Lenovo ThinkSystem SR680a V4 Server
Product Guide

The Lenovo ThinkSystem SR680a V4 is a high-performance 8U system equipped with dual Intel Xeon 6 processors and eight NVIDIA B300 HGX GPUs. Designed for air cooling, it is purpose-built for Generative AI workloads, offering advanced GPU-to-GPU communication and fast interconnects between GPUs, CPUs, and networking. Developed entirely in-house by Lenovo, the server delivers exceptional modularity, thermal efficiency, and reliability.

Suggested uses: AI workloads including modeling, training, simulation, rendering, financial tech, and scientific research

Figure 1. Lenovo ThinkSystem SR680a V4

Did you know?

The SR680a V4 with integrated NVIDIA HGX B300 GPUs is purpose-built for advanced AI. With the latest Intel Xeon 6 processors and integrated NVIDIA GPUs, NVIDIA NVLink, NVIDIA ConnectX-8 networking, and a fully accelerated software stack, the SR680a V4 is ideal for AI and complex simulations that use massive datasets.

As a premier accelerated scale-up platform with up to 11x more inference performance than the previous GPU generation, the SR680a V4 is designed for the most demanding generative AI, data analytics, and HPC workloads.

Key features

The SR680a V4 is designed for use in air-cooled data centers that require maximum GPU performance for AI workloads. Outstanding reliability, availability, and serviceability (RAS) and high-efficiency design can improve your business environment and can help save operational costs.

Performance

The following features boost performance, improve scalability and reduce costs:

- Supports two Intel Xeon 6700-series processors with Performance-cores (P-cores)
  - Up to 86 cores and 172 threads
  - Core speeds of up to 2.7 GHz
  - TDP ratings of up to 350 W
- Eight high-performance onboard NVIDIA GPUs with high-speed interconnects
  - Eight NVIDIA B300 1100W GPUs with 270 GB HBM3e memory per GPU
- Support for DDR5 memory DIMMs to maximize the performance of the memory subsystem:
  - Up to 32 DDR5 memory DIMMs, 16 DIMMs per processor
  - 8 memory channels per processor (2 DIMMs per channel)
  - Supports 1 DIMM per channel operating at 6400 MHz
  - Supports 2 DIMMs per channel operating at 5200 MHz
  - Using 128GB RDIMMs, the server supports up to 4TB of system memory
- Eight integrated ConnectX-8 800Gb/s network controllers with GPU Direct support
- Four PCIe 5.0 x16 FHHL slots for network adapters
- One dedicated OCP 3.0 slot supporting a variety of Ethernet network adapters. A simple-swap mechanism with a thumbscrew and pull-tab enables tool-less installation and removal of the adapter. The adapter supports shared BMC network sideband connectivity to enable out-of-band systems management.
- Supports up to 8x PCIe 5.0 NVMe drives for high-speed internal storage. The use of NVMe drives maximizes drive I/O performance, in terms of throughput, bandwidth, and latency.
- Supports two front-mounted hot-swap M.2 NVMe drives with integrated RAID support for operating system boot functions

Availability and serviceability

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

- Designed to run 24 hours a day, 7 days a week
- The server uses ECC memory and supports memory RAS features including Single Device Data Correction (SDDC, also known as Chipkill), Patrol/Demand Scrubbing, Bounded Fault, DRAM Address Command Parity with Replay, DRAM Uncorrected ECC Error Retry, On-die ECC, ECC Error Check and Scrub (ECS), and Post Package Repair.
- The server offers hot-swap drives for greater system uptime.
- Two NVMe M.2 drives with integrated RAID support which enables the two M.2 drives to be configured as a redundant pair.
- The server has up to eight hot-swap redundant power supplies with N+1 redundancy
- The server has 21x hot-swap redundant fans to cool all components:
  - 6x front-mounted fans for the CPU, memory and rear slots subsystem
  - 15x rear-mounted fans for the drive bays and GPU subsystem
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (NVMe SSDs, M.2 storage), fans, power supplies, server ambient and subcomponent temperatures. Alerts can be surfaced through the XClarity Controller to managers such as Lenovo XClarity Administrator, VMware vCenter, and Microsoft System Center. These proactive alerts let you take appropriate actions in advance of possible failure, thereby increasing server uptime and application availability.

- The built-in XClarity Controller 3 (XCC3) 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 supports diagnostics and can save service data to a USB key drive or remote CIFS share folder for troubleshooting and reduce service time.
- Auto restart in the event of a momentary loss of AC power (based on power policy setting in the XClarity Controller service processor)
- An integrated diagnostics panel with LCD display provides more detailed diagnostics by displaying all error messages and VPD data needed for a service call, thereby aiding with problem resolution and system uptime.
- Support for the XClarity Administrator Mobile app running on a supported smartphone and connected to the server through the service-enabled USB port, enables additional local systems management functions.
- Three-year or one-year customer-replaceable unit and onsite limited warranty, 9 x 5 next business day. Optional service upgrades are available.

Manageability and security

Systems management features simplify local and remote management:

- The server includes XClarity Controller 3 (XCC3) to monitor server availability. Includes XCC3 Premier which provides remote control (keyboard video mouse) functions, support for the mounting of remote media files (ISO and IMG image files), boot capture and power capping. XCC3 Premier also offers additional features such as Neighbor Groups, System Guard, a CNSA-compliant security mode, a FIPS 140-3-compliant mode, and enhanced NIST 800-193 support.
- Dedicated RJ45 port at the front of the server for remote management using standard management protocols
- Lenovo XClarity software tools (XClarity One, XClarity Administrator, XClarity Orchestrator) offer comprehensive hardware management capabilities that help to increase uptime, reduce costs and improve productivity through advanced server management capabilities.
- UEFI-based Lenovo XClarity Provisioning Manager, accessible from F1 during boot, provides system inventory information, graphical UEFI Setup, platform update function, operating system installation function, and diagnostic functions.
- Support for Lenovo XClarity Energy Manager which captures real-time power and temperature data from the server and provides automated controls to lower energy costs.
- An integrated industry-standard Unified Extensible Firmware Interface (UEFI) enables improved setup, configuration, and updates, and simplifies error handling.
- Support for industry standard management protocols, IPMI 2.0, SNMP 3.0, Redfish REST API, serial console via IPMI
- An integrated hardware Trusted Platform Module (TPM) supporting TPM 2.0 enables advanced cryptographic functionality, such as digital signatures and remote attestation.
- Administrator and power-on passwords help protect from unauthorized access to the server.
- 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.
- Supports Secure Boot to ensure only a digitally signed operating system can be used.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.

Energy efficiency

The following energy-efficiency features help save energy, reduce operational costs, and increase energy availability:

- Energy-efficient planar components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Titanium certifications
- Optional Lenovo XClarity Energy Manager provides advanced data center power notification and analysis to help achieve lower heat output and reduced cooling needs.

Comparing the SR680a V4 to the SR680a V3

The ThinkSystem SR680a V4 improves on the previous generation SR680a V3, as summarized in the following table.

Table 1. Comparing the SR680a V4 to the previous generation SR680a V3

Feature	SR680a V3	SR680a V4	Benefits
Chassis	• 8U 19-inch rack-mount server	• 8U 19-inch rack-mount server	• Installs in standard data center configurations
Processor	• 2x 5th Gen Intel Xeon Scalable Processors • Up to 64 cores and 128 threads • TDP up to 350W	• 2x Intel Xeon 6700-series processors with Performance cores (P-cores) • up to 86 cores and 172 threads • TDP up to 350W	• Significant increase in cores per processor • Increased performance • Consolidation of more apps on same number of servers, reducing costs
Memory	• DDR5 memory operating up to 5600 MHz • 8 channels per CPU • 32 DIMMs (16 per processor), 2 DIMMs per channel • Supports RDIMMs • Up to 4TB of system memory using 128GB DIMMs	• DDR5 memory operating up to 6400 MHz • 8 channels per CPU • 32 DIMMs (16 per processor), 2 DIMMs per channel • Supports RDIMMs • Up to 4TB of system memory using 128GB DIMMs	• Support for new memory technologies • 1.7x increased memory bandwidth
GPU support	• 8x NVIDIA HGX B200 SXM Modules • or 8x NVIDIA HGX H200 SXM Modules • or 8x NVIDIA HGX H100 SXM Modules	• 8x NVIDIA HGX B300 SXM Modules	• SR680a V4 supports the latest NVIDIA GPUs • Integrated NVLink direct connectivity between all GPUs
Internal storage	• 16x 2.5-inch hot-swap drive bays • NVMe drives • 2x Internal M.2 with VROC RAID 1 (non-hot-swap) • PCIe 4.0 and PCIe 5.0 NVMe drive support	• 8x 2.5-inch hot-swap drive bays • NVMe drives • 2x front hot-swap M.2 with integrated RAID 1 • PCIe 5.0 NVMe drive support	• Flexible storage offerings • NVMe drives for high-performance storage • Hot-swap M.2 to maximize server uptime

Feature	SR680a V3	SR680a V4	Benefits
Networking	• 8x PCIe Gen5 x16 FHHL slots for adapters (GPU Direct) • 2x PCIe Gen5 x16 FHHL slots for adapters	• 8x OSFP connectors, connected to integrated CX8 switches • 4x PCIe Gen5 x16 FHHL slots for adapters • 1x OCP slot (PCIe Gen5 x16)	• Integrated ConnectX-8 switches for high-speed networking between GPUs and CPUs • Additional network adapter slots for User/Control Plane • OCP slot for increased networking ports
Front ports	• 1x VGA (B200 systems) or mini DisplayPort video (H100/H200 systems) • 1x USB 3 (5 Gb/s) + 1x USB 2 (H100/H200 systems) or 2x USB 3 (5 Gb/s) (B200 systems)	• 1x VGA video port • 4x USB 3 ports (5 Gb/s) • 1x 1GbE for dedicated management	• All ports are front-accessible • Dedicated RJ45 Ethernet management network port for remote management
Rear ports	• 1x VGA video (H100/H200 systems) • 2x USB 3 (5 Gb/s) (H100/H200 systems) • 1x 1GbE for dedicated management	• None	• All ports are front-accessible
Management and security	• Integrated XClarity Controller 2 • Support for full XClarity toolset including XClarity Administrator • Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT)	• Integrated XClarity Controller 3 • Support for full XClarity toolset including XClarity Administrator • Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT)	• New XCC3 offers improved management capabilities including OpenBMC support • Same system management tool with previous generation • Silicon-level security solution
Power	• 8x 3200W hot-swap power supplies • Titanium level power efficiency • N+N redundancy • Active-Standby mode	• 8x 3200W CRPS Premium hot-swap power supplies • Titanium level power efficiency • N+1 redundancy • Active-Standby mode	• Higher capacity power supplies to support high-powered components • Support Industrial CRPS form factor PSUs

Components and connectors

The following figure shows the front of the server. The server offers 8x front-accessible OSFP interfaces with GPU Direct connections for high-speed networking. The server also has 4x PCIe 5.0 x16 slots and 8x hot-swap PCIe 5.0 NVMe drives for internal storage.

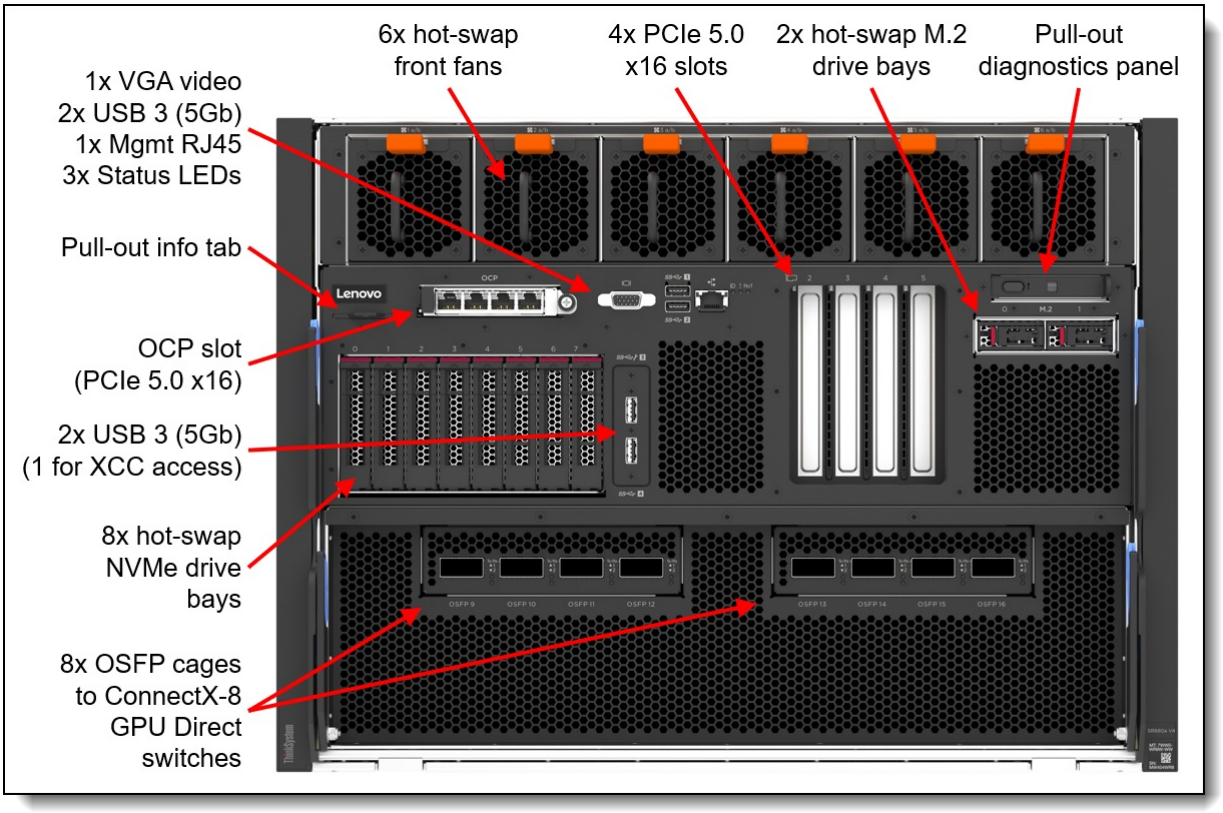

Figure 2. Front view of the ThinkSystem SR680a V4

For details on front-accessible integrated diagnostics panel, see the Local management section.

The following figure shows the components visible from the rear of the server.

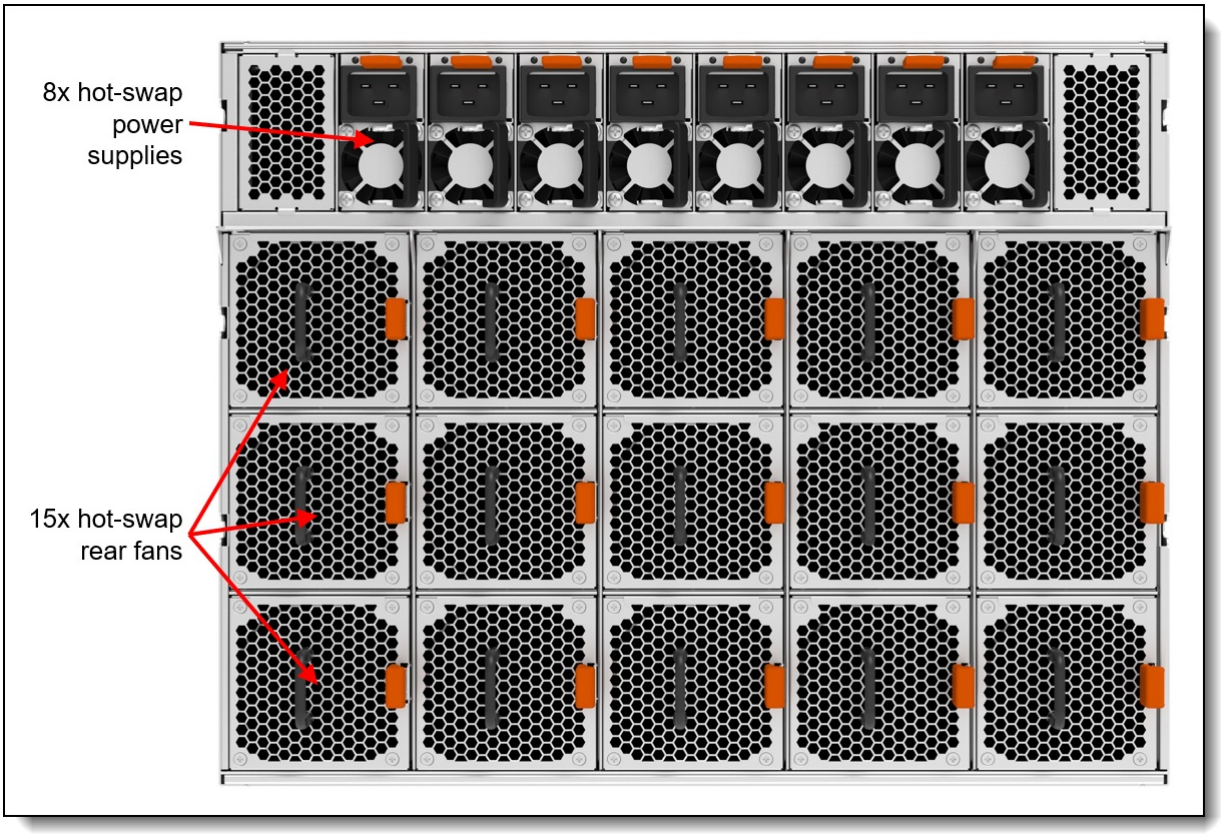

Figure 3. Rear view of the ThinkSystem SR680a V4

System architecture

The following figure shows the architectural block diagram of the SR680a V4, showing the major components and their connections.

The server has eight GPUs and eight OSFP interfaces, all connected to NVIDIA ConnectX-8 switches using PCIe 6.0 x16 links. Each GPU is connected to all other GPUs using NVLink connections, each link with 128 GB/s bidirectional bandwidth. The server also supports 8 NVMe drives, each connected to a PCIe switch using a PCIe 5.0 x4 link.

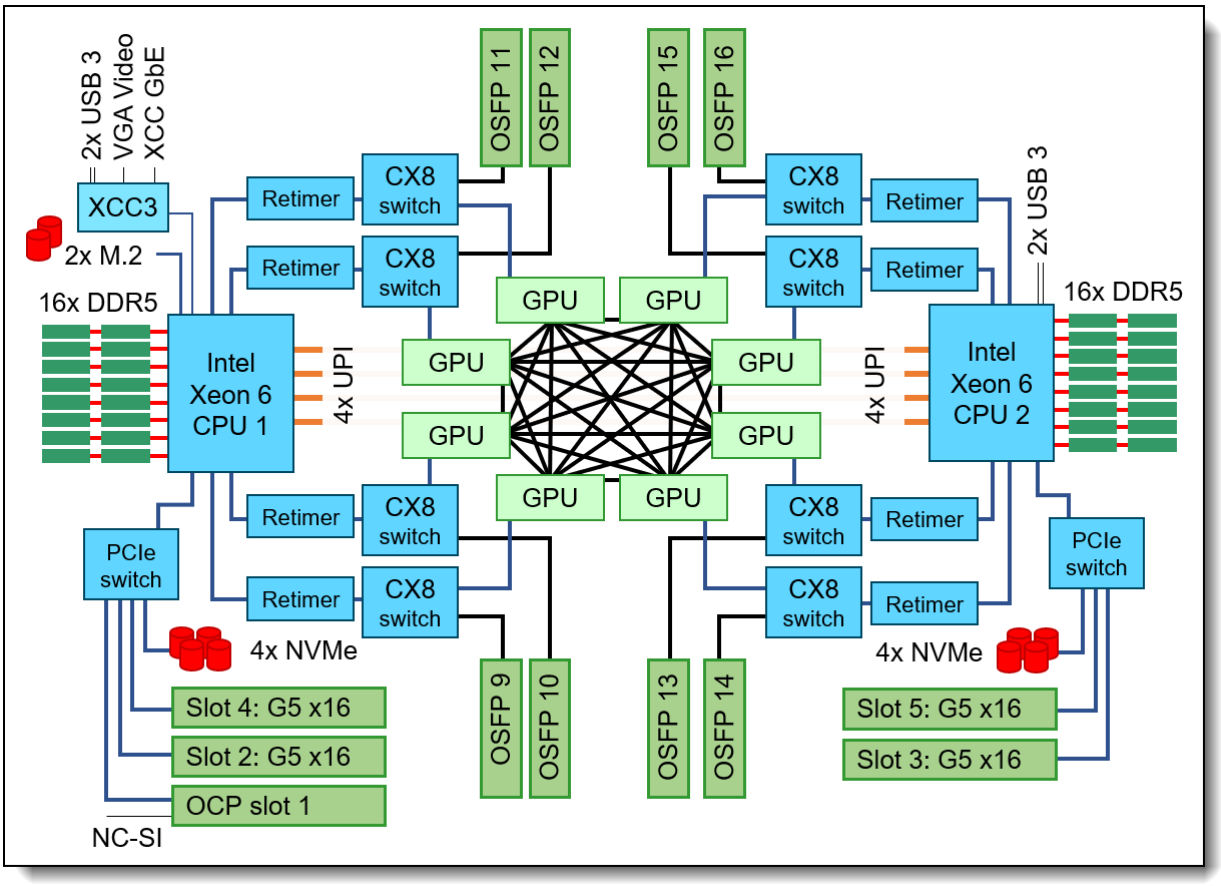

Figure 4. SR680a V4 system architectural block diagram

Standard specifications

The following table lists the standard specifications.

Table 2. Standard specifications

Components	Specification
Machine types	7DMK - 3 year warranty
Form factor	8U rack.
Processor	Two Intel Xeon 6700P-series processors (formerly codenamed "Granite Rapids"). Supports processors up to 86 cores and 172 threads, core speeds of up to 2.7 GHz, and TDP ratings of up to 350 W.
Chipset	None. Integrated into the processor
GPUs	NVIDIA HGX B300 NVL8 8-GPU complex

Components	Specification
Memory	32 DIMM slots with two processors (16 DIMM slots per processor). Each processor has 8 memory channels, with 2 DIMMs per channel (DPC). Lenovo TruDDR5 RDIMMs are supported. RDIMMs operate at up to 6400 MHz at 1 DPC and up to 5200 MHz at 2 DPC.
Memory maximum	Up to 4TB by using 32x 128GB RDIMMs
Memory protection	ECC, SDDC (for x4-based memory DIMMs), ADDDC (for x4-based memory DIMMs), and memory mirroring.
Disk drive bays	8x 2.5-inch hot-swap drive bays, supporting PCIe 5.0 NVMe drives.
OS boot drives	Support for two M.2 hot-swap drives with integrated RAID support for OS boot and data storage functions. Located at the front of the server.
Maximum internal storage	122.88TB using 8x 15.36TB 2.5-inch NVMe SSDs
Storage controller	Onboard NVMe (Non-RAID)
Network interfaces	8x OSFP 800 Gb/s interfaces with GPU Direct support, located at the front of the server
PCI Expansion slots	4x PCIe 5.0 x16 FHHL slots 1x OCP slot with PCIe 5.0 x16 host interface Slots are located at the front of the server
Ports	Front: 4x USB 3 (5 Gb/s) port (one also for XCC local management), 1x VGA video port, 1x RJ-45 1GbE systems management port for XCC remote management. Rear: None.
Cooling	6x front-mounted dual-rotor fans for the CPU and storage subsystem, N+1 redundant. 15x rear-mounted dual-rotor fans for the GPU subsystem, N+1 redundant. One fan integrated in each power supply. Front-to-rear airflow.
Power supply	Eight hot-swap redundant AC power supplies with up to N+1 redundancy. 80 PLUS Titanium certification. 3200 W AC power supplies requiring 220 V AC supply.
Video	Embedded graphics with 16 MB memory with 2D hardware accelerator, integrated into the XClarity Controller 3 management controller. Front Mini DisplayPort video port. Maximum resolution is 1920x1200 at 60Hz.
Hot-swap parts	Drives, power supplies, and fans.
Systems management	Integrated Diagnostics Panel with status LEDs and pull-out LCD display. XClarity Controller 3 (XCC3) embedded management based on the ASPEED AST2600 baseboard management controller (BMC). Dedicated front Ethernet port for XCC3 remote access for management. XClarity Administrator, XClarity One, and XClarity Orchestrator for centralized infrastructure management, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. Includes XCC3 Premier to enable remote control functions and other features.
Security features	Power-on password, administrator's password, Root of Trust module supporting TPM 2.0 and Platform Firmware Resiliency (PFR).
Operating systems supported	Red Hat Enterprise Linux, Ubuntu Server. See the Operating system support section for specifics.
Limited warranty	Three-year customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.

Components	Specification
Dimensions	Width: 447 mm (17.6 in.), height: 351 mm (13.8 in.), depth: 924 mm (36.3 in.). See Physical and electrical specifications for details.
Weight	Maximum: 116 kg (256 lbs)

Models

ThinkSystem SR680a V4 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Topics in this section:

- CTO models
- Base feature codes

CTO models

ThinkSystem SR680a V4 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Preconfigured server models may also be available for the SR680a V4, 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 SR680a V4 server.

Table 3. Base CTO models

Machine Type/Model	Description
7DMKCTO1WW	ThinkSystem SR680a V4 - 3 Year Warranty

Base feature codes

Models of the SR680a V4 are defined based on the GPUs selected, as listed in the following table.

Table 4. Chassis base feature codes

Feature code	Description
CBAD	ThinkSystem SR680a V4 B300 GPU Base

Processors

The SR680a V4 supports Intel Xeon 6700-series processors with P-cores (formerly "Granite Rapids SP" or GNR-SP). The server supports two processors. Configurations of one processor are not supported.

Topics in this section:

Processor options

The following table lists the Intel Xeon 6 processors with P-cores that are supported by the SR680a V4.

Table 5. Intel Xeon 6 P-core processor support

Part number	Feature code	SKU	Description	Maximum quantity
Intel Xeon 6700-series with P-cores				
CTO only	C5R3	6740P	Intel Xeon 6740P 48C 270W 2.1GHz Processor	2
CTO only	C5R8	6747P	Intel Xeon 6747P 48C 330W 2.7GHz Processor	2
CTO only	C5R1	6760P	Intel Xeon 6760P 64C 330W 2.2GHz Processor	2
CTO only	C5QY	6767P	Intel Xeon 6767P 64C 350W 2.4GHz Processor	2
CTO only	CC06	6776P	Intel Xeon 6776P 64C 350W 2.3GHz Processor	2
CTO only	C5QM	6787P	Intel Xeon 6787P 86C 350W 2.0GHz Processor	2

Processor features

Processors supported by the SR680a V4 include embedded accelerators to add even more processing capability:

- QuickAssist Technology (Intel QAT)

  Help reduce system resource consumption by providing accelerated cryptography, key protection, and data compression with Intel QuickAssist Technology (Intel QAT). By offloading encryption and decryption, this built-in accelerator helps free up processor cores and helps systems serve a larger number of clients.

- Intel Dynamic Load Balancer (Intel DLB)

  Improve the system performance related to handling network data on multi-core Intel Xeon Scalable processors. Intel Dynamic Load Balancer (Intel DLB) enables the efficient distribution of network processing across multiple CPU cores/threads and dynamically distributes network data across multiple CPU cores for processing as the system load varies. Intel DLB also restores the order of networking data packets processed simultaneously on CPU cores.

- Intel Data Streaming Accelerator (Intel DSA)

  Drive high performance for storage, networking, and data-intensive workloads by improving streaming data movement and transformation operations. Intel Data Streaming Accelerator (Intel DSA) is designed to offload the most common data movement tasks that cause overhead in data center-scale deployments. Intel DSA helps speed up data movement across the CPU, memory, and caches, as well as all attached memory, storage, and network devices.

- Intel In-Memory Analytics Accelerator (Intel IAA)

  Run database and analytics workloads faster, with potentially greater power efficiency. Intel In-Memory Analytics Accelerator (Intel IAA) increases query throughput and decreases the memory footprint for in-memory database and big data analytics workloads. Intel IAA is ideal for in-memory databases, open source databases and data stores like RocksDB, Redis, Cassandra, and MySQL.

The processors also support a separate and encrypted memory space, known as the SGX Enclave, for use by Intel Software Guard Extensions (SGX). The size of the SGX Enclave supported varies by processor model. Intel SGX offers hardware-based memory encryption that isolates specific application code and data in memory. It allows user-level code to allocate private regions of memory (enclaves) which are designed to be protected from processes running at higher privilege levels.

The following table summarizes the key features of the Intel Xeon 6 P-core processors that are supported in the SR680a V4.

Table 6. Intel 6 P-core processor features

CPU model	Die	Cores/ threads	Core speed (Base / TB max)	L3 cache	Mem. chan	Max RDIMM speed	Max MRDIMM speed	UPI 2.0 links & speed	PCIe lanes	TDP	Accelerators				SGX Enclave Size
											QAT	DLB	DSA	IAA	
Intel Xeon 6700-series with P-cores															
6740P	XCC	48 / 96	2.1GHz / 3.8 GHz	288 MB	8	6400 MHz	None	4 / 24 GT/s	88	270W	2	2	2	2	128GB
6747P	XCC	48 / 96	2.7GHz / 3.9 GHz	288 MB	8	6400 MHz	8000 MHz	4 / 24 GT/s	88	330W	4	4	4	4	512GB
6760P	XCC	64 / 128	2.2GHz / 3.8 GHz	320 MB	8	6400 MHz	None	4 / 24 GT/s	88	330W	2	2	2	2	128GB
6767P	XCC	64 / 128	2.4GHz / 3.9 GHz	336 MB	8	6400 MHz	8000 MHz	4 / 24 GT/s	88	350W	4	4	4	4	512GB
6776P	XCC	64 / 128	2.3GHz / 3.9 GHz	336 MB	8	6400 MHz	8000 MHz	4 / 24 GT/s	88	350W	2	2	2	2	512GB
6787P	XCC	86 / 172	2.0GHz / 3.8 GHz	336 MB	8	6400 MHz	8000 MHz	4 / 24 GT/s	88	350W	4	4	4	4	512GB

UEFI operating modes

The SR680a V4 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.

Table 7. UEFI operating mode presets in DCSC

Feature code	Description
C3JB	ThinkSystem General Computing - Power Efficiency (default)
C3JA	ThinkSystem General Computing - Peak Frequency
C3J9	ThinkSystem General Computing - Max Performance
C3J8	ThinkSystem High Performance Computing (HPC)
C9U8	ThinkSystem Low Latency
C9UA	ThinkSystem Virtualization - Power Efficiency
C9U9	ThinkSystem Virtualization - Max Performance
C9U7	ThinkSystem DataBase - Transaction Processing
CCVW	ThinkSystem Database Memory

The preset modes for the SR680a V4 are as follows:

- **ThinkSystem General Computing - Power Efficiency** (feature C3JB): This workload profile optimizes the performance per watt efficiency with a bias towards performance. This workload profile is analogous to “Efficiency – Favor Performance” operating mode on ThinkSystem V3 servers. This profile contains settings for ENERGY STAR® and ERP Lot9 compliance.
- **ThinkSystem General Computing - Peak Frequency** (feature C3JA): This workload profile is defined by the requirement to drive the highest core frequencies out of a processor across a subset of cores available – not for all cores active. This workload profile benefits workloads requiring either high per core and / or overall CPU package frequency. These workloads may have variable resource demands, are relatively insensitive to overall platform latency, and are generally CPU clock constrained. Tuning a system for highest possible core frequency may mean allowing inactive cores to transfer in and out of sleep states (C-states), which allows active cores to run at higher frequency for different durations of time. Allowing cores to go into low power states allows for higher per core frequency but can introduce “jitter” in the systems clock frequency.
- **ThinkSystem General Computing - Max Performance** (feature C3J9): This workload profile maximizes the absolute performance of the system without regard for power savings. Power savings features are disabled. This operating mode should be used when an application can sustain work across all cores simultaneously and is Non-uniform Memory Access (NUMA) aware.
- **ThinkSystem High Performance Computing (HPC)** (feature C3J8): This profile is for customers running large-scale scientific and engineering workloads. These environments tend to be clustered environments where each node performs at maximum utilization for extended periods of time, and the application is Non-Uniform Memory Access (NUMA) aware.
- **ThinkSystem Low Latency** (feature C9U8): This workload profile seeks to minimize overall transaction latency. Low wait times for core-to-core, core-to-cache, CPU-to-memory, and CPU-to-adapter communication are critical. Clock frequency is only important in so far as it minimizes intra- and inter-CPU latency. This profile is characterized by maintaining low processor clock variability and maintaining all external CPU links, memory and PCIe subsystems at maximum frequency.
- **ThinkSystem Virtualization - Power Efficiency** (feature C9UA): This workload profile is for virtualization environments. The profile ensures that all available virtualization options are enabled. Power saving features are enabled.
- **ThinkSystem Virtualization - Max Performance** (feature C9U9): This workload profile is for virtualization environments. The profile ensures that all available virtualization options are enabled. Power saving features are disabled.
- **ThinkSystem DataBase - Transaction Processing** (feature C9U7): This workload profile is for online transaction processing (OLTP) applications that require a database back-end.

Memory

The SR680a V4 uses Lenovo TruDDR5 memory operating at up to 6400 MHz. The server supports up to 32 DIMMs with 2 processors. The processors have 8 memory channels and support 2 DIMMs per channel (DPC). The server supports up to 4TB of memory using 32x 128GB RDIMMs and two processors.

DIMMs operate at the following speeds, up to the memory bus speed of the processor selected. See the Processor features section for specifics

- 1 DIMM per channel: Up to 6400 MHz
- 2 DIMMs per channel using RDIMMs: Up to 5200 MHz

Lenovo TruDDR5 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 TruDDR5 memory automatically assumes the system warranty, and Lenovo provides service and support worldwide.

The following table lists the RDIMMs that are currently supported by the SR680a V4. These DIMMs are installed in the DIMM slots adjacent to the processors. The table also lists the supported quantities.

Table 8. Memory options for DIMM slots

Part number	Feature code	Description	DRAM technology	Quantities supported (2 CPUs)
x4 RDIMMs				
4X77A90966	C0TQ	ThinkSystem 64GB TruDDR5 6400MHz (2Rx4) RDIMM	16Gb	32
4X77A90997	BZ7D	ThinkSystem 96GB TruDDR5 6400MHz (2Rx4) RDIMM	24Gb	32
4X77A90993	C0U1	ThinkSystem 128GB TruDDR5 6400MHz (2Rx4) RDIMM	32Gb	16, 32

The following rules apply when specifying the memory configuration:

- All installed DIMMs must be identical part numbers; mixing not supported

For more information on this memory, see the Lenovo Press paper, Introduction to DDR5 Memory.

GPU accelerators

A key feature of the SR680a V4 is the integration of an 8-GPU complex in the lower half of the server as shown in the Components and connectors section.

The GPUs supported are listed in the following table.

Table 9. GPU accelerators

Part number	Feature code	Description	Max Qty
CTO only	CBAG	ThinkSystem NVIDIA HGX B300 NVL8 1100W 8-GPU Board	1

The NVIDIA HGX B300 is built for the age of AI reasoning with enhanced compute and increased memory. Featuring 7X more AI compute than Hopper platforms, 2.3TB of HBM3e memory, and high-performance networking integration with NVIDIA ConnectX-8 SuperNICs, HGX B300 delivers breakthrough performance on the most complex workloads from agentic systems and reasoning, to real time video generation for every data center.

The following table lists the GPU specifications.

Table 10. GPU specifications

Specification	NVIDIA SXM B300 (per GPU)
Form Factor	SXM6
FP64	1.2 teraFLOPS
FP64 Tensor Core	1.2 teraFLOPS
FP32	72 teraFLOPS
TF32 Tensor Core	1.1 / 2.2 petaFLOPS*
BFLOAT16 Tensor	2.25 / 4.5 petaFLOPS*
FP16 Tensor Core	2.25 / 4.5 petaFLOPS*
FP8 Tensor Core	4.5 / 9 petaFLOPS*
INT8 Tensor Core	0.14 / 0.28 petaOPS*
FP4 Tensor Core	13 / 18 petaFLOPS*
GPU Memory	270 GB HBM3e
GPU Memory Bandwidth	8 TB/s
Thermal Design Point (TDP)	1100W
Multi-Instance GPUs	Up to 7 MIGs @ 34 GB
Interconnect	NVLink: 1.8 TB/s PCIe Gen5: 128 GB/s

* Without / with structural sparsity enabled

Internal storage

The SR680a V4 has 8x 2.5-inch hot-swap drive bays using a single 8-bay drive backplane, installed at the front of the server. The server supports NVMe drives, each with a PCIe 5.0 x4 host interface.

The server also supports one or two hot-swap M.2 drives, accessible from the front of the server.

In this section:

Drive backplanes

Ordering information for the drive backplanes is shown in the following table.

Table 11. Backplanes

Part number	Feature code	Description	Quantity supported
CTO only	C46P	ThinkSystem 2U V4 8x2.5" NVMe Backplane	1

Configuration rules:

- The drive backplane is required, however 0 drives can be configured

M.2 drives

The SR680a V4 supports one or two M.2 2280 form-factor NVMe drives for use as an operating system boot solution or as additional storage. M.2 drives are installed in hot-swap drive carriers at the front of the server. The M.2 enclosure support in a front-mounted hot-swap M.2 drives with integrated RAID.

Hot-swap tip: The bare M.2 drives (as listed in the Internal drive options section) are non-hot-swap drives. However, when the installed in the assembly for the front-mounted M.2, the drives are hot-swap enabled.

The following figure shows the components of the hot-swap M.2 drive bays.

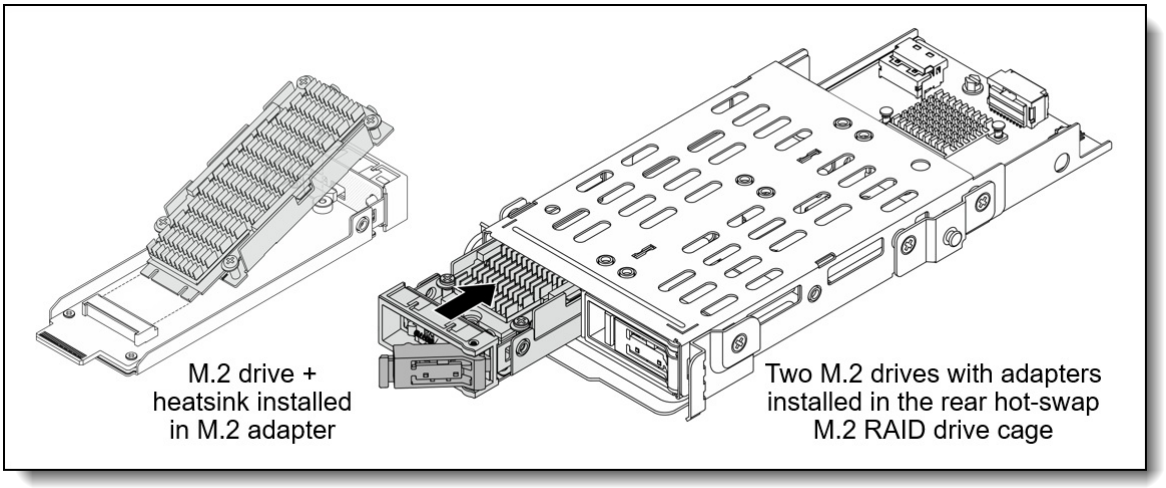

Figure 5. Hot-swap M.2 drive bays

The supported M.2 module is listed in the following table. For field upgrades see the M.2 field upgrades section below.

Table 12. M.2 adapters

Part number	Feature code	Description	SATA drives	NVMe drives	RAID	Max Qty
Front hot-swap M.2						
CTO only	C0JJ	ThinkSystem M.2 RAID B540p-2HS SATA/NVMe Adapter	Yes	Yes (x1 lane per drive)	Integrated (Broadcom)	1

Supported drives are listed in the Internal drive options section.

Controllers for internal storage

The drives of the SR680a V4 are connected to an integrated NVMe storage controller:

- Onboard PCIe 5.0 x4 NVMe ports

The onboard NVMe support has the following features:

- Controller integrated into the processor
- Each drive has PCIe 5.0 x4 host interface
- Supports JBOD
- No support for RAID

Note: The SR680a V4 does not support VROC RAID on the 2.5-inch drives.

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 PCIe 5.0 NVMe SSDs

M.2 drives:

- M.2 PCIe 4.0 NVMe 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 13. 2.5-inch hot-swap PCIe 5.0 NVMe SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch SSDs - U.2 PCIe 5.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A93127	C0ZR	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	8
4XB7A93128	C0ZQ	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	8
4XB7A93129	C0ZP	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	8
4XB7A93130	C0ZN	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	8
2.5-inch SSDs - U.2 PCIe 5.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A93122	C0ZV	ThinkSystem 2.5" U.2 VA 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	8
4XB7A93123	C0ZU	ThinkSystem 2.5" U.2 VA 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	8
4XB7A93124	C0ZT	ThinkSystem 2.5" U.2 VA 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	8
4XB7A93125	C0ZS	ThinkSystem 2.5" U.2 VA 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	8

Table 14. M.2 PCIe 4.0 NVMe drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A13999	BKSR	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2

Optical drives

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

Table 15. 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

The SR680a V4 offers 4x PCIe slots plus 1x OCP slot. All slots are standard and are all located at the front of the server.

OCP slot

- Slot 1: PCIe 5.0 x16, connected to CPU 1

PCIe slots:

- Slot 2: PCIe 5.0 x16 FHHL, connected to CPU 1
- Slot 3: PCIe 5.0 x16 FHHL, connected to CPU 2
- Slot 4: PCIe 5.0 x16 FHHL, connected to CPU 1
- Slot 5: PCIe 5.0 x16 FHHL, connected to CPU 2

In addition, the server offers 8x OSFP cages which are connected to the 8x ConnectX-8 switches integrated into the GPU system board. These OSFP cages and CX8 switches enable GPU Direct high-speed connectivity. Each OSFP cage enables 800Gb/s InfiniBand or Ethernet connectivity.

The locations of the slots and OSFP cages are shown in the following figure.

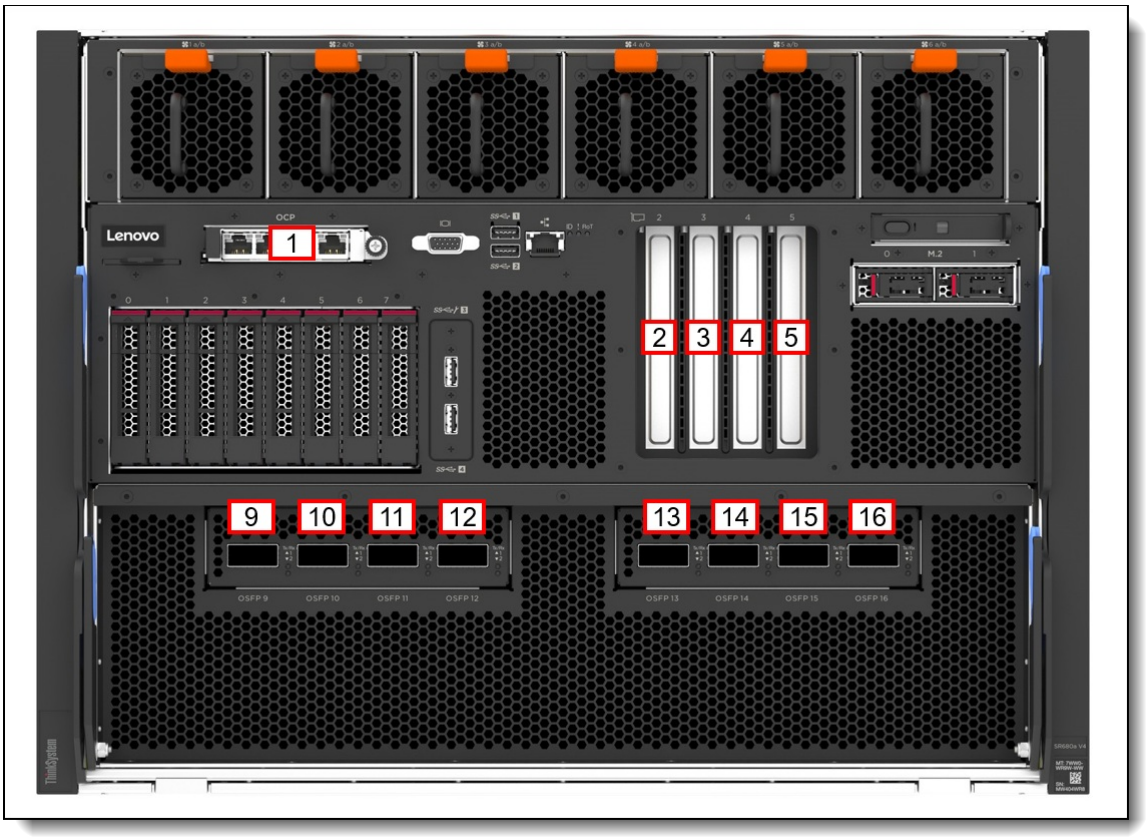

Figure 6. SR680a V4 slots

Network adapters

In this section:

OCP network adapters

The SR680a V4 supports the OCP network adapters listed in the following table. OCP adapters are installed in Slot 1.

Table 16. OCP adapters

Part number	Feature code	Description	Quantity
25 Gb Ethernet			
4XC7A62582	BE4T	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port OCP Ethernet Adapter	1
100 Gb Ethernet			
4XC7A99190	C62H	ThinkSystem Nvidia ConnectX-6 Dx 100GbE QSFP56 2-port OCP Ethernet Adapter(Generic)	1

PCIe network adapters

The SR680a V4 supports the PCIe network adapters listed in the following table.

Table 17. PCIe adapters

Part number	Feature code	Description	Quantity	Slots
10GBASE-T Ethernet				
4XC7A80266	BNWL	ThinkSystem Intel X710-T2L 10GBase-T 2-Port PCIe Ethernet Adapter	4	2,3,4,5
4XC7A79699	BMXB	ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCIe Ethernet Adapter	4	2,3,4,5
25 Gb Ethernet				
4XC7A62580	BE4U	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	4	2,3,4,5
100 Gb Ethernet				
4XC7A08248	B8PP	ThinkSystem Mellanox ConnectX-6 Dx 100GbE QSFP56 2-port PCIe Ethernet Adapter	4	2,3,4,5
200 Gb Ethernet / InfiniBand				
4XC7A95572	C4GA	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 PCIe Ethernet Adapter	4	2,3,4,5
4XC7A87752	BVBG	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter	2	4,5
CTO only	CCVX	ThinkSystem NVIDIA BlueField-3 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	2	4,5
400 Gb Ethernet / InfiniBand				
4XC7A95508	C51C	ThinkSystem NVIDIA ConnectX-7 NDR400 OSFP 1-port PCIe Gen5 VPI Adapter	4	2,3,4,5

Configurations notes:

- The NVIDIA BlueField-3 B3220 adapters require a power cable which will be automatically included in CTO orders when the adapter is selected
  - B3220 adapter BVBG uses power cable C1F7
  - B3220 adapter CCVX uses power cable C9K3

Cooling

The SR680a V4 server has 21 system fans installed as standard. Airflow is front to back.

- 6x front hot-swap 60mm dual-rotor fans to cool the CPU shuttle (CPUs, memory, rear slots)
  - Fans are N+1 rotor redundant
  - Fans operate at a peak of 20.9K RPM
- 15x rear hot-swap 80mm dual-rotor fans to cool the GPUs, drive bays, and PCIe switches
  - Fans are N+1 rotor redundant
  - Fans operate at a peak of 19.5K RPM

Each of the eight power supplies also has an integrated dual-rotor fan.

Table 18. Fan ordering information

Part number	Feature code	Description	Quantity standard
CTO only	C9JR	ThinkSystem SR680a V3 / SR680a V4 for B200 Front Fan	6
CTO only	C1FG	ThinkSystem SR685a V3 / SR680a V3 / SR680a V4 Rear Fan	15

Power supplies

The SR680a V4 supports eight redundant hot-swap power supplies. All are standard. The power supplies are N+1 redundant.

- Power supply ordering information
- Power supply LEDs
- Power cords (C19 connectors)

Power supply ordering information

Ordering information is listed in the following table.

Table 19. Power supply options

Part number	Feature code	Description	Connector	Qty	110V AC	220V AC
AC input power - 80 PLUS Titanium efficiency						
CTO only	CBAF	ThinkSystem 3200W 230V/115V Titanium CRPS Premium Hot-Swap Power Supply	C19	8	No	Yes

For power specifications, see the Physical and electrical specifications section.

Power supply options do not include a line cord. For server configurations, the inclusion of a power cord is model dependent. Configure-to-order models can be configured without power cords if desired.

Power supply LEDs

CRPS Premium power supplies have two LEDs:

- Power output/fault LED:
  - Green, on solid: The server is on and the power supply is working normally
  - Green, fast blinking (5 flashes/sec): The power supply unit is in firmware update mode
  - Yellow: The power supply unit may have failed.
  - Off: The server is powered off, or the power supply is not working properly
- Power input LED:
  - Green: The power supply is connected to the input power source
  - Off: The power supply is disconnected from the AC power source or a power problem has occurred

Note: Zero-output mode (also known as Standby mode or Cold Redundancy mode) is not supported

Power cords (C19 connectors)

Line cords and rack power cables with C19 connectors can be ordered as listed in the following table.

Table 20. Power cords (C19 connectors)

Part number	Feature code	Description
Rack cables		
4L67A86677	BPJ0	0.5m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
4L67A86678	B4L0	1.0m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
4L67A86679	B4L1	1.5m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
4L67A86680	B4L2	2.0m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
39Y7916	6252	2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable
4L67A86681	B4L3	4.3m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
Rack cables for India		
4L67B10323	CC6N	2.0m, 16A/100-250V, C19 to C20 Jumper Cord (India)
4L67B10324	CC6P	2.8m, 16A/100-250V, C19 to C20 Jumper Cord (India)
4L67B10325	CC6Q	4.3m, 16A/100-250V, C19 to C20 Jumper Cord (India)
Line cords		
40K9777	6276	4.3m, 220-240V, C19 to IRAM 2073 (Argentina) Line cord
40K9773	6284	4.3m, 220-240V, C19 to AS/NZS 3112 (Aus/NZ) Line cord
40K9775	6277	4.3m, 250V, C19 to NBR 14136 (Brazil) Line Cord
40K9774	6288	4.3m, 220-240V, C19 to GB2099.1 (China) Line cord
40K9766	6279	4.3m, 220-240V, C19 to CEE7-VII (European) Line cord
40K9776	6285	4.3m, 220-240V, C19 to IS6538 (India) Line cord
40K9768	6281	4.3m, 220-240V, C19 to CEI 23-16 (Italy) Line cord
41Y9231	6289	4.3m, 15A/250V, C19 to KSC 8305 (S. Korea) Line Cord
41Y9230	6287	4.3m, 16A/250V, C19 to CNS 10917-3 (Taiwan) Line Cord
40K9767	6278	4.3m, 220-240V, C19 to BS 1363/A w/13A fuse (UK) Line Cord
40K9772	6275	4.3m, 16A/208V, C19 to NEMA L6-20P (US) Line Cord
00D7197	A1NV	4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord

Systems management

The SR680a V4 contains an integrated service processor, XClarity Controller 3 (XCC3), which provides advanced control, monitoring, and alerting functions. The XCC3 is based on an OpenBMC design, using the AST2600 baseboard management controller (BMC) with a dual-core ARM Cortex A7 32-bit RISC service processor running at 1.2 GHz.

Topics in this section:

- System I/O Board (DC-SCM)
- Local management
- System status with XClarity Mobile
- Remote management
- XCC3 Premier
- Lenovo XClarity Provisioning Manager
- Lenovo XClarity One
- Lenovo XClarity Administrator
- Lenovo XClarity Integrators
- Lenovo XClarity Essentials
- Lenovo XClarity Energy Manager
- Lenovo Capacity Planner

System I/O Board (DC-SCM)

The SR680a V4 implements a separate System I/O Board, also known as the DC-SCM (Data Center Secure Control Module or DCSCM), that connects to the CPU board in the Compute shuttle. The System I/O Board contains all the connectors visible at the front of the server as shown in the following figure.

Note: The NMI (non-maskable interrupt) button is no longer present on the board. Lenovo recommends using the NMI function that is part of the XCC user interfaces instead.

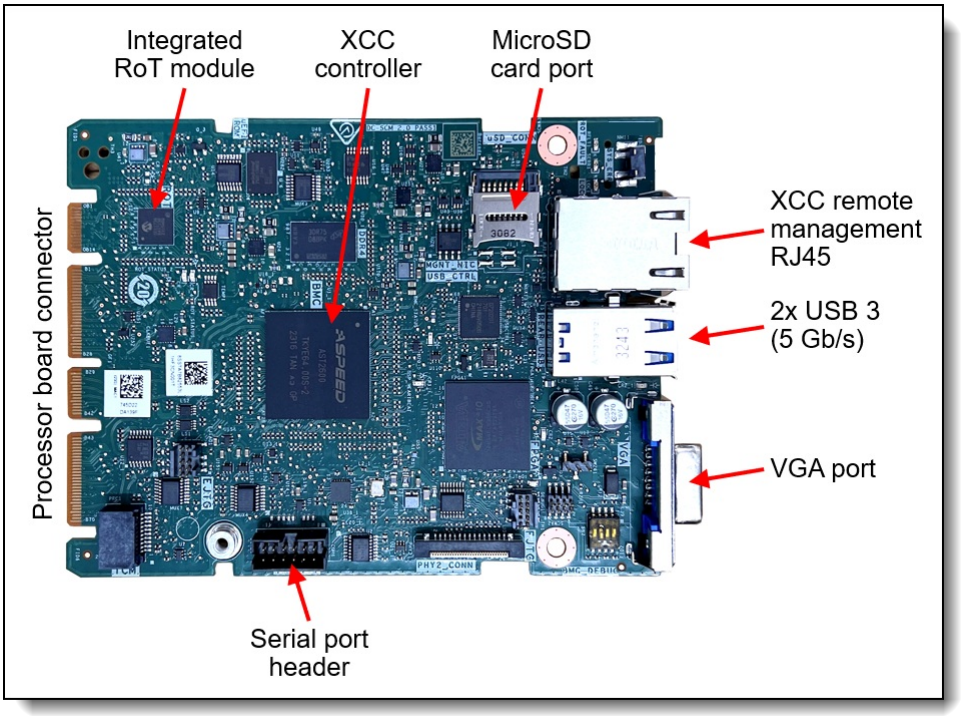

Figure 7. System I/O Board

The board also has the following components:

- XClarity Controller 3, implemented using the ASPEED AST2600 baseboard management controller

(BMC).

- Root of Trust (RoT) module - implements Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) which enables the server to be NIST SP800-193 compliant. For more details about PFR, see the Security section.
- MicroSD card port to enable the use of a MicroSD card for additional storage for use with the XCC3 controller. XCC3 can use the storage as a Remote Disc on Card (RDOC) device (up to 4GB of storage). It can also be used to store firmware updates (including N-1 firmware history) for ease of deployment.

  Tip: Without a MicroSD card installed, the XCC controller will have 100MB of available RDOC storage.

Ordering information for the supported Micro SD cards are listed in the MicroSD for XCC local storage section.

Local management

The SR680a V4 offers a front operator panel with key LED status indicators on the front, as shown in the following figure. The server also includes an integrated LCD diagnostics panel.

Network LED: The network LED only shows the activity of the network adapter installed in the OCP slot.

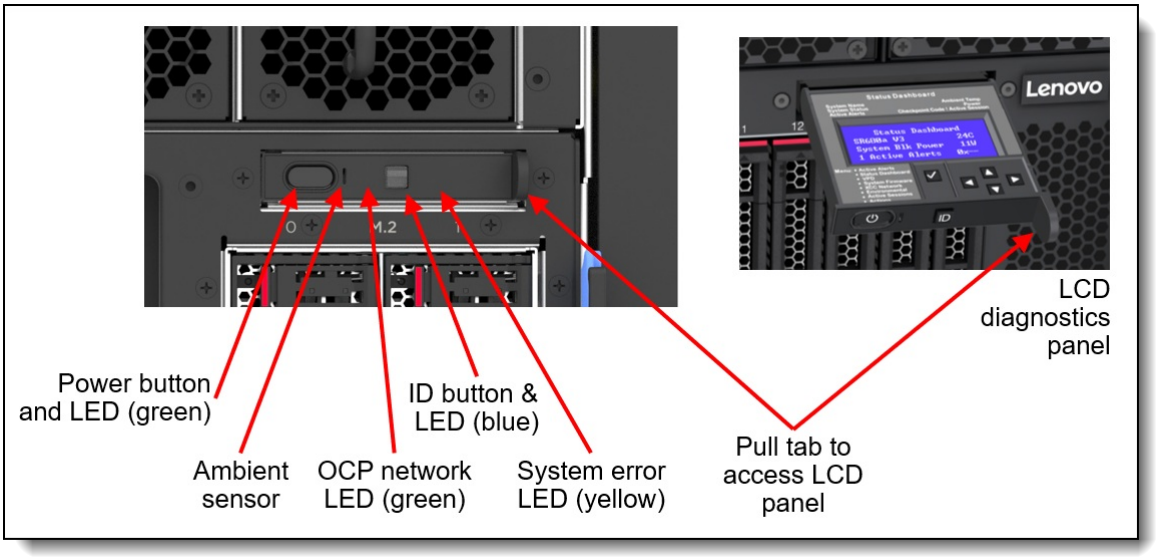

Figure 8. Front operator panel with pull-out diagnostics panel

The integrated diagnostics panel allows quick access to system status, firmware, network, and health information. The LCD display on the panel and the function buttons give you access to the following information:

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

Information pull-out tab

The front of the server also houses an information pull-out tab (also known as the network access tag). A label on the tab shows the network information (MAC address and other data) to remotely access the service processor.

System status with XClarity Mobile

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

The steps to connect the mobile device are as follows:

1. Enable USB Management on the server, by holding down the ID button for 3 seconds (or pressing the dedicated USB management button if one is present)
2. Connect the mobile device via a USB cable to the server's USB port with the management symbol 
3. In iOS or Android settings, enable Personal Hotspot or USB Tethering
4. Launch the Lenovo XClarity Mobile app

Once connected you can see the following information:

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

Remote management

The server offers a dedicated RJ45 port at the front 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 support (DMTF compliant)
- Web browser - HTML 5-based browser interface (Java and ActiveX not required) using a responsive design (content optimized for device being used - laptop, tablet, phone) with NLS support

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 21. IPMI-over-LAN settings

Feature code	Description
B7XZ	Disable IPMI-over-LAN (default)
B7Y0	Enable IPMI-over-LAN

XCC3 Premier

In the SR680a V4, XCC3 has the Premier level of features built into the server. XCC3 Premier in ThinkSystem V4 servers is equivalent to the XCC2 Premium offering in ThinkSystem V3 servers.

Configurator tip: Even though XCC3 Premier is a standard feature of the SR680a V4, it does *not* appear in the list of feature codes in the configurator.

XCC3 Premier includes the following functions:

- System Guard - Monitor hardware inventory for unexpected component changes, and simply log the event or prevent booting
- Neighbor Group - Enables administrators to manage and synchronize configurations and firmware level across multiple servers
- Syslog alerting
- Lenovo SED security key management
- Boot video capture and crash video capture
- Virtual console collaboration - Ability for up to 6 remote users to be log into the remote session simultaneously
- Remote console Java client
- System utilization data and graphic view
- Single sign on with Lenovo XClarity Administrator
- Update firmware from a repository
- Enterprise Strict Security mode - Enforces CNSA 1.0 level security
- 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
- International keyboard mapping support
- Redirecting serial console via SSH
- Component replacement log (Maintenance History log)
- Access restriction (IP address blocking)
- Displaying graphics for real-time and historical power usage data and temperature
- Mapping the ISO and image files located on the local client as virtual drives for use by the server
- Mounting the remote ISO and image files via HTTPS, SFTP, CIFS, and NFS
- Power capping
- License for XClarity Energy Manager

With XCC3 Premier, for CTO orders, you can request that System Guard be enabled in the factory and the first configuration snapshot be recorded. To add this to an order, select feature code listed in the following table. The selection is made in the Security tab of the configurator.

Table 22. Enable System Guard in the factory (CTO orders)

Feature code	Description
BUT2	Install System Guard

For more information about System Guard, see https://pubs.lenovo.com/xcc2/NN1ia_c_systemguard

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 One

Lenovo XClarity One is a hybrid cloud-based unified Management-as-a-Service (MaaS) platform, built for growing enterprises. XClarity One is powered by Lenovo Smarter Support, a powerful AI-driven platform that leverages predictive analytics to enhance the performance, reliability, and overall efficiency of Lenovo servers.

XClarity One is the next milestone in Lenovo's portfolio of systems management products. Now you can leverage the benefits of a true next-generation, hybrid cloud-based solution for the deployment, management, and maintenance of your infrastructure through a single, centralized platform that delivers a consistent user experience across all Lenovo products.

Key features include:

- **AI-powered Automation**

  Harnesses the power of AI and predictive analytics to enhance the performance and reliability of your infrastructure with proactive protection.

  - **AI-Powered Predictive Failure Analytics** - predict maintenance needs before the failure occurs, with the ability to visualize aggregated actions in customer dashboard.
  - **AI-Powered Call-Home** - A Call-Home serviceable event opens a support ticket automatically, leveraging AI technology for problem determination and fast resolution.
  - **AI-Powered Premier Support with Auto CRU** - uses AI to automatically dispatch parts and services, reducing service costs and minimizing downtime.

- **Secure Management Hub**

  Lenovo's proprietary Management Hub is an on-premises virtual appliance that acts as the bridge between your infrastructure and the cloud.

  - **On-Premises Security with Cloud Flexibility** - your infrastructure has no direct connection to the cloud, greatly reducing your attack surface from external threats while still having the deployment benefits, flexibility, and scalability of a cloud solution.
  - **Authentication and Authorization** - built on a Zero Trust Architecture and requiring OTP Application authentication for all users to handle the support of all customers' servers and client devices. Role-based access controls help define and restrict permissions based on user roles.

- **AI-Powered Management**

  Go beyond standard system management leveraging AI algorithms to continuously learn from data patterns to optimize performance and predict potential issues before they impact operations.

  - **AI Customizable Insights and Reporting** - Customize AI-generated insights and reports to align with specific business objectives, enabling data-driven decision-making and strategic planning.
  - **AI-driven scalability and flexibility** - Guided with AI-driven predictions, the platform supports dynamic scaling of resources based on workload demands.
  - **Monitor and Change** - AI Advanced analytics capabilities providing deep insights into server performance, resource utilization, and security threats, to detect anomalies and suggest optimizations in real-time. NLP capabilities enabling administrators to interact with the platform using voice commands or text queries.
  - **Upward Integration** - Integrated with Lenovo Open Cloud Automation (LOC-A), Lenovo Intelligent Computer Orchestration (LiCO) and AIOps engines providing an end-to-end management architecture across Lenovo infrastructure and devices solutions.
  - **Cross-Platform Compatibility** - Compatibility across different server types and cloud environments

Lenovo XClarity One is an optional management component. License information for XClarity One is listed in the following table.

Table 23. XClarity One license information

Part number	Feature code	Description
7S0X000LWW	SCJC	XClarity One - Managed Device, Per Endpoint w/1 Yr SW S&S
7S0X000MWW	SCJD	XClarity One - Managed Device, Per Endpoint w/3 Yr SW S&S
7S0X000NWW	SCJE	XClarity One - Managed Device, Per Endpoint w/5 Yr SW S&S

For more information, see these resources:

- Lenovo XClarity One datasheet:
  https://lenovopress.lenovo.com/ds0188-lenovo-xclarity-one
- Lenovo XClarity One product guide:
  https://lenovopress.lenovo.com/lp1992-lenovo-xclarity-one

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 SR680a V4. The software can be downloaded and used at no charge to discover and monitor the SR680a V4 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 24. 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

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.

ThinkSystem V4 servers: The format of UEFI and BMC settings has changed for ThinkSystem V4 servers, to align with OpenBMC and Redfish requirements. See the documentation of these tools for details. As a result, the following versions are required for these servers:

- OneCLI 5.x or later
- UpdateXpress 5.x or later
- BOMC 14.x or later

For more information and downloads, visit the Lenovo XClarity Essentials web page:
http://support.lenovo.com/us/en/documents/LNVO-center

Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager (LXEM) is a power and temperature management solution for data centers. It is an agent-free, web-based console that enables you to monitor and manage power consumption and temperature in your data center through the management console. It enables server density and data center capacity to be increased through the use of power capping.

LXEM is a licensed product. A single-node LXEM license is included with the XClarity Controller Premier upgrade as described in the XCC3 Premier section. If your server does not have the XCC Premier upgrade, Energy Manager licenses can be ordered as shown in the following table.

Table 25. Lenovo XClarity Energy Manager

Part number	Description
4L40E51621	Lenovo XClarity Energy Manager Node License (1 license needed per server)

For more information about XClarity Energy Manager, see the following resources:

- Lenovo Support page:
  https://datacentersupport.lenovo.com/us/en/solutions/lnvo-lxem
- User Guide for XClarity Energy Manager:
  https://pubs.lenovo.com/lxem/

Lenovo Capacity Planner

Lenovo Capacity Planner is a power consumption evaluation tool that enhances data center planning by enabling IT administrators and pre-sales professionals to understand various power characteristics of racks, servers, and other devices. Capacity Planner can dynamically calculate the power consumption, current, British Thermal Unit (BTU), and volt-ampere (VA) rating at the rack level, improving the planning efficiency for large scale deployments.

For more information, refer to the Capacity Planner web page:
http://datacentersupport.lenovo.com/us/en/solutions/lnvo-lcp

Security

Topics in this section:

- Security features
- Platform Firmware Resiliency - Lenovo ThinkShield
- Security standards

Security features

The SR680a V4 server offers the following electronic security features:

- Secure Boot function of the Intel Xeon processor
- Support for Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) - see the Platform Firmware Resiliency section
- Firmware signature processes compliant with FIPS and NIST requirements
- System Guard (part of XCC3 Premier) - Proactive monitoring of hardware inventory for unexpected component changes
- Administrator and power-on password
- Integrated Trusted Platform Module (TPM) supporting TPM 2.0
- Self-encrypting drives (SEDs) with support for enterprise key managers - see the SED encryption key management section

The server is NIST SP 800-147B compliant.

Platform Firmware Resiliency - Lenovo ThinkShield

Lenovo's ThinkShield Security is a transparent and comprehensive approach to security that extends to all dimensions of our data center products: from development, to supply chain, and through the entire product lifecycle.

The ThinkSystem SR680a V4 includes Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) which enables the system to be NIST SP800-193 compliant. This offering further enhances key platform subsystem protections against unauthorized firmware updates and corruption, to restore firmware to an integral state, and to closely monitor firmware for possible compromise from cyber-attacks.

PFR operates upon the following server components:

- UEFI image – the low-level server firmware that connects the operating system to the server hardware
- XCC image – the management “engine” software that controls and reports on the server status separate from the server operating system
- FPGA image – the code that runs the server’s lowest level hardware controller on the motherboard

The Lenovo Platform Root of Trust Hardware performs the following three main functions:

- Detection – Measures the firmware and updates for authenticity
- Recovery – Recovers a corrupted image to a known-safe image
- Protection – Monitors the system to ensure the known-good firmware is not maliciously written

These enhanced protection capabilities are implemented using a dedicated, discrete security processor whose implementation has been rigorously validated by leading third-party security firms. Security evaluation results and design details are available for customer review – providing unprecedented transparency and assurance.

The SR680a V4 includes support for Secure Boot, a UEFI firmware security feature developed by the UEFI Consortium that ensures only immutable and signed software are loaded during the boot time. The use of Secure Boot helps prevent malicious code from being loaded and helps prevent attacks, such as the installation of rootkits. Lenovo offers the capability to enable secure boot in the factory, to ensure end-to-end protection. Alternatively, Secure Boot can be left disabled in the factory, allowing the customer to enable it themselves at a later point, if desired.

The following table lists the relevant feature code(s).

Table 26. Secure Boot options

Part number	Feature code	Description	Purpose
CTO only	BPKQ	TPM 2.0 with Secure Boot	Configure the system in the factory with Secure Boot enabled.
CTO only	BPKR	TPM 2.0	Configure the system without Secure Boot enabled. Customers can enable Secure Boot later if desired.

Tip: If Secure Boot is not enabled in the factory, it can be enabled later by the customer. However once Secure Boot is enabled, it cannot be disabled.

Security standards

The SR680a V4 supports the following security standards and capabilities:

- **Industry Standard Security Capabilities**
  - Intel CPU Enablement
    - Intel Trust Domain Extensions (Intel TDX)
    - Intel Crypto Acceleration
    - Intel QuickAssist Software Acceleration
    - Intel Platform Firmware Resilience Support
    - Intel Control-Flow Enforcement Technology
    - Intel Total Memory Encryption - Multi Key
    - Intel Total Memory Encryption
    - Intel AES New Instructions (AES-NI)
    - Intel OS Guard
    - Execute Disable Bit (XD)
    - Intel Boot Guard
    - Mode-based Execute Control (MBEC)
    - Intel Virtualization Technology (VT-x)
    - Intel Virtualization Technology for Directed I/O (VT-d)
  - Microsoft Windows Security Enablement
    - Credential Guard
    - Device Guard
    - Host Guardian Service
  - TCG (Trusted Computing Group) TPM (Trusted Platform Module) 2.0
  - UEFI (Unified Extensible Firmware Interface) Forum Secure Boot
- **Hardware Root of Trust and Security**
  - Independent security subsystem providing platform-wide NIST SP800-193 compliant Platform

Firmware Resilience (PFR)
    - Management domain RoT supplemented by the Secure Boot features of XCC
- **Platform Security**
    - Boot and run-time firmware integrity monitoring with rollback to known-good firmware (e.g., “self-healing”)
    - Non-volatile storage bus security monitoring and filtering
    - Resilient firmware implementation, such as to detect and defeat unauthorized flash writes or SMM (System Management Mode) memory incursions
    - Patented IPMI KCS channel privileged access authorization (USPTO Patent# 11,256,810)
    - Host and management domain authorization, including integration with CyberArk for enterprise password management
    - KMIP (Key Management Interoperability Protocol) compliant, including support for IBM SKLM and Thales KeySecure
    - Reduced “out of box” attack surface
    - Configurable network services
    - FIPS 140-3 (in progress) validated cryptography for XCC
    - CNSA Suite 1.0 Quantum-resistant cryptography for XCC
    - Lenovo System Guard

  For more information on platform security, see the paper “How to Harden the Security of your ThinkSystem Server and Management Applications” available from https://lenovopress.com/lp1260-how-to-harden-the-security-of-your-thinksystem-server.
- **Standards Compliance and/or Support**
    - NIST SP800-131A rev 2 “Transitioning the Use of Cryptographic Algorithms and Key Lengths”
    - NIST SP800-147B “BIOS Protection Guidelines for Servers”
    - NIST SP800-193 “Platform Firmware Resiliency Guidelines”
    - ISO/IEC 11889 “Trusted Platform Module Library”
    - Common Criteria TCG Protection Profile for “PC Client Specific TPM 2.0”
    - European Union Commission Regulation 2019/424 (“ErP Lot 9”) “Ecodesign Requirements for Servers and Data Storage Products” Secure Data Deletion
    - Optional FIPS 140-2 validated Self-Encrypting Disks (SEDs) with external KMIP-based key management
- **Product and Supply Chain Security**
    - Suppliers validated through Lenovo’s Trusted Supplier Program
    - Developed in accordance with Lenovo’s Secure Development Lifecycle (LSDL)
    - Continuous firmware security validation through automated testing, including static code analysis, dynamic network and web vulnerability testing, software composition analysis, and subsystem-specific testing, such as UEFI security configuration validation
    - Ongoing security reviews by US-based security experts, with attestation letters available from our third-party security partners
    - Digitally signed firmware, stored and built on US-based infrastructure and signed on US-based Hardware Security Modules (HSMs)
    - TAA (Trade Agreements Act) compliant manufacturing, by default in Mexico for North American markets with additional US and EU manufacturing options
    - US 2019 NDAA (National Defense Authorization Act) Section 889 compliant

Rack installation

The SR680a V4 installs in a standard 19-inch rack cabinet using a static L-shaped rail kit as listed in the following table.

Table 27. Rack installation options

Part number	Feature	Description
4XF7A16545	A4AA	ThinkSystem Toolless Fixed Rail Kit
CTO only	AUMY	ThinkSystem Lift Handles

The figure below shows the components of the rail kit.

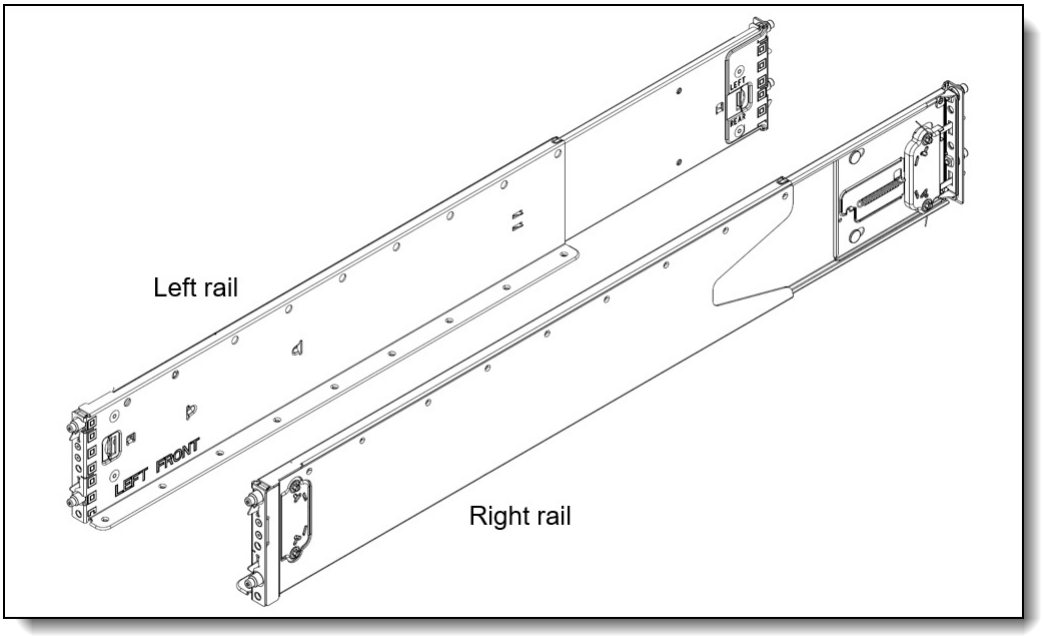

Figure 9. ThinkSystem Toolless Fixed Rail Kit

Configuration rules:

- A maximum of 5x SR680a V4 servers can be installed in a single rack cabinet (42U or 48U)
- The rail kit is included in CTO orders by default, but can be removed if desired
- A cable management arm (CMA) is not supported

The following table summarizes the rail kit features and specifications.

Table 28. Rail kit specifications

Feature	L-shelf rail kit
Option part number	None (feature A4AA)
Rail type	L-shaped shelf (no slide function)
Toolless installation	Yes
CMA support	No
Supported rack type	Four-post IBM and Lenovo standard rack, complying with the IEC standard
In-rack server maintenance	No
1U PDU support	Yes
0U PDU support	Yes
Supported mounting holes	Square or round
Thickness of mounting flanges	2.0 to 3.3 mm (0.08 to 0.13 inches)
Supported distance between front and rear mounting flanges	613 to 774 mm (24.1 to 30.5 inches)
Rail length†	613mm (24.1 inches)

† Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail. Rail is in closed position.

Material lift

Considering the weight of the trays in the server, an onsite material lift is required to allow service by a single person. If you do not already have a material lift available, Lenovo offers the Genie Lift GL-8 material lift as configurable option to the rack cabinets. Ordering information is listed in the following table.

Note: If neither the Genie Lift GL-8 nor the ServerLift SL-350x is available onsite when onsite service is required, the customer will be responsible for getting the system to a suitable work surface (with access to power) prior to service technician arrival and returning the system to the rack when service is complete prior to service technician departure.

Table 29. Genie Lift GL-8 ordering information

Part number	Description
4XF7B02087	Genie Lift GL-8 (Standard Base) Material Lift Option Kit • Genie GL-8 material lift • Load platform • Foot-release brake

Operating system support

The SR680a V4 supports the following operating systems:

- Red Hat Enterprise Linux 9.6
- Ubuntu 24.04 LTS 64-bit

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.lenovo.com/osig#servers=sr680a-v4-7dmk-7dpa

Physical and electrical specifications

The SR680a V4 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: 447 mm (17.6 inches)
- Height: 351 mm (13.8 inches)
- Depth: 924 mm (36.3 inches)

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

Table 30. Detailed dimensions

Dimension	Description
483 mm	X_a = Width, to the outsides of the front EIA flanges
447 mm	X_b = Width, to the rack rail mating surfaces
447 mm	X_c = Width, to the outer most chassis body feature
351 mm	Y_a = Height, from the bottom of chassis to the top of the chassis
861 mm	Z_a = Depth, from the rack flange mating surface to the rearmost I/O port surface
889 mm	Z_b = Depth, from the rack flange mating surface to the rearmost feature of the chassis body
917 mm	Z_c = Depth, from the rack flange mating surface to the rearmost feature such as power supply handle
35 mm	Z_d = Depth, from the forwardmost feature on front of EIA flange to the rack flange mating surface
71 mm	Z_e = Depth, from the front of security bezel (if applicable) or forwardmost feature to the rack flange mating surface

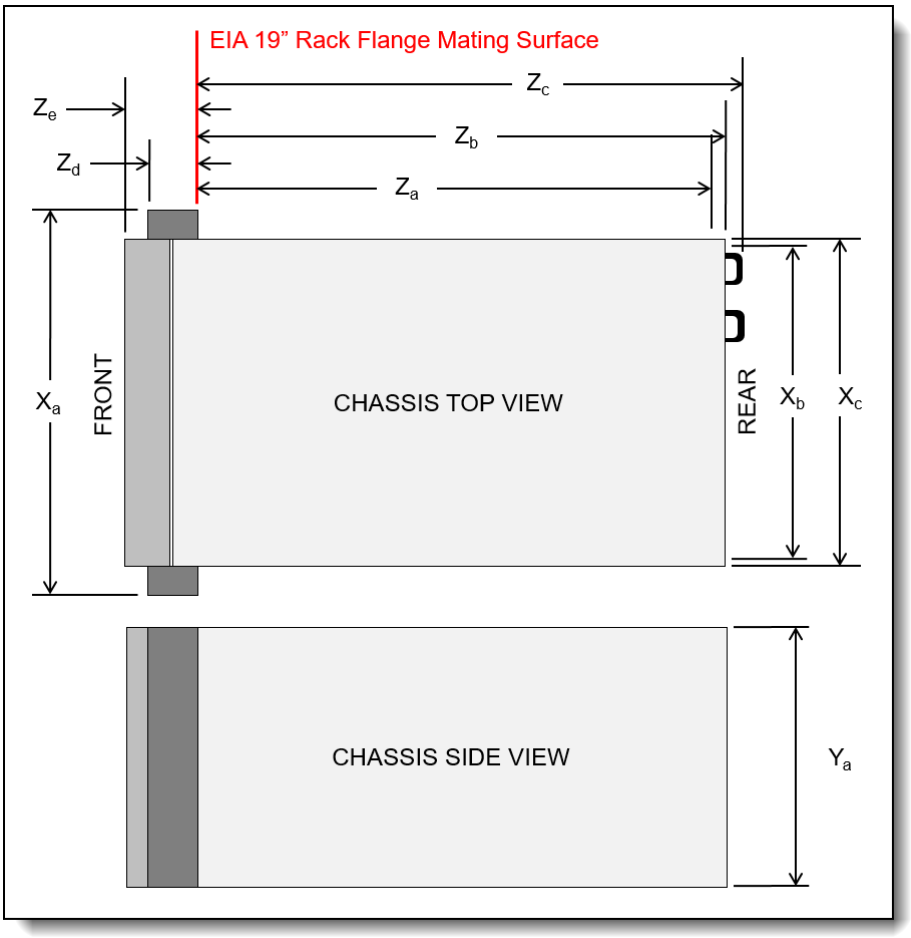

Figure 10. Enclosure dimensions

The shipping (cardboard packaging) dimensions of the SR680a V4 are as follows:

- Width: 600 mm (23.6 inches)
- Height: 740 mm (29.1 inches)
- Depth: 1200 mm (47.2 inches)

The server has the following weight:

- Maximum: 116 kg (256 lbs)

Electrical specifications for AC input power supplies:

- Input voltage:
  - 200 to 240 (nominal) Vac, 50 Hz or 60 Hz
  - 180 to 300 Vdc (China only)
- Inlet current: See the following table.

Table 31. Maximum inlet current

Part number	Description	100V AC	200V AC	220V AC	240V DC
CBAF	ThinkSystem 3200W 230V/115V Titanium CRPS Premium Hot-Swap Power Supply	No support	15A	16A	14.5A

Operating environment

The SR680a V4 server complies with ASHRAE Class A2 specifications. System performance may be impacted when operating temperature is outside ASHRAE A2 specification.

Topics in this section:

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: -20°C to 60°C (-4°F to 140°F)
- Maximum altitude: 3,050 m (10,000 ft)
- Relative Humidity (non-condensing):
  - Operating
    - ASHRAE Class A2: 8% to 80%; maximum dew point: 21°C (70°F)
  - Shipment/storage: 8% to 90%

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 SR680a V4 has a warranty based on the machine type of the system:

- 7DMK - 3 year warranty

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

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

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

Services

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

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

In this section:

- Lenovo Advisory Services
- Lenovo Plan & Design Services
- Lenovo Deployment, Migration, and Configuration Services
- Lenovo Support Services
- Lenovo Managed Services
- Lenovo Sustainability Services

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 SR680a V4 conforms to the following standards:

- UL Green Guard, UL2819
- Japanese Energy-Saving Act
- EU2019/424 Energy Related Product (ErP Lot9)

Rack cabinets

The following table lists the supported rack cabinets.

Table 32. 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
93604PX	42U 1200mm Deep Dynamic Rack
93614PX	42U 1200mm Deep Static Rack
93634PX	42U 1100mm Dynamic Rack
93634EX	42U 1100mm Dynamic Expansion Rack

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 33. KVM console

Part number	Description
4XF7A84188	ThinkSystem 18.5" LCD console (with US English keyboard)

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

Table 35. KVM switches and options

Part number	Description
KVM Console switches	
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
Cables for GCM and LCM Console switches	
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

Lenovo Financial Services

Why wait to obtain the technology you need now? No payments for 90 days and predictable, low monthly payments make it easy to budget for your Lenovo solution.

- **Flexible**

  Our in-depth knowledge of the products, services and various market segments allows us to offer greater flexibility in structures, documentation and end of lease options.

- **100% Solution Financing**

  Financing your entire solution including hardware, software, and services, ensures more predictability in your project planning with fixed, manageable payments and low monthly payments.

- **Device as a Service (DaaS)**

  Leverage latest technology to advance your business. Customized solutions aligned to your needs. Flexibility to add equipment to support growth. Protect your technology with Lenovo's Premier Support service.

- **24/7 Asset management**

  Manage your financed solutions with electronic access to your lease documents, payment histories, invoices and asset information.

- **Fair Market Value (FMV) and $1 Purchase Option Leases**

  Maximize your purchasing power with our lowest cost option. An FMV lease offers lower monthly payments than loans or lease-to-own financing. Think of an FMV lease as a rental. You have the flexibility at the end of the lease term to return the equipment, continue leasing it, or purchase it for the fair market value. In a $1 Out Purchase Option lease, you own the equipment. It is a good option when you are confident you will use the equipment for an extended period beyond the finance term. Both lease types have merits depending on your needs. We can help you determine which option will best meet your technological and budgetary goals.

Ask your Lenovo Financial Services representative about this promotion and how to submit a credit application. For the majority of credit applicants, we have enough information to deliver an instant decision and send a notification within minutes.

Seller training courses

The following sales training courses are offered for employees and partners (login required). Courses are listed in date order.

1. **Lenovo Data Center Technical Certification Exam Study Guide**
   2025-08-19 | 10 minutes | Employees and Partners

   This guide includes information to help candidates prepare and register for the Data Center Technical practice and certification exams.

   Tags: DataCenter Products

   Published: 2025-08-19
   Length: 10 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: LENU-322C-SG

2. **Lenovo Data Center Sales Certification Exam Study Guide**
   2025-08-19 | 10 minutes | Employees and Partners

   This guide includes information to help candidates prepare and register for the Data Center Sales practice and certification exams.

   Tags: DataCenter Products

   Published: 2025-08-19
   Length: 10 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: LENU-122C-SG

3. **Think AI Weekly: ISG & SSG Better Together: Uniting AI Solutions & Services for Smarter Outcomes**
   2025-08-01 | 55 minutes | Employees Only

   View this session to hear from our speakers Allen Holmes, AI Technologist, ISG and Balaji Subramaniam, AI Regional Leader-Americas, SSG.

   Topics include:

   • An overview of ISG & SSG AI CoE Offerings with Customer Case Studies
   • The Enterprise AI Deal Engagement Flow with ISG and SSG
   • How sellers can leverage this partnership to differentiate with Enterprise clients.
   • NEW COURSE: From Inception to Execution: Evolution of an AI Deal

   Tags: Artificial Intelligence (AI), Sales, Services, Technology Solutions, TruScale Infrastructure as a Service

   Published: 2025-08-01
   Length: 55 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DTAIW145

4. **Guide d'étude pour l'examen de certification des ventes techniques de Lenovo Data Center**
   2025-07-30 | 10 minutes | Employees and Partners

   Ce guide contient des informations pour aider les candidats à se préparer et à s'inscrire aux examens pratiques et de certification Data Center Technical.

   Tags: DataCenter Products, Server, ThinkEdge

   Published: 2025-07-30
   Length: 10 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: LENU-322C-SG-FR

5. **VTT-HPC: Explaining HPC Benchmarking: Processes, Standards and Best Practices**
   2025-07-30 | 87 minutes | Employees Only

   Please join us as Eric Michel, HPC & AI Performance Team Coordinator and Kevin Dean, Sr Manager, HPC Performance, Projection & Operations speak with us about HPC Benchmarking.

   Topics will include:

   • Why sellers need to request benchmarks
   • How to request benchmarks
   • How the team performs a benchmark
   • The performance database
   • Demonstration of the tool

   Tags: Advanced Data Center, High Performance Computing (HPC), Technical Sales

   Published: 2025-07-30
   Length: 87 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DVHPC224

6. **Family Portfolio: Server Component Options**
   2025-07-21 | 20 minutes | Employees and Partners

   This course covers opportunities that are available to upsell server components. By upselling the correct components, you can increase the size and revenue of the original sale.
   After completing this course, you should be able to:
   • Identify the opportunities for an upsell
   • Recognize when specific products should be discussed
   • Emphasize how a product benefits the customer
   • Identify keywords that indicate upsell opportunities

   Tags: Server, Storage

   Published: 2025-07-21
   Length: 20 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: SXXW1109r2

7. **Family Portfolio: ThinkSystem Rack and Tower Servers Powered by Intel**
   2025-06-23 | 25 minutes | Employees and Partners

   This course is designed to give Lenovo sales and partner representatives a foundation of the ThinkSystem Intel Rack and Tower server family.

   After completing this course, you will be able to:
   • Identify products within this ThinkSystem server family
   • Describe features of this family
   • Recognize when a specific product should be selected

   Tags: Server, ThinkSystem

   Published: 2025-06-23
   Length: 25 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: SXXW1204r14

8. **Q1 Solutions Launch AI Servers Solutions and Services**
   2025-06-16 | 7 minutes | Employees Only

   This FY26Q1 Launch Quick Hit covers a number of announcements related to AI, from new and upgraded servers to services and solutions. The Lenovo ThinkSystem SR680a V3 is now available with eight NVIDIA B200 GPUs, while the Lenovo ThinkSystem SR680a V4 supports eight NVIDIA B300 GPUs. These air-cooled AI powerhouses are ideal for large AI environments that have not yet embraced liquid cooling.

   New Lenovo Hybrid AI Advantage services are being offered, and new solutions have been certified, including the Lenovo Hybrid AI Platform validated with IBM watsonx and Cisco, a proven architecture that integrates seamlessly with enterprise AI platforms to accelerate innovation.

   Tags: Artificial Intelligence (AI), NVIDIA, Server, Storage, ThinkSystem

   Published: 2025-06-16
   Length: 7 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: SXXW2547a

9. **ThinkSystem Rack and Tower Introduction for ISO Client Managers**
   2025-06-16 | 20 minutes | Employees Only

   In this course, you will learn about Lenovo's Data Center Portfolio, its ThinkSystem Family and the key features of the Rack and Tower servers. It will equip you with foundational knowledge which you can then expand upon by participating in the facilitated session of the curriculum.

   Tags: Server, ThinkSystem

   Published: 2025-06-16
   Length: 20 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DSRTO101r2_JP

10. **Lenovo Data Center Product Portfolio**
    2025-06-11 | 20 minutes | Employees and Partners

    This course introduces the Lenovo data center portfolio, and covers servers, storage, storage networking, and software-defined infrastructure products. After completing this course about Lenovo data center products, you will be able to identify product types within each data center family, describe Lenovo innovations that this product family or category uses, and recognize when a specific product should be selected.

    Course objectives:
    1.Identify product types within each data center family
    2.Describe the features of the product family or category
    3.Recognize when a specific product should be selected

    Tags: Advanced DataCenter, DataCenter Products, Server, ThinkAgile, ThinkEdge, ThinkSystem

    Published: 2025-06-11
    Length: 20 minutes

    Start the training:
    Employee link: Grow@Lenovo
    Partner link: Lenovo 360 Learning Center

    Course code: SXXW1110r8

11. **VTT HPC: AI and the Impact on the Environment**
2025-06-11 | 58 minutes | Employees Only

Please join us as Matthew Ziegler, Director of Lenovo Neptune and Sustainability speaks with us about AI and the Impact on the Environment.

Topics will include:

- Why is ESG essential for your customer?
- How to find and read an eco declaration
- What is a product carbon footprint?
- Demo of the Lenovo Capacity Planner

Tags: Advanced DataCenter, Artificial Intelligence (AI), Environmental Social Governance (ESG), High-Performance Computing (HPC), Server

Published: 2025-06-11
Length: 58 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DVHPC223

12. **Partner Technical Webinar - RTX Pro 6000**
2025-05-22 | 60 minutes | Employees and Partners

In this 60-minute replay, Allen Bourgoyne, Product Marketing for NVIDIA, presented the newly announced RTX Pro 6000 Blackwell Server Edition GPU.

Tags: Artificial Intelligence (AI)

Published: 2025-05-22
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: MAY1525

13. **Partner Technical Webinar - DCSC Improvements - MAY0225**
2025-05-05 | 60 minutes | Employees and Partners

In this 60-minute replay, new improvements to DCSC were reviewed. Joe Allen, Lenovo NA LETS, presented the new PCI wizard and discussed RAID adapters. Ryan Tuttle, Lenovo NA LETS presented Spreadsheet import, Autocorrect and Expanded selections on by default. Joe Murphy, Lenovo NA LETS closed out with review of Error Message improvements and location of ThinkAgile MX and VX in the DCSC menus.

Tags: Technical Sales

Published: 2025-05-05
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: MAY0225

14. **Family Portfolio: Storage Controller Options**
2025-03-03 | 25 minutes | Employees and Partners

This course covers the storage controller options available for use in Lenovo servers. The classes of storage controller are discussed, along with a discussion of where they are used, and which to choose.

After completing this course, you will be able to:
• Describe the classes of storage controllers
• Discuss where each controller class is used
• Describe the available options in each controller class

Tags: Sales, Storage

Published: 2025-03-03
Length: 25 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: SXXW1111r2

15. **ThinkSystem Rack and Tower Introduction for ISO Client Managers**
2024-12-10 | 20 minutes | Employees Only

In this course, you will learn about Lenovo's Data Center Portfolio, its ThinkSystem Family and the key features of the Rack and Tower servers. It will equip you with foundational knowledge which you can then expand upon by participating in the facilitated session of the curriculum.

Course Objectives:
• By the end of this course, you should be able to:
• Identify Lenovo's main data center brands.
• Describe the key components of the ThinkSystem Family servers.
• Differentiate between the Rack and Tower servers of the ThinkSystem Family.
• Understand the value Rack and Tower servers can provide to customers.

Tags: Server, ThinkSystem

Published: 2024-12-10
Length: 20 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DSRTO101r2

16. **Partner Technical Webinar - Server Update with Mark Bica**
2024-11-26 | 60 minutes | Employees and Partners

In this 60-minute replay, Mark Bica, Lenovo Product Manager gave an update on the server portfolio. Mark presented on the new V4 Intel servers with Xeon 6 CPUs. He reviewed where the new AMD 5th Gen EPYC CPUs will be used in our servers. He followed with a review of the GPU dense servers including SR680, SR680a, SR575 and SR780a. Mark concluded with a review of the SC777 and SC750 that were introduced at TechWorld.

Tags: Server

Published: 2024-11-26
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: 112224

17. **Partner Technical Webinar - LenovoPress updates and LPH Demo**
2024-11-13 | 60 minutes | Employees and Partners

In this 60-minute replay, we had 3 topics. First, David Watts, Lenovo Sr Manager LenovoPress, gave an update on LenovoPress and improvements to finding Seller Training Courses (both partner and Lenovo). Next, Ryan Tuttle, Lenovo LETS Solution Architect, gave a demo of Lenovo Partner Hub (LPH) including how to find replays of Partner Webinars in LPL. Finally, Joe Murphy, Lenovo Sr Manager of LETS NA, gave a quick update on the new Stackable Warranty Options in DCSC.

Tags: Technical Sales

Published: 2024-11-13
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: 110824

18. **Virtual Facilitated Session - ThinkSystem Rack and Tower Primer for ISO Client Managers**
2024-10-31 | 90 minutes | Employees Only

In this Virtual Instructor-Led Training Session, ISO Client Managers will be able to build on the knowledge gained in Module 1 (eLearning) of the ThinkSystem Rack and Tower Server Primer for ISO Client Managers curriculum.

IMPORTANT! Module 1 (eLearning) must be completed to be eligible to participate in this session. Please note that places are subject to availability. If you are selected, you will receive the invite to this session via email.

Tags: Sales, Server, ThinkSystem

Published: 2024-10-31
Length: 90 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DSRTO102

19. **Partner Technical Webinar - OneIQ**
2024-07-15 | 60 minutes | Employees and Partners

In this 60-minute replay, Peter Grant, Field CTO for OneIQ, reviewed and demo'd the capabilities of OneIQ including collecting data and analyzing. Additionally, Peter and the team discussed how specific partners (those with NA Channel SA coverage) will get direct access to OneIQ and other partners can get access to OneIQ via Distribution or the NA LETS team.

Tags: Technical Sales

Published: 2024-07-15
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo
Partner link: Lenovo 360 Learning Center

Course code: 071224

20. **SAP Webinar for Lenovo Sellers: Lenovo Portfolio Update for SAP Landscapes**
2024-06-04 | 60 minutes | Employees Only

Join Mark Kelly, Advisory IT Architect with the Lenovo Global SAP Center of Competence as he discusses:
•Challenges in the SAP environment
•Lenovo On-premise Solutions for SAP
•Lenovo support resources for SAP solutions

Tags: SAP, ThinkAgile, ThinkEdge, ThinkSystem

Published: 2024-06-04
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DSAPF101

Related publications and links

For more information, see these resources:

- ThinkSystem SR680a V4 product page:
https://www.lenovo.com/us/en/p/servers-storage/servers/racks/lenovo-thinksystem-sr680a-v4/len21ts0046
- ThinkSystem SR680a V4 datasheet
https://lenovopress.lenovo.com/datasheet/ds0198-lenovo-thinksystem-sr680a-v4
- User Guides for options:
https://serveroption.lenovo.com
- ServerProven hardware compatibility:
http://serverproven.lenovo.com

Related product families

Product families related to this document are the following:

- 2-Socket Rack Servers
- AI Servers
- ThinkSystem SR680a V4 Server

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