



Lenovo ThinkSystem SR850 Server Product Guide

The Lenovo ThinkSystem SR850 is a 4-socket server that features a streamlined 2U rack design that is optimized for price and performance, with best-in-class flexibility and expandability. Models of the SR850 are powered by up to four Intel Xeon Processor Scalable Family processors, each with up to 28 cores, for an efficient 4-socket solution. The ThinkSystem SR850's agile design provides rapid upgrades for processors and memory, and its large, flexible storage capacity helps to keep pace with data growth.

Suggested uses: General business consolidation, data analytics, virtualization, database, dense computing and scientific applications



Figure 1. Lenovo ThinkSystem SR850

Did you know?

With a dense 2U design, the Lenovo ThinkSystem SR850 provides advanced features and capabilities. These include support for up to four sockets and 48 DIMMs, mix and match internal storage, and enterprise-grade systems management with the embedded Lenovo XClarity Controller.

The SR850 has space for 16x 2.5-inch drive bays, up to 8 of which can be configured as AnyBay drives - supporting SAS, SATA or NVMe drives. NVMe drives are high-speed, low-latency storage, ideal for storage tiering. The server also offers easy expansion, with up to nine PCIe slots (two of which are x16) and up to 2 (mirrored) M.2 drives for rapid OS boot, faster than either USB keys or SD cards.

Key features

The flexible ThinkSystem SR850 server can scale from two to four Intel Xeon Gold or Platinum processors, delivering significantly faster performance than the previous generation. Built for standard workloads like general business applications and server consolidation, it can also accommodate high-growth areas such as databases and virtualization. The ThinkSystem SR850's agile design permits rapid upgrades for processors and memory, and its large, flexible storage capacity helps to keep pace with data growth.

With the capability to support up to 48 DIMMs, four sockets, mix-and-match internal storage with up to 16 drives, and a dedicated slot for Gigabit or 10 GbE networking, the SR850 provides unmatched features and capabilities in a dense 2U rack-mount design.

Scalability and performance

The SR850 offers numerous features to boost performance, improve scalability and reduce costs:

- Supports Gold and Platinum level processors in the Intel Xeon Processor Scalable Family. Processors supported have up to 28 cores, core speeds of up to 3.6GHz, L3 cache sizes up to 38.5 MB, and TDP ratings of up to 205W.
- The SR850's processor mezzanine tray design enables you to start with two processors and 24 DIMM sockets and upgrade to four processors and 48 DIMM sockets when you need it, helping lower initial costs and manage growth.
- Up to four processors, 112 cores, and 226 threads maximize the concurrent execution of multithreaded applications.
- Intelligent and adaptive system performance with Intel Turbo Boost Technology 2.0 allows processor cores to run at maximum speeds during peak workloads by temporarily going beyond processor TDP.
- Intel Hyper-Threading Technology boosts performance for multithreaded applications by enabling simultaneous multithreading within each processor core, up to two threads per core.
- Intel Virtualization Technology integrates hardware-level virtualization hooks that allow operating system vendors to better use the hardware for virtualization workloads.
- Support for up to 48 TruDDR4 memory DIMMs operating at 2666 MHz means you have the fastest available memory subsystem and memory capacity of up to 3.0 TB using 48x 64 GB LRDIMMs (all processors) or 6.0 TB using 48x 128 GB 3DS RDIMMs (requires M-suffix processors).
- The use 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.
- Up to 16x 2.5-inch drives -- SAS or SATA HDDs, SAS or SATA SSDs and the new NVMe PCIe SSDs -- provide a flexible and scalable all-in-one platform to meet your increasing demands.
- Support for up to 8 NVMe PCIe SSDs in a 2.5-inch form factor maximizes drive I/O performance, in terms of throughput, bandwidth, and latency.
- New high-speed RAID controllers from Broadcom provide 12 Gb SAS connectivity to the drive backplanes. A variety of RAID adapters are available, with cache up to 4 GB and support for 16 drives on a single controller.
- Supports a new Lenovo patented-design M.2 adapter for convenient operating system boot functions. Available M.2 adapters support either one M.2 drive or two M.2 drives in a RAID 1 configuration for boot drive performance and reliability.
- The server has a dedicated flexible LAN-on-motherboard (LOM) slot, supporting a variety of 10 GbE or Gigabit Ethernet adapters that do not occupy one of the standard PCIe slots.
- A total of up to 11 PCIe slots: 9 general-purpose PCIe 3.0 slots plus slots dedicated to the LOM adapter and the M.2 adapter.

- The server offers PCI Express 3.0 I/O expansion capabilities that improve the theoretical maximum bandwidth by almost 100% (8 GTps per link using 128b/130b encoding) compared to the previous generation of PCI Express 2.0 (5 GTps per link using 8b/10b encoding).

Availability and serviceability

The SR850 provides many features to simplify serviceability and increase system uptime:

- The server offers Single Device Data Correction (SDDC, also known as Chipkill), Adaptive Double-Device Data Correction (ADDDC, also known as Redundant Bit Steering or RBS), memory mirroring, and memory rank sparing for redundancy in the event of a non-correctable memory failure.
- The server offers hot-swap drives, supporting RAID redundancy for data protection and greater system uptime.
- The Dual M.2 Boot Adapter supports RAID-1 which enables two installed M.2 drives to be configured as a redundant pair.
- The server has up to two hot-swap redundant power supplies and six hot-swap redundant fans to provide availability for business-critical applications.
- The power-source-independent light path diagnostics uses LEDs to lead the technician to failed (or failing) components, which simplifies servicing, speeds up problem resolution, and helps improve system availability.
- The optional LCD system information display panel provides more detailed diagnostics by displaying all error messages and VPD data needed for a service call, thereby aiding with problem resolution and system uptime.
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (SAS/SATA HDDs and SSDs, NVMe SSDs, M.2 storage, flash storage adapters), fans, power supplies, RAID controllers, server ambient and subcomponent temperatures. Alerts can be surfaced through the XClarity Controller 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.
- Solid-state drives (SSDs) offer more reliability than traditional mechanical HDDs for greater uptime.
- The built-in XClarity Controller continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Built-in diagnostics in UEFI, using Lenovo XClarity Provisioning Manager, speed up troubleshooting tasks to reduce service time.
- Lenovo XClarity Provisioning Manager collects and saves service data to USB key drive or remote CIFS share folder, for troubleshooting and to reduce service time.
- Auto restart in the event of a momentary loss of AC power (based on the power policy setting in the XClarity Controller service processor)
- Support for the XClarity Administrator Mobile app running on a supported smartphone and connected to the server through the service-enabled USB port, enables additional local systems management functions.
- Three-year or one-year customer-replaceable unit and onsite limited warranty, 9 x 5 next business day. Optional service upgrades are available.

Manageability and security

Powerful systems management features simplify local and remote management of the SR850:

- Lenovo XClarity Controller (XCC) monitors server availability and performs remote management. XCC Advanced is standard, which enables remote KVM. Optional XCC Enterprise enables the mounting of remote media files (ISO and IMG image files), boot capture, and power capping.
- Lenovo XClarity Administrator offers comprehensive hardware management tools that help to

increase uptime, reduce costs and improve productivity through advanced server management capabilities.

- New UEFI-based Lenovo XClarity Provisioning Manager, accessible from F1 during boot, provides system inventory information, graphical UEFI Setup, platform update function, RAID Setup wizard, operating system installation function, and diagnostic functions.
- Support for Lenovo XClarity Energy Manager, which captures real-time power and temperature data from the server and provides automated controls to lower energy costs.
- Integrated Trusted Platform Module (TPM) 2.0 support enables advanced cryptographic methods, such as digital signatures and remote attestation.
- Supports Secure Boot to ensure only a digitally signed operating system can be used. Supported with HDDs and SSDs, as well as M.2 drives in the M.2 Adapter.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.
- Intel Execute Disable Bit functionality can prevent certain classes of malicious buffer overflow attacks when combined with a supported operating system.
- Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks, allowing an application to run in its own isolated space, protected from all other software running on a system.

Energy efficiency

The SR850 offers the following energy-efficiency features to save energy, reduce operational costs, and increase energy availability:

- Energy-efficient planar components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Platinum certifications
- Intel Intelligent Power Capability turns individual processor elements on and off as needed to reduce power draw.
- Low-voltage 1.2 V DDR4 memory offers energy savings compared to 1.35 V and 1.5 V DDR3 DIMMs.
- Solid-state drives (SSDs) consume as much as 80% less power than traditional spinning 2.5-inch HDDs.
- The server uses hexagonal ventilation holes, which can be grouped more densely than round holes, providing more efficient airflow through the system and thus keeping your system cooler.
- Optional Lenovo XClarity Energy Manager provides advanced data center power notification, analysis, and policy-based management to help achieve lower heat output and reduced cooling needs.

Components and connectors

The following figure shows the front of the server.

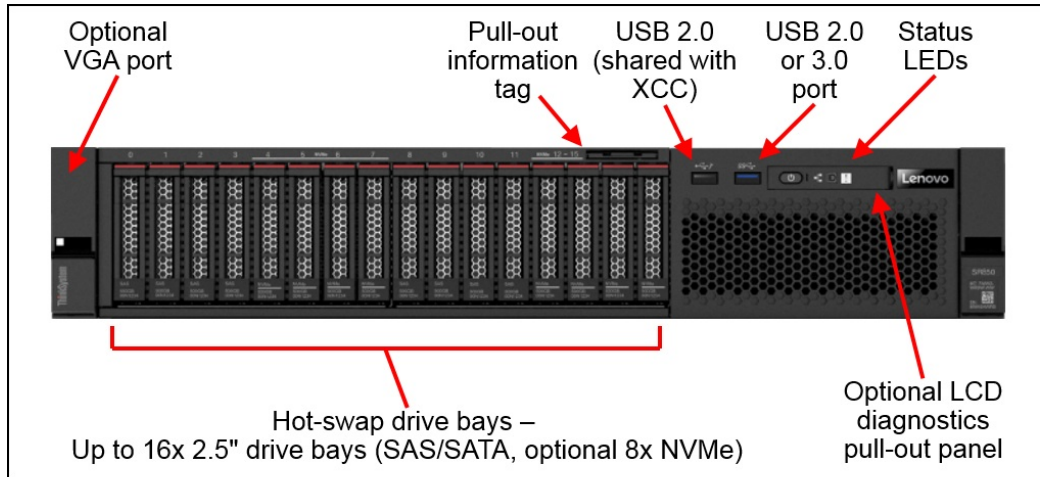


Figure 2. Front view of the Lenovo ThinkSystem SR850

The following figure shows the rear of the server.

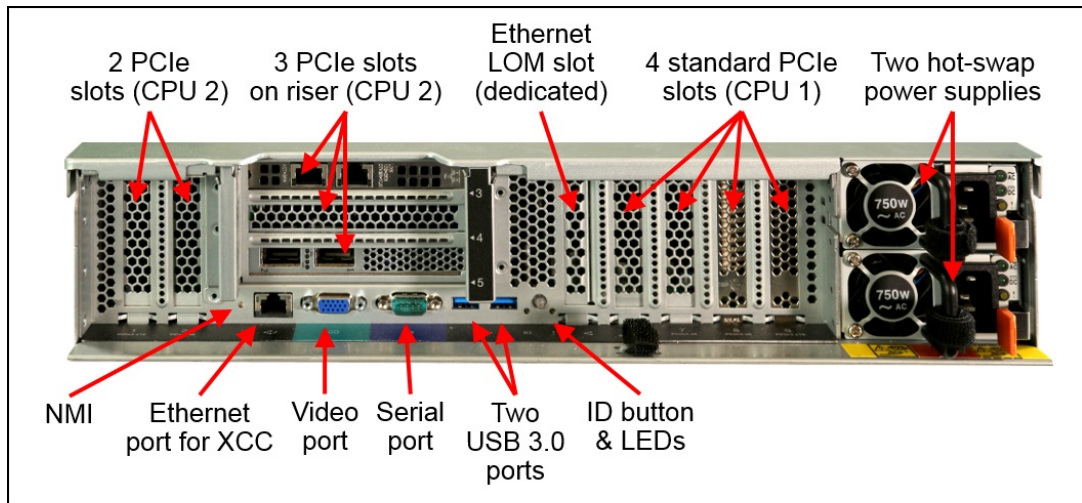


Figure 3. Rear view of the Lenovo ThinkSystem SR850

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

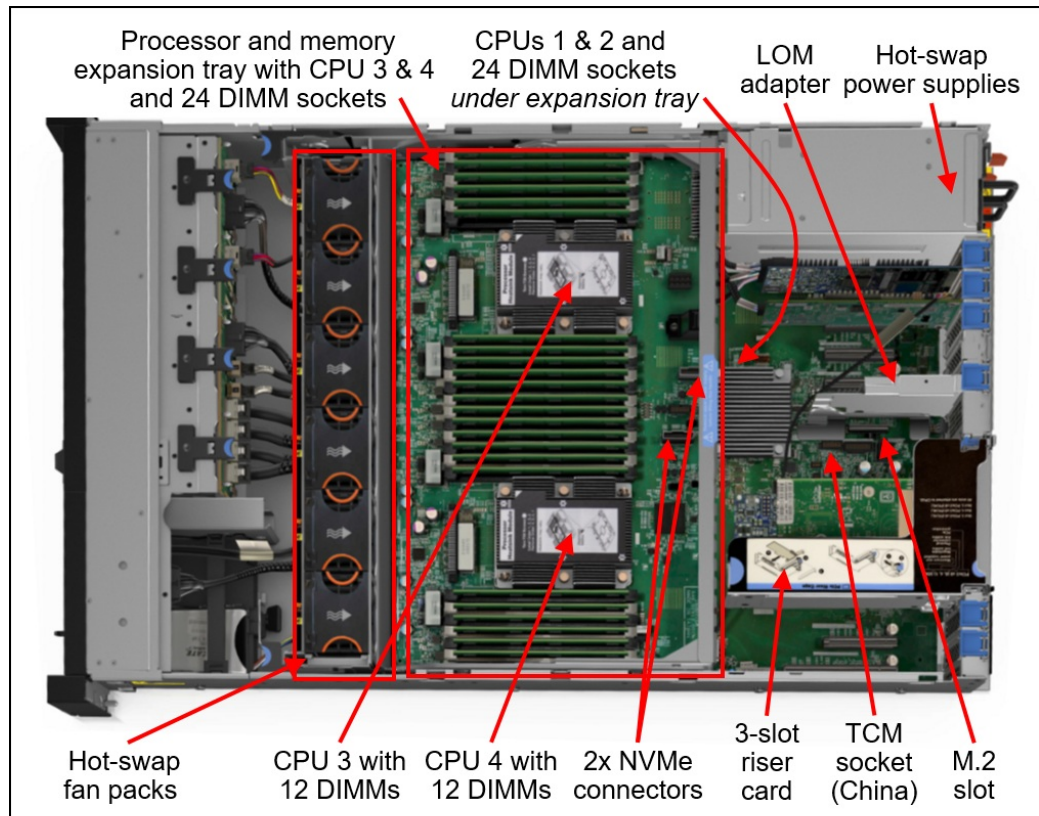


Figure 4. Internal view of the Lenovo ThinkSystem SR850

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine types	7X18 - 1 year warranty 7X19 - 3 year warranty
Form factor	2U rack.
Processor	Up to four Intel Xeon Processor Scalable Family of processors, either Gold or Platinum level processors (formerly codename "Skylake"). Supports processors up to 28 cores, core speeds up to 3.6 GHz, and TDP ratings up to 205W. Two processor sockets on the system board and two processors on the Processor and Memory Expansion Tray (standard on most models). Two Intel Ultra Path Interconnect (UPI) links at 10.4 GT/s each. Four processors are connected in a ring topology.
Chipset	Intel C624 "Lewisburg" chipset
Memory	Up to 48 DIMM sockets (12 DIMMs per processor) supporting Lenovo TruDDR4 DIMMs at up to 2666 MHz. RDIMMs, LRDIMMs and 3DS RDIMMs are supported, but memory types cannot be mixed. There are 24 DIMM sockets on the system board, and an additional 24 DIMM sockets on the processor and memory expansion tray (standard on most models).

Components	Specification
Memory maximums	With RDIMMs: Up to 1.5 TB with 48x 32 GB RDIMMs and four processors. With LRDIMMs: Up to 3.0 TB with 48x 64 GB LRDIMMs and four processors. With 3DS RDIMMs: Up to 6.0 TB with 48x 128 GB 3DS RDIMMs and four processors (requires M-suffix processors that support greater than 786 GB memory per processor)
Memory protection	ECC, SDDC (for x4-based memory DIMMs), ADDDC (for x4-based memory DIMMs), memory mirroring, and memory sparing.
Disk drive bays	Up to 16 2.5-inch hot-swap SAS/SATA bays.
Maximum internal storage	Up to 245.76 TB with 16x 15.36 TB 2.5" SAS SSDs, or up to 32 TB with 16x 2.0 TB 2.5" 7.2K SAS HDDs. With 8x SAS/SATA and 8x NVMe drives, up to 153.6 TB with 8x 15.36 TB 2.5" SAS SSDs and 8x 3.84 TB U.2 2.5" NVMe SSDs. Mix of SSDs/HDDs supported.
Storage controller	<ul style="list-style-type: none"> • No embedded RAID • 12 Gb SAS/SATA RAID adapters: <ul style="list-style-type: none"> ◦ RAID 530i (cacheless) supports RAID 0, 1, 10, 5, 50 ◦ RAID 730-8i with 1GB cache supports RAID 0, 1, 10, 5, 50 ◦ RAID 930-8i with 2GB flash-backed cache supports RAID 0, 1, 10, 5, 50, 6, 60 ◦ RAID 930-16i and 24i with 4GB or 8GB flash-backed cache supports RAID 0, 1, 10, 5, 50, 6, 60 • 12 Gb SAS/SATA non-RAID: 430-8i and 430-16i HBAs
Optical drive bays	No internal optical drive.
Tape drive bays	No internal backup drive.
Network interfaces	Integrated 10Gb Ethernet controller, based on the Intel Ethernet Connection X722. The server supports 1 of 6 available Phy adapters, providing either 2- or 4-port Gigabit Ethernet, 2- or 4-port 10 GbE with SFP+ connections or 2- or 4-port 10 GbE with RJ45 connections. One port can optionally be shared with the XClarity Controller (XCC) management processor for Wake-on-LAN and NC-SI support.
PCI Expansion slots	Up to 11 PCIe slots including slots reserved for a LOM Ethernet adapter and an M.2 adapter. Eight slots are on the system board and three (slots 3-5) are through a riser card. Three riser cards are available. All 11 slots are available with two processors. The slots are as follows: <ul style="list-style-type: none"> • Slot 1: PCIe 3.0 x16 (low profile) • Slot 2: PCIe 3.0 x8 (low profile) • Slot 3-5: Riser card slots (choices are x8/x8/x8, x8/x8/x8ML2 and x8/x16ML2) • Slot 6: PCIe 2.0 x2 / 6 Gb SATA slot reserved to M.2 adapter and drives • Slot 7: Reserved for Ethernet LOM phy adapter • Slot 8: PCIe 3.0 x8 (low profile) • Slot 9: PCIe 3.0 x8 (low profile) • Slot 10: PCIe 3.0 x8 (low profile) • Slot 11: PCIe 3.0 x16 (low profile)

Components	Specification
Ports	<p>Front: Two USB 2.0 ports or one USB 2.0 and one USB 3.0 port, model dependent. The first USB 2.0 port can be configured to support local systems management by using the XClarity Administrator mobile app on a mobile device connected via a USB cable. Optional front VGA video port (CTO or field upgrade).</p> <p>Rear: Two USB 3.0 ports, one VGA video port, one DB-9 serial port, and one RJ-45 XClarity Controller (XCC) systems management port. The serial port can be shared with the XCC for serial redirection functions.</p> <p>Internal: Optional M.2 adapter in dedicated slot supporting one or two M.2 drives (for OS boot support, including hypervisor support).</p>
Cooling	Six N+1 redundant hot swap 60 mm fans (all six standard). One fan integrated in each power supply.
Power supply	Up to two hot-swap redundant AC power supplies (all 80 PLUS Platinum certification): 750 W, 1100 W and 1600 W AC options, supporting 220 V AC. 750 W and 1100 W options also support 110V input supply. In China only, all power supply options support 240 V DC. Second power supply requires either Processor and Memory Expansion Tray or a power interposer card.
Video	G200 graphics with 16 MB memory with 2D hardware accelerator, integrated into the XClarity Controller. Maximum resolution is 1920x1200 32bpp at 60Hz.
Hot-swap parts	Drives, power supplies, and fans.
Systems management	XClarity Controller embedded management, XClarity Administrator centralized infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. XClarity Controller Advanced standard with the SR850; XClarity Controller Enterprise optional with software license upgrade. Light path diagnostics for local failure detection and reporting, with optional LCD diagnostics pull-out panel.
Security features	Power-on password, administrator's password, Trusted Platform Module (TPM), supporting TPM 1.2 or TPM 2.0. In China only, optional Trusted Cryptographic Module (TCM). Lockable top cover. Optional lockable front security bezel.
Operating systems supported	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 or one-year (model dependent) customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.
Dimensions	Height: 86 mm (3.4 in.), width: 445 mm (17.5 in.), depth: 776 mm (30.5 in.)
Weight	Minimum configuration: 18 kg (40 lb.), maximum: 27 kg (59.6 lb)

The SR850 servers are shipped with the following items:

- ThinkSystem Toolless Slide Rail
- Documentation flyer
- Power cords (model and region dependent)

Models

The following tables list the available models, grouped by region.

- [Models for Australia and New Zealand](#)
- [Models for South East Asian countries \(ASEAN\)](#)
- [Models for EMEA countries](#)
- [Models for Hong Kong, Taiwan, Korea \(HTK\)](#)
- [Models for India](#)
- [Models for Japan](#)
- [Models for Latin American countries \(except Brazil\)](#)
- [Models for USA and Canada](#)

Models for Australia and New Zealand

All models have the following common features:

- No included drives (open drive bays)
- XCC Advanced with an available upgrade to XCC Enterprise
- No power cords included; ensure desired power cords are added to the order
- Slide Rail Kit (cable management arm is available but not included)

Table 2. Models for Australia and New Zealand

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0	LCD panel	Front VGA
7X19A003AU	2x Gold 5115 10C 85W 2.4GHz	2x 8GB	RAID 530-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	No	Option
7X19A009AU	2x Gold 5115 10C 85W 2.4GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	No	Option
7X19A025AU	2x Gold 5118 12C 105W 2.3GHz	2x 16GB	RAID 530-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	No	Option
7X19A029AU	2x Gold 5118 12C 105W 2.3GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	No	Option
7X19A01GAU	2x Gold 5120 14C 105W 2.2GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	Yes	Yes	Option
7X19A00DAU	2x Gold 6134 8C 130W 3.2GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A010AU	2x Gold 6136 12C 150W 3.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A01VAU	2x Gold 6138 20C 125W 2.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A01MAU	2x Gold 6140 18C 140W 2.3GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A00NAU	2x Gold 6142 16C 150W 2.6GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A02CAU	2x Gold 6152 22C 140W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A01AAU	2x Platinum 8153 16C 125W 2.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A01DAU	2x Platinum 8160 24C 150W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0	LCD panel	Front VGA
7X19A01ZAU	2x Platinum 8164 26C 150W 2.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Yes	Option
7X19A00PAU	2x Platinum 8170 26C 165W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1600W HS	Yes	Yes	Option
7X19A00MAU	2x Platinum 8176 28C 165W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1600W HS	Yes	Yes	Option

† Processor detail: Quantity, model, core count, TDP, core frequency

Models for South East Asian countries (ASEAN)

All models have the following common features:

- No included drives (open drive bays)
- XCC Advanced with an available upgrade to XCC Enterprise
- VGA port on the front of the server
- Pull-out LCD Display Panel
- USB 3.0 port on the front of the server
- No power cords included; ensure desired power cords are added to the order
- Slide Rail Kit (cable management arm is available but not included)

Table 3. Models for South East Asian countries (ASEAN)

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies
7X19A00GSG	2x Gold 5115 10C 85W 2.4GHz	2x 16GB 2Rx8	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1100W HS
7X19A00QSG	2x Gold 5118 12C 105W 2.3GHz	2x 16GB 2Rx8	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1100W HS
7X19A012SG	2x Gold 5120 14C 105W 2.2GHz	2x 16GB 2Rx8	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1100W HS
7X19A02BSG	2x Gold 6126 12C 125W 2.6GHz	2x 16GB 2Rx8	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1100W HS
7X19A00XSG	2x Gold 6130 16C 125W 2.1GHz	2x 32GB	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1100W HS
7X19A017SG	2x Gold 6134 8C 130W 3.2GHz	2x 16GB 2Rx8	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1100W HS
7X19A00VSG	2x Gold 6140 18C 140W 2.3GHz	2x 32GB	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1600W HS
7X19A01JSG	2x Gold 6148 20C 150W 2.4GHz	2x 32GB	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1600W HS
7X19A01BSG	2x Gold 6152 22C 140W 2.1GHz	2x 32GB	RAID 530-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1600W HS

† Processor detail: Quantity, model, core count, TDP, core frequency

Models for EMEA countries

All models have the following common features:

- No included drives (open drive bays)
- XCC Advanced with an available upgrade to XCC Enterprise
- Pull-out LCD Display Panel
- No power cords included; ensure desired power cords are added to the order
- Slide Rail Kit (cable management arm is available but not included)

Table 4. Models for EMEA countries

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0	Front VGA
7X19A02GEA	4x Gold 5115 10C 85W 2.4GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS	Yes	Yes
7X19A02HEA	4x Gold 5118 12C 105W 2.3GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS	Yes	Yes
7X19A02JEA	4x Gold 5120 14C 105W 2.2GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS	Yes	Yes
7X19A02LEA	4x Gold 6130 16C 125W 2.1GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS	Yes	Yes
7X19A02NEA	4x Gold 6148 20C 150W 2.4GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS	Yes	Yes
7X19A02PEA	4x Gold 6150 18C 165W 2.7GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS	Yes	Yes

† Processor detail: Quantity, model, core count, TDP, core frequency

Models for Hong Kong, Taiwan, Korea (HTK)

All models have the following common features:

- No included drives (open drive bays)
- XCC Advanced with an available upgrade to XCC Enterprise
- No VGA port on the front of the server; available as an option
- Basic operator panel (no pull-out LCD Display Panel)
- No power cords included; ensure desired power cords are added to the order
- Slide Rail Kit (cable management arm is available but not included)

Table 5. Models for Hong Kong, Taiwan, Korea (HTK)

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0
7X19A021CN	2x Gold 5115 10C 85W 2.4GHz	2x 16GB 2Rx8	2x RAID 930-8i	16x 2.5" / 16	4x1Gb	8 / 11	1x 750W HS	No
7X19A01TCN	2x Gold 5118 12C 105W 2.3GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A01RCN	2x Gold 5120 14C 105W 2.2GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A01PCN	2x Gold 5122 4C 105W 3.6GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A022CN	2x Gold 6126 12C 125W 2.6GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A01WCN	2x Gold 6130 16C 125W 2.1GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0
7X19A02DCN	2x Gold 6134 8C 130W 3.2GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A02ACN	2x Gold 6136 12C 150W 3.0GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A00RCN	2x Gold 6140 18C 140W 2.3GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A00ZCN	2x Gold 6142 16C 150W 2.6GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A011CN	2x Gold 6150 18C 165W 2.7GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A00BCN	2x Gold 6152 22C 140W 2.1GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A007CN	2x Platinum 8153 16C 125W 2.0GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A024CN	2x Platinum 8156 4C 105W 3.6GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A026CN	2x Platinum 8158 12C 150W 3.0GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A004CN	2x Platinum 8160 24C 150W 2.1GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A00CCN	2x Platinum 8164 26C 150W 2.0GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A00FCN	2x Platinum 8170 26C 165W 2.1GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A00ECN	2x Platinum 8176 28C 165W 2.1GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes
7X19A027CN	2x Gold 5120T 14C 105W 2.2GHz	2x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16	4x1Gb	11 / 11	1x 750W HS	Yes

† Processor detail: Quantity, model, core count, TDP, core frequency

Models for India

All models have the following common features:

- No included drives (open drive bays)
- XCC Advanced with an available upgrade to XCC Enterprise
- No VGA port on the front of the server; available as an option
- Basic operator panel (no pull-out LCD Display Panel)
- Power cords included: 2.8m, 10A/250V, C13 to IS 6538, except for 7X19A005SG which includes 2.8m,10A/230V,C13 to CEE7-VII instead

Table 6. Models for India

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0	Rail kit
7X19A023SG	2x Gold 5115 10C 85W 2.4GHz	2x 8GB	RAID 530-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	Slide Rail
7X19A013SG	2x Gold 5115 10C 85W 2.4GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	Slide Rail
7X19A005SG	2x Gold 5118 12C 105W 2.3GHz	2x 16GB 2Rx8	RAID 530-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	Yes	Friction Rail

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0	Rail kit
7X19A01ESG	2x Gold 5118 12C 105W 2.3GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	Slide Rail
7X19A016SG	2x Gold 5118 12C 105W 2.3GHz	2x 16GB	RAID 530-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	No	Slide Rail
7X19A020SG	2x Gold 5120 14C 105W 2.2GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	Yes	Option
7X19A01KSG	2x Gold 5120 14C 105W 2.2GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 750W HS	Yes	Slide Rail
7X19A01QSG	2x Gold 6134 8C 130W 3.2GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A01NSG	2x Gold 6136 12C 150W 3.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A028SG	2x Gold 6138 20C 125W 2.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A01HSG	2x Gold 6140 18C 140W 2.3GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A01FSG	2x Gold 6142 16C 150W 2.6GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A00ASG	2x Gold 6152 22C 140W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A006SG	2x Platinum 8153 16C 125W 2.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A002SG	2x Platinum 8160 24C 150W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A00LSG	2x Platinum 8164 26C 150W 2.0GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1100W HS	Yes	Slide Rail
7X19A00KSG	2x Platinum 8170 26C 165W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1600W HS	Yes	Slide Rail
7X19A00HSG	2x Platinum 8176 28C 165W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x1Gb	8 / 11	1x 1600W HS	Yes	Slide Rail

† Processor detail: Quantity, model, core count, TDP, core frequency

Models for Japan

All models have the following common features:

- No included drives (open drive bays)
- VGA port on the front of the server
- Pull-out LCD Display Panel
- No power cords included; ensure desired power cords are added to the order
- Slide Rail Kit (cable management arm is available but not included)

Table 7. Models for Japan

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	Front USB 3.0	XCC Upgrade
7X19A01UJP	2x Gold 5115 10C 85W 2.4GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x10Gb RJ45	11 / 11	1x 1100W HS	No	Option
7X19A02FJP	2x Gold 6150 18C 165W 2.7GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x10Gb SFP+	8 / 11	1x 1600W HS	Yes	Yes
7X19A02EJP	2x Platinum 8176 28C 165W 2.1GHz	2x 16GB	RAID 930-8i	8x 2.5" SAS / 16	4x10Gb SFP+	8 / 11	1x 1600W HS	Yes	Yes

† Processor detail: Quantity, model, core count, TDP, core frequency

Models for Latin American countries (except Brazil)

All models have the following common features:

- No included drives (open drive bays)
- VGA port on the front of the server
- Pull-out LCD Display Panel
- USB 3.0 port on the front of the server
- No power cords included; ensure desired power cords are added to the order

Table 8. Models for Latin American countries (except Brazil)

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies	XCC Upgrade	Rail kit
7X19A037LA	2x Gold 6140 18C 140W 2.3GHz	12x 16GB 2Rx8	RAID 930-8i	8x 2.5" SAS / 16	Open	11 / 11	2x 1100W HS	Yes	Slide Rail
7X19A033LA	2x Gold 6148 20C 150W 2.4GHz	12x 16GB 2Rx8	RAID 930-8i	8x 2.5" SAS / 16	Open	11 / 11	2x 1100W HS	Yes	Slide Rail
7X19A032LA	2x Platinum 8153 16C 125W 2.0GHz	12x 32GB	RAID 930-8i	8x 2.5" SAS / 16	Open	11 / 11	2x 1100W HS	Yes	Slide Rail
7X19A03ELA	2x Platinum 8160 24C 150W 2.1GHz	12x 32GB	RAID 930-8i	8x 2.5" SAS / 16	Open	11 / 11	2x 1100W HS	Yes	Slide Rail
7X19A03CLA	2x Platinum 8164 26C 150W 2.0GHz	12x 32GB	RAID 930-8i	8x 2.5" SAS / 16	Open	11 / 11	2x 1600W HS	Yes	Slide Rail
7X19A03BLA	2x Platinum 8170 26C 165W 2.1GHz	12x 32GB	RAID 930-8i	8x 2.5" SAS / 16	Open	11 / 11	2x 1600W HS	Yes	Slide Rail
7X19A03FLA*	4x Platinum 8170 26C 165W 2.1GHz	16x 32GB	RAID 930-16i	16x 2.5" / 16 (4x AnyBay)	4x1Gb	11 / 11	2x 1600W HS	Option	Slide Rail + CMA
7X19A03HLA*	4x Platinum 8170 26C 165W 2.1GHz	32x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16 (4x AnyBay)	4x1Gb	11 / 11	2x 1600W HS	Option	Slide Rail + CMA
7X19A03ALA	2x Platinum 8176 28C 165W 2.1GHz	12x 32GB	RAID 930-8i	8x 2.5" SAS / 16	Open	11 / 11	2x 1600W HS	Yes	Slide Rail
7X19A03GLA*	4x Platinum 8176 28C 165W 2.1GHz	16x 32GB	RAID 930-16i	16x 2.5" / 16 (4x AnyBay)	4x1Gb	11 / 11	2x 1600W HS	Option	Slide Rail + CMA
7X19A03JLA*	4x Platinum 8176 28C 165W 2.1GHz	32x 16GB 2Rx8	RAID 930-16i	16x 2.5" / 16 (4x AnyBay)	4x1Gb	11 / 11	2x 1600W HS	Option	Slide Rail + CMA

† Processor detail: Quantity, model, core count, TDP, core frequency

* Also includes one external USB DVD-RW drive

Models for USA and Canada

All models have the following common features:

- No included drives (open drive bays)
- XCC Advanced with an available upgrade to XCC Enterprise
- VGA port on the front of the server
- Pull-out LCD Display Panel
- Front USB ports are USB 2.0
- No power cords included; ensure desired power cords are added to the order
- Slide Rail Kit (cable management arm is available but not included)

Table 9. Models for USA and Canada

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet LOM	Slots	Power supplies
7X19A008NA	4x Gold 5115 10C 85W 2.4GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS
7X19A018NA	4x Gold 5118 12C 105W 2.3GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS
7X19A019NA	4x Gold 5120 14C 105W 2.2GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS
7X19A01CNA	4x Gold 6126 12C 125W 2.6GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS
7X19A00SNA	4x Gold 6130 16C 125W 2.1GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS
7X19A00UNA	4x Gold 6138 20C 125W 2.0GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1100W HS
7X19A00YNA	4x Gold 6148 20C 150W 2.4GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS
7X19A014NA	4x Gold 6150 18C 165W 2.7GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS
7X19A015NA	4x Gold 6152 22C 140W 2.1GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS
7X19A01LNA	4x Platinum 8160 24C 150W 2.1GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS
7X19A01YNA	4x Platinum 8164 26C 150W 2.0GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS
7X19A00JNA	4x Platinum 8170 26C 165W 2.1GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS
7X19A00TNA	4x Platinum 8176 28C 165W 2.1GHz	4x 32GB	RAID 930-8i	8x 2.5" / 16 (4x AnyBay)	Open	11 / 11	2x 1600W HS

† Processor detail: Quantity, model, core count, TDP, core frequency

Processor options

The SR850 supports Gold and Platinum level processors in the Intel Xeon Processor Scalable Family.

The server supports up to four processors:

- Processors 1 and 2 are installed in sockets on the system board.
- Processors 3 and 4 are installed on the Processor and Memory Expansion Tray.

The SR850 Processor and Memory Expansion Tray has a patent-pending sliding and rolling lift mechanism that requires only a one-handed operation to insert or remove from the server. It has a toolless design for superior usability, serviceability and reliability.

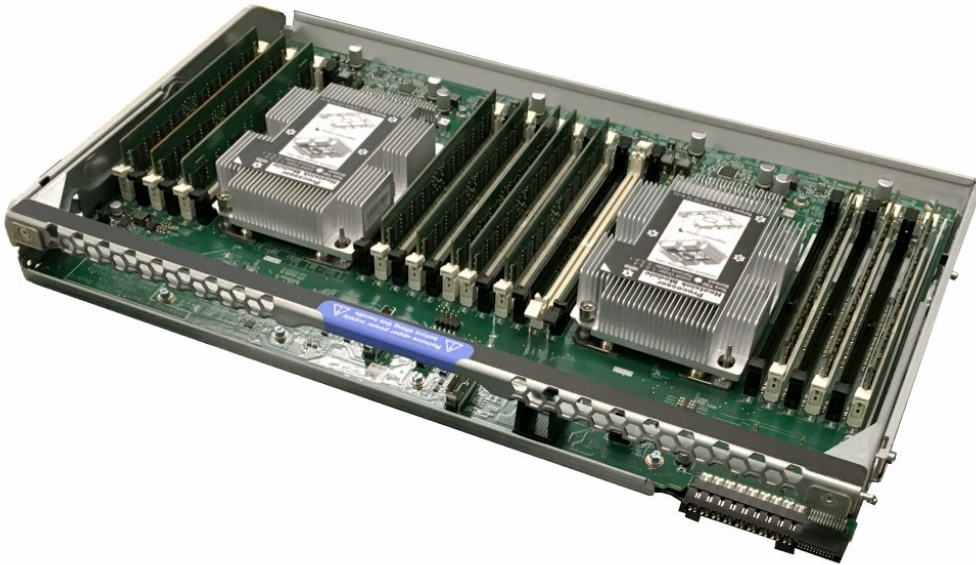


Figure 5. SR850 Processor and Memory Expansion Tray

The ordering information for the Processor and Memory Expansion Tray is shown in the following table.

Table 10. Processor and Memory Expansion Tray

Part number	Feature code	Description
7B27A03953	AUPY	SR850 Processor and Memory Expansion Tray

The following processor quantities are supported:

- Two processors, installed in sockets 1 and 2, without the Processor and Memory Expansion Tray
- Four processors, installed in all four sockets
- Configurations of one processor or three processors are supported via Special Bid

The SR850 supports the Intel Xeon Processor Scalable Family options listed in the following table.

All supported processors have the following characteristics:

- 14 nm process technology
- Six DDR4 memory channels
- 48 PCIe 3.0 I/O lanes
- 1 MB L2 cache
- 1.375 MB L3 cache per core (except where larger, as noted with ** in the table below)
- Intel Hyper-Threading Technology
- Intel Turbo Boost Technology 2.0
- Intel Advanced Vector Extensions 512 (AVX-512)
- Intel Ultra Path Interconnect (UPI) links at 10.4 GT/s (replaces QPI)

With two processors installed, the two processors are connected together using one UPI link. With four processors installed, the processors are connected together using a ring topology, using two UPI links, one to each adjacent processor in the ring.

Processors with the T suffix have more robust thermal characteristics (higher T-case). Processors with the M suffix support greater than 768 GB per processor.

Table 11. Processor options

Part number	Feature code	Description	Memory speed	Supports >768 GB per CPU	L3 cache	AVX-512 FMA units
7XG7A04974	AX8M	Intel Xeon Gold 5115 10C 85W 2.4GHz	2400 MHz	No	13.75 MB	1
4XG7A09098	B248	Intel Xeon Gold 5117 14C 105W 2.0GHz	2400 MHz	No	19.25 MB	1
7XG7A04971	AX7D	Intel Xeon Gold 5118 12C 105W 2.3GHz	2400 MHz	No	16.5 MB	1
7XG7A04973	B259	Intel Xeon Gold 5119T 14C 85W 1.9GHz	2400 MHz	No	19.25 MB	1
7XG7A04970	AX7C	Intel Xeon Gold 5120 14C 105W 2.2GHz	2400 MHz	No	19.25 MB	1
7XG7A04972	AX7E	Intel Xeon Gold 5120T 14C 105W 2.2GHz	2400 MHz	No	19.25 MB	1
7XG7A04959	AX70	Intel Xeon Gold 5122 4C 105W 3.6GHz	2666 MHz*	No	16.5 MB**	2*
7XG7A03949	AWEX	Intel Xeon Gold 6126 12C 125W 2.6GHz	2666 MHz	No	19.25 MB**	2
None†	AX73	Intel Xeon Gold 6126T 12C 125W 2.6GHz	2666 MHz	No	19.25 MB**	2
7XG7A04958	B251	Intel Xeon Gold 6128 6C 115W 3.4GHz	2666 MHz	No	19.25 MB**	2
7XG7A03945	AX6D	Intel Xeon Gold 6130 16C 125W 2.1GHz	2666 MHz	No	22 MB	2
7XG7A04961	AX72	Intel Xeon Gold 6130T 16C 125W 2.1GHz	2666 MHz	No	22 MB	2
7XG7A03947	B24N	Intel Xeon Gold 6132 14C 140W 2.6GHz	2666 MHz	No	19.25	2
7XG7A04957	AX6Y	Intel Xeon Gold 6134 8C 130W 3.2GHz	2666 MHz	No	24.75 MB**	2
7XG7A04968	B258	Intel Xeon Gold 6134M 8C 130W 3.2GHz	2666 MHz	Yes	24.75 MB**	2
7XG7A03948	AX6W	Intel Xeon Gold 6136 12C 150W 3.0GHz	2666 MHz	No	24.75 MB**	2
7XG7A03943	AX6Q	Intel Xeon Gold 6138 20C 125W 2.0GHz	2666 MHz	No	27.5 MB	2
7XG7A04960	B252	Intel Xeon Gold 6138T 20C 125W 2.0GHz	2666 MHz	No	27.5 MB	2
7XG7A03944	AX6R	Intel Xeon Gold 6140 18C 140W 2.3GHz	2666 MHz	No	24.75 MB	2
7XG7A04967	B257	Intel Xeon Gold 6140M 18C 140W 2.3GHz	2666 MHz	Yes	24.75 MB	2
7XG7A03946	AX6E	Intel Xeon Gold 6142 16C 150W 2.6GHz	2666 MHz	No	22 MB	2
7XG7A04966	B256	Intel Xeon Gold 6142M 16C 150W 2.6GHz	2666 MHz	Yes	22 MB	2
None†	AX6X	Intel Xeon Gold 6144 8C 150W 3.5GHz	2666 MHz	No	24.75 MB**	2
None†	AX6V	Intel Xeon Gold 6146 12C 165W 3.2GHz	2666 MHz	No	24.75 MB**	2
7XG7A03942	AWEW	Intel Xeon Gold 6148 20C 150W 2.4GHz	2666 MHz	No	27.5 MB	2
7XG7A06760	AX6T	Intel Xeon Gold 6150 18C 165W 2.7GHz	2666 MHz	No	24.75 MB	2
7XG7A03941	AX6P	Intel Xeon Gold 6152 22C 140W 2.1GHz	2666 MHz	No	30.25 MB	2
None†	AX6S	Intel Xeon Gold 6154 18C 200W 3.0GHz	2666 MHz	No	24.75 MB	2
7XG7A03938	AX6L	Intel Xeon Platinum 8153 16C 125W 2.0GHz	2666 MHz	No	22 MB	2
7XG7A03939	AWEV	Intel Xeon Platinum 8156 4C 105W 3.6GHz	2666 MHz	No	16.5 MB**	2
7XG7A04969	AX7B	Intel Xeon Platinum 8158 12C 150W 3.0GHz	2666 MHz	No	24.75 MB**	2
7XG7A03937	AWGJ	Intel Xeon Platinum 8160 24C 150W 2.1GHz	2666 MHz	No	33 MB	2
7XG7A04965	B255	Intel Xeon Platinum 8160M 24C 150W 2.1GHz	2666 MHz	Yes	33 MB	2
None†	AX6N	Intel Xeon Platinum 8160T 24C 150W 2.1GHz	2666 MHz	No	33 MB	2
7XG7A03936	AX6K	Intel Xeon Platinum 8164 26C 150W 2.0GHz	2666 MHz	No	35.75 MB	2
None†	AX6M	Intel Xeon Platinum 8168 24C 205W 2.7GHz	2666 MHz	No	33 MB	2
7XG7A03935	AX6J	Intel Xeon Platinum 8170 26C 165W 2.1GHz	2666 MHz	No	35.75 MB	2
7XG7A04964	B254	Intel Xeon Platinum 8170M 26C 165W 2.1GHz	2666 MHz	Yes	35.75 MB	2
7XG7A03934	AX6H	Intel Xeon Platinum 8176 28C 165W 2.1GHz	2666 MHz	No	38.5 MB	2
7XG7A04963	B253	Intel Xeon Platinum 8176M 28C 165W 2.1GHz	2666 MHz	Yes	38.5 MB	2
None†	AX6G	Intel Xeon Platinum 8180 28C 205W 2.5GHz	2666 MHz	No	38.5 MB	2
None†	AX74	Intel Xeon Platinum 8180M 28C 205W 2.5GHz	2666 MHz	Yes	38.5 MB	2

* All Gold 5000-level processors, except the 5122, support 2400 MHz memory speeds and have one AVX-512 512-bit FMA units. The 5122 processor supports 2666 MHz and has two FMA units

** L3 cache is 1.375 MB per core except for processor indicated with ** where the cache size is larger

† These high-performance processors have high thermal requirements and can only be ordered in a configure-to-order (CTO) configuration. No field upgrade of processors is supported. In addition, if these processors are used, then no backplanes or drives can be installed, and there are cooling restrictions. See the [Internal storage](#) and [Cooling](#) sections for details.

Memory options

The SR850 server supports TruDDR4 memory. TruDDR4 memory uses the highest-quality components sourced from Tier 1 DRAM suppliers and only memory that meets strict tolerances is selected. It is compatibility tested and tuned to maximize performance and reliability.

TruDDR4 memory has a unique signature programmed into the DIMM, which enables ThinkSystem servers to verify whether the memory installed is qualified and supported. From a service and support standpoint, TruDDR4 memory automatically assumes the system's warranty, and service and support provided worldwide.

The SR850 supports up to 12 DIMMs per processor, for a total of 48 DIMMs when four processors are installed. Each processor has six memory channels, and supports one or two DIMMs per channel.

All DIMMs can operate at a speed of 2666 MHz, both at 1 DIMM per channel and 2 DIMMs per channel. However, if the processor selected has a lower memory bus speed (eg 2400 MHz), then all DIMMs will operate at that lower speed.

The following table lists the memory options that are available for the SR850 server.

Table 12. Memory options

Part number	Feature code	Description	Maximum supported
RDIMMs			
7X77A01301	AUU1	ThinkSystem 8GB TruDDR4 2666 MHz (1Rx8 1.2V) RDIMM	48 (12 per processor)
7X77A01302	AUNB	ThinkSystem 16GB TruDDR4 2666 MHz (1Rx4 1.2V) RDIMM	48 (12 per processor)
7X77A01303	AUNC	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	48 (12 per processor)
7X77A01304	AUND	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	48 (12 per processor)
LRDIMMs			
7X77A01305	AUNE	ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	48 (12 per processor)
3DS RDIMMs			
7X77A01307	AUNF	ThinkSystem 128GB TruDDR4 2666 MHz (8Rx4 1.2V) 3DS RDIMM	48 (12 per processor)

The following rules apply when selecting the memory configuration:

- The server supports RDIMMs, LRDIMMs and 3DS RDIMMs. UDIMMs are not supported.
- Mixing RDIMMs and LRDIMMs is not supported.
- Mixing 3DS RDIMMs with either RDIMMs or LRDIMMs is not supported.
- Mixing x4 and x8 DIMMs is supported.
- When mixing 16 GB and 32 GB DIMMs in the same configuration, use 16GB 2Rx8 DIMMs instead of 16 GB 1Rx4 DIMMs for better performance
- For best performance, populate memory DIMMs in quantities of 6 or 12 per processor, so that all memory channels are used.

The following memory protection technologies are supported:

- ECC
- SDDC (for x4-based memory DIMMs; look for "x4" in the DIMM description)
- ADDDC (for x4-based memory DIMMs)
- Memory channel mirroring
- Memory rank sparing

If memory channel mirroring is used, then DIMMs must be installed in pairs (minimum of one pair per processor), and both DIMMs in a pair must be identical in type and size. 50% of the installed capacity is available to the operating system.

If memory rank sparing is used, then a minimum of one quad-rank DIMM or two single-rank or dual-rank DIMMs must be installed per populated channel (the DIMMs do not need to be identical). In rank sparing mode, one rank of a DIMM in each populated channel is reserved as spare memory. The largest rank in the channel will be automatically selected as the spare rank. The amount of memory available to the operating system depends on the number, capacity and rank counts of the DIMMs installed.

Internal storage

The server can support up to 16x 2.5-inch drives, SAS, SATA or NVMe, depending on the selected backplane configuration. You can mix drives in the same server, but not in the same array. Drives are all installed from the front of the server. The server also supports one or two M.2 drives, installed in an M.2 adapter.

In this section:

- [Backplanes and drive bays](#)
- [Processors with backplane restrictions](#)
- [Adapters and cabling](#)
- [Field upgrades](#)
- [M.2 drives](#)
- [SED encryption key management with ISKLM](#)

Backplanes and drive bays

The SR850 supports various internal storage configurations based on two different backplanes:

- 8-drive SAS/SATA backplane for 8x 2.5-inch SAS or SATA drives
- 8-drive SAS/SATA+AnyBay backplane for either:
 - 8x 2.5-inch SAS or SATA drives
 - 4x 2.5-inch SAS or SATA drives + 4x 2.5-inch U.2 (NVMe) drives

For configure-to-order (CTO) configurations, ordering information for the backplanes is in the following table.

Table 13. Backplane ordering

Part number	Feature code	Description
None*	AUR5	ThinkSystem 2U 2.5" AnyBay 8-Bay Backplane Kit
None*	AURA	ThinkSystem 2U/Tower 2.5" SATA/SAS 8-Bay Backplane Kit

* Backplanes are configure-to-order (CTO) only; however, upgrade kits are available that include backplanes, as described in the [Field upgrades](#) section below.

Regular 2.5-inch SAS/SATA drive bays support only SAS or SATA drives, however the Lenovo AnyBay drive bay design allows a choice of SATA, SAS or NVMe drives. This design enables the flexibility to configure some of the bays with high-performance PCIe SSDs and still use the remaining bays for high-capacity HDDs, which is the ideal solution for storage tiering.

Backplane connections are as follows:

- The 8-drive SAS/SATA backplane has two SAS/SATA connectors and connects to a supported RAID controller or SAS HBA.
- The 8-drive SAS/SATA+AnyBay backplane has two SAS/SATA connectors and connects to a supported RAID controller or SAS HBA plus four PCIe connectors to connect to either two PCIe connectors on the Processor and Memory Expansion Tray (see [Figure 4](#)), or four PCIe connectors on a NVMe Switch adapter installed in a PCIe slot.

Five drive configurations are possible with these two backplanes:

1. 8 drive bays, all SAS/SATA
2. 8 drive bays, where 4 are AnyBay
3. 16 drive bays, all SAS/SATA
4. 16 drive bays, where 4 are AnyBay
5. 16 drive bays, where 8 are AnyBay
6. Zero drive bays without any backplanes installed

The first five configurations are shown in the following figure.

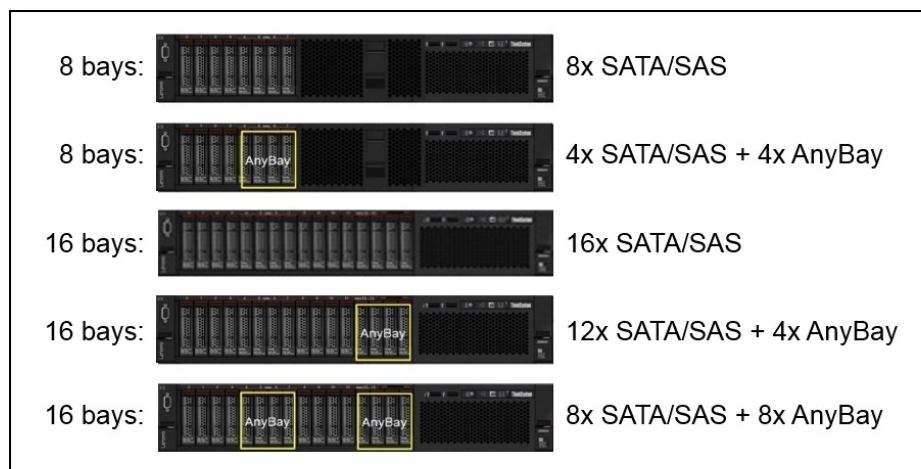


Figure 6. Drive bay configurations

Processors with backplane restrictions

The following processors have high thermal characteristics. If any one of these processors is selected, then no backplanes and no 2.5-inch drives can be installed in the server:

- Intel Xeon Gold 6126T 12C 125W 2.6GHz Processor
- Intel Xeon Gold 6144 8C 150W 3.5GHz Processor
- Intel Xeon Gold 6146 12C 165W 3.2GHz Processor
- Intel Xeon Gold 6154 18C 200W 3.0GHz Processor
- Intel Xeon Platinum 8160T 24C 150W 2.1GHz Processor
- Intel Xeon Platinum 8168 24C 205W 2.7GHz Processor
- Intel Xeon Platinum 8180 28C 205W 2.5GHz Processor
- Intel Xeon Platinum 8180M 28C 205W 2.5GHz Processor

The use of M.2 drives is still supported with these processors.

Use of these processors does have cooling restrictions. See the [Cooling](#) section for details.

Special bid configuration with one backplane: With one of the above processors selected, it is possible to also include one 8-drive backplane, however additional cooling restrictions are in place. See the [Cooling](#) section for details. Such configurations requires a Special Bid request.

Adapters and cabling

This section describes the adapter and cabling requirements for each of the five configurations. There are two aspects of the server configuration that determine what adapters are needed:

- For configurations with two SAS/SATA backplanes, you can select either one 16-port SAS/SATA adapter or two 8-port SAS/SATA adapters
- For AnyBay drive bays, cabling varies depending on whether the server has four processors and the Processor and Memory Expansion Tray (with its two NVMe connectors) installed. If the server has only two processors configured, then the NVMe ports are provided by a NVMe Switch adapter.

The five drive bay configurations are shown in the the subsections below. Where there are different adapter and cabling options, or for 2 or 4 processors, they are shown by the letters A, B, C, D. These configuration numbers are also later references in the [Field upgrades section](#).

1. 8x drive bays, all SAS/SATA
2. 8x drive bays, where 4 are AnyBay
3. 16x drive bays, all SAS/SATA
4. 16x drive bays, where 4 are AnyBay
5. 16x drive bays, where 8 are AnyBay

Tip: The adapters are described in detail in the [Controllers for internal storage](#) section.

1. 8 drive bays, all SAS/SATA

In this drive bay configuration, all eight drives are connected to one 8-port SAS/SATA RAID adapter or HBA using two backplane cables, as shown in the following figure.

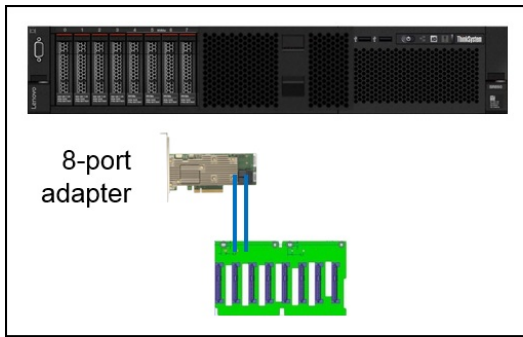


Figure 7. Adapter and cabling for 8x drive bays, all SAS/SATA

2. 8 drive bays, where 4 are AnyBay

In 8-drive bay configurations where four of those drive bays are AnyBay drive bays, possible adapter and cabling configurations are shown in the following figure.

When only two processors are selected, a NVMe Switch Adapter is used to provide the four needed NVMe ports. When four processors are selected, the NVMe ports on the Processor and Memory Expansion Tray are used to connect to the NVMe connectors on the backplane.

In this configuration you can have up to eight SAS or SATA drives, or you can instead put up to four NVMe drives in the AnyBay drive bays, along with up to four SAS/SATA drives in the other drive bays.

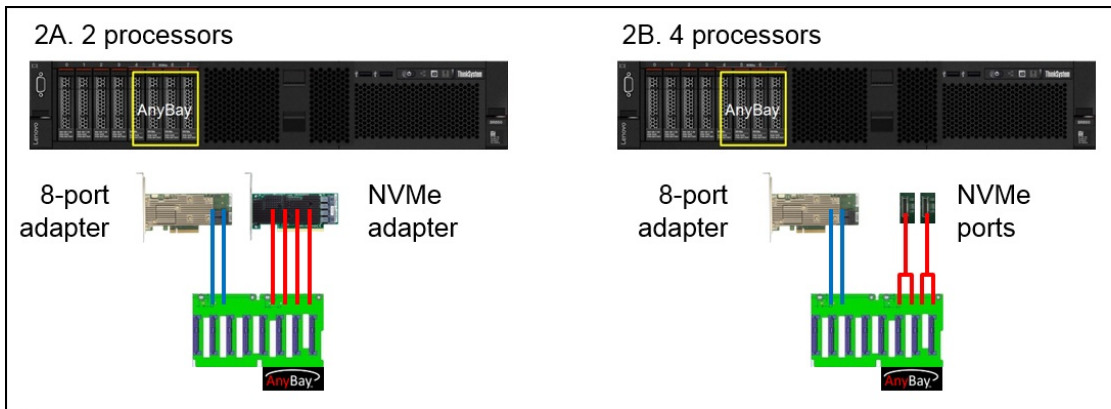


Figure 8. Adapter and cabling for 8 drive bays, where 4 of the bays are AnyBay

3. 16 drive bays, all SAS/SATA

In 16-bay configurations where all 16 drive bays are SAS/SATA drives, you can use either two 8-port SAS/SATA RAID adapters or HBAs or one 16-port SAS/SATA RAID adapter or HBA. These choices are shown in the following figure.

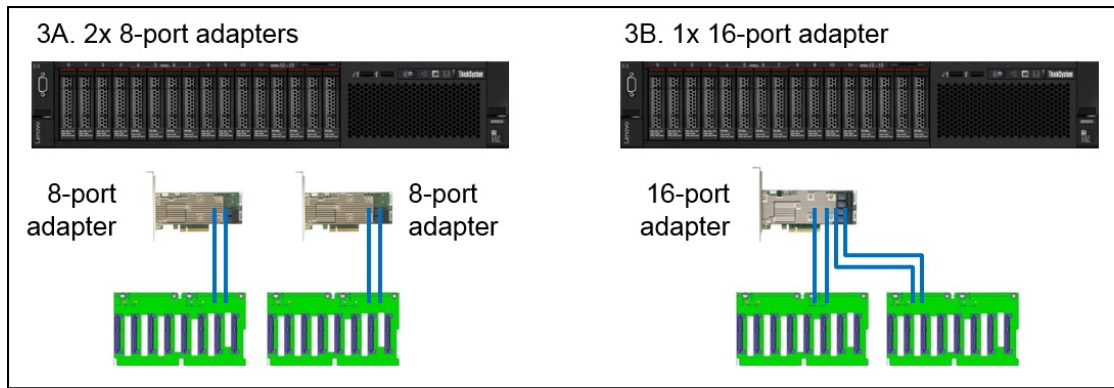


Figure 9. Adapter and cabling for 16 drive bays, all SAS/SATA

4. 16 drive bays, where 4 are AnyBay

In 16-drive configurations where four of the bays are AnyBay drive bays, you can elect to have either one 16-port adapter or two 8-port adapters for SAS/SATA connectivity. In addition, the NVMe connectivity depends on whether you have two or four processors installed: for two-processor systems, an NVMe Switch Adapter is required; for four-processor systems, the onboard NVMe ports can be used. The configurations are shown in the following figure.

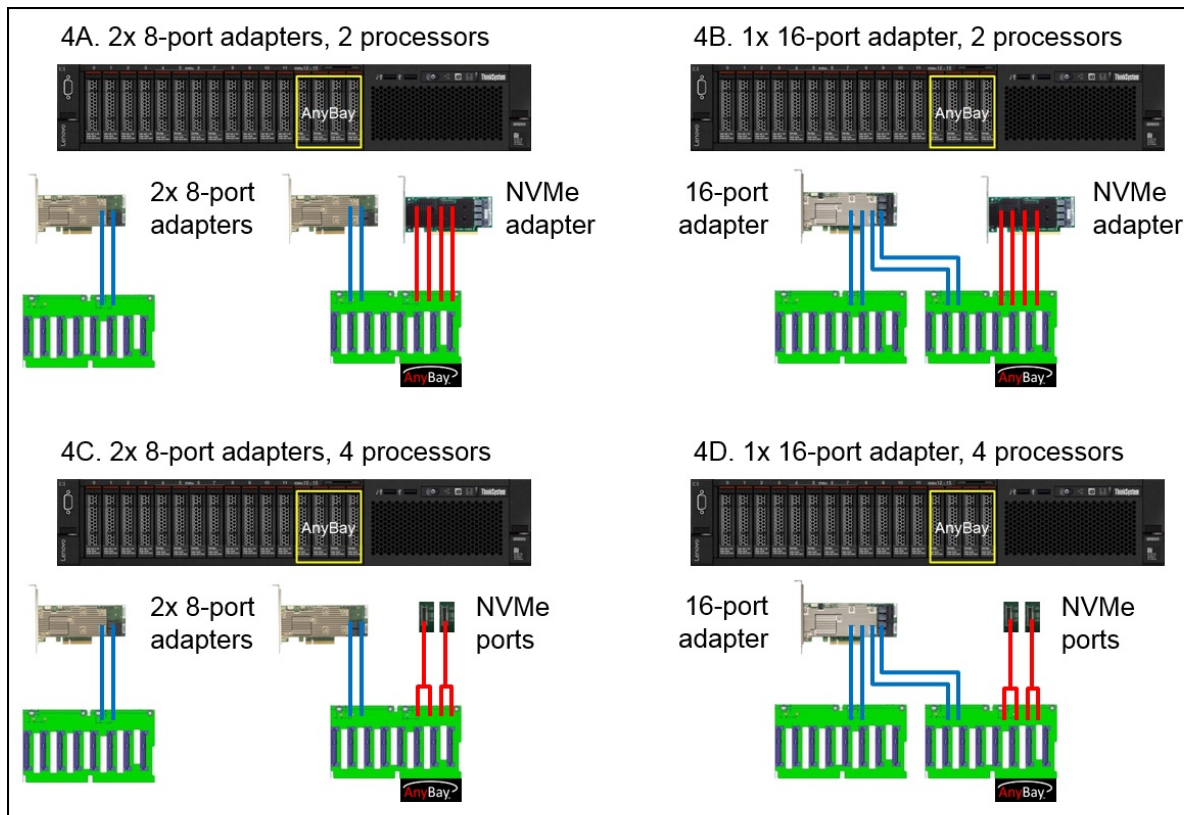


Figure 10. Adapter and cabling for 16 drive bays, where 4 of the bays are AnyBay

5. 16 drive bays, where 8 are AnyBay

In 16-drive configurations where eight of the bays are AnyBay drive bays, you can select either one 16-port adapter or two 8-port adapters for SAS/SATA connectivity. In addition, the NVMe connectivity depends on whether you have two or four processors installed: for two-processor systems, two NVMe Switch Adapters are required; for four-processor systems, the onboard NVMe ports is used for four of the AnyBay drive bays and an NVMe Switch Adapter is needed for the other four AnyBay drive bays. The configurations are shown in the following figure.

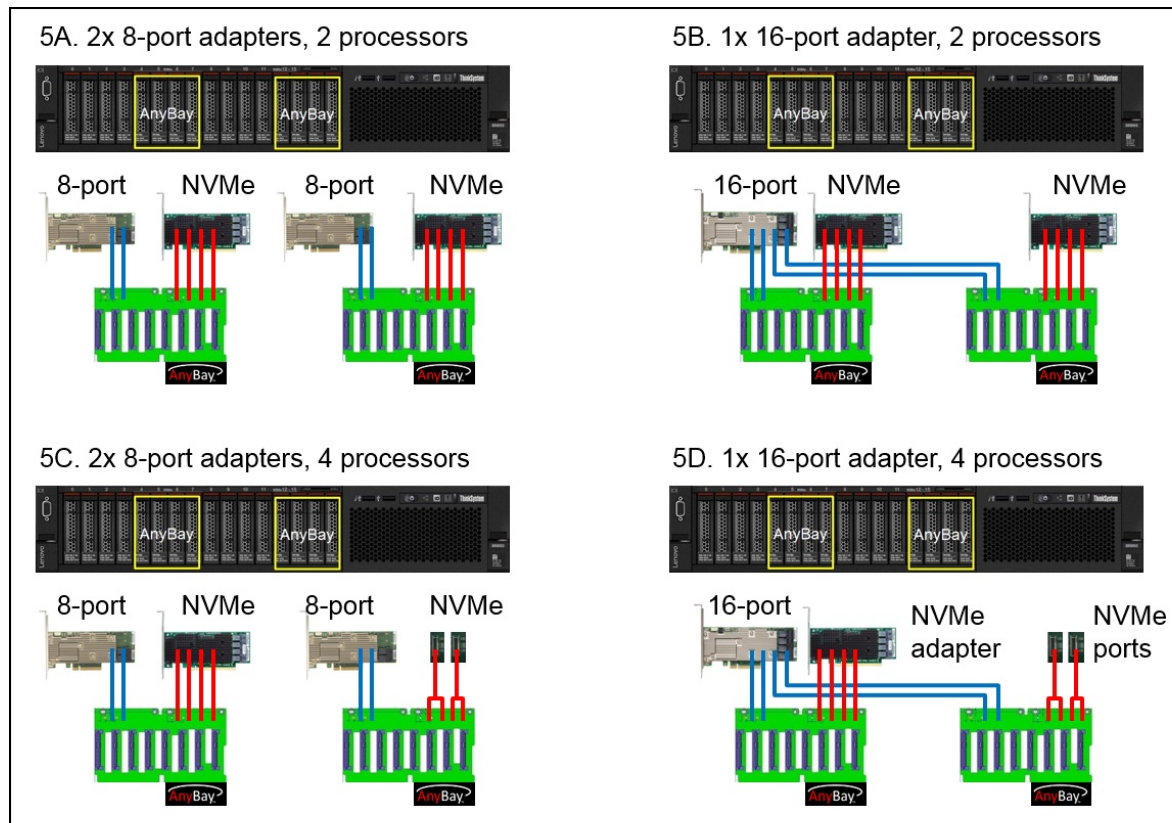


Figure 11. Adapter and cabling for 16 drive bays, where 8 of the bays are AnyBay

Field upgrades

This section describes how customers can upgrade their 8-bay configurations after the initial purchase of the server. The two backplane upgrade kits are listed in the following table.

Table 14. Drive backplane upgrades

Part number	Feature code	Description
7C57A03998	AXP7	ThinkSystem SR850/SR860 2.5" SATA/SAS 8-Bay BP Kit
7C57A03999	AXP8	ThinkSystem SR850/SR860 2.5" AnyBay 8-Bay BP Kit

The ThinkSystem SR850 2.5" SATA/SAS 8-Bay BP Kit, 7C57A03998, contains the following items:

- 1x 8-bay SAS/SATA backplane
- 1x backplane power cable
- 2x 900mm SAS/SATA cables
- 2x 720mm SAS/SATA cables
- 8x 1-bay fillers

The ThinkSystem SR850 2.5" AnyBay 8-Bay BP Kit, 7C57A03999, contains the following items:

- 1x 8-bay AnyBay backplane (4 SAS/SATA connectors, 4 AnyBay connectors)
- 1x backplane power cable
- 1x 900mm SAS/SATA cable
- 1x 720mm SAS/SATA cable
- 4x 750mm NVMe cables for use with NVMe Switch Adapter
- 2x 900mm NVMe cables for use with onboard NVMe ports

In addition to the backplane kits, you will need a RAID adapter or HBA, and for some upgrades you may also need an NVMe adapter. Upgrades needed are listed in the following two tables. Upgrading from a 8-port SAS/SATA adapter to a 16-port SAS/SATA adapter is supported, however that requires removing the existing 8-port adapter.

Tip: The adapters are described in the [Controllers for internal storage](#) section.

The following table lists the available upgrades for SR850 servers with a single SAS/SATA backplane (See [Configuration 1](#) above).

Table 15. Upgrades for servers with one 8-bay SAS/SATA backplane

Target configuration	Remove existing 8-port adapter	Components to add
Servers with two processors		
16x bays (all SAS/SATA) with 2x 8-port adapters (Config 3A)	No	1x SAS/SATA backplane 1x 8-port adapter
16x bays (4x AnyBay) with 2x 8-port adapters, 1x NVMe adapter (Config 4A)	No	1x AnyBay backplane 1x 8-port adapter, 1x NVMe adapter
16x bays (all SAS/SATA) with 1x 16-port adapter (Config 3B)	Yes	1x SAS/SATA backplane 1x 16-port adapter
16x bays (4x AnyBay) with 1x 16-port adapter, 1x NVMe adapter (Config 4B)	Yes	1x AnyBay backplane 1x 16-port adapter, 1x NVMe adapter
Servers with four processors		
16x bays (all SAS/SATA) with 2x 8-port adapters (Config 3A)	No	1x SAS/SATA backplane 1x 8-port adapter
16x bays (4x AnyBay) with 2x 8-port adapters (Config 4C)	No	1x AnyBay backplane 1x 8-port adapter, cables to onboard NVMe ports
16x bays (all SAS/SATA) with 1x 16-port adapter (Config 3B)	Yes	1x SAS/SATA backplane 1x 16-port adapter
16x bays (4x AnyBay) with 1x 16-port adapter (Config 4D)	Yes	1x AnyBay backplane 1x 16-port adapter, cables to onboard NVMe ports

The following table lists the available upgrades for SR850 servers with a single SAS/SATA backplane (See [Configuration 2](#) above).

Table 16. Upgrades for servers with one 8-bay AnyBay backplane

Target configuration	Remove existing 8-port adapter	Components to add
Servers with two processors		
16x bays (4x AnyBay) with 2x 8-port adapters, 1x NVMe adapter (Config 4A)	No	1x SAS/SATA backplane 1x 8-port adapter
16x bays (8x AnyBay) with 2x 8-port adapters, 2x NVMe adapters (Config 5A)	No	1x AnyBay backplane 1x 8-port adapter, 1x NVMe adapter
16x bays (4x AnyBay) with 1x 16-port adapter, 1x NVMe adapter (Config 4B)	Yes	1x SAS/SATA backplane 1x 16-port adapter
16x bays (8x AnyBay) with 2x 8-port adapters, 2x NVMe adapters (Config 5B)	Yes	1x AnyBay backplane 1x 16-port adapter, 1x NVMe adapter
Servers with four processors		
16x bays (4x AnyBay) with 2x 8-port adapters (Config 4C)	No	1x SAS/SATA backplane 1x 8-port adapter
16x bays (8x AnyBay) with 2x 8-port adapters, 1x NVMe adapter (Config 5C)	No	1x AnyBay backplane 1x 8-port adapter, 1x NVMe adapter
16x bays (4x AnyBay) with 1x 16-port adapter (Config 4D)	Yes	1x SAS/SATA backplane 1x 16-port adapter
16x bays (8x AnyBay) with 2x 8-port adapters, 1x NVMe adapter (Config 5D)	Yes	1x AnyBay backplane 1x 16-port adapter, 1x NVMe adapter

M.2 drives

The server supports one or two M.2 form-factor SATA drives for use as an operating system boot solution. With two M.2 drives configured, the drives are configured by default as a RAID-1 mirrored pair for redundancy.

The M.2 drives install into an M.2 adapter which in turn is installed in a dedicated slot on the system board. See the internal view of the server in the [Components and connectors](#) section for the location of the M.2 slot.

There are two M.2 adapters supported, as listed in the following table.

Table 17. M.2 components

Part number	Feature code	Description	Maximum supported
7Y37A01092	AUMU	ThinkSystem M.2 Enablement Kit (contains the Single M.2 Boot Adapter; supports 1 drive)	1
7Y37A01093	AUMV	ThinkSystem M.2 with Mirroring Enablement Kit (contains the Dual M.2 Boot Adapter, supports 1 or 2 drives)	1

Supported drives are listed in the [Internal drive options](#) section.

For details about M.2 components, see the *ThinkSystem M.2 Drives and M.2 Adapters* product guide: <https://lenovopress.com/lp0769-thinksystem-m2-drives-adapters>

SED encryption key management with ISKLM

The server supports self-encrypting drives (SEDs) and FIPS 140-2 drives as described in the [Internal drive options](#) section. To effectively manage a large deployment of these drives in Lenovo servers, IBM Security Key Lifecycle Manager (SKLM) offers a centralized key management solution. A Lenovo Feature on Demand (FoD) upgrade is used to enable this SKLM support in the management processor of the server.

The following table lists the part numbers and feature codes for the upgrades.

Table 18. FoD upgrades for SKLM support

Part number	Feature code	Description
Security Key Lifecycle Manager - FoD (United States, Canada, Asia Pacific, and Japan)		
00D9998	A5U1	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 1 year S&S
00D9999	AS6C	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 3 year S&S
Security Key Lifecycle Manager - FoD (Latin America, Europe, Middle East, and Africa)		
00FP648	A5U1	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 1 year S&S
00FP649	AS6C	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 3 year S&S

Controllers for internal storage

The SR850 supports internal SAS and SATA drives with the addition of a RAID adapter or HBA. For NVMe support, the server offers two onboard NVMe ports on the processor and memory expansion tray (with four processors) and two ports with the use of an NVMe Switch Adapter.

The following table lists the adapters used for the internal storage of the SR850 server.

Tip: Unlike System x RAID adapters, no upgrades are available for these RAID adapters. All supported functions are included with the base part numbers.

Table 19. Controllers for internal storage

Part number	Feature code	Description	Number of ports	Maximum supported
SAS/SATA HBA				
7Y37A01088	AUNL	ThinkSystem 430-8i SAS/SATA 12Gb HBA	8	2
7Y37A01089	AUNM	ThinkSystem 430-16i SAS/SATA 12Gb HBA	16	1
RAID adapters				
7Y37A01082	AUNG	ThinkSystem RAID 530-8i PCIe 12Gb Adapter	8	2
7Y37A01083*	AUNH*	ThinkSystem RAID 730-8i 1GB Cache PCIe 12Gb Adapter	8	2
7Y37A01084	AUNJ	ThinkSystem RAID 930-8i 2GB Flash PCIe 12Gb Adapter	8	2
7Y37A01085	AUNK	ThinkSystem RAID 930-16i 4GB Flash PCIe 12Gb Adapter	16	1
4Y37A09721	B31E	ThinkSystem RAID 930-16i 8GB Flash PCIe 12Gb Adapter	16	1
NVMe adapter				
7Y37A01081	AUV2	ThinkSystem 1610-4P NVMe Switch Adapter	4	2

* The RAID 730-8i adapter is not available in USA and Canada

The following table compares the functions of the storage adapters.

Table 20. Comparison of internal storage controllers

Feature	430-8i	430-16i	RAID 530-8i	RAID 730-8i**	RAID 930-8i	RAID 930-16i	1610-4P NVMe
Adapter type	HBA	HBA	RAID controller	RAID controller	RAID controller	RAID controller	NVMe switch
Part number	7Y37A01088	7Y37A01089	7Y37A01082	7Y37A01083	7Y37A01084	7Y37A01085 4Y37A09721	7Y37A01081
Form factor	PCIe low profile	PCIe low profile	PCIe HHHL	PCIe low profile	PCIe HHHL	PCIe HHHL	PCIe HHHL
Controller chip	LSI SAS3408	LSI SAS3416	LSI SAS3408	LSI SAS3108	LSI SAS3508	LSI SAS3516	Broadcom PEX9733
Broadcom equivalent	HBA 9400-8i	HBA 9400-16i	MegaRAID 9440-8i	MegaRAID 9361-8i	MegaRAID 9460-8i	MegaRAID 9460-16i	P310W-4P
Host interface	PCIe 3.0x8	PCIe 3.0x8	PCIe 3.0x8	PCIe 3.0x8	PCIe 3.0x8	PCIe 3.0x8	PCIe 3.0x16
Port interface	12 Gb SAS	12 Gb SAS	12 Gb SAS	12 Gb SAS	12 Gb SAS	12 Gb SAS	PCIe NVMe
Number of ports	8	16	8	8	8	16	4
Port connectors	2x Mini-SAS HD x4 (SFF-8643)	4x Mini-SAS HD x4 (SFF-8643)	2x Mini-SAS HD x4 (SFF-8643)	2x Mini-SAS HD x4 (SFF-8643)	2x Mini-SAS HD x4 (SFF-8643)	4x Mini-SAS HD x4 (SFF-8643)	4x Mini-SAS HD x4 (SFF-8643)
Drive interface	SAS, SATA	SAS, SATA	SAS, SATA	SAS, SATA	SAS, SATA	SAS, SATA	NVMe
Drive type	HDD, SSD, SED*	HDD, SSD, SED*	HDD, SED, SSD	HDD, SSD	HDD, SED, SSD	HDD, SED, SSD	SSD
Hot-swap drives	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max devices	8	16	8	8	8	16	4
RAID levels	No RAID	No RAID	0, 1, 10, 5, 50	0, 1, 10, 5, 50	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50, 6, 60	None
JBOD mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cache	No	No	None	1GB (Standard)	2GB (Standard)	4GB or 8GB (Standard)	None
CacheVault cache protection	No	No	No	No	Yes (Flash)	Yes (Flash)	No
Performance Accelerator (FastPath)	No	No	Yes	No	Yes	Yes	No
SSD Caching (CacheCade Pro 2.0)	No	No	No	No	No	No	No
SED support*	Yes	Yes	Yes	No	Yes	Yes	No

* SAS HBAs support SEDs (self-encrypting drives) by using software on the server and simply passing SED commands through the HBA to the drives. SED support by RAID controllers is provided using the built-in MegaRAID SafeStore functionality of the adapter.

** The RAID 730-8i adapter is not available in USA and Canada

For more information about the adapters see the product guides in the RAID adapters or HBA sections of the Lenovo Press web site:

<https://lenovopress.com/servers/options/raid>

<https://lenovopress.com/servers/options/hba>

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 21: [2.5-inch hot-swap 12 Gb SAS HDDs](#)
- Table 22: [2.5-inch hot-swap 6 Gb SAS/SATA HDDs](#)
- Table 23: [2.5-inch hot-swap 12 Gb SAS SSDs](#)
- Table 24: [2.5-inch hot-swap 6 Gb SAS/SATA SSDs](#)
- Table 25: [2.5-inch U.2 NVMe SSDs](#)
- Table 26: [M.2 drives](#)

Tip: The use of M.2 drives requires an additional adapter as described in the [M.2 drives](#) subsection.

Table 21. 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			
7XB7A00024	AULY	ThinkSystem 2.5" 300GB 10K SAS 12Gb Hot Swap 512n HDD	16
7XB7A00025	AULZ	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD	16
7XB7A00026	AUM0	ThinkSystem 2.5" 900GB 10K SAS 12Gb Hot Swap 512n HDD	16
7XB7A00027	AUM1	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	16
7XB7A00028	AUM2	ThinkSystem 2.5" 1.8TB 10K SAS 12Gb Hot Swap 512e HDD	16
7XB7A00069	B0YS	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD	16
2.5-inch hot-swap HDDs - 12 Gb SAS 15K			
7XB7A00021	AULV	ThinkSystem 2.5" 300GB 15K SAS 12Gb Hot Swap 512n HDD	16
7XB7A00022	AULW	ThinkSystem 2.5" 600GB 15K SAS 12Gb Hot Swap 512n HDD	16
7XB7A00023	AULX	ThinkSystem 2.5" 900GB 15K SAS 12Gb Hot Swap 512e HDD	16
2.5-inch hot-swap HDDs - 12 Gb NL SAS			
7XB7A00034	AUM6	ThinkSystem 2.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD	16
7XB7A00035	AUM7	ThinkSystem 2.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD	16
2.5-inch hot-swap SED HDDs - 12 Gb SAS 10K			
7XB7A00030	AUM4	ThinkSystem 2.5" 300GB 10K SAS 12Gb Hot Swap 512n HDD SED	16
7XB7A00031	AUM5	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD SED	16
7XB7A00033	B0YX	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD SED	16

Table 22. 2.5-inch hot-swap 6 Gb SAS/SATA HDDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap HDDs - 6 Gb NL SATA			
7XB7A00036	AUUE	ThinkSystem 2.5" 1TB 7.2K SATA 6Gb Hot Swap 512n HDD	16
7XB7A00037	AUJJ	ThinkSystem 2.5" 2TB 7.2K SATA 6Gb Hot Swap 512e HDD	16

Table 23. 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			
7N47A00121	AUMK	ThinkSystem 2.5" PM1633a 3.84TB Capacity SAS 12Gb Hot Swap SSD	16
7N47A00122	AUML	ThinkSystem 2.5" PM1633a 7.68TB Capacity SAS 12Gb Hot Swap SSD	16
7N47A00123	B116	ThinkSystem 2.5" PM1633a 15.36TB Capacity SAS 12Gb Hot Swap SSD	16
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Performance (10+ DWPD)			
7N47A00124	AUMG	ThinkSystem 2.5" HUSMM32 400GB Performance SAS 12Gb Hot Swap SSD	16
7N47A00125	AUMH	ThinkSystem 2.5" HUSMM32 800GB Performance SAS 12Gb Hot Swap SSD	16
7N47A00126	AVRB	ThinkSystem 2.5" HUSMM32 1.6TB Performance SAS 12Gb Hot Swap SSD	16
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Mainstream (3-5 DWPD)			
7N47A00117	AUMC	ThinkSystem 2.5" PM1635a 400GB Mainstream SAS 12Gb Hot Swap SSD	16
7N47A00118	AUMD	ThinkSystem 2.5" PM1635a 800GB Mainstream SAS 12Gb Hot Swap SSD	16
7N47A00119	AVRG	ThinkSystem 2.5" PM1635a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	16
7N47A00120	AVRJ	ThinkSystem 2.5" PM1635a 3.2TB Mainstream SAS 12Gb Hot Swap SSD	16
2.5-inch hot-swap SED SSDs - 12 Gb SAS - Enterprise Performance (10+ DWPD)			
7SD7A05754	B11P	ThinkSystem 2.5" HUSMM32 400GB Performance SAS 12Gb Hot Swap SSD FIPS	16
7SD7A05753	B11Q	ThinkSystem 2.5" HUSMM32 800GB Performance SAS 12Gb Hot Swap SSD FIPS	16
7SD7A05752	B11R	ThinkSystem 2.5" HUSMM32 1.6TB Performance SAS 12Gb Hot Swap SSD FIPS	16

Table 24. 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)			
7SD7A05765	B10W	ThinkSystem 2.5" 5100 240GB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05764	B10X	ThinkSystem 2.5" 5100 480GB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05763	B10Y	ThinkSystem 2.5" 5100 960GB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05762	B10Z	ThinkSystem 2.5" 5100 1.92TB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05761	B110	ThinkSystem 2.5" 5100 3.84TB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05723	B0ZP	ThinkSystem 2.5" Intel S4600 240GB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05722	B0ZQ	ThinkSystem 2.5" Intel S4600 480GB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05721	B0ZR	ThinkSystem 2.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	16
7SD7A05720	B0ZS	ThinkSystem 2.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	16
2.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Entry (<3 DWPD)			
4XB7A10195	B34H	ThinkSystem 2.5" PM883 240GB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10196	B34J	ThinkSystem 2.5" PM883 480GB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10197	B34K	ThinkSystem 2.5" PM883 960GB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10198	B34L	ThinkSystem 2.5" PM883 1.92TB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10199	B34M	ThinkSystem 2.5" PM883 3.84TB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10153	B2X2	ThinkSystem 2.5" 5200 480GB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10154	B2X3	ThinkSystem 2.5" 5200 960GB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10155	B2X4	ThinkSystem 2.5" 5200 1.92TB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10156	B2X5	ThinkSystem 2.5" 5200 3.84TB Entry SATA 6Gb Hot Swap SSD	16
4XB7A10157	B2X6	ThinkSystem 2.5" 5200 7.68TB Entry SATA 6Gb Hot Swap SSD	16
7N47A00111	AUUQ	ThinkSystem 2.5" PM863a 240GB Entry SATA 6Gb Hot Swap SSD	16
7N47A00112	AUM9	ThinkSystem 2.5" PM863a 480GB Entry SATA 6Gb Hot Swap SSD	16
7N47A00113	AVCZ	ThinkSystem 2.5" PM863a 960GB Entry SATA 6Gb Hot Swap SSD	16
7N47A00114	AVRC	ThinkSystem 2.5" PM863a 1.92TB Entry SATA 6Gb Hot Swap SSD	16
7SD7A05742	B0YY	ThinkSystem 2.5" Intel S4500 240GB Entry SATA 6Gb Hot Swap SSD	16
7SD7A05741	B0YZ	ThinkSystem 2.5" Intel S4500 480GB Entry SATA 6Gb Hot Swap SSD	16
7SD7A05740	B0Z0	ThinkSystem 2.5" Intel S4500 960GB Entry SATA 6Gb Hot Swap SSD	16
7SD7A05739	B0Z1	ThinkSystem 2.5" Intel S4500 1.92TB Entry SATA 6Gb Hot Swap SSD	16
7SD7A05738	B0Z2	ThinkSystem 2.5" Intel S4500 3.84TB Entry SATA 6Gb Hot Swap SSD	16
4XB7A08502	B10N	ThinkSystem 2.5" 5100 480GB Entry SATA 6Gb Hot Swap SSD	16

Table 25. 2.5-inch U.2 NVMe SSDs

Part number	Feature	Description	Maximum supported
2.5-inch SSDs - NVMe - Enterprise Performance (10+ DWPD)			
7XB7A05923	AWG6	ThinkSystem U.2 PX04PMB 800GB Performance NVMe PCIe 3.0 x4 Hot Swap SSD	8
7XB7A05922	AWG7	ThinkSystem U.2 PX04PMB 1.6TB Performance NVMe PCIe 3.0 x4 Hot Swap SSD	8
7N47A00081	AUMJ	ThinkSystem U.2 Intel P4800X 375GB Performance NVMe PCIe 3.0 x4 Hot Swap SSD	8
7N47A00083	B2ZJ	ThinkSystem U.2 Intel P4800X 750GB Performance NVMe PCIe 3.0 x4 Hot Swap SSD	8
2.5-inch SSDs - NVMe - Enterprise Mainstream (3-5 DWPD)			
7N47A00095	AUJY	ThinkSystem U.2 PX04PMB 960GB Mainstream NVMe PCIe 3.0 x4 Hot Swap SSD	8
7N47A00096	AUMF	ThinkSystem U.2 PX04PMB 1.92TB Mainstream NVMe PCIe 3.0 x4 Hot Swap SSD	8
7SD7A05772	B11J	ThinkSystem U.2 Intel P4600 1.6TB Mainstream NVMe PCIe 3.0 x4 Hot Swap SSD	8
7SD7A05771	B11K	ThinkSystem U.2 Intel P4600 3.2TB Mainstream NVMe PCIe 3.0 x4 Hot Swap SSD	8
2.5-inch SSDs - NVMe - Enterprise Entry (<3 DWPD)			
4XB7A10175	B34N	ThinkSystem U.2 PM983 1.92TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	8
4XB7A10176	B34P	ThinkSystem U.2 PM983 3.84TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	8
7N47A00984	AUV0	ThinkSystem U.2 PM963 1.92TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	8
7N47A00985	AUUU	ThinkSystem U.2 PM963 3.84TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	8
7SD7A05779	B11C	ThinkSystem U.2 Intel P4500 1.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	8
7SD7A05778	B11D	ThinkSystem U.2 Intel P4500 2.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	8
7SD7A05777	B11E	ThinkSystem U.2 Intel P4500 4.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	8

Note: NVMe PCIe SSDs support informed hot removal and hot insertion, provided the operating system supports PCIe SSD hot-swap.

Table 26. M.2 drives

Part number	Feature	Description	Maximum supported
M.2 SSDs - 6 Gb SATA - Enterprise Entry (<3 DWPD)			
7N47A00129	AUUL	ThinkSystem M.2 CV1 32GB SATA 6Gbps Non-Hot-Swap SSD	2
7N47A00130	AUUV	ThinkSystem M.2 CV3 128GB SATA 6Gbps Non-Hot-Swap SSD	2
7SD7A05703	B11V	ThinkSystem M.2 5100 480GB SATA 6Gbps Non-Hot-Swap SSD	2

Internal backup units

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

Optical drives

The server does not supports an internal optical drive.

An *external* USB optical drive is available, listed in the following table.

Table 27. External optical drive

Part number	Feature code	Description
7XA7A05926	AVV8	ThinkSystem External USB DVD RW Optical Disk Drive

I/O expansion options

The server supports up to 11 PCIe slots including a slot reserved for the M.2 adapter.

Eight slots are on the system board and three (slots 3-5) are through a riser card. A riser card is standard on some models and optional on others. All slots are available with two processors.

The PCIe slots are as follows:

- Slot 1: PCIe 3.0 x16 (low profile) (CPU 2)
- Slot 2: PCIe 3.0 x8 (low profile) (CPU 2)
- Slot 3-5: Riser card slots (see below) (CPU 2)
- Slot 6: PCIe 2.0 x2 dedicated to M.2 adapter and drives
- Slot 7: Dedicated to Ethernet LOM phy adapter (CPU 1)
- Slot 8: PCIe 3.0 x8 (low profile) (CPU 1)
- Slot 9: PCIe 3.0 x8 (low profile) (CPU 1)
- Slot 10: PCIe 3.0 x8 (low profile) (CPU 1)
- Slot 11: PCIe 3.0 x16 (low profile) (CPU 1)

Note: The slot labeled Slot 6 is for the M.2 adapter as described in the [M.2 drives section](#).

Slots 3-5 are implemented using a riser card, and the SR850 supports three different riser cards as listed in the following table.

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

Table 28. PCI riser card options

Part number	Feature code	Description	Maximum supported
7C57A03950	AUR4	ThinkSystem SR850/SR860 x8/x8/x8 PCIe FH Riser 1 Kit	1
7C57A03951	AUR7	ThinkSystem SR850/SR860 x8/x8/x8ML2 PCIe FH Riser 1 Kit	1
7C57A03952	AURB	ThinkSystem SR850/SR860 x8/x16ML2 PCIe FH Riser 1 Kit	1

The riser cards listed in the table have the following slots:

- x8/x8/x8 PCIe FH Riser:
 - Slot 3: PCIe 3.0 x8 FHHL
 - Slot 4: PCIe 3.0 x8 FHHL
 - Slot 5: PCIe 3.0 x8 FHHL
- x8/x8/x8ML2 PCIe FH
 - Slot 3: PCIe 3.0 x8 FHHL
 - Slot 4: PCIe 3.0 x8 FHHL
 - Slot 5: PCIe 3.0 x8 ML2 FHHL
- x8/x16ML2 PCIe FH Riser
 - Slot 3: PCIe 3.0 x8 FHHL
 - Slot 4: None
 - Slot 5: PCIe 3.0 x16 ML2 FHHL

Network adapters

The SR850 has an integrated 10Gb Ethernet controller, based on the Intel Ethernet Connection X722. The X722 has the following features:

- Integrated into the Intel PCH chipset
- Supports 1GbE or 10GbE connections, depending on the selected LOM Phy adapter
- Offers VXLAN/NVGRE hardware offloads
- Supports VMDq and SR-IOV for advanced virtualization
- Supports iWarp RDMA

To provide connectivity to the X722, the SR850 supports six different LOM (LAN on Motherboard) cards which provide the Ethernet PHY function. Only 1 LOM card can be installed. See [Figure 3](#) for the location of the LOM slot.

The LOM card supports NC-SI to allow the network connection to be shared between the operating system and the XClarity Controller (XCC) management module (also known as IMM, short for integrated management module). The LOM also supports Wake-on-LAN (WOL).

For more information about the X722 controller, see the Lenovo Press product guide:

<http://lenovopress.com/LP0654-intel-x722-integrated-controller>

The following table lists the supported LOM cards.

Note: None of the LOM cards listed in the table support speeds lower than 1 Gbps.

Table 29. Supported LOM adapters

Part number	Feature code	Description	Ports	Slots supported	Maximum supported
Gigabit Ethernet					
7ZT7A00544	AUKG	ThinkSystem 1Gb 2-port RJ45 LOM	2x RJ45	7	1
7ZT7A00545	AUKH	ThinkSystem 1Gb 4-port RJ45 LOM	4x RJ45	7	1
10 Gb Ethernet					
7ZT7A00546	AUKJ	ThinkSystem 10Gb 2-port SFP+ LOM	2x SFP+ bays	7	1
7ZT7A00547	AUKK	ThinkSystem 10Gb 4-port SFP+ LOM	4x SFP+ bays	7	1
7ZT7A00548	AUKL	ThinkSystem 10Gb 2-port Base-T LOM	2x RJ45 (10GBASE-T)	7	1
7ZT7A00549	AUKM	ThinkSystem 10Gb 4-port Base-T LOM	4x RJ45 (10GBASE-T)	7	1

The SR850 also supports an ML2 card provided a suitable ML2 riser card is installed (see the [I/O expansion options section](#) for details). The ML2 card supports NC-SI and WOL. The following table lists the supported ML2 adapters.

VFA5.2 and FCoE support: ThinkSystem servers do not support Features on Demand, so the Emulex VFA5.2 ML2 Dual Port 10GbE SFP+ Adapter, 00AG560, cannot be upgraded to FCoE support. If you need FCoE or iSCSI support use 01CV770 instead.

Table 30. Supported ML2 adapters

Part number	Feature code	Description	Bus width	Slots supported	Maximum supported
Gigabit Ethernet					
7ZT7A00536	AUKW	ThinkSystem Intel I350-T4 ML2 1Gb 4-Port RJ45 Ethernet Adapter	PCIe 3.0 x8	5	1
10 Gb Ethernet					
00JY940	ATRH	Intel X710-DA2 ML2 2x10GbE SFP+ Adapter	PCIe 3.0 x8	5	1
7ZT7A00497	AUKQ	ThinkSystem Broadcom NX-E ML2 10Gb 2-Port Base-T Ethernet Adapter	PCIe 3.0 x8	5	1
00AG560**	AT7U	Emulex VFA5.2 ML2 Dual Port 10GbE SFP+ Adapter	PCIe 3.0 x8	5	1
01CV770	AU7Z	Emulex VFA5.2 ML2 2x10 GbE SFP+ Adapter and FCoE/iSCSI SW	PCIe 3.0 x8	5	1
25 Gb Ethernet					
7ZT7A00507	AUKU	ThinkSystem Mellanox ConnectX-4 Lx ML2 25Gb 2-Port SFP28 Ethernet Adapter	PCIe 3.0 x8	5	1
00MN990	ATZR	Mellanox ConnectX-4 Lx ML2 1x25GbE SFP28 Adapter	PCIe 3.0 x8	5	1
InfiniBand					
7ZT7A00501	AUKR	ThinkSystem Mellanox ConnectX-3 Pro ML2 FDR 2-Port QSFP VPI Adapter	PCIe 3.0 x8	5	1

* ThinkSystem servers do not support Features on Demand, so the Emulex VFA5.2 ML2 Dual Port 10GbE SFP+ Adapter, 00AG560, cannot be upgraded to FCoE support. If you need FCoE or iSCSI support use 01CV770 instead.

The following table lists additional supported network adapters that can be installed in the regular PCIe slots.

VFA5.2 and FCoE support: ThinkSystem servers do not support Features on Demand, so the Emulex VFA5.2 2x10 GbE SFP+ PCIe Adapter, 00AG570, cannot be upgraded to FCoE support. If you need FCoE or iSCSI support use 00AG580 instead.

Table 31. Supported PCIe Network Adapters

Part number	Feature code	Description	Slots supported	Maximum supported
Gigabit Ethernet				
7ZT7A00533	AUZZ	ThinkSystem I350-F1 PCIe 1Gb 1-Port SFP Ethernet Adapter	1-5, 8, 9, 11	8

Part number	Feature code	Description	Slots supported	Maximum supported
7ZT7A00534	AUZY	ThinkSystem I350-T2 PCIe 1Gb 2-Port RJ45 Ethernet Adapter	1-5, 8, 9, 11	8
7ZT7A00535	AUZW	ThinkSystem I350-T4 PCIe 1Gb 4-Port RJ45 Ethernet Adapter	1-5, 8, 9, 11	8
10 Gb Ethernet - 10GBase-T				
7ZT7A00496	AUKP	ThinkSystem Broadcom NX-E PCIe 10Gb 2-Port Base-T Ethernet Adapter	1-5, 8, 9, 11	8
7ZT7A00482	AUZX	ThinkSystem NetXtreme PCIe 1Gb 2-Port RJ45 Ethernet Adapter	1-5, 8, 9, 11	8
00MM860	ATPX	Intel X550-T2 Dual Port 10GBase-T Adapter	1-5, 8, 9, 11	8
4XC7A08225	B31G	ThinkSystem QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter	1-5, 8, 9, 11	8
10 Gb Ethernet - SFP+				
7ZT7A00537	AUKX	ThinkSystem X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter	1-5, 8, 9, 11	8
7ZT7A00493	AUKN	ThinkSystem Emulex OCe14104B-NX PCIe 10Gb 4-Port SFP+ Ethernet Adapter	3, 4, 5	3
00AG570*	AT7S	Emulex VFA5.2 2x10 GbE SFP+ PCIe Adapter	1-5, 8, 9, 11	8
00AG580	AT7T	Emulex VFA5.2 2x10 GbE SFP+ Adapter and FCoE/iSCSI SW	1-5, 8, 9, 11	8
25 Gb Ethernet				
4XC7A08228	B21R	ThinkSystem QLogic QL41262 PCIe 25Gb 2-Port SFP28 Ethernet Adapter	1-5, 8, 9, 11	8
7XC7A05523	B0WY	ThinkSystem Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter	1-5, 8, 9, 11	8
7ZT7A00505	AUKS	ThinkSystem Broadcom NX-E PCIe 25Gb 1-Port SFP28 Ethernet Adapter	1-5, 8, 9, 11	8
01GR250	AUAJ	Mellanox ConnectX-4 Lx 2x25GbE SFP28 Adapter	1-5, 8, 9, 11	8
4XC7A08229	B31C	ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter	11, 1	2
40 Gb Ethernet				
00MM950	ATRN	Mellanox ConnectX-4 Lx 1x40GbE QSFP+ Adapter	1-5, 8, 9, 11	8
7ZT7A00500	AUVG	ThinkSystem Mellanox ConnectX-4 PCIe FDR 2-Port QSFP VPI Adapter	1-5, 8, 9, 11	8
4XC7A08229	B31C	ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter	11, 1	2
100 Gb Ethernet / EDR InfiniBand				
00KH924	ASWQ	Mellanox ConnectX-4 1x100GbE/EDR IB QSFP28 VPI Adapter	11, 1	2
00MM960	ATRP	Mellanox ConnectX-4 2x100GbE/EDR IB QSFP28 VPI Adapter	11, 1	2
FDR InfiniBand				

Part number	Feature code	Description	Slots supported	Maximum supported
7ZT7A00500	AUVG	ThinkSystem Mellanox ConnectX-4 PCIe FDR 2-Port QSFP VPI Adapter	1-5, 8, 9, 11	8
Omni-Path Architecture (OPA)				
00WE023	AU0A	Intel OPA 100 Series Single-port PCIe 3.0 x8 HFA	1-5, 8, 9, 11	8
00WE027	AU0B	Intel OPA 100 Series Single-port PCIe 3.0 x16 HFA	11, 1	2

* ThinkSystem servers do not support Features on Demand, so the Emulex VFA5.2 2x10 GbE SFP+ PCIe Adapter, 00AG570, cannot be upgraded to FCoE support. If you need FCoE or iSCSI support use 00AG580 instead.

For more information, including the transceivers and cables that each adapter supports, see the list of Lenovo Press Product Guides in the Networking adapters category:

<https://lenovopress.com/servers/options/ethernet>

Fibre Channel host bus adapters

The following table lists the Fibre Channel HBAs supported by SR850 server.

Table 32. Fibre Channel HBAs

Part number	Feature code	Description	Slots supported	Maximum supported
32 Gb Fibre Channel HBAs				
7ZT7A00516	AUNS	ThinkSystem QLogic QLE2740 PCIe 32Gb 1-Port SFP+ Fibre Channel Adapter	1-5, 8, 9, 11	8
7ZT7A00518	AUNU	ThinkSystem QLogic QLE2742 PCIe 32Gb 2-Port SFP+ Fibre Channel Adapter	1-5, 8, 9, 11	8
7ZT7A00519	AUNV	ThinkSystem Emulex LPe32002-M2-L PCIe 32Gb 2-Port SFP+ Fibre Channel Adapter	1-5, 8, 9, 11	8
7ZT7A00517	AUNT	ThinkSystem Emulex LPe32000-M2-L PCIe 32Gb 1-Port SFP+ Fibre Channel Adapter	1-5, 8, 9, 11	8
16 Gb Fibre Channel HBAs				
01CV750	ATZB	QLogic 16Gb Enhanced Gen5 FC Single-port HBA	1-5, 8, 9, 11	8
01CV760	ATZC	QLogic 16Gb Enhanced Gen5 FC Dual-port HBA	1-5, 8, 9, 11	8
01CV830	ATZU	Emulex 16Gb Gen6 FC Single-port HBA	1-5, 8, 9, 11	8
01CV840	ATZV	Emulex 16Gb Gen6 FC Dual-port HBA	1-5, 8, 9, 11	8

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 SAS HBAs and RAID adapters supported by SR850 server for use with external storage.

Table 33. Adapters for external storage

Part number	Feature code	Description	Slots supported	Maximum supported
SAS HBAs				
7Y37A01090	AUNR	ThinkSystem 430-8e SAS/SATA 12Gb HBA	1-5, 8, 9, 11	8
7Y37A01091	AUNN	ThinkSystem 430-16e SAS/SATA 12Gb HBA	1-5, 8, 9, 11	8
External RAID adapters				
7Y37A01087	AUNQ	ThinkSystem RAID 930-8e 4GB Flash PCIe 12Gb Adapter	1-5, 8, 9, 11	4

For more information, see the list of Lenovo Press Product Guides in the Host bus adapters and RAID adapters categories:

<https://lenovopress.com/servers/options/hba>

<https://lenovopress.com/servers/options/raid>

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

Table 34. Comparison of external storage adapters

Feature	430-8e	430-16e	930-8e
Adapter type	HBA	HBA	External RAID
Part number	7Y37A01090	7Y37A01091	7Y37A01087
Controller chip	LSI SAS3408	LSI SAS3416	LSI SAS3508
Broadcom equivalent	HBA 9400-8e	HBA 9400-16e	MegaRAID 9480-8e
Host interface	PCIe 3.0x8	PCIe 3.0x8	PCIe 3.0x8
Port interface	12 Gb SAS	12 Gb SAS	12 Gb SAS
Number of ports	8	16	8
Port connectors	2x Mini-SAS HD SFF8644	4x Mini-SAS HD SFF8644	2x Mini-SAS HD SFF8644
Drive interface	SAS/SATA	SAS/SATA	SAS,SATA
Drive type	HDD/SSD/SED*	HDD/SSD/SED*	HDD,SED,SSD
Hot-swap drives	Yes	Yes	Yes
Maximum devices	512 (planned: 1024)	512 (planned: 1024)	64 (planned: 216)
RAID levels	None	None	0/1/10/5/50/6/60
JBOD mode	Yes	Yes	Yes
Cache	None	None	4GB (Standard)
CacheVault cache protection	None	None	Yes (Flash)
Performance Accelerator (FastPath)	No	No	Yes
SSD Caching (CacheCade Pro 2.0)	No	No	No
SED support*	Yes	Yes	Yes

* SAS HBAs support SEDs (self-encrypting drives) by using software on the server and simply passing SED commands through the HBA to the drives. SED support by RAID controllers is provided using the built-in MegaRAID SafeStore functionality of the adapter.

Flash storage adapters

The server supports the PCIe Flash Storage adapters listed in the following table.

Table 35. Flash Storage Adapters

Part number	Feature code	Description	Slots supported	Maximum supported
Entry NVMe PCIe Adapters - Optimized for read-intensive workloads with an endurance of less than 3 DWPD.				
7SD7A05776	B11Z	ThinkSystem HHHH Intel P4500 4.0TB Entry NVMe PCIe 3.0 x4 Flash Adapter	1-5, 8, 9, 11	8
7SD7A05775	B120	ThinkSystem HHHH Intel P4500 8.0TB Entry NVMe PCIe3.0 x4 Flash Adapter	1-5, 8, 9, 11	8
Mainstream NVMe PCIe Adapters - Optimized for mixed-intensive application workloads with an endurance of 3-5 DWPD.				
7SD7A05769	B11X	ThinkSystem HHHH Intel P4600 2.0TB Mainstream NVMe PCIe3.0 x4 Flash Adapter	1-5, 8, 9, 11	8
7SD7A05768	B11Y	ThinkSystem HHHH Intel P4600 4.0TB Mainstream NVMe PCIe3.0 x4 Flash Adapter	1-5, 8, 9, 11	8
7N47A00097	AUUP	ThinkSystem HHHH PX04PMC 1.92TB Mainstream NVMe PCIe 3.0 x4 Flash Adapter	1-5, 8, 9, 11	8
7N47A00098	AUVY	ThinkSystem HHHH PX04PMC 3.84TB Mainstream NVMe PCIe 3.0 x4 Flash Adapter	1-5, 8, 9, 11	8
Performance NVMe PCIe Adapters - Optimized for write-intensive application workloads with an endurance of 10+ DWPD.				
7XB7A05925	AWG8	ThinkSystem HHHH PX04PMC 1.6TB Performance NVMe PCIe 3.0 x4 Flash Adapter	1-5, 8, 9, 11	8
XB7A05924	AWG9	ThinkSystem HHHH PX04PMC 3.2TB Performance NVMe PCIe 3.0 x4 Flash Adapter	1-5, 8, 9, 11	8

For details about these adapters, see the Lenovo Press product guides in the Flash Adapters category: <https://lenovopress.com/servers/options/ssdadapter>

GPU adapters

The SR850 currently does not support any graphics processing units (GPUs).

Cooling

The server has six 60 mm hot-swap fans and all six fans are standard in all models. The server offers N+1 redundancy, meaning that one fan can fail and the server still operates normally.

In addition, each power supply has an integrated fan.

The following processors have high thermal characteristics:

- Intel Xeon Gold 6126T 12C 125W 2.6GHz Processor
- Intel Xeon Gold 6144 8C 150W 3.5GHz Processor
- Intel Xeon Gold 6146 12C 165W 3.2GHz Processor
- Intel Xeon Gold 6154 18C 200W 3.0GHz Processor
- Intel Xeon Platinum 8160T 24C 150W 2.1GHz Processor
- Intel Xeon Platinum 8168 24C 205W 2.7GHz Processor
- Intel Xeon Platinum 8180 28C 205W 2.5GHz Processor
- Intel Xeon Platinum 8180M 28C 205W 2.5GHz Processor

As a result, when any of these processors are used in the server, then the following conditions must be met:

- Maximum ambient temperature of 35 °C
- No drive backplanes or 2.5-inch drives can be installed (M.2 drives are supported)
- If the ambient temperature is sufficiently low enough, the system fans are redundant:
 - For the 8160T, 6146, 6144, and 6126T, if the ambient temperature is 27 °C (80.6 °F) or lower, system fans are N+1 redundant.
 - For the 8180M, 8180, 8168 and 6154, if the ambient temperature is 20 °C (68 °F) or lower, system fans are N+1 redundant.
- If the ambient temperature is greater than the above temperature values, the system fans are not N+1 redundant at full performance. If a fan fails in this scenario, the server will continue to function however with some performance degradation.

Special bid configuration: Under special bid conditions, the server also supports the use of one of the above high-performance processors plus one 8-drive backplane, however the following conditions must be met: (**Note:** temperature values to be confirmed)

- Ambient temperature cannot exceed 30 °C
- If the ambient temperature is 20 °C or lower, system fans are still N+1 redundant.
- If the ambient temperature is greater than 20 °C, the system fans are not N+1 redundant at full performance. If a fan fails in this scenario, the server will continue to function however with some performance degradation.

Power supplies

The server supports up to two redundant hot-swap power supplies.

Installing a second power supply requires either the Processor and Memory Expansion Tray (7B27A03953) or the power interposer (feature AUPZ).

The power interposer enables redundant power support when the Processor and Memory Expansion Tray is not installed. If you do not have the Processor and Memory Expansion Tray installed and want to install two power supplies, then the power interposer card must be installed.

Tip: Use Lenovo Capacity Planner to determine exactly what power your server needs:
<https://datacentersupport.lenovo.com/us/en/products/solutions-and-software/software/lenovo-capacity-planner/solutions/ht504651>

Table 36. Power supply options

Part number	Feature code	Description	Maximum supported	110V AC	220V AC	240V DC China only†
None*	AUPZ	SR850 2S Power Paddle (power interposer)	1**	Yes	Yes	Yes
7N67A00883	AUPR	750W Platinum (230V/115V) Power Supply	2	Yes	Yes	Yes
7N67A00885	AUPS	1100W Platinum (230V/115V) Power Supply	2	Yes	Yes	Yes
7N67A00886	AUPT	1600W Platinum (230V) Power Supply	2	No	Yes	Yes

* Configure-to-order only

** Only needed if two power supplies are installed but the Processor and Memory Expansion Tray is not installed

† Support for 240 DC is planned

750W and 1100W power supplies are auto-sensing and support both 110V AC (100-127V 50/60 Hz) and 220V AC (200-240V 50/60 Hz) power. The 1600 W power supply only supports 220V AC power.

For China customers, all three power supplies are 240V DC ready; support is planned for a future date.

Note: At 110 V, the 1100W power supply generates 1050W of power.

Power supply options do not include a line cord.

For server configurations, the inclusion of a power cord is model dependent. Configure-to-order models can be configured without a power cord if desired.

Power cords

Country-specific line cords and rack power cables can be ordered as listed in the following table.

110V customers: If you plan to use the ThinkSystem 1100W power supply with a 110V power source, select a power cable that is rated above 10A. Power cables that are rated at 10A or below are not supported with 110V power.

Table 37. Power cords

Part number	Feature code	Description
Rack cables		
00Y3043	A4VP	1.0m, 10A/100-250V, C13 to C14 Jumper Cord
39Y7937	6201	1.5m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08369	6570	2.0m, 13A/100-250V, C13 to C14 Jumper Cord
4L67A08366	6311	2.8m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08370	6400	2.8m, 13A/100-250V, C13 to C14 Jumper Cord
39Y7932	6263	4.3m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08371	6583	4.3m, 13A/100-250V, C13 to C14 Jumper Cord
Country-specific cables		

Part number	Feature code	Description
39Y7930	6222	2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord
81Y2384	6492	4.3m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord
39Y7924	6211	2.8m, 10A/250V, C13 to AS/NZS 3112 (Australia/NZ) Line Cord
81Y2383	6574	4.3m, 10A/250V, C13 to AS/NZS 3112 (Australia/NZ) Line Cord
69Y1988	6532	2.8m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord
81Y2387	6404	4.3m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord
39Y7928	6210	2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord
81Y2378	6580	4.3m, 10A/250V, C13 to GB 2099.1 (China) Line Cord
39Y7918	6213	2.8m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord
81Y2382	6575	4.3m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord
39Y7917	6212	2.8m, 10A/250V, C13 to CEE 7/7 (Europe) Line Cord
81Y2376	6572	4.3m, 10A/250V, C13 to CEE 7/7 (Europe) Line Cord
39Y7927	6269	2.8m, 10A/250V, C13 to IS 6538 (India) Line Cord
81Y2386	6567	4.3m, 10A/250V, C13 to IS 6538 (India) Line Cord
39Y7920	6218	2.8m, 10A/250V, C13 to SI 32 (Israel) Line Cord
81Y2381	6579	4.3m, 10A/250V, C13 to SI 32 (Israel) Line Cord
39Y7921	6217	2.8m, 10A/250V, C13 to CEI 23-16 (Italy) Line Cord
81Y2380	6493	4.3m, 10A/250V, C13 to CEI 23-16 (Italy) Line Cord
4L67A08362	6495	4.3m, 12A/200V, C13 to JIS C-8303 (Japan) Line Cord
39Y7922	6214	2.8m, 10A/250V, C13 to SABS 164-1 (South Africa) Line Cord
81Y2379	6576	4.3m, 10A/250V, C13 to SANS 164-1 (South Africa) Line Cord
39Y7926	6335	4.3m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord
39Y7925	6219	2.8m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord
81Y2385	6494	4.3m, 12A/250V, C13 to KSC 8305 (S. Korea) Line Cord
39Y7919	6216	2.8m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord
81Y2390	6578	4.3m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord
23R7158	6386	2.8m, 10A/125V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2375	6317	2.8m, 10A/250V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2374	6402	2.8m, 13A/125V, C13 to CNS 10917 (Taiwan) Line Cord
4L67A08363	AX8B	4.3m, 10A/125V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2389	6531	4.3m, 10A/250V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2388	6530	4.3m, 13A/125V, C13 to CNS 10917 (Taiwan) Line Cord
39Y7923	6215	2.8m, 10A/250V, C13 to BS 1363/A (UK) Line Cord
81Y2377	6577	4.3m, 10A/250V, C13 to BS 1363/A (UK) Line Cord
90Y3016	6313	2.8M, 10A/125V, C13 to NEMA 5-15P (US) Line Cord
46M2592	A1RF	2.8m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord
00WH545	6401	2.8M, 13A/125V, C13 to NEMA 5-15P (US) Line Cord
4L67A08359	6370	4.3m, 10A/125V, C13 to NEMA 5-15P (US) Line Cord
4L67A08361	6373	4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord
4L67A08360	AX8A	4.3m, 13A/125V, C13 to NEMA 5-15P (US) Line Cord

Integrated virtualization

The server supports booting from an operating system or hypervisor installed on an M.2 solid-state drive. See the [M.2 drives section](#) for details and the list of available options.

You can download supported VMware vSphere hypervisor images from the following web page and load it on the M.2 drive using the instructions provided:

https://vmware.lenovo.com/content/custom_iso/

Systems management

The server contains an integrated service processor, XClarity Controller (XCC), which provides advanced control, monitoring, and alerting functions. The XCC is based on the Pilot4 XE401 baseboard management controller (BMC) using a dual-core ARM Cortex A9 service processor.

Local management

The SR850 offers a front operator panel with key LED status indicators, as shown in the following figure.

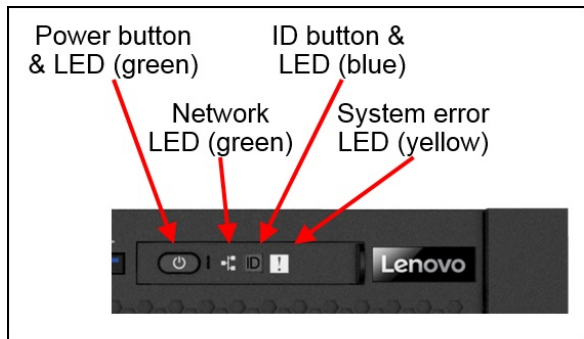


Figure 12. Front operator panel

As an alternative to the front operator panel, (certain models or configure-to-order; not available as a field upgrade), the server supports a pull-out LCD display panel. The LCD display panel allows quick access to system status, firmware, network, and health information. The following figure shows the front operator panel with LCD display.

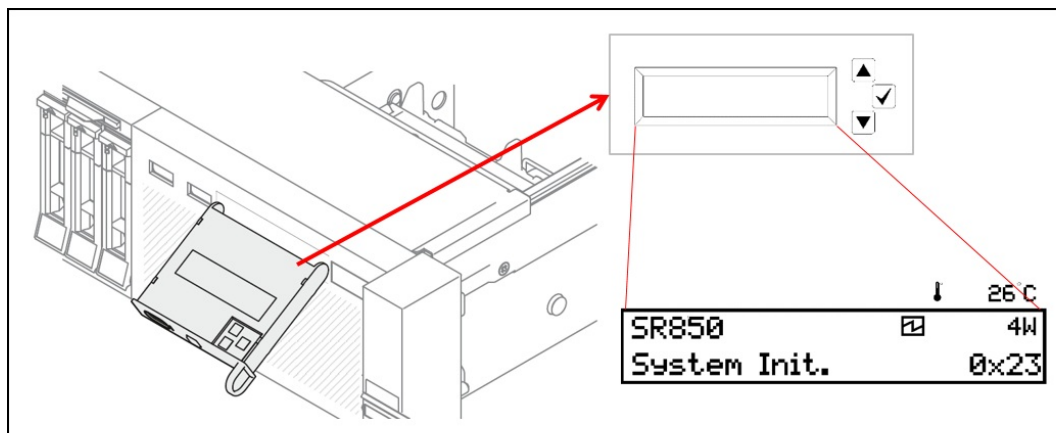


Figure 13. Front operator panel with LCD display

The LCD display and the function buttons give you access to the following information:

- Error messages

- System VPD: machine type & mode, serial number, UUID string
- System firmware levels: UEFI and XCC firmware
- XCC network information: hostname, MAC address, IP address, DNS addresses
- Environmental data: Ambient temperature, CPU temperature, AC input voltage, estimated power consumption
- System reset action

The front operator panel with LCD display can be ordered as listed in the following table.

Table 38. LCD system information display panel

Part number	Feature code	Description
None*	AUMW	Front operator panel with LCD display

* Only available configure-to-order or with predefined models

The server offers light path diagnostics. If an environmental condition exceeds a threshold or if a system component fails, the XCC lights LEDs inside the server to help you diagnose the problem and find the failing part. The SR850 has fault LEDs next to the following components:

- Each processor
- Each memory DIMM
- Each drive bay
- Each system fan
- Each power supply

The front of the server also houses an information pull-out tab (also known as the network access tag). See [Figure 2](#) for the location. A label on the tab shows the network information (MAC address and other data) to remotely access XClarity Controller.

System status with XClarity Mobile

The XClarity Mobile app now includes a tethering function where you can connect your Android or iOS device to the server via USB to see the status of the server.

The steps to connect the mobile device are as follows:

1. Enable USB Management on the server, by holding down the ID button for 3 seconds (or pressing the dedicated USB management button if one is present)
2. Connect the mobile device via a USB cable to the server's USB port with the management symbol



3. In iOS or Android settings, enable Personal Hotspot or USB Tethering
4. Launch the Lenovo XClarity Mobile app

Once connected you can see the following information:

- Server status including error logs (read only, no login required)
- Server management functions (XClarity login credentials required)

Remote management

Remote server management is provided through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3 (no SET commands; no SMNP v1)

- Common Information Model (CIM-XML)
- Representational State Transfer (REST) support
- Redfish support (DMTF compliant)
- Web browser - HTML 5-based browser interface (Java and ActiveX not required) using a responsive design (content optimized for device being used - laptop, tablet, phone) with NLS support

A virtual presence (remote control) capability also comes standard in the server for remote server management. Virtual media (remote drive images) support is optional via a software license upgrade.

The remote control functions include the following:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 23 bits per pixel, regardless of the system state
- Remotely accessing the server using the keyboard and mouse from a remote client
- Capturing blue-screen errors
- International keyboard mapping support
- LDAP-based authentication
- With the XCC Enterprise license upgrade, mapping ISO and diskette IMG image files as virtual drives that are available for use by the server

The Enterprise license upgrade, shown in the following table, enables the following features:

- Boot Capture
- Remote mounting of ISO and IMG files
- Virtual console collaboration - Ability for up to 6 remote users to be log into the remote session simultaneously
- Power capping
- License for XClarity Energy Manager

Table 39. XClarity Controller Enterprise Upgrade

Part number	Feature code	Description
4L47A09133	AVUU	ThinkSystem XClarity Controller Advanced to Enterprise Upgrade

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.

Lenovo XClarity Administrator provides agent-free hardware management for ThinkSystem servers, in addition to ThinkServer, System x, and Flex System 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 provides full management function to ThinkSystem servers, including the following:

- Discovery
- Inventory
- Monitoring and alerting
- Call home
- Centralized user management
- Cryptography modes, server certificates, and encapsulation
- Configuration patterns
- Operating system deployment
- Firmware updates

For more information about Lenovo XClarity Administrator, including ordering part numbers, see the Lenovo XClarity Administrator Product Guide:

<https://lenovopress.com/tips1200-lenovo-xclarity-administrator>

Lenovo XClarity Provisioning Manager

Lenovo XClarity Provisioning Manager is a UEFI-based application embedded in ThinkSystem servers and accessible via the F1 key during system boot.

Lenovo XClarity Provisioning Manager provides the following functions:

- Graphical UEFI Setup
- System inventory information and VPD update
- System firmware updates (UEFI and XCC)
- RAID setup wizard
- OS installation wizard (including unattended OS installation)
- Diagnostics functions

Lenovo XClarity Essentials

Lenovo offers the following XClarity Essentials software tools that can help you set up, use, and maintain the server at no additional cost:

- Lenovo Essentials OneCLI

OneCLI is a collection of server management tools that uses a command line interface program to manage firmware, hardware, and operating systems. It provides functions to collect full system health information (including health status), configure system setting, and update system firmware and drivers.

- Lenovo Essentials UpdateXpress

The UpdateXpress tool is a standalone GUI application for firmware and device driver updates that enables you to maintain your server firmware and device drivers up-to-date and help you avoid unnecessary server outages. The tool acquires and deploys individual updates and UpdateXpress System Packs (UXSPs) which are integration-tested bundles.

- Lenovo Essentials Bootable Media Creator

The Bootable Media Creator (BOMC) tool is used to create bootable media for offline firmware update.

For more information and downloads, visit the Lenovo XClarity Essentials web page:

<http://support.lenovo.com/us/en/documents/LNVO-center>

Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager is an agent-free, web-based console that provides power management for ThinkSystem servers as well as System x and ThinkServer systems. It enables server density and data center capacity to be increased through the use of power capping.

Lenovo XClarity Energy Manager is a licensed product. A single-node XClarity Energy Manager license is included with the XClarity Controller Enterprise (XCC Enterprise) upgrade as described in the [Remote Management](#) section. If your server does not have the XCC Enterprise upgrade, Energy Manager licenses can be ordered as shown in the following table.

Table 40. Lenovo XClarity Energy Manager

Description	Part number	Maximum supported
4L40E51621	Lenovo XClarity Energy Manager Node License	1 node
4L40E51622	Lenovo XClarity Energy Manager Node License Pack	5 nodes
4L40E51623	Lenovo XClarity Energy Manager Node License Pack	50 nodes

Security

The server offers the following security features:

- Administrator and power-on password
- Trusted Platform Module (TPM) supporting both TPM 1.2 and TPM 2.0
- Optional Trusted Cryptographic Module (TCM) or Nationz TPM 2.0, available only in China
- Lockable top cover to help prevent access to internal components
- Optional lockable front security bezel
- Self-encrypting drives with support for IBM Security Key Lifecycle Manager

The TCM and Nationz TPM modules, available only for China customers, are installed in a dedicated socket on the system board, as shown in [Figure 4](#).

The optional lockable front bezel is shown in the following figure and includes a key that enables you to secure the bezel over the drives and system controls thereby reducing the chance of unauthorized or accidental access to the server.

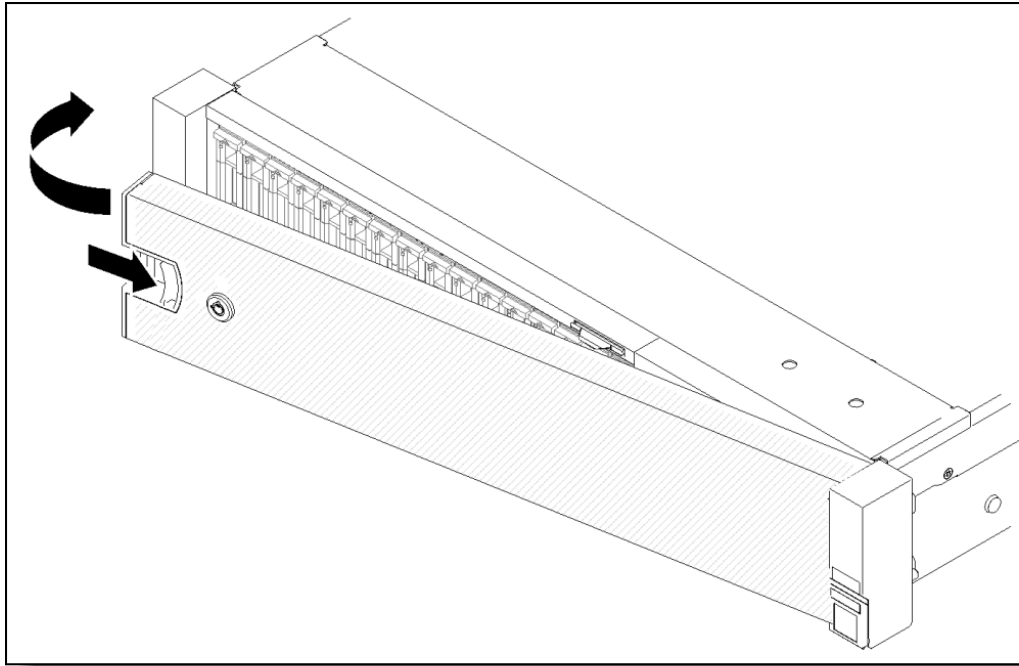


Figure 14. Lockable front security bezel

The dimensions of the security bezel are:

- Width: 437 mm (17.2 in.)
- Height: 87 mm (3.4 in.)
- Width: 23 mm (0.9 in.)

The following table lists the security options for the server.

Table 41. Security features

Part number	Feature code	Description
None*	AVKE	ThinkSystem Trusted Cryptographic Module (China customers only)
None*	B22N	ThinkSystem Nationz Trusted Platform Module v2.0 (China customers only)
7Z17A02580	AURX	ThinkSystem 2U Security Bezel

* Not available as a field upgrade. The component is CTO on pre-configured models only.

For SED drives and IBM Security Key Lifecycle Manager support see the [SED encryption key management with ISKLM](#) section.

Rack installation

The following table lists the rack installation options that are available for the server.

The Front VGA Connector Upgrade Kit allows you to upgrade your server by adding a VGA video port to the front of the server (if the server does not already come with a front VGA port). When the front VGA is in use, the rear VGA port is automatically disabled.

Table 42. Rack installation options

Option	Feature Code	Description
Optional front VGA port		
7X97A03954	AUPX	ThinkSystem SR850 Front VGA Connector Upgrade Kit
Rail slides		
7M27A05700	AXCH	ThinkSystem Toolless Slide Rail Kit with 2U CMA
7M27A05702	AXCA	ThinkSystem Toolless Slide Rail
4M17A07274	AXFN	ThinkSystem Tooled Slide Rail
4M17A07273	AXFM	ThinkSystem Toolless Friction Rail
Cable Management Arms		
4M17A07275	AXFU	ThinkSystem 2U CMA Upgrade Kit for Tooled Slide Rail
7M27A05698	None*	ThinkSystem 2U CMA Upgrade Kit for Toolless Slide Rail

* This kit is for field upgrades only; for CTO use the rail kit with CMA, feature AXCH

The following table summarizes the rail kit features and specifications.

Table 43. Rail kit features and specifications summary

Feature	ThinkSystem Toolless Slide Rail	ThinkSystem Tooled Slide Rail	ThinkSystem Toolless Friction Rail
Part number	7M27A05702 (no CMA) 7M27A05700 (with CMA)	4M17A07274	4M17A07273
Rail type	Full-out slide (ball bearing)	Full-out slide (ball bearing)	Half-out slide (friction)
Toolless installation	Yes	No	Yes
Cable Management Arm (CMA) support	Yes (7M27A05700 only)	Optional (4M17A07275)	No
In-rack server maintenance	Yes	Yes	No
1U PDU support	Yes	Yes	Yes
0U PDU support	Limited*	Limited*	Limited**
Rack type	Lenovo and IBM 4-post, IEC standard-compliant	Lenovo and IBM 4-post, IEC standard-compliant	Lenovo and IBM 4-post, IEC standard-compliant
Mounting holes	Square or round	Square, round, or threaded	Square or round
Mounting flange thickness	2 mm - 3.3 mm (0.08 - 0.13 in.)	2 mm - 3.3 mm (0.08 - 0.13 in.)	2 mm - 3.3 mm (0.08 - 0.13 in.)
Distance between front and rear mounting flanges	610 mm - 864 mm (24 - 34 in.)	610 mm - 864 mm (24 - 34 in.)	610 mm - 864 mm (24 - 34 in.)
Rail length***	730 mm (28.74 in.)	837 mm (32.9 in.)	728 mm (28.7 in.)

* For 0U PDU support, the rack must be at least 1100 mm (43.31 in.) deep without a CMA, or at least 1200 mm (47.24 in.) deep if a CMA is used.

** For 0U PDU support with the friction rail kit, the rack must be at least 1000 mm (39.37 in.) deep.

*** Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail.

Operating system support

The server supports the following operating systems:

- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Microsoft Windows Server, version 1709
- Microsoft Windows Server, version 1803
- Red Hat Enterprise Linux 6.10 x64
- Red Hat Enterprise Linux 6.9 x64
- Red Hat Enterprise Linux 7.3
- Red Hat Enterprise Linux 7.4
- Red Hat Enterprise Linux 7.5
- SUSE Linux Enterprise Server 11 Xen x64 SP4
- SUSE Linux Enterprise Server 11 x64 SP4
- SUSE Linux Enterprise Server 12 SP2
- SUSE Linux Enterprise Server 12 SP3
- SUSE Linux Enterprise Server 12 Xen SP2
- SUSE Linux Enterprise Server 12 Xen SP3
- VMware ESXi 6.0 U3
- VMware ESXi 6.5
- VMware ESXi 6.5 U1
- VMware ESXi 6.5 U2
- VMware ESXi 6.7

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#servers=sr850-7x18-7x19>

For configure-to-order configurations, the server can be preloaded with VMware ESXi installed on M.2 cards. Ordering information is listed in the following table.

Table 44. VMware ESXi preload

Part number	Feature code	Description
CTO only	AXFT	VMware ESXi 6.5 (factory installed)
CTO only	AXFS	VMware ESXi 6.0 U3 (factory installed)

Physical and electrical specifications

Dimensions and weight:

- Height: 86 mm (3.4 in.)
- Width: 445 mm (17.5 in.)
- Depth: 776 mm (30.5 in.)
- Approximate weight, minimum 18 kg (40 lb.), fully configured 27 kg (59.6 lb.)

Electrical specifications:

- Electrical - Input voltage
 - 100 - 127 (nominal) V AC, 50 Hz or 60 Hz
 - 200 - 240 (nominal) V AC, 50 Hz or 60 Hz
 - 180 - 300 V DC (support is planned; China only)
- Power consumption:
 - 100-127 V:
 - 750W power supply: 8.4 kVA
 - 1100W power supply: 12 kVA
 - 200-240 V:
 - 750W power supply: 4.1 kVA
 - 1100W power supply: 6 kVA
 - 1600W power supply: 8.7 kVA

Operating environment

The ThinkSystem SR850 server complies with ASHRAE Class A2 specifications, and depending on the hardware configuration, also complies with ASHRAE Class A3 and Class A4 specifications. System performance may be impacted when operating temperature is outside ASHRAE A2 specification.

To comply with ASHRAE class A3 and class A4 specifications, the server models must meet the following hardware configuration requirements:

- Two power supplies installed
- NVMe drives not installed
- PCIe flash storage adapters not installed

CPU core speed may be reduced depending on the processor selected.

Cooling restrictions: Certain high-performance processors have additional cooling restrictions regarding ambient temperature and fan redundancy. See the [Cooling](#) section for details.

The server is supported in the following environment:

- Air temperature:
 - Operating:
 - ASHARE Class A2: 10°C to 35°C (50°F to 95°F); the maximum ambient temperature decreases by 1°C for every 300 m (984 ft) increase in altitude above 900 m (2,953 ft).
 - ASHARE Class A3: 5°C to 40°C (41°F to 104°F); the maximum ambient temperature decreases by 1°C for every 175 m (574 ft) increase in altitude above 900 m (2,953 ft).
 - ASHARE Class A4: 5°C to 45°C (41°F to 113°F); the maximum ambient temperature decreases by 1°C for every 125 m (410 ft) increase in altitude above 900 m (2,953 ft).
 - Server off: 5°C to 45°C (41°F to 113°F)
 - Shipment/storage: -40°C to 60°C (-40°F to 140°F)
- Maximum altitude: 3,050 m (10,000 ft)
- Relative Humidity (non-condensing):
 - Operating
 - ASHRAE Class A2: 8% to 80%; maximum dew point: 21°C (70°F)
 - ASHRAE Class A3: 8% to 85%; maximum dew point: 24°C (75°F)
 - ASHRAE Class A4: 8% to 90%; maximum dew point: 24°C (75°F)
 - Shipment/storage: 8% to 90%

The server generates the following heat and noise:

- Heat/thermal output:
 - Minimum configuration: 454 BTU/hr, 133 W
 - Maximum configuration: 5118 BTU/hr, 1500 W
- Noise level (LWAm)
 - Sound power, idling: 5.2 bels (minimum), 5.8 bels (typical), 6.4 bels (maximum)
 - Sound power, operating: 5.8 bels (minimum), 6.8 bels (typical), 7.0 bels (maximum)

The server has the following vibration and shock limits:

- Vibration:
 - Operating: 0.21 G rms at 5 Hz to 500 Hz for 15 minutes across 3 axes
 - Non-operating: 1.04 G rms at 2 Hz to 200 Hz for 15 minutes across 6 surfaces
- Shock:
 - Operating: 15 G for 3 milliseconds in each direction (positive and negative X, Y, and Z axes)
 - Non-operating:
 - 12 kg - 22 kg: 50 G for 152 in./sec velocity change across 6 surfaces
 - 23 kg - 31 kg: 35 G for 152 in./sec velocity change across 6 surfaces

Warranty

The SR850 has a 1-year or 3-year warranty based on the machine type of the system:

- 7X18: 1 year warranty
- 7X19: 3 year warranty

The standard warranty terms are customer-replaceable unit (CRU) and onsite (for field-replaceable units, FRUs, only) with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Also available are Lenovo Services warranty maintenance upgrades and post-warranty maintenance agreements, with a predefined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

Lenovo warranty service upgrade offerings are country-specific. Not all warranty service upgrades are available in every country. For more information about Lenovo warranty service upgrade offerings that are available in your country, go to the Data Center Advisor and Configurator (formerly known as LESC) website <http://lesc.lenovo.com>, then do the following:

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

The following table explains warranty service definitions in more detail.

Table 45. Warranty service definitions

Term	Description
Onsite Service	If a problem with your product cannot be resolved via telephone, a Service Technician will be dispatched to arrive at your location.
Parts Delivered	If a problem with your product cannot be resolved via telephone and a CRU part is required, Lenovo will send a replacement CRU to arrive at your location. If a problem with your product cannot be resolved via telephone and a FRU part is required, a Service Technician will be dispatched to arrive at your location.
Technician Installed Parts	If a problem with your product cannot be resolved via telephone, a Service Technician will be dispatched to arrive at your location.
Hours of coverage	<ul style="list-style-type: none">• 9x5: 9 hours/day, 5 days/week, during normal business hours, excluding local public & national holidays• 24x7: 24 hours per day, 7 days per week, 365 days per year.
Response time target	2 hours, 4 hours, or Next Business Day: The time period from when the telephone based troubleshooting is completed and logged, to the delivery of the CRU or arrival of a Service Technician and part at the Customer's location for repair.
Committed Repair	6 hours: The time period between the service request registration in Lenovo's call management system and the restoration of the product to conformance with its specification by a Service Technician.

The following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
 - Three, four, or five years of 9x5 or 24x7 service coverage
 - Parts delivered or technician installed parts from next business day to 4 or 2 hours
 - Committed repair service
 - Warranty extension of up to 5 years
 - Post warranty extensions
- Committed Repair Service

Committed Repair Services enhances the level of Warranty Service Upgrade or Post Warranty/Maintenance Service offering associated with the selected systems. Offerings vary and are available in select countries.

 - Priority handling to meet defined time frames to restore the failing machine to good working condition
 - 24x7x6 committed repair: Service performed 24 hours per day, 7 days per week, within 6 hours
- YourDrive YourData

Lenovo's YourDrive YourData service is a multi-drive retention offering that ensures your data is always under your control, regardless of the number of drives that are installed in your Lenovo server. In the unlikely event of a drive failure, you retain possession of your drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The YourDrive YourData service can be purchased in convenient bundles with Lenovo warranty upgrades and extensions.
- Microcode Support

Keeping microcode current helps prevent hardware failures and security exposure. There are two levels of service: analysis of the installed base and analysis and update where required. Offerings vary by country and can be bundled with other warranty upgrades and extensions.
- Enterprise Software Support

Lenovo Enterprise Server Software Support can help you troubleshoot your entire server software stack. Choose support for server operating systems from Microsoft, Red Hat, SUSE, and VMware; Microsoft server applications; or both operating systems and applications. Support staff can help answer troubleshooting and diagnostic questions, address product compatibility and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

In addition, you can access hardware "how to" support for ThinkSystem servers. Staff can help resolve hardware problems not covered under warranty, refer you to the right documentation and publications, provide corrective service information for known defects, and transfer you to a hardware support call center if needed.
- Hardware Installation Services

Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing your team to focus on other priorities. Your new systems will be configured and ready for your software installation.

Regulatory compliance

The SR850 server conforms to the following standards:

- Energy Star v2.1
- FCC: Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 6, 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 32, Class A; AS/NZS 60950.1
- IEC 60950-1 (CB Certificate and CB Test Report)
- China CCC (GB4943.1), GB9254 Class A, GB17625.1
- Taiwan BSMI CNS13438, Class A; CNS14336-1
- Korea KN32, Class A; KN35
- Russia, Belorussia and Kazakhstan, EAC: TP TC 004/2011(for Safety); TP TC 020/2011(for EMC)
- CE Mark (EN55032 Class A, EN60950-1, EN55024, EN61000-3-2, and EN61000-3-3)
- CISPR 32, Class A
- TUV-GS (EN60950-1 /IEC60950-1, EK1-ITB2000)
- India BIS certification

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 standard models of the D1212 and D1224 12 Gbps SAS external drive enclosures offered by Lenovo that can be used with the server for storage expansion.

Table 46. D1212 and D1224 standard models

Part number	Description
LFF models	
4587A11*	D1212 LFF Chassis, Dual 3-port ESMs (US English documentation)
4587A1C^	D1212 LFF Chassis, Dual 3-port ESMs (Simplified Chinese documentation)
4587A1J**	D1212 LFF Chassis, Dual 3-port ESMs (Japanese documentation)
SFF models	
4587A31*	D1224 SFF Chassis, Dual 3-port ESMs (US English documentation)
4587A3C^	D1224 SFF Chassis, Dual 3-port ESMs (Simplified Chinese documentation)
4587A3J**	D1224 SFF Chassis, Dual 3-port ESMs (Japanese documentation)

* Available worldwide (except China and Japan)

^ Available only in China

** Available only in Japan

The following table lists the TopSeller models of the D1212 and D1224 12 Gbps SAS external drive enclosures offered by Lenovo that can be used with the server for storage expansion.

Table 47. D1212 and D1224 TopSeller models

Part number	Description
Brazil and Latin America - LFF models	
4587EAU	D1212 LFF Chassis, Dual 3-port ESMs, 4x 2TB 3.5" HDDs, 4x 0.5m SAS cables
4587EBU	D1212 LFF Chassis, Dual 3-port ESMs, 4x 4TB 3.5" HDDs, 4x 0.5m SAS cables
4587ECU	D1212 LFF Chassis, Dual 3-port ESMs, 4x 6TB 3.5" HDDs, 4x 0.5m SAS cables
4587EDU	D1212 LFF Chassis, Dual 3-port ESMs, 4x 8TB 3.5" HDDs, 4x 0.5m SAS cables
4587EEU	D1212 LFF Chassis, Dual 3-port ESMs, 8x 2TB 3.5" HDDs, 4x 0.5m SAS cables
4587EFU	D1212 LFF Chassis, Dual 3-port ESMs, 8x 4TB 3.5" HDDs, 4x 0.5m SAS cables
4587EGU	D1212 LFF Chassis, Dual 3-port ESMs, 8x 6TB 3.5" HDDs, 4x 0.5m SAS cables
4587EHU	D1212 LFF Chassis, Dual 3-port ESMs, 8x 8TB 3.5" HDDs, 4x 0.5m SAS cables
4587EIU	D1212 LFF Chassis, Dual 3-port ESMs, 12x 2TB 3.5" HDDs, 4x 0.5m SAS cables
4587EJU	D1212 LFF Chassis, Dual 3-port ESMs, 12x 4TB 3.5" HDDs, 4x 0.5m SAS cables
4587EKU	D1212 LFF Chassis, Dual 3-port ESMs, 12x 6TB 3.5" HDDs, 4x 0.5m SAS cables
4587ELU	D1212 LFF Chassis, Dual 3-port ESMs, 12x 8TB 3.5" HDDs, 4x 0.5m SAS cables
Brazil and Latin America - SFF models	
4587E6U	D1224 SFF Chassis, Dual 3-port ESMs, 9x 1.2TB 10K HDDs, 4x 0.5m SAS cables
4587E2U	D1224 SFF Chassis, Dual 3-port ESMs, 9x 1.2TB 10K HDDs, 2x 400GB SSDs, 4x 0.5m SAS cables
4587E4U	D1224 SFF Chassis, Dual 3-port ESMs, 9x 1.2TB 10K HDDs, 4x 400GB SSDs, 4x 0.5m SAS cables
4587E5U	D1224 SFF Chassis, Dual 3-port ESMs, 18x 1.2TB 10K HDDs, 1x 0.5m SAS cable
4587E1U	D1224 SFF Chassis, Dual 3-port ESMs, 18x 1.2TB 10K HDDs, 2x 400GB SSDs, 4x 0.5m SAS cables
4587E3U	D1224 SFF Chassis, Dual 3-port ESMs, 18x 1.2TB 10K HDDs, 4x 400GB SSDs, 4x 0.5m SAS cables

For details about supported drives and cables for the Lenovo Storage D1212 and D1224, see the Lenovo Press Product Guide:

<http://lenovopress.com/lp0512>

The following table lists the standard models of the D3284 12 Gbps SAS external high density drive enclosures offered by Lenovo.

Table 48. D3284 standard models

Description	Part number
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

The following table lists the TopSeller models of the D3284 12 Gbps SAS external high density drive enclosures offered by Lenovo.

Table 49. D3284 TopSeller models

Description	Part number
Lenovo Storage D3284 High Density Expansion Enclosure	6413E5F
Lenovo Storage D3284 4TB x 42 HD Expansion Enclosure	6413E1H
Lenovo Storage D3284 4TB x 84 HD Expansion Enclosure	6413E1F
Lenovo Storage D3284 6TB x 42 HD Expansion Enclosure	6413E2H
Lenovo Storage D3284 6TB x 84 HD Expansion Enclosure	6413E2F
Lenovo Storage D3284 8TB x 42 HD Expansion Enclosure	6413E3H
Lenovo Storage D3284 8TB x 84 HD Expansion Enclosure	6413E3F
Lenovo Storage D3284 10TB x 42 HD Expansion Enclosure	6413E4H
Lenovo Storage D3284 10TB x 84 HD Expansion Enclosure	6413E4F

For details about supported drives, adapters, and cables for the Lenovo Storage D3284, see the Lenovo Press Product Guide:

<http://lenovopress.com/lp0513>

External storage systems

The following table lists the external storage systems that are currently offered by Lenovo.

Note: Information provided in this section is for ordering reference purposes only. End-to-end storage configuration support *must* be verified through the interoperability matrix for a particular storage system that can be found on the Lenovo Data Center Support web site:

<http://datacentersupport.lenovo.com>

Table 50. External storage systems

Description	Part number
Lenovo ThinkSystem DS Series Storage (SAS connectivity)	
Lenovo ThinkSystem DS2200 LFF SAS Dual Controller Unit (US English documentation)	4599A41*
Lenovo ThinkSystem DS2200 LFF SAS Dual Controller Unit (Simplified Chinese documentation)	4599A4C^
Lenovo ThinkSystem DS2200 LFF SAS Dual Controller Unit (Japanese documentation)	4599A4J**
Lenovo ThinkSystem DS2200 SFF SAS Dual Controller Unit (US English documentation)	4599A21*
Lenovo ThinkSystem DS2200 SFF SAS Dual Controller Unit (Simplified Chinese documentation)	4599A2C^
Lenovo ThinkSystem DS2200 SFF SAS Dual Controller Unit (Japanese documentation)	4599A2J**
Lenovo ThinkSystem DS4200 LFF SAS Dual Controller Unit (US English documentation)	4617A41*
Lenovo ThinkSystem DS4200 LFF SAS Dual Controller Unit (Simplified Chinese documentation)	4617A4C^
Lenovo ThinkSystem DS4200 LFF SAS Dual Controller Unit (Japanese documentation)	4617A4J**
Lenovo ThinkSystem DS4200 SFF SAS Dual Controller Unit (US English documentation)	4617A21*
Lenovo ThinkSystem DS4200 SFF SAS Dual Controller Unit (Simplified Chinese documentation)	4617A2C^
Lenovo ThinkSystem DS4200 SFF SAS Dual Controller Unit (Japanese documentation)	4617A2J**
Lenovo ThinkSystem DS6200 SFF SAS Dual Controller Unit (US English documentation)	4619A21*
Lenovo ThinkSystem DS6200 SFF SAS Dual Controller Unit (Simplified Chinese documentation)	4619A2C^
Lenovo ThinkSystem DS6200 SFF SAS Dual Controller Unit (Japanese documentation)	4619A2J**
Lenovo ThinkSystem DS Series Storage (iSCSI or FC connectivity)	

Description	Part number
Lenovo ThinkSystem DS2200 LFF FC/iSCSI Dual Controller Unit (US English documentation)	4599A31*
Lenovo ThinkSystem DS2200 LFF FC/iSCSI Dual Controller Unit (Simplified Chinese documentation)	4599A3C^
Lenovo ThinkSystem DS2200 LFF FC/iSCSI Dual Controller Unit (Japanese documentation)	4599A3J**
Lenovo ThinkSystem DS2200 SFF FC/iSCSI Dual Controller Unit (US English documentation)	4599A11*
Lenovo ThinkSystem DS2200 SFF FC/iSCSI Dual Controller Unit (Simplified Chinese documentation)	4599A1C^
Lenovo ThinkSystem DS2200 SFF FC/iSCSI Dual Controller Unit (Japanese documentation)	4599A1J**
Lenovo ThinkSystem DS4200 LFF FC/iSCSI Dual Controller Unit (US English documentation)	4617A31*
Lenovo ThinkSystem DS4200 LFF FC/iSCSI Dual Controller Unit (Simplified Chinese documentation)	4617A3C^
Lenovo ThinkSystem DS4200 LFF FC/iSCSI Dual Controller Unit (Japanese documentation)	4617A3J**
Lenovo ThinkSystem DS4200 SFF FC/iSCSI Dual Controller Unit (US English documentation)	4617A11*
Lenovo ThinkSystem DS4200 SFF FC/iSCSI Dual Controller Unit (Simplified Chinese documentation)	4617A1C^
Lenovo ThinkSystem DS4200 SFF FC/iSCSI Dual Controller Unit (Japanese documentation)	4617A1J**
Lenovo ThinkSystem DS6200 SFF FC/iSCSI Dual Controller Unit (US English documentation)	4619A11*
Lenovo ThinkSystem DS6200 SFF FC/iSCSI Dual Controller Unit (Simplified Chinese documentation)	4619A1C^
Lenovo Storage V Series (SAS [except V7000/V7000F], iSCSI, or FC connectivity)	
Lenovo Storage V3700 V2 LFF Control Enclosure	6535C1D
Lenovo Storage V3700 V2 LFF Control Enclosure (TopSeller)	6535EC1
Lenovo Storage V3700 V2 SFF Control Enclosure	6535C2D
Lenovo Storage V3700 V2 SFF Control Enclosure (TopSeller)	6535EC2
Lenovo Storage V3700 V2 XP LFF Control Enclosure	6535C3D
Lenovo Storage V3700 V2 XP LFF Control Enclosure (TopSeller)	6535EC3
Lenovo Storage V3700 V2 XP SFF Control Enclosure	6535C4D
Lenovo Storage V3700 V2 XP SFF Control Enclosure (TopSeller)	6535EC4
Lenovo Storage V5030 LFF Control Enclosure 3Yr S&S	6536C12
Lenovo Storage V5030 LFF Control Enclosure 5Yr S&S	6536C32
Lenovo Storage V5030 SFF Control Enclosure 3Yr S&S	6536C22
Lenovo Storage V5030 SFF Control Enclosure 5Yr S&S	6536C42
Lenovo Storage V5030F SFF Control Enclosure 3Yr S&S	6536B1F
Lenovo Storage V5030F SFF Control Enclosure 5Yr S&S	6536B2F
Lenovo Storage V7000 SFF Control Enclosure 3Yr S&S PRC	6538R11^
Lenovo Storage V7000 SFF Control Enclosure 5Yr S&S PRC	6538R21^
Lenovo Storage V7000F SFF Control Enclosure 3Yr S&S PRC	6538R1G^
Lenovo Storage V7000F SFF Control Enclosure 5Yr S&S PRC	6538R2G^
IBM Storwize for Lenovo (SAS [except V7000], iSCSI, or FC connectivity)	
IBM Storwize V3500 3.5-inch Dual Control Storage Controller Unit	6096CU2^
IBM Storwize V3500 2.5-inch Dual Control Storage Controller Unit	6096CU3^
IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA	6195C32†
IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA, LA	6195C3L‡
IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA	6195C52†
IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA, LA	6195C5L‡

* Available worldwide (except China and Japan).

^ Available only in China.

** Available only in Japan.

† Available worldwide except Latin America.

‡ Available only in Latin America.

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

- Lenovo DS Series and V Series storage:
<http://lenovopress.com/storage/san/lenovo#rt=product-guide>
- IBM Storwize for Lenovo storage:
<http://lenovopress.com/storage/san/ibm#rt=product-guide>

External backup units

The server supports both USB-attached RDX backup units and SAS-attached tape drives.

The following table lists the supported external SAS tape backup options.

Tip: Verify the end-to-end support of an IBM tape backup solution through the IBM System Storage Interoperation Center (SSIC): <http://www.ibm.com/systems/support/storage/ssic>

Table 51. External SAS backup options

Part number	Description
External SAS tape backup drives	
6160S5E	IBM TS2250 Tape Drive Model H5S
6160S6E	IBM TS2260 Tape Drive Model H6S
6160S7E	IBM TS2270 Tape Drive Model H7S
External SAS tape backup autoloaders	
6171S5R	IBM TS2900 Tape Autoloader w/LTO5 HH SAS
6171S6R	IBM TS2900 Tape Autoloader w/LTO6 HH SAS
6171S7R	IBM TS2900 Tape Autoloader w/LTO7 HH SAS
External tape backup libraries	
61732UL	IBM TS3100 Tape Library Model L2U
61734UL	IBM TS3200 Tape Library Model L4U
SAS backup drives for TS3100 and TS3200 Tape Libraries	
00NA109	6173 LTO Ultrium 5 SAS Drive Sled
00NA111	6173 LTO Ultrium 5 Half High SAS Drive Sled
00NA117	6173 LTO Ultrium 6 Half High SAS Drive Sled
00WF767	6173 LTO Ultrium 7 Half High SAS Drive Sled

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

The following table lists the external RDX backup options available.

Table 52. External RDX dock and cartridges

Part number	Feature code	Description
External RDX docks		
4T27A10725	B32R	ThinkSystem RDX External USB 3.0 Dock (No cartridge included with the drive)
Cartridges		
7TP7A01601	AVF8	ThinkSystem RDX 500GB Cartridge
7TP7A01602	AVF1	ThinkSystem RDX 1TB Cartridge
7TP7A01603	AVF0	ThinkSystem RDX 2TB Cartridge
7TP7A04318	AXD1	ThinkSystem RDX 4TB Cartridge

For more information, see the Lenovo RDX USB 3.0 Disk Backup Solution product guide: <https://lenovopress.com/tips0894-rdx-usb-30>

Top-of-rack Ethernet switches

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

Table 53. Ethernet LAN switches

Part number	Description
1 Gb Ethernet switches	
7165H1X	Juniper EX2300-C PoE Switch
7165H2X	Juniper EX2300-24p PoE Switch
7159BAX	Lenovo RackSwitch G7028 (Rear to Front)
7159CAX	Lenovo RackSwitch G7052 (Rear to Front)
7159G52	Lenovo RackSwitch G8052 (Rear to Front)
10 Gb Ethernet switches	
7159A1X	Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)
7159B1X	Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)
7159C1X	Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)
7159BR6	Lenovo RackSwitch G8124E (Rear to Front)
7159G64	Lenovo RackSwitch G8264 (Rear to Front)
7159DRX	Lenovo RackSwitch G8264CS (Rear to Front)
7159CRW	Lenovo RackSwitch G8272 (Rear to Front)
7159GR6	Lenovo RackSwitch G8296 (Rear to Front)
25 Gb Ethernet switches	
7159E1X	Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)
40 Gb Ethernet switches	
7159BRX	Lenovo RackSwitch G8332 (Rear to Front)
100 Gb Ethernet switches	
7159D1X	Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)

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

The following table lists the Fibre Channel SAN switches that are offered by Lenovo and can be used with this system.

Table 54. Fibre Channel SAN switches

Part number	Description
8 Gb FC	
3873AR3	Lenovo B300, 8 ports activated, 8x 8Gb SWL SFPs, 1 PS, Rail Kit
3873AR4	Lenovo B6505, 12 ports activated, 12x 8Gb SWL SFPs, 1 PS, Rail Kit
3873BR2	Lenovo B6510, 24 ports activated, 24x 8Gb SWL SFPs, 2 PS, Rail Kit
16 Gb FC	
6559D2Y	Lenovo ThinkSystem DB610S, 8 ports activated, 8x 16Gb SWL SFPs, 1 PS, Rail Kit
6559D1Y	Lenovo ThinkSystem DB610S, 24 ports activated, 24x 16Gb SWL SFP, Enterprise SW, 1 PS, Rail Kit
3873AR5	Lenovo B6505, 12 ports activated w/ 16Gb SWL SFPs, 1 PS, Rail Kit
3873BR3	Lenovo B6510, 24 ports activated w/ 16Gb SWL SFPs, 2 PS, Rail Kit
32 Gb FC	
6559D3Y	Lenovo ThinkSystem DB610S, 8 ports activated, 1 PS, Rail Kit
6415G3A	Lenovo ThinkSystem DB620S, 24 ports activated, No SFPs, 2 PS, Rail Kit
6415G11	Lenovo ThinkSystem DB620S, 24 Ports Activated, 24x 32Gb SWL SFPs, 2 PS, Rail Kit
6415G2A	Lenovo ThinkSystem DB620S, 48 Ports Activated, 48x 32Gb SWL SFPs, 2 PS, Rail Kit
6684B2A	Lenovo ThinkSystem DB400D 32Gb FC Director, up to 192 ports, 8U, Enterprise SW
6682B1A	Lenovo ThinkSystem DB800D 32Gb FC Director, up to 384 ports, 14U, Enterprise SW

For more information, see the list of Product Guides in the Rack SAN Switches category:
<http://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 55. Uninterruptible power supply units

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

† Only available in China and countries in the Asia Pacific region.

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 56. Power distribution units

Part number	Description
0U Basic PDUs	
00YJ776	0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord
00YJ777	0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord
00YJ778	0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord
00YJ779	0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord
Switched and Monitored PDUs	
00YJ780	0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord
00YJ781	0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord
00YJ782	0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord
00YJ783	0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord
46M4002	1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)
46M4003	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
46M4004	1U 12 C13 Switched and Monitored DPI PDU (without line cord)
46M4005	1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
71762NX	Ultra Density Enterprise C19/C13 PDU Module (without line cord)
71763NU	Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
39M2816	DPI C13 Enterprise PDU+ (without line cord)
39Y8941	DPI Single Phase C13 Enterprise PDU (without line cord)
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
39Y8948	DPI Single Phase C19 Enterprise PDU (without line cord)
39Y8923	DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord
Front-end PDUs (3x IEC 320 C19 outlets)	
39Y8938	DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord
39Y8939	DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord
39Y8934	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8940	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8935	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
NEMA PDUs (6x NEMA 5-15R outlets)	
39Y8905	DPI 100-127V PDU with Fixed NEMA L5-15P line cord
Line cords for PDUs that ship without a line cord	
40K9611	DPI 32a Line Cord (IEC 309 3P+N+G)
40K9612	DPI 32a Line Cord (IEC 309 P+N+G)
40K9613	DPI 63a Cord (IEC 309 P+N+G)
40K9614	DPI 30a Line Cord (NEMA L6-30P)

Part number	Description
40K9615	DPI 60a Cord (IEC 309 2P+G)
40K9617	DPI Australian/NZ 3112 Line Cord
40K9618	DPI Korean 8305 Line Cord

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

Rack cabinets

The following table lists the supported rack cabinets.

Table 57. Rack cabinets

Part number	Description
93072RX	25U Standard Rack
93072PX	25U Static S2 Standard Rack
93634PX	42U 1100mm Dynamic Rack
93634EX	42U 1100mm Dynamic Expansion Rack
93604PX	42U 1200mm Deep Dynamic Rack
93614PX	42U 1200mm Deep Static Rack
93084EX	42U Enterprise Expansion Rack
93084PX	42U Enterprise Rack
93074RX	42U Standard Rack
Withdrawn rack cabinets	
201886X*	11U Office Enablement Kit
93604EX*	42U 1200mm Deep Dynamic Expansion Rack
93614EX*	42U 1200mm Deep Static Expansion Rack
93074XX*	42U Standard Rack Extension
93624PX*	47U 1200mm Deep Static Rack
93624EX*	47U 1200mm Deep Static Expansion Rack
93634BX*	PureFlex System 42U Expansion Rack
93634DX*	PureFlex System 42U Expansion Rack
93634AX*	PureFlex System 42U Rack
93634CX*	PureFlex System 42U Rack

* Withdrawn from marketing

For specifications about these racks, see the Lenovo Rack Cabinet Reference, available from:
<https://lenovopress.com/lp0658-lenovo-rack-cabinet-reference>

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

KVM console options

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

Table 58. Console keyboards

Part number	Description
Consoles	
17238BX	1U 18.5" Standard Console (without keyboard)
Console keyboards	
7ZB7A05469	ThinkSystem Keyboard w/ Int. Pointing Device USB - Arabic 253 RoHS v2
7ZB7A05468	ThinkSystem Keyboard w/ Int. Pointing Device USB - Belg/UK 120 RoHS v2
7ZB7A05206	ThinkSystem Keyboard w/ Int. Pointing Device USB - Czech 489 RoHS v2
7ZB7A05207	ThinkSystem Keyboard w/ Int. Pointing Device USB - Danish 159 RoHS v2
7ZB7A05208	ThinkSystem Keyboard w/ Int. Pointing Device USB - Dutch 143 RoHS v2
7ZB7A05210	ThinkSystem Keyboard w/ Int. Pointing Device USB - Fr/Canada 445 RoHS v2
7ZB7A05209	ThinkSystem Keyboard w/ Int. Pointing Device USB - French 189 RoHS v2
7ZB7A05211	ThinkSystem Keyboard w/ Int. Pointing Device USB - German 129 RoHS v2
7ZB7A05212	ThinkSystem Keyboard w/ Int. Pointing Device USB - Greek 219 RoHS v2
7ZB7A05213	ThinkSystem Keyboard w/ Int. Pointing Device USB - Hebrew 212 RoHS v2
7ZB7A05214	ThinkSystem Keyboard w/ Int. Pointing Device USB - Hungarian 208 RoHS v2
7ZB7A05215	ThinkSystem Keyboard w/ Int. Pointing Device USB - Italian 141 RoHS v2
7ZB7A05216	ThinkSystem Keyboard w/ Int. Pointing Device USB - Japanese 194 RoHS v2
7ZB7A05217	ThinkSystem Keyboard w/ Int. Pointing Device USB - Korean 413 RoHS v2
7ZB7A05218	ThinkSystem Keyboard w/ Int. Pointing Device USB - LA Span 171 RoHS v2
7ZB7A05219	ThinkSystem Keyboard w/ Int. Pointing Device USB - Norwegian 155 RoHS v2
7ZB7A05220	ThinkSystem Keyboard w/ Int. Pointing Device USB - Polish 214 RoHS v2
7ZB7A05221	ThinkSystem Keyboard w/ Int. Pointing Device USB - Portugese 163 RoHS v2
7ZB7A05222	ThinkSystem Keyboard w/ Int. Pointing Device USB - Russian 441 RoHS v2
7ZB7A05223	ThinkSystem Keyboard w/ Int. Pointing Device USB - Slovak 245 RoHS v2
7ZB7A05231	ThinkSystem Keyboard w/ Int. Pointing Device USB - Slovenian 234 RoHS v2
7ZB7A05224	ThinkSystem Keyboard w/ Int. Pointing Device USB - Spanish 172 RoHS v2
7ZB7A05225	ThinkSystem Keyboard w/ Int. Pointing Device USB - Swed/Finn 153 RoHS v2
7ZB7A05226	ThinkSystem Keyboard w/ Int. Pointing Device USB - Swiss F/G 150 RoHS v2
7ZB7A05227	ThinkSystem Keyboard w/ Int. Pointing Device USB - Thai 191 RoHS v2
7ZB7A05467	ThinkSystem Keyboard w/ Int. Pointing Device USB - Trad Chinese/US 467 RoHS v2
7ZB7A05228	ThinkSystem Keyboard w/ Int. Pointing Device USB - Turkish 179 RoHS v2
7ZB7A05229	ThinkSystem Keyboard w/ Int. Pointing Device USB - UK Eng 166 RoHS v2
7ZB7A05470	ThinkSystem Keyboard w/ Int. Pointing Device USB - US Eng 103P RoHS v2
7ZB7A05230	ThinkSystem Keyboard w/ Int. Pointing Device USB - US Euro 103P RoHS v2
ThinkSystem Digital and Analog KVM Console switches and cables	
1754D1T	ThinkSystem Digital 2x1x16 KVM Switch (DVI video output port)
1754A1T	ThinkSystem Analog 1x8 KVM Switch (DVI video output port)

Part number	Description
4X97A11108	ThinkSystem VGA to DVI Conversion Cable
4X97A11109	ThinkSystem Single-USB Conversion Cable for Digital KVM
4X97A11107	ThinkSystem Dual-USB Conversion Cable for Digital KVM
4X97A11106	ThinkSystem USB Conversion Cable for Analog KVM
GCM and LCM Console switches and cables	
1754D2X	Global 4x2x32 Console Manager (GCM32)
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
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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<http://www.lenovofs.com>

Related publications and links

For more information, see these resources:

- Lenovo ThinkSystem SR850 product page:
<http://www3.lenovo.com/us/en/p/77XX7HSSR85>
- Interactive 3D Tour of the ThinkSystem SR850:
<http://lenovopress.com/LP0676>
- Lenovo Press video walk-through of the ThinkSystem SR850:
<http://lenovopress.com/LP0701>
- ThinkSystem SR850 drivers and support
<http://datacentersupport.lenovo.com/products/servers/thinksystem/sr850/7x18/downloads>
- Lenovo ThinkSystem SR850 product publications:
<http://thinksystem.lenovofiles.com/help/index.jsp>
 - Quick Start
 - Rack Installation Guide
 - Setup Guide
 - Hardware Maintenance Manual
 - Messages and Codes Reference
 - Memory Population Reference
- ServerProven hardware compatibility:
<http://www.lenovo.com/us/en/serverproven>

Related product families

Product families related to this document are the following:

- [4-Socket Rack Servers](#)
- [ThinkSystem SR850 Server](#)

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