SSDs or Up to 16 TB with 8x 2 TB 2.5-inch NL SAS HDDs, or Up to 16 TB with 4x 4 TB 2.5-inch PCIe NVMe SSDs.
RAID support	12 Gb SAS/SATA RAID 0, 1, or 10 with ServeRAID M5210; optional upgrades to RAID 5 and 50 are available (zero-cache; 1 GB non-backed cache; 1 GB or 2 GB flash-backed cache). Upgrades to RAID 6 or 60 available for M5210 with 1 GB or 2 GB upgrades.
Optical and tape bays	No internal bays. See http://support.lenovo.com/en/documents/pd011281 for external DVD options.
Network interfaces	Mezzanine LOM (ML2) slot for dual-port 10 GbE cards with SFP+ or RJ-45 connectors or quad-port GbE cards with RJ-45 connectors. See the Ethernet column in the Standard models table. Dedicated 1 GbE port for systems management.

Components	Specification
PCI Expansion slots	Up to 11 PCIe slots plus dedicated Mezzanine LOM slot. The slots are as follows: • Two PCIe 3.0 x8 slots for internal RAID controllers (Storage Book) • Two PCIe 3.0 x16 slots (x16-wired), half length, full height (Primary I/O Book) • One PCIe 3.0 x16 (x8-wired), half length, full height (Primary I/O Book) • One ML2 slot for network adapter (PCIe 3.0 x8) (Primary I/O Book) • Two optional I/O Books, each with three slots, all full height (using these I/O Books requires four processors). Optional books are hot-swap capable. Optional I/O Books can be either of the following options: • Half-length I/O Book: Two PCIe 3.0 x8 slots, one PCIe 3.0 x16 slot. • Full-length I/O Book: Two PCIe 3.0 x16, one PCIe 2.0 x4 slot; two aux power connectors: 150 W and 75 W. Supports one double-wide GPU up to 300 W.
Ports	Front: Two USB 3.0, one USB 2.0, and one VGA video port. Rear: Four USB 2.0, one VGA video, one DB-9 serial, and one 1 GbE RJ-45 systems management. Internal: USB 2.0 port for embedded hypervisor.
Cooling	Calibrated Vectored Cooling™. Up to ten redundant hot-swap fan packs and five fan zones with N+1 fan redundancy. Each fan pack includes two counter-rotated dual-motor fans.
Power supply	Up to four redundant hot-swap 900 W AC or 1400 W AC power supplies (all 80 PLUS Platinum certified). -48 V 750 W DC power supplies are available through CTO.
Hot-swap parts	Drives, power supplies, fans, and optional I/O Books.
Video	Matrox G200eR2 with 16 MB memory that is integrated into the IMM2. Maximum resolution is 1600 x 1200 at 75 Hz with 16 M colors.
Security features	Power-on password, admin password, and an integrated Trusted Platform Module supporting TPM 2.0 and TPM 1.2.
Systems management	UEFI, Integrated Management Module II (IMM2) with remote presence feature, Predictive Failure Analysis, Light Path Diagnostics, Automatic Server Restart, Lenovo XClarity Administrator, Lenovo XClarity Integrators, and ServerGuide.
Operating systems	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi. See the Operating system support section for specifics.
Limited warranty	Three-year customer-replaceable unit (CRU) and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through Lenovo Services offerings: 4-hour or 2-hour response time, 8-hour fix time, 1-year or 2-year warranty extension, and remote technical support for Lenovo hardware and some Lenovo / OEM applications.
Dimensions	Height: 173 mm (6.8 in.), width: 482 mm (19.0 in.), depth: 804 mm (31.6 in), depth with cable management brackets installed: 836 mm (32.9 in), depth with Full-length I/O Book installed: 921 mm (36.2 in)
Weight	Minimum configuration: 35.9 kg (79.2 lb), typical: 46.4 kg (102.3 lb), maximum: 54.7 kg (120 lb)

The server is shipped with the following items:

- Rail kit
- Cable management brackets
- 2.8 m (9.18 ft) C13-C14 power cord (one for each power supply)
- Documentation flyer and safety/warranty/installation information

Standard models

This section lists the Standard and TopSeller models of the x3850 X6 server.

The following table lists the models with E7 v4 processors.

Withdrawn: All models are now withdrawn from marketing.

Table 2. Standard and TopSeller models with E7 v4 processors

Model†	Intel Xeon Processor* (in a Compute Book)	Memory	RAID	Drive bays Drives	Ethernet‡	I/O slots§	Power supplies
x3850 X6 models with E7 v4 processors (TruDDR4 memory)							
6241-14x	1x E7-4809 v4 8C 2.1GHz 20M 115W	2x 8GB (1866MHz)¤	Optional	Optional	4x 1 GbE	6 std 12 max	1x 900W HS / 4
6241-24x**	2x E7-4820 v4 10C 2.0GHz 25M 115W	4x 16GB (1866MHz)¤	1x M5210	4x 2.5" / 8 Open bay	4x 1 GbE	6 std 12 max	2x 900W HS / 4
6241-44x**	2x E7-4850 v4 16C 2.1GHz 40M 115W	4x 16GB (1866MHz)¤	1x M5210	4x 2.5" / 8 Open bay	4x 1 GbE	6 std 12 max	2x 900W HS / 4
6241-54x**	2x E7-8860 v4 18C 2.2GHz 45M 140W	4x 16GB (1866MHz)¤	1x M5210	4x 2.5" / 8 Open bay	4x 1 GbE	6 std 12 max	2x 900W HS / 4
6241-94x**	2x E7-8890 v4 24C 2.2GHz 60M 165W	4x 16GB (1866MHz)¤	1x M5210	4x 2.5" / 8 Open bay	4x 1 GbE	6 std 12 max	2x 900W HS / 4
x3850 X6 TopSeller models with E7 v4 processors (TruDDR4 memory) - North America only							
6241-E1U	2x E7-4820 v4 10C 2.0GHz 25M 115W	4x 16GB (1866MHz)¤	1x M5210	4x 2.5" / 8 Open bay	4x 1 GbE	6 std 12 max	2x 900W HS / 4
6241-E2U	2x E7-4850 v4 16C 2.1GHz 40M 115W	4x 16GB (1866MHz)¤	1x M5210	4x 2.5" / 8 Open bay	4x 1 GbE	6 std 12 max	2x 900W HS / 4
6241-E3U	2x E7-8890 v4 24C 2.2GHz 60M 165W	4x 16GB (1866MHz)¤	1x M5210	4x 2.5" / 8 Open bay	4x 1 GbE	6 std 12 max	2x 900W HS / 4

† x in the Machine Type Model (MTM) represents a region-specific letter (for example, the EMEA MTM is 6241-A4G, and the US MTM is 6241-A4U). Ask a Lenovo representative for specifics.
* Processor detail: Processor quantity and model, cores, core speed, L3 cache, and TDP.
¤ The DIMMs in these models operate at the speed indicated to match the memory bus speed of the processor
‡ Model F3x, F4x, B3x include the Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+ adapter (BCM57810S based). All other models include Intel I350-T4 ML2 Quad Port GbE Adapter (I350-AM4 based).
§ Models with six slots have the Primary I/O Book (four slots) and Storage Book (two slots) standard.
** Models 24x, 44x, 54x and 94x not available in North America.

SAP HANA Workload Optimized models

The Lenovo System x3850 X6 Workload Optimized Solutions for SAP HANA provide optimal solutions for SAP NetWeaver Business Warehouse, data mart, and SAP Business Suite, Powered by SAP HANA applications. Preconfigured workload optimized server models for SAP HANA applications are configured with up to 1 TB of memory and are upgradeable to support larger single node and scale-out cluster implementations.

Note: For CTO configurations of SAP HANA models, select base model 6241-AC3

The following table lists the Workload Optimized Solution models for SAP HANA with E7 v4 processors.

Withdrawn: All models are now withdrawn from marketing.

Table 3. Workload Optimized Solution models for SAP HANA with E7 v4 processors

Model	Intel Xeon (Compute Book)	Memory	RAID	Drive bays Drives	Ethernet	I/O slots	Power supplies
SAP HANA models with E7 v4 processors and TruDDR4 memory - Standard models							
6241-8Ax	2x E7-8880 v4 22C 2.2GHz 55M 150W	128 GB 16x 8GB DDR4 RDIMM	1x M5210 + upgrades*	8x 2.5" bays 6x 1.2 TB SAS HDD 2x 400 GB S3710 SSD	1x 4x1GbE ML2 2x Mellanox 10Gb*	6 std 12 max	4x 1400W HS / 4
6241-8Bx	2x E7-8880 v4 22C 2.2GHz 55M 150W	256 GB 16x 16GB DDR4 RDIMM	1x M5210 + upgrades*	8x 2.5" bays 6x 1.2 TB SAS HDD 2x 400 GB S3710 SSD	1x 4x1GbE ML2 2x Mellanox 10Gb*	6 std 12 max	4x 1400W HS / 4
6241-8Cx	2x E7-8880 v4 22C 2.2GHz 55M 150W	512 GB 16x 32GB DDR4 RDIMM	1x M5210 + upgrades*	8x 2.5" bays 6x 1.2 TB SAS HDD 2x 400 GB S3710 SSD	1x 4x1GbE ML2 2x Mellanox 10Gb*	6 std 12 max	4x 1400W HS / 4
6241-8Dx	4x E7-8880 v4 22C 2.2GHz 55M 150W	512 GB 32x 16GB DDR4 RDIMM	1x M5210 + upgrades*	8x 2.5" bays 6x 1.2 TB SAS HDD 2x 400 GB S3710 SSD	1x 4x1GbE ML2 2x Mellanox 10Gb*	12 std 12 max	4x 1400W HS / 4
6241-8Fx	4x E7-8880 v4 22C 2.2GHz 55M 150W	1024 GB 32x 32GB DDR4 RDIMM	1x M5210 + upgrades* + 1x M5225 + upgrades*	8x 2.5" bays 6x 1.2 TB SAS HDD 2x 400 GB S3710 SSD	1x 4x1GbE ML2 2x Mellanox 10Gb*	12 std 12 max	4x 1400W HS / 4
SAP HANA models with E7 v4 processors and TruDDR4 memory - TopSeller models (North America only)							
6241-EKU	2x E7-8880 v4 22C 2.2GHz 55M 150W	256 GB 16x 16GB DDR4 RDIMM	1x M5210 + upgrades*	8x 2.5" bays 6x 1.2 TB SAS HDD 2x 400 GB S3710 SSD	1x 4x1GbE ML2 2x Mellanox 10Gb*	6 std 12 max	4x 1400W HS / 4

* See the list of specific components below

Each of these HANA models include the following components

- ServeRAID M5210 controller (46C9110) with 2GB cache upgrade with flash backup (47C8664), plus Performance Accelerator (47C8710) and SSD Caching Enabler (47C8712)
- Models HQx, HVx: ServeRAID M5120 RAID controller for external connectivity (81Y4478), with 1GB cache upgrade with flash backup (47C8660) plus Performance Accelerator (47C8710) and SSD Caching Enabler (47C8712).
- Model 8Fx: ServeRAID M5225-2GB RAID controller for external connectivity (00AE938) plus Performance Accelerator (47C8710) and SSD Caching Enabler (47C8712).
- Six 1.2TB 10K 6Gbps SAS 2.5" G3HS HDD (00AJ146)
- Models with E7 v4 processors: Two Intel S3710 400GB Enterprise Performance SATA G3HS 2.5" SSDs (00YC325)
- One Intel I350-T4 ML2 Quad Port GbE Adapter (00D1998)
- Models with E7 v4 processors: Two Mellanox ConnectX-3 10 GbE Adapters (00D9690) plus four

SFP+ SR Transceivers (46C3447)

- Models with 12 standard slots: Two X6 Half-length I/O Books (44X4049)
- Lenovo solution for SAP HANA media

Note: The operating system software is not included with the SAP HANA models. Operating system selection must be a separate line item included in order: SLES for SAP with standard or priority support. The SAP HANA Software is included, but the license is sold separately by SAP or an SAP business partner. VMware Enterprise Plus license sold separately. IBM Spectrum Scale (GPFS) is available from Lenovo separately.

For more information about the standard features of the server, see the Standard specifications section.

Upgrading Compute Books

With the x3850 X6, machine type 6241, Lenovo supports upgrading the server processors by simply by replacing the Compute Books. The process to upgrade is made very simple because of the innovative book design of the x3850 X6.

Supported upgrades are:

- E7 v2 processors to E7 v4 processors (new DDR4 DIMMs required)
- E7 v3 processors with DDR3 to E7 v4 processors (new DDR4 DIMMs required)
- E7 v3 processors with DDR4 to E7 v4 processors (optionally keep existing memory)

Notes:

- E7 v3 processors are now withdrawn, so you cannot upgrade to E7 v3 processors.
- Upgrades to v4 processors are only supported with machine type 6241. If you want to upgrade an X6 server with machine type 3837, contact your local representative.
- eXFlash DIMMs (now withdrawn) are not supported with TruDDR4 memory; Only DDR3 memory is supported
- Intel Xeon E7 v4 processors require minimum firmware levels. Consult the documentation that is included with the Compute Books.
- Compute books with E7 v4 processors do not support DDR3 memory
- If you upgrade from E7 v3 processors with DDR4 to E7 v4 processors, you can transfer the 2133 MHz DDR4 memory DIMMs to the new compute books. If you also want to add additional memory to the E7 v4 compute book, it is supported to use either 2133 MHz or 2400 MHz DDR4 memory DIMMs. It is supported to mix 2133 MHz and 2400 MHz DIMMs in the same compute book.

Upgrading to an 8-socket system

The x3850 X6 server has a flexible modular design that allows you to increase the server's compute power and I/O capabilities by adding additional Compute Books and I/O Books. The modular design also means that if your business needs additional processing or I/O capability within the same system image, then it is possible to migrate to an eight-socket x3950 X6.

Lenovo supports upgrading a 4-socket X6 server to an 8-socket X6 server. The two recommended methods are as follows:

- Start with a 4-socket x3950 X6 (8U chassis) and add additional processors when needed
- Start with a 4-socket x3850 X6 (4U chassis) and upgrade it when needed using an option part number

Option 1: Start with a 4-socket x3950 X6

With this option, you plan for the need for future 8-socket performance in advance and purchase an x3950 X6 with only four Compute Books installed. The initial order would contain:

- Four Compute Books with E7-8800 v3 or v4 series processors (not E7-4800 processors)
- Four Power Supplies (preferably 1400W)
- Two Primary IO Book standard
- Two Storage Book Standard

Once the need arises to upgrade the server to six or eight processors, simply purchase more Compute Books with the same processor model, plus additional power supplies (as determined by using the Power Configurator), I/O Books, adapters and drives as needed.

For information about the x3950 X6, see the Lenovo System x3950 X6 Product Guide: http://lenovopress.com/tips1251

Note: It is supported to install E7-4800-based Compute Books in a x3950 X6 from either an System x3850 X6 (machine type 3837) or a Lenovo System x3850 X6 (machine type 6241)

Option 2: Upgrade your 4-socket x3850 X6 using option 00MY849

With this option, you don't have to plan for 8-socket capacity up front. You start with an x3850 X6 then when you are ready to upgrade to a 6-socket or 8-socket server, you purchase part number 00MY849.

Table 4. 8S upgrade part number

Part number	Feature code	Description
00MY849	None	x3850 X6 8S Upgrade

The part number includes the following major components:

- 1x 8U chassis and 8-socket midplane
- 1x Primary I/O Book
- 1x Storage Book

Engage a Lenovo service engineer to come onsite to perform the field upgrade by transferring all components to the new chassis. This method also requires the x3850 X6 compute books be the same E7-8800 series processors as ordered, however, in this scenario, the server maintain the original serial number.

Note: Use of E7-4800 processors: Intel Xeon E7-4800 v2/v3/v4 processors cannot be used in an x3950 X6. If your x3850 X6 has Compute Books with E7-4800 processors, then these must be replaced with Compute Books with E7-8800 processors if you plan to upgrade to an x3950 X6. The memory in the Compute Books can be reused in the x3950 X6, however (provided the selected processors support the memory type, DDR3 or DDR4).

The major parts of the 4U to 8U upgrade are the 8U chassis, the Storage Book and the Primary I/O Book. All the components in the package will be installed in the top portion of the chassis. The 4U system's components will be transferred to the bottom section of the chassis.

Even though this upgrade requires a new 8U chassis replacing the existing 4U chassis, the majority of internal components can be moved from the x3850 X6 to the x3950 X6.

The x3850 X6 components that can be migrated to the x3950 X6 as part of the upgrade are:

- Compute Books, provided they use Intel Xeon E7-8800 processors
- All memory DIMMs
- Storage Book
- All internal drives
- Primary I/O Book (and associated fans)
- Half-length I/O Books
- Full-length I/O Books
- All adapters
- All power supplies

The upgrade may also require new parts:

- Additional Compute Books (a minimum of four Compute Books required in the x3950 X6)
- Additional power supplies (a minimum of four are required in the x3950 X6)
- Additional I/O Books, network adapters, drives as needed

There are key considerations for this upgrade:

- Processor support: Intel Xeon E7-4800 v2/v3/v4 processors cannot be used in an x3950 X6. If your x3850 X6 has Compute Books with E7-4800 processors, then these must be replaced with Compute Books with E7-8800 processors if you plan to upgrade to an x3950 X6. The memory in the Compute Books can be reused in the x3950 X6, however.
- All processors must be identical: All processors used in the x3950 X6 must be the identical. For example, all E7-8850 v3 processors. A minimum of four processors are required.
- The upgrade does result in some parts no longer being used (“parts on the floor”):
- Existing 4U chassis and 4-socket midplane
- Compute Books that are based on E7-4800 processors
- Original x3850 X6 server may need to be ordered configure-to-order (CTO) or Special Bid: To minimize “parts on the floor” (parts that cannot be used in the upgraded system), the original x3850 X6 should be configured with Compute Books containing E7-8800 processors. Since many standard models of the x3850 X6 (see Table 2) contain E7-4800 processors, you may need to use configure-to-order or order the server using Special Bid to create a server configuration with E7-8800 processors.
- Serial number swap: The upgrade process also involves transferring the x3850 X6 serial number to the x3950 X6 chassis. This transfer makes the upgrade simpler from an asset or depreciation management point of view. This transfer also means that the old 4U chassis will be retired as it will no longer have a valid serial number.
- Power supplies: Ideally all power supplies are the 1400W variant. Regardless of the selection, the power supplies coexistence rules as described in the Power supplies section must be followed.
- Additional power: Depending on your workload and configuration you may need to provision for additional PDU outlets, cables and power capacity for your x3950 X6 server. Use the Lenovo Power Configurator to determine your total power draw to assist you in provisioning adequate power. You can download the Power Configurator from https://support.lenovo.com/documents/LNVO-PWRCONF
- Additional rack space: An additional 4U of rack space is required when upgrading the x3850 X6 to the x3950 X6, for a total of 8U of rack space.
- Down time: In order to upgrade the x3850 X6 server to an x3950 X6 server you will need to allow for down time. The server will need to be completely powered off and have some of its components removed for re-installation into the new x3950 X6 server.

Processor options

The x3850 X6 supports up to four Intel Xeon E7 v4 processors. Compute books with E7 v3 or E7 v2 processors are now withdrawn from marketing. Processors are installed in Compute Books, one processor in each Compute Book. The following figure shows the components of the Compute Book:

- One processor
- A total of 24 DIMM slots, 12 on each side of the book
- Two hot-swap dual-motor fans that are mounted on the front of the book

The x3850 X6 supports two or four Compute Books. Three Compute Books are not supported. A configuration of one Compute Book is only supported in standard models 6241-A4x and 6241-D5x.

Each Compute Book is installed in the front of the server, as shown in the following figure.

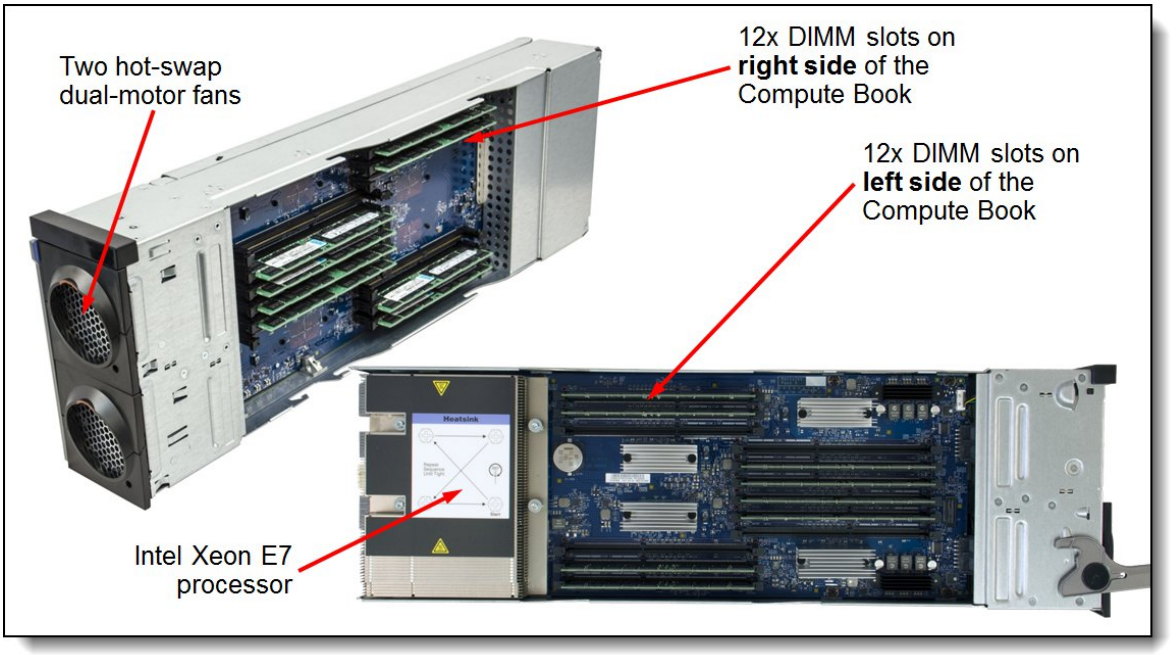

Figure 4. Compute Book

The following table shows the processor options, grouped as follows:

- E7-4800 v4 processors in Compute Books with TruDDR4 support
- E7-8800 v4 processors in Compute Books with TruDDR4 support

Each option includes the processor installed in a Compute Book. Compute Books with one of the E7-4800 family of processors are supported only in a four-socket x3850 X6 server and cannot be used in an x3950 X6 server. All Compute Books installed in a server must be identical.

The table also shows the maximum memory bus speed each processor supports plus 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 5. Compute book options (HT = Hyper Threading, TB = Turbo Boost 2.0)

Part number Feature codes‡	Description (processor installed in a Compute Book)	L3 cache	QPI speed	Memory support	Memory bus speed (RAS / Performance)†	HT	TB	Models where used
Intel Xeon E7-4800 v4 processors (not supported in the x3950 X6)								
00WH302 ATX1 / ATXR	X6 Compute Book E7-4809 v4 8C 2.1GHz 20M 115W	20 MB	6.4 GHz	TruDDR4	1866 MHz / 1333 MHz	Y	N	14x
00WH306 ATX2 / ATXS	X6 Compute Book E7-4820 v4 10C 2.0GHz 25M 115W	25 MB	6.4 GHz	TruDDR4	1866 MHz / 1333 MHz	Y	N	24x, E1U
00WH310 ATX3 / ATXT	X6 Compute Book E7-4830 v4 14C 2.0GHz 35M 115W	35 MB	8 GHz	TruDDR4	1866 MHz / 1333 MHz	Y	Y	-
00WH314 ATX4 / ATXU	X6 Compute Book E7-4850 v4 16C 2.1GHz 40M 115W	40 MB	8 GHz	TruDDR4	1866 MHz / 1333 MHz	Y	Y	44x, E2U
Intel Xeon E7-8800 v4 processors (also supported in the x3950 X6)								
00KH384 ATWZ / ATYF	X6 Compute Book E7-8855 v4 14C 2.1GHz 35M 140W	35 MB	8 GHz	TruDDR4	1866 MHz / 1333 MHz	Y	Y	-
00WH322 ATX6 / ATXW	X6 Compute Book E7-8860 v4 18C 2.2GHz 45M 140W	45 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	54x

Part number Feature codes‡	Description (processor installed in a Compute Book)	L3 cache	QPI speed	Memory support	Memory bus speed (RAS / Performance)†	HT	TB	Models where used
00WH318 ATX5 / ATXV	X6 Compute Book E7-8867 v4 18C 2.4GHz 45M 165W	45 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	-
00WH326 ATX7 / ATXX	X6 Compute Book E7-8870 v4 20C 2.1GHz 50M 140W	50 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	-
00WH330 ATX8 / ATXY	X6 Compute Book E7-8880 v4 22C 2.2GHz 55M 150W	55 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	HANA models
00WH334 ATX9 / ATXZ	X6 Compute Book E7-8890 v4 24C 2.2GHz 60M 165W	60 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	94x, E3U
00WH342 ATXB / ATY1	X6 Compute Book E7-8891 v4 10C 2.8GHz 60M 165W	60 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	-
00WH346 ATXC / ATY2	X6 Compute Book E7-8893 v4 4C 3.2GHz 60M 140W	60 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	-
00YG935 AVR6 / AVR7	X6 Compute Book E7-8894 v4 24C 2.4GHz 60M 165W	60 MB	9.6 GHz	TruDDR4	1866 MHz / 1600 MHz	Y	Y	-

‡ The first feature code is for the first Compute Book. The second feature code is for all additional Compute Books

† The processors support two memory modes, RAS mode (also known as lockstep mode) and Performance mode (also known as independent mode). In Performance mode, the SMI2 link operates at *twice the memory bus speed shown*.

Memory options

The x3850 X6 (6241) supports either DDR3 or TruDDR4 memory, depending on the Compute Books used in the server.

Lenovo TruDDR4 Memory uses the highest quality components that are sourced from Tier 1 DRAM suppliers and only memory that meets the strict requirements of Lenovo is selected. It is compatibility tested and tuned to maximize performance and reliability. TruDDR4 Memory has a unique signature that is programmed into the DIMM that enables System x® servers to verify whether the memory that is installed is qualified or supported by Lenovo. Because TruDDR4 Memory is authenticated, certain extended memory performance features can be enabled to extend performance over industry standards.

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 TruDDR4 and DDR3 memory automatically assumes the system warranty, and Lenovo provides service and support worldwide.

The x3850 X6 supports TruDDR4 memory operating at speeds up to 1866 MHz and DDR3 memory at speeds up to 1600 MHz. Note that even though supported TruDDR4 DIMMs are rated at 2400 MHz or 2133 MHz, when used in the x3850 X6, they operate at speeds up to 1866 MHz.

The x3850 X6 supports up to 96 DIMMs when all processors are installed, 24 DIMMs per processor. Each processor has four memory channels that are implemented using Scalable Memory Interface generation 2 (SMI2) chips, and the server implements three DIMMs per channel. The processor and the corresponding memory DIMM slots are on the Compute Book.

The following table lists the memory options that are available for x3850 X6.

Table 6. Memory options

Part number	Feature code	Description	Maximum supported	Models where used
2400 MHz TruDDR4 RDIMMs and LRDIMMs (for use with E7 v4 processors; also supported with E7 v3)				
46W0821	ATC8	8GB TruDDR4 Memory (1Rx4, 1.2V) PC4-19200 CL17 2400MHz LP RDIMM	96 (24 per CPU)	14x
46W0829	ATCA	16GB TruDDR4 Memory (2Rx4, 1.2V) PC4-19200 CL17 2400MHz LP RDIMM	96 (24 per CPU)	All other v4 models
46W0833	ATCB	32GB TruDDR4 Memory (2Rx4, 1.2V) PC4-19200 CL17 2400MHz LP RDIMM	96 (24 per CPU)	8Cx, 8Fx, 8Hx, 8Jx
46W0841	ATGG	64GB TruDDR4 Memory (4Rx4, 1.2V) PC4-19200 CL17 2400MHz LP LRDIMM	96 (24 per CPU)	-
00YG941	B0MV	128GB TruDDR4 Memory (8Rx4 1.2V) PC4-2400-R 2400MHz 3DS RDIMM	96 (24 per CPU)	-

The following rules apply when selecting the memory configuration:

- The server supports RDIMMs and LRDIMMs.
- DDR4 Compute Books support mixing 2133 MHz and 2400 MHz DDR4 memory. (Note: 2133 MHz DIMMs are now withdrawn)
- Mixing different types of memory (combinations of RDIMMs, LRDIMMs, and 3DS RDIMMs) is not supported.
- Mixing different generations of memory (DDR3 and TruDDR4) is not supported
- The maximum number of ranks per one memory channel is six with RDIMMs, 12 with LRDIMMs, or 24 with 3DS RDIMMs.
- In RAS (lockstep) mode, DIMMs must be installed in a pair.
- The maximum quantity of DIMMs that can be installed in the server depends on the number of processors, DIMM type, rank, and operating voltage, as shown in the "Maximum qty supported" row in the following table.
- All DIMMs in the server operate at the same speed, which is determined as the lowest value of one of the following options:
    - 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 "Maximum operating speed" section in the following table.

The following table shows the characteristics of the supported DIMMs. Table cells that are highlighted with a gray background indicate that the server supports higher memory frequencies or larger memory capacity (or both) than the Intel processor specification defines.

Memory speed: In performance mode, memory channels operate independently, and the SMI2 link operates at twice the DDR3 speed. In RAS mode, two channels operate synchronously, and the SMI2 link operates at the DDR3 speed.

Table 7. Maximum memory speeds - 2400 MHz TruDDR4 memory

Specification	RDIMMs		LRDIMMs	3DS RDIMMs
Rank	Single rank	Dual rank	Quad rank	Octo rank
Part numbers	46W0821 (8 GB)	46W0829 (16 GB) 46W0833 (32 GB)	46W0841 (64 GB)	00YG941 (128 GB)
Rated speed	2400 MHz	2400 MHz	2400 MHz	2400 MHz
Rated voltage	1.2 V	1.2 V	1.2 V	1.2 V
Operating voltage	1.2 V	1.2 V	1.2 V	1.2 V
Maximum quantity*	96	96	96	96
Largest DIMM	8 GB	32 GB	64 GB	128 GB
Max memory capacity	0.75 TB	3 TB	6 TB	12 TB
Maximum operating speed - Performance mode (2:1 mode - SMI2 link operates at*twice* the speed shown)				
1 DIMM per channel	1600 MHz	1600 MHz	1600 MHz	1600 MHz
2 DIMMs per channel	1600 MHz	1600 MHz	1600 MHz	1600 MHz
3 DIMMs per channel	1600 MHz	1600 MHz†	1600 MHz	1600 MHz
Maximum operating speed - RAS mode (1:1 mode - SMI2 link operates at the speed shown)				
1 DIMM per channel	1866 MHz	1866 MHz	1866 MHz	1866 MHz
2 DIMMs per channel	1866 MHz	1866 MHz	1866 MHz	1866 MHz
3 DIMMs per channel	1600 MHz	1600 MHz†	1600 MHz	1600 MHz

* Maximum quantity supported is shown for all processors that are installed
† This speed is above the Intel standard and is achieved only when Lenovo TruDDR4 memory is used

The following memory protection technologies are supported:

- ECC
- Chipkill (for x4-based memory DIMMs)
- Redundant bit steering (Double Device Data Correction)
- Memory mirroring
- Memory rank sparing

Chipkill and Redundant Bit Steering are supported in RAS mode. Chipkill is supported in Performance mode.

If memory mirroring is used, DIMMs must be installed in pairs for Performance mode (minimum of one pair per each processor) and quads for RAS mode. DIMMs in the pair/quad must be identical in type and size.

If memory rank sparing is used, then a minimum of 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 that are installed.

Internal storage

The x3850 X6 server supports 1.8-inch solid-state drives and 2.5-inch SSDs and HDDs. Drives are installed in the Storage Book. The x3850 X6 has one Storage Book. The Storage Book supports the following configurations:

- 4x 2.5-inch hot-swap drive bays
- 8x 2.5-inch hot-swap drive bays
- 4x 2.5-inch hot-swap drive bays + 8x 1.8-inch hot-swap SSD bays

- 8x 1.8-inch hot-swap SSD bays
- 16x 1.8-inch hot-swap SSD bays
- 4x 2.5-inch PCIe NVMe SSDs
- 2x 2.5-inch PCIe NVMe SSDs + 8x 1.8-inch HDD hot-swap drives
- 2x 2.5-inch PCIe NVMe SSDs + 4x 2.5-inch HDD hot-swap drives

The following figure shows these configurations.

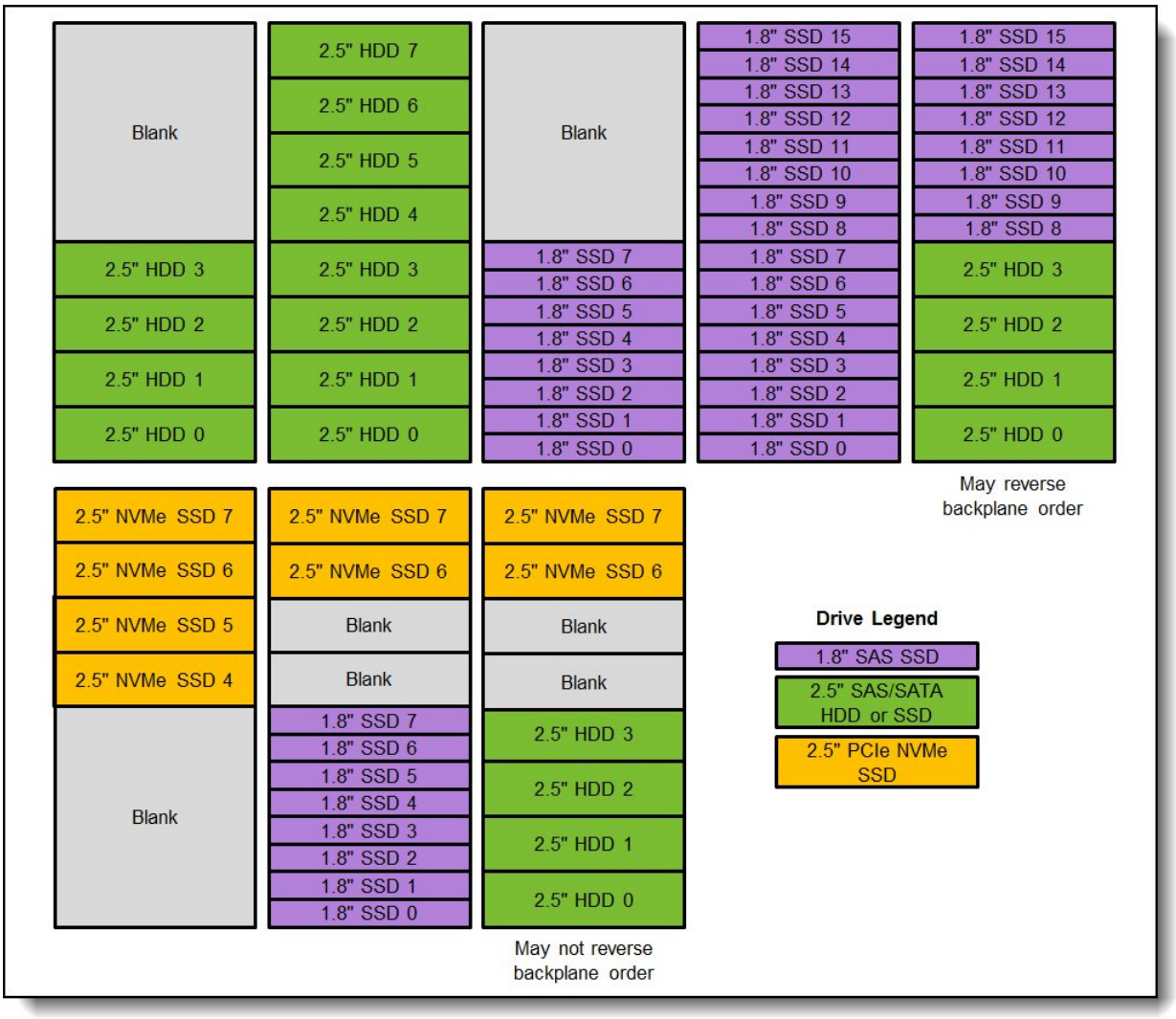

Figure 5. Internal drive configurations

Backplanes

All standard models ship with four 2.5-inch SAS/SATA hot-swap hard disk drive bays, except model 6241-A4x. The following table shows the internal storage expansion options that are available.

Table 8. Internal storage expansion options

Part number	Feature code	Description	Maximum supported
44X4104	A4A6	4x 2.5" HS 12Gb SAS HDD Backplane	2
44X4106*	A4A7	8x 1.8" HS 12Gb SAS HDD Backplane	2
44X4108	A4A8	1x4 2.5-inch NVMe PCIe Gen3 SSD Backplane	1

* Withdrawn from marketing

The backplanes are connected to one or two RAID controllers or HBAs depending on the number and type of backplane that is installed. The adapters are installed in PCIe slots in the Storage Book, as shown in the following figure.

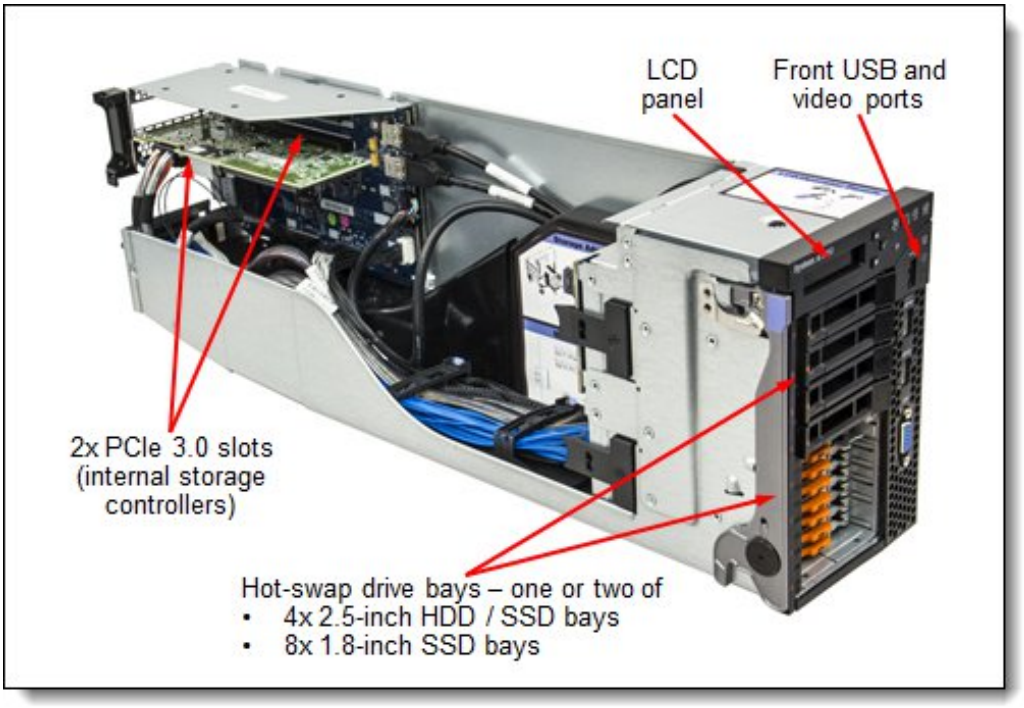

Figure 6. Storage Book

The following table shows the backplanes that are required per Storage Book and the number of controllers that are required. Note that the table shows the exact number of controllers supported for each drive/backplane configuration, no more, no fewer.

Table 9. Drive combinations per Storage Book

Drive combination	Backplanes required	Number of adapters supported
4x 2.5-inch hot-swap drive bays	1x 4x 2.5" HS 12Gb SAS HDD Backplane, 44X4104	1
8x 2.5-inch hot-swap drive bays	2x 4x 2.5" HS 12Gb SAS HDD Backplane, 44X4104	1
4x 2.5-inch hot-swap drive bays + 8x 1.8-inch hot-swap SSD bays	1x 4x 2.5" HS 12Gb SAS HDD Backplane, 44X4104 1x 8x 1.8" HS 12Gb SAS HDD Backplane, 44X4106	2
8x 1.8-inch hot-swap SSD bays	1x 8x 1.8" HS 12Gb SAS HDD Backplane, 44X4106	1
16x 1.8-inch hot-swap SSD bays	2x 8x 1.8" HS 12Gb SAS HDD Backplane, 44X4106	2
4x 2.5-inch NVMe	1x 4x 2.5-inch NVMe PCIe SSD Backplane, 44X4108	1 or 2*
2x 2.5-inch NVMe + 4x 2.5-inch HDD/SSD	1x 4x 2.5-inch NVMe PCIe SSD Backplane, 44X4108 1x 4x 2.5" HS 12Gb SAS HDD Backplane, 44X4104	2
2x 2.5-inch NVMe + 8x 1.8-inch SSD	1x 4x 2.5-inch NVMe PCIe SSD Backplane, 44X4108 1x 8x 1.8" HS 12Gb SAS HDD Backplane, 44X4106	2

* The number of controllers required is dependent on the number of drives installed: 1 or 2 drives requires one controller, and 3 or 4 drives requires two controllers.

Controllers for internal storage

The following table lists the RAID controllers, HBAs, and additional hardware and feature upgrades that are used for internal disk storage. The adapters are installed in slots in the Storage Book.

Table 10. RAID controllers and HBAs for internal storage

Part number	Feature code	Description	Maximum supported (slot #)	Models where used
46C9110	A3YZ	ServeRAID M5210 SAS/SATA Controller	2 (11, 12)	All models
47C8675	A3YY	N2215 SAS/SATA HBA for System x	2 (11, 12)	-
00ML997	AS95	NVMe PCIe SSD Extender Adapter	2 (11, 12)	-
Hardware upgrades for the M5210				
47C8656	A3Z0	ServeRAID M5200 Series 1GB Cache/RAID 5 Upgrade	2	-
47C8660	A3Z1	ServeRAID M5200 Series 1GB Flash/RAID 5 Upgrade	2	-
47C8664	A3Z2	ServeRAID M5200 Series 2GB Flash/RAID 5 Upgrade	2	-
47C8668	A3Z3	ServeRAID M5200 Series 4GB Flash/RAID 5 Upgrade	2	-
Features on Demand upgrades for the M5210				
47C8708	A3Z6	ServeRAID M5200 Series Zero Cache/RAID 5 Upgrade	1	-
47C8706	A3Z5	ServeRAID M5200 Series RAID 6 Upgrade	1*	-
47C8710	A3Z7	ServeRAID M5200 Series Performance Accelerator	1*	-
47C8712	A3Z8	ServeRAID M5200 Series SSD Caching Enabler	1*	-

* These M5210 features upgrades require a cache memory upgrade (47C8656, 47C8660, or 47C8664).

The following table compares the features of the supported controllers.

Table 11. Feature comparison

Feature	ServeRAID M5210	N2215	NVMe Extender
Adapter type	RAID controller	SAS HBA	PCIe Extender
Part number	46C9110	47C8675	00ML997
Form factor	PCIe low profile	PCIe low profile	PCIe low profile
Controller chip	LSI SAS3108	LSI SAS3008	None
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	12 Gbps SAS	12 Gbps SAS	PCIe NVMe
Number of ports	8	8	2
Port connectors	2x Mini-SAS HD x4 (SFF-8643)	2x Mini-SAS HD x4 (SFF-8643)	OCuLink
Drive interface	SAS, SATA	SAS, SATA	NVMe
Drive type	HDD, SSD, SED	HDD, SSD	SSD
Hot-swap drives	Yes	Yes	Yes
Max devices	240	1024	2
RAID levels	0/1/10; Optional 5/50 (RAID 5 FoD, 47C8708, or cache upgrades) Optional 6/60 (47C8706)	None	None
JBOD mode	Yes (without cache)	Yes	Yes
Cache	1 GB no backup (47C8656) 1 GB flash backup (47C8660) 2 GB flash backup (47C8664) 4 GB flash backup (47C8668)	None	None
CacheVault cache protection	Optional	None	None
Performance Accelerator (FastPath)	Optional (47C8710)	No	No
SSD Caching (CacheCade Pro 2.0)	Optional (47C8712)	No	No
SED support (SafeStore)	Yes (with RAID 5 FoD upgrade or any cache upgrade	No	No

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

The NVMe PCIe SSD Extender Adapter is a PCIe adapter that simply routes the PCIe 3.0 x8 signal from the slot in the Storage Book, splits the signal to two x4 links, and routes those via cables to the drive backplane. The extender adapter is shown in the following figure.

One adapter is required for every two drives installed in the Storage Book. Since there are only two PCIe slots in the Compute Book, only two adapters can be installed and therefore only four NVMe drives can be installed in a Storage Book.

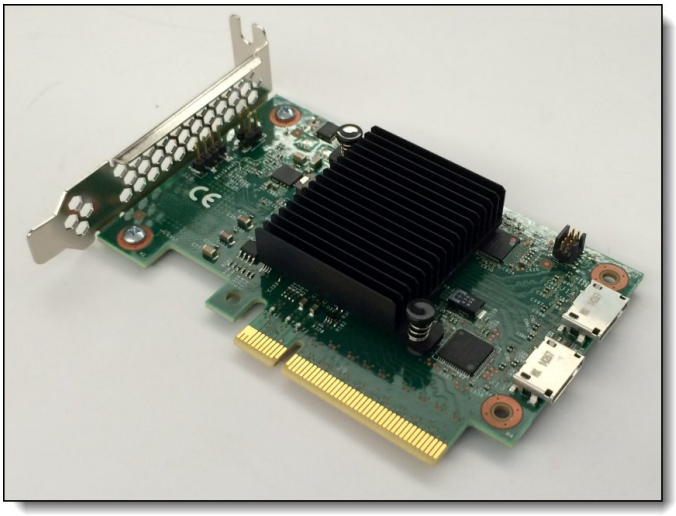

Figure 7. NVMe PCIe SSD Extender Adapter

Internal drive options

The following tables list the hard disk drive and solid-state drive options for the internal disk storage of the server.

- Table 12: 2.5-inch hot-swap 12 Gb SAS HDDs
- Table 13: 2.5-inch hot-swap 6 Gb SAS/SATA HDDs
- Table 14: 2.5-inch hot-swap 12 Gb SAS SSDs
- Table 15: 2.5-inch hot-swap 6 Gb SAS/SATA SSDs
- Table 16: 2.5-inch NVMe SSDs

Table 12. 2.5-inch hot-swap 12 Gb SAS HDDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap HDDs - 12 Gb SAS 10K			
00WG685	AT89	300GB 10K 12Gbps SAS 2.5" G3HS HDD	8
00WG690	AT8A	600GB 10K 12Gbps SAS 2.5" G3HS HDD	8
00WG695	AT8B	900GB 10K 12Gbps SAS 2.5" G3HS HDD	8
00WG700	AT8C	1.2TB 10K 12Gbps SAS 2.5" G3HS HDD	8
00NA271	ASBM	1.8TB 10K 12Gbps SAS 2.5" G3HS 512e HDD	8
2.5-inch hot-swap HDDs - 12 Gb SAS 15K			
00WG660	AT84	300GB 15K 12Gbps SAS 2.5" G3HS HDD	8
00WG665	AT85	600GB 15K 12Gbps SAS 2.5" G3HS HDD	8
01GV035	AVKU	900GB 15K 12Gbps SAS 2.5" G3HS 512e HDD	8
2.5-inch hot-swap HDDs - 12 Gb NL SAS			
00NA491	AT7Z	1TB 7.2K 12Gbps NL SAS 2.5" G3HS HDD	8
00NA496	AT80	2TB 7.2K 12Gbps NL SAS 2.5" G3HS 512e HDD	8
2.5-inch hot-swap SED HDDs - 12 Gb SAS 10K			
00WG705	AT8D	300GB 10K 12Gbps SAS 2.5" G3HS SED	8
00WG710	AT8E	600GB 10K 12Gbps SAS 2.5" G3HS SED	8
00WG715	AT8F	900GB 10K 12Gbps SAS 2.5" G3HS SED	8
00WG720	AT8G	1.2TB 10K 12Gbps SAS 2.5" G3HS SED	8

Table 13. 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			
01GV070	B0YT	2.4TB 10K 12Gbps SAS 2.5" G3HS 512e HDD	8
2.5-inch hot-swap HDDs - 6 Gb NL SATA			
00AJ141	A4TX	1TB 7.2K 6Gbps NL SATA 2.5" G3HS HDD	8
00NA526	AT81	2TB 7.2K 6Gbps NL SATA 2.5" G3HS 512e HDD	8

Table 14. 2.5-inch hot-swap 12 Gb SAS SSDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Capacity			
01GR786	AVKV	PM1633a 3.84TB Enterprise Capacity 12Gb SAS G3HS 2.5" SSD	8
01GR771	AUEJ	PM1633a 7.68TB Enterprise Capacity 12Gb SAS G3HS 2.5" SSD	8
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Performance (10+ DWPD)			
01GV711	AVL0	400GB Enterprise Performance 12G SAS G3HS 2.5" SSD	8
01GV716	AVL1	800GB Enterprise Performance 12G SAS G3HS 2.5" SSD	8
01GV721	AVL2	1.6TB Enterprise Performance 12G SAS G3HS 2.5" SSD	8
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Mainstream (3-5 DWPD)			
01GV761	AWEY	PM1635a 400GB Enterprise Mainstream 12Gb SAS G3HS 2.5" SSD	8
01GV766	AWEZ	PM1635a 800GB Enterprise Mainstream 12Gb SAS G3HS 2.5" SSD	8
01GV771	AWF0	PM1635a 1.6TB Enterprise Mainstream 12Gb SAS G3HS 2.5" SSD	8

Table 15. 2.5-inch hot-swap 6 Gb SAS/SATA SSDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Mainstream (3-5 DWPD)			
7SD7A05713	B10B	Intel S4600 480GB Enterprise Mainstream SATA G3HS 2.5" SSD	8
01GV863	AXFZ	5100 3.84TB Enterprise Mainstream SATA G3HS 2.5" SSD	8
2.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Entry (<3 DWPD)			
7SD7A05732	B0Z8	Intel S4500 240GB Enterprise Entry SATA G3HS 2.5" SSD	8
7SD7A05731	B0Z9	Intel S4500 480GB Enterprise Entry SATA G3HS 2.5" SSD	8
7SD7A05730	B0ZA	Intel S4500 960GB Enterprise Entry SATA G3HS 2.5" SSD	8
4XB7A08493	B0ZB	Intel S4500 1.92TB Enterprise Entry SATA G3HS 2.5" SSD	8
4XB7A08494	B0ZC	Intel S4500 3.84TB Enterprise Entry SATA G3HS 2.5" SSD	8
01GR836	AVHP	PM863a 240GB Enterprise Entry SATA G3HS 2.5" SSD	8
01GR846	AVHR	PM863a 960GB Enterprise Entry SATA G3HS 2.5" SSD	8
01GR711	AUE7	1.92TB Enterprise Entry SATA G3HS 2.5" SSD	8

Table 16. 2.5-inch NVMe SSDs

Part number	Feature	Description	Maximum supported
2.5-inch SSDs - NVMe - Enterprise Mainstream (3-5 DWPD)			
7SD7A05767	B11M	Intel P4600 1.6TB NVMe 2.5" Enterprise Mainstream PCIe SSD	4
7SD7A05766	B11N	Intel P4600 3.2TB NVMe 2.5" Enterprise Mainstream PCIe SSD	4
2.5-inch SSDs - NVMe - Enterprise Entry (<3 DWPD)			
01GT715	AVPP	PM963 3.84TB NVMe 2.5" Enterprise Value PCIe SSD	4
4XB7A08539	B1JK	Intel P4500 4.0TB NVMe 2.5" Enterprise Entry PCIe SSD	4

Internal backup units

The server does not support internal tape drive options.

Optical drives

The server does not support an internal optical drive option, however, you can connect an external USB optical drive. See http://support.lenovo.com/en/documents/pd011281 for information about available external optical drives from Lenovo.

I/O expansion options

The server supports up to 11 PCIe slots plus dedicated Mezzanine LOM slot (12 total) as follows:

- In the Storage Book (standard in all models): Two PCIe 3.0 x8 slots for supported internal RAID controllers and SAS HBAs
- In the Primary I/O Book (standard in all models):
  - Two PCIe 3.0 x16 slots (x16-wired), half length, full height, up to 75 W of power
  - One PCIe 3.0 x16 (x8-wired), half length, full height, up to 75 W of power
  - One mezzanine LOM 2 (ML2) slot for network adapters with the new ML2 form factor (PCIe 3.0 x8)
- Two optional I/O Books, each with three slots, all full height. Optional I/O Books are enabled for hot-swap.

The following figure shows the Primary I/O Book with the air baffle raised to show the internals.

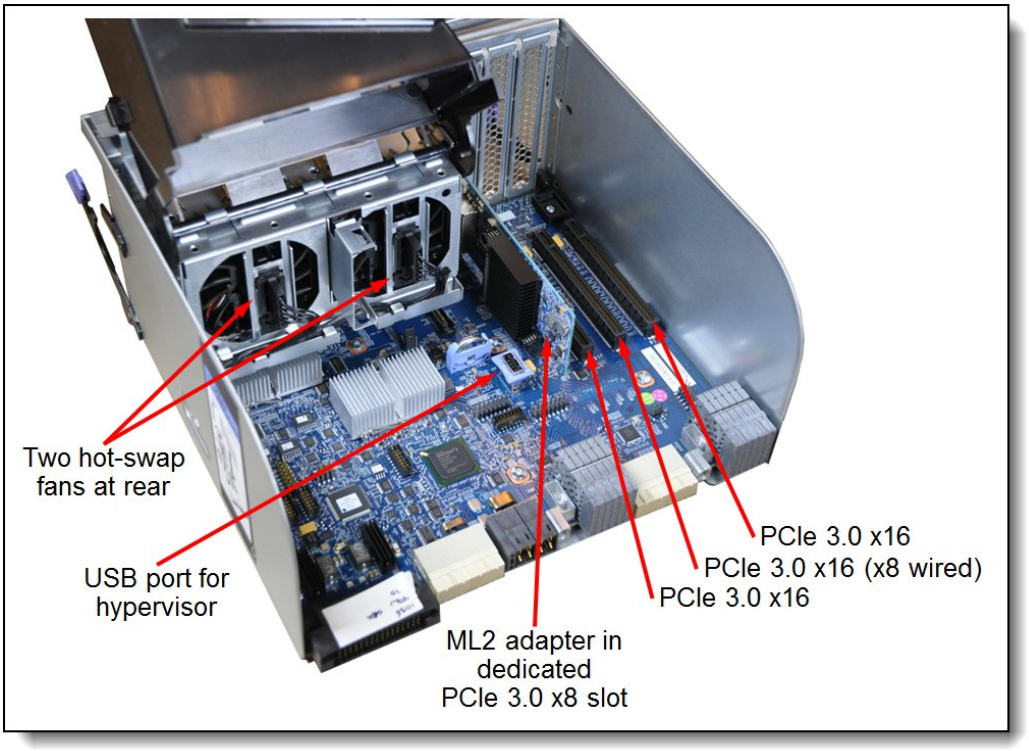

Figure 8. Primary I/O Book

Optional I/O Books can be either of:

- Half-length I/O Book:
  - Two PCIe 3.0 x8 slots (x8 wired)
  - One PCIe 3.0 x16 slot (x16 wired)
- Full-length I/O Book:
  - Two PCIe 3.0 x16 (x16 wired)
  - One PCIe 2.0 x8 slot (x4 wired)

Hot-swap support

In order for an I/O Book to be hot-swappable, all adapters that are installed in the book must support hot-swap and the operating system must also support hot-swap. These operating systems support hot-swap:

- Windows Server 2008 R2
- Windows Server 2012
- Windows Server 2012 R2

The adapters listed in the following table support hot-swap.

Table 17. Adapters that support hot swap

Part number	Feature code	Description
00D8540*	A4XH	Emulex Dual Port 10GbE SFP+ VFA IIIr for System x*
49Y7960	A2EC	Intel X520 Dual Port 10GbE SFP+ Adapter for System x
49Y7970	A2ED	Intel X540-T2 Dual Port 10GBaseT Adapter for System x
00AG500	A56K	Intel I350-F1 1xGbE Fiber Adapter for System x
00AG510	A56L	Intel I350-T2 2xGbE BaseT Adapter for System x
00AG520	A56M	Intel I350-T4 4xGbE BaseT Adapter for System x

* Hot-swap is only supported when the adapter is in pNIC mode. Hot-swap is not supported in either vNIC mode (Virtual Fabric mode or Switch Independent mode).

Optional I/O books

The usage of these Optional I/O Books requires all four processors to be installed.

The following table shows the ordering information for the optional I/O Books.

Table 18. I/O Book options

Part number	Feature code	Description	Maximum supported x3850 X6
44X4049	A4A2	X6 Half-Length I/O Book	2
44X4051	A4A3*	X6 Full-Length I/O Book	2

* The Full-length I/O Book can be ordered only as an option. It is not available through CTO because the Full-length I/O Book cannot be shipped installed in the server

The following figure shows the two optional I/O Books, the Half-length I/O Book and the Full-length I/O Book.

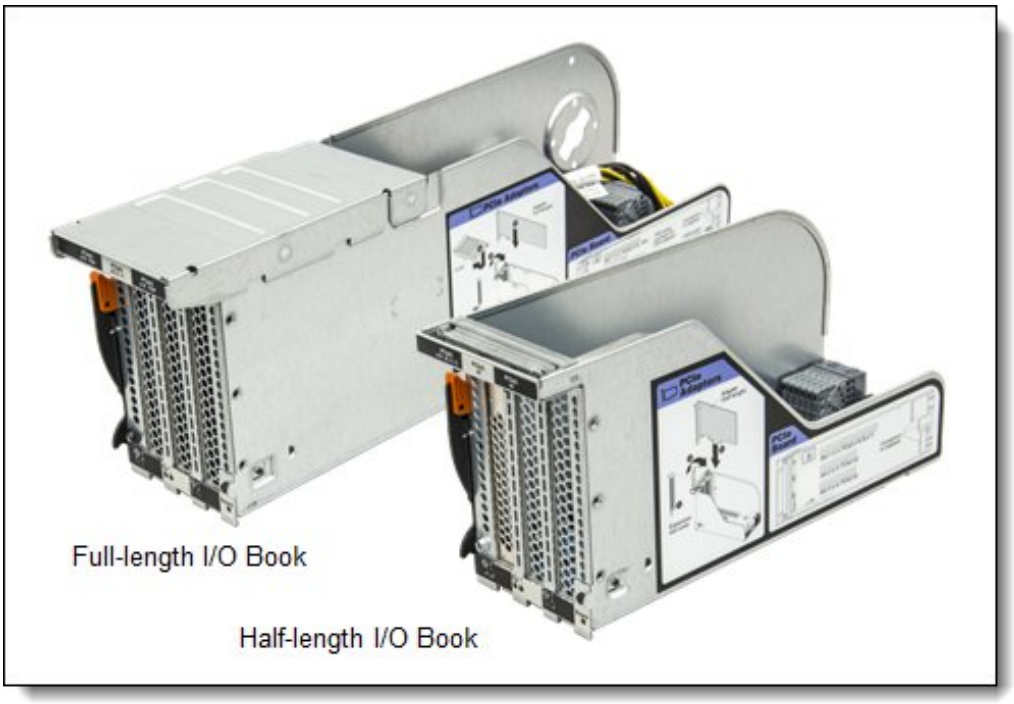

Figure 9. Half-length I/O Book and the Full-length I/O Book

The following figure shows the inside of the Half-length I/O Book.

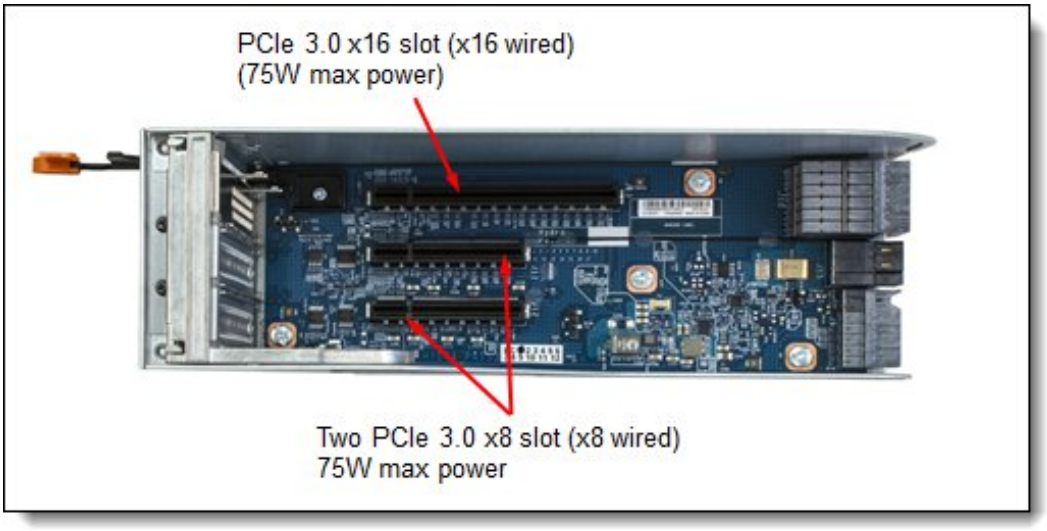

Figure 10. Half-length I/O Book

Each slot in the Half-length I/O Book and the Full-length I/O Book supplies up to 75 W of power.

The Full-length I/O Book also includes two auxiliary power connectors. With the use of these connectors and the supplied power cords, the I/O book supports one double-wide adapter up to 300 W. The auxiliary power connectors are as follows:

- One 2x4 power connector, which supplies up to 150 W of additional power to the adapter
- One 2x3 power connector, which supplies up to 75 W of additional power to the adapter

The combined power consumption of all the adapters that are installed in the Full-length I/O Book cannot exceed 300 W.

Note: The 2x3 connector is intended to be used only when one adapter is installed in the first x16 slot (the up-most slot in the following figure), either requiring 225 W or 300 W of power. The location of the 2x3 connector prevents an adapter from being installed in the other x16 slot.

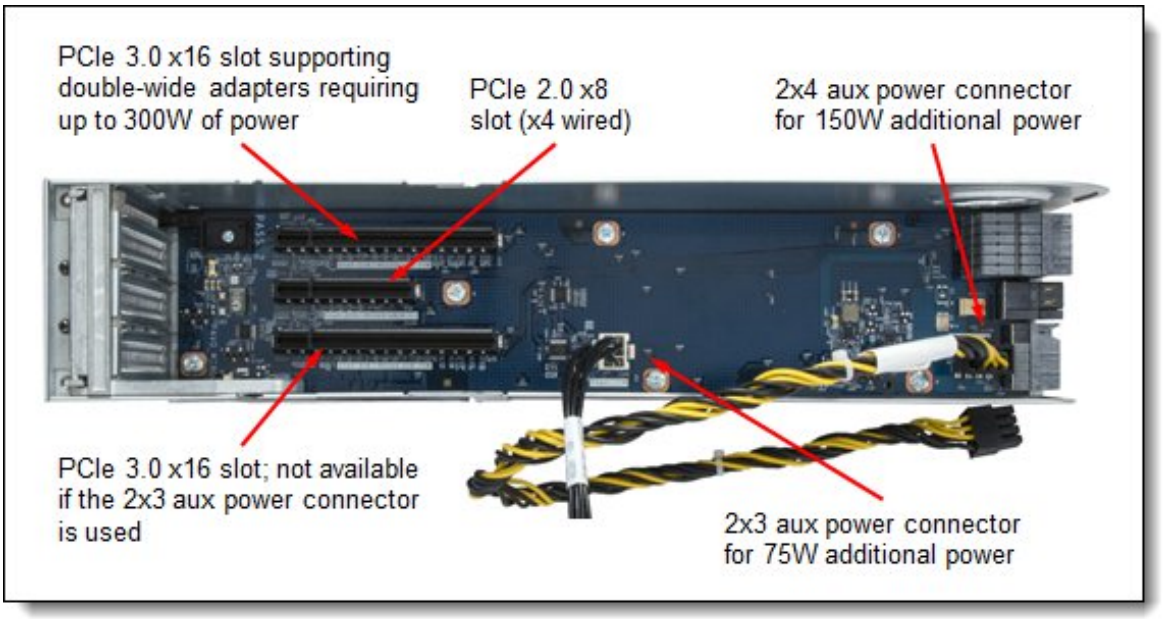

Figure 11. Full-length I/O Book

The Half-length I/O Book installs flush with the Primary I/O Book at the rear of the server. The Full-length I/O Book, when installed, adds a 99 mm (3.9 in.) mechanical extension to the base length dimension of the chassis.

The following figure shows a Full-length I/O Book and a Half-length I/O Book installed in the server.

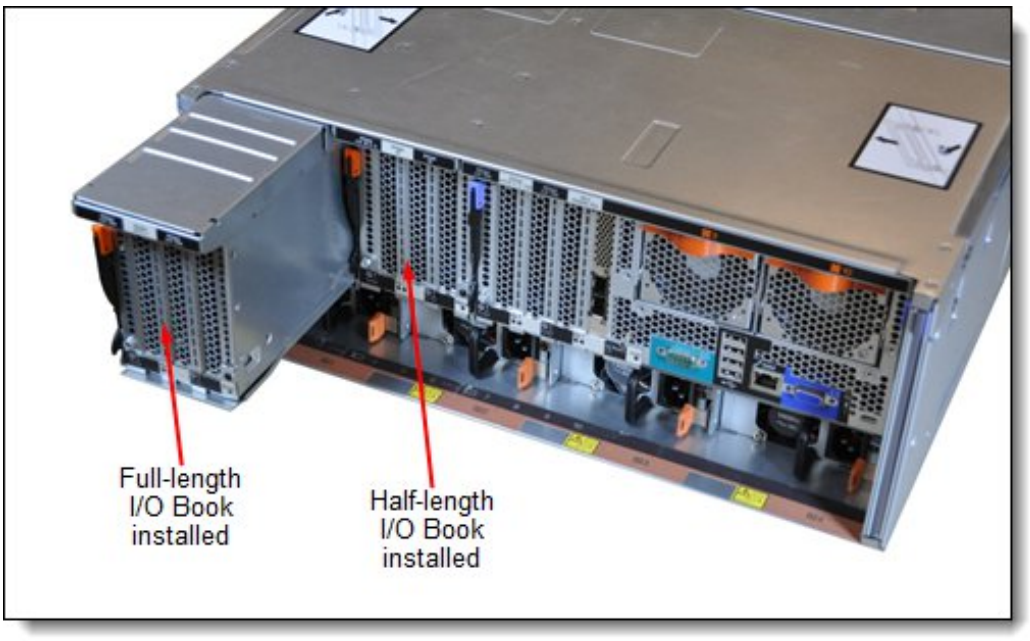

Figure 12. I/O Books that are installed in the x3850 X6

Slot locations

The slot numbering for the PCIe slots in the server are as shown in the following figure.

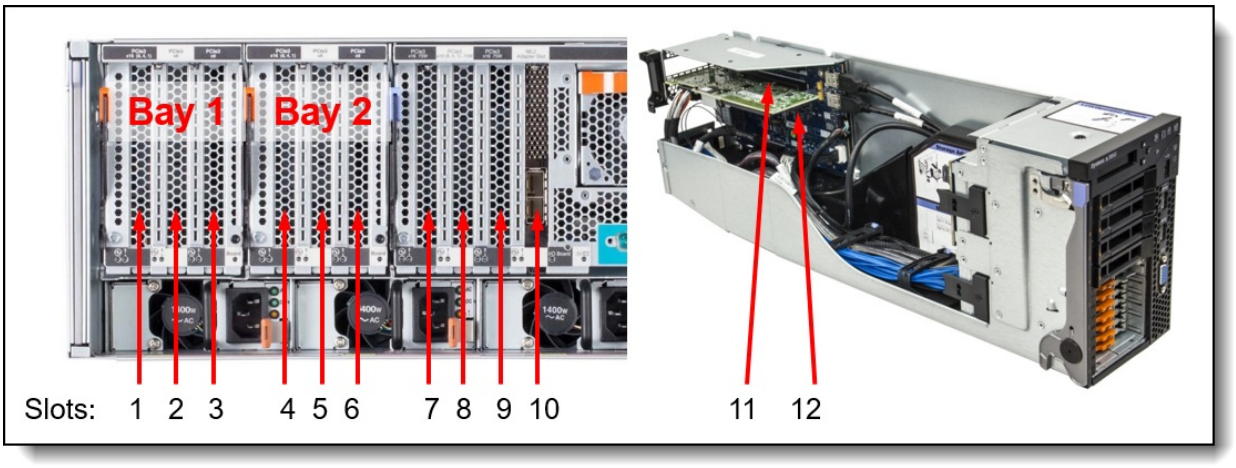

Figure 13. Slot numbering

Network adapters

The server supports ML2 adapters that are installed in the custom ML2 slot. This slot supports adapters with either two 10 Gb ports or four Gigabit ports and supports direct connectivity to the IMM2 service processor for out-of-band systems management.

As listed in the Standard models section, Model B3x includes the Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+ adapter as standard. All other standard models include an Intel I350-T4 ML2 Quad Port GbE Adapter (I350-AM4 based).

The Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+ Adapter has the following specifications:

- Dual-port 10 Gb Ethernet connectivity
- Broadcom BCM57810S ASIC
- SFP+ ports supporting fiber optic and direct-attach copper (DAC) cables

For more information about this adapter, see the Product Guide: http://lenovopress.com/tips1027

The Intel I350-T4 ML2 Quad Port GbE Adapter has the following specifications:

- Quad-port 1 Gb Ethernet connectivity
- Intel I350-AM4 ASIC
- RJ45 ports for copper cables

For more information about this adapter, see Product Guide: http://lenovopress.com/tips1155

The following table lists the supported ML2 adapters. ML2 adapters are installed only in the ML2 slot (slot 10 as show in the Slot locations section).

Table 19. ML2 adapters

Part number	Feature code	Description	Maximum supported (slot #)
25 Gb Ethernet			
00MN990*	ATZR	Mellanox ConnectX-4 Lx ML2 1x25GbE SFP28 Adapter	1* (10)
10 Gb Ethernet			
00D2026	A40S	Broadcom NetXtreme II ML2 Dual Port 10GbaseT	1 (10)
00D2028	A40T	Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+	1 (10)
00AG560	AT7U	Emulex VFA5.2 ML2 Dual Port 10GbE SFP+ Adapter	1 (10)
01CV770	AU7Z	Emulex VFA5.2 ML2 2x10 GbE SFP+ Adapter and FCoE/iSCSI SW	1 (10)
00D1994	A40P	Intel X540 ML2 Dual Port 10GbaseT Adapter	1 (10)
00JY940*	ATRH	Intel X710-DA2 ML2 2x10GbE SFP+ Adapter	1* (10)
94Y5200	AS74	Intel X710 ML2 4x10GbE SFP+ Adapter	1 (10)
Gigabit Ethernet			
00D1998	A40R	Intel I350-T4 ML2 Quad Port GbE Adapter	1 (10)
InfiniBand			
00FP650	A5RK	Mellanox ConnectX-3 Pro ML2 2x40GbE/FDR VPI Adapter	1 (10)

* Not supported in servers with E7 v2 compute books

The server also supports various other Ethernet, InfiniBand and Omni-Path network adapters, as listed in the following table. The maximum quantity listed is for configurations with all processors and I/O books installed.

The maximum supported column also indicates which slots each adapter is supported in. For slot locations see the Slot locations section.

Table 20. Network adapters

Part number	Feature code	Description	Maximum supported (slot #)
Omni-Path Architecture (OPA)			
00WE027**	AU0B	Intel OPA 100 Series Single-port PCIe 3.0 x16 HFA	3 (7,8,9)
00WE023	AU0A	Intel OPA 100 Series Single-port PCIe 3.0 x8 HFA	2 (7,9)
100 Gb Ethernet			
00MM960*	ATRP	Mellanox ConnectX-4 2x100GbE/EDR IB QSFP28 VPI Adapter	4* (1, 4, 7, 9)
40 Gb Ethernet			
00MM950*	ATRN	Mellanox ConnectX-4 Lx 1x40GbE QSFP+ Adapter	9* (1-9)
00D9550	A3PN	Mellanox ConnectX-3 40GbE / FDR IB VPI Adapter	9 (1-9)
25 Gb Ethernet			
01GR250	AUAJ	Mellanox ConnectX-4 Lx 2x25GbE SFP28 Adapter	9 (1-9)
10 Gb Ethernet			
94Y5180	A4Z6	Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter	9 (1-9)
44T1370	A5GZ	Broadcom NetXtreme 2x10GbE BaseT Adapter	9 (1-9)
00AG570	AT7S	Emulex VFA5.2 2x10 GbE SFP+ PCIe Adapter	9 (1-9)
00AG580	AT7T	Emulex VFA5.2 2x10 GbE SFP+ Adapter and FCoE/iSCSI SW	9 (1-9)
00D8540	A4M9	Emulex Dual Port 10GbE SFP+ VFA III-R	9 (1-9)
49Y7960	A2EC	Intel X520 Dual Port 10GbE SFP+ Adapter	9 (1-9)
49Y7970	A2ED	Intel X540-T2 Dual Port 10GBaseT Adapter	9 (1-9)
00MM850†	ATRY	Intel X550-T1 Single Port 10GBase-T Adapter	9† (1-9)
00MM860*	ATPX	Intel X550-T2 Dual Port 10GBase-T Adapter	9* (1-9)
01DA900	AU2Y	Intel X710-DA2 2x10GbE SFP+ Adapter	9 (1-9)
00D9690	A3PM	Mellanox ConnectX-3 10 GbE Adapter	9 (1-9)
Gigabit Ethernet			
90Y9370	A2V4	Broadcom NetXtreme I Dual Port GbE Adapter	9 (1-9)
90Y9352	A2V3	Broadcom NetXtreme I Quad Port GbE Adapter	9 (1-9)
49Y4230	5767	Intel Ethernet Dual Port Server Adapter I340-T2	9 (1-9)
49Y4240	5768	Intel Ethernet Quad Port Server Adapter I340-T4	9 (1-9)
00AG500	A56K	Intel I350-F1 1xGbE Fiber Adapter	9 (1-9)
00AG510	A56L	Intel I350-T2 2xGbE BaseT Adapter	9 (1-9)
00AG520	A56M	Intel I350-T4 4xGbE BaseT Adapter	9 (1-9)
InfiniBand			
00D9550	A3PN	Mellanox ConnectX-3 40GbE / FDR IB VPI Adapter	9 (1-9)
00MM960*	ATRP	Mellanox ConnectX-4 2x100GbE/EDR IB QSFP28 VPI Adapter	4* (1, 4, 7, 9)
00KH924	ASWQ	Mellanox ConnectX-4 EDR IB VPI Single-port x16 PCIe 3.0 HCA	4 (1,4,7,9)

* Not supported in servers with E7 v2 compute books
† Only supported in servers with E7 v4 compute books

For more information, including supported transceivers and cables, see the list of Lenovo Press Product Guides in the Ethernet Adapters category and the InfiniBand & Omni-Path Adapters category .

Fibre Channel host bus adapters

The following table lists the Fibre Channel HBAs supported by the x3850 X6. The maximum quantity listed is for configurations with all processors and I/O books installed. The maximum supported column also indicates which slots each adapter is supported in. For slot locations see the Slot locations section.

Table 21. Storage adapters

Part number	Feature code	Description	Maximum supported (slot #)
Fibre Channel - 16 Gb (32 Gb ASIC)			
01CV830*	ATZU	Emulex 16Gb Gen6 FC Single-port HBA	9* (1-9)
01CV840*	ATZV	Emulex 16Gb Gen6 FC Dual-port HBA	9* (1-9)
01CV750*	ATZB	QLogic 16Gb Enhanced Gen5 FC Single-port HBA	9* (1-9)
01CV760*	ATZC	QLogic 16Gb Enhanced Gen5 FC Dual-port HBA	9* (1-9)
Fibre Channel - 16 Gb			
81Y1655	A2W5	Emulex 16Gb FC Single-port HBA	9 (1-9)
81Y1662	A2W6	Emulex 16Gb FC Dual-port HBA	9 (1-9)
00Y3337	A3KW	QLogic 16Gb FC Single-port HBA	9 (1-9)
00Y3341	A3KX	QLogic 16Gb FC Dual-port HBA	9 (1-9)
Fibre Channel - 8 Gb			
42D0485	3580	Emulex 8 Gb FC Single-port HBA	9 (1-9)
42D0494	3581	Emulex 8 Gb FC Dual-port HBA	9 (1-9)
42D0501	3578	QLogic 8 Gb FC Single-port HBA	9 (1-9)
42D0510	3579	QLogic 8 Gb FC Dual-port HBA	9 (1-9)

* Not supported in servers with E7 v2 compute books

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

SAS adapters for external storage

The following table lists the SAS HBAs and RAID adapters that are supported by the x3850 X6. The maximum quantity listed is for configurations with all processors and I/O books installed. The maximum supported column also indicates which slots each adapter is supported in. For slot locations see the Slot locations section.

Table 22. Storage adapters

Part number	Feature code	Description	Maximum supported (slot #)
SAS HBAs			
00AE912	A5M0	N2225 SAS/SATA HBA	9 (1-9)
00AE916	A5M1	N2226 SAS/SATA HBA	5 (1, 4, 7, 8, 9)
RAID adapters			
00AE938	A5ND	ServeRAID M5225-2GB SAS/SATA Controller	3 (7, 8, 9)
Features on Demand upgrades for the M5225 (1 per server)			
47C8706	A3Z5	ServeRAID M5200 Series RAID 6 Upgrade for Systems-FoD	1
47C8710	A3Z7	ServeRAID M5200 Series Performance Accelerator for Systems-FoD	1
47C8712	A3Z8	ServeRAID M5200 Series SSD Caching Enabler for Systems-FoD	1

The following table compares the specifications of the external SAS HBAs and RAID adapters.

Table 23. Specifications comparison

Feature	N2225	N2226	ServeRAID M5225
Adapter type	SAS HBA	SAS HBA	RAID adapter
Part number	00AE912	00AE916	00AE938
Form factor	Low profile	Low profile	Low profile
Controller chip	LSI SAS3008	LSI SAS3008	LSI SAS3108
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	12 Gbps SAS	12 Gbps SAS	12 Gbps SAS
Number of external ports	8	16	8
External port connectors	2x Mini-SAS HD (SFF-8644)	4x Mini-SAS HD (SFF-8644)	2x Mini-SAS HD (SFF-8644)
Drive interface	SAS, SATA	SAS, SATA	SAS, SATA
Drive type	HDD, SSD	HDD, SSD	HDD, SED, SSD
Maximum number of devices	1024	1024	240
RAID levels	None	None	0/1/10/5/50; Optional 6/60 (47C8706)
JBOD mode	Yes	Yes	No
Cache	None	None	2 GB (included)
CacheVault cache protection	None	None	Flash (included)
FastPath	None	None	Optional (47C8710)
CacheCade Pro 2.0	None	None	Optional (47C8712)

Cache upgrade required: The ServeRAID M5120 SAS/SATA Controller ships standard without a cache. One of the available cache upgrades (81Y4487, 81Y4559, or 47C8670) is required for the M5120 adapter operations, and it must be purchased together with the controller.

For more information about the adapters, see these Lenovo Press Product Guides:

- N2125: http://lenovopress.com/tips1062
- N2225 & N2226: http://lenovopress.com/tips1175
- ServeRAID M5120: http://lenovopress.com/tips0858
- ServeRAID M5225: http://lenovopress.com/tips1258

PCIe Flash Storage adapters

All supported Flash Storage Adapters are now withdrawn from marketing.

GPU adapters and co-processors

The server supports the co-processors and graphics processing units (GPUs) that are listed in the following table. Each is installed in a Full-length I/O Book. No other adapter can be installed in the Full-length I/O Book. The Full-length I/O Book includes the necessary auxiliary power cables. The maximum supported column indicates which slots each adapter is supported in. For slot locations see the Slot locations section.

Notes:

- These adapters are not available through CTO and cannot be shipped installed in the server because they are installed in the Full-length I/O Book, which extends beyond the rear of the chassis (see Figure 12). These adapters must be shipped separately from the server. Order the adapter and Full-length I/O Book as separate options.
- If an NVIDIA GPU is installed, the maximum system memory that can be installed is 1 TB, however, it is recommended you have less than 1 TB of memory installed. See https://support.lenovo.com/us/en/solutions/ht114952 for details.

Table 24. GPU adapters

Part number	Feature code	Description	Minimum system RAM	Maximum supported (slot #)
90Y2495	AU3W†	NVIDIA Quadro M6000 24GB GPU, PCIe (active)	48 GB	2 (1, 4)
00YL378*	ATZF†	NVidia Quadro M5000 GPU, PCIe (active)	16 GB	2* (1, 4)

* Not supported in servers with E7 v2 compute books
† Not available through CTO.

Power supplies

The x3850 X6 server supports up to four redundant power supplies. Standard models come with one, two, or four power supplies (model dependent). The following table lists the power supplies.

Table 25. Power supplies

Part number	Feature code	Description	Maximum supported x3850 X6	Models where used
44X4150	A54D	1400W HE Redundant Power Supply for altitudes >5000 meters	4	All HANA models
44X4152	A54E	1400W HE Redundant Power Supply	4	-
44X4132	A4R0	900W Power Supply	4	A4x, B1x, B3x, C1x, C4x
88Y7433	A2EA	750W High Efficiency -48 V DC Power Supply	4	-

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

Configuration rules are as follows:

- Power supplies must be in pairs (x3850 X6) or quads (x3950 X6), with the exception of model 3837-A4x, where one power supply is supported.
- The AC power supplies can be mixed. Valid combinations for the x3850 X6 for example, are:
  - Two 44X4132 and two 44X4152
  - Two 44X4132 and two 44X4150
- It is not recommended you mix the two 1400 W options (44X4152 for low altitude and 44X4150 for high altitude) as you will nullify the high-altitude capabilities of 44X4150.
- You cannot mix the AC power supplies with the DC power supply
- Use the Power Configurator to determine exactly what power your server needs: https://support.lenovo.com/documents/LNVO-PWRCONF

Integrated virtualization

The server supports VMware ESXi that is installed on a USB memory key. The key is installed in a USB socket that is on the primary I/O book inside the server. The following table lists the virtualization options.

Table 26. Virtualization options

Part number	Feature code	Description	Maximum supported
Blank USB keys			
00WH140	ATRM	Blank USB Memory Key 4G SLC for VMware ESXi Downloads (4GB capacity)	1
41Y8298	A2G0	Blank USB Memory Key for VMware ESXi Downloads (2GB capacity)	1
USB keys preloaded with Lenovo custom image			
00ML235	ASN7	USB Memory Key for VMware ESXi 5.5 Update 2	1
00WH150*	ATZG	USB Memory Key for VMware ESXi 5.5 Update 3B	1*
00WH138	ATRL	USB Memory Key 4G for VMware ESXi 6.0 Update 1A	1
00WH151*	ATZH	USB Memory Key for VMware ESXi 6.0 Update 2	1*
CTO only*	AVNW	USB Memory Key for VMware ESXi 6.5	1

* Not supported in servers with E7 v2 compute books

Systems management

The server contains Integrated Management Module II (IMM2), 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 IMM2 lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. The IMM2 also provides a virtual presence capability for remote server management capabilities.

The IMM2 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 remote presence provides the following functions:

- Remotely viewing video with graphics resolutions up to 1600 x 1200 at 75 Hz with up to 23 bits per pixel colors, regardless of the system state
- Remotely accessing the server by 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 feature to assist in determining the cause of the hang condition.

Lenovo XClarity Administrator

Lenovo XClarity Administrator is a centralized resource management solution designed to reduce complexity, speed response, and enhance the availability of Lenovo systems and solutions. It provides agent-free hardware management for ThinkSystem servers. The administration dashboard is based on HTML 5 and allows fast location of resources so tasks can be run quickly.

Because Lenovo XClarity Administrator does not require any agent software to be installed on the managed endpoints, there are no CPU cycles spent on agent execution, and no memory is used, which means that up to 1GB of RAM and 1 - 2% CPU usage is saved, compared to a typical managed system where an agent is required.

Lenovo XClarity Administrator is an optional software component for the x3850 X6. The software can be downloaded and used at no charge to discover and monitor the x3850 X6 and to manage firmware upgrades.

If software support is required for Lenovo XClarity Administrator, or premium features such as configuration management and operating system deployment are required, Lenovo XClarity Pro software subscription should be ordered. Lenovo XClarity Pro is licensed on a per managed system basis, that is, each managed Lenovo system requires a license.

The following table lists the Lenovo XClarity software license options.

Table 27. Lenovo XClarity Pro ordering information

Part number	Feature code	Description
00MT201	1339	Lenovo XClarity Pro, per Managed Endpoint w/1 Yr SW S&S
00MT202	1340	Lenovo XClarity Pro, per Managed Endpoint w/3 Yr SW S&S
00MT203	1341	Lenovo XClarity Pro, per Managed Endpoint w/5 Yr SW S&S
7S0X000HWW	SAYV	Lenovo XClarity Pro, per Managed Endpoint w/6 Yr SW S&S
7S0X000JWW	SAYW	Lenovo XClarity Pro, per Managed Endpoint w/7 Yr SW S&S

Lenovo XClarity Administrator offers the following standard features that are available at no charge:

- Auto-discovery and monitoring of Lenovo systems
- Firmware updates and compliance enforcement
- External alerts and notifications via SNMP traps, syslog remote logging, and e-mail
- Secure connections to managed endpoints
- NIST 800-131A or FIPS 140-3 compliant cryptographic standards between the management solution and managed endpoints
- Integration into existing higher-level management systems such as cloud automation and orchestration tools through REST APIs, providing extensive external visibility and control over hardware resources
- An intuitive, easy-to-use GUI
- Scripting with Windows PowerShell, providing command-line visibility and control over hardware resources

Lenovo XClarity Administrator offers the following premium features that require an optional Pro license:

- Pattern-based configuration management that allows to define configurations once and apply repeatedly without errors when deploying new servers or redeploying existing servers without disrupting the fabric
- Bare-metal deployment of operating systems and hypervisors to streamline infrastructure provisioning

For more information, refer to the Lenovo XClarity Administrator Product Guide:
http://lenovopress.com/tips1200

Lenovo XClarity Integrators

Lenovo also offers software plug-in modules, Lenovo XClarity Integrators, to manage physical infrastructure from leading external virtualization management software tools including those from Microsoft and VMware.

These integrators are offered at no charge, however if software support is required, a Lenovo XClarity Pro software subscription license should be ordered.

Lenovo XClarity Integrators offer the following additional features:

- Ability to discover, manage, and monitor Lenovo server hardware from VMware vCenter or Microsoft System Center
- Deployment of firmware updates and configuration patterns to Lenovo x86 rack servers and Flex System from the virtualization management tool
- Non-disruptive server maintenance in clustered environments that reduces workload downtime by dynamically migrating workloads from affected hosts during rolling server updates or reboots
- Greater service level uptime and assurance in clustered environments during unplanned hardware events by dynamically triggering workload migration from impacted hosts when impending hardware failures are predicted

For more information about all the available Lenovo XClarity Integrators, see the Lenovo XClarity Administrator Product Guide: https://lenovopress.com/tips1200-lenovo-xclarity-administrator

Rack installation

All models of the x3850 X6 include a rail kit and cable management bracket kit for installation in a 19-inch rack cabinet. The contents of the kits are shown in the following figure.

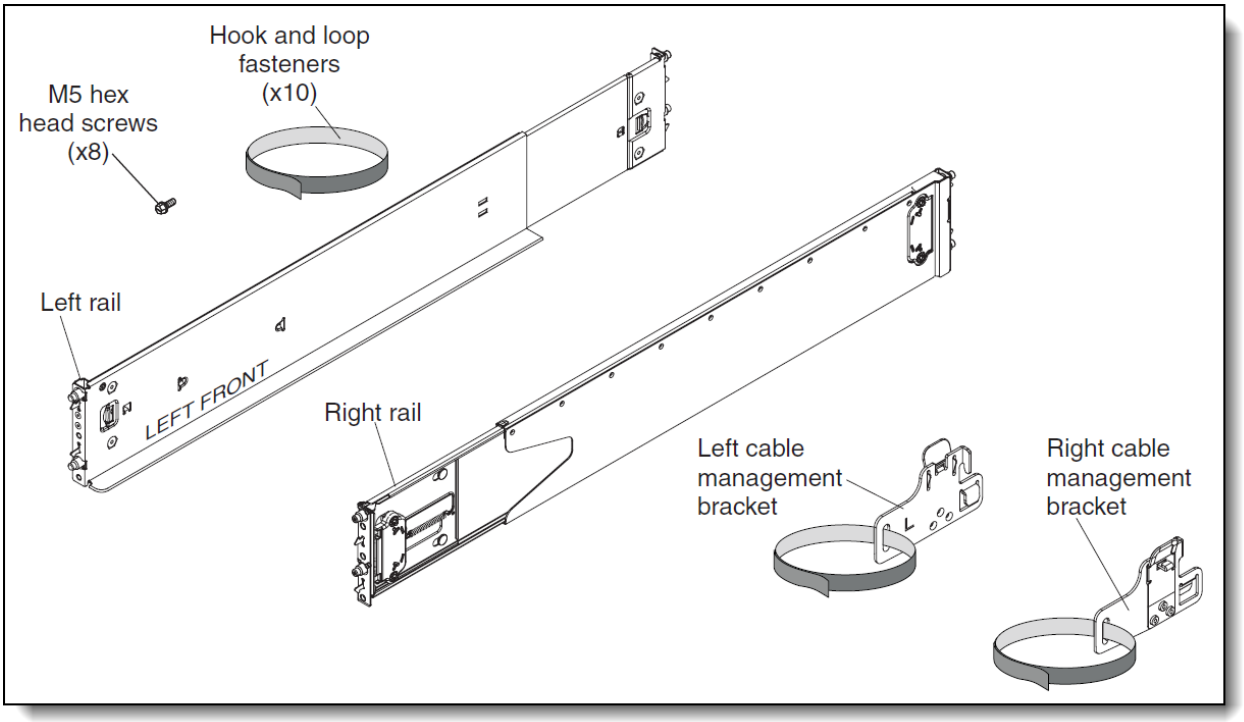

Figure 14. x3850 X6 rail kit and cable management bracket kit

Operating system support

Operating system support is based on the compute books installed in the server.

For a complete list of supported, certified and tested operating systems, plus additional details and links to relevant web sites, see the Operating System Interoperability Guide: https://lenovopress.com/osig

The following operating systems are supported with E7 v4 compute books:

- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Microsoft Windows Server 2019
- Microsoft Windows Server, version 1709
- Red Hat Enterprise Linux 6.7 x64
- Red Hat Enterprise Linux 6.8 x64
- Red Hat Enterprise Linux 6.10 x64
- Red Hat Enterprise Linux 7.2
- Red Hat Enterprise Linux 7.3
- Red Hat Enterprise Linux 7.4
- Red Hat Enterprise Linux 7.5
- Red Hat Enterprise Linux 7.6
- Red Hat Enterprise Linux 7.7
- Red Hat Enterprise Linux 7.8
- Red Hat Enterprise Linux 7.9
- Red Hat Enterprise Linux 8.0
- Red Hat Enterprise Linux 8.1
- Red Hat Enterprise Linux 8.2
- Red Hat Enterprise Linux 8.3
- Red Hat Enterprise Linux 8.4
- Red Hat Enterprise Linux 8.5
- Red Hat Enterprise Linux 8.6
- Red Hat Enterprise Linux 8.7
- Red Hat Enterprise Linux 8.8
- SUSE Linux Enterprise Server 11 Xen x64 SP4
- SUSE Linux Enterprise Server 11 x64 SP4
- SUSE Linux Enterprise Server 12 SP1
- SUSE Linux Enterprise Server 12 SP2
- SUSE Linux Enterprise Server 12 SP3
- SUSE Linux Enterprise Server 12 SP4
- SUSE Linux Enterprise Server 12 SP5
- SUSE Linux Enterprise Server 12 Xen SP1
- SUSE Linux Enterprise Server 12 Xen SP2
- SUSE Linux Enterprise Server 12 Xen SP3
- SUSE Linux Enterprise Server 12 Xen SP4
- SUSE Linux Enterprise Server 12 Xen SP5
- SUSE Linux Enterprise Server 15
- SUSE Linux Enterprise Server 15 SP1
- SUSE Linux Enterprise Server 15 SP2
- SUSE Linux Enterprise Server 15 SP3
- SUSE Linux Enterprise Server 15 SP4
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 Xen
- SUSE Linux Enterprise Server 15 Xen SP1
- SUSE Linux Enterprise Server 15 Xen SP2
- SUSE Linux Enterprise Server 15 Xen SP3
- SUSE Linux Enterprise Server 15 Xen SP4
- SUSE Linux Enterprise Server 15 Xen SP5

- VMware ESXi 6.0 U2
- VMware ESXi 6.0 U3
- VMware ESXi 6.5
- VMware ESXi 6.5 U1
- VMware ESXi 6.5 U2
- VMware ESXi 6.5 U3
- VMware ESXi 6.7
- VMware ESXi 6.7 U1
- VMware ESXi 6.7 U2
- VMware ESXi 6.7 U3

The following operating systems are supported with E7 v3 compute books:

- Microsoft Windows Server 2008 R2 SP1
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Microsoft Windows Server, version 1709
- Red Hat Enterprise Linux 6.6 x64
- Red Hat Enterprise Linux 6.7 x64
- Red Hat Enterprise Linux 6.8 x64
- Red Hat Enterprise Linux 6.10 x64
- Red Hat Enterprise Linux 7.1
- Red Hat Enterprise Linux 7.2
- Red Hat Enterprise Linux 7.3
- Red Hat Enterprise Linux 7.4
- Red Hat Enterprise Linux 7.5
- Red Hat Enterprise Linux 7.6
- Red Hat Enterprise Linux 7.7
- Red Hat Enterprise Linux 7.8
- Red Hat Enterprise Linux 7.9
- SUSE Linux Enterprise Server 11 Xen x64 SP3
- SUSE Linux Enterprise Server 11 Xen x64 SP4
- SUSE Linux Enterprise Server 11 x64 SP3
- SUSE Linux Enterprise Server 11 x64 SP4
- SUSE Linux Enterprise Server 12
- SUSE Linux Enterprise Server 12 SP1
- SUSE Linux Enterprise Server 12 SP2
- SUSE Linux Enterprise Server 12 SP3
- SUSE Linux Enterprise Server 12 SP4
- SUSE Linux Enterprise Server 12 SP5
- SUSE Linux Enterprise Server 12 Xen
- SUSE Linux Enterprise Server 12 Xen SP1
- SUSE Linux Enterprise Server 12 Xen SP2
- SUSE Linux Enterprise Server 12 Xen SP3
- SUSE Linux Enterprise Server 12 Xen SP4
- SUSE Linux Enterprise Server 12 Xen SP5
- SUSE Linux Enterprise Server 15
- SUSE Linux Enterprise Server 15 SP1
- SUSE Linux Enterprise Server 15 SP2
- SUSE Linux Enterprise Server 15 SP3
- SUSE Linux Enterprise Server 15 SP4
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 Xen
- SUSE Linux Enterprise Server 15 Xen SP1
- SUSE Linux Enterprise Server 15 Xen SP2
- SUSE Linux Enterprise Server 15 Xen SP3

- SUSE Linux Enterprise Server 15 Xen SP4
- SUSE Linux Enterprise Server 15 Xen SP5
- VMware ESXi 5.5 U2
- VMware ESXi 5.5 U3
- VMware ESXi 6.0
- VMware ESXi 6.0 U1
- VMware ESXi 6.0 U2
- VMware ESXi 6.0 U3
- VMware ESXi 6.5
- VMware ESXi 6.5 U1
- VMware ESXi 6.5 U2
- VMware ESXi 6.5 U3

The following operating systems are supported with E7 v2 compute books:

- Microsoft Windows Server 2008 R2 SP1
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2
- Red Hat Enterprise Linux 6.5 x64
- Red Hat Enterprise Linux 6.6 x64
- Red Hat Enterprise Linux 6.7 x64
- Red Hat Enterprise Linux 6.8 x64
- Red Hat Enterprise Linux 6.10 x64
- Red Hat Enterprise Linux 7.0
- Red Hat Enterprise Linux 7.1
- Red Hat Enterprise Linux 7.2
- Red Hat Enterprise Linux 7.6
- Red Hat Enterprise Linux 7.7
- Red Hat Enterprise Linux 7.8
- Red Hat Enterprise Linux 7.9
- SUSE Linux Enterprise Server 11 Xen x64 SP3
- SUSE Linux Enterprise Server 11 Xen x64 SP4
- SUSE Linux Enterprise Server 11 x64 SP3
- SUSE Linux Enterprise Server 11 x64 SP4
- SUSE Linux Enterprise Server 12
- SUSE Linux Enterprise Server 12 SP1
- SUSE Linux Enterprise Server 12 SP2
- SUSE Linux Enterprise Server 12 SP3
- SUSE Linux Enterprise Server 12 SP4
- SUSE Linux Enterprise Server 12 Xen
- SUSE Linux Enterprise Server 12 Xen SP1
- SUSE Linux Enterprise Server 12 Xen SP2
- SUSE Linux Enterprise Server 12 Xen SP3
- SUSE Linux Enterprise Server 12 Xen SP4
- VMware ESXi 5.1 U2
- VMware ESXi 5.1 U3
- VMware ESXi 5.5
- VMware ESXi 5.5 U1
- VMware ESXi 5.5 U2
- VMware ESXi 5.5 U3
- VMware ESXi 6.0
- VMware ESXi 6.0 U1
- VMware ESXi 6.0 U2

Physical and environmental specifications

Dimensions and weight:

- Height: 173 mm (6.8 in.)
- Width: 482 mm (19.0 in.)
- Depth: 804 mm (31.6 in)
- Depth with cable management brackets installed: 836 mm (32.9”)
- Depth with Full-length I/O Book installed: 921 mm (36.2 in)
- Weight:
    - Minimum configuration: 35.9 kg (79.2 lb)
    - Typical configuration: 46.4 kg (102.3 lb)
    - Maximum configuration: 54.7 kg (120 lb)

Supported environment:

- The server is designed to the ASHRAE Class A3 guidelines
- Air temperature:
    - Server on: 5 °C to 40 °C (41 °F to 104 °F); altitude: 0 - 3,050 m (10,000 ft).
    - Server off: 5 °C to 45 °C (41 °F to 113 °F); altitude: 0 - 3,050 m (10,000 ft).
    - Shipment: -40 °C to 60 °C (-40 °F to 140 °F)
- Humidity:
    - Server on: 8% - 85%, maximum dew point 24 °C
    - Server off: 8% - 85%, maximum dew point 27 °C
- Electrical:
    - Models with 1400 W AC power supplies:
        - 100 -127 (nominal) V AC; 50 Hz or 60 Hz; 10 A (900 W DC output)
        - 200 - 240 (nominal) V AC; 50 Hz or 60 Hz; 8 A (1400 W DC output)
        - Input kilovolt-amperes (kVA) (approximately):
            - Minimum configuration: 0.16 kVA
            - Maximum configuration: 3.2 kVA
    - Models with 900 W AC power supplies:
        - 100 - 127 (nominal) V AC; 50 Hz or 60 Hz; 10.7 A
        - 200 - 240 (nominal) V AC; 50 Hz or 60 Hz; 5.3 A
        - Input kilovolt-amperes (kVA) (approximately):
            - Minimum configuration: 0.16 kVA
            - Maximum configuration: 2.0 kVA
    - Models with 750 W DC power supplies:
        - -40 to -75 (nominal) V DC
        - Input kilovolt-amperes (kVA) (approximately):
            - Minimum configuration: 0.16 kVA
            - Maximum configuration: 1.7 kVA
- BTU output:
    - Minimum configuration: 546 Btu/hr (160 watts)
    - Maximum configuration: 10,912 Btu/hr (3,200 watts)
- Noise level:
    - 6.6 bels (operating)
    - 6.4 bels (idle)

Warranty and Support

The System x3850 X6, machine type 6241 has a three-year warranty.

Our global network of regional support centers offers consistent, local-language support enabling you to vary response times and level of service to match the criticality of your support needs:

- **Standard Next Business Day** – Best choice for non-essential systems requiring simple maintenance.
- **Premier Next Business Day** – Best choice for essential systems requiring technical expertise from senior-level Lenovo engineers.
- **Premier 24x7 4-Hour Response** – Best choice for systems where maximum uptime is critical.
- **Premier Enhanced Storage Support 24x7 4-Hour Response** – Best choice for storage systems where maximum uptime is critical.

For more information, consult the brochure Lenovo Operational Support Services for Data Centers Services.

Services

Lenovo Data Center Services empower you at every stage of your IT lifecycle. From expert advisory and strategic planning to seamless deployment and ongoing support, we ensure your infrastructure is built for success. Our comprehensive services accelerate time to value, minimize downtime, and free your IT staff to focus on driving innovation and business growth.

Note: Some service options may not be available in all markets or regions. For more information, go to https://lenovolocator.com/. For information about Lenovo service upgrade offerings that are available in your region, contact your local Lenovo sales representative or business partner.

In this section:

Lenovo Advisory Services

Lenovo Advisory Services simplify the planning process, enabling customers to build future-proofed strategies in as little as six weeks. Consultants provide guidance on projects including VM migration, storage, backup and recovery, and cost management to accelerate time to value, improve cost efficiency, and build a flexibly scalable foundation.

- **Assessment Services**

  An Assessment helps solve your IT challenges through an onsite, multi-day session with a Lenovo technology expert. We perform a tools-based assessment which provides a comprehensive and thorough review of a company's environment and technology systems. In addition to the technology based functional requirements, the consultant also discusses and records the non-functional business requirements, challenges, and constraints. Assessments help organizations like yours, no matter how large or small, get a better return on your IT investment and overcome challenges in the ever-changing technology landscape.

- **Design Services**

  Professional Services consultants perform infrastructure design and implementation planning to support your strategy. The high-level architectures provided by the assessment service are turned into low level designs and wiring diagrams, which are reviewed and approved prior to implementation. The implementation plan will demonstrate an outcome-based proposal to provide business capabilities through infrastructure with a risk-mitigated project plan.

Lenovo Plan & Design Services

Unlock faster time to market with our tailored, strategic design workshops to align solution approaches with your business goals and technical requirements. Leverage our deep solution expertise and end-to-end delivery partnership to meet your goals efficiently and effectively.

Lenovo Deployment, Migration, and Configuration Services

Optimize your IT operations by shifting labor-intensive functions to Lenovo's skilled technicians for seamless on-site or remote deployment, configuration, and migration. Enjoy peace of mind, faster time to value, and comprehensive knowledge sharing with your IT staff, backed by our best-practice methodology.

- **Deployment Services for Storage and ThinkAgile**

  A comprehensive range of remote and onsite options tailored specifically for your business needs to ensure your storage and ThinkAgile hardware are fully operational from the start.

- **Hardware Installation Services**

  A full-range, comprehensive setup for your hardware, including unpacking, inspecting, and positioning components to ensure your equipment is operational and error-free for the most seamless and efficient installation experience, so you can quickly benefit from your investments.

- **DM/DG File Migration Services**

  Take the burden of file migration from your IT’s shoulders. Our experts will align your requirements and business objectives to the migration plans while coordinating with your team to plan and safely execute the data migration to your storage platforms.

- **DM/DG/DE Health Check Services**

  Our experts perform proactive checks of your Firmware and system health to ensure your machines are operating at peak and optimal efficiency to maximize up-time, avoid system failures, ensure the security of IT solutions and simplify maintenance.

- **Factory Integrated Services**

  A suite of value-added offerings provided during the manufacturing phase of a server or storage system that reduces time to value. These services aim at improving your hardware deployment experience and enhance the quality of a standard configuration before it arrives at your facility.

Lenovo Support Services

In addition to response time options for hardware parts, repairs, and labor, Lenovo offers a wide array of additional support services to ensure your business is positioned for success and longevity. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

- **Premier Support for Data Centers**

  Your direct line to the solution that promises the best, most comprehensive level of support to help you fully unlock the potential of your data center.

- **Premier Enhanced Storage Support (PESS)**

  Gain all the benefits of Premier Support for Data Centers, adding dedicated storage specialists and resources to elevate your storage support experience to the next level.

- **Committed Service Repair (CSR)**

  Our commitment to ensuring the fastest, most seamless resolution times for mission-critical systems that require immediate attention to ensure minimal downtime and risk for your business. This service is only available for machines under the Premier 4-Hour Response SLA.

- **Multivendor Support Services (MVS)**

  Your single point of accountability for resolution support across vast range of leading Server, Storage, and Networking OEMs, allowing you to manage all your supported infrastructure devices seamlessly from a single source.

- **Keep Your Drive (KYD)**

  Protect sensitive data and maintain compliance with corporate retention and disposal policies to ensure your data is always under your control, regardless of the number of drives that are installed in your Lenovo server.

- **Technical Account Manager (TAM)**

  Your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time, ensuring smooth operations and optimized performance as your business grows.

- **Enterprise Software Support (ESS)**

  Gain comprehensive, single-source, and global support for a wide range of server operating systems and Microsoft server applications.

For more information, consult the brochure Lenovo Operational Support Services for Data Centers.

Lenovo Managed Services

Achieve peak efficiency, high security, and minimal disruption with Lenovo's always-on Managed Services. Our real-time monitoring, 24x7 incident response, and problem resolution ensure your infrastructure operates seamlessly. With quarterly health checks for ongoing optimization and innovation, Lenovo's remote active monitoring boosts end-user experience and productivity by keeping your data center's hardware performing at its best.

Lenovo Managed Services provides continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of your data center using state-of-the-art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

Quarterly reviews check error logs, verify firmware & OS device driver levels, and software as needed. We'll also maintain records of latest patches, critical updates, and firmware levels, to ensure you systems are providing business value through optimized performance.

Lenovo Sustainability Services

- **Asset Recovery Services**

  Lenovo Asset Recovery Services (ARS) provides a secure, seamless solution for managing end-of-life IT assets, ensuring data is safely sanitized while contributing to a more circular IT lifecycle. By maximizing the reuse or responsible recycling of devices, ARS helps businesses meet sustainability goals while recovering potential value from their retired equipment. For more information, see the Asset Recovery Services offering page.

- **CO2 Offset Services**

  Lenovo's CO2 Offset Services offer a simple and transparent way for businesses to take tangible action on their IT footprint. By integrating CO2 offsets directly into device purchases, customers can easily support verified climate projects and track their contributions, making meaningful progress toward their sustainability goals without added complexity.

- **Lenovo Certified Refurbished**

  Lenovo Certified Refurbished offers a cost-effective way to support IT circularity without compromising on quality and performance. Each device undergoes rigorous testing and certification, ensuring reliable performance and extending its lifecycle. With Lenovo's trusted certification, you gain peace of mind while making a more sustainable IT choice.

Regulatory compliance

The server conforms to the following regulations:

- Energy Star 2.0
- 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)

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 28. 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 29. 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, ThinkSystem DG Series and ThinkSystem DM Series external storage systems for high-performance storage. See the DE Series, DG 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 30. External backup options

Part number	Description
External RDX USB drives	
4T27A10725	ThinkSystem RDX External USB 3.0 Dock
External SAS tape backup drives	
6160S6E	IBM TS2260 Tape Drive Model H6S
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	
6171S6R	IBM TS2900 Tape Autoloader w/LTO6 HH SAS
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
6741B1F	IBM TS4300 3U Tape Library Base Unit - Max 48U
6741A3F	TS4300 Tape Library Expansion Unit
6741B3F	IBM TS4300 3U Tape Library Expansion Unit - Max 48U
SAS backup drives for TS4300 Tape Library	
01KP934	LTO 6 HH SAS Drive
01KP937	LTO 7 HH SAS Drive
01KP953	LTO 8 HH SAS Drive
02JH836	LTO 9 HH SAS Drive
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 31. 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 32. Uninterruptible power supply units

Part number	Description
Rack-mounted or tower UPS units - 100-125VAC	
7DD5A001WW	RT1.5kVA 2U Rack or Tower UPS-G2 (100-125VAC)
55941AX	RT1.5kVA 2U Rack or Tower UPS (100-125VAC)
55942AX	RT2.2kVA 2U Rack or Tower UPS (100-125VAC)
7DD5A003WW	RT3kVA 2U Rack or Tower UPS-G2 (100-125VAC)
55943AX	RT3kVA 2U Rack or Tower UPS (100-125VAC)
Rack-mounted or tower UPS units - 200-240VAC	
7DD5A002WW	RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC)
55941KX	RT1.5kVA 2U Rack or Tower UPS (200-240VAC)
55942KX	RT2.2kVA 2U Rack or Tower UPS (200-240VAC)
7DD5A005WW	RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)
55943KX	RT3kVA 2U Rack or Tower UPS (200-240VAC)
7DD5A007WW	RT5kVA 3U Rack or Tower UPS-G2 (200-240VAC)
55945KX	RT5kVA 3U Rack or Tower UPS (200-240VAC)
7DD5A008WW	RT6kVA 3U Rack or Tower UPS-G2 (200-240VAC)
55946KX	RT6kVA 3U Rack or Tower UPS (200-240VAC)
55948KX	RT8kVA 6U Rack or Tower UPS (200-240VAC)
7DD5A00AWW	RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)
55949KX	RT11kVA 6U Rack or Tower UPS (200-240VAC)
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)
Rack-mounted or tower UPS units - 380-415VAC	
55948PX	RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55949PX	RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)

† 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 33. Power distribution units

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
0U Basic PDUs															
4PU7A93176	C0QH	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93169	C0DA	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93177	C0QJ	0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93170	C0D9	0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
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
00YJ777	ATZZ	0U 36 C13/6 C19 32A 1 Phase PDU	Y	Y	Y	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															
4PU7A93181	C0QN	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU v2 (60A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
4PU7A93174	C0D5	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU (60A derated)	N	Y	N	N	N	N	N	Y	N	N	N	Y	N
4PU7A93178	C0QK	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93171	C0D8	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93182	C0QP	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93175	C0CS	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93180	C0QM	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93173	C0D6	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93179	C0QL	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU v2 (30A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
4PU7A93172	C0D7	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU(30A derated)	N	Y	N	N	N	N	N	Y	N	N	N	Y	N
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

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
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	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
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	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A81118	BNDW	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU – CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A90810	C0DD	1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
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	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A77468	BLC5	1U 12 C19/C13 switched and monitored 32A 3P WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A90812	C0DB	1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	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
1U C13 Enterprise PDUs (12x IEC 320 C13 outlets)															
39M2816	6030	DPI C13 PDU+	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8941	6010	Enterprise C13 PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U C19 Enterprise PDUs (6x IEC 320 C19 outlets)															
39Y8948	6060	Enterprise C19 PDU	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
39Y8923	6061	Enterprise C19 3 phase PDU (60a)	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 30amp/125V Front-end PDU with NEMA L5-30P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8939	6003	DPI 30amp/250V Front-end PDU with NEMA L6-30P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8934	6005	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8940	6004	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd connector	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
39Y8935	6006	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd connector	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 PDU with Fixed Nema L5-15P line cord	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	DPI 32a Cord (IEC 309 3P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	DPI 32a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	DPI 63a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	DPI 30a Cord (NEMA L6-30P)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9615	6501	DPI 60a Cord (IEC 309 2P+G)	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
40K9617	6505	4.3m, 32A/230V, Souriau UTG to AS/NZS 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 racks supported by the server are listed in the following table.

Table 34. Rack cabinets

Part number	Description	Supported by x3850 X6	Maximum supported x3850 X6
2018-86X	11U Office Enablement Kit	No	Not applicable
9307-2PX	25U Static S2 Standard Rack	No	Not applicable
9307-2RX	25U Standard Rack	No	Not applicable
9307-4RX	42U Standard Rack	No	Not applicable
9307-4XX	42U Standard Rack Extension	No	Not applicable
9308-4EX	42U Enterprise Expansion Rack	Yes*	10
9308-4PX	42U Enterprise Rack	Yes*	10
9360-4PX	42U 1200mm Deep Dynamic Rack	Yes	10
9360-4EX	42U 1200mm Deep Dynamic Expansion Rack	Yes	10
9361-4PX	42U 1200mm Deep Static Rack	Yes	10
9361-4EX	42U 1200mm Deep Static Expansion Rack	Yes	10
9362-4PX	47U 1200mm Deep Static Rack	Yes	11
9362-4EX	47U 1200mm Deep Static Expansion Rack	Yes	11
9363-4CX	PureFlex System 42U Rack	Yes	10
9363-4DX	PureFlex System 42U Expansion Rack	Yes	10
9363-4PX	42U 1100mm Dynamic Rack	Yes	10
9363-4EX	42U 1100mm Dynamic Expansion Rack	Yes	10
1410-2RX	Intelligent Cluster 25U Rack Family	No	Not applicable
1410-4RX	Intelligent Cluster 42U Rack Family	Yes*	10
1410-PRA	Intelligent Cluster 42U 1200mm Deep Rack Family	Yes	10
1410-PRB	Intelligent Cluster 42U 1100mm Enterprise V2 Rack Family	Yes	10
7200-4PX	Smart Analytics 42U Rack Family	Yes*	10

* No support for Full-length I/O Books

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

KVM console options

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

Table 35. 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

Part number	Description
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
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

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Related publications and links

For more information, see these useful resources:

- Lenovo System x3850 X6 product page
  https://www3.lenovo.com/us/en/data-center/servers/flex-blade-servers/compute-nodes/mission-critical/System-x3850-X6/p/77XS7HE7H01
- Customer Implementations of the x3850 X6 - Case Studies and Videos
  href="https://lenovosuccess.com/search#term=&systems=System%2520x&system_models=x3850%2520X6
- Lenovo System x3850 X6 Installation and Service Guide
  http://systemx.lenovofiles.com/help/index.jsp?topic=%2Fcom.lenovo.sysx.6241.doc%2Fprintable_doc.html
- Lenovo System x3850 X6 Rack Installation Instructions
  http://systemx.lenovofiles.com/help/index.jsp?topic=%2Fcom.lenovo.sysx.6241.doc%2Fprintable_doc.html
- Lenovo System x3950 X6 Product Guide
  http://lenovopress.com/tips1251
- ServerProven hardware compatibility page for the x3850 X6 and x3950 X6
  http://www.lenovo.com/us/en/serverproven/xseries/6241E7xxxxV4.shtml
- xREF: System x Reference
  http://lenovopress.com/xref
- Support Portal for the x3850 X6:
  http://support.lenovo.com/products/Servers/Lenovo-x86-servers/Lenovo-System-x3850-X6/6241
- IBM System Storage Interoperation Center
  http://www.ibm.com/systems/support/storage/ssic
- Golden Egg Visual Diagram
  http://www.goldeneggs.fi/documents/GE-LENOVO-X3850X6-A.pdf

Related product families

Product families related to this document are the following:

- 4-Socket Rack Servers
- Large Memory Capacity Servers

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