Lenovo ThinkSystem SR670 Server (Xeon SP Gen 2)
Product Guide (withdrawn product)

The Lenovo ThinkSystem SR670 is a 2U rack server that has been designed to support up to eight high-performance GPUs. Models of the SR670 are powered by two second-generation Intel Xeon Processor Scalable Family processors and the ratio of up to 1:4 for CPUs to GPUs means the server is an excellent choice for the emerging requirements for HPC and AI.

Suggested uses: The SR670 system is ideal for running Artificial Intelligence (AI), High Performance Computing (HPC), and Virtual Desktop Infrastructure (VDI) workloads.

Figure 1. Front view of the Lenovo ThinkSystem SR670

Did you know?

With support for eight single-width GPUs or four double-width GPUs per server, the SR670 is ideal for scale-out with both HPC and AI workloads. The server adheres to open industry standards, provides modularity for users, and avoids single points of failure.

Lenovo is the leading provider of supercomputers in the TOP500. Lenovo is trusted by 17 of the world's top 25 research universities to provide scalable, high-performance solutions. The SR670 provides performance and reliability with a scalable solution for enterprise and research.

Key features

The Lenovo ThinkSystem SR670 delivers optimal performance for Artificial Intelligence (AI) and high-performance computing (HPC) workloads while maintaining a low total cost of ownership (TCO). The SR670 allows up to eight GPUs per 2U node and is suited for computationally intensive workload requirements for both Machine Learning (ML) and Deep Learning (DL).

Built on Intel Xeon processor Scalable Family CPUs and designed to support high-end GPUs including NVIDIA Tesla V100, the ThinkSystem SR670 delivers optimized performance for AI training and accelerated HPC workloads.

SR670 capabilities include:

- Up to eight half-length/single-width GPUs or four full-length/double-width GPUs in a 2U form factor
- Up to eight 2.5-inch drives and M.2 boot SSDs for storage flexibility
- Support for 100 GbE and EDR InfiniBand adapters including Intel OPA support for high-performance networking
- Enabled for Lenovo intelligent Computing Orchestration (LiCO) HPC/AI management software

Scalability and performance

The SR670 offers numerous features to boost performance, improve scalability and reduce costs:

- Supports two processors in the second-generation Intel Xeon Processor Scalable Family.
- Processors supported have up to 28 cores, core speeds of up to 3.8GHz, and TDP ratings of up to 205W.
- Supports up to four high-performance GPUs, including the NVIDIA Tesla V100, resulting in a 1:2 ratio of CPUs to GPUs. Alternatively supports up to eight NVIDIA T4 single-wide GPUs, resulting in a 1:4 ratio of CPUs to GPUs.
- 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 24 TruDDR4 memory DIMMs operating at 2933 MHz means you have the fastest available memory subsystem and memory capacity of up to 1.5 TB using 24x 64 GB RDIMMs.
- High-speed RAID controllers from Broadcom provide 12 Gb SAS connectivity to the drive backplane. 12 Gbps SAS internal storage connectivity doubles the data transfer rate compared to 6 Gb SAS solutions to maximize performance of storage I/O-intensive applications.
- 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 8x 2.5-inch drives, supporting HDDs and SSDs, either SAS or SATA, provide a flexible local storage platform.
- Supports a 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.
- Up to 11x PCIe slots with space for 8x single-wide GPUs, or up to 8x PCIe slots with space for 4x double-wide GPUs; plus 3x additional general-purpose PCIe slots for network adapters.

- 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 SR670 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 simple-swap redundant fans to provide availability for business-critical applications.
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (HDDs, SSDs, M.2 drives), fans, power supplies, server ambient and subcomponent temperatures. Alerts can be surfaced through the XClarity Controller to upstream managers. 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)
- Three-year or one-year customer-replaceable unit and onsite limited warranty, 9 x 5 next business day. Optional service upgrades are available. The SR670 can also be ordered without a warranty if needed.

Manageability and security

Powerful systems management features simplify local and remote management of the SR670:

- The server includes an XClarity Controller (XCC) to monitor server availability. Optional upgrade to XCC Advanced to provide remote control (keyboard video mouse) functions. Optional upgrade to XCC Enterprise enables the additional support for the mounting of remote media files (ISO and IMG image files), boot capture, and power capping.
- 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.
- Supports Lenovo intelligent Computing Orchestration (LiCO), a powerful platform that manages cluster resources for HPC and AI applications. LiCO supports multiple AI frameworks, including TensorFlow, Caffe, Neon, and MXNet, allowing you to leverage a single cluster for diverse workload requirements.
- Rack-level power capping and management via Extreme Cloud Administration Toolkit (xCAT)
- 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 SR670 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.

Components and connectors

The following figure shows the front of the server.

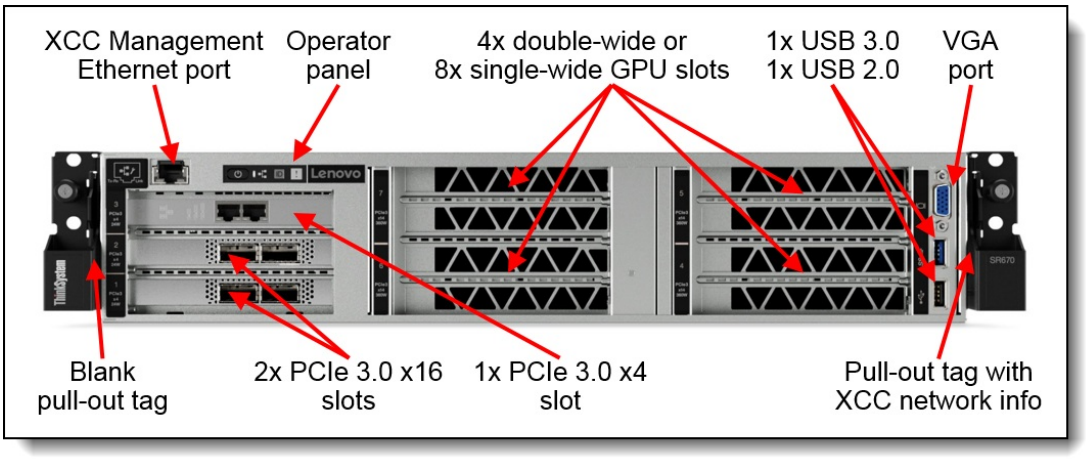

Figure 2. Front view of the Lenovo ThinkSystem SR670

The following figure shows the rear of the server.

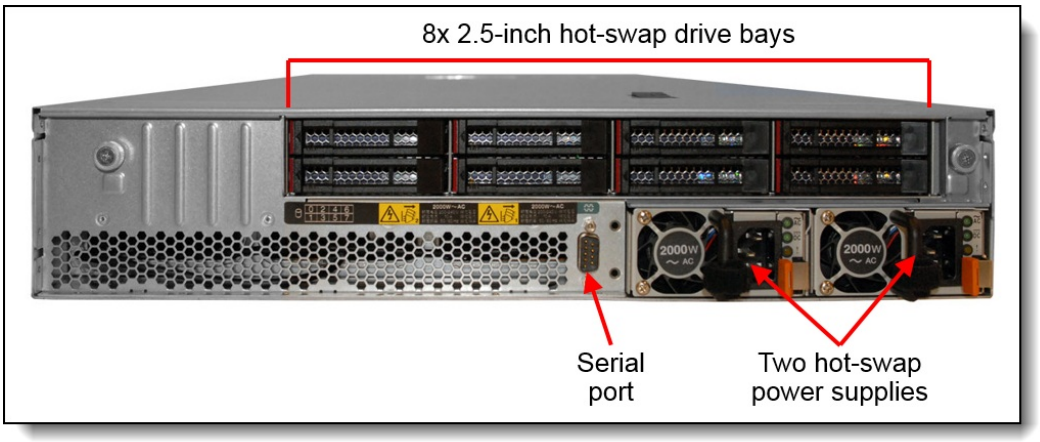

Figure 3. Rear view of the Lenovo ThinkSystem SR670

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

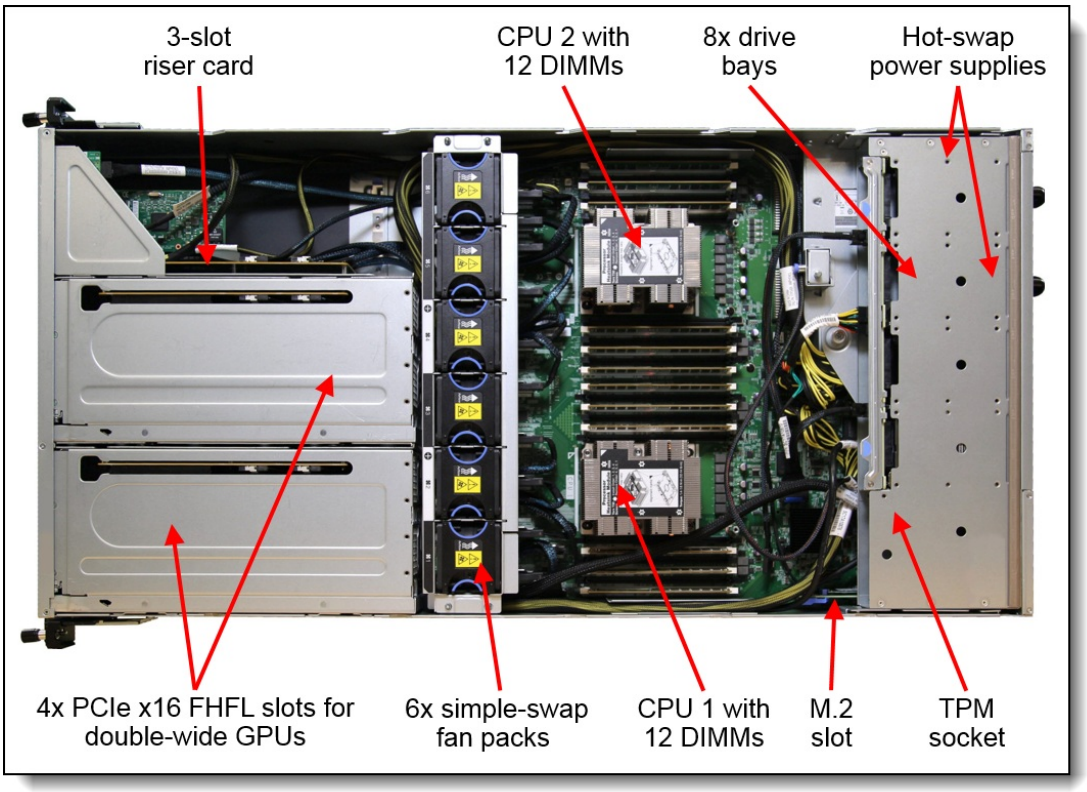

Figure 4. Internal view of the Lenovo ThinkSystem SR670

System architecture

The following figure shows the architectural block diagram of the SR670, showing the major components and their connections.

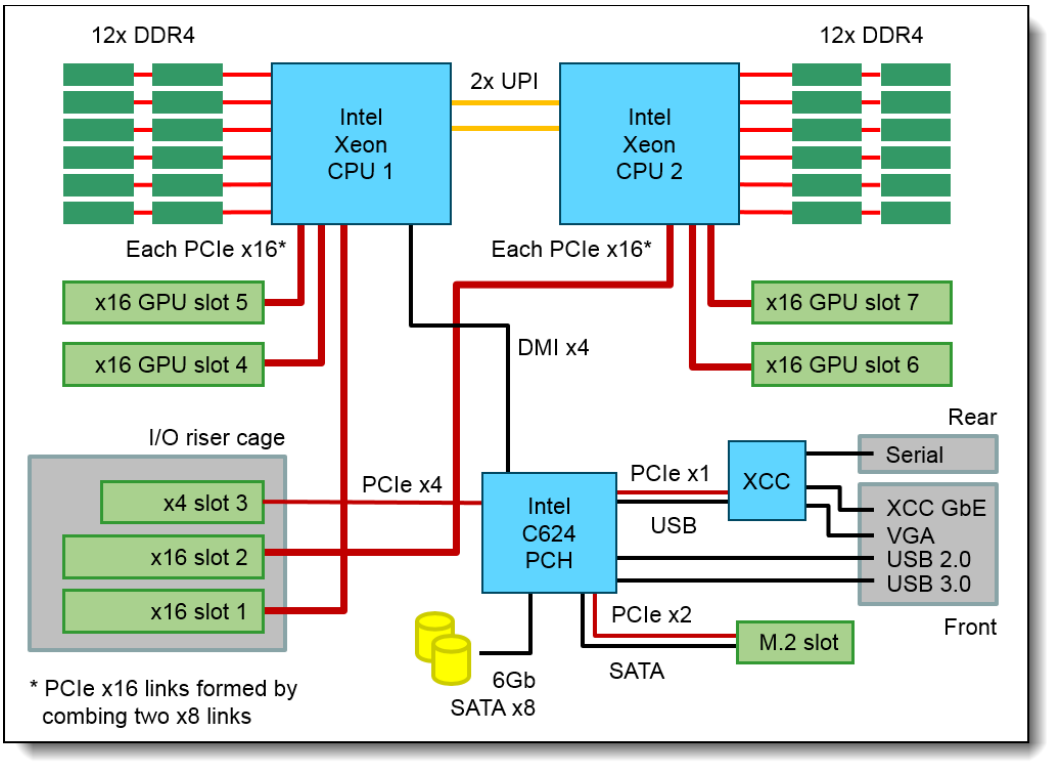

Figure 5. SR670 system architectural block diagram (four x16 GPU slots)

When the server is configured with eight PCIe x8 slots for GPUs, the architectural block diagram of the SR670 is as shown in the following diagram.

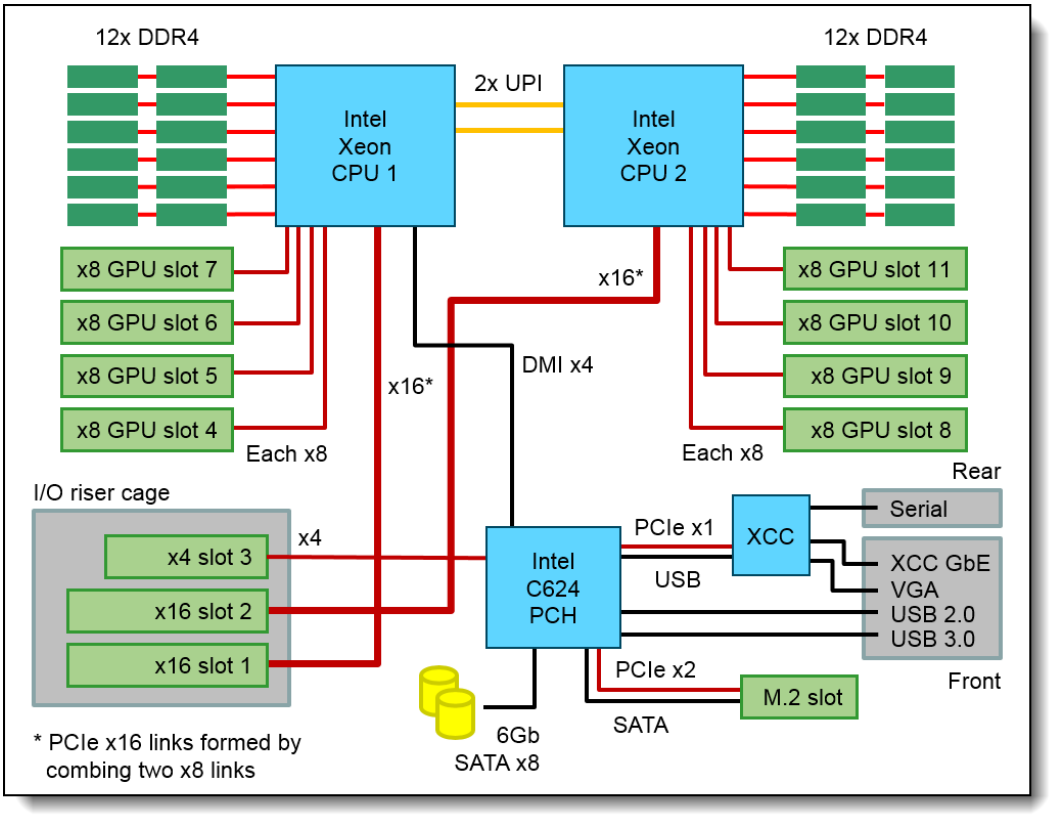

Figure 6. SR670 system architectural block diagram (eight x8 GPU slots)

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine types	7Y36 - 1 year warranty 7Y37 - 3 year warranty 7Y38 - No warranty
Form factor	2U rack.
Processor	Two second-generation Intel Xeon Processor Scalable processors (formerly codename "Cascade Lake"). Up to 28 cores, core frequencies up to 3.8 GHz, and TDP ratings up to 205W. Two Intel Ultra Path Interconnect (UPI) links at 10.4 GT/s each.
Chipset	Intel C624 "Lewisburg" chipset
Memory	24 DIMM sockets (12 DIMMs per processor) supporting Lenovo TruDDR4 DIMMs at up to 2933 MHz.
Memory maximums	With RDIMMs: Up to 1.5 TB with 24x 64 GB RDIMMs and two processors.
Memory protection	ECC, SDDC (for x4-based memory DIMMs), ADDDC (for x4-based memory DIMMs), memory mirroring, and memory sparing.

Components	Specification
Disk drive bays	Eight 2.5-inch hot-swap drive bays supporting SATA HDDs and SSDs. M.2 slot for one or two M.2 drives.
Maximum internal storage	• 245.76TB using 8x 30.72TB 2.5-inch SAS/SATA SSDs • 16TB using 8x 2TB 2.5-inch HDDs

Storage controller	• Onboard 6 Gb SATA for simple-swap drive configurations, using embedded Intel RSTe software RAID, supporting RAID 0, 1, 10, 5
	• 12 Gb SAS/SATA RAID for hot-swap drive configurations:
	  ◦ 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 940-8i with 4GB flash-backed cache supports RAID 0, 1, 10, 5, 50, 6, 60
	• 12 Gb SAS/SATA non-RAID: 430-8i HBA

Optical drive bays	No internal optical drive.
Tape drive bays	No internal backup drive.
Network interfaces	None standard; add networking via a PCIe adapter. Dedicated Ethernet port for systems management (connected to the XClarity Controller) is standard.
PCI Expansion slots	• With support for four double-wide GPUs, there are seven front-accessible PCIe slots • With support for eight-wide GPUs, there are 11 front-accessible PCIe slots See the I/O expansion options section for details.
Ports	Front: One USB 2.0 port, one USB 3.0 port, one VGA video port, one RJ45 XClarity Controller (XCC) systems management port. Rear: One DB9 serial port. The serial port can be redirected and accessed remotely via IPMI or SSH via XCC.
Cooling	Six N+1 redundant simple-swap 60 mm dual-rotor fans (all six standard). One fan integrated in each power supply.
Power supply	Two 2000W hot-swap AC power supplies with 80 PLUS Platinum certification. Power supplies are redundant in most configurations. Requires 200-240 V AC power (110 V AC not supported).
Video	G200e 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 and power supplies.
Systems management	XClarity Controller embedded systems management. Support for Lenovo intelligent Computing Orchestration (LiCO), Lenovo XClarity Essentials (BoMC, UpdateExpress, OneCLI), Lenovo XClarity Provisioning Manager. Redfish API Spec v1.0.2 compliant. Optional XClarity Controller Advanced or Enterprise with software license upgrade to enable remote control functions. XClarity Administrator and XClarity Energy Manager currently not supported.
Security features	Power-on password, administrator's password, Trusted Platform Module (TPM), supporting TPM 2.0 . In China only, optional Nationz TPM 2.0 plug-in module.
Operating systems supported	Red Hat Enterprise Linux and SUSE Linux Enterprise Server. See the Operating system support section for specifics.
Limited warranty	Three-year or one-year or no warranty (model dependent). Customer-replaceable unit (CRU) and onsite limited warranty with 9x5 next business day (NBD).

Components	Specification
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	Width: 448 mm (17.6 in.), height: 87 mm (3.4 in.), depth: 906 mm (35.7 in.). See Physical and electrical specifications for details.
Weight	32 kg (71.9 lb) depending on the specific configuration

The SR670 server is shipped with the following items:

- Documentation flyer
- Power cords (model and region dependent)

Models

ThinkSystem SR670 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Preconfigured server models may also be available for the SR670, however these are region-specific; that is, each region may define their own server models, and not all server models are available in every region.

The following table lists the base CTO models of the ThinkSystem SR670 server.

Table 2. Base CTO models

Machine Type/Model	Description
7Y37CTO1WW	ThinkSystem SR670 – 3-year warranty
7Y36CTO1WW	ThinkSystem SR670 – 1-year warranty
7Y38CTO1WW	ThinkSystem SR670 – No warranty

Models of the SR670 are defined based on whether the server has 4x PCIe x16 slots (suitable for double-wide GPUs) or 8x PCIe x8 slots. See the System architecture section for the block diagram for these two configurations and the I/O expansion options section for the layout of these slots.

For model configurations, the feature codes for these chassis bases are as listed in the following table. There is no functional difference between the v2 and non-v2 variants of the base feature codes.

Table 3. Chassis base feature codes

Feature code	Description
BMQ9	ThinkSystem SR670 2.5" Chassis - 8 Drive, 4 GPU v2
B3XX	ThinkSystem SR670 2.5" Chassis - 8 Drive, 4 GPU
BMQ7	ThinkSystem SR670 2.5" Chassis - 8 Drive, 8 GPU v2
B3XY	ThinkSystem SR670 2.5" Chassis - 8 Drive, 8 GPU

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 Hong Kong, Taiwan, Korea (HTK)
- Models for Japan

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

Models for Australia and New Zealand

Table 4. Models for Australia and New Zealand

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet	Slots	Power supplies	XCC Level	Rail kit
TopSeller models									
7Y37A00GAU	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00JAU	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00FAU	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00RAU	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00MAU	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00SAU	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A015AU	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01CAU	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01BAU	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01LAU	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01KAU	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01MAU	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide

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

Models for South East Asian countries (ASEAN)

Table 5. Models for South East Asian countries (ASEAN)

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet	Slots	Power supplies	XCC Level	Rail kit
TopSeller models									
7Y37A00PSG	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00TSG	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A011SG	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01ASG	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A019SG	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01GSG	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01NSG	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01PSG	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00ZSG	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01HSG	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00QSG	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01ESG	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide

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

Models for Hong Kong, Taiwan, Korea (HTK)

Table 6. Models for Hong Kong, Taiwan, Korea (HTK)

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet	Slots	Power supplies	XCC Level	Rail kit
Standard models									
7Y37A009CN	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
TopSeller models									
7Y37A012CN	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01JCN	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A014CN	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01DCN	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00NCN	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A010CN	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00KCN	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00LCN	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00ACN	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00BCN	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00XCN	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A017CN	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide

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

Models for Japan

Table 7. Models for Japan

Model	Intel Xeon processors†	Memory	RAID	Drive bays	Ethernet	Slots	Power supplies	XCC Level	Rail kit
Topseller Models									
7Y37A00HJP	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00UJP	2x Silver 4210 10C 85W 2.2GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00WJP	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A013JP	2x Gold 5215 10C 85W 2.5GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00YJP	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A01FJP	2x Gold 5217 8C 115W 3.0GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00CJP	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A016JP	2x Gold 6240 18C 150W 2.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00DJP	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A018JP	2x Gold 6244 8C 150W 3.6GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00EJP	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide
7Y37A00VJP	2x Gold 6254 18C 200W 3.1GHz	8x 32GB 2933	930-8i	8x 2.5" / Open bay	I350-T2	7 (4x DW x16)	2x 2000W	Std	Slide

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

Processors

The SR670 supports two processors in the second-generation Intel Xeon Processor Scalable Family. Both processors must be installed.

The server supports the second-generation processor options that are listed in the following table.

Tip: The SR670 also supports first-generation Intel Xeon Scalable processors as described in a separate product guide, https://lenovopress.com/lp0923.

Topics in this section:

- Memory capacity of processors
- Processor features
- UEFI operating modes

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 or more per core

- 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)

Tip: Two processors are installed in the factory so there are no part numbers for field upgrades.

Table 8. Processor options

Feature code	Description
B4HS	Intel Xeon Silver 4210 10C 85W 2.2GHz Processor
B7N5	Intel Xeon Silver 4210R 10C 100W 2.4GHz Processor
B7N6	Intel Xeon Silver 4214R 12C 100W 2.4GHz Processor
BAZU	Intel Xeon Silver 4215R 8C 130W 3.2GHz Processor
B4HP	Intel Xeon Silver 4216 16C 100W 2.1GHz Processor
B4HN	Intel Xeon Gold 5215 10C 85W 2.5GHz Processor
B4P9	Intel Xeon Gold 5215L 10C 85W 2.5GHz Processor
B4P1	Intel Xeon Gold 5215M 10C 85W 2.5GHz Processor
B4HM	Intel Xeon Gold 5217 8C 115W 3.0GHz Processor
B4HL	Intel Xeon Gold 5218 16C 125W 2.3GHz Processor
BAZS	Intel Xeon Gold 5218R 20C 125W 2.1GHz Processor
B4HK	Intel Xeon Gold 5220 18C 125W 2.2GHz Processor
B7N9	Intel Xeon Gold 5220R 24C 150W 2.2GHz Processor
B5S1	Intel Xeon Gold 5222 4C 105W 3.8GHz Processor
BAZW	Intel Xeon Gold 6226R 16C 150W 2.9GHz Processor
B4HJ	Intel Xeon Gold 6230 20C 125W 2.1GHz Processor
BAZX	Intel Xeon Gold 6230R 26C 150W 2.1GHz Processor
B6CK	Intel Xeon Gold 6234 8C 130W 3.3GHz Processor
B6CJ	Intel Xeon Gold 6238 22C 140W 2.1GHz Processor
B6CR	Intel Xeon Gold 6238L 22C 140W 2.1GHz Processor
B6CM	Intel Xeon Gold 6238M 22C 140W 2.1GHz Processor
BAZL	Intel Xeon Gold 6238R 28C 165W 2.2GHz Processor
B4HH	Intel Xeon Gold 6240 18C 150W 2.6GHz Processor
B6CS	Intel Xeon Gold 6240L 18C 150W 2.6GHz Processor
B6CN	Intel Xeon Gold 6240M 18C 150W 2.6GHz Processor
BAZM	Intel Xeon Gold 6240R 24C 165W 2.4GHz Processor
B4HG	Intel Xeon Gold 6242 16C 150W 2.8GHz Processor
BAZN	Intel Xeon Gold 6242R 20C 205W 3.1GHz Processor
B4HF	Intel Xeon Gold 6244 8C 150W 3.6GHz Processor
B6PD	Intel Xeon Gold 6246 12C 165W 3.3GHz Processor
BAZP	Intel Xeon Gold 6246R 16C 205W 3.4GHz Processor
B4HE	Intel Xeon Gold 6248 20C 150W 2.5GHz Processor
BAZQ	Intel Xeon Gold 6248R 24C 205W 3.0GHz Processor

Feature code	Description
B4HC	Intel Xeon Gold 6252 24C 150W 2.1GHz Processor
B4HD	Intel Xeon Gold 6254 18C 200W 3.1GHz Processor
B96D	Intel Xeon Gold 6256 12C 205W 3.6GHz Processor
BAZR	Intel Xeon Gold 6258R 28C 205W 2.7GHz Processor
B4HB	Intel Xeon Platinum 8260 24C 165W 2.4GHz Processor
B4P7	Intel Xeon Platinum 8260L 24C 165W 2.4GHz Processor
B4NZ	Intel Xeon Platinum 8260M 24C 165W 2.4GHz Processor
B4HA	Intel Xeon Platinum 8268 24C 205W 2.9GHz Processor
B4H9	Intel Xeon Platinum 8270 26C 205W 2.7GHz Processor
B4H8	Intel Xeon Platinum 8276 28C 165W 2.2GHz Processor
B4P6	Intel Xeon Platinum 8276L 28C 165W 2.2GHz Processor
B4NY	Intel Xeon Platinum 8276M 28C 165W 2.2GHz Processor
B4H7	Intel Xeon Platinum 8280 28C 205W 2.7GHz Processor
B4P5	Intel Xeon Platinum 8280L 28C 205W 2.7GHz Processor
B4NX	Intel Xeon Platinum 8280M 28C 205W 2.7GHz Processor

Memory capacity of processors

Second-generation Xeon Scalable processors are limited to the amount of memory they can address, as follows:

- Processors with an L suffix (eg 8280L): Up to 4.5 TB per processor
- Processors with an M suffix (eg 8280M): Up to 2 TB per processor
- All other processors: Up to 1 TB per processor

The calculation is based on each processor individually, not the total memory installed in the server. For example, a configuration using 24x 32GB DIMMs per server is 12x 32 GB per processor, which is 384 GB per processor. This means that neither an M nor an L processor is required.

Tip: There are no *current* memory configurations of the SR670 that require an L-suffix or an M-suffix processor.

Processor features

The following table compares the features of the supported second-generation Intel Xeon processors.

Abbreviations used in the table:

- UPI: Ultra Path Interconnect
- TDP: Thermal Design Power
- FMA: Number of Intel AVX-512 Fused-Multiply Add (FMA) units
- HT: Hyper-Threading
- TB: Turbo Boost 2.0
- VT: Virtualization Technology (includes VT-x and VT-d)
- SST-PP: Speed Select Technology - Performance Profile
- DCPMM: DC Persistent Memory Module support
- RAS: Reliability, Availability, and Serviceability: Std = Standard, Adv = Advanced

The processors that support SST-PP offer three distinct operating points that are defined by a core count with a base speed associated with that core count. The operating point is selected during the boot process and cannot be changed at runtime.

Table 9. Processor specifications

CPU model	Cores / threads	Core speed (Base / TB max)	L3 cache*	Max memory speed	Max memory per CPU	UPI links & speed	FMA units	TDP	HT	TB	VT	SST-PP	DCPMM	RAS
Intel Xeon 4200 (Silver) processors														
4210	10 / 20	2.2 / 3.2 GHz	13.75 MB	2400 MHz	1 TB	2, 9.6 GT/s	1	85 W	Y	Y	Y	N	N	Std
4210R	10 / 20	2.4 / 3.2 GHz	13.75 MB	2400 MHz	1 TB	2, 9.6 GT/s	1	100 W	Y	Y	Y	N	N	Std
4214R	12 / 24	2.4 / 3.5 GHz	16.5 MB	2400 MHz	1 TB	2, 9.6 GT/s	1	100 W	Y	Y	Y	N	N	Std
4215R	8 / 16	3.2 / 4.0 GHz	11 MB	2400 MHz	1 TB	2, 9.6 GT/s	1	130 W	Y	Y	Y	N	Y	Std
4216	16 / 32	2.1 / 3.2 GHz	22 MB	2400 MHz	1 TB	2, 9.6 GT/s	1	100 W	Y	Y	Y	N	N	Std
Intel Xeon 5200 (Gold) processors														
5215	10 / 20	2.5 / 3.4 GHz	13.75 MB	2666 MHz	1 TB	2, 10.4 GT/s	1	85 W	Y	Y	Y	N	Y	Adv
5215M	10 / 20	2.5 / 3.4 GHz	13.75 MB	2666 MHz	2 TB	2, 10.4 GT/s	1	85 W	Y	Y	Y	N	Y	Adv
5215L	10 / 20	2.5 / 3.4 GHz	13.75 MB	2666 MHz	4.5 TB	2, 10.4 GT/s	1	85 W	Y	Y	Y	N	Y	Adv
5217	8 / 16	3.0 / 3.7 GHz	11 MB	2666 MHz	1 TB	2, 10.4 GT/s	1	115 W	Y	Y	Y	N	Y	Adv
5218	16 / 32	2.3 / 3.9 GHz	22 MB	2666 MHz	1 TB	2, 10.4 GT/s	1	125 W	Y	Y	Y	N	Y	Adv
5218R	20 / 40	2.1 / 4.0 GHz	27.5 MB	2666 MHz	1 TB	2, 10.4 GT/s	1	125 W	Y	Y	Y	N	Y	Adv
5220	18 / 36	2.2 / 3.9 GHz	24.75 MB	2666 MHz	1 TB	2, 10.4 GT/s	1	125 W	Y	Y	Y	N	Y	Adv
5220R	24 / 48	2.2 / 4.0 GHz	35.75 MB*	2666 MHz	1 TB	2, 10.4 GT/s	1	150 W	Y	Y	Y	N	Y	Adv
5222	4 / 8	3.8 / 3.9 GHz	16.5 MB*	2933 MHz	1 TB	2, 10.4 GT/s	2	105 W	Y	Y	Y	N	Y	Adv
Intel Xeon 6200 (Gold) processors														
6226R	16 / 32	2.9 / 3.9 GHz	22 MB	2933 MHz	1 TB	2, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6230	20 / 40	2.1 / 3.9 GHz	27.5 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	125 W	Y	Y	Y	N	Y	Adv
6230R	26 / 52	2.1 / 4.0 GHz	35.75 MB	2933 MHz	1 TB	2, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6234	8 / 16	3.3 / 4.0 GHz	24.75 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	130 W	Y	Y	Y	N	Y	Adv
6238	22 / 44	2.1 / 3.7 GHz	30.25 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	140 W	Y	Y	Y	N	Y	Adv
6238M	22 / 44	2.1 / 3.7 GHz	30.25 MB	2933 MHz	2 TB	3, 10.4 GT/s	2	140 W	Y	Y	Y	N	Y	Adv
6238L	22 / 44	2.1 / 3.7 GHz	30.25 MB	2933 MHz	4.5 TB	3, 10.4 GT/s	2	140 W	Y	Y	Y	N	Y	Adv
6238R	28 / 56	2.2 / 4.0 GHz	38.5 MB	2933 MHz	1 TB	2, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
6240	18 / 36	2.6 / 3.9 GHz	24.75 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6240M	18 / 36	2.6 / 3.9 GHz	24.75 MB	2933 MHz	2 TB	3, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6240L	18 / 36	2.6 / 3.9 GHz	24.75 MB	2933 MHz	4.5 TB	3, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6240R	24 / 48	2.4 / 4.0 GHz	35.75 MB*	2933 MHz	1 TB	2, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
6242	16 / 32	2.8 / 3.9 GHz	22 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv

CPU model	Cores / threads	Core speed (Base / TB max)	L3 cache*	Max memory speed	Max memory per CPU	UPI links & speed	FMA units	TDP	HT	TB	VT	SST-PP	DCPMM	RAS
6242R	20 / 40	3.1 / 4.1 GHz	35.75 MB*	2933 MHz	1 TB	2, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
6244	8 / 16	3.6 / 4.4 GHz	24.75 MB*	2933 MHz	1 TB	3, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6246	12 / 24	3.3 / 3.9 GHz	24.75 MB*	2933 MHz	1 TB	3, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
6246R	16 / 32	3.4 / 4.1 GHz	35.75 MB*	2933 MHz	1 TB	2, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
6248	20 / 40	2.5 / 3.9 GHz	27.5 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6248R	24 / 48	3.0 / 4.0 GHz	35.75 MB*	2933 MHz	1 TB	2, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
6252	24 / 48	2.1 / 3.7 GHz	35.75 MB*	2933 MHz	1 TB	3, 10.4 GT/s	2	150 W	Y	Y	Y	N	Y	Adv
6254	18 / 36	3.1 / 4.0 GHz	24.75 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	200 W	Y	Y	Y	N	Y	Adv
6256	12 / 24	3.6 / 4.5 GHz	33 MB*	2933 MHz	1 TB	2, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
6258R	28 / 56	2.7 / 4.0 GHz	38.5 MB	2933 MHz	1 TB	2, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
Intel Xeon 8200 (Platinum) processors														
8260	24 / 48	2.4 / 3.9 GHz	35.75 MB*	2933 MHz	1 TB	3, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
8260M	24 / 48	2.4 / 3.9 GHz	35.75 MB*	2933 MHz	2 TB	3, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
8260L	24 / 48	2.4 / 3.9 GHz	35.75 MB*	2933 MHz	4.5 TB	3, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
8268	24 / 48	2.9 / 3.9 GHz	35.75 MB*	2933 MHz	1 TB	3, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
8270	26 / 52	2.7 / 4.0 GHz	35.75 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
8276	28 / 56	2.2 / 4.0 GHz	38.5 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
8276M	28 / 56	2.2 / 4.0 GHz	38.5 MB	2933 MHz	2 TB	3, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
8276L	28 / 56	2.2 / 4.0 GHz	38.5 MB	2933 MHz	4.5 TB	3, 10.4 GT/s	2	165 W	Y	Y	Y	N	Y	Adv
8280	28 / 56	2.7 / 4.0 GHz	38.5 MB	2933 MHz	1 TB	3, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
8280M	28 / 56	2.7 / 4.0 GHz	38.5 MB	2933 MHz	2 TB	3, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv
8280L	28 / 56	2.7 / 4.0 GHz	38.5 MB	2933 MHz	4.5 TB	3, 10.4 GT/s	2	205 W	Y	Y	Y	N	Y	Adv

* L3 cache is 1.375 MB per core or larger. Processors with a larger L3 cache per core are marked with an *
** The Intel Xeon Gold 5218 and 5218B processors have similar specifications; however, they use different silicon designs and cannot be mixed in the same system.

UEFI operating modes

The SR670 offers preset operating modes that affect energy consumption and performance. These modes are a collection of predefined low-level UEFI settings that simplify the task of tuning the server to suit your business and workload requirements.

The following table lists the feature codes that allow you to specify the mode you wish to preset in the factory for CTO orders.

UK and EU customers: For compliance with the ERP Lot9 regulation, you should select feature BFYE. For some systems, you may not be able to make a selection, in which case, it will be automatically derived by the configurator.

Table 10. UEFI operating mode presets in DCSC

Feature code	Description
BFYB	Operating mode selection for: "Maximum Performance Mode"
BFYC	Operating mode selection for: "Minimal Power Mode"
BFYD	Operating mode selection for: "Efficiency Favoring Power Savings Mode"
BFYE	Operating mode selection for: "Efficiency - Favoring Performance Mode"

The preset modes for the SR670 are as follows:

- **Maximum Performance Mode** (feature BFYB): Achieves maximum performance but with higher power consumption and lower energy efficiency.
- **Minimal Power Mode** (feature BFYC): Minimize the absolute power consumption of the system.
- **Efficiency Favoring Power Savings Mode** (feature BFYD): Maximize the performance/watt efficiency with a bias towards power savings. This is the favored mode for SPECpower benchmark testing, for example.
- **Efficiency Favoring Performance Mode** (feature BFYE): Maximize the performance/watt efficiency with a bias towards performance. This is the favored mode for Energy Star certification, for example.

For details about these preset modes, and all other performance and power efficiency UEFI settings offered in the SR670, see the paper "Tuning UEFI Settings for Performance and Energy Efficiency on Intel Xeon Scalable Processor-Based ThinkSystem Servers", available from https://lenovopress.lenovo.com/lp1477.

Memory options

The SR670 with second-generation Intel Xeon Scalable processors uses Lenovo TruDDR4 memory operating at up to 2933 MHz. The server supports 8, 12, 16 or 24 DIMMs with the two processors installed. Each processor has six memory channels with two DIMMs per channel. The server supports a total of 1.5 TB of system memory (24x 64 GB RDIMMs).

With second-generation processors, the server supports these memory DIMMs:

- 2933 MHz DIMMs, that operate at 2933 MHz at 1 DIMM per channel, and at 2666 MHz at 2 DIMMs per channel
- 2933 MHz Performance+ DIMMs, that operate at 2933 MHz both at 1 DIMM per channel and 2 DIMMs per channel

The following table lists the memory options supported by the SR670 with second-generation processors.

Memory support for 1st Gen processors: The memory supported in the SR670 with 1st Gen processors (now withdrawn) is different that the DIMMs listed in the table below. See the Memory section of the following product guide for ordering information: https://lenovopress.lenovo.com/lp0923-thinksystem-sr670-server-xeon-sp-gen-1

Lenovo TruDDR4 memory uses the highest quality components that are sourced from Tier 1 DRAM suppliers and only memory that meets the strict requirements of Lenovo is selected. It is compatibility tested and tuned to maximize performance and reliability. From a service and support standpoint, Lenovo TruDDR4 memory automatically assumes the system warranty, and Lenovo provides service and support worldwide.

Table 11. 2933 MHz memory options

Part number	Feature code	Description	Maximum supported
2933 MHz RDIMMs			
4ZC7A08708	B4H2	ThinkSystem 16GB TruDDR4 2933MHz (2Rx8 1.2V) RDIMM	24 (12 per processor)
4ZC7A08709	B4H3	ThinkSystem 32GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	24 (12 per processor)
4ZC7A08710	B4H4	ThinkSystem 64GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	24 (12 per processor)
2933 MHz Performance+ RDIMMs			
4X77A12184	B5N6	ThinkSystem 16GB TruDDR4 Performance+ 2933MHz (2Rx8 1.2V) RDIMM	24 (12 per processor)
4X77A12185	B5N7	ThinkSystem 32GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	24 (12 per processor)

The following rules apply when selecting the memory configuration:

- The server architecturally supports RDIMMs, LRDIMMs and 3DS RDIMMs. UDIMMs are not supported.
- The SR670 server only supports four memory configurations:
  - 8 DIMMs, which are installed in DIMM slots 3, 5, 8, 10, 15, 17, 20, and 22.
  - 12 DIMMs, which are installed in DIMM slots 1, 3, 5, 8, 10, 12, 13, 15, 17, 20, 22, and 24.
  - 16 DIMMs, which are installed in DIMM slots 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, and 22
  - 24 DIMMs, installed in all slots.
- All DIMMs to be installed must be the same type and capacity.
- If the processor selected has a memory bus speed of less than 2933 MHz (eg 2400 MHz or 2666 MHz - see Processor features), then all DIMMs will operate at that lower speed, even though the DIMMs are rated for 2933 MHz.
- 2666 MHz memory options that are supported with the SR670 using second-generation Xeon processors
- Intel Optane DC Persistent Memory is not supported by the SR670

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 mirroring
- Memory rank sparing

If memory channel mirroring is used, then DIMMs must be installed in pairs or sets of three (minimum of one pair or set of three per processor), and all DIMMs in the pair or set of three 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 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 support 8x 2.5-inch drives. Currently, only SATA HDDs and SSDs are supported. You can mix drives in the same server, but not in the same array. Drives are all installed from the rear of the server. The server also supports one or two M.2 drives, installed in an M.2 adapter.

In this section:

Backplane and drive bays

The SR670 offers eight 2.5-inch hot-swap drive bays, located at the rear of the server. All eight drive bays are connected to a single backplane. The backplane supports SAS and SATA drives. SAS drives require the use of a supported SAS HBA or RAID controller.

The drive bays are numbered as shown in the following figure.

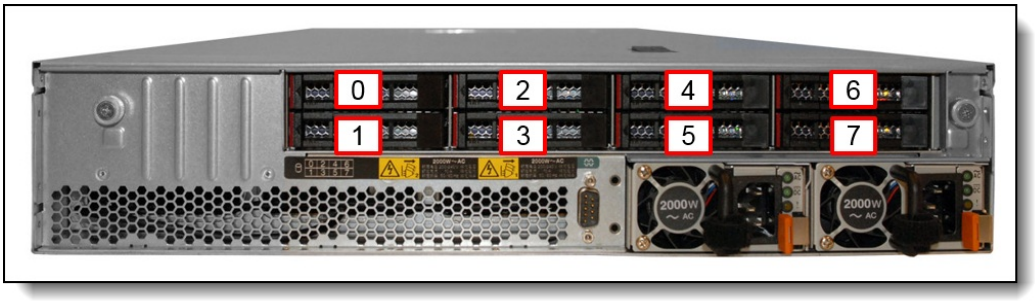

Figure 7. Drive bay numbering (rear of the server)

The drive bays support 6Gb SATA drives or 12Gb SAS drives. NVMe drives are not supported.

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 12. 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

Controllers for internal storage

The SR670 supports one of the following controllers to connect to the eight internal drive bays:

- SAS/SATA RAID adapter
- SAS HBA adapter
- Onboard SATA controller

The following table lists the supported adapters.

Table 13. Controllers for internal storage

Part number	Feature code	Description	Number of ports	Maximum supported
SAS/SATA HBA				
4Y37A16228	B5MR	ThinkSystem SR670 430-8i SAS/SATA HBA	8	1
RAID adapters				
4Y37A16225	B5MP	ThinkSystem SR670 RAID 530-8i PCIe Adapter	8	1
4Y37A16226	B5MQ	ThinkSystem SR670 RAID 730-8i 1GB Cache Adapter	8	1
4Y37A16227	B5DP	ThinkSystem SR670 RAID 930-8i 2GB Flash	8	1
4Y37A09728*	B8NY	ThinkSystem RAID 940-8i 4GB Flash PCIe Gen4 12Gb Adapter	8	1

* For field upgrades, also requires the ThinkSystem SR670 RAID 940 Upgrade Kit, 4X97A80366

For a comparison of the functions of the supported storage adapters, see the ThinkSystem RAID Adapter and HBA Reference:
https://lenovopress.com/lp1288-thinksystem-raid-adapter-and-hba-reference#sr670-support=SR670

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

When installing the RAID 940-8i 4GB Flash adapter as a field upgrade, you will also need to order the ThinkSystem SR670 RAID 940 Upgrade Kit as listed in the following table. This kit is not required for factory orders that include the RAID adapter, as the necessary cables will automatically be derived by the configurator.

Table 14. Field upgrades of the RAID 940-8i 4GB Flash adapter

Part number	Feature code	Description
4X97A80366	BM82	ThinkSystem SR670 RAID 940 Upgrade Kit • 1x Flash Power Module (supercap) • 1x Supercap holder for SR670 • 1x Supercap cable, 330mm • 1x Power cable • 1x SAS/SATA cable for RAID 940, 810mm

The onboard SATA controller onboard is integrated into the server chipset. An SFF-9402 OCulink x8 SATA connector routes the signals to the eight internal drive bays at the rear of the server. The SATA controller operates in either AHCI mode for JBOD support, or Intel RSTe mode for RAID support. In RSTe mode, Intel RAID features are accessible via XClarify Provisioning Manager (UEFI-based) where you can enabling RAID volumes of up to 8 drives. RAID levels 0, 1, 5, 10 are supported.

Virtualization support: The SATA ports of the onboard SATA controller can be used with virtualization hypervisors, including VMware ESXi, Linux KVM, Xen, and Microsoft Hyper-V Server, however support is limited to AHCI (non-RAID) mode. RSTe mode is not supported with virtualization hypervisors.

Internal drive options

The following tables list the drive options for internal storage of the server.

2.5-inch hot-swap drives:

- 2.5-inch hot-swap 12 Gb SAS HDDs
- 2.5-inch hot-swap 6 Gb SATA HDDs
- 2.5-inch hot-swap 24 Gb SAS SSDs
- 2.5-inch hot-swap 12 Gb SAS SSDs
- 2.5-inch hot-swap 6 Gb SATA SSDs

M.2 drives:

- M.2 SATA drives

M.2 drive support: The use of M.2 drives requires an additional adapter as described in the M.2 drives subsection.

SED support: The tables include a column to indicate which drives support SED encryption. The encryption functionality can be disabled if needed. Note: Not all SED-enabled drives have "SED" in the description.

Table 15. 2.5-inch hot-swap 12 Gb SAS HDDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap HDDs - 12 Gb SAS 10K				
7XB7A00024	AULY	ThinkSystem 2.5" 300GB 10K SAS 12Gb Hot Swap 512n HDD	No	8
7XB7A00025	AULZ	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD	No	8
7XB7A00027	AUM1	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	No	8

Table 16. 2.5-inch hot-swap 6 Gb SATA HDDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap HDDs - 6 Gb NL SATA				
7XB7A00036	AUUE	ThinkSystem 2.5" 1TB 7.2K SATA 6Gb Hot Swap 512n HDD	No	8
7XB7A00037	AUUJ	ThinkSystem 2.5" 2TB 7.2K SATA 6Gb Hot Swap 512e HDD	No	8

Table 17. 2.5-inch hot-swap 24 Gb SAS SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 24 Gb SAS - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A80340	BNW8	ThinkSystem 2.5" PM1655 800GB Mixed Use SAS 24Gb HS SSD	Support	8
4XB7A80341	BNW9	ThinkSystem 2.5" PM1655 1.6TB Mixed Use SAS 24Gb HS SSD	Support	8
4XB7A80342	BNW6	ThinkSystem 2.5" PM1655 3.2TB Mixed Use SAS 24Gb HS SSD	Support	8
4XB7A80343	BP3K	ThinkSystem 2.5" PM1655 6.4TB Mixed Use SAS 24Gb HS SSD	Support	8
2.5-inch hot-swap SSDs - 24 Gb SAS - Read Intensive/Entry/Capacity (<3 DWPD)				
4XB7A80322	BP3J	ThinkSystem 2.5" PM1653 15.36TB Read Intensive SAS 24Gb HS SSD	Support	8
4XB7A80323	BP3D	ThinkSystem 2.5" PM1653 30.72TB Read Intensive SAS 24Gb HS SSD	Support	8

Table 18. 2.5-inch hot-swap 12 Gb SAS SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 12 Gb SAS - Write Intensive/Performance (10+ DWPD)				
4XB7A83214	BR10	ThinkSystem 2.5" Nytro 3750 400GB Write Intensive SAS 12Gb HS SSD	Support	8
4XB7A83215	BR0Z	ThinkSystem 2.5" Nytro 3750 800GB Write Intensive SAS 12Gb HS SSD	Support	8
4XB7A83216	BR0Y	ThinkSystem 2.5" Nytro 3750 1.6TB Write Intensive SAS 12Gb HS SSD	Support	8
4XB7A83217	BR0X	ThinkSystem 2.5" Nytro 3750 3.2TB Write Intensive SAS 12Gb HS SSD	Support	8
4XB7A70006	BG07	ThinkSystem 2.5" Nytro 3732 400GB Performance SAS 12Gb Hot Swap SSD	No	8
4XB7A70005	BG06	ThinkSystem 2.5" Nytro 3732 800GB Performance SAS 12Gb Hot Swap SSD	No	8
4XB7A70007	BFZZ	ThinkSystem 2.5" Nytro 3732 800GB Performance SAS 12Gb Hot Swap SSD SED	Support	8
4XB7A70004	BG05	ThinkSystem 2.5" Nytro 3732 1.6TB Performance SAS 12Gb Hot Swap SSD	No	8
4XB7A70003	BG04	ThinkSystem 2.5" Nytro 3732 3.2TB Performance SAS 12Gb Hot Swap SSD	No	8
4XB7A10219	B4Y4	ThinkSystem 2.5" SS530 400GB Performance SAS 12Gb Hot Swap SSD	No	8
4XB7A10230	B4Y5	ThinkSystem 2.5" SS530 800GB Performance SAS 12Gb Hot Swap SSD	No	8
4XB7A10231	B4Y6	ThinkSystem 2.5" SS530 1.6TB Performance SAS 12Gb Hot Swap SSD	No	8
4XB7A10232	B4Y7	ThinkSystem 2.5" SS530 3.2TB Performance SAS 12Gb Hot Swap SSD	No	8
7N47A00124	AUMG	ThinkSystem 2.5" HUSMM32 400GB Performance SAS 12Gb Hot Swap SSD	No	8
2.5-inch hot-swap SSDs - 12 Gb SAS - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A17062	B8HU	ThinkSystem 2.5" PM1645a 800GB Mainstream SAS 12Gb Hot Swap SSD	No	8
4XB7A17063	B8J4	ThinkSystem 2.5" PM1645a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	No	8
4XB7A17064	B8JD	ThinkSystem 2.5" PM1645a 3.2TB Mainstream SAS 12Gb Hot Swap SSD	No	8
4XB7A17065	B8JA	ThinkSystem 2.5" PM1645a 6.4TB Mainstream SAS 12Gb Hot Swap SSD	No	8
4XB7A13653	B4A0	ThinkSystem 2.5" PM1645 800GB Mainstream SAS 12Gb Hot Swap SSD	No	8
4XB7A13654	B4A1	ThinkSystem 2.5" PM1645 1.6TB Mainstream SAS 12Gb Hot Swap SSD	No	8

Table 19. 2.5-inch hot-swap 6 Gb SATA SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 6 Gb SATA - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A82289	BQ21	ThinkSystem 2.5" 5400 MAX 480GB Mixed Use SATA 6Gb HS SSD	Support	8
4XB7A82290	BQ24	ThinkSystem 2.5" 5400 MAX 960GB Mixed Use SATA 6Gb HS SSD	Support	8
4XB7A82291	BQ22	ThinkSystem 2.5" 5400 MAX 1.92TB Mixed Use SATA 6Gb HS SSD	Support	8
4XB7A82292	BQ23	ThinkSystem 2.5" 5400 MAX 3.84TB Mixed Use SATA 6Gb HS SSD	Support	8
4XB7A17125	BA7Q	ThinkSystem 2.5" S4620 480GB Mixed Use SATA 6Gb HS SSD	No	8
4XB7A17126	BA4T	ThinkSystem 2.5" S4620 960GB Mixed Use SATA 6Gb HS SSD	No	8
4XB7A17127	BA4U	ThinkSystem 2.5" S4620 1.92TB Mixed Use SATA 6Gb HS SSD	No	8
4XB7A17128	BK7L	ThinkSystem 2.5" S4620 3.84TB Mixed Use SATA 6Gb HS SSD	No	8
4XB7A13633	B49L	ThinkSystem 2.5" S4610 240GB Mixed Use SATA 6Gb HS SSD	No	8
4XB7A13634	B49M	ThinkSystem 2.5" S4610 480GB Mixed Use SATA 6Gb HS SSD	No	8
4XB7A13635	B49N	ThinkSystem 2.5" S4610 960GB Mixed Use SATA 6Gb HS SSD	No	8
4XB7A13637	B49Q	ThinkSystem 2.5" S4610 3.84TB Mixed Use SATA 6Gb HS SSD	No	8
2.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7A82258	BQ1Q	ThinkSystem 2.5" 5400 PRO 240GB Read Intensive SATA 6Gb HS SSD	Support	8
4XB7A82259	BQ1P	ThinkSystem 2.5" 5400 PRO 480GB Read Intensive SATA 6Gb HS SSD	Support	8
4XB7A82260	BQ1R	ThinkSystem 2.5" 5400 PRO 960GB Read Intensive SATA 6Gb HS SSD	Support	8
4XB7A82261	BQ1X	ThinkSystem 2.5" 5400 PRO 1.92TB Read Intensive SATA 6Gb HS SSD	Support	8
4XB7A82262	BQ1S	ThinkSystem 2.5" 5400 PRO 3.84TB Read Intensive SATA 6Gb HS SSD	Support	8
4XB7A82263	BQ1T	ThinkSystem 2.5" 5400 PRO 7.68TB Read Intensive SATA 6Gb HS SSD	Support	8
4XB7A72438	BM8B	ThinkSystem 2.5" PM893 480GB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A72439	BM8A	ThinkSystem 2.5" PM893 960GB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A72440	BM89	ThinkSystem 2.5" PM893 1.92TB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A72441	BM88	ThinkSystem 2.5" PM893 3.84TB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A72442	BM87	ThinkSystem 2.5" PM893 7.68TB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A17072	B99D	ThinkSystem 2.5" S4520 240GB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A17101	BA7G	ThinkSystem 2.5" S4520 480GB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A17102	BA7H	ThinkSystem 2.5" S4520 960GB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A17103	BA7J	ThinkSystem 2.5" S4520 1.92TB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A17104	BK77	ThinkSystem 2.5" S4520 3.84TB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A17105	BK78	ThinkSystem 2.5" S4520 7.68TB Read Intensive SATA 6Gb HS SSD	No	8
4XB7A38271	BCTC	ThinkSystem 2.5" Multi Vendor 240GB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A38272	BCTD	ThinkSystem 2.5" Multi Vendor 480GB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A38273	BCTE	ThinkSystem 2.5" Multi Vendor 960GB Entry SATA 6Gb Hot Swap SSD	No	8

Part number	Feature code	Description	SED support	Max Qty
4XB7A38274	BCTF	ThinkSystem 2.5" Multi Vendor 1.92TB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A38275	BCTG	ThinkSystem 2.5" Multi Vendor 3.84TB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A17075	B8HV	ThinkSystem 2.5" 5300 240GB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A17076	B8JM	ThinkSystem 2.5" 5300 480GB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A17077	B8HP	ThinkSystem 2.5" 5300 960GB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A17078	B8J5	ThinkSystem 2.5" 5300 1.92TB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A17079	B8JP	ThinkSystem 2.5" 5300 3.84TB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A10153	B2X2	ThinkSystem 2.5" 5200 480GB Entry SATA 6Gb Hot Swap SSD	No	8
4XB7A10154	B2X3	ThinkSystem 2.5" 5200 960GB Entry SATA 6Gb Hot Swap SSD	No	8

Table 20. M.2 SATA drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7A82286	BQ1Z	ThinkSystem M.2 5400 PRO 240GB Read Intensive SATA 6Gb NHS SSD	Support	2
4XB7A82287	BQ1Y	ThinkSystem M.2 5400 PRO 480GB Read Intensive SATA 6Gb NHS SSD	Support	2
7N47A00130	AUUV	ThinkSystem M.2 128GB SATA 6Gbps Non-Hot Swap SSD	No	2

Internal backup units

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

Optical drives

The server supports the external USB optical drive listed in the following table.

Table 21. External optical drive

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

The drive is based on the Lenovo Slim DVD Burner DB65 drive and supports the following formats: DVD-RAM, DVD-RW, DVD+RW, DVD+R, DVD-R, DVD-ROM, DVD-R DL, CD-RW, CD-R, CD-ROM.

I/O expansion options

The server supports either:

- Up to 7 front-accessible PCIe slots with four double-wide GPU slots
- Up to 11 front-accessible PCIe slots with eight single-wide GPU slots

The slot count is based on the riser cards selected for the server, as listed in the table below. The selection of riser card is automatically selected when you select the Base feature code as listed in the Models section.

The following figures shows the location of the PCIe slots.

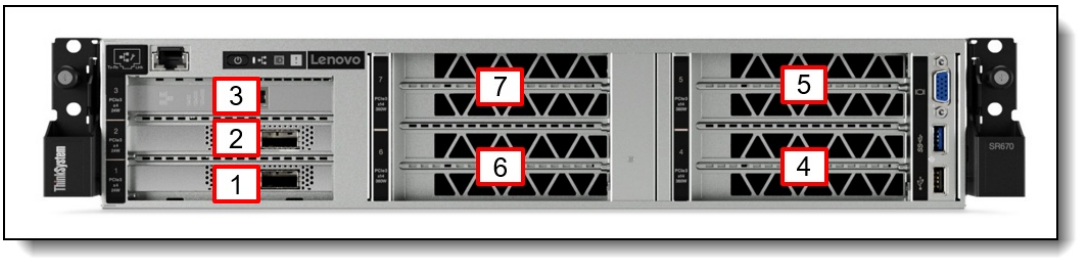

Figure 8. Location of the PCIe slots (front of the server) - four double-wide GPU slots

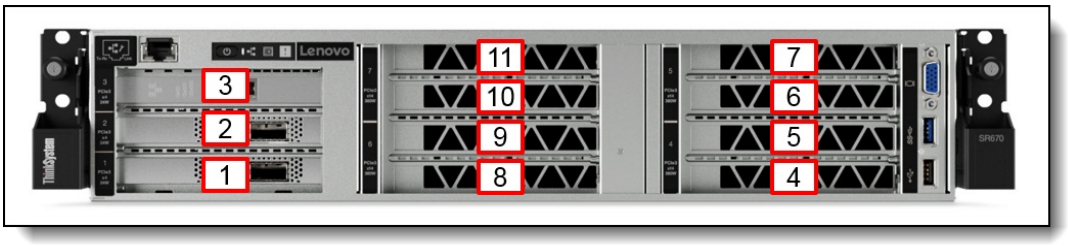

Figure 9. Location of the PCIe slots (front of the server) - eight single-wide GPU slots

Table 22. Riser card selections

Base feature code*	Riser Feature code	Description	Maximum supported
B3XX	B3Y8	ThinkSystem SR670 1-3 Slot PCIe x16 FHFL Riser Kit • Provides slots 1-3 when installed in the left bay • Provides two x16 slots 6 & 7 when installed in middle bay • Provides two x16 slots 4 & 5 when installed in the right bay	3
B3XY	B6BB	ThinkSystem SR670 4 Slot PCIe x8/x16 FHHL Riser Kit • Provides four x8 (x16 physical) slots 8-11 when installed in middle bay • Provides four x8 (x16 physical) slots 4-7 when installed in the right bay	2

* In the configurator, when you select the Base feature code, the Riser feature code is automatically derived based on the number of GPUs you configure. See the Models section for information about the Base feature codes.

The PCIe slots are as follows, including which processor that each slot is connected to:

- Slot 1: PCIe 3.0 x16 (full-height, half-length) (CPU 1)
- Slot 2: PCIe 3.0 x16 (full-height, half-length) (CPU 2)
- Slot 3: PCIe 3.0 x4 (full-height, half-length) (PCH from CPU 1)

With four double-wide GPU slots (riser card B3Y8, base B3XX):

- Slot 4: PCIe 3.0 x16 for a GPU (full-height, full-length, double-width) (CPU 1)
- Slot 5: PCIe 3.0 x16 for a GPU (full-height, full-length, double-width) (CPU 1)
- Slot 6: PCIe 3.0 x16 for a GPU (full-height, full-length, double-width) (CPU 2)
- Slot 7: PCIe 3.0 x16 for a GPU (full-height, full-length, double-width) (CPU 2)

With eight single-wide half-length GPU slots (riser card B6BB, base B3XY):

- Slot 4: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, half-length, single-width) (CPU 1)
- Slot 5: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, half-length, single-width) (CPU 1)

- Slot 6: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, full-length, single-width) (CPU 1)
- Slot 7: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, half-length, single-width) (CPU 1)
- Slot 8: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, full-length, single-width) (CPU 2)
- Slot 9: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, half-length, single-width) (CPU 2)
- Slot 10: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, half-length, single-width) (CPU 2)
- Slot 11: PCIe 3.0 x8 (x16 physical) for a GPU (full-height, half-length, single-width) (CPU 2)

Network adapters

The SR670 does not have an onboard Ethernet controller.

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

Table 23. Supported PCIe Network Adapters

Part number	Feature code	Description	Slots supported	Maximum supported
Gigabit Ethernet				
7ZT7A00534	AUZY	ThinkSystem I350-T2 PCIe 1Gb 2-Port RJ45 Ethernet Adapter	1,2,3	3
10 Gb Ethernet				
7ZT7A00537	AUKX	ThinkSystem Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter	1,2	2
100 Gb Ethernet / InfiniBand				
4C57A14177	B4R9	ThinkSystem Mellanox ConnectX-6 HDR100/100GbE QSFP56 1-port PCIe VPI Adapter	1,2	2
4C57A14178	B4RA	ThinkSystem Mellanox ConnectX-6 HDR100/100GbE QSFP56 2-port PCIe VPI Adapter	1,2	2
4XC7A08248	B8PP	ThinkSystem Mellanox ConnectX-6 Dx 100GbE QSFP56 2-port PCIe Ethernet Adapter	1,2	2
4C57A08980*	B0RM*	Mellanox ConnectX-5 EDR IB VPI Dual-port x16 PCIe 3.0 HCA	1,2	1
00MM960	ATRP	Mellanox ConnectX-4 2x100GbE/EDR IB QSFP28 VPI Adapter	1,2	2
200 Gb Ethernet / HDR InfiniBand				
4C57A15326	B4RC	ThinkSystem Mellanox ConnectX-6 HDR/200GbE QSFP56 1-port PCIe 4 VPI Adapter	1	1
4C57A14179	B4RB	ThinkSystem Mellanox HDR/200GbE 2x PCIe Aux Kit (installs with 4C57A15326 to provide the additional PCIe 3.0 x16 needed for HDR)	2	1
Omni Path Architecture				
00WE027	AU0B	Intel OPA 100 Series Single-port PCIe 3.0 x16 HFA	1,2	2

* Note: This ConnectX-5 adapter is only available to Lenovo customers through LeSI.

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 SR670 does not currently support any Fibre Channel adapters.

SAS adapters for external storage

The following table lists the SAS HBA supported by the SR670 server for use with external storage.

Table 24. 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, 2	1

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

The following table lists the specifications of the supported external SAS HBA.

Table 25. Comparison of external storage adapters

Feature	430-8e
Adapter type	HBA
Controller chip	LSI SAS3408
Host interface	PCIe 3.0 x8
Port interface	12 Gb SAS
Number of ports	8
Port connectors	2x Mini-SAS HD SFF8644
Drive interface	SAS/SATA
Drive type	HDD/SSD/SED*
Hot-swap drives	Yes
Maximum devices	1024
RAID levels	None
JBOD mode	Yes
Cache	None
CacheVault cache protection	None
Performance Accelerator (FastPath)	No
SSD Caching (CacheCade Pro 2.0)	No
SED support	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.

Flash storage adapters

The SR670 does not currently support any Flash Storage adapters.

GPU adapters

The SR670 supports the GPUs listed in the following table.

Table 26. GPU adapter support

Part number	Feature	Description	Slots supported	Maximum supported
Double-wide GPUs - require feature code B3Y8 riser cards				
4X67A13135	BEL5	ThinkSystem NVIDIA A100 40GB PCIe Passive GPU	4,5,6,7	4*
4X67A72593	BEL4	ThinkSystem NVIDIA A40 48GB PCIe Gen4 Passive GPU	4,5,6,7	4‡
4X67A72593	BQZQ	ThinkSystem NVIDIA A40 48GB PCIe Gen4 Passive GPU w/o CEC	4,5,6,7	4‡
4X67A76581	BJHG	ThinkSystem NVIDIA A30 24GB PCIe Gen4 Passive GPU	4,5,6,7	4
CTO only	BQZR	ThinkSystem NVIDIA A30 24GB PCIe Gen4 Passive GPU w/o CEC	4,5,6,7	4
4X67A13124	BB2E	ThinkSystem NVIDIA Tesla V100S 32GB PCIe Passive GPU	4,5,6,7	4
4X67A12088	B34S	ThinkSystem NVIDIA Tesla V100 32GB PCIe Passive GPU	4,5,6,7	4
4C57A09498	B1JY	ThinkSystem NVIDIA Tesla V100 16GB PCIe Passive GPU	4,5,6,7	4
4X67A65441	BCGR	ThinkSystem NVIDIA Quadro RTX 8000 48GB PCIe Passive GPU	4,5,6,7	4†
4X67A13125	BB2D	ThinkSystem NVIDIA Quadro RTX 6000 24GB PCIe Passive GPU	4,5,6,7	4
7C57A02888	B15U	ThinkSystem NVIDIA Tesla P40 24GB PCIe Passive GPU	4,5,6,7	4
4C57A16224	B5DN	ThinkSystem SR670 AMD Radeon Instinct MI25 16Gb PCIe Passive GPU	4,5,6,7	4
Single-wide GPUs - supported with either feature code B6BB or B3Y8 riser cards				
4X67A14926	B4YB	ThinkSystem NVIDIA Tesla T4 16GB PCIe Passive GPU	4-11	8

* The NVIDIA A100 GPU requires SR670 UEFI firmware Version 2.41 or later. See Support tip HT511162 for details.
† Only available via Special Bid or via Lenovo Scalable Infrastructure (LeSI). Select "AI & HPC – LeSI Solutions" in the DCSC configurator. See the LeSI product guide for details.
‡ The DisplayPort ports on the A40 are not supported when used in the SR670

Configuration notes:

- Some NVIDIA A Series GPUs are available as two feature codes, one with a CEC chip and one without a CEC chip (ones without the CEC chip have "w/o CEC" in the name). The CEC is a secondary Hardware Root of Trust (RoT) module that provides an additional layer of security, which can be used by customers who have high regulatory requirements or high security standards. NVIDIA uses a multi-layered security model and hence the protection offered by the primary Root of Trust embedded in the GPU is expected to be sufficient for most customers. The CEC defeatured products still offer Secure Boot, Secure Firmware Update, Firmware Rollback Protection, and In-Band Firmware Update Disable. Specifically, without the CEC chip, the GPU does not support Key Revocation or Firmware Attestation. CEC and non-CEC GPUs of the same type of GPU can be mixed in field upgrades.
- When fewer than the maximum number of GPUs is installed, you can specify in the CTO factory order how you want the GPUs installed in the slots:
  - Distributed GPU Configuration: Indicates that GPUs are populated as equally as possible between the two processors
  - Concentrated GPU Configuration: Indicates that GPUs should fully populate all slots connected to CPU 1 first, and then once those slots are consumed, install the slots connected to CPU 2.

For details about these GPUs, consult the ThinkSystem GPU Summary, availlable from:
https://lenovopress.com/lp0768-thinksystem-gpu-summary

For customers that purchase the AMD Radeon Instinct MI25 directly from AMD, the required power cable is not included with the GPU. To use a customer-supplied MI25 GPU with the SR670, order the cable listed in the following table, one for each GPU to be installed.

Table 27. Power cable for AMD GPU (customer-supplied GPU only)

Part number	Description
4Z57A26300	ThinkSystem SR670 PCIe 6-pin + PCIe 8-pin Power Adapter Cable

Note: This cable is only for a customer-supplied AMD Radeon Instinct MI25. Option part number 4C57A16224 already includes the cable. The cable is not required for any NVIDIA adapter.

Cooling

The server has six 60 mm simple-swap fans and all six fans are standard in all models. The server offers N+1 fan redundancy, meaning that one fan can fail and the server still operates normally in typical datacenter environments. However, if the ambient temperate is above 27°C and a fan failure occurs, the GPUs may be instructed by the system to enter an emergency power reduction state whereby GPU performance will be impacted.

Each power supply has an integrated fan.

Power supplies

The server includes two 2000W hot-swap redundant power supplies. Both power supplies are standard.

The power supplies form a redundant pair in all server configurations except when the quantity of 250W (or greater) GPUs is three or more.

In such configurations, in the event of a single power supply failure, by default the server will proactively throttle the performance of the GPUs. This setting is configurable in UEFI. See the SR670 Information Center for details:
https://pubs.lenovo.com/sr670/gpu_power_braking.html

Table 28. Power supply

Part number	Feature code	Description	Maximum supported	110V AC	220V AC	240V DC (China)
CTO only	B3YC	2000W Platinum (230V) Power Supply	2	No	Yes	No

Power cords

Line cords and rack power cables can be ordered as listed in the following table.

Table 29. 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
Line cords		
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

Part number	Feature code	Description
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
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
81Y2375	6317	2.8m, 10A/250V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2389	6531	4.3m, 10A/250V, 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
46M2592	A1RF	2.8m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord
4L67A08361	6373	4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord

Systems management

The SR670 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.

In this section:

- Local management
- Remote management
- Lenovo XClarity Provisioning Manager
- Lenovo XClarity Essentials
- Lenovo XClarity Administrator
- Lenovo XClarity Integrators

Local management

The SR670 offers a front operator panel with key LED status indicators, as shown in the following figure.

Note: The System Activity LED is not currently being used.

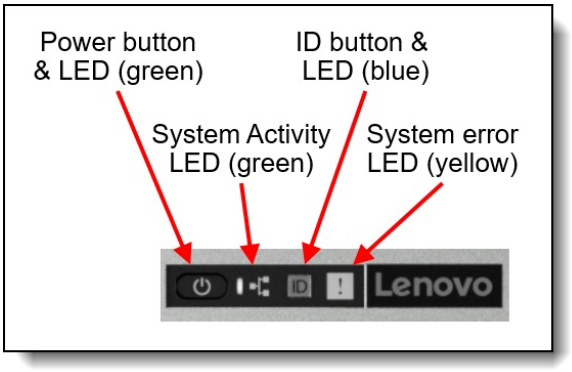

Figure 10. Front operator panel

Remote management

The server offers a dedicated RJ45 port at the rear of the server for remote management via the XClarity Controller management processor. The port supports 10/100/1000 Mbps speeds.

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 SNMP v1)
- Common Information Model (CIM-XML)
- Representational State Transfer (REST) support
- Redfish API Spec v1.0.2 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
- The server's serial port can be redirected and accessed remotely via IPMI or SSH via XClarity Controller

IPMI via the Ethernet port (IPMI over LAN) is supported, however it is disabled by default. For CTO orders you can specify whether you want to the feature enabled or disabled in the factory, using the feature codes listed in the following table.

Table 30. IPMI-over-LAN settings

Part number	Feature code	Description
CTO only	B7XZ	Disable IPMI-over-LAN (default)
CTO only	B7Y0	Enable IPMI-over-LAN

There are two XClarity Controller upgrades available for the server, Advanced and Enterprise.

Lenovo XClarity Controller Advanced adds the following remote control functions:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 23 bits per pixel, regardless of the system state
- Remotely accessing the server using the keyboard and mouse from a remote client
- Capturing blue-screen errors
- International keyboard mapping support
- LDAP-based authentication

Lenovo XClarity Controller Enterprise enables the following additional features:

- Boot Capture
- Remote mounting of CD-ROM (ISO) and diskette (IMG) files as virtual drives
- Virtual console collaboration - Ability for up to 6 remote users to be log into the remote session simultaneously
- Power capping

For configure-to-order (CTO), you can elect to have one of the following XCC functionality by selecting the appropriate XCC feature codes as listed in the following table:

- XCC Standard - select neither feature listed in the table
- XCC Advanced - select feature AVUT
- XCC Enterprise - select feature AUPW

Table 31. XClarity Controller Upgrades for configure-to-order

Feature code	Description
AVUT	ThinkSystem XClarity Controller Standard to Advanced Upgrade
AUPW	ThinkSystem XClarity Controller Standard to Enterprise Upgrade

The following table shows the field upgrades available for SR670 servers already deployed.

Table 32. XClarity Controller field upgrades

Part number	Feature code	Description
4L47A09132	AVUT	ThinkSystem XClarity Controller Standard to Advanced Upgrade (for servers that have XCC Standard)
4L47A09133	AVUU	ThinkSystem XClarity Controller Advanced to Enterprise Upgrade (for servers that have XCC Advanced)

Lenovo XClarity Provisioning Manager

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

LXPM 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 settings, 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 Administrator

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

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

Lenovo XClarity Administrator is an optional software component for the SR670. The software can be downloaded and used at no charge to discover and monitor the SR670 and to manage firmware upgrades.

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

The following table lists the Lenovo XClarity software license options.

Table 33. Lenovo XClarity Pro ordering information

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

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

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

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

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

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

Lenovo XClarity Integrators

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

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

Lenovo XClarity Integrators offer the following additional features:

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

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

Security

The server offers the following security features:

- Administrator and power-on password
- Trusted Platform Module (TPM) supporting TPM 2.0 (TPM 1.2 not supported)
- Optional Nationz TPM 2.0, available only in China

The server is NIST SP 800-147B compliant.

The Nationz TPM module is available only for China customers and is installed in a dedicated socket on the system board, as shown in Figure 4.

Table 34. Security features

Part number	Feature code	Description
None*	B22N	ThinkSystem Nationz Trusted Platform Module v2.0 (China customers only)

* Not available as a field upgrade. The component is configure to order only.

Intel Transparent Supply Chain

Add a layer of protection in your data center and have peace of mind that the server hardware you bring into it is safe authentic and with documented, testable, and provable origin.

Lenovo has one of the world's best supply chains, as ranked by Gartner Group, backed by extensive and mature supply chain security programs that exceed industry norms and US Government standards. Now we are the first Tier 1 manufacturer to offer Intel® Transparent Supply Chain in partnership with Intel, offering you an unprecedented degree of supply chain transparency and assurance.

To enable Intel Transparent Supply Chain for the Intel-based servers in your order, add the following feature code in the DCSC configurator, under the Security tab.

Table 35. Intel Transparent Supply Chain ordering information

Feature code	Description
BB0P	Intel Transparent Supply Chain

For more information on this offering, see the paper *Introduction to Intel Transparent Supply Chain on Lenovo ThinkSystem Servers*, available from https://lenovopress.com/lp1434-introduction-to-intel-transparent-supply-chain-on-thinksystem-servers.

Rack installation

The SR670 supports a slide rail kit, however a cable management arm is not available. The following table lists ordering information.

Table 36. Rack Kit ordering information

Option	Feature Code	Description
Rail slides		
CTO only*	B47V	ThinkSystem SR670 Slide Rail

* Only available as part of a configure-to-order (CTO) configuration. Not currently available as a separate option.

The following figure shows the Slide Rail kit.

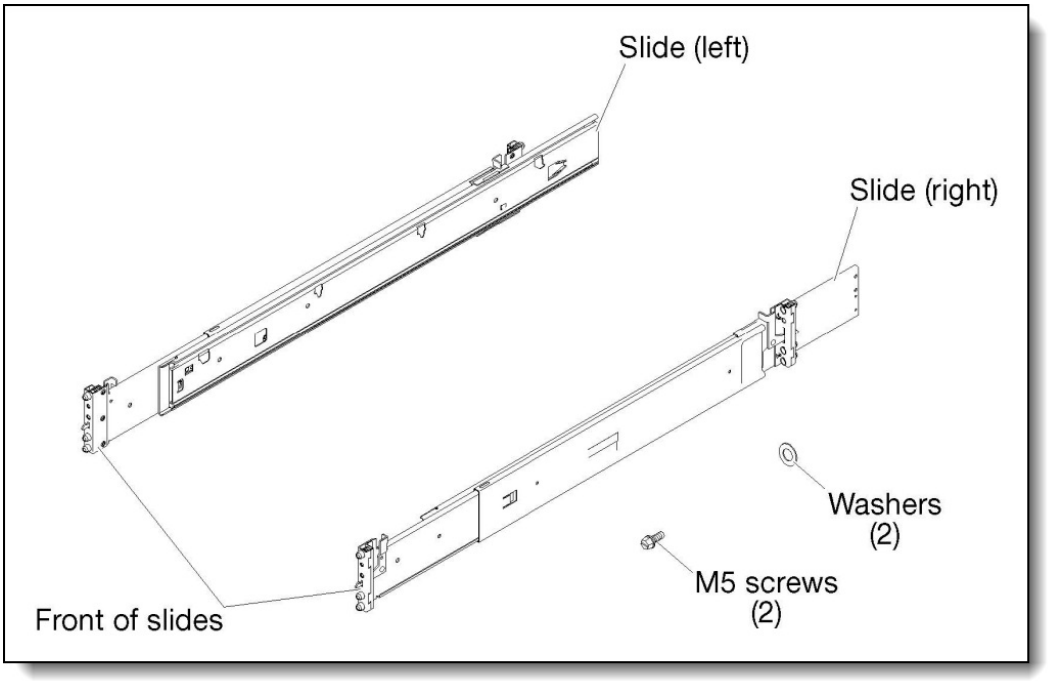

Figure 11. ThinkSystem SR670 Slide Rail

Operating system support

The SR670 with second-generation Intel Xeon Scalable processors supports the following operating systems:

- Microsoft Windows Server 2022
- Red Hat Enterprise Linux 7.5
- Red Hat Enterprise Linux 7.7
- Red Hat Enterprise Linux 7.8
- Red Hat Enterprise Linux 7.9
- Red Hat Enterprise Linux 8.1
- Red Hat Enterprise Linux 8.2
- Red Hat Enterprise Linux 8.3
- Red Hat Enterprise Linux 8.4
- Red Hat Enterprise Linux 8.5
- Red Hat Enterprise Linux 8.6
- Red Hat Enterprise Linux 8.7

- Red Hat Enterprise Linux 8.8
- Red Hat Enterprise Linux 8.9
- Red Hat Enterprise Linux 9.0
- Red Hat Enterprise Linux 9.1
- Red Hat Enterprise Linux 9.2
- Red Hat Enterprise Linux 9.3
- SUSE Linux Enterprise Server 12 SP5
- SUSE Linux Enterprise Server 12 Xen SP5
- SUSE Linux Enterprise Server 15 SP1
- SUSE Linux Enterprise Server 15 SP2
- SUSE Linux Enterprise Server 15 SP3
- SUSE Linux Enterprise Server 15 SP4
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 Xen SP1
- SUSE Linux Enterprise Server 15 Xen SP2
- SUSE Linux Enterprise Server 15 Xen SP3
- SUSE Linux Enterprise Server 15 Xen SP4
- SUSE Linux Enterprise Server 15 Xen SP5
- Ubuntu 22.04 LTS 64-bit
- VMware ESXi 7.0
- VMware ESXi 7.0 U1
- VMware ESXi 7.0 U2
- VMware ESXi 7.0 U3
- VMware ESXi 8.0
- VMware ESXi 8.0 U1
- VMware ESXi 8.0 U2
- VMware ESXi 8.0 U3

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=sr670-7y36-7y37-7y38-sp-gen-2

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

Table 37. VMware ESXi preload

Part number	Feature code	Description
CTO only	B88T	VMware ESXi 6.7 U3 (factory installed)
CTO only	BBZG	VMware ESXi 7.0 (Factory Installed)
CTO only	BE5E	VMware ESXi 7.0 U1 (Factory Installed)
CTO only	BHSR	VMware ESXi 7.0 U2 (Factory Installed)
CTO only	BMEY	VMware ESXi 7.0 U3 (Factory Installed)
CTO only	BMT5	VMware ESXi 8.0 (Factory Installed)

Physical and electrical specifications

The SR670 has the following overall physical dimensions, excluding components that extend outside the standard chassis, such as EIA flanges, front security bezel (if any), and power supply handles:

- Width: 448 mm (17.6 inches)
- Height: 87 mm (3.4 inches)
- Depth: 906 mm (35.7 inches)

The following table lists the detailed dimensions. See the figure below for the definition of each dimension.

Table 38. Detailed dimensions

Dimension	Description
488 mm	X_a = Width, to the outsides of the front EIA flanges
435 mm	X_b = Width, to the rack rail mating surfaces
448 mm	X_c = Width, to the outer most chassis body feature
87 mm	Y_a = Height, from the bottom of chassis to the top of the chassis
N/A	Z_a = Depth, from the rack flange mating surface to the rearmost I/O port surface
872 mm	Z_b = Depth, from the rack flange mating surface to the rearmost feature of the chassis body
899 mm	Z_c = Depth, from the rack flange mating surface to the rearmost feature such as power supply handle
34 mm	Z_d = Depth, from the forwardmost feature on front of EIA flange to the rack flange mating surface
21 mm	Z_e = Depth, from the front of security bezel (if applicable) or forwardmost feature to the rack flange mating surface

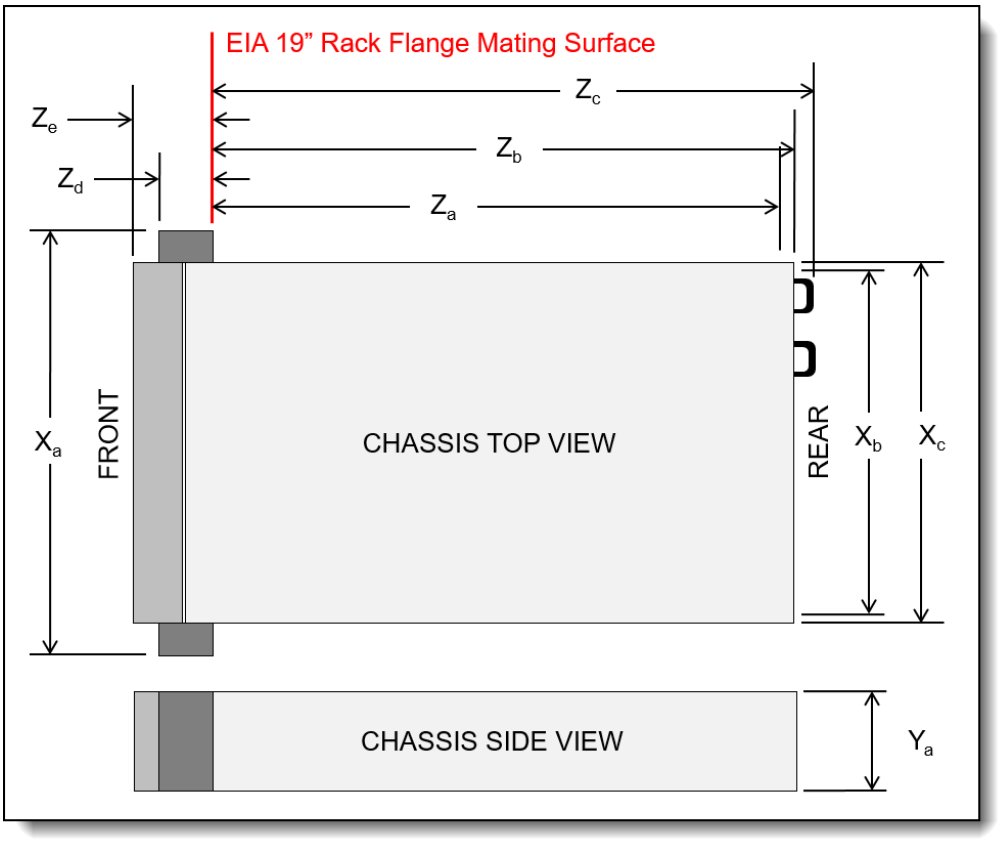

Figure 12. Server dimensions

The shipping (cardboard packaging) dimensions of the SR670 are as follows:

- Width: 592 mm (23.3 inches)
- Height: 292 mm (11.5 inches)
- Depth: 1095 mm (43.1 inches)

Weight:

- 32 kg (71.9 lb) depending on the specific configuration

Electrical specifications:

- Input voltage
  - 200 - 240 (nominal) V AC, 50 Hz or 60 Hz
- With 2000 W AC power supplies:
  - 200 - 240 (nominal) V AC; 50 Hz or 60 Hz; 9.9 A
  - Input kilovolt-amperes (kVA) (approximately):
    - Minimum configuration: 0.746 kVA
    - Maximum configuration: 2.04 kVA

Operating environment

The ThinkSystem SR670 server complies with ASHRAE Class A2 specifications.

Temperature and humidity

The server is supported in the following environment:

- Air temperature:
  - Operating: ASHRAE 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)
  - Server off: 5°C to 45°C (41°F to 113°F)
  - Shipment/storage: -40°C to 70°C (-40°F to 158°F)
- Maximum altitude: 5000 m (16,400 ft)
- Relative Humidity (non-condensing):
  - Operating: ASHRAE A2, 8% to 80%; maximum dew point: 21°C (70°F)
  - Shipment/storage: 5% to 95%

For any of the following processors, full performance cannot be guaranteed and processor throttling may occur when the ambient temperature is above 27°C or when a fan failure event occurs:

- Intel Xeon Gold 6242R
- Intel Xeon Gold 6246R
- Intel Xeon Gold 6248R
- Intel Xeon Gold 6258R

Heat/thermal emissions

The server generates the following heat:

- Heat/thermal output:
  - Minimum configuration: 2544 BTU/hr, 746W
  - Maximum configuration: 6963 BTU/hr, 2042W

Acoustic noise emissions

The server has the following acoustic noise emissions declaration:

- Sound power, idling: 7.0 bels
- Sound power, operating (typical workload): 7.5 bels
- Sound power, operating (maximum workload): 8.5 bels

Notes regarding noise levels:

- These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296.
- The declared acoustic noise levels are based on specified configurations, which may change slightly depending on configuration/conditions.
- Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation.

The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation, the size, materials, and configuration of the room, the noise levels from other equipment, the room ambient temperature, and employees' location in relation to the equipment. Further, compliance with such government regulations also depends upon a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. Lenovo recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

Shock and vibration

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: 23 kg - 31 kg: 35 G for 152 in./sec velocity change across 6 surfaces

Particulate contamination

Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might damage the system that might cause the system to malfunction or stop working altogether.

The following specifications indicate the limits of particulates that the system can tolerate:

- Reactive gases:
  - The copper reactivity level shall be less than 200 Angstroms per month (Å/month)
  - The silver reactivity level shall be less than 200 Å/month
- Airborne particulates:
  - The room air should be continuously filtered with MERV 8 filters.
  - Air entering a data center should be filtered with MERV 11 or preferably MERV 13 filters.
  - The deliquescent relative humidity of the particulate contamination should be more than 60% RH
  - Environment must be free of zinc whiskers

For additional information, see the Specifications section of the documentation for the server, available from the Lenovo Documents site, https://pubs.lenovo.com/

Warranty upgrades and post-warranty support

The SR670 has a 1-year or 3-year warranty based on the machine type of the system. It is also available without any warranty.

- 7Y36 - 1 year warranty
- 7Y37 - 3 year warranty
- 7Y38 - No warranty

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

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

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

Services

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

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

In this section:

Lenovo Advisory Services

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

- **Assessment Services**

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

- **Design Services**

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

Lenovo Plan & Design Services

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

Lenovo Deployment, Migration, and Configuration Services

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

- **Deployment Services for Storage and ThinkAgile**

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

- **Hardware Installation Services**

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

- **DM/DG File Migration Services**

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

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

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

- **Factory Integrated Services**

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

Lenovo Support Services

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

- **Premier Support for Data Centers**

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

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

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

- **Committed Service Repair (CSR)**

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

- **Multivendor Support Services (MVS)**

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

- **Keep Your Drive (KYD)**

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

- **Technical Account Manager (TAM)**

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

- **Enterprise Software Support (ESS)**

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

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

Lenovo Managed Services

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

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

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

Lenovo Sustainability Services

- **Asset Recovery Services**

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

- **CO2 Offset Services**

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

- **Lenovo Certified Refurbished**

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

Lenovo TruScale

Lenovo TruScale XaaS is your set of flexible IT services that makes everything easier. Streamline IT procurement, simplify infrastructure and device management, and pay only for what you use – so your business is free to grow and go anywhere.

Lenovo TruScale is the unified solution that gives you simplified access to:

- The industry's broadest portfolio – from pocket to cloud – all delivered as a service
- A single-contract framework for full visibility and accountability
- The global scale to rapidly and securely build teams from anywhere
- Flexible fixed and metered pay-as-you-go models with minimal upfront cost
- The growth-driving combination of hardware, software, infrastructure, and solutions – all from one single provider with one point of accountability.

For information about Lenovo TruScale offerings that are available in your region, contact your local Lenovo sales representative or business partner.

Regulatory compliance

The SR670 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
- UL/IEC 62368-1
- CSA C22.2 No. 60950-1
- 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)
- IEC 62368-1 (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)

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.

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

Table 39. External drive enclosures

Model	Description
4587HC1	Lenovo Storage D1212 Disk Expansion Enclosure (2U enclosure with 12x LFF drive bays)
4587HC2	Lenovo Storage D1224 Disk Expansion Enclosure (2U enclosure with 24x SFF drive bays)
6413HC1	Lenovo Storage D3284 High Density Expansion Enclosure (5U enclosure with 84x LFF drive bays)
7DAHCTO1WW	Lenovo ThinkSystem D4390 Direct Attached Storage (4U enclosure with 90x LFF drive bays)

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

- Lenovo Storage D1212 and D1224
  http://lenovopress.lenovo.com/lp0512
- Lenovo Storage D3284
  http://lenovopress.lenovo.com/lp0513
- Lenovo ThinkSystem D4390
  https://lenovopress.lenovo.com/lp1681

Top-of-rack Ethernet switches

The PCIe slots in the SR670 are all front-accessible. This means that top-of-rack networking switches would normally be installed at the front of the rack and all switches would have front-to-rear airflow (Opposite Port Side Exhaust or oPSE).

The server supports the top-of-rack Ethernet switches that are listed in the following table. These switches have front-to-rear (reverse) airflow for use with servers where the networking ports are at the front of the server.

Table 40. Top-of-rack switches

Part number	Description
1 Gb top-of-rack switches	
7Y810012WW	Lenovo ThinkSystem NE0152T RackSwitch (Front to Rear)
715952F	Lenovo RackSwitch G8052 (Front to Rear)
10 Gb top-of-rack switches	
7159A2X	Lenovo ThinkSystem NE1032 RackSwitch (Front to Rear)
7159B2X	Lenovo ThinkSystem NE1032T RackSwitch (Front to Rear)
7159C2X	Lenovo ThinkSystem NE1072T RackSwitch (Front to Rear)
715964F	Lenovo RackSwitch G8264 (Front to Rear)
7159DFX	Lenovo RackSwitch G8264CS (Front to Rear)
7159CFV	Lenovo RackSwitch G8272 (Front to Rear)
7159GR5	Lenovo RackSwitch G8296 (Front to Rear)
7159BF7	Lenovo RackSwitch G8124E (Front to Rear)
25 Gb top-of-rack switches	
7159E2X	Lenovo ThinkSystem NE2572 RackSwitch (Front to Rear)
40 Gb top-of-rack switches	
7159BFX	Lenovo RackSwitch G8332 (Front to Rear)
100 Gb top-of-rack switches	
7159D2X	Lenovo ThinkSystem NE10032 RackSwitch (Front to Rear)

For more information, see the list of Product Guides in the Top-of-rack switches 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: https://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

If desired, switches with traditional air flow (rear to front) can also be used, with such switches installed at the rear of the rack and cables routed to the front of the rack to connect to the network ports of the SR670 server.

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

Table 41. Ethernet LAN switches

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

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

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

Uninterruptible power supply units

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

Table 42. Uninterruptible power supply units

Part number	Description
Rack-mounted or tower UPS units - 200-240VAC	
7DD5A002WW	RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC)
55941KX	RT1.5kVA 2U Rack or Tower UPS (200-240VAC)
55942KX	RT2.2kVA 2U Rack or Tower UPS (200-240VAC)
7DD5A005WW	RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)
55943KX	RT3kVA 2U Rack or Tower UPS (200-240VAC)
7DD5A007WW	RT5kVA 3U Rack or Tower UPS-G2 (200-240VAC)
55945KX	RT5kVA 3U Rack or Tower UPS (200-240VAC)
7DD5A008WW	RT6kVA 3U Rack or Tower UPS-G2 (200-240VAC)
55946KX	RT6kVA 3U Rack or Tower UPS (200-240VAC)
55948KX	RT8kVA 6U Rack or Tower UPS (200-240VAC)
7DD5A00AWW	RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)
55949KX	RT11kVA 6U Rack or Tower UPS (200-240VAC)
55943KT†	ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55943LT†	ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55946KT†	ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)
5594XKT†	ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)
Rack-mounted or tower UPS units - 380-415VAC	
55948PX	RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55949PX	RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)

† Only available in China and the Asia Pacific market.

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

Power distribution units

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

Table 43. Power distribution units

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
0U Basic PDUs															
4PU7A93176	C0QH	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93169	C0DA	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93177	C0QJ	0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93170	CBVF	0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
00YJ776	ATZY	0U 36 C13/6 C19 24A 1 Phase PDU	N	Y	Y	N	N	N	N	N	N	Y	Y	Y	N
00YJ779	ATZX	0U 21 C13/12 C19 48A 3 Phase PDU	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
00YJ777	ATZZ	0U 36 C13/6 C19 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y
00YJ778	AU00	0U 21 C13/12 C19 32A 3 Phase PDU	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y
0U Switched and Monitored PDUs															
4PU7A93181	C0QN	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU v2 (60A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
4PU7A93174	CBVJ	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU (60A derated)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93178	C0QK	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93171	C0D8	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93182	C0QP	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93175	C0CS	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93180	C0QM	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93173	CBVH	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93179	C0QL	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU v2 (30A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
4PU7A93172	CBVG	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU(30A derated)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
00YJ783	AU04	0U 12 C13/12 C19 Switched and Monitored 48A 3 Phase PDU	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
00YJ781	AU03	0U 20 C13/4 C19 Switched and Monitored 24A 1 Phase PDU	N	N	Y	N	Y	N	Y	N	N	Y	Y	Y	N
00YJ782	AU02	0U 18 C13/6 C19 Switched and Monitored 32A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
00YJ780	AU01	0U 20 C13/4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
1U Switched and Monitored PDUs															
4PU7A90808	C0D4	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 ETL	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7A81117	BNDV	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - ETL	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7A90809	C0DE	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A81118	BNDW	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU – CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A90810	C0DD	1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7A77467	BLC4	1U 18 C19/C13 Switched and Monitored 80A 3P Delta PDU	N	N	N	N	N	N	N	N	N	Y	N	Y	N
4PU7A90811	C0DC	1U 12 C19/C13 Switched and monitored 32A 3P WYE PDU V2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A77468	BLC5	1U 12 C19/C13 switched and monitored 32A 3P WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A90812	C0DB	1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7A77469	BLC6	1U 12 C19/C13 switched and monitored 60A 3P Delta PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
46M4002	5896	1U 9 C19/3 C13 Switched and Monitored DPI PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4004	5894	1U 12 C13 Switched and Monitored DPI PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4003	5897	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4005	5895	1U 12 C13 Switched and Monitored 60A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U C13 Enterprise PDUs (12x IEC 320 C13 outlets)															
39M2816	6030	DPI C13 PDU+	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8941	6010	Enterprise C13 PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U C19 Enterprise PDUs (6x IEC 320 C19 outlets)															
39Y8948	6060	Enterprise C19 PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
39Y8923	6061	Enterprise C19 3 phase PDU (60a)	N	N	Y	N	N	N	Y	N	N	N	Y	Y	N
1U Front-end PDUs (3x IEC 320 C19 outlets)															
39Y8938	6002	DPI 30amp/125V Front-end PDU with NEMA L5-30P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8939	6003	DPI 30amp/250V Front-end PDU with NEMA L6-30P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8934	6005	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8940	6004	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd connector	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
39Y8935	6006	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd connector	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U NEMA PDUs (6x NEMA 5-15R outlets)															
39Y8905	5900	DPI 100-127v PDU with Fixed Nema L5-15P line cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Line cords for 1U PDUs that ship without a line cord															
40K9611	6504	4.3m, 32A/380-415V, EPDU/IEC 309 3P+N+G 3ph wye (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	4.3m, 32A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	4.3m, 63A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	4.3m, 30A/208V, EPDU to NEMA L6-30P (US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9615	6501	4.3m, 60A/208V, EPDU to IEC 309 2P+G (US) Line Cord	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
40K9617	6505	4.3m, 32A/230V, Souriau UTG to AS/NZS 3112 (Aus/NZ) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9618	6506	4.3m, 32A/250V, Souriau UTG Female to KSC 8305 (S. Korea) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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

Rack cabinets

The following table lists the supported rack cabinets.

Table 44. Rack cabinets

Model	Description
7D6DA007WW	ThinkSystem 42U Onyx Primary Heavy Duty Rack Cabinet (1200mm)
7D6DA008WW	ThinkSystem 42U Pearl Primary Heavy Duty Rack Cabinet (1200mm)
7D6EA009WW	ThinkSystem 48U Onyx Primary Heavy Duty Rack Cabinet (1200mm)
7D6EA00AWW	ThinkSystem 48U Pearl Primary Heavy Duty Rack Cabinet (1200mm)
1410O42	Lenovo EveryScale 42U Onyx Heavy Duty Rack Cabinet
1410P42	Lenovo EveryScale 42U Pearl Heavy Duty Rack Cabinet
1410O48	Lenovo EveryScale 48U Onyx Heavy Duty Rack Cabinet
1410P48	Lenovo EveryScale 48U Pearl Heavy Duty Rack Cabinet

For specifications about these racks, see the Lenovo Rack Cabinet Reference, available from:
https://lenovopress.com/lp1287-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.

Table 45. KVM console

Part number	Description
Consoles	
4XF7A84188	ThinkSystem 18.5" LCD console (with US English keyboard)
4XF7A73009	ThinkSystem 18.5" LCD console (with US English keyboard)
17238BX	1U 18.5" Standard Console (without keyboard - see the next table)

The following table lists the keyboards supported with the 1U 18.5" Standard Console (now withdrawn).

Note: These keyboards are not supported with the ThinkSystem 18.5" LCD Console.

Table 46. Keyboards for 1U 18.5" Standard Console

Part number	Description
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 with 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

The following table lists the available KVM switches and the options that are supported with them.

Table 47. KVM switches and options

Part number	Description
KVM Console switches	
1754D1T	ThinkSystem Digital 2x1x16 KVM Switch (DVI video output port)
1754A1T	ThinkSystem Analog 1x8 KVM Switch (DVI video output port)
1754D2X	Global 4x2x32 Console Manager (GCM32)
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
Cables for ThinkSystem Digital and Analog KVM Console switches	
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
Cables for GCM and LCM Console switches	
43V6147	Single Cable USB Conversion Option (UCO)
39M2895	USB Conversion Option Pack
46M5383	Virtual Media Conversion Option Gen2 (VCO2)
46M5382	Serial Conversion Option (SCO)

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

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Related publications and links

For more information, see these resources:

- Lenovo ThinkSystem SR670 product page:
  https://www.lenovo.com/us/en/data-center/servers/racks/Thinksystem-SR670/p/77XX7SRSR67
- 3D Interactive Tour of the SR670:
  https://lenovopress.com/lp0944-3d-tour-thinksystem-sr670
- Lenovo ThinkSystem SR670 product publications:
  https://pubs.lenovo.com/sr670
  - Quick Start
  - Rack Installation Guide
  - Setup Guide
  - Hardware Maintenance Manual
  - Messages and Codes Reference
- ServerProven hardware compatibility:
  http://www.lenovo.com/us/en/serverproven

Related product families

Product families related to this document are the following:

- 2-Socket Rack Servers
- High Performance Computing
- ThinkSystem SR670 Server

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