Lenovo ThinkSystem SR860 V4 Server
Product Guide

The Lenovo ThinkSystem SR860 V4 is a 4-socket large-memory server in a 4U rack design. The server offers technology advances, including Intel Xeon 6700-Series processors, up to 16 TB of 6400 MHz DDR5 memory, and up to 18x PCIe slots for adapters.

The SR860 V4 is designed to handle a wide range of data services workloads with large memory footprint demands, such as databases including in-memory databases, data lakes, big data analytics, business intelligence, and OLTP.

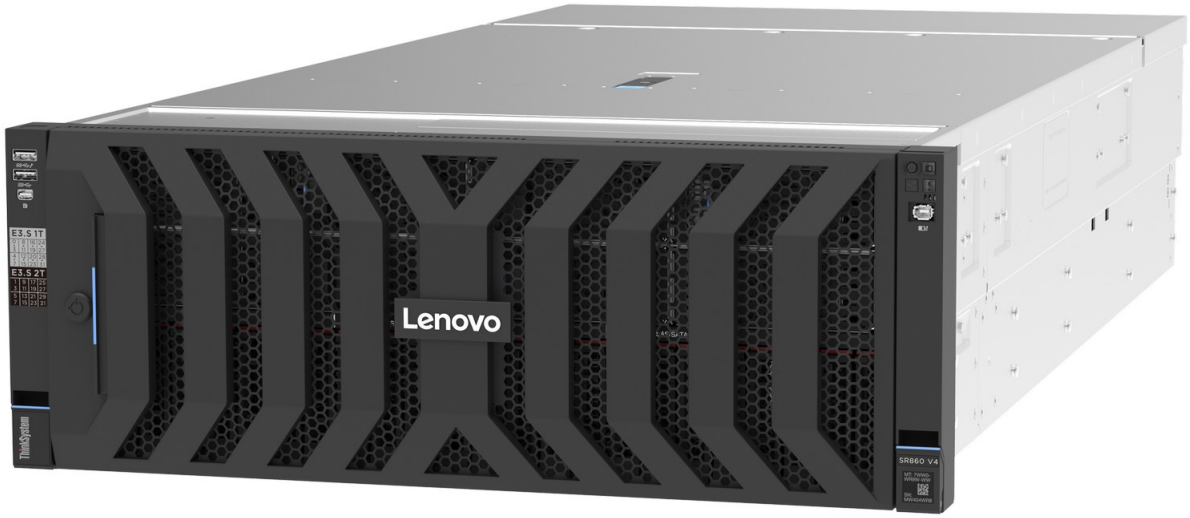

Figure 1. Lenovo ThinkSystem SR860 V4 with optional security bezel

Did you know?

The Lenovo ThinkSystem SR860 V4 provides the advanced capabilities of four of the new Intel Xeon 6 processors with Performance cores (P-cores), however if you wish, you can start with two processors and 32 DIMM slots and then easily expand up to four processors and 64 DIMMs.

The SR860 V4 has space for 48x 2.5-inch drive bays at the front of the server, and all bays can be configured as NVMe drive bays to maximize storage performance. The server also supports the new E3.S drive type, with up to 32x E3.S 1T drive bays plus 24x 2.5-inch drive bays at the front of the server.

Key features

The flexible ThinkSystem SR860 V4 server supports Intel Xeon 6 P-core processors and can scale from two to four processors. Built for standard workloads like general business applications and server consolidation, it can also accommodate high-growth areas such as databases and virtualization. The SR860 V4's agile design permits rapid upgrades for processors and memory, and its large, flexible storage capacity helps to keep pace with data growth.

With the capability to support up to 64 DIMMs, four sockets, up to 56 drives for internal storage, up to 18 PCIe slots, plus two dedicated OCP 3.0 slots for up to 400 GbE networking, the SR860 V4 provides unmatched features and capabilities in a 4U rack-mount design.

Scalability and performance

The ThinkSystem SR860 V4 offers numerous features to boost performance, improve scalability and reduce costs:

- Supports two or four Intel Xeon 6700-series processors with Performance-cores (P-cores)
  - Up to 86 cores and 172 threads
  - Core speeds of up to 4 GHz
  - TDP ratings of up to 350 W
- Support for DDR5 memory DIMMs to maximize the performance of the memory subsystem:
  - Up to 64 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 256GB 3D RDIMMs, the server supports up to 16TB of system memory
- Support for Compute Express Link (CXL) memory DIMMs in an E3.S 2T form factor, up to 16x CXL DIMMs with two processors. With CXL 2.0 for next-generation workloads, you can reduce compute latency in the data center and lower TCO. CXL is a protocol that runs across the standard PCIe physical layer and can support both standard PCIe devices as well as CXL devices on the same link.
- Up to 48x 2.5-inch drive bays -- supporting combinations of SAS or SATA HDDs, SAS or SATA SSDs, and NVMe PCIe SSDs -- provide a flexible and scalable all-in-one platform to meet your increasing demands. Up to 24x NVMe drives are supported, maximizing drive I/O performance in terms of throughput, bandwidth, and latency.
- As an alternative to 48x 2.5-inch drive bays, the server supports up to 32x E3.S 1T NVMe drives + 24x 2.5-inch drive bays. E3.S is a new form factor drive for high-density and high-performance NVMe storage.
- The server has up to two dedicated industry-standard OCP 3.0 slots 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.
- Up to 18 PCIe slots in addition to the two OCP 3.0 Ethernet slots to maximize I/O capabilities.
- Supports up to 8x single-width GPUs or 4x double-wide GPUs, for accelerated processing power in a 4U 4-socket system.
- Supports high-speed RAID controllers providing 12 Gb SAS connectivity to the drive backplanes. A variety of PCIe 3.0 and PCIe 4.0 RAID adapters are available.
- Supports M.2 drives for convenient operating system boot functions or data storage. M.2 drives can be internally mounted or can be mounted at the rear of the server as hot-swap drives. Optional RAID-0 or RAID-1.
- Supports Intel VROC (Virtual RAID on CPU) which enables basic RAID functionality on the onboard NVMe ports of the server, with no additional adapter needed.
- The server offers PCI Express 5.0 I/O expansion capabilities that doubles the theoretical maximum bandwidth of PCIe 4.0 (32GT/s in each direction for PCIe Gen 5, compared to 16 GT/s with PCIe Gen 4 and 8 GT/s with PCIe Gen 3). A PCIe 5.0 x16 slot provides 128 GB/s bandwidth, enough to support a

dual-port 200GbE network connection or a single-port 400GbE connection.

Availability and serviceability

The SR860 V4 provides many features to simplify serviceability and increase system uptime:

- Designed to run 24 hours a day, 7 days a week
- The server offers Single Device Data Correction (SDDC, also known as Chipkill), Adaptive Double-Device Data Correction (ADDDC, also known as Redundant Bit Steering or RBS), and memory mirroring for redundancy in the event of a non-correctable memory failure.
- The server offers hot-swap drives, supporting RAID redundancy for data protection and greater system uptime.
- Available M.2 boot adapters support RAID-1 (using onboard hardware RAID or using Intel VROC) which can enable two M.2 drives to be configured as a redundant pair.
- The server has up to 4x hot-swap redundant power supplies and up to 12x hot-swap redundant fans to provide availability for business-critical applications.
- The light path diagnostics feature uses LEDs to lead the technician to failed (or failing) components, which simplifies servicing, speeds up problem resolution, and helps improve system availability.
- Solid-state drives (SSDs) offer more reliability and performance than traditional mechanical HDDs for greater uptime.
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (SAS/SATA HDDs and SSDs, NVMe SSDs, M.2 storage), fans, power supplies, RAID controllers, server ambient and subcomponent temperatures. Alerts can be surfaced through the XClarity Controller to managers such as Lenovo XClarity Administrator, VMware vCenter, and Microsoft System Center. These proactive alerts let you take appropriate actions in advance of possible failure, thereby increasing server uptime and application availability.
- The built-in XClarity Controller continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Built-in diagnostics in UEFI, using Lenovo XClarity Provisioning Manager, speed up troubleshooting tasks to reduce service time.
- Lenovo XClarity Provisioning Manager 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)
- Offers a diagnostics port on the front of the server to allow you to attach an external diagnostics handset for enhanced systems management capabilities.
- Support for the XClarity Administrator Mobile app running on a supported smartphone or tablet 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 (varies by geography), 9 x 5 next business day. Optional service upgrades are available.

Manageability and security

Systems management features simplify local and remote management of the SR860 V4:

- The server includes XClarity Controller 3 (XCC3) to monitor server availability. Optional upgrade to XCC3 Premier to provide 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 Ethernet port at the rear of the server for remote management (BMC management).
- Lenovo XClarity Administrator offers comprehensive hardware management tools 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, RAID Setup wizard, operating system installation function, and diagnostic functions.
- Support for Lenovo XClarity Energy Manager which captures real-time power and temperature data from the server and provides automated controls to lower energy costs.
- 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
- Enhanced security for storage connectivity with Fibre Channel adapters such as the Emulex SecureHBA, which provides autonomous in-flight encryption with integrated post-quantum cryptography (PQC) algorithms and CNSA 1.0 and 2.0 compliance.
- 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.
- Supports Secure Boot to ensure only a digitally signed operating system can be used. Supported with HDDs and SSDs, as well as M.2 drives.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.
- Intel Execute Disable Bit functionality can prevent certain classes of malicious buffer overflow attacks when combined with a supported operating system.
- Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks, allowing an application to run in its own isolated space, protected from all other software running on a system.
- Additional physical security features are an available chassis intrusion switch and available lockable front bezel.

Energy efficiency

The SR860 V4 offers the following energy-efficiency features to save energy, reduce operational costs, and increase energy availability:

- The server supports advanced Lenovo Neptune Core direct-water cooling (DWC) capabilities, where heat from the processors is removed from the rack and the data center using an open loop and coolant distribution units, resulting in lower energy costs.
- Energy-efficient system board components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Titanium certifications
- Solid-state drives (SSDs) consume as much as 80% less power than traditional spinning 2.5-inch HDDs.
- Support for Lenovo XClarity Energy Manager provides advanced data center power notification, analysis, and policy-based management to help achieve lower heat output and reduced cooling needs.
- The server uses hexagonal ventilation holes, which can be grouped more densely than round holes, providing more efficient airflow through the system and thus keeping your system cooler.

Comparing the SR860 V4 to the SR860 V3

The ThinkSystem SR860 V4 improves on the previous generation SR860 V3, as summarized in the following table.

Table 1. Comparing the SR860 V4 to the previous generation SR860 V3

Feature	SR860 V3	SR860 V4	Benefits
Form factor	• 4U4S with optional security bezel	• 4U4S with optional security bezel	• High density server
Processor	• 4x 4th Gen Intel Xeon Scalable Processors "Sapphire Rapids" • "Eagle Stream" platform • Up to 60 cores • TDP up to 350W • 80x PCIe 5.0 lanes per processor	• 4x Intel Xeon 6700-series processors with Performance cores (P-cores) "Granite Rapids SP" • "Birch Stream" platform • Up to 86 cores and 172 threads • TDP up to 350W • 88x PCIe 5.0 lanes per processor	• Up to 43% more processor cores • Increased performance • Consolidation of more apps on same number of servers, reducing costs • Increased number of lanes means more higher performance networking and NVMe storage
Memory	• DDR5 memory operating up to 4800 MHz • 4800 MHz @ 1DPC, 4400 MHz @ 2DPC • 8 channels per CPU • 64 DIMMs (16 per processor), 2 DIMMs per channel • Supports RDIMMs, 3DS RDIMMs, 9x4 RDIMMs • Up to 16TB of system memory	• DDR5 memory operating up to 6400 MHz • 6400 MHz @ 1DPC, 5200 MHz @ 2DPC • 8 channels per CPU • 64 DIMMs (16 per processor), 2 DIMMs per channel • Supports RDIMMs, 3DS RDIMMs • Supports CXL 2.0 memory in E3.S 2T form factor, up to 16x modules with four processors • Up to 16TB of system memory	• Support for new memory technologies • 33% bandwidth increase • Support for CXL memory enables additional memory support using E3.S drive bays
Internal storage	• Up to 48x 2.5-inch hot-swap drive bays (24x NVMe) • Support for NVMe or SAS or SATA • Supports PCIe Gen4 and Gen5 drives • 2x Internal M.2 with optional RAID 1 • 2x rear 7mm hot swap SAS/SATA/NVMe (RAID support via VROC) • PCIe 4.0 and PCIe 5.0 NVMe drive support	• Up to 48x 2.5-inch hot-swap drive bays (24x NVMe), or • Up to 32x E3.S 1T + 24x 2.5-inch SAS/SATA hot-swap drive bays • Support for NVMe or SAS or SATA • Supports PCIe Gen4 and Gen5 drives • 2x Internal M.2 with optional RAID 1 • 2x rear hot-swap M.2 with RAID 1 • PCIe 4.0 and PCIe 5.0 NVMe drive support	• Flexible storage offerings • Support E3.S 1T NVMe drives • Up to 32x NVMe drives for high-performance storage • M.2 for effective boot drive support • Support hot swap M.2 drives for increased uptime

Feature	SR860 V3	SR860 V4	Benefits
RAID	• 8-, 16- and 32-port RAID adapters with up to 8GB flash • Support for RAID adapters and HBAs • Support for PCIe or Internal cabled (CFF) form factor adapters • VROC for NVMe	• 8-, 16- and 32-port RAID adapters with up to 8GB flash • Support for RAID adapters and HBAs • Support for PCIe or Internal cabled (CFF) form factor adapters • VROC for NVMe	• Consistent RAID/HBA support • Flexible config solution • PCIe Gen 5 allows for greater storage performance
Networking	• 2x OCP 3.0 rear-accessible slots with PCIe Gen 5 interface • Additional PCIe adapters supported • 1GbE dedicated Management port	• 2x OCP 3.0 rear-accessible slots with PCIe Gen 5 interface • Additional PCIe adapters supported • 1GbE dedicated Management port	• Support for two OCP adapters in dedicated slots
PCIe	• Supports PCIe 5.0 • Up to 16x (12x Gen5 + 4x Gen4) or • Up to 18x Gen4 or • 4x Gen4 slots • All slots via riser cards • 2x OCP slots (PCIe Gen5)	• Supports PCIe 5.0 • Up to 18x (16x Gen5 + 2x Gen4) • All slots via riser cards • 2x OCP slots (PCIe Gen5)	• An increase of 4x Gen5 slots • PCIe Gen 5 allows for greater I/O performance • Flexible PCIe offerings • More PCIe connections for greater PCIe/NVMe support
GPU support	• Supports up to 8x single-wide 75W GPUs • Supports up to 4x double-wide 350W GPUs	• Supports up to 8x single-wide 75W GPUs • Supports up to 4x double-wide 400W GPUs	• High performance GPU support
Management and security	• Integrated XClarity Controller 2 • Support for full XClarity toolset including XClarity Administrator • Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) • Tamper Switch security solution (intrusion switch) • Supports optional external diagnostics handset	• Integrated XClarity Controller 3 • Support for full XClarity toolset including XClarity Administrator • Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) • Tamper Switch security solution (intrusion switch) • Supports optional external diagnostics handset	• New XCC3 offers improved management capabilities including OpenBMC support • Same system management tool with previous generation • Silicon-level security solution • Redundant remote management connectivity
Cooling	• 6x hot-swap dual-rotor fans • N+1 rotor redudancy	• 6x hot-swap dual-rotor fans • N+1 rotor redudancy • Optional Neptune Core water cooling for processors	• Water cooling of processors results in lower energy costs

Feature	SR860 V3	SR860 V4	Benefits
Power	• 4x PSUs, Redundant N+N • Choice of 1100-2600W AC hot-swap power supplies • Available in Titanium and Platinum efficiency levels • 240V HVDC support for PRC customers • CRPS power supply support for PRC customers • -48V or 336V DC power supply for PRC customers • Active-Standby mode	• 4x PSUs, Redundant N+N • Choice of 1300W, 2000W, 2700W, 3200W AC Hot Plug PSUs • Available in Titanium and Platinum efficiency levels • 1300W -48VDC general support • 1300W HVAC/HVDC general support • 240V HVDC support for PRC customers • Active-Standby mode	• Higher capacity power supplies to support high-powered components • Support Industrial CRPS form factor PSUs • Support for Telco customers with -48V requirements • Support for customers with HVDC/HVAC power requirements

Components and connectors

The following figure shows the front of the SR860 V4.

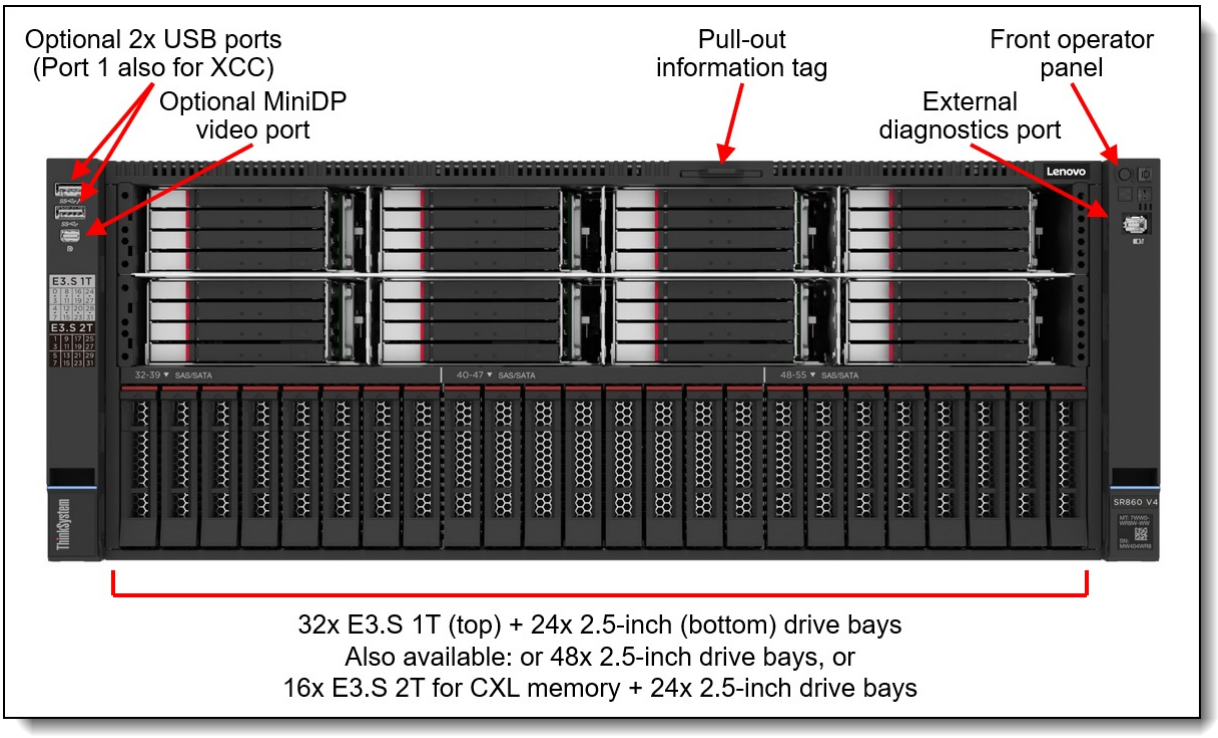

Figure 2. Front view of the ThinkSystem SR860 V4 with 2.5-inch drive bays

For details on the front ports, including the optional front USB and Mini DP video port, see the Local management section.

The following figure shows the front configurations of the SR860 V4. The server supports three different drive bay configurations:

- Up to 48x 2.5-inch hot-swap drives
- Up to 32x E3.S 1T + 24x 2.5-inch hot-swap drive bays
- Up to 16 E3.S 2T bays for CXL memory + 24x 2.5-inch hot-swap drive bays

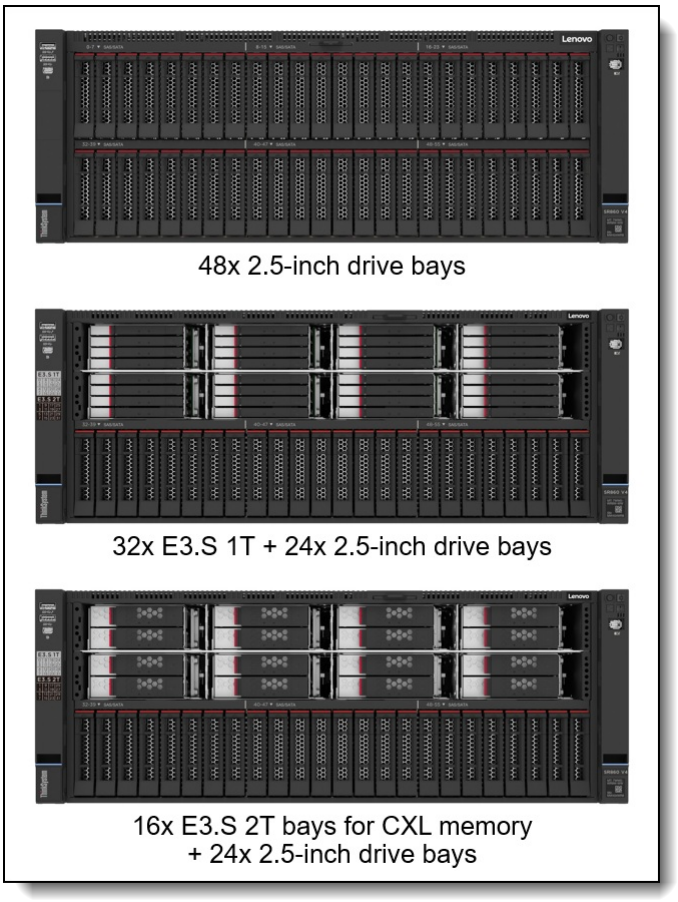

Figure 3. Front view configurations of the ThinkSystem SR860 V4

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

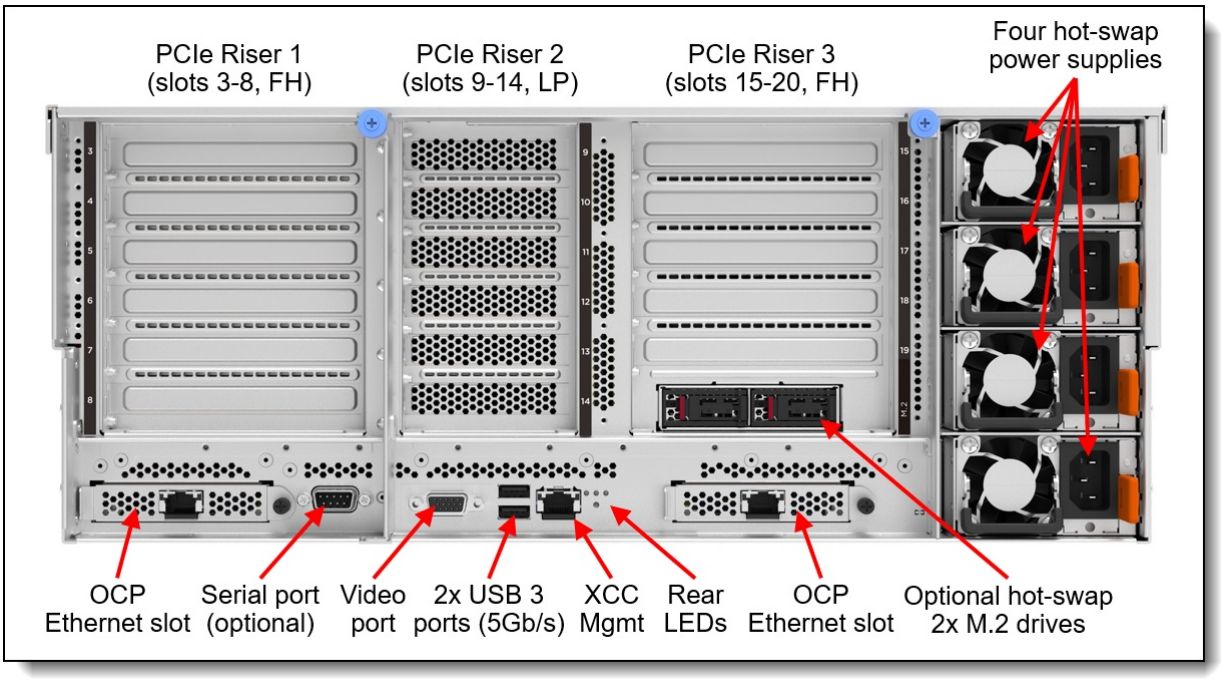

Figure 4. Rear view of the ThinkSystem SR860 V4 (configuration with full-height slots and rear M.2 drive bays)

The following figure shows the available rear configurations, including the optional hot-swap M.2 drive bays. The server also supports open-loop water cooling, and the figure also shows where the water connections are located.

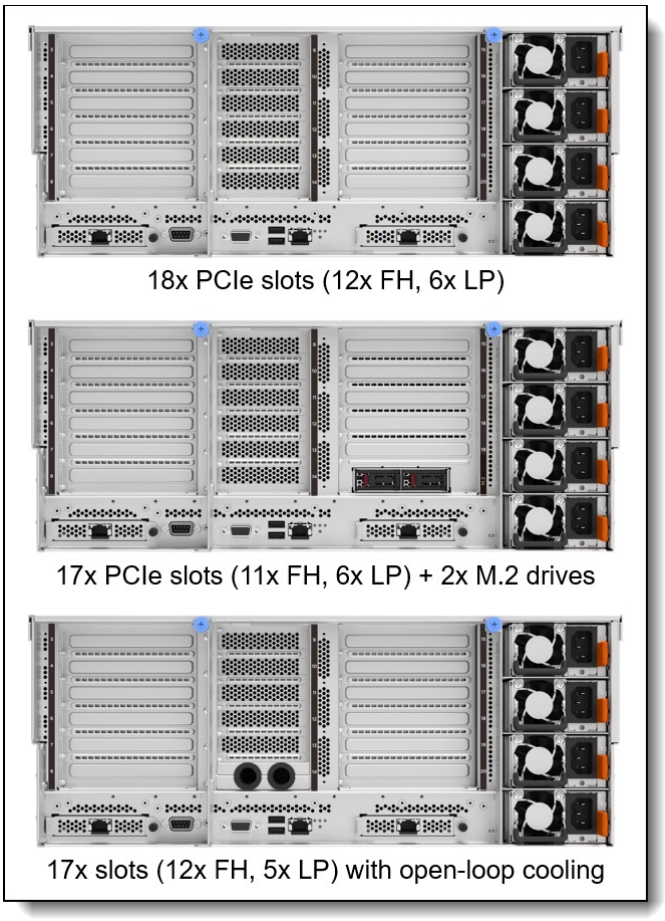

Figure 5. Rear configurations of the SR860 V4

The following figure shows the locations of key components inside the server (shown configured with Lenovo Neptune Core open-loop water cooling).

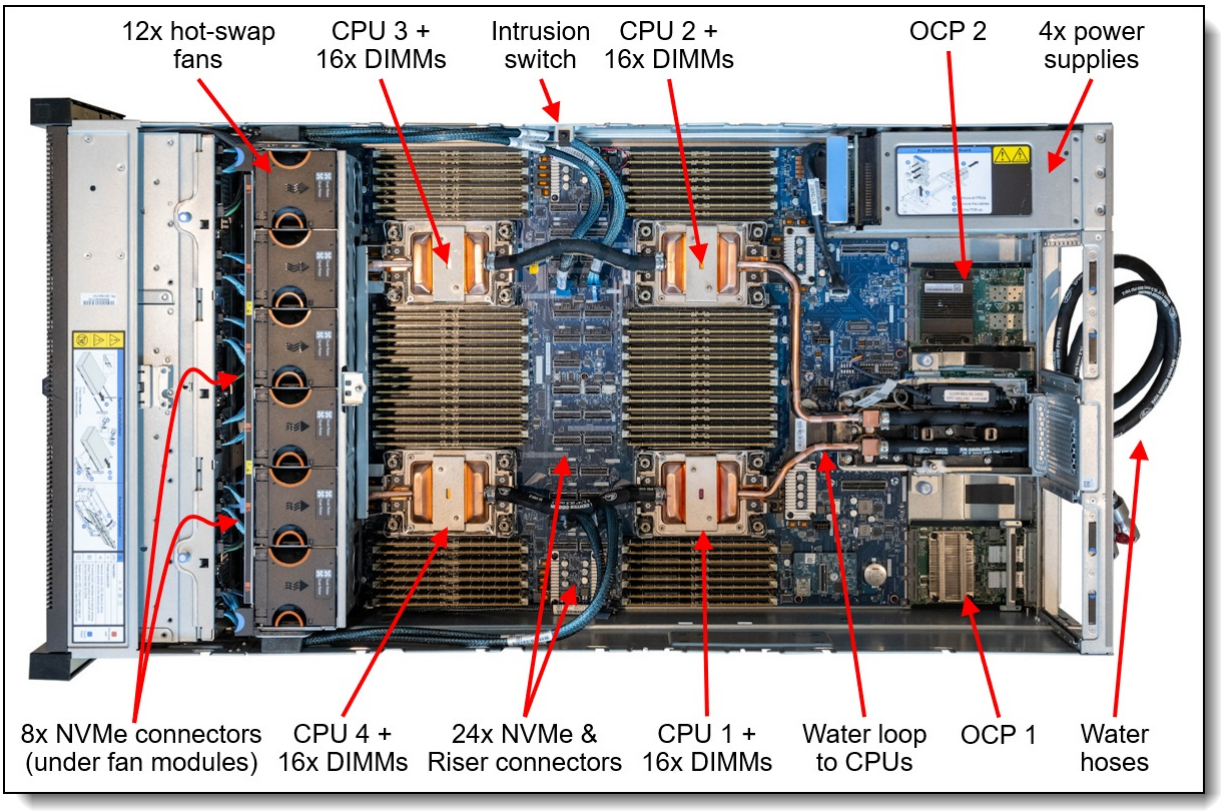

Figure 6. Internal view of the ThinkSystem SR860 V4 (shown configured with Lenovo Neptune Core open-loop water cooling)

System architecture

This section shows the architectural block diagrams of the SR860 V4, showing the major components and their connections.

The following figure shows the block diagram for the with 48x 2.5-inch drive bays, 24 of which can be NVMe or AnyBay drives.

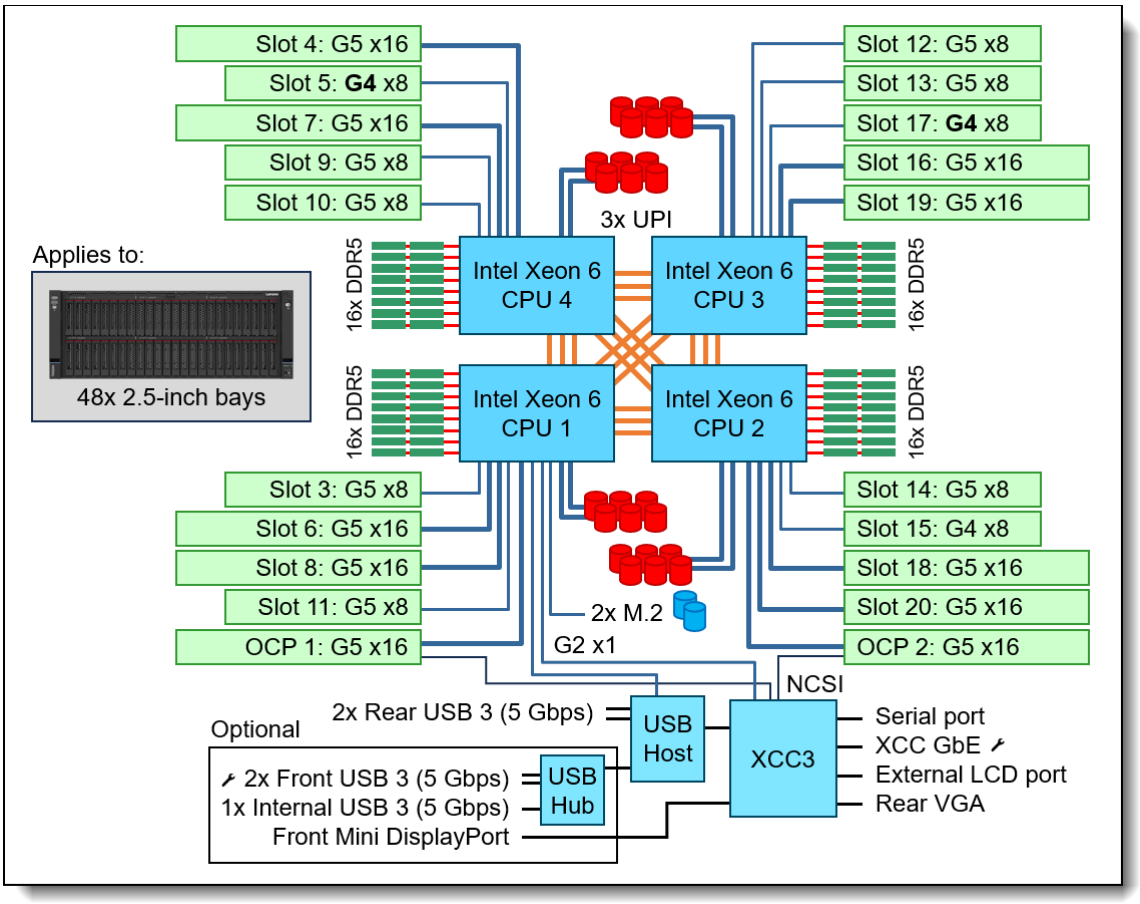

Figure 7. SR860 V4 system architectural block diagram - 2.5-inch drive bays

The following figure shows the block diagram for the with 32x E3.S drive bays + 24x 2.5-inch SAS/SATA drive bays.

Slots 6 and 18: As noted in the figure, if more than 4x E3.S backplanes (more than 16x E3.S 1T drive bays) are configured, then slot 6 and slot 18 are not available.

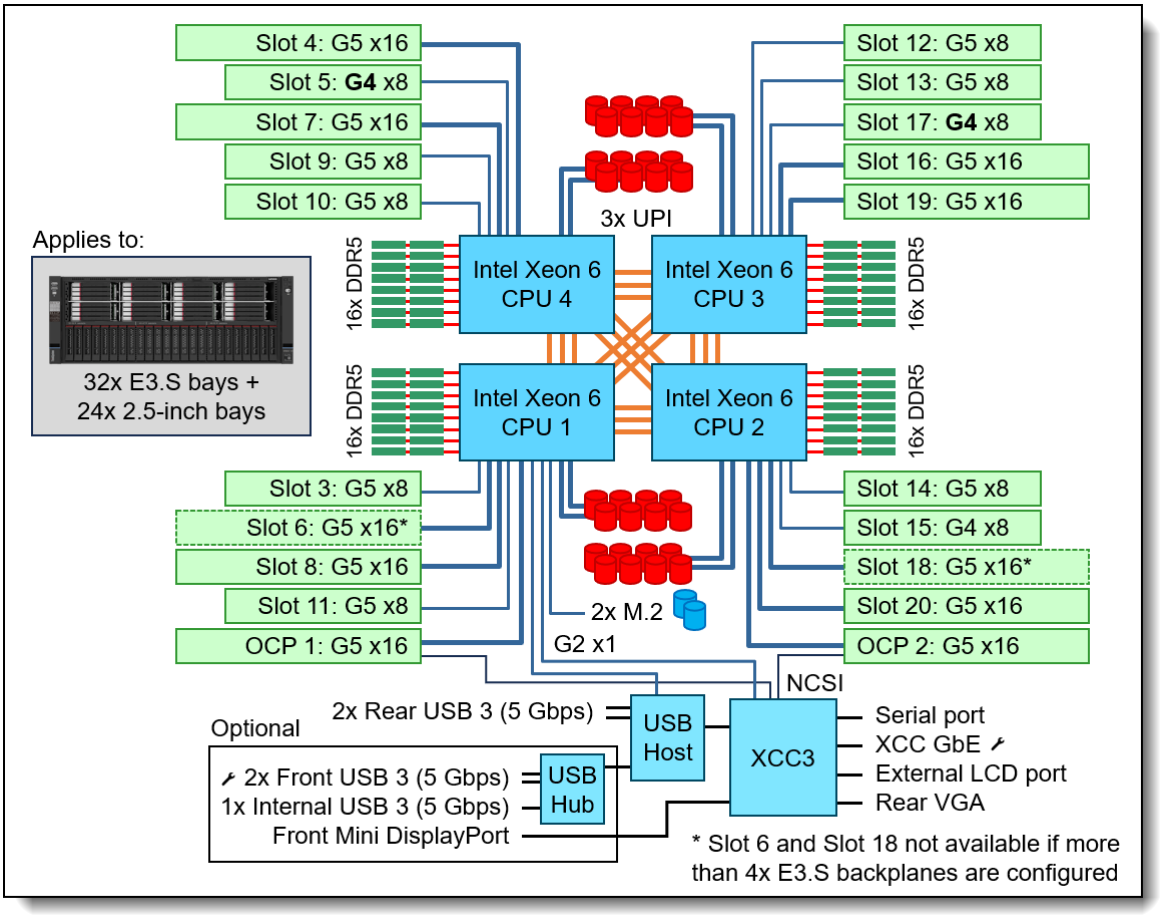

Figure 8. SR860 V4 system architectural block diagram - 2.5-inch drive bays

Standard specifications

The following table lists the standard specifications.

Table 2. Standard specifications

Components	Specification
Machine types	• 7DJQ - 1 year warranty • 7DJN - 3 year warranty • 7DJR - 3 year warranty - SR860 V4 with SAP HANA
Form factor	4U rack
Processor	Two or four Intel Xeon 6700P-series processors (formerly codenamed "Granite Rapids SP"). Supports processors up to 86 cores and 172 threads, core speeds of up to 4.0 GHz, and TDP ratings of up to 350 W.
Chipset	None. Integrated into the processor
Memory	64 DIMM slots with four processors (16 DIMM slots per processor). Each processor has 8 memory channels, with 2 DIMMs per channel (DPC). Lenovo TruDDR5 RDIMMs and 3DS RDIMMs are supported. RDIMMs operate at up to 6400 MHz at 1 DPC and up to 5200 MHz at 2 DPC. Up to 16x CXL 2.0 memory modules are also supported, installed in the front E3.S 2T drive bays (4 processors required)
Memory maximum	Up to 16TB by using 64x 256GB 3DS RDIMMs

Components	Specification
Memory protection	ECC, SDDC (for x4-based memory DIMMs), ADDDC (for x4-based memory DIMMs), and memory mirroring.

Disk drive bays	Three drive bay configuration choices:
	• Up to 48x 2.5-inch hot-swap drives:
	  ◦ All SAS/SATA
	  ◦ 24x AnyBay + 24x SAS/SATA
	• Up to 32x E3.S 1T NVMe hot-swap + 24x 2.5-inch SAS/SATA hot-swap drive bays
	• Up to 16 E3.S 2T bays for CXL memory + 24x 2.5-inch SAS/SATA hot-swap drive bays
	M.2 support, for OS boot and drive storage support:
	• 2x rear hot-swap M.2 drive bays (configurations with full-height slots only), or
	• Internal M.2 module supporting up to two M.2 drives
	See Storage configurations for details.

Maximum internal storage	• 2.5-inch drives:
	  ◦ 368.64TB using 48x 7.68TB 2.5-inch SAS/SATA SSDs
	  ◦ 368.64TB using 24x 15.36TB 2.5-inch NVMe SSDs
	  ◦ 115.2TB using 48x 2.4TB 2.5-inch HDDs
	• E3.S drives
	  ◦ 491.52TB using 32x 15.36TB E3.S EDSFF NVMe SSDs

Storage controllers	• Onboard NVMe ports with optional RAID support using Intel VROC • NVMe RAID support using a Tri-mode RAID adapter • 12 Gb SAS/SATA RAID adapters, PCIe 4.0 or PCIe 3.0 host interface • 12 Gb SAS/SATA HBA (non-RAID), PCIe 4.0 or PCIe 3.0 host interface
Optical drive bays	No internal optical drive.
Tape drive bays	No internal backup drive.
Network interfaces	Two dedicated OCP 3.0 SFF slots with a PCIe 5.0 x16 host interface. Support a variety of 2-port and 4-port adapters with up to 400 GbE network connectivity. One port of each installed OCP adapter can optionally be shared with the XClarity Controller (XCC) management processor for Wake-on-LAN and NC-SI support.
PCI Expansion slots	Up to 18 PCIe slots, depending on the configuration, plus two Gen5 OCP 3.0 slots. Slot combinations are based on the risers selected: • 16x PCIe Gen5 slots + 2x PCIe Gen4 slots • 4x PCIe Gen4 slots (entry configuration) See the I/O expansion section for details.
GPU support	Support for up to 8x single-wide GPUs or 4x double-wide GPUs
Ports	Front: External diagnostics port, optional 2x USB 3 (5 Gb/s) port, one supports XCC local management, optional Mini DisplayPort (miniDP) v1.1a video port. Rear: 2x USB 3 (5 Gb/s) ports, 1x VGA video port, optional 1x DB-9 COM serial port, 1x RJ-45 1GbE systems management port for XCC remote management. Internal: Optional 1x USB 3 (5 Gb/s) connector for operating system or license key purposes

Components	Specification
Cooling	12x N+1 redundant hot-swap 60 mm fans (all 12 standard). Fans are N+1 redundant, tolerating a single-rotor failure. One additional fan integrated in each of the two power supplies. For customers with water infrastructure in their data center, the server also supports open-loop water cooling for efficient heat removal.
Power supply	Up to four hot-swap redundant AC power supplies, 80 PLUS Platinum or 80 PLUS Titanium certification. 1300W, 2000W, 2700W and 3200W AC options. All AC power supplies support 230V power. No support for 115V. In China only, all power supply options support 240 V DC. Support for HVDC and -48V DC power supply options.
Video	Embedded graphics with 16 MB memory with 2D hardware accelerator, integrated into the XClarity Controller 3 management controller. Two video ports (rear VGA and optional front Mini DisplayPort); both can be used simultaneously if desired. Maximum resolution is 1920x1200 32bpp at 60Hz.
Hot-swap parts	Drives, power supplies, and fans.
Systems management	Operator panel with status LEDs. Optional External Diagnostics Handset with LCD display. Clarity Controller 3 (XCC3) embedded management based on the ASPEED AST2600 baseboard management controller (BMC) and OpenBMC, XClarity Administrator centralized infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. XCC3 Premier is included which enables remote control functions and other features.
Security features	Chassis intrusion switch, Power-on password, administrator's password, Root of Trust module supporting TPM 2.0 and Platform Firmware Resiliency (PFR). Optional lockable front security bezel.
Operating systems supported	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi, Ubuntu Server. See the Operating system support section for specifics.
Limited warranty	Three-year or one-year (model dependent) customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.
Dimensions	Width: 447 mm (17.6 in.), height: 175 mm (6.9 in.), depth of 2.5-inch chassis: 906 mm (35.7 in.), depth of E3.S chassis: 946 mm (37.2 in.). See Physical and electrical specifications for details.
Weight	Maximum weight: 64 kg (141.1 lb)

Models

ThinkSystem SR860 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 SR860 V4 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Preconfigured server models may also be available for the SR860 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 SR860 V4 server.

Table 3. Base CTO models

Machine Type/Model	Description
7DJNCTO1WW	ThinkSystem SR860 V4 – 3-year warranty
7DJQCTO1WW	ThinkSystem SR860 V4 – 1-year warranty
7DJRCTO1WW	ThinkSystem SR860 V4 – SAP HANA configurations with 3-year warranty

Base feature codes

Models of the SR860 V4 are defined based on the configuration of front drives. The feature codes for these chassis bases are as listed in the following table.

Table 4. Chassis base feature codes

Feature code	Description	Purpose
C97F	ThinkSystem SR860 V4 2.5" Chassis	Configurations with 2.5-inch drive bays
C974	ThinkSystem SR860 V4 E3.S Chassis	Configurations with E3.S drive bays

Processors

The SR860 V4 supports 2 or 4 of the following Intel processors:

- Intel Xeon 6700-series with P-cores (formerly "Granite Rapids SP" or GNR SP)

In the SR860 V4, the processors are connected together using 3x UPI 2.0 links in a mesh configuration. Quantities of 1 or 3 processors 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 SR860 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				
4XG7B08897	C5R7	6714P	ThinkSystem SR860 V4 Intel Xeon 6714P 8C 165W 4.0GHz Processor w/o Fan	4
4XG7B08896	C5R5	6724P	ThinkSystem SR860 V4 Intel Xeon 6724P 16C 210W 3.6GHz Processor w/o Fan	4
4XG7B08895	C5RC	6728P	ThinkSystem SR860 V4 Intel Xeon 6728P 24C 210W 2.7GHz Processor w/o Fan	4
4XG7B08894	C5RE	6738P	ThinkSystem SR860 V4 Intel Xeon 6738P 32C 270W 2.9GHz Processor w/o Fan	4

Part number	Feature code	SKU	Description	Maximum quantity
4XG7B08893	C5QS	6748P	ThinkSystem SR860 V4 Intel Xeon 6748P 48C 300W 2.5GHz Processor w/o Fan	4
4XG7B08892	C5RF	6768P	ThinkSystem SR860 V4 Intel Xeon 6768P 64C 330W 2.4GHz Processor w/o Fan	4
4XG7B08891	C5RA	6788P	ThinkSystem SR860 V4 Intel Xeon 6788P 86C 350W 2.0GHz Processor w/o Fan	4

Processor features

Processors supported by the SR860 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 SR860 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															

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	QAT	DLB	DSA	IAA	SGX Enclave Size
6714P	LCC	8 / 16	4.0GHz / 4.3 GHz	48 MB	8	6400 MHz	None	4 / 24 GT/s	88	165W	2	2	2	2	512GB
6724P	LCC	16 / 32	3.6GHz / 4.3 GHz	72 MB	8	6400 MHz	None	4 / 24 GT/s	88	210W	2	2	2	2	512GB
6728P	HCC	24 / 48	2.7GHz / 4.1 GHz	144 MB	8	6400 MHz	None	4 / 24 GT/s	88	210W	4	4	4	4	512GB
6738P	HCC	32 / 64	2.9GHz / 4.2 GHz	144 MB	8	6400 MHz	None	4 / 24 GT/s	88	270W	4	4	4	4	512GB
6748P	HCC	48 / 96	2.5GHz / 4.1 GHz	192 MB	8	6400 MHz	None	4 / 24 GT/s	88	300W	4	4	4	4	512GB
6768P	XCC	64 / 128	2.4GHz / 3.9 GHz	336 MB	8	6400 MHz	None	4 / 24 GT/s	88	330W	4	4	4	4	512GB
6788P	XCC	86 / 172	2.0GHz / 3.8 GHz	336 MB	8	6400 MHz	None	4 / 24 GT/s	88	350W	4	4	4	4	512GB

Intel On Demand feature licensing

Intel Xeon 6 processors do not support Intel On Demand feature licensing for Accelerators.

Two-processor configurations

The SR860 V4 can be used with two processors installed. Most core functions of the server (including the XClarity Controller) are connected to processor 1 or 2 as shown in the System architecture section.

With only two processors, the server has the following capabilities:

- 32 memory DIMMs for an 8TB maximum
- 2x OCP slots: Slots 1, 2
- 8x PCIe slots are available - see I/O expansion for details
  - Riser 1: slots 3, 6, 8
  - Riser 2: slots 11, 14
  - Riser 3: slots 15, 18, 20
- Support for only 2x DW GPUs or 4x SW GPUs
- Up to 8x NVMe drives

E3.S 1T and E3.S 2T configurations all require 4 processors.

Processor cooling

The SR860 V4 offers two implementations to remove heat from the processors:

- Performance heatsinks for air-cooled processors
- Open-loop liquid cooling of the processors, as described in the Lenovo Processor Neptune Core Module section

Ordering information is listed in the following table.

Table 7. Processor cooling options

Feature code	Description	Purpose
Cooling options		
BNWR	ThinkSystem SR860 V3/ST650 V3 CPU Heatsink	Standard heatsinks for: • Lower-TDP processors: Front & rear sockets • Higher-TDP processors: Front sockets only
BU4F	ThinkSystem SR850 V3/SR860 V3 Rear Winged 2U Heatsink	Performance heatsinks for: • Higher-TDP processors: Rear sockets only
C975	ThinkSystem SR860 V4 open loop Module	Enables open-loop liquid cooling of the processors. See the Lenovo Processor Neptune Core Module section.

Lenovo Processor Neptune Core Module - Open-loop liquid cooling

The SR860 V4 also supports advanced direct-water cooling (DWC) capability with the Lenovo Processor Neptune Core Module. This module implements a liquid cooling solution where heat from the processors is removed from the rack and the data center using an open loop and coolant distribution units.

With the Processor Neptune Core Module, all heat generated by the processors is removed from the server using water. This means that the server fans and data center air conditioning units only need to remove the heat generated by the other components. This results in lower air conditioning costs and it enables the use of slower fans which results in lower overall power consumption.

The following figure shows the Lenovo Processor Neptune Core Module.

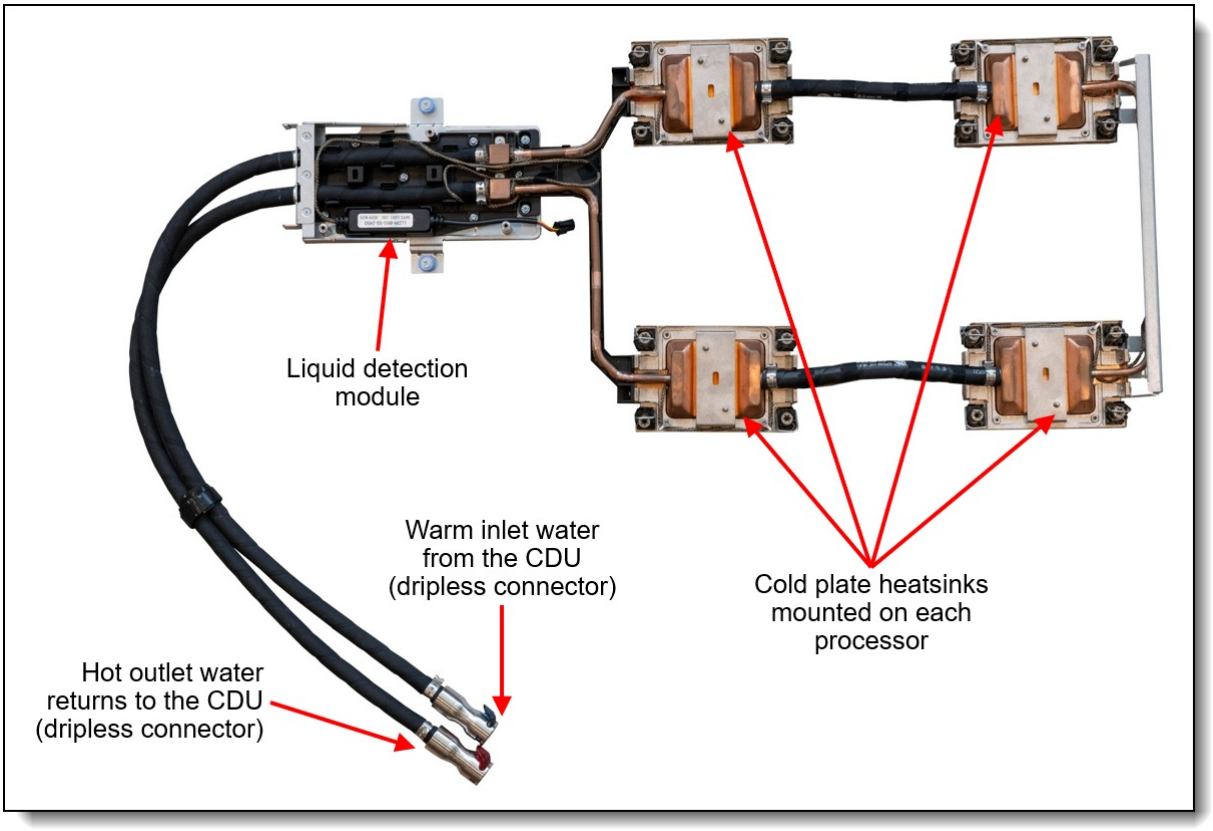

Figure 9. Lenovo Processor Neptune Core Module

The Processor Neptune Core Module also includes a leak detection module which can detect a leakage of more than 0.5ml (about 10 drops) along the length of the tube and then issue an event to the XClarity Controller. XCC will then post an error to the System Event Log and enable further actions. Once the liquid evaporates, a further event is issue to XCC.

The Processor Neptune Core Module is only available in CTO orders, not as a field upgrade. Ordering information is listed in the following table.

Table 8. Lenovo Processor Neptune Core Module

Part number	Feature code	Description
CTO only	C975*	ThinkSystem SR860 V4 open loop Module

* In DCSC, this feature code is listed in the Processor tab

Configuration notes:

- The Processor Neptune Core Module requires water infrastructure be available in the rack cabinet and data center, as described in the Water infrastructure section.
- All processor SKUs are supported
- Either two or four CPUs are supported
- All front drive bay configurations are supported
- Slots 14 is not available for adapters - the water loop is routed through the space otherwise occupied by slot 14
- M.2 adapters are supported based on the configurations in the Storage configurations section
- Standard fans can be configured in most configurations
- The use of a cable management arm (CMA) is not supported

UEFI operating modes

The SR860 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.

Limited choice for LCC processors: If you select a processor with an LCC topology (see the Die column in the Processor features table), you will only be able to select General Computing - Power Efficiency (C3JB) in DCSC. The other modes are still supported, however, they can only be set in the field, not in the factory. Note that this is the only mode that is ERP Lot9-compliant for EU and UK customers.

Table 9. 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

The preset modes for the SR860 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. The profile does not assume an application is Non-Uniform Memory Access (NUMA) aware.

Memory

The SR860 V4 uses Lenovo TruDDR5 memory operating at up to 6400 MHz. The server supports up to 64 DIMMs with 4 processors. The processors have 8 memory channels and support 2 DIMMs per channel (DPC). The server supports up to 16TB of memory using 64x 256GB RDIMMs and two processors. The server also supports up to 16x CXL memory DIMMs (4 processors are required) which are installed in E3.S 2T drive bays.

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

- RDIMMs and 3DS RDIMMs:
  - 1 DIMM per channel: Up to 6400 MHz
  - 2 DIMMs per channel using RDIMMs: Up to 5200 MHz
- CXL 2.0 memory modules - install in E3.S 2T front drive bays
  - 16 CXL modules (4 processors; 4 memory modules per processor)

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.

RDIMM memory

The following table lists the RDIMMs and 3DS RDIMMs that are currently supported by the SR860 V4. These DIMMs are installed in the DIMM slots adjacent to the processors. The table also lists the supported quantities.

Table 10. Memory options for DIMM slots

Part number	Feature code	Description	DRAM technology	Quantity with 2x CPUs	Quantity with 4x CPUs
x4 RDIMMs					
4X77A90964	C0U9	ThinkSystem 32GB TruDDR5 6400MHz (1Rx4) RDIMM	16Gb	8, 16 total	16, 32 total
4X77A90966	C0TQ	ThinkSystem 64GB TruDDR5 6400MHz (2Rx4) RDIMM	16Gb	2, 8, 16, 32 total	4, 16, 32, 64 total
4X77A90997	BZ7D	ThinkSystem 96GB TruDDR5 6400MHz (2Rx4) RDIMM	24Gb	16, 32 total	32, 64 total
4X77A90993	C0U1	ThinkSystem 128GB TruDDR5 6400MHz (2Rx4) RDIMM	32Gb	16, 32 total	32, 64 total
3DS RDIMMs					
4X77A90994	C0U0	ThinkSystem 256GB TruDDR5 6400MHz (4Rx4) 3DS RDIMM	16Gb	8, 16 per CPU	32, 64 total

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

CXL memory

The following table lists the CXL memory that are currently supported by the SR860 V4. These memory options are installed in the front E3.S 2T drive bays at the front of the server.

OS support for CXL: CXL memory is not supported with Windows Server and VMware ESXi. See OSIG for specifics:
https://lenovopress.lenovo.com/osig#servers=sr860-v4-xeon-6-p-cores-7djt-7djs-7dju&os_families=microsoft-windows-server&os_families=vmware-esxi&support=all

VROC restriction with CXL memory : VROC NVMe RAID is currently not supported with the following CXL memory configurations:

- Configurations with a mix of CXL memory (E3.S 2T) bays and E3.S 1T drive bays
- Configurations with CXL memory (E3.S 2T) bays and M.2 drives

CXL memory configurations without E3.S 1T drives or without M.2 drives are not affected and are supported. This restriction is planned to be removed with a firmware update planned for 3Q/2025.

Table 11. CXL memory options

Part number	Feature code	Description	Quantity with 2x CPUs	Quantity with 4x CPUs
CXL DIMMs				
4X77A91000	C0TW	ThinkSystem 96GB E3.S 2T CXL DIMM	No support	16
4X77A91001	C0TV	ThinkSystem 128GB E3.S 2T CXL DIMM	No support	16

For servers that have a combination of DDR5 memory and CXL memory, you can specify how you want to the memory spaces to be presented to the operating system. For CTO orders, you can specify the factory to set the memory mode, as described in the table below. The memory mode can also be changed in UEFI at a later stage.

Memory mirroring: The use of memory mirroring is mutually exclusive with both of these modes.

Table 12. Interleaving choices for CTO orders (Memory tab in DCSC)

Part number	Feature code	Description	Purpose
CTO only	C8VB*	DDR5 and (volatile) CXL Memory interleaved together in one 12-way set	Heterogeneous mode. This mode supports memory interleave between CXL memory and DDR memory. Interleaving of memory requests across a combination of native attach DDR5 channels and CXL-connected memory to increase aggregate bandwidth. The entire combined capacity of DDR memory and CXL memory is visible to the software as a single NUMA domain. As a result, no software changes are needed in the system to use heterogeneous interleave mode.
CTO only	C8VC	Native DDR5(1LM) and CXL Memory(volatile) visible to SW as separate tiers, separately interleaved	This is a 2-tier memory mode, where the DDR5 memory and CXL memory are different address spaces and separate NUMA nodes. This mode is also referred to as Software Managed tiering because the application must manage the placement of data in separate tiers and must manage any desired movement of data between tiers. This management of placement and movement may be performed by the OS, or by a higher-level middleware or directly by an application.

* Not supported with LCC processors. See the Processor features section to see which processors have an LCC die.

For more information, see the Lenovo Press paper, Introduction to CXL 2.0 Memory.

Memory rules

The following rules apply when specifying the memory configuration:

- The tables above list the supported quantities. Other quantities are not supported.
- All installed DIMMs, except for CXL memory, must be identical part numbers; mixing not supported
- With 2.5-inch drive configurations, if 256GB 3DS RDIMMs are selected, then at most 3x drive backplanes (24 drives) can be installed.
- The use of CXL memory requires 4 processors (the use of 2 processors may be supported via Special Bid)

- CXL memory can be mixed with the following RDIMMs
  - ThinkSystem 64GB TruDDR5 6400MHz (2Rx4) RDIMM, 4X77A90966
  - ThinkSystem 96GB TruDDR5 6400MHz (2Rx4) RDIMM, 4X77A90997
  - ThinkSystem 128GB TruDDR5 6400MHz (2Rx4) RDIMM, 4X77A90993
- CXL memory is installed in E3.S 2T drive bays, however hot-swap functionality is not supported
- CXL heterogenous mode (feature C8VB) is not supported with processors with an LCC die. See the Processor features section to see which processors have an LCC die.

For best performance, consider the following:

- Ensure the memory installed is at least the same speed as the memory bus of the selected processor.
- Populate all memory channels.

The following memory protection technologies are supported:

- ECC detection/correction
- Bounded Fault detection/correction
- SDDC (for 10x4-based memory DIMMs; look for "x4" in the DIMM description)
- ADDDC (for 10x4-based memory DIMMs)
- Memory mirroring

See the Lenovo Press article "RAS Features of the Lenovo ThinkSystem Intel Servers" for more information about memory RAS features: https://lenovopress.lenovo.com/lp1711-ras-features-of-the-lenovo-thinksystem-intel-servers

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

Memory rank sparing is implemented using ADDDC/ADC-SR/ADDDC-MR to provide DRAM-level sparing feature support.

Internal storage

The SR860 V4 supports the following drive bay configuration choices:

- Up to 48x 2.5-inch hot-swap drives:
  - All SAS/SATA, or
  - 24x AnyBay + 24x SAS/SATA
- Up to 32x E3.S 1T NVMe hot-swap + 24x 2.5-inch SAS/SATA hot-swap drive bays
- Up to 16 E3.S 2T bays for CXL memory + 24x 2.5-inch SAS/SATA hot-swap drive bays

All front drive bays are hot-swap and all front-accessible.

The server also supports one or two M.2 drives, in the following possible locations, configuration dependent:

- Installed in an M.2 adapter internal to the server (non-hot-swap)
- Hot-swap in the rear of the server (configurations with full-height slots only)

In this section:

NVMe drive support

The SR860 V4 supports up to 24x 2.5-inch NVMe drives or up to 32x E3.S 1T NVMe drives to maximize storage performance, each with a direct connection to the processors. All connections are made using onboard connectors; no NVMe retimer adapters are needed or supported. There is no oversubscription: each x4 drive has a full x4 (four PCIe Gen5 lanes) connection to the processor.

Front drive bays

The SR860 V4 supports the following drive bay combinations:

- 48x 2.5-inch SAS/SATA hot-swap drives
- 24x 2.5-inch AnyBay hot-swap drives + 24x 2.5-inch SAS/SATA hot-swap drives
- 32x E3.S 1T NVMe hot-swap + 24x 2.5-inch SAS/SATA hot-swap drive bays
- 16 E3.S 2T bays for CXL memory + 24x 2.5-inch SAS/SATA hot-swap drive bays

These drive bay combinations are shown in the two figures below.

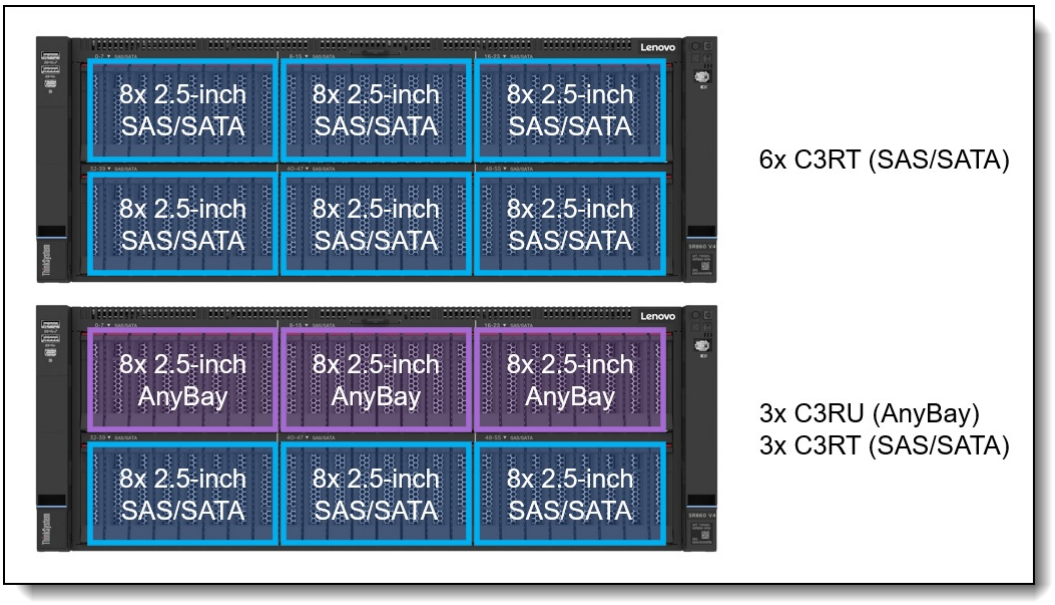

Figure 10. SR860 V4 drive bays - 2.5-inch drive bays

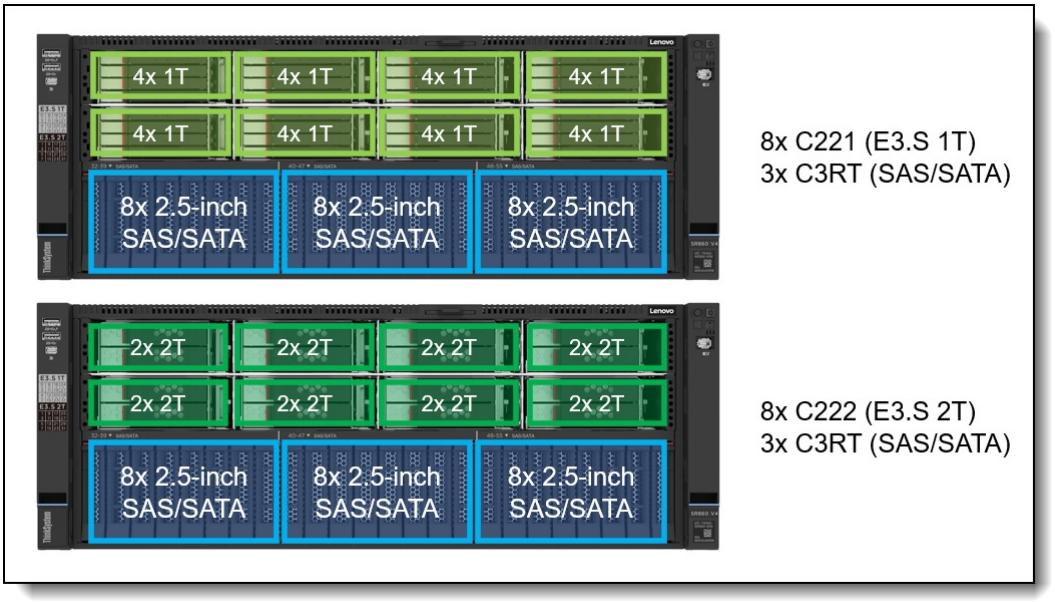

Figure 11. SR860 V4 drive bays - E3.S + 2.5-inch drive bays

The following table lists the supported backplanes.

Table 13. Drive backplanes

Part number	Feature code	Description	PCIe Gen	SAS Gen	Quantities supported
4XH7B08874	C3RT	ThinkSystem SR850 V4/SR860 V4 8x2.5" SAS/SATA Backplane Option Kit	-	12Gb	1, 2, 3, 4, 5, 6
4XH7B08875	C3RU	ThinkSystem SR850 V4/SR860 V4 8x2.5" AnyBay Backplane Option Kit	Gen5	24Gb	1, 2, 3
4XH7B08876	C221	ThinkSystem SR850 V4/SR860 V4 E3.S 4x1T Backplane Option Kit	Gen5	-	2, 4, 6, 8
4XH7B08877	C222	ThinkSystem SR850 V4/SR860 V4 E3.S 2x2T Backplane Option Kit	Gen5	-	4, 8

Configuration rules:

- The combinations of backplanes that are supported are listed in the Storage configurations section

Tri-Mode support - RAID 940 adapters

The RAID 940 adapters support NVMe through a feature named Tri-Mode support (or Trimode support). This feature enables the use of NVMe U.3 drives at the same time as SAS and SATA drives. Tri-Mode requires an AnyBay backplane. Cabling of the controller to the backplanes is the same as with SAS/SATA drives, and the NVMe drives are connected via a PCIe x1 link to the controller.

NVMe drives connected using Tri-Mode support provide better performance than SAS or SATA drives: A SATA SSD has a data rate of 6Gbps, a SAS SSD has a data rate of 12Gbps, whereas an NVMe U.3 Gen 4 SSD with a PCIe x1 link will have a data rate of 16Gbps. NVMe drives typically also have lower latency and higher IOPS compared to SAS and SATA drives. Tri-Mode is supported with U.3 NVMe drives and requires an AnyBay backplane.

Tri-Mode requires U.3 drives: Only NVMe drives with a U.3 interface are supported. U.2 drives are not supported. See the Internal drive options section for the U.3 drives supported by the server.

Storage configurations

This section describes the various combinations drive bays and storage controllers that the server supports, as well as M.2 support.

Tip: These tables are based on Storage Configs v0.7

- Overview of storage configurations
- Details of storage configurations

The following table summarize the storage configurations for the SR860 V4. For details, including controller selections, see the Details table.

Overview of storage configurations

The following table summarizes the storage configurations with 2.5-inch front drives bays.

Jump down to the details of the configurations.

Table 14. Overview of storage configurations

Config	Total drives (NVMe)	Front drive bays					Backplanes
		SAS/SATA	AnyBay	NVMe	E3.S 1T	E3.S 2T	
1	8 (0)	8	0	0	0	0	8x2.5" SAS/SATA (C3RT)
2	8 (8)	0	8	0	0	0	8x2.5" AnyBay G5 (C3RU)
2	8 (8)	0	8	0	0	0	8x2.5" AnyBay G5 (C3RU) (Tri-mode)
3	8 (8)	0	0	8	0	0	8x2.5" AnyBay G5 (C3RU)
4	16 (0)	16	0	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT)
5	16 (16)	0	16	0	0	0	2x 8x2.5" AnyBay G5 (2x C3RU)
5	16 (16)	0	16	0	0	0	2x 8x2.5" AnyBay G5 (2x C3RU) (Tri-mode)
6	16 (16)	0	0	16	0	0	2x 8x2.5" AnyBay G5 (2x C3RU)
7	16 (8)	8	8	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)
9	24 (0)	24	0	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT)
10	24 (24)	0	24	0	0	0	3x 8x2.5" AnyBay G5 (3x C3RU)
10	24 (24)	0	24	0	0	0	3x 8x2.5" AnyBay G5 (3x C3RU) (Tri-mode)
11	24 (24)	0	0	24	0	0	3x 8x2.5" AnyBay G5 (3x C3RU)
12	24 (8)	16	8	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)
14	24 (16)	8	16	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)
16	8 (8)	0	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221)
16	16 (16)	0	0	0	16	0	4x 4xE3.S 1T NVMe G5 (4x C221)
16	24 (24)	0	0	0	24	0	6x 4xE3.S 1T NVMe G5 (6x C221)
16	32 (32)	0	0	0	32	0	8x 4xE3.S 1T NVMe G5 (8x C221)
17	8 (8)	0	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222)
17	16 (16)	0	0	0	0	16	8x 2xE3.S 2T NVMe G5 (8x C222)
18	32 (0)	32	0	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT)
19	32 (8)	24	8	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)
21	32 (16)	16	16	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)

Config	Total drives (NVMe)	Front drive bays					Backplanes
		SAS/SATA	AnyBay	NVMe	E3.S 1T	E3.S 2T	
24	32 (24)	8	24	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU)
24	32 (24)	8	24	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU) (Tri-mode)
26	40 (0)	40	0	0	0	0	5x 8x2.5" SAS/SATA (5x C3RT)
27	40 (8)	32	8	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)
29	40 (16)	24	16	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)
31	40 (24)	16	24	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU)
33	48 (0)	48	0	0	0	0	6x 8x2.5" SAS/SATA (6x C3RT)
34	48 (8)	40	8	0	0	0	5x 8x2.5" SAS/SATA (5x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)
36	48 (16)	32	16	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)
36	48 (16)	32	16	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU) (Tri-mode)
38	48 (24)	24	24	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU)
38	48 (24)	24	24	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU) (Tri-mode)
40	16 (8)	8	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221) + 8x2.5" SAS/SATA (C3RT)
40	24 (16)	8	0	0	16	0	4x 4xE3.S 1T NVMe G5 (2x C221) + 1x 8x2.5" SAS/SATA (3x C3RT)
40	32 (24)	8	0	0	24	0	6x 4xE3.S 1T NVMe G5 (2x C221) + 1x 8x2.5" SAS/SATA (3x C3RT)
40	40 (32)	8	0	0	32	0	8x 4xE3.S 1T NVMe G5 (2x C221) + 1x 8x2.5" SAS/SATA (3x C3RT)
41	24 (8)	16	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (2x C3RT)
41	32 (16)	16	0	0	16	0	4x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (3x C3RT)
41	40 (24)	16	0	0	24	0	6x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (3x C3RT)
41	48 (32)	16	0	0	32	0	8x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (3x C3RT)
42	32 (8)	24	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)
42	40 (16)	24	0	0	16	0	4x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)
42	48 (24)	24	0	0	24	0	6x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)
42	56 (32)	24	0	0	32	0	8x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)
43	16 (8)	8	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222) + 1x 8x2.5" SAS/SATA (3x C3RT)
43	24 (16)	8	0	0	0	16	8x 2xE3.S 2T NVMe G5 (4x C222) + 1x 8x2.5" SAS/SATA (3x C3RT)
44	24 (8)	16	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222) + 2x 8x2.5" SAS/SATA (3x C3RT)
44	32 (16)	16	0	0	0	16	8x 2xE3.S 2T NVMe G5 (4x C222) + 2x 8x2.5" SAS/SATA (3x C3RT)
45	32 (8)	24	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222) + 3x 8x2.5" SAS/SATA (3x C3RT)
45	40 (16)	24	0	0	0	16	8x 2xE3.S 2T NVMe G5 (4x C222) + 3x 8x2.5" SAS/SATA (3x C3RT)

VROC restriction with CXL memory : VROC NVMe RAID is currently not supported with the following CXL memory configurations:

- Configurations with a mix of CXL memory (E3.S 2T) bays and E3.S 1T drive bays
- Configurations with CXL memory (E3.S 2T) bays and M.2 drives

CXL memory configurations without E3.S 1T drives or without M.2 drives are not affected and are supported. This restriction is planned to be removed with a firmware update planned for 3Q/2025.

Details of storage configurations

The following table lists the detailed storage configurations, including supported controllers.

Go back to the overview of the configurations.

Table 15. Details of storage configurations

Cfg	CPUs	NVMe limit 2 CPUs	Total drives (NVMe)	Front drive bays					Backplanes	M.2		Controllers
				SAS/SATA	AnyBay	NVMe	E3.S 1T	E3.S 2T		M.2 Internal	M.2 Rear HS	
1-1	2 or 4	No limit	8 (0)	8	0	0	0	0	8x2.5" SAS/SATA (C3RT)	Y	Y	(9350-8i or 5350-8i)
1-2	2 or 4	No limit								Y	Y	(940-8i or 545-8i)
2-1	2 or 4	4 max	8 (8)	0	8	0	0	0	8x2.5" AnyBay G5 (C3RU)	Y	Y	OB NVMe + (9350-8i or 5350-8i)
2-2	2 or 4	4 max								Y	Y	OB NVMe + (940-8i or 545-8i)
2-3	2 or 4	No limit	8 (8)	0	8	0	0	0	8x2.5" AnyBay G5 (C3RU) (Tri-mode)	Y	Y	940-8i Tri-mode
3-1	2 or 4	4 max	8 (8)	0	0	8	0	0	8x2.5" AnyBay G5 (C3RU)	Y	Y	OB NVMe
4-1	2 or 4	No limit	16 (0)	16	0	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT)	Y	Y	(9350-16i or 4350-16i)
4-2	2 or 4	No limit								Y	Y	(940-16i or 440-16i)
5-1	2 or 4	8 max	16 (16)	0	16	0	0	0	2x 8x2.5" AnyBay G5 (2x C3RU)	Y	Y	OB NVMe + (9350-16i or 4350-16i)
5-2	2 or 4	8 max								Y	Y	OB NVMe + (940-16i or 440-16i)
5-3	2 or 4	No limit	16 (16)	0	16	0	0	0	2x 8x2.5" AnyBay G5 (2x C3RU) (Tri-mode)	Y	Y	940-16i Tri-mode
6-1	2 or 4	8 max	16 (16)	0	0	16	0	0	2x 8x2.5" AnyBay G5 (2x C3RU)	Y	Y	OB NVMe
7-1	2 or 4	4 max	16 (8)	8	8	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)	Y	Y	OB NVMe + (9350-16i or 4350-16i)
7-2	2 or 4	4 max								Y	Y	OB NVMe + (940-16i or 440-16i)
9-1	2 or 4	No limit	24 (0)	24	0	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	(9350-8i or 5350-8i) + (9350-16i or 4350-16i)
9-2	2 or 4	No limit								Y	Y	(940-8i or 545-8i) + (940-16i or 440-16i)
10-1	2 or 4	8 max	24 (24)	0	24	0	0	0	3x 8x2.5" AnyBay G5 (3x C3RU)	Y	Y	OB NVMe + (9350-8i or 5350-8i) + (9350-16i or 4350-16i)
10-2	2 or 4	8 max								Y	Y	OB NVMe + (940-8i or 545-8i) + (940-16i or 440-16i)
10-3	2 or 4	No limit	24 (24)	0	24	0	0	0	3x 8x2.5" AnyBay G5 (3x C3RU) (Tri-mode)	Y	Y	940-16i Tri-mode + 940-8i Tri-mode

Cfg	CPUs	NVMe limit 2 CPUs	Total drives (NVMe)	Front drive bays					Backplanes	M.2		Controllers
				SAS/SATA	AnyBay	NVMe	E3.S 1T	E3.S 2T		M.2 Internal	M.2 Rear HS	
11-1	2 or 4	8 max	24 (24)	0	0	24	0	0	3x 8x2.5" AnyBay G5 (3x C3RU)	Y	Y	OB NVMe
12-1	2 or 4	4 max	24 (8)	16	8	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)	Y	Y	OB NVMe + (9350-8i or 5350-8i) + (9350-16i or 4350-16i)
12-2	2 or 4	4 max								Y	Y	OB NVMe + (940-8i or 545-8i) + (940-16i or 440-16i)
14-1	2 or 4	8 max	24 (16)	8	16	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)	Y	Y	OB NVMe + (9350-8i or 5350-8i) + (9350-16i or 4350-16i)
14-2	2 or 4	8 max								Y	Y	OB NVMe + (940-8i or 545-8i) + (940-16i or 440-16i)
16-2	4 only	-	8 (8)	0	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221)	Y	Y	OB NVMe
16-3	4 only	-	16 (16)	0	0	0	16	0	4x 4xE3.S 1T NVMe G5 (4x C221)	Y	Y	OB NVMe
16-4	4 only	-	24 (24)	0	0	0	24	0	6x 4xE3.S 1T NVMe G5 (6x C221)	Y	Y	OB NVMe
16-5	4 only	-	32 (32)	0	0	0	32	0	8x 4xE3.S 1T NVMe G5 (8x C221)	Y	Y	OB NVMe
17-1	2 or 4	No limit	8 (8)	0	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222)	Y	Y	OB NVMe
17-2	2 or 4	No limit	16 (16)	0	0	0	0	16	8x 2xE3.S 2T NVMe G5 (8x C222)	Y	Y	OB NVMe
18-1	2 or 4	No limit	32 (0)	32	0	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT)	Y	Y	2x (9350-16i or 4350-16i)
18-2	2 or 4	No limit								Y	Y	2x (940-16i or 440-16i)
19-1	2 or 4	4 max	32 (8)	24	8	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)	Y	Y	OB NVMe + 2x (9350-16i or 4350-16i)
19-2	2 or 4	4 max								Y	Y	OB NVMe + 2x (940-16i or 440-16i)
21-1	2 or 4	8 max	32 (16)	16	16	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)	Y	Y	OB NVMe + 2x (9350-16i or 4350-16i)
21-2	2 or 4	8 max								Y	Y	OB NVMe + 2x (940-16i or 440-16i)
24-1	2 or 4	8 max	32 (24)	8	24	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU)	Y	Y	OB NVMe + 2x (9350-16i or 4350-16i)
24-2	2 or 4	8 max								Y	Y	OB NVMe + 2x (940-16i or 440-16i)
24-3	2 or 4	No limit	32 (24)	8	24	0	0	0	1x 8x2.5" SAS/SATA (1x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU) (Tri-mode)	Y	Y	2x 940-16i Tri-mode
26-1	2 or 4	No limit	40 (0)	40	0	0	0	0	5x 8x2.5" SAS/SATA (5x C3RT)	Y	Y	2x (9350-16i or 4350-16i) + 1x (9350-8i + 5350-8i)
26-1	2 or 4	No limit								Y	Y	2x (940-16i or 440-16i) + 1x (940-8i or 545-8i)
27-1	2 or 4	4 max	40 (8)	32	8	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)	Y	Y	OB NVMe + 2x (9350-16i or 4350-16i) + 1x (9350-8i + 5350-8i)
27-2	2 or 4	4 max								Y	Y	OB NVMe + 2x (940-16i or 440-16i) + 1x (940-8i or 545-8i)
29-1	2 or 4	8 max	40 (16)	24	16	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)	Y	Y	OB NVMe + 2x (9350-16i or 4350-16i) + 1x (9350-8i + 5350-8i)

Cfg	CPUs	NVMe limit 2 CPUs	Total drives (NVMe)	Front drive bays					Backplanes	M.2		Controllers
				SAS/SATA	AnyBay	NVMe	E3.S 1T	E3.S 2T		M.2 Internal	M.2 Rear HS	
29-2	2 or 4	8 max								Y	Y	OB NVMe + 2x (940-16i or 440-16i) + 1x (940-8i or 545-8i)
31-1	2 or 4	8 max	40 (24)	16	24	0	0	0	2x 8x2.5" SAS/SATA (2x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU)	Y	Y	OB NVMe + 2x (9350-16i or 4350-16i) + 1x (9350-8i + 5350-8i)
31-2	2 or 4	8 max								Y	Y	OB NVMe + 2x (940-16i or 440-16i) + 1x (940-8i or 545-8i)
31-3	2 or 4	No limit								Y	Y	2x 940-16i Tri-mode + (5350-8i or 9350-8i)
31-4	2 or 4	No limit								Y	Y	2x 940-16i Tri-mode + (940-8i or 545-8i)
33-1	2 or 4	No limit	48 (0)	48	0	0	0	0	6x 8x2.5" SAS/SATA (6x C3RT)	Y	Y	3x (9350-16i or 4350-16i)
33-2	2 or 4	No limit								Y	Y	3x (940-16i or 440-16i)
34-1	2 or 4	4 max	48 (8)	40	8	0	0	0	5x 8x2.5" SAS/SATA (5x C3RT) + 1x 8x2.5" AnyBay G5 (1x C3RU)	Y	Y	OB NVMe + 3x (9350-16i or 4350-16i)
34-2	2 or 4	4 max								Y	Y	OB NVMe + 3x (940-16i or 440-16i)
36-1	2 or 4	8 max	48 (16)	32	16	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU)	Y	Y	OB NVMe + 3x (9350-16i or 4350-16i)
36-2	2 or 4	8 max								Y	Y	OB NVMe + 3x (940-16i or 440-16i)
36-3	2 or 4	No limit	48 (16)	32	16	0	0	0	4x 8x2.5" SAS/SATA (4x C3RT) + 2x 8x2.5" AnyBay G5 (2x C3RU) (Tri-mode)	Y	Y	940-16i Tri-mode + 2x (940-16i or 440-16i)
38-1	2 or 4	8 max	48 (24)	24	24	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU)	Y	Y	OB NVMe + 3x (9350-16i or 4350-16i)
38-2	2 or 4	8 max								Y	Y	OB NVMe + 3x (940-16i or 440-16i)
38-3	2 or 4	No limit	48 (24)	24	24	0	0	0	3x 8x2.5" SAS/SATA (3x C3RT) + 3x 8x2.5" AnyBay G5 (3x C3RU) (Tri-mode)	Y	Y	2x 940-16i Tri-mode + (9350-16i or 4350-16i)
38-4	2 or 4	No limit								Y	Y	2x 940-16i Tri-mode + (940-16i or 440-16i)
40-3	4 only	-	16 (8)	8	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221) + 8x2.5" SAS/SATA (C3RT)	Y	Y	OB NVMe + (9350-8i or 5350-8i)
40-4	4 only	-								Y	Y	OB NVMe + (940-8i or 545-8i)
40-5	4 only	-	24 (16)	8	0	0	16	0	4x 4xE3.S 1T NVMe G5 (2x C221) + 1x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-8i or 5350-8i)
40-6	4 only	-								Y	Y	OB NVMe + (940-8i or 545-8i)
40-7	4 only	-	32 (24)	8	0	0	24	0	6x 4xE3.S 1T NVMe G5 (2x C221) + 1x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-8i or 5350-8i)
40-8	4 only	-								Y	Y	OB NVMe + (940-8i or 545-8i)
40-9	4 only	-	40 (32)	8	0	0	32	0	8x 4xE3.S 1T NVMe G5 (2x C221) + 1x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-8i or 5350-8i)
40-10	4 only	-								Y	Y	OB NVMe + (940-8i or 545-8i)

Cfg	CPUs	NVMe limit 2 CPUs	Total drives (NVMe)	Front drive bays					Backplanes	M.2		Controllers
				SAS/SATA	AnyBay	NVMe	E3.S 1T	E3.S 2T		M.2 Internal	M.2 Rear HS	
41-3	4 only	-	24 (8)	16	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (2x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i)
41-4	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i)
41-5	4 only	-	32 (16)	16	0	0	16	0	4x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i)
41-6	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i)
41-7	4 only	-	40 (24)	16	0	0	24	0	6x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i)
41-8	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i)
41-9	4 only	-	48 (32)	16	0	0	32	0	8x 4xE3.S 1T NVMe G5 (2x C221) + 2x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i)
41-10	4 only	-								N	N	OB NVMe + (940-16i or 440-16i)
42-3	4 only	-	32 (8)	24	0	0	8	0	2x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i) + (9350-8i + 5350-8i)
42-4	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i) + (940-8i or 545-8i)
42-5	4 only	-	40 (16)	24	0	0	16	0	4x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i) + (9350-8i + 5350-8i)
42-6	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i) + (940-8i or 545-8i)
42-7	4 only	-	48 (24)	24	0	0	24	0	6x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i) + (9350-8i + 5350-8i)
42-8	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i) + (940-8i or 545-8i)
42-9	4 only	-	56 (32)	24	0	0	32	0	8x 4xE3.S 1T NVMe G5 (2x C221) + 3x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i) + (9350-8i + 5350-8i)
42-10	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i) + (940-8i or 545-8i)
43-1	4 only	-	16 (8)	8	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222) + 1x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-8i or 5350-8i)
43-2	4 only	-								Y	Y	OB NVMe + (940-8i or 545-8i)
43-3	4 only	-	24 (16)	8	0	0	0	16	8x 2xE3.S 2T NVMe G5 (4x C222) + 1x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-8i or 5350-8i)
43-4	4 only	-								Y	Y	OB NVMe + (940-8i or 545-8i)
44-1	4 only	-	24 (8)	16	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222) + 2x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i)

Cfg	CPUs	NVMe limit 2 CPUs	Total drives (NVMe)	Front drive bays					Backplanes	M.2		Controllers
				SAS/SATA	AnyBay	NVMe	E3.S 1T	E3.S 2T		M.2 Internal	M.2 Rear HS	
44-2	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i)
44-3	4 only	-	32 (16)	16	0	0	0	16	8x 2xE3.S 2T NVMe G5 (4x C222) + 2x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i)
44-4	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i)
45-1	4 only	-	32 (8)	24	0	0	0	8	4x 2xE3.S 2T NVMe G5 (4x C222) + 3x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i) + (9350-8i + 5350-8i)
45-2	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i) + (940-8i or 545-8i)
45-3	4 only	-	40 (16)	24	0	0	0	16	8x 2xE3.S 2T NVMe G5 (4x C222) + 3x 8x2.5" SAS/SATA (3x C3RT)	Y	Y	OB NVMe + (9350-16i or 4350-16i) + (9350-8i + 5350-8i)
45-4	4 only	-								Y	Y	OB NVMe + (940-16i or 440-16i) + (940-8i or 545-8i)

Field upgrades

This section lists the field upgrades related to the internal storage.

- Backplanes and cables
- 2.5-inch drive bay fillers

Backplanes and cables

The following tables list the backplanes and cable upgrades. Backplane part numbers do not include cables.

When adding drive bays, you will also need to add the appropriate storage controller(s). Consult the tables in the Storage configurations section to determine what controller sections are supported and what additional controllers you will need. Controllers are described in the Controllers for internal storage section.

Table 16. Drive backplanes

Part number	Description	PCIe Gen	SAS Gen	Quantities supported
4XH7B08874	ThinkSystem SR850 V4/SR860 V4 8x2.5" SAS/SATA Backplane Option Kit	-	12Gb	1, 2, 3, 4, 5, 6
4XH7B08875	ThinkSystem SR850 V4/SR860 V4 8x2.5" AnyBay Backplane Option Kit	Gen5	24Gb	1, 2, 3
4XH7B08876	ThinkSystem SR850 V4/SR860 V4 E3.S 4x1T Backplane Option Kit	Gen5	-	2, 4, 6, 8
4XH7B08877	ThinkSystem SR850 V4/SR860 V4 E3.S 2x2T Backplane Option Kit	Gen5	-	4, 8

Table 17. Cable kits

Part number	Description
4X97B08879	ThinkSystem SR850 V4/SR860 V4 8x2.5" Backplane SAS/SATA Cable Kit
4X97B08934	ThinkSystem SR860 V4 8x2.5" Backplane NVMe Cable Kit
4X97B08935	ThinkSystem SR860 V4 E3.S 1T Backplane Cable Kit
4X97B08936	ThinkSystem SR860 V4 E3.S 2T Backplane Cable Kit

2.5-inch drive bay fillers

Backplane option kits include the necessary drive bay fillers, however if needed, additional blanks can be ordered as listed in the following table.

Table 18. Drive bay fillers for 2.5-inch bays

Part number	Description
4XH7A99569	ThinkSystem 2.5" 1x1 HDD Filler by 8 units (contains 8x single drive-bay fillers)

M.2 drives

In this section:

- M.2 ordering information
- VROC RAID support for the B340i-2i adapter
- M.2 adapter features
- M.2 field upgrades for internal M.2
- M.2 field upgrades for hot-swap M.2

The SR860 V4 supports one or two M.2 form-factor SATA or NVMe drives for use as an operating system boot solution or as additional storage.

M.2 drives can be installed in one of the following locations:

- Internal to the server (non-hot-swap) on an M.2 module which is mounted horizontally in the server. RAID is either integrated or with the use of VROC, depending on the M.2 adapter selected. The M.2 adapter is mounted on the air baffle.
- Rear-mounted hot-swap M.2 drives with integrated RAID.

Hot-swap M.2: 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 rear-mounted M.2, the drives are hot-swap enabled.

The following figure shows the SR860 V4 with rear hot-swap M.2 drive bays. The top figure shows the 18-slot configuration where the M.2 is installed in the place of slot 20. The bottom figure shows the 4-slot configuration.

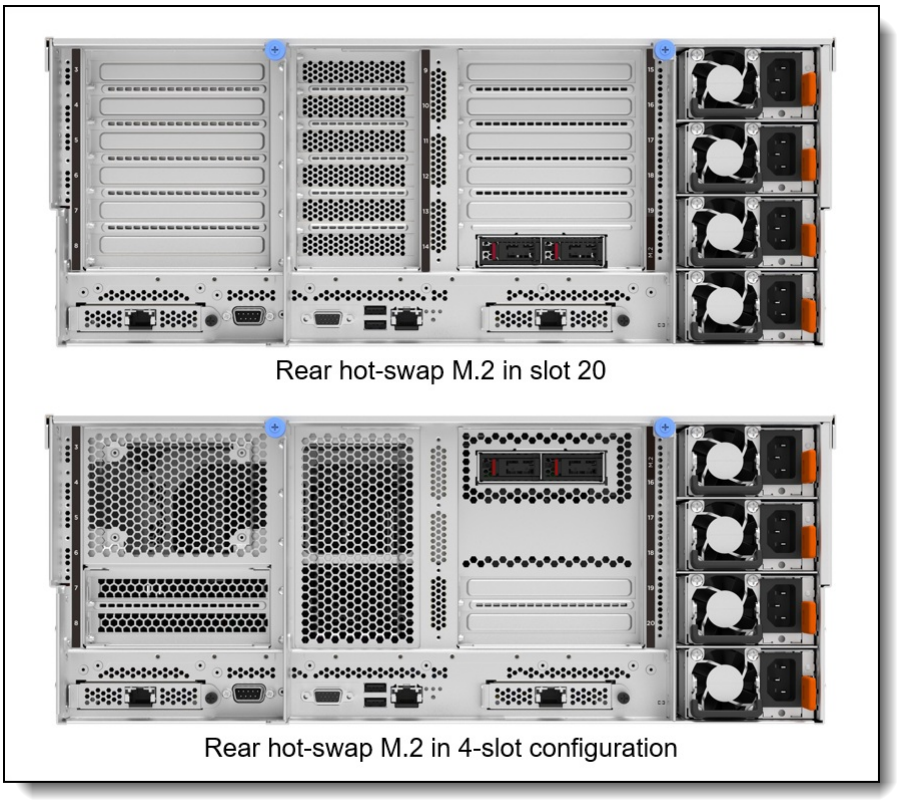

Figure 12. Hot-swap M.2 drive bays

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

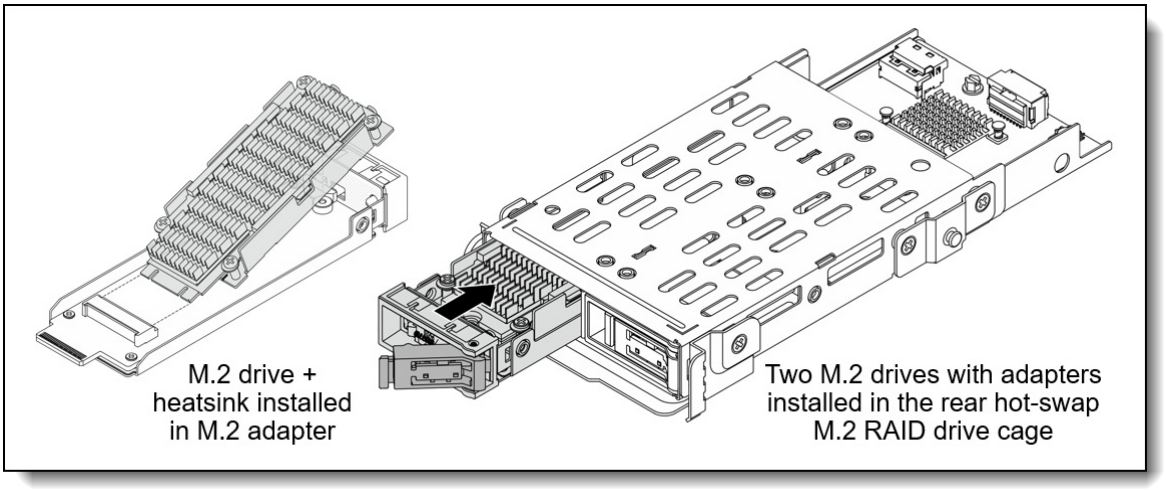

Figure 13. Rear hot-swap M.2 drive bays

M.2 ordering information

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

Table 19. M.2 adapters

Part number	Feature code	Description	SATA drives	NVMe drives	RAID	Max Qty
Internal M.2 (non-hot-swap)						
4Y37A91802	C0JK	ThinkSystem M.2 B340i-2i NVMe Enablement Adapter	No	Yes (x2 lanes per drive)	VROC	1
4Y37A93746	C26V	ThinkSystem M.2 RAID B545i-2i SATA/NVMe Adapter	Yes	Yes (x1 lane per drive)	Integrated (Broadcom)	1
Rear hot-swap M.2						
4XH7B08878	C0JJ	ThinkSystem SR850 V4/SR860 V4 External M.2 RAID B540p-2HS SATA/NVMe Enablement Option Kit • M.2 rear drive cage for FH slot • M.2 rear drive cage for 2xFH slots • M.2 2-drive hot-swap backplane • 2x empty M.2 hot-swap adapter tray • Signal and power cables	Yes	Yes (x1 lane per drive)	Integrated (Broadcom)	1

Configuration notes:

- For CTO orders, all other necessary components, except for the M.2 drives themselves, will be automatically included in the order. For the M.2 drives, see the Internal drive options section.
- For field upgrades of the internal M.2, an additional cable is needed as described in the M.2 field upgrades for internal M.2 section below.
- For field upgrades of the rear or front hot-swap M.2, one additional kit is needed for each M.2 drive you plan to install, as described in the M.2 field upgrades for hot-swap M.2 section below.

VROC RAID support for the B340i-2i adapter

ThinkSystem M.2 B340i-2i NVMe Enablement Adapter (4Y37A91802) optionally supports RAID with the use of Intel VROC. For CTO orders, ordering information is listed in the following table.

Table 20. CTO feature codes to select VROC RAID for ThinkSystem M.2 B340i-2i NVMe Enablement Adapter (4Y37A91802)

Part number	Feature code	Description	Max Qty	RAID support
VROC NVMe RAID for ThinkSystem M.2 B340i-2i NVMe Enablement Adapter (4Y37A91802)				
4L47A92670*	BZ4X	Intel VROC RAID1 Only for M.2	1	RAID-1
4L47A83669*	BS7M	Intel VROC (VMD NVMe RAID) Standard for M.2	1	RAID-0,1

* The part numbers enable VROC for all installed drives, not just M.2

M.2 adapter features

The ThinkSystem M.2 B340i-2i NVMe Enablement Adapter (4Y37A91802) has the following features:

- Supports one or two NVMe M.2 drives (SATA not supported)
- Drives are not hot-swap
- Support M.2 2280 (80mm) drive form factor only
- No built-in RAID support (optionally supports Intel VROC NVMe RAID)
- PCIe 5.0 x4 host interface; PCIe 5.0 x2 connection to each drive
- Management and configuration support via UEFI and OS-based tools
- Supports monitoring and reporting of events and temperature
- Firmware update via Lenovo firmware update tools
- Supports SED drive encryption

The ThinkSystem M.2 RAID B545i-2i SATA/NVMe Adapter (4Y37A93746) has the following features:

- Supports one or two M.2 drives, either SATA or NVMe
- Drives are not hot-swap
- Supports M.2 2242, 2260, 2280 drive form factors (42mm, 60mm, 80mm)
- RAID support via an onboard Broadcom SAS3808N RAID Controller
- With 1 drive, supports JBOD
- With 2 drives, supports 2-drive RAID-0, 2-drive RAID-1, or JBOD (default is RAID-1)
- PCIe 4.0 x2 host interface; PCIe 4.0 x1 connection to each drive
- Management and configuration support via UEFI and OS-based tools
- Supports monitoring and reporting of events and temperature
- Firmware update via Lenovo firmware update tools
- Supports SED drive encryption

The ThinkSystem SR850 V4/SR860 V4 External M.2 RAID B540p-2HS SATA/NVMe Enablement Option Kit (4XH7B08878) has the following features:

- Supports one or two M.2 drives, either SATA or NVMe
- Each drive is installed in a hot-swap carrier
- Support M.2 2280 (80mm) drive form factor only
- RAID support via an onboard Broadcom SAS3808N RAID Controller
- With 1 drive, supports JBOD
- With 2 drives, supports 2-drive RAID-0, 2-drive RAID-1, or JBOD (default is RAID-1)
- PCIe 4.0 x2 host interface; PCIe 4.0 x1 connection to each drive
- Management and configuration support via UEFI and OS-based tools
- Supports monitoring and reporting of events and temperature
- Firmware update via Lenovo firmware update tools
- Supports SED drive encryption

M.2 field upgrades for internal M.2

For field upgrades to add one of the supported internal M.2 adapters, the SR860 V4 also requires an additiona M.2 cable kit. Ordering information is listed in the following table.

Table 21. M.2 Cable Kits for field upgrades to add an internal M.2 adapter

Part number	Description	Qty
4X97B08884	ThinkSystem SR850 V4/SR860 V4 Internal M.2 Enablement Cable Kit	1

M.2 field upgrades for hot-swap M.2

This section applies to rear hot-swap M.2.

In addition to the M.2 adapter kit (as listed in the M.2 adapters table), for each M.2 drive you want to add to the server as a hot-swap drive, you will also need to a drive kit which supplies the M.2 adapter, drive tray, and drive heatsink that are needed. One kit is required for each M.2 drive.

Table 22. M.2 kit for field upgrades to add hot-swap M.2 drives

Part number	Description	Qty
4XH7A96837	ThinkSystem V4 Hot Swap M.2 SATA/NVMe Drive Assembly Kit (see below) • M.2 adapter • M.2 drive tray • M.2 drive heatsink	1 per drive

The following figure shows the components of the ThinkSystem V4 Hot Swap M.2 SATA/NVMe Drive Assembly Kit (4XH7A96837), used for hot-swap M.2 (not for internal M.2). The M.2 drive needs to be ordered separately.

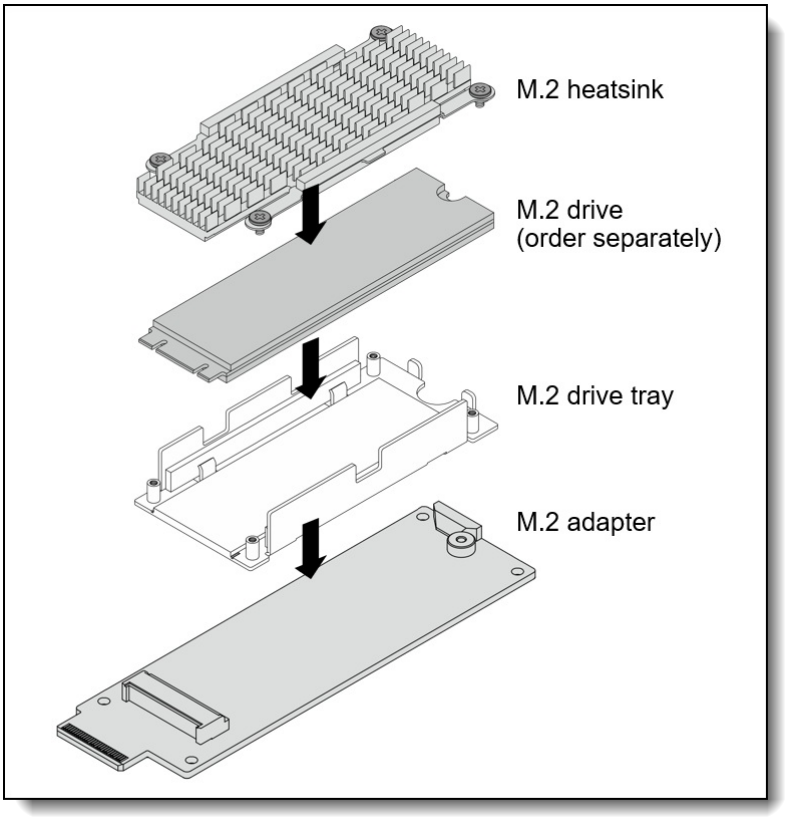

Figure 14. Components of the ThinkSystem V4 Hot Swap M.2 SATA/NVMe Drive Assembly Kit (4XH7A96837)

SED encryption key management with SKLM

The server supports self-encrypting drives (SEDs) as listed in the Internal drive options section. To effectively manage a large deployment of these drives in Lenovo servers, IBM Security Key Lifecycle Manager (SKLM) offers a centralized key management solution.

The IBM Security Key Lifecycle Manager software is available from Lenovo using the ordering information listed in the following table.

Table 23. IBM Security Key Lifecycle Manager licenses

Part number	Feature	Description
SKLM Basic Edition		
7S0A007FWW	S874	IBM Security Key Lifecycle Manager Basic Edition Install License + SW Subscription & Support 12 Months
7S0A008VWW	SDJR	IBM Security Key Lifecycle Manager Basic Edition Install License + SW Subscription & 3 Years Of Support
7S0A008WWW	SDJS	IBM Security Key Lifecycle Manager Basic Edition Install License + SW Subscription & 4 Years Of Support
7S0A008XWW	SDJT	IBM Security Key Lifecycle Manager Basic Edition Install License + SW Subscription & 5 Years Of Support
SKLM For Raw Decimal Terabyte Storage		
7S0A007HWW	S876	IBM Security Key Lifecycle Manager For Raw Decimal Terabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months

Part number	Feature	Description
7S0A008YWW	SDJU	IBM Security Key Lifecycle Manager For Raw Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 3 Years Of Support
7S0A008ZWW	SDJV	IBM Security Key Lifecycle Manager For Raw Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 4 Years Of Support
7S0A0090WW	SDJW	IBM Security Key Lifecycle Manager For Raw Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 5 Years Of Support
SKLM For Raw Decimal Petabyte Storage		
7S0A007KWW	S878	IBM Security Key Lifecycle Manager For Raw Decimal Petabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A0091WW	SDJX	IBM Security Key Lifecycle Manager For Raw Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 3 Years Of Support
7S0A0092WW	SDJY	IBM Security Key Lifecycle Manager For Raw Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 4 Years Of Support
7S0A0093WW	SDJZ	IBM Security Key Lifecycle Manager For Raw Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 5 Years Of Support
SKLM For Usable Decimal Terabyte Storage		
7S0A007MWW	S87A	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A0094WW	SDK0	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 3 Years In Support
7S0A0095WW	SDK1	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 4 Years In Support
7S0A0096WW	SDK2	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 5 Years In Support
SKLM For Usable Decimal Petabyte Storage		
7S0A007PWW	S87C	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A0097WW	SDK3	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 3 Years Of Support
7S0A0098WW	SDK4	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 4 Years Of Support
7S0A0099WW	SDK5	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 5 Years Of Support

Controllers for internal storage

The SR860 V4 offers a variety of controller options for internal drives:

- For 2.5-inch drives:
  - RAID adapters and HBAs for SAS/SATA drives (PCIe slot-based)
  - RAID adapters and HBAs for SAS/SATA drives (cabled in a dedicated space)
  - Onboard NVMe ports with RAID support using Intel VROC NVMe RAID
  - Tri-Mode support using RAID 940 adapters for NVMe drives, with RAID provided by the RAID adapter
- For E3.S EDSFF drives:
  - Onboard NVMe ports with RAID support using Intel VROC NVMe RAID
- For M.2 drives (see M.2 drives section)
  - SATA controller integrated on the M.2 adapters
  - NVMe controller integrated on the M.2 adapters

As well as supporting RAID adapters and HBAs that install in a PCIe slot, the SR860 V4 with 2.5-inch front drive bays supports a custom form factor (CFF) adapter that is mounted in the server and cabled to one of the onboard NVMe ports.

The following table lists the adapters used for the internal storage of the server. For VROC ordering information, see the Intel VROC section.

No Onboard SATA support: The processors in the SR860 V4 do not offer onboard SATA support. For SATA drives, you will need either a RAID adapter or an HBA.

Table 24. Storage controller support for internal drives

Part number	Feature code	Description	RAID level	Max Qty	Supercap
Onboard NVMe - PCIe 5.0 - RAID using Intel VROC.					
CTO only	BC4V	Non RAID NVMe	Optional; See VROC	1	No
12Gb SAS/6Gb SATA HBA - PCIe 3.0					
4Y37A72481	BJHJ	ThinkSystem 4350-16i SAS/SATA 12Gb HBA	None	3	No
12Gb SAS/6Gb SATA HBA - PCIe 4.0					
4Y37A78602	BM50	ThinkSystem 440-16i SAS/SATA PCIe Gen4 12Gb HBA	None	3	No
12Gb SAS/6Gb SATA RAID Adapter - PCIe 3.0					
4Y37A72482	BJHK	ThinkSystem RAID 5350-8i PCIe 12Gb Adapter	0, 1, 10, 5	1	No
4Y37A72483	BJHL	ThinkSystem RAID 9350-8i 2GB Flash PCIe 12Gb Adapter	0, 1, 10, 5, 50, 6, 60, 1 Triple, 10 Triple	1	Included
4Y37A72485	BJHN	ThinkSystem RAID 9350-16i 4GB Flash PCIe 12Gb Adapter	0, 1, 10, 5, 50, 6, 60, 1 Triple, 10 Triple	3	Included
12Gb SAS/6Gb SATA RAID Adapter - PCIe 4.0					
4Y37A93012	C0TU	ThinkSystem RAID 545-8i PCIe Gen4 12Gb Adapter	0, 1, 10	1	No
4Y37A09728	B8NY	ThinkSystem RAID 940-8i 4GB Flash PCIe Gen4 12Gb Adapter	0, 1, 10, 5, 50, 6, 60	1	Included
4Y37A09730	B8NZ	ThinkSystem RAID 940-16i 8GB Flash PCIe Gen4 12Gb Adapter	0, 1, 10, 5, 50, 6, 60	3	Included
NVMe (Tri-Mode support)					
4Y37A09728	BGM1	ThinkSystem RAID 940-8i 4GB Flash PCIe Gen4 12Gb Adapter for U.3	0, 1, 10, 5, 50, 6, 60	1	Included
4Y37A09730	BDY4	ThinkSystem Raid 940-16i 8GB Flash PCIe Gen4 12Gb Adapter for U.3	0, 1, 10, 5, 50, 6, 60	3	Included

Configuration notes:

- **Supercap support**: The table lists whether the adapter includes a power module (supercap) to power the flash memory. The server supports up to 4 supercaps mounted on the air baffle. The number of supercaps supported also determines the maximum number of RAID adapters with flash that can be installed in the server, both with internal ports and with external ports.

The onboard NVMe support has the following features:

- Support integrated into the Intel processor
- Each drive has PCIe 5.0 x4 host interface

- Supports JBOD
- Supports RAID using Intel VROC

For specifications about the RAID adapters and HBAs supported by the SR860 V4, see the ThinkSystem RAID Adapter and HBA Comparison, available from: https://lenovopress.com/lp1288-lenovo-thinksystem-raid-adapter-and-hba-reference#sr860-v4-support=SR860%2520V4

For details about these adapters, see the relevant product guide:

- SAS HBAs: https://lenovopress.com/servers/options/hba
- RAID adapters: https://lenovopress.com/servers/options/raid

Tri-Mode support - RAID 940 adapters

The RAID 940 adapters support NVMe through a feature named Tri-Mode support (or Trimode support). This feature enables the use of NVMe U.3 drives at the same time as SAS and SATA drives. Tri-Mode requires an AnyBay backplane. Cabling of the controller to the backplanes is the same as with SAS/SATA drives, and the NVMe drives are connected via a PCIe x1 link to the controller.

NVMe drives connected using Tri-Mode support provide better performance than SAS or SATA drives: A SATA SSD has a data rate of 6Gbps, a SAS SSD has a data rate of 12Gbps, whereas an NVMe U.3 Gen 4 SSD with a PCIe x1 link will have a data rate of 16Gbps. NVMe drives typically also have lower latency and higher IOPS compared to SAS and SATA drives. Tri-Mode is supported with U.3 NVMe drives and requires an AnyBay backplane.

Tri-Mode requires U.3 drives: Only NVMe drives with a U.3 interface are supported. U.2 drives are not supported. See the Internal drive options section for the U.3 drives supported by the server.

Intel VROC onboard RAID

Intel VROC (Virtual RAID on CPU) is a feature of the Intel processor that enables Integrated RAID support.

On the SR860 V4, Intel VROC provides RAID functions for the onboard NVMe controller (Intel VROC NVMe RAID).

VROC NVMe RAID offers RAID support for any NVMe drives directly connected to the ports on the server's system board or via adapters such as NVMe retimers or NVMe switch adapters. On the SR860 V4, RAID levels implemented are based on the VROC feature selected as indicated in the following table. RAID 1 is limited to 2 drives per array, and RAID 10 is limited to 4 drives per array. Hot-spare functionality is also supported.

Performance tip: For best performance with VROC NVMe RAID, the drives in an array should all be connected to the same processor. Spanning processors is possible however performance will be unpredictable and should be evaluated based on your workload.

The SR860 V4 supports the VROC NVMe RAID offerings listed in the following table.

Table 25. Intel VROC NVMe RAID ordering information and feature support

Part number	Feature code	Description	Intel NVMe SSDs	Non-Intel NVMe SSDs	RAID 0	RAID 1	RAID 10	RAID 5
4L47A92670	BZ4W	Intel VROC RAID1 Only	Yes	Yes	No	Yes	No	No
4L47A83669	BR9B	Intel VROC (VMD NVMe RAID) Standard	Yes	Yes	Yes	Yes	Yes	No
4L47A39164	B96G	Intel VROC (VMD NVMe RAID) Premium	Yes	Yes	Yes	Yes	Yes	Yes

Configuration notes:

- If a feature code is ordered in a CTO build, the VROC functionality is enabled in the factory. For field upgrades, order a part number and it will be fulfilled as a Feature on Demand (FoD) license which can then be activated via the XCC management processor user interface.
- Intel VROC NVMe is supported on all Intel Xeon Scalable processors

Virtualization support: Virtualization support for Intel VROC is as follows:

- **VROC (VMD) NVMe RAID** : VROC (VMD) NVMe RAID is supported by ESXi, KVM, Xen, and Hyper-V. ESXi support is limited to RAID 1 only; other RAID levels are not supported. Windows and Linux OSes support VROC RAID NVMe, both for host boot functions and for guest OS function, and RAID-0, 1, 5, and 10 are supported. On ESXi, VROC is supported with both boot and data drives.

VROC restriction with CXL memory : VROC NVMe RAID is currently not supported with the following CXL memory configurations:

- Configurations with a mix of CXL memory (E3.S 2T) bays and E3.S 1T drive bays
- Configurations with CXL memory (E3.S 2T) bays and M.2 drives

CXL memory configurations without E3.S 1T drives or without M.2 drives are not affected and are supported. This restriction is planned to be removed with a firmware update planned for 3Q/2025.

Internal drive options

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

2.5-inch hot-swap drives:

- 2.5-inch hot-swap 12 Gb SAS HDDs
- 2.5-inch hot-swap 6 Gb SATA SSDs
- 2.5-inch hot-swap PCIe 5.0 NVMe SSDs
- 2.5-inch hot-swap PCIe 4.0 NVMe SSDs

EDSFF hot-swap drives:

- E3.S 1T EDSFF hot-swap PCIe 5.0 NVMe SSDs

M.2 drives:

- M.2 SATA 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 26. 2.5-inch hot-swap 12 Gb SAS HDDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap HDDs - 12 Gb SAS 10K				
7XB7A00025	AULZ	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD	No	48
7XB7A00027	AUM1	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	No	48
4XB7A83970	BRG7	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD v2	No	48
2.5-inch hot-swap SED HDDs - 12 Gb SAS 10K				
7XB7A00033	B0YX	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD SED	Support	48
4XB7A84038	BRG8	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD FIPS v2	Support	48

Table 27. 2.5-inch hot-swap 6 Gb SATA SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 6 Gb SATA - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A90884	BYM2	ThinkSystem 2.5" VA 480GB Mixed Use SATA 6Gb HS SSD v2	No	48
4XB7A90885	BYM4	ThinkSystem 2.5" VA 960GB Mixed Use SATA 6Gb HS SSD v2	No	48
4XB7A90886	BYM5	ThinkSystem 2.5" VA 1.92TB Mixed Use SATA 6Gb HS SSD v2	No	48
2.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7A90872	BYLQ	ThinkSystem 2.5" VA 240GB Read Intensive SATA 6Gb HS SSD v2	No	48
4XB7A90873	BYLR	ThinkSystem 2.5" VA 480GB Read Intensive SATA 6Gb HS SSD v2	No	48
4XB7A90874	BYLS	ThinkSystem 2.5" VA 960GB Read Intensive SATA 6Gb HS SSD v2	No	48
4XB7A90875	BYLT	ThinkSystem 2.5" VA 1.92TB Read Intensive SATA 6Gb HS SSD v2	No	48
4XB7A90876	BYLU	ThinkSystem 2.5" VA 3.84TB Read Intensive SATA 6Gb HS SSD v2	No	48
4XB7A90877	BYLV	ThinkSystem 2.5" VA 7.68TB Read Intensive SATA 6Gb HS SSD v2	No	48

Table 28. 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)				
4XB7A93098	C1WN	ThinkSystem 2.5" U.2 PM9D5a 1.6TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93099	C1WP	ThinkSystem 2.5" U.2 PM9D5a 3.2TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93100	C1WR	ThinkSystem 2.5" U.2 PM9D5a 6.4TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93101	C1WQ	ThinkSystem 2.5" U.2 PM9D5a 12.8TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93127	C0ZR	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93128	C0ZQ	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93129	C0ZP	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	24
2.5-inch SSDs - U.2 PCIe 5.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A93067	C0GL	ThinkSystem 2.5" U.2 PM9D3a 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93068	C0GN	ThinkSystem 2.5" U.2 PM9D3a 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93069	C0GP	ThinkSystem 2.5" U.2 PM9D3a 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93095	C1WL	ThinkSystem 2.5" U.2 PM9D3a 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93122	C0ZV	ThinkSystem 2.5" U.2 VA 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93123	C0ZU	ThinkSystem 2.5" U.2 VA 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	24
4XB7A93124	C0ZT	ThinkSystem 2.5" U.2 VA 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	24

Table 29. 2.5-inch hot-swap PCIe 4.0 NVMe SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A95055	C2BV	ThinkSystem 2.5" U.3 7500 MAX 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	24
4XB7A95056	C2BW	ThinkSystem 2.5" U.3 7500 MAX 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	24
4XB7A95057	C2BF	ThinkSystem 2.5" U.3 7500 MAX 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	24
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A95050	C2BR	ThinkSystem 2.5" U.3 7500 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	24
4XB7A95051	C2BS	ThinkSystem 2.5" U.3 7500 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	24
4XB7A95052	C2BT	ThinkSystem 2.5" U.3 7500 PRO 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	24

Table 30. E3.S 1T EDSFF hot-swap PCIe 5.0 NVMe SSDs

Part number	Feature code	Description	SED support	Max Qty
E3.S hot-swap SSDs - PCIe 5.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A93136	C1WD	ThinkSystem E3.S 1T VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Support	32
4XB7A93137	C1WE	ThinkSystem E3.S 1T VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Support	32
4XB7A93138	C1WF	ThinkSystem E3.S 1T VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Support	32
4XB7A93139	C1WG	ThinkSystem E3.S 1T VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD v2	Support	32
E3.S hot-swap SSDs - PCIe 5.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A93131	C1W8	ThinkSystem E3.S 1T VA 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD v2	Support	32
4XB7A93132	C1W9	ThinkSystem E3.S 1T VA 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD v2	Support	32
4XB7A93133	C1WA	ThinkSystem E3.S 1T VA 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD v2	Support	32
4XB7A93134	C1WB	ThinkSystem E3.S 1T VA 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD v2	Support	32

Table 31. M.2 SATA drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7B07588	CABU	ThinkSystem M.2 VA 480GB Read Intensive SATA 6Gb NHS SSD	Support	2
4XB7B07589	CACA	ThinkSystem M.2 VA 960GB Read Intensive SATA 6Gb NHS SSD	Support	2
4XB7A90049	BYF8	ThinkSystem M.2 ER3 480GB Read Intensive SATA 6Gb NHS SSD	Support	2
4XB7A82286	BQ1Z	ThinkSystem M.2 5400 PRO 240GB Read Intensive SATA 6Gb NHS SSD	Support	2
4XB7A82287	BQ1Y	ThinkSystem M.2 5400 PRO 480GB Read Intensive SATA 6Gb NHS SSD	Support	2

Table 32. 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)				
4XB7A82636	BS2P	ThinkSystem M.2 7450 PRO 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2
4XB7A13999	BKSR	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2

Internal backup units

The server does not supports any internal backup units, such as tape drives or RDX drives. External backup units are available as described in the External backup units section.

Optical drives

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

Table 33. 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 SR860 V4 supports up to 20 slots: 18x regular PCIe slots – either Gen4 or Gen5 – plus two OCP 3.0 slots with Gen5 interfaces. The slots are installed in three risers supporting either full-height slots (riser 1 and riser 3) or low-profile slots (riser 2).

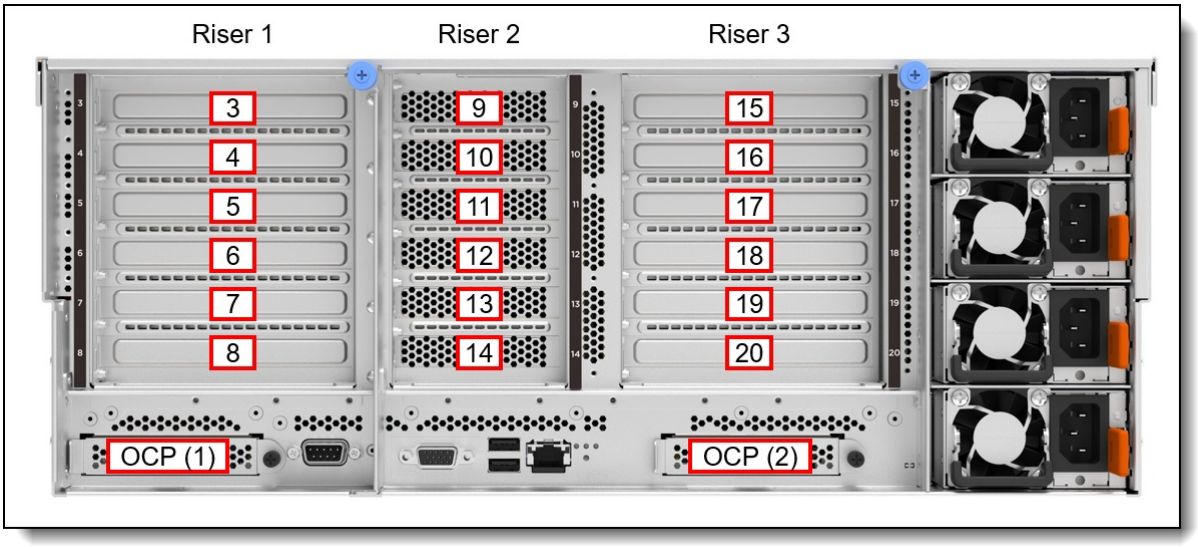

Figure 15. Slots in the SR860 V4

Topics in this section:

- Riser & slot support
- Riser ordering information
- Serial port
- OCP slot filler

Riser & slot support

The SR860 V4 server supports two slot configurations, to suit the needs of installed applications.

- 16x Gen5 + 2x Gen4 + 2x OCP Gen5 slots
- 4x Gen4 + 2x OCP Gen5 slots

16x Gen5 + 2x Gen4 + 2x OCP Gen5 slots

For most applications, including those with GPU requirements, the SR860 V4 supports a configuration with 16x Gen5 slots, 2x Gen4 slots, plus 2x OCP slots. The configuration supports 4x double-wide GPUs and optionally supports M.2 hot-swap drive bays installed in place of slot 20.

Slots are as follows:

E3.S configurations: If the server is configured with 6x or 8x E3.S backplanes (which equates to 24x or 32x E3.S 1T drive bays, or 12x or 16x E3.S 2T bays), then **Slot 6** and **Slot 18** are not available.

- OCP slots:
  - Slot 1: Gen5 x16 OCP 3.0 slot (CPU 1)
  - Slot 2: Gen5 x16 OCP 3.0 slot (CPU 2)
- Riser 1:
  - Slot 3: Gen5 x8 FHFL (CPU 1) (Not usable if slot 4 has a double-wide GPU installed)
  - Slot 4: Gen5 x16 FHFL (CPU 4) (Double-wide GPU capable)
  - Slot 5: Gen4 x8 FHFL (CPU 4) (Not usable if slot 4 has a double-wide GPU installed)
  - Slot 6: Gen5 x16 FHFL (CPU 1) (Double-wide GPU capable) (not available if 6x or 8x E3.S

backplanes configured)
    - Slot 7: Gen5 x16 FHHL (CPU 4)
    - Slot 8: Gen5 x16 FHHL (CPU 1)
- Riser 2:
    - Slot 9: Gen5 x8 HHHL (CPU 4)
    - Slot 10: Gen5 x8 HHHL (CPU 4)
    - Slot 11: Gen5 x8 HHHL (CPU 1)
    - Slot 12: Gen5 x8 HHHL (CPU 3)
    - Slot 13: Gen5 x8 HHHL (CPU 3)
    - Slot 14: Gen5 x8 HHHL (CPU 2)
- Riser 3:
    - Slot 15: Gen5 x8 FHFL (CPU 2) (Not usable if slot 4 has a double-wide GPU installed)
    - Slot 16: Gen5 x16 FHFL (CPU 3) (Double-wide GPU capable)
    - Slot 17: Gen4 x8 FHHL (CPU 3) (Not usable if slot 4 has a double-wide GPU installed)
    - Slot 18: Gen5 x16 FHFL (CPU 2) (Double-wide GPU capable) (not available if 6x or 8x E3.S backplanes configured)
    - Slot 19: Gen5 x16 FHHL (CPU 3)
    - Slot 20: Gen5 x16 FHHL (CPU 2) (Not present if rear hot-swap M.2 is configured)

The 18-slot configuration (16x Gen5 slots + 2x Gen4 slots) is shown in the following figure. Blue slots are Gen4 and green slots are Gen5. The red shading indicates the slots where double-wide GPUs are supported. The processor that each slot is connected to is also shown in the figure.

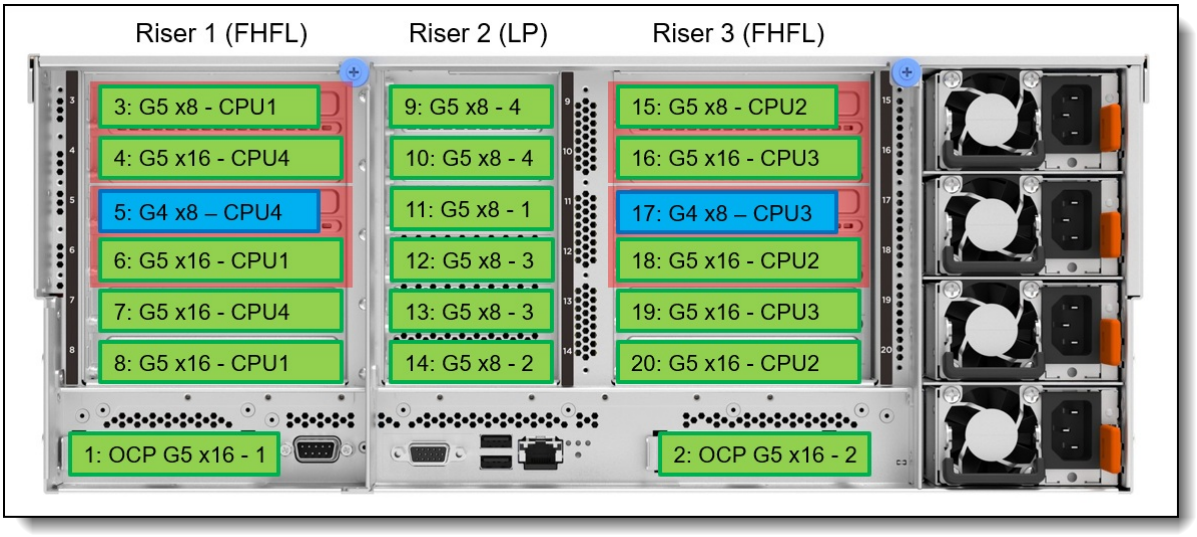

Figure 16. Slot configuration with 16x Gen5 slots + 2x Gen4 slots

4x Gen4 + 2x OCP Gen5 slots

For applications that don't require many slots, the SR860 V4 also supports a configuration with 4x Gen4 slots plus 2x OCP slots. The configuration optionally supports hot-swap M.2 drive bays installed in riser 3.

- OCP slots:
    - Slot 1: Gen5 x16 OCP 3.0 slot (CPU 1)
    - Slot 2: Gen5 x16 OCP 3.0 slot (CPU 2)
- Riser 1:
    - Slot 3 ~ Slot 6: Empty
    - Slot 7: Gen4 x8 FHHL (CPU 1)
    - Slot 8: Gen4 x8 FHHL (CPU 1)
- Riser 2: Empty
    - Slot 9 ~ Slot 14: Empty

- Riser 3:
  - Slot 15 ~ Slot 18: Empty
  - Slot 19: Gen4 x8 FHHL (CPU 2)
  - Slot 20: Gen4 x8 FHHL (CPU 2)

The 4-slot configuration is shown in the following figure. Blue slots are Gen4 and green slots are Gen5. The processor that each slot is connected to is also shown in the figure.

The figure also shows the location of the optional hot-swap M.2 drive bays.

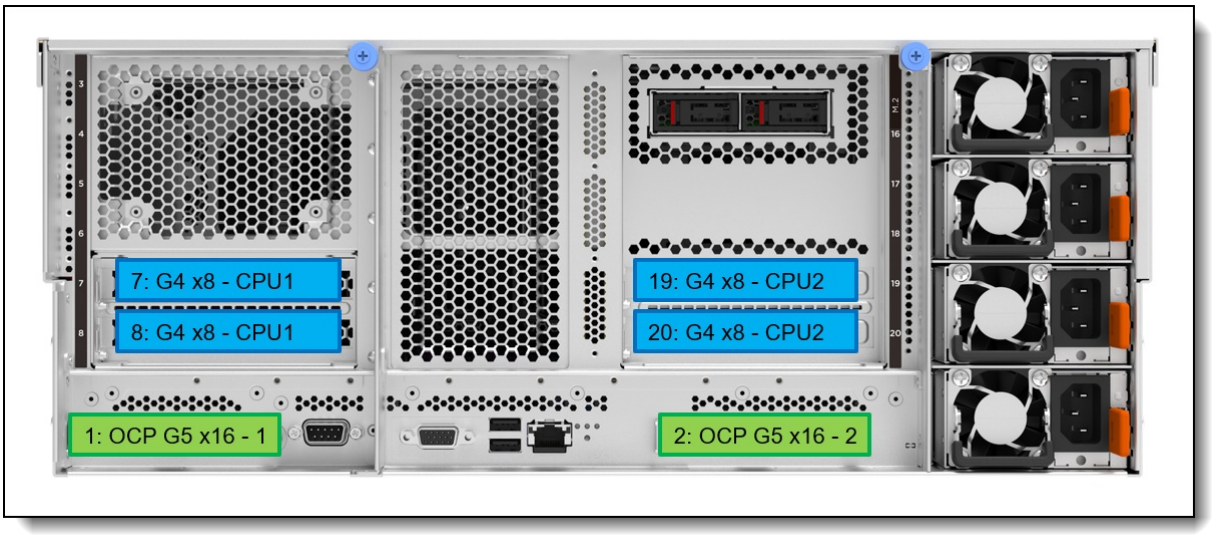

Figure 17. Slot configuration with 4x Gen4 slots

Riser ordering information

The riser cards supported are listed in the following table. The table also lists the total slots and what type of slots each riser card includes. All of the x8 slots have a physical x16 connector.

Riser with M.2 drive cage: As listed in the table, one riser includes support for two M.2 hot-swap drive bays installed in Riser 1. The part number and feature code include the cage and cables needed for the M.2 drive bays, however the M.2 drive bays themselves (backplanes) will need to be ordered as well. See the M.2 drives section for details.

Table 34. Riser part numbers (Blue = Gen4, green = Gen5)

Part number	Feature code	Description of feature code	Qty	Purpose	Slots					M.2 bays
					Total slots	G5 x8	G5 x16	G4 x8	G4 x16	
18-slot configurations										
4XH7B08909	C976	ThinkSystem SR860 V4 4 x16 & 2 x8 PCIe Gen5 Riser 1/3 FHFL Option Kit	2	Riser 1, 3 with 6 slots	6	1	4	1	0	No
4XH7B08911	C97D	ThinkSystem SR860 V4 6 x8 PCIe Gen5 Riser 2 HHHL Option Kit	1	Riser 2 with 6 slots	6	6	0	0	0	No
4XH7B08910	C977	ThinkSystem SR860 V4 3 x16 & 2 x8 + M.2 PCIe Gen5 Riser 3 FHFL Option Kit	1	Riser 3 with 5 slots+M.2	5	1	3	1	0	Yes
4-slot configurations										
4XH7B08908	CA03	ThinkSystem SR860 V4 x8/x8 PCIe Gen4 Riser 1/3 FHHL Option Kit	2	Riser 1, 3 with 2 slots	2	0	0	2	0	No
4XH7B08907	C97E	ThinkSystem SR860 V4 M.2/x8/x8 PCIe Gen4 Riser 3 FHHL Option Kit	1	Riser 3 with 2 slots+M.2	2	0	0	2	0	Yes

Serial port

A serial port is optional in the SR860 V4 and installed in a dedicated position at the rear of the server. See the Components and connectors section for the location of the RS-232 COM port.

Ordering information is shown in the following table.

Field upgrades: The option part number includes PCIe slot brackets however these are not used in the SR860 V4.

Table 35. Serial port

Part number	Feature code	Description
4X97A97253	C3FB	ThinkSystem V4 1U/2U COM Port Upgrade Kit

OCP slot filler

If customers or partners remove an OCP adapter from the server, we recommend that a slot cover (slot filler) be installed in its place to ensure proper airflow in the server. Ordering information is listed in the following table.

Tip: For CTO orders and preconfigured models, slot fillers are automatically installed in slots where an OCP adapter is not installed.

Table 36. OCP slot filler

Part number	Description
4XF7B06188	ThinkSystem OCP3 FILLER

Network adapters

This section lists the supported network adapters:

- OCP network adapters
- PCIe network adapters
- Adapters with Generic firmware

OCP network adapters

The server has two dedicated OCP 3.0 SFF slots each with either a PCIe x8 or x16 host interface. The OCP slots are both located at the rear of the server. See Figure 3 for the location of the OCP slots.

The following table lists the supported OCP adapters. One port can optionally be shared with the XCC management processor for Wake-on-LAN and NC-SI support.

Table 37. Supported OCP adapters

Part number	Feature code	Description	Maximum supported
10 Gb Ethernet - 10GBASE-T			
4XC7A08236	B5ST	ThinkSystem Broadcom 57416 10GBASE-T 2-port OCP Ethernet Adapter	2
4XC7A96732	C4HS	ThinkSystem Intel E610-T2 10GBase-T 2-Port OCP Ethernet Adapter(Generic FW)*	2
25 Gb Ethernet			
4XC7A80567	BPPW	ThinkSystem Broadcom 57504 10/25GbE SFP28 4-Port OCP Ethernet Adapter	2
4XC7A62582	BE4T	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port OCP Ethernet Adapter	2
100 Gb Ethernet			
4XC7A99190	C62H	ThinkSystem Nvidia ConnectX-6 Dx 100GbE QSFP56 2-port OCP Ethernet Adapter(Generic)*	2
400 Gb Ethernet			
4XC7A95695	C4CQ	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 OCP Ethernet Adapter(Generic FW)*	2

* See the Adapters with Generic firmware section

PCIe network adapters

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

The table indicates quantities and slot locations based on the riser configuration of the server (specified by the Base feature code):

- 4-riser config (12 slots, all Low Profile): base C947 or C94E
- 3-riser config (9 slots, mix of LP and FH): base C946 or C94D

Table 38. Supported PCIe Network Adapters

Part number	Feature code	Description	Max qty	Slots supported	PCIe width
Gigabit Ethernet					
7ZT7A00484	AUZV	ThinkSystem Broadcom 5719 1GbE RJ45 4-Port PCIe Ethernet Adapter	18	All slots	PCIe x8
25 Gb Ethernet					
4XC7A08238	BK1H	ThinkSystem Broadcom 57414 10/25GbE SFP28 2-port PCIe Ethernet Adapter	18	All slots	PCIe x8
4XC7A80566	BNWM	ThinkSystem Broadcom 57504 10/25GbE SFP28 4-port PCIe Ethernet Adapter	8	4,6,7,8,16, 18,19,20	PCIe x16
4XC7A62580	BE4U	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	18	All slots	PCIe x8
4XC7A99191	C62J	ThinkSystem Nvidia ConnectX-7 10/25GbE SFP28 4-Port PCIe Ethernet Adapter(Generic)*	8	4,6,7,8,16, 18,19,20	PCIe x16
100 Gb Ethernet and HDR100 InfiniBand					
4XC7A08248	B8PP	ThinkSystem Mellanox ConnectX-6 Dx 100GbE QSFP56 2-port PCIe Ethernet Adapter	8	4,6,7,8,16, 18,19,20	PCIe x16
200 Gb Ethernet and HDR/NDR200 InfiniBand					
4XC7A81883	BQBN	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 Adapter	8	4,6,7,8,16, 18,19,20	PCIe x16
400 Gb Ethernet and NDR InfiniBand					
4XC7A95508	C51C	ThinkSystem NVIDIA ConnectX-7 NDR400 OSFP 1-port PCIe Gen5 VPI Adapter	6	4,6,7,16, 18,19	PCIe x16

* See the Adapters with Generic firmware section

For more information, including the transceivers and cables that each adapter supports, see the list of Lenovo Press Product Guides in the Networking adapters category:
https://lenovopress.com/servers/options/ethernet

Adapters with Generic firmware

As indicated in the tables of supported adapters, some adapters are now offered by Lenovo with standard vendor firmware (look for "Generic FW" or "Generic" in the adapter names). These adapters are supported in Lenovo servers however there are currently limitations on the use of Lenovo management tools.

Support in Lenovo XClarity management tools for adapters with generic firmware is per the following table.

Tip: Always use firmware that is obtained from Lenovo sources to ensure the firmware is fully tested by Lenovo and is supported. You should not use firmware that is obtained from the vendor web site, unless directed to do so by Lenovo support.

Table 39. Lenovo XClarity management tools support for adapters with generic firmware

Function	Lenovo XClarity Provisioning Manager	Lenovo XClarity OneCLI (out-of-band)	Lenovo XClarity OneCLI (in-band)	Lenovo XClarity Administrator
Adapter configuration	Supported (in-band via UEFI)	Planned for support 3Q/2025	Planned for support 3Q/2025	Planned for support 3Q/2025

GPU adapters

This section describes the supported GPUs.

- GPU part numbers
- GPU configuration rules
- GPU Full Length Thermal Option Kit
- GPU cable kit

GPU part numbers

The SR860 V4 supports the following graphics processing units (GPUs).

Table 40. Supported GPUs

Part number	Feature code	Description	Controlled GPU	Max qty	Slots supported	Aux power	Form factor
Single-wide GPUs							
4X67A84824	BS2C	ThinkSystem NVIDIA L4 24GB PCIe Gen4 Passive GPU	Controlled	8	3,4,5,6,15, 16,17,18	No	LP
Double-wide GPUs							
4X67A90669	BYFH	ThinkSystem NVIDIA L40S 48GB PCIe Gen4 Passive GPU	Controlled	4	4,6,16,18	Yes	FHFL

For information about these GPUs, see the ThinkSystem GPU Summary, available at:
https://lenovopress.com/lp0768-thinksystem-thinkagile-gpu-summary

GPU configuration rules

The following configuration requirements must be met when installing GPUs:

- The table includes a Controlled GPU column. If a GPU is listed as Controlled, that means the GPU is not offered in certain markets, as determined by the US Government. If a GPU is listed as No, that means the GPU is not controlled and is available in all markets.
- All GPUs installed must be identical

GPU Full Length Thermal Option Kit

When installing any full-length GPU as a field upgrade, you will also need to order the GPU Enablement Kit as listed in the following table. This kit is only required for full-length GPUs and is not required for low profile GPUs such as the NVIDIA L4. See the GPU part number table above for GPU form factors.

Table 41. ThinkSystem SR860 V4 Full Length GPU Thermal Option Kit

Part number	Description	Maximum quantity
4XH7B08937	ThinkSystem SR860 V4 Full Length GPU Thermal Option Kit • 2x heatsinks - replace existing heatsinks (SBB7A73617, BU4F) • 1x Air baffle (SBB7B00923, CBLN) • 4x 16-pin GPU power cables for double-wide GPUs (SBB7A72759, BTPA)	1

GPU cable kit

The following cable kit is offered to provide auxiliary power cables for GPUs that require one. See the GPU part numbers section to see which GPUs require an auxiliary power cable.

Configuration notes:

- This cable kit is only required for field upgrades; factory (CTO) orders will automatically include any required cables.
- This cable kit is only required for GPUs that require an auxilary power cable. See the GPU part number table.
- The cable kit is only required if you are adding *additional* GPUs to a server that already has one GPU installed from a CTO order. If you are doing a field upgrade to install the *first* DW GPU to a server, order the ThinkSystem SR860 V4 Full Length GPU Thermal Option Kit (4XH7B08937) instead, since 4XH7B08937 includes the necessary power cables.

Table 42. GPU cable kit

Part number	Description	Quantity
4X97B08883	ThinkSystem SR850 V4/SR860 V4 GPU Power Cable Kit • 1x 16-pin GPU power cable for double-wide GPU (SBB7A72759, BTPA)	1 per GPU

Fibre Channel host bus adapters

The following table lists the Fibre Channel HBAs supported by the SR860 V4.

Table 43. Fibre Channel HBAs

Part number	Feature code	Description	Max qty	Slots supported
32Gb Fibre Channel				
4XC7A96457	C5FC	ThinkSystem Emulex LPe37102 32Gb 2-port SecureHBA PCIe Fibre Channel Adapter(Generic FW)	18	All slots
4XC7A08276	BA1F	ThinkSystem QLogic QLE2772 32Gb 2-Port PCIe Fibre Channel Adapter	18	All slots
64Gb Fibre Channel				
4XC7A96458	C5FD	ThinkSystem Emulex LPe38102 64Gb 2-port SecureHBA PCIe Fibre Channel Adapter(Generic FW)	18	All slots
4XC7A96744	C4L3	ThinkSystem QLogic QLE2872 64Gb 2-Port PCIe Fibre Channel Adapter(Generic FW)	18	All slots

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

SAS adapters for external storage

The following table lists SAS HBAs supported by SR860 V4 server for use with external storage.

Table 44. Adapters for external storage

Part number	Feature code	Description	Max qty	Slots supported
SAS HBA - PCIe 4.0				
4Y37A09724	B8P7	ThinkSystem 440-16e SAS/SATA PCIe Gen4 12Gb HBA	18	All slots

For a comparison of the functions of the supported storage adapters, see the ThinkSystem RAID Adapter and HBA Reference:
https://lenovopress.lenovo.com/lp1288#sr860-v4-support=SR860%2520V4&internal-or-external-ports=External

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

Cooling

The SR860 V4 optionally supports open-loop water cooling to remove heat from the processors. For details of available cooling methods, see the Processor cooling section.

The server has 12 60mm hot-swap dual-rotor variable-speed fans at the front of the server and all 12 fans are standard in all models. The server offers N+1 redundancy, meaning that one rotor can fail and the server still operates normally.

Each power supply also includes an integrated fan.

The 12 fans are installed in six modules in vertical bays, each of which comprise of 2 fans. When servicing the fan modules, you remove the modules from the top of the unit (hot-swap). Although the server supports N+1 redundancy (that is, supporting the failure of 1 rotor while maintaining server operation), the server supports the removal of two fans for the time it takes to undertake a fan replacement: remove the module, replace the fan, reinsert the module.

System fan selection is automatically derived by the configurator tool based on the configuration selected. Fan choices are as follows:

- Standard fans, single-rotor 24K RPM
- Performance fans, dual-rotor, 20K RPM
- Ultra performance fans, dual-rotor, 21K RPM

Ordering information for the fans is listed in the following table. Option part numbers are offered in case customers wish to have spare parts readily available to minimize disruption in the event a fan develops a fault.

Table 45. Cooling

Part number	Feature code	Description	Max qty
4F17B08903	C96U	ThinkSystem SR860 V4 Standard Fan Module Option Kit	6
4F17B08904	C96V	ThinkSystem SR860 V4 Performance Fan Module Option Kit	6
4F17B08905	C971	ThinkSystem SR860 V4 Ultra Fan Module Option Kit	6

Power supplies

The SR860 V4 supports up to four redundant hot-swap power supplies. Redundancy can be configured as N+1 or N+N.

Topics in this section:

Power supply ordering information

The power supply choices are listed in the following table. Power supplies installed in the server must be identical.

Tip: When configuring a server in the DCSC configurator, power consumption is calculated precisely by interfacing with Lenovo Capacity Planner. You can therefore select the appropriate power supply for your configuration. However, do consider future upgrades that may require additional power needs.

Table 46. Power supply options

Part number	Feature code	Description	Max Qty	Capacity (230V)	Capacity (115V)	Voltage	Connector
Titanium AC power supplies - CRPS Premium							
4P57A88621	C0U4	ThinkSystem 1300W 230V/115V Titanium CRPS Premium Hot-Swap Power Supply	4	1300W	1000W	230V/115V	C14
4P57A88689	C0U3	ThinkSystem 2000W 230V Titanium CRPS Premium Hot-Swap Power Supply	4	2000W	-	230V	C14
4P57A88622	C0UC	ThinkSystem 2700W 230V Titanium CRPS Premium Hot-Swap Power Supply	4	2700W	-	230V	C20
4P57A88623	C0UD	ThinkSystem 3200W 230V Titanium CRPS Premium Hot-Swap Power Supply	4	3200W	-	230V	C20
Platinum AC power supplies - CRPS							
4P57A89307	C0U6	ThinkSystem 1300W 230V/115V Platinum CRPS Hot-Swap Power Supply v1.5	4	1300W	1000W	230V/115V	C14
4P57A88636	C0U5	ThinkSystem 1300W 230V/115V Platinum CRPS Hot-Swap Power Supply v2.4	4	1300W	1000W	230V/115V	C14
4P57A89308	C0UA	ThinkSystem 2700W 230V Platinum CRPS Hot-Swap Power Supply v2.3	4	2700W	-	230V	C20
4P57A88628	C0UB	ThinkSystem 2700W 230V Platinum CRPS Hot-Swap Power Supply v2.4	4	2700W	-	230V	C20
HVAC/HVDC power supplies - CRPS Premium							

Part number	Feature code	Description	Max Qty	Capacity (230V)	Capacity (115V)	Voltage	Connector
4P57A88627	C0TR	ThinkSystem 1300W HVAC/HVDC Platinum CRPS Premium Hot-Swap Power Supply	4	1300W	-	200-277V AC 240-380V DC	Amphenol 0167814-002
-48V DC power supplies - CRPS Premium							
4P57A88625	C0TS	ThinkSystem 1300W -48V DC CRPS Premium Hot-Swap Power Supply	4	1300W	-	-48V	BizLink 115H0-025987-R1

Supported voltage ranges are as follows:

- AC power supplies listed as 230V support high-range (200-240V 50/60 Hz) power.
- AC power supplies listed as 115V support low-range (100-127V 50/60 Hz) power.
- For China customers, all AC power supplies also support 240V DC.
- The -48V DC power supply supports voltage range -44V to -54V DC.
- The HVAC/HVDC power supply supports voltage ranges 200-277V AC single phase, and 240-380V DC

For inlet current requirements, see the Physical and electrical specifications section.

Power supply options do not include a line cord. See the tables below for details about supported line cords, including the power cords for the DC power supplies. For server configurations, the inclusion of a power cord is model dependent. Configure-to-order models can be configured without power cords if desired.

The SR860 V4 supports both CRPS and CRPS Premium power supplies. CRPS Premium power supplies offer the following additional features:

- Over-subscription
- More accurate power metering
- Virtual reseat
- Enhanced fault detection
- System cooling assist (fan override)
- Fault LEDs
- VPD support
- Zero-output mode support (cold redundancy mode) (see the Zero-output mode section)

Power supply LEDs

CRPS Premium power supplies have two LEDs:

- Power output/fault LED:
  - Green: The server is on and the power supply is working normally
  - Green, slow blinking (1 flash/sec): The power supply is in Zero-output/Standby mode (see below)
  - 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

CRPS power supplies have one LED:

- Green: The server is on and the power supply is working normally
- Green, blinking: The power supply unit is in firmware update mode
- Yellow: Either the power supply has failed, or two power supplies are installed but one is not connected to the input power source
- Yellow, blinking: The power supply is indicating a warning such as over-temperature warning, over-current warning, or a slow fan speed
- Off: The server is powered off, or the power supply is not working properly

Zero-output mode

Zero-output mode (also known as Standby mode or Cold Redundancy mode) allows a power supply to enter a low-power mode when it is not needed. Zero-output mode is only supported on CRPS Premium power supplies.

When Zero-output mode is configured in XCC and the server power load is sufficiently low, one of the installed power supplies enters into the Standby state while the other one delivers entire load. When the power load increases, the standby power supply will switch to Active state to provide sufficient power to the server.

Zero-output mode can be enabled or disabled in the XClarity Controller web interface, **Server Configuration > Power Policy**. If you select Disable, then both power supplies will be in the Active state.

Supported with CRPS Premium only : Zero-output mode is supported with CRPS Premium power supplies, but not with CRPS non-Premium power supplies

Power cords

Line cords and rack power cables with C13 connectors can be ordered as listed in the following table.

115V customers: If you plan to use the 1300W power supply with a low-range (100-127V) power source, select a power cable that is rated above 10A. Power cables that are rated at 10A or below are not supported with low-range power.

Table 47. Power cords

Part number	Feature code	Description
Rack cables - C13 to C14		
SL67B08593	BPHZ	0.5m, 10A/100-250V, C13 to C14 Jumper Cord
00Y3043	A4VP	1.0m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08367	B0N5	1.0m, 13A/100-250V, C13 to C14 Jumper Cord
39Y7937	6201	1.5m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08368	B0N6	1.5m, 13A/100-250V, C13 to C14 Jumper Cord
4L67A08365	B0N4	2.0m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08369	6570	2.0m, 13A/100-250V, C13 to C14 Jumper Cord
4L67A08366	6311	2.8m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08370	6400	2.8m, 13A/100-250V, C13 to C14 Jumper Cord
39Y7932	6263	4.3m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08371	6583	4.3m, 13A/100-250V, C13 to C14 Rack Power Cable
Rack cables - C13 to C14 (Y-cable)		
00Y3046	A4VQ	1.345m, 2X C13 to C14 Jumper Cord, Rack Power Cable
00Y3047	A4VR	2.054m, 2X C13 to C14 Jumper Cord, Rack Power Cable

Part number	Feature code	Description
Rack cables - C13 to C20		
39Y7938	6204	2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable
Rack cables - C13 to C20 (Y-cable)		
47C2491	A3SW	1.2m, 16A/100-250V, 2 Short C13s to Short C20 Rack Power Cable
47C2492	A3SX	2.5m, 16A/100-250V, 2 Long C13s to Short C20 Rack Power Cable
47C2493	A3SY	2.8m, 16A/100-250V, 2 Short C13s to Long C20 Rack Power Cable
47C2494	A3SZ	4.1m, 16A/100-250V, 2 Long C13s to Long C20 Rack Power Cable
Line cords		
39Y7930	6222	2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord
81Y2384	6492	4.3m 10A/220V, C13 to IRAM 2073 (Argentina) Line Cord
39Y7924	6211	2.8m, 10A/250V, C13 to AS/NZ 3112 (Australia/NZ) Line Cord
81Y2383	6574	4.3m, 10A/230V, C13 to AS/NZS 3112 (Aus/NZ) Line Cord
69Y1988	6532	2.8m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord
81Y2387	6404	4.3m, 10A/250V, C13 - 2P+Gnd (Brazil) Line Cord
39Y7928	6210	2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord
81Y2378	6580	4.3m, 10A/220V, C13 to GB 2099.1 (China) Line Cord
39Y7918	6213	2.8m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord
81Y2382	6575	4.3m, 10A/230V, C13 to DK2-5a (Denmark) Line Cord
39Y7917	6212	2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord
81Y2376	6572	4.3m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord
39Y7927	6269	2.8m, 10A/250V, C13(2P+Gnd) (India) Line Cord
81Y2386	6567	4.3m, 10A/240V, C13 to IS 6538 (India) Line Cord
39Y7920	6218	2.8m, 10A/250V, C13 to SI 32 (Israel) Line Cord
81Y2381	6579	4.3m, 10A/230V, C13 to SI 32 (Israel) Line Cord
39Y7921	6217	2.8m, 220-240V, C13 to CEI 23-16 (Italy/Chile) Line Cord
81Y2380	6493	4.3m, 10A/230V, C13 to CEI 23-16 (Italy/Chile) Line Cord
46M2593	A1RE	2.8m, 12A/125V, C13 to JIS C-8303 (Japan) Line Cord
4L67A08362	6495	4.3m, 12A/200V, C13 to JIS C-8303 (Japan) Line Cord
39Y7926	6335	4.3m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord
39Y7922	6214	2.8m, 10A/250V, C13 to SABS 164 (S Africa) Line Cord
81Y2379	6576	4.3m, 10A/230V, C13 to SABS 164 (South Africa) Line Cord
39Y7925	6219	2.8m, 220-240V, C13 to KETI (S Korea) Line Cord
81Y2385	6494	4.3m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord
39Y7919	6216	2.8m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord
81Y2390	6578	4.3m, 10A/230V, C13 to SEV 1011-S24507 (Sws) Line Cord
23R7158	6386	2.8m, 10A/125V, C13 to CNS 10917-3 (Taiwan) Line Cord
81Y2375	6317	2.8m, 10A/240V, C13 to CNS 10917-3 (Taiwan) Line Cord
81Y2374	6402	2.8m, 13A/125V, C13 to CNS 60799 (Taiwan) Line Cord
4L67A08363	AX8B	4.3m, 10A 125V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2389	6531	4.3m, 10A/250V, C13 to 76 CNS 10917-3 (Taiwan) Line Cord
81Y2388	6530	4.3m, 13A/125V, C13 to CNS 10917 (Taiwan) Line Cord
39Y7923	6215	2.8m, 10A/250V, C13 to BS 1363/A (UK) Line Cord

Part number	Feature code	Description
81Y2377	6577	4.3m, 10A/230V, C13 to BS 1363/A (UK) Line Cord
90Y3016	6313	2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord
46M2592	A1RF	2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord
00WH545	6401	2.8m, 13A/120V, C13 to NEMA 5-15P (US) Line Cord
4L67A08359	6370	4.3m, 10A/125V, C13 to NEMA 5-15P (US) Line Cord
4L67A08361	6373	4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord
4L67A08360	AX8A	4.3m, 13A/120V, C13 to NEMA 5-15P (US) Line Cord

Power cords (C19 connectors)

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

Table 48. 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
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
40K9769	6283	4.3m, 16A/230V, C19 to IEC 309-P+N+G (Den/Sws) 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
40K9771	6282	4.3m, 220-240V, C19 to SI 32 (Israel) Line cord
40K9768	6281	4.3m, 220-240V, C19 to CEI 23-16 (Italy) Line cord
40K9770	6280	4.3m, 220-240V, C19 to SABS 164 (South Africa) Line cord
41Y9231	6289	4.3m, 15A/250V, C19 to KSC 8305 (S. Korea) Line Cord
81Y2391	6549	4.3m, 16A/230V, C19 to SEV 1011 (Sws) 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

-48V DC power cord

For the -48V DC Power Supply, the following power cable is supported.

Table 49. -48V DC power cable

Part number	Feature code	Description
4L67A97438	C682	2.8m, 38A /-48V, -48V (3V3) Line Cord

The following figure shows the power cable.

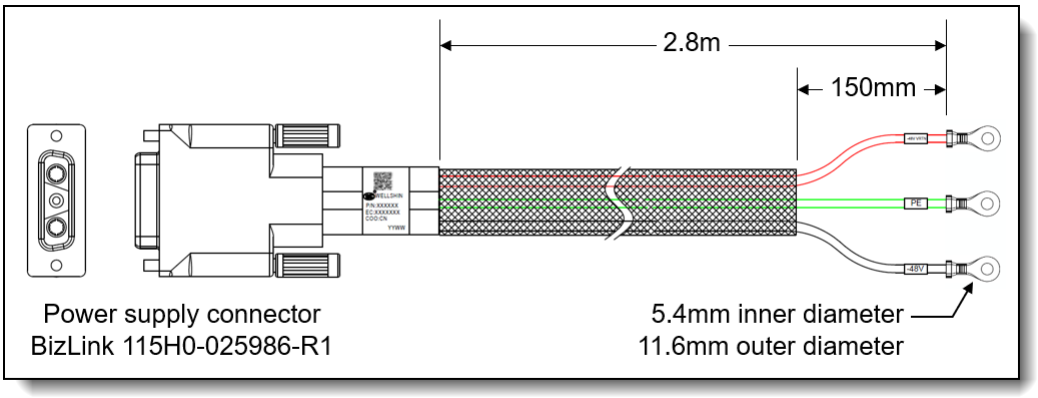

Figure 18. -48V DC power cord

HVAC/HVDC power cord

For the HVDC Power Supply, the following power cable is supported.

Table 50. -48V DC power cable

Part number	Feature code	Description
4L67A97238	C683	2.8M,10A/400V,HVDC Line Cord

The following figure shows the power cable.

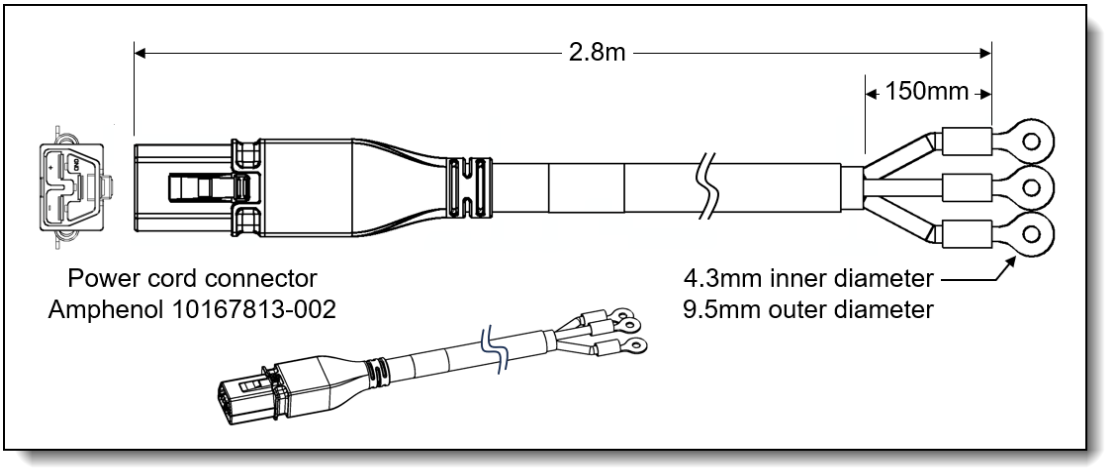

Figure 19. HVDC power cord

Systems management

The SR860 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
- MicroSD for XCC local storage
- USB flash drive
- 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 SR860 V4 implements a separate System I/O Board, also known as the DC-SCM (Data Center Secure Control Module, DCSCM), that connects to the system board as shown in the Internal view in the Components and connectors section. The System I/O Board contains connectors that are accessible from the exterior 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.

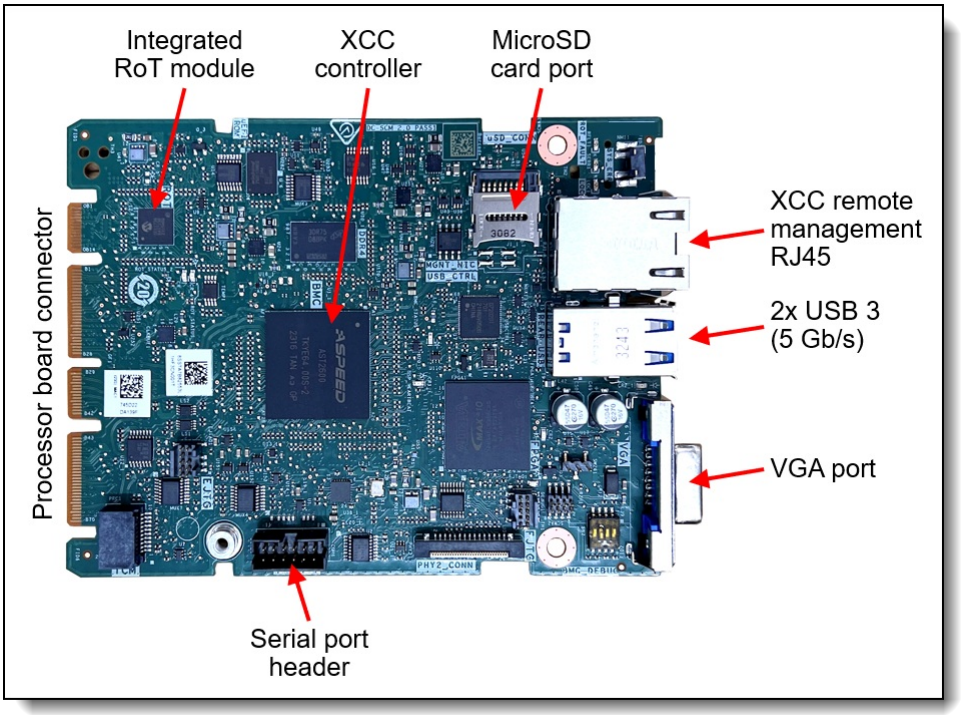

Figure 20. System I/O Board

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 SR860 V4 offers a front operator panel with key LED status indicators, as shown in the following figure.

Tip: The Network LED only shows network activity of an installed OCP network adapter. The LED shows activity from both OCP adapters if two are installed.

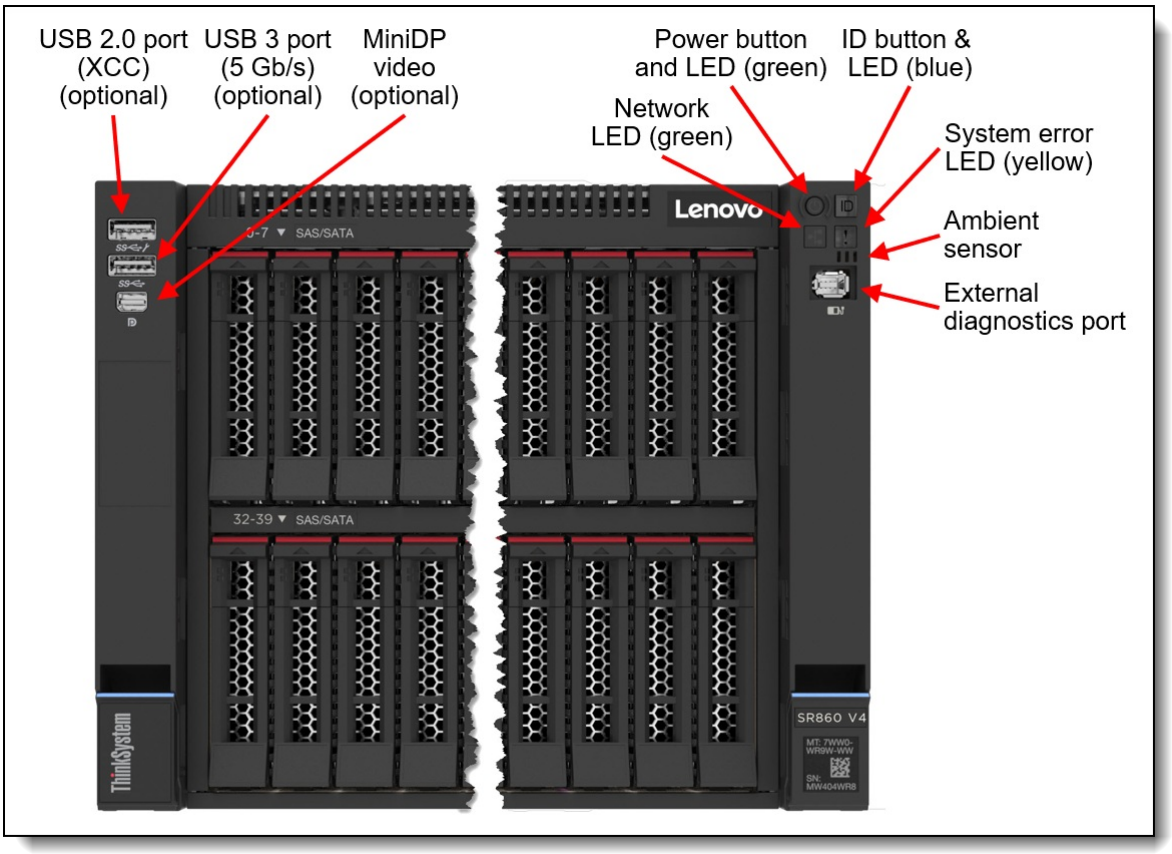

Figure 21. Front operator controls are on the left and right side of the server

Front DisplayPort video port and Front/Internal USB ports

The rear USB ports and VGA video port are standard on all models of the SR860 V4, however the front and internal USB ports, and front MiniDP video port are optional, and can be configured in the factory in CTO orders, or as field upgrades using option part numbers.

Internal USB port: The internal USB port supports USB drives that have an overall length of less than 30mm. See the USB flash drive section for the supported drive.

For CTO orders, the feature codes are listed in the following table.

Tip: The C97C and C97A feature codes are for both 2.5-inch and E3.S configurations

Table 51. CTO orders - Front & internal ports

Feature code	Description	Purpose
C94G	USB Option card wave3	Provides the Internal USB 3 port (5 Gb/s)
C97C	ThinkSystem SR860 V4 left Ear blank module	No front USB ports, no MiniDP video port
C97A*	ThinkSystem 4S V4 2U 2.5" left Ear module	Provides the 2x Front USB 3 ports (5 Gb/s) and MiniDP 1.1a port (requires Internal USB port, C94G)

* Feature C94G must also be selected

Configuration rules:

- The Internal USB port (C94G) can be selected without also selecting the front USB/MiniDP ports
- The Front USB ports and MiniDP requires that the Internal USB port (C94G) also be selected
- The front USB ports are required to use XClarity Mobile, as described in the System status with XClarity Mobile section.

For field upgrades, the part numbers listed in the following table are available.

Table 52. Local management

Part number	Description	Purpose
4XF7B08939	ThinkSystem SR860 V4 Left Rack Latch with USB/MiniDP Option kit • USB I/O board with Internal USB port • Front media bezel with USB ports and MiniDP port	For either 2.5-inch or E3.S drive bay configurations. Adds Internal USB 3 port (5 Gb/s), 2x Front USB 3 ports (5 Gb/s), MiniDP 1.1a video port See the USB flash drive section for supported USB drives for internal USB port.
4XF7A99087	ThinkSystem V4 Internal USB I/O Board Option kit • USB I/O board with Internal USB port	Adds Internal USB 3 port (5 Gb/s) only.

Configuration notes for field upgrades:

- If you order 4XF7B08939 for use in a server that already has the internal USB port installed (feature C94G), the USB I/O board from the kit will not be needed as it is a duplicate of what is already installed.
- 4XF7B08939 is required to use XClarity Mobile, as described in the System status with XClarity Mobile section.

External Diagnostics Handset

The SR860 V4 optionally has a port to connect an External Diagnostics Handset as described in the preceding section. The External Diagnostics Handset has the same functions as the Integrated Diagnostics Panel but has the advantages of not consuming space on the front of the server plus it can be shared among many servers in your data center. The handset has a magnet on the back of it to allow you to easily mount it on a convenient place on any rack cabinet.

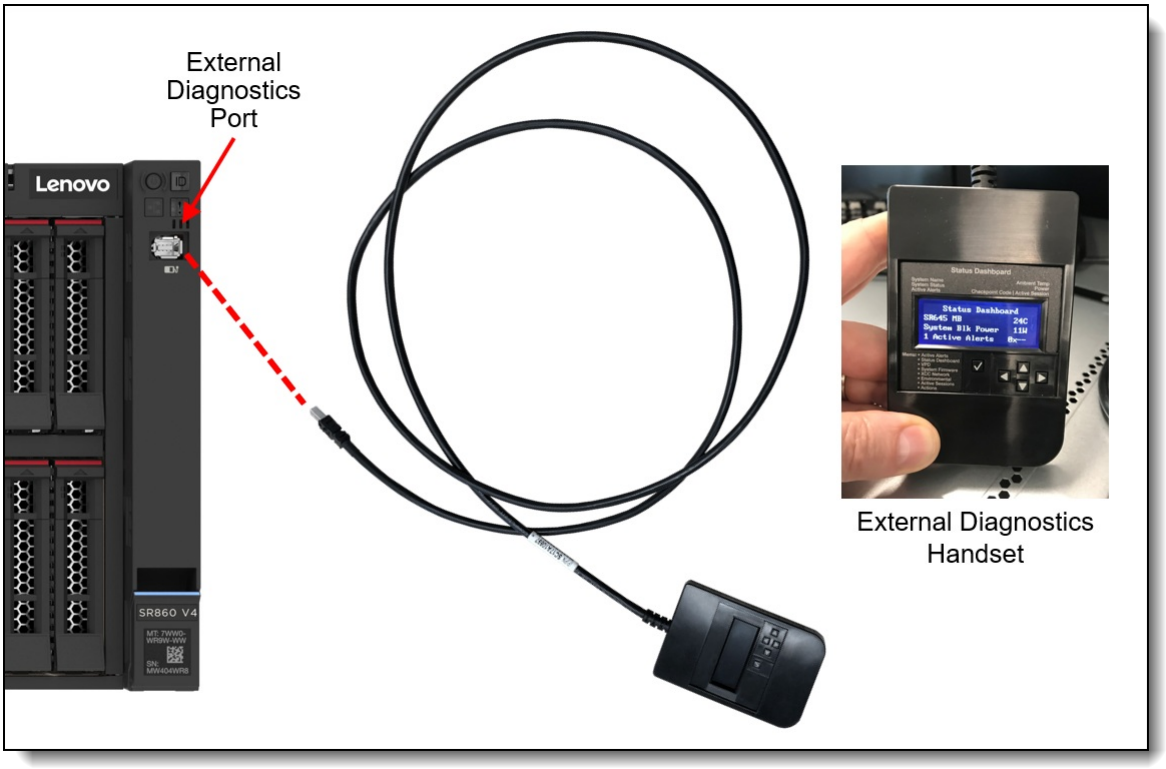

Figure 22. External Diagnostics Handset

The External Diagnostics Handset allows quick access to system status, firmware, network, and health information. The LCD display and the function buttons give you access to the following information:

- Active alerts (support planned for 4Q/2025)
- Status Dashboard (support planned for 4Q/2025)
- 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 (support planned for 4Q/2025)
- Environmental data: Ambient temperature, CPU temperature, AC input voltage, estimated power consumption (support planned for 4Q/2025)
- Active XCC sessions (support planned for 4Q/2025)
- System reset action (support planned for 4Q/2025)

Ordering information for the External Diagnostics Handset with is listed in the following table.

Table 53. External Diagnostics Handset ordering information

Part number	Feature code	Description
4TA7A64874	BEUX	ThinkSystem External Diagnostics Handset

Information pull-out tab

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

Light path diagnostics

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

The server has fault LEDs next to the following components:

- Each memory DIMM
- Each drive bay
- Each power supply

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)

Configuration notes:

- The use of XClarity Mobile requires front USB ports. If your server doesn't already include front USB ports, order the field upgrade 4XF7B08939 as described in the Local management section

Remote management

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

Remote server management is provided through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3 (no SET commands; no SNMP v1)
- Common Information Model (CIM-XML)
- Representational State Transfer (REST) support
- Redfish 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 54. IPMI-over-LAN settings

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

MicroSD for XCC local storage

The server includes a MicroSD card port to enable the use of a MicroSD card for additional storage for use with the XCC controller. XCC 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 is listed in the following table.

Table 55. Media for use with the MicroSD card port

Part number	Feature code	Description
4X77A92672	C0BC	ThinkSystem MicroSD 64GB Class 10 Flash Memory Card

USB flash drive

For general portable storage needs, the server also supports the USB flash drive option that is listed in the following table.

Table 56. USB memory key

Part number	Feature	Description
4X77A95465	C44Q	ThinkSystem USB 64GB USB 3.0 Flash Drive

XCC3 Premier

In the SR860 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 SR860 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 57. 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 58. XClarity One license information

Part number	Description
7S0X000LWW	XClarity One - Managed Device, Per Endpoint w/1 Yr SW S&S
7S0X000MWW	XClarity One - Managed Device, Per Endpoint w/3 Yr SW S&S
7S0X000NWW	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 SR860 V4. The software can be downloaded and used at no charge to discover and monitor the SR860 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 59. 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 60. 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 SR860 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
- For China users, optional Nationz TPM 2.0 module
- 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.

The SR860 V4 server also offers the following optional physical security features:

- Optional chassis intrusion switch
- Optional lockable front security bezel

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

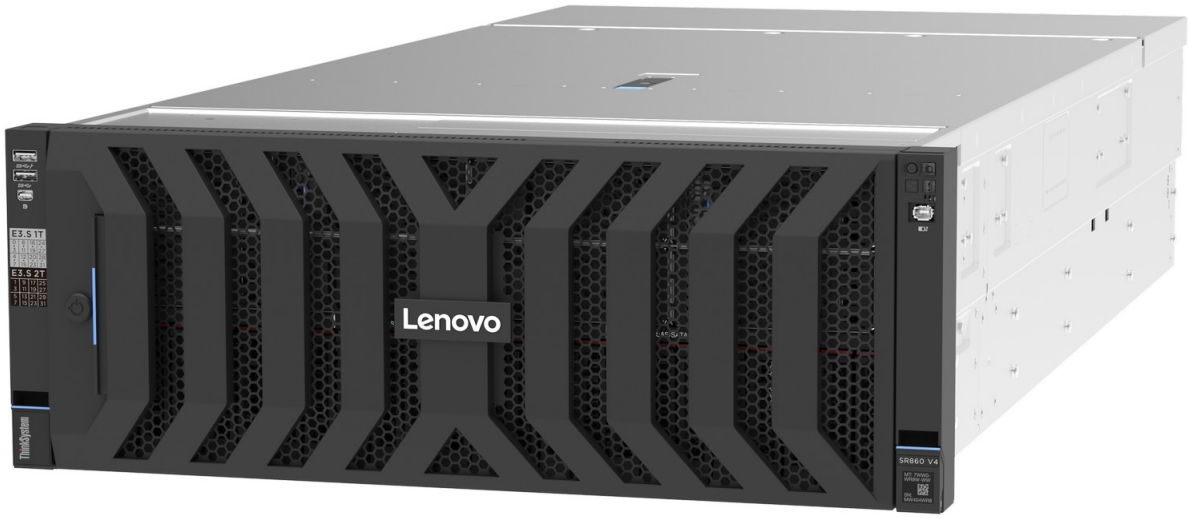

Figure 23. Lockable front security bezel

The dimensions of the security bezel are:

- Width: 435 mm (17.1 in.)
- Height: 175 mm (6.9 in.)
- Width: 30 mm (1.2 in.)

The following table lists the security options for the SR860 V4.

Table 61. Security features

Part number	Feature code	Description
4M27A11826	BCPG	ThinkSystem SR860 V3/SR850 V3/SR850 V2 Intrusion Cable Kit
4XF7B08938	C8HK	ThinkSystem V4 4U Security Bezel Option Kit
CTO only	C8UF	ThinkSystem V4 PRC NationZ TPM 2.0 Module

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 SR860 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 SR860 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 62. 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 SR860 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 following table lists the rack installation options that are available for the SR860 V4.

For supported racks, see the Rack cabinets section.

CMA not included with Rail kit: The Slide Rail kits listed in the table do not include the cable management arm. CMAs need to be ordered separately using either the feature code (CTO) or part number (field upgrades).

Table 63. Rack installation options

Part number	Feature Code	Description
Rail kit and CMA for 2.5-inch drive bay configurations		
4XF7A86616	BTTK	ThinkSystem SR860 V3 Slide Rail
4XF7A86617	BT6J	ThinkSystem SR850 V3/SR860 V3 Cable Management Arm
Rail kit and CMA for E3.S drive bay configurations		
4XF7B08941	C970	ThinkSystem SR860 V4 E3.S Chassis Slide Rail
4XF7B08890	BXK1	ThinkSystem SR850 V4/SR860 V4 E3.S Chassis Cable Management Arm

See the Rail Kit comparison for the specifications of each rail kit:
https://lenovopress.lenovo.com/lp1838-thinksystem-and-thinkedge-rail-kit-reference#availability=Available&sr860-v4-support=SR860%2520V4

Operating system support

The SR860 V4 supports the following operating systems:

- Microsoft Windows Server 2022
- Microsoft Windows Server 2025
- Red Hat Enterprise Linux 9.6
- Red Hat Enterprise Linux 10.0
- SUSE Linux Enterprise Server 15 SP7
- Ubuntu 22.04 LTS 64-bit
- Ubuntu 24.04 LTS 64-bit
- VMware ESXi 9.0

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=sr860-v4-xeon-6-p-cores-7djq-7djn-7djr&support=all

For configure-to-order configurations, the SR860 V4 can be preloaded with VMware ESXi. Ordering information is listed in the following table.

Table 64. VMware ESXi preload

Part number	Feature code	Description
CTO only	C91V	VMware ESXi 9.0 (Factory Installed)

Configuration rule:

- An ESXi preload cannot be selected if the configuration includes an NVIDIA GPU (ESXi preload cannot include the NVIDIA driver)

You can download supported VMware vSphere hypervisor images from the following web page and install it using the instructions provided:
https://vmware.lenovo.com/content/custom_iso/

Physical and electrical specifications

The SR860 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:

- 48x 2.5-inch chassis:
  - Width: 447 mm (17.6 inches)
  - Height: 175 mm (6.9 inches)
  - Depth: 906 mm (35.7 inches)
- E3.S chassis:
  - Width: 447 mm (17.6 inches)
  - Height: 175 mm (6.9 inches)
  - Depth: 946 mm (37.2 inches)

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

Table 65. Detailed dimensions

Dimension		Description
2.5-inch	E3.S	
482 mm		X_a = Width, to the outsides of the front EIA flanges
435 mm		X_b = Width, to the rack rail mating surfaces
447 mm		X_c = Width, to the outer most chassis body feature
175 mm		Y_a = Height, from the bottom of chassis to the top of the chassis
825 mm	865 mm	Z_a = Depth, from the rack flange mating surface to the rearmost I/O port surface
869 mm	909 mm	Z_b = Depth, from the rack flange mating surface to the rearmost feature of the chassis body
903 mm	943 mm	Z_c = Depth, from the rack flange mating surface to the rearmost feature such as power supply handle
37 mm		Z_d = Depth, from the forwardmost feature on front of EIA flange to the rack flange mating surface
53 mm		Z_e = Depth, from the front of security bezel (if applicable) or forwardmost feature to the rack flange mating surface

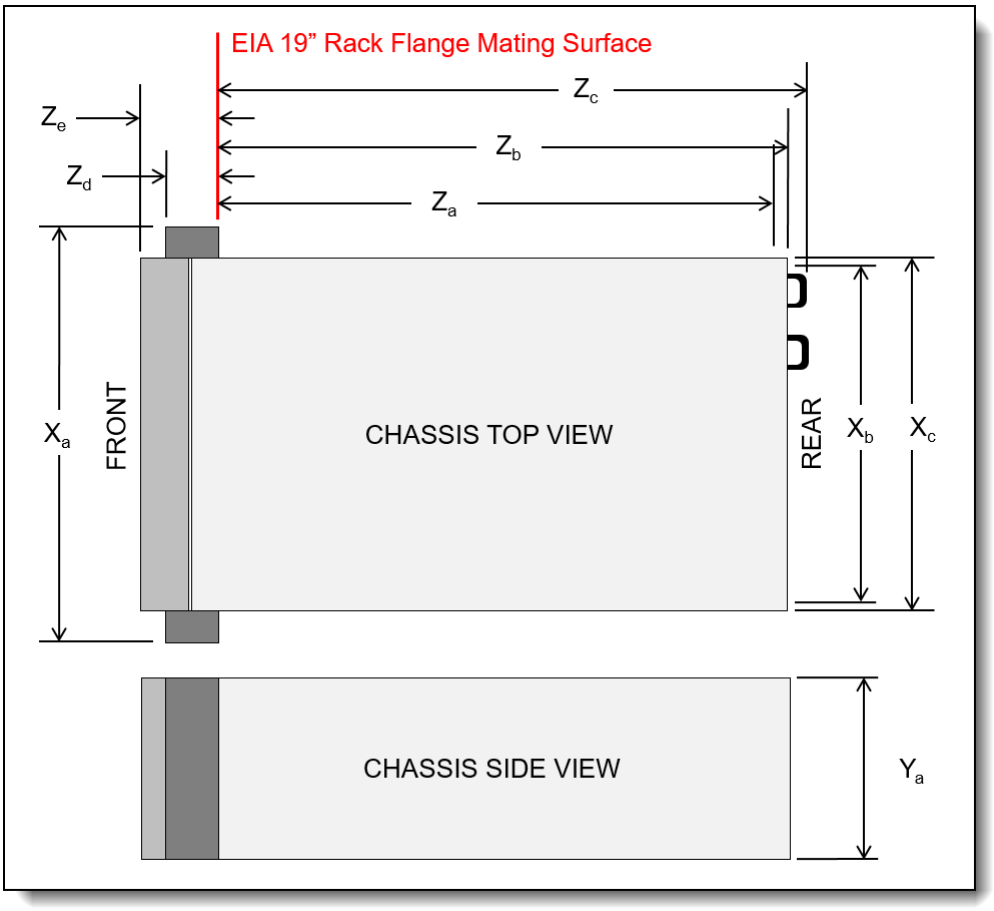

Figure 24. Server dimensions

The shipping (cardboard packaging) dimensions of the SR860 V4 are as follows:

- Width: 600 mm (23.6 inches)
- Height: 587 mm (23.1 inches)
- Depth: 1200 mm (47.2 inches)

The server has the following weight:

- Maximum weight: 42 kg (92.6 lb)

The server has the following 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 66. Maximum inlet current

Part number	Description	200V AC	240V DC	
Titanium AC power supplies - CRPS Premium				
4P57A88621	ThinkSystem 1300W 230V/115V Titanium CRPS Premium Hot-Swap Power Supply	11.4A	7.2A	6.2A
4P57A88689	ThinkSystem 2000W 230V Titanium CRPS Premium Hot-Swap Power Supply	No support	11A	9.1A
4P57A88622	ThinkSystem 2700W 230V Titanium CRPS Premium Hot-Swap Power Supply	No support	15A	12.3A
4P57A88623	ThinkSystem 3200W 230V Titanium CRPS Premium Hot-Swap Power Supply	No support	16A	14.5A
Platinum AC power supplies - CRPS				
4P57A89307	ThinkSystem 1300W 230V/115V Platinum CRPS Hot-Swap Power Supply v1.5	12A	8A	6.5A
4P57A88636	ThinkSystem 1300W 230V/115V Platinum CRPS Hot-Swap Power Supply v2.4	12A	8A	8A
4P57A89308	ThinkSystem 2700W 230V Platinum CRPS Hot-Swap Power Supply v2.3	No support	16A	16A
4P57A88628	ThinkSystem 2700W 230V Platinum CRPS Hot-Swap Power Supply v2.4	No support	16A	16A
HVAC/HVDC power supplies - CRPS Premium				
4P57A88627	ThinkSystem 1300W HVAC/HVDC Platinum CRPS Premium Hot-Swap Power Supply	No support	7.2A	6.2A

Electrical specifications for -48V DC input power supply, 4P57A88625:

- Input voltage: -48 to -60 Vdc
- Inlet current: 29.8 A

Electrical specifications for HVAC/HVDC power supply, 4P57A88627:

- Input voltage ranges:
  - 200-277V AC single phase
  - 240-380V DC
- Inlet current:
  - AC: 7.2 A
  - DC: 6.2 A

Operating environment

The SR860 V4 server complies with ASHRAE Class A2 specifications with most configurations, and depending on the hardware configuration, also complies with ASHRAE Class A3 and Class A4 specifications. System performance may be impacted when operating temperature is outside ASHRAE A2 specification.

Depending on the hardware configuration, the SR860 V4 server also complies with ASHRAE Class H1 specification. System performance may be impacted when operating temperature is outside ASHRAE H1 specification.

Topics in this section:

Water requirements

The SR860 V4 has the following requirements for open-loop liquid cooling:

- Maximum pressure: 3 bars
- Water inlet temperature and flow rates for Compute Complex Neptune Core Module:
  - 45°C (113°F) inlet temperature: 1 liter per minute (lpm) per server
- Water inlet temperature and flow rates for Processor Neptune Core Module:
  - 50°C (122°F) inlet temperature: 1.5 liters per minute (lpm) per server
  - 45°C (113°F) inlet temperature: 1 liter per minute (lpm) per server
  - 40°C (104°F) or lower inlet temperature: 0.5 liters per minute (lpm) per server

The water required to initially fill the system side cooling loop must be reasonably clean, bacteria-free water (<100 CFU/ml) such as de-mineralized water, reverse osmosis water, de-ionized water, or distilled water. The water must be filtered with an in-line 50 micron filter (approximately 288 mesh). The water must be treated with anti-biological and anti-corrosion measures. Environment quality must be maintain over the lifetime of the system to receive warranty and support on affecting components. For more information, see Lenovo Neptune Direct Water-Cooling Standards.

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).
    - ASHRAE Class A3: 5°C to 40°C (41°F to 104°F); the maximum ambient temperature decreases by 1°C for every 175 m (574 ft) increase in altitude above 900 m (2,953 ft).
    - ASHRAE Class A4: 5°C to 45°C (41°F to 113°F); the maximum ambient temperature decreases by 1°C for every 125 m (410 ft) increase in altitude above 900 m (2,953 ft).
    - ASHRAE Class H1: 5 °C to 25 °C (41 °F to 77 °F); Decrease the maximum ambient temperature by 1°C for every 500 m (1640 ft) increase in altitude above 900 m (2,953 ft).
  - Server off: -10°C to 60°C (14°F to 140°F)
  - Shipment/storage: -40°C to 70°C (-40°F to 158°F)
- Maximum altitude: 3,050 m (10,000 ft)
- Relative Humidity (non-condensing):
  - Operating
    - ASHRAE Class A2: 8% to 80%; maximum dew point: 21°C (70°F)
    - ASHRAE Class A3: 8% to 85%; maximum dew point: 24°C (75°F)
    - ASHRAE Class A4: 8% to 90%; maximum dew point: 24°C (75°F)
    - ASHRAE Class H1: 8% to 80%; Maximum dew point: 17°C (63°F)

- Shipment/storage: 8% to 90%

Acoustical noise emissions

The server has the following acoustic noise emissions declaration.

- Sound power level (L_{WAd}) (Statistical adder for verification, Kv (B) = 0.4):
  - Idling: Typical: 6.8 Bel, Max: 6.8 Bel
  - Operating 1: Typical: 7.2 Bel, Max: 7.9 Bel
  - Operating 2: Typical: 7.9 Bel, Max: 8.5 Bel
- Sound pressure level (L_{pAm}) (Bystander position)
  - Idling: Typical: 53 dBA, Max: 53 dBA
  - Operating 1: Typical: 58 dBA, Max: 66 dBA
  - Operating 2: Typical: 66 dBA, Max: 72 dBA

The declared acoustic sound levels are based on the following configurations, which may change depending on configuration or conditions:

- Typical: 4 x 270 W CPUs, 32 x 64 GB RDIMMs, 24 x 2.5" SAS HDDs, 1 x RAID 545-8i, 1 x Intel E610-T4 10GBASE-T 4-port OCP, 4 x 2000W PSUs
- Max.: 4 x 350 W CPUs, 64 x 64 GB RDIMMs, 48 x 2.5" SAS HDDs, 1 x RAID 545-8i, 1 x Intel E610-T4 10GBASE-T 4-port OCP, 4 x 3200W PSUs

Notes:

- These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296.
- The declared sound levels may change depending on configuration/conditions.
- Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation. The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation; the size, materials, and configuration of the room; the noise levels from other equipment; the room ambient temperature, and employee's location in relation to the equipment. Further, compliance with such government regulations depends on a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. Lenovo recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

Shock and vibration

The server has the following vibration and shock limits:

- Vibration:
  - Operating: 0.21 G rms at 5 Hz to 500 Hz for 15 minutes across 3 axes
  - Non-operating: 1.04 G rms at 2 Hz to 200 Hz for 15 minutes across 6 surfaces
- Shock:
  - Operating: 15 G for 3 milliseconds in each direction (positive and negative X, Y, and Z axes)
  - Non-operating:
    - 12 kg - 22 kg: 50 G for 152 in./sec velocity change across 6 surfaces
    - 23 kg - 31 kg: 35 G for 152 in./sec velocity change across 6 surfaces (3x GPU config, 2.5” config)
    - 32 kg - 68 kg: 35 G for 136 in./sec velocity change across 6 surfaces (16x 3.5” HDD config)

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/

Water infrastructure for the Lenovo Processor Neptune Core Module

The Lenovo Processor Neptune Core Module is the liquid-based processor cooling offering for the SR860 V4, as described in the Lenovo Processor Neptune Core Module section.

The open-loop cooling module requires the following water infrastructure components in the rack cabinet and data center:

- Supported 42U or 48U rack cabinet

  The 42U or 48U Heavy Duty Rack Cabinet (machine types 7D6D or 7D6E) are supported. Two 0U mounting points are required for the water manifolds, at the rear of the rack cabinet, one either side.

  For information about the 42U and 48U Heavy Duty Rack Cabinets, see the product guide: https://lenovopress.lenovo.com/lp1498-lenovo-heavy-duty-rack-cabinets

- 38-port water manifold (machine type 7DE6), installed in the rear of the rack cabinet

  The manifold provides quick-disconnect couplings that each server in the rack are connected to. Ordering information is in the table below.

- Coolant distribution unit (CDU), either in-rack or in-row

  In-rack CDUs are installed at the bottom of the rack cabinet. The supported in-rack CDU is as follows:

  - Lenovo Neptune DWC RM100 In-Rack CDU; see the RM100 In-Rack Coolant Distribution Unit section

  In-row CDUs are separate cabinets that are typically installed at the end of a row of rack cabinets. Examples of suitable in-row CDUs include (but not limited to):

  - CoolTera FS400 310KW CDU
  - Vertiv Liebert XDU60 60KW CDU

- Hose kit to connect to the CDU to the manifold

  Ordering information is in the table below.

The following figure shows the major components of the solution.

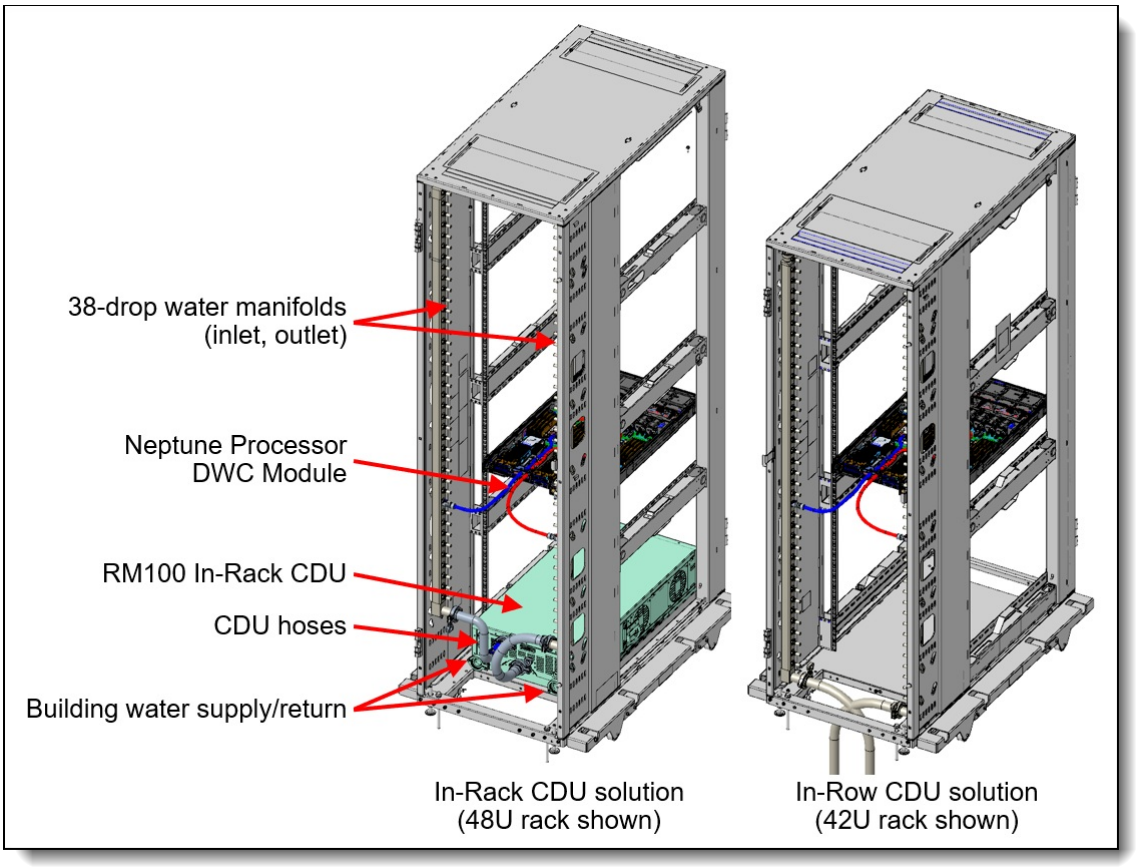

Figure 25. Water manifold connections

Configuration requirements:

- Maximum number of SR860 V4 servers supported in a rack:
  - 48U rack: 9 servers
  - 42U rack with in-rack CDU: 9 servers
  - 42U rack without in-rack CDU: 9 servers
- Inlet water flow rate:
  - 0.5 LPM: Maximum 40°C inlet water temperature
  - 1.0 LPM: Maximum 45°C inlet water temperature
  - 1.5 LPM: Maximum 50°C inlet water temperature
- Water pressure requirement:
  - Maximum operating node inlet pressure = 43.5 psi (3 bars)

Note: Water quality must be maintained over the lifetime of the system to receive warranty and support on affecting components. For water quality requirement, see Lenovo Neptune Direct Water-Cooling Standards

The 38-drop water manifold and hoses can be ordered as listed in the following table.

Table 67. Water infrastructure ordering information

Part number	Feature code	Description
Manifold for 42U and 48U rack cabinet		
4XF7A90061	C5YW	ThinkSystem Neptune 38-Port Rack Manifold
Hoses to connect the manifold to an in-rack CDU		
4XF7A90232	C5YX	Connection Set, 38/45 Ports Manifold with in-rack CDU
4XF7A90233	C5YY	Connection Set, 38-Port Manifold with in-rack CDU for 48U Rack
Hoses to connect the manifold to an in-row CDU		
4XF7A90234	C5YZ	Hose Set, 1 inch EPDM, 1.3m, for Rack Manifold with in-row CDU
4XF7A90235	C5Z0	Hose Set, 1 inch EPDM, 2.3m, for Rack Manifold with in-row CDU

Configuration notes:

- This water connection solution described here cannot be used with the DW612S and N1380 enclosures as the water requirements are different.
- The hoses for in-row CDUs that are listed in the table above have Eaton FD83 quick-disconnect couplings

RM100 In-Rack Coolant Distribution Unit

The RM100 In-Rack Coolant Distribution Unit (CDU) can provide 100kW cooling capacity within the rack cabinet. It is designed as a 4U high rack device installed at the bottom of the rack. The CDU is supported in the 42U and 48U Heavy Duty Rack Cabinets.

For information about the 42U and 48U Heavy Duty Rack Cabinets, see the product guide: https://lenovopress.lenovo.com/lp1498-lenovo-heavy-duty-rack-cabinets

The following figure shows the RM100 CDU.

Figure 26. RM100 In-Rack Coolant Distribution Unit

The CDU can be ordered using the CTO process in the configurators using machine type 7DBL. The following table lists the base CTO model and base feature code.

Table 68. RM100 ordering information

CTO model	Base feature	Description
7DBLCTOLWW	BRL4	Lenovo Neptune DWC RM100 In-Rack CDU

For details and exact specification of the CDU, see the In-Rack CDU Operation & Maintenance Guide: https://pubs.lenovo.com/hdc_rackcabinet/rm100_user_guide.pdf

Professional Services: The factory integration of the In-Rack CDU requires Lenovo Professional Services review and approval for warranty and associated extended services. Before ordering CDU and manifold, contact the Lenovo Professional Services team (CDUsupport@lenovo.com).

Warranty upgrades and post-warranty support

The SR860 V4 has a 1-year or 3-year warranty based on the machine type of the system:

- 7DJQ, - 1 year warranty
- 7DJN, 7DJR - 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 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 SR860 V4 conforms to the following standards:

- ANSI/UL 62368-1
- CE, UKCA Mark (EN55032 Class A, EN62368-1, EN55035, EN61000-3-11, EN61000-3-12, (EU) 2019/424, and EN IEC 63000 (RoHS))
- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 7, Class A
- CISPR 32, Class A, CISPR 35
- Korea KS C 9832 Class A, KS C 9835
- Japan VCCI, Class A
- Taiwan BSMI CNS15936, Class A; CNS15598-1; Section 5 of CNS15663
- Australia/New Zealand AS/NZS CISPR 32, Class A; AS/NZS 62368.1
- China CELP certificate, HJ 2507-2011

External drive enclosures

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

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

Table 69. External drive enclosures

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

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

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

External storage systems

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

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

External backup units

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

Table 70. External backup options

Part number	Description
External RDX USB drives	
4T27A10725	ThinkSystem RDX External USB 3.0 Dock
External SAS tape backup drives	
6160S8E	IBM TS2280 Tape Drive Model H8S
6160S9E	IBM TS2290 Tape Drive Model H9S
External SAS tape backup autoloaders	
6171S8R	IBM TS2900 Tape Autoloader w/LTO8 HH SAS
6171S9R	IBM TS2900 Tape Autoloader w/LTO9 HH SAS
External tape backup libraries	
6741B1F	IBM TS4300 3U Tape Library Base Unit - Max 48U
6741B3F	IBM TS4300 3U Tape Library Expansion Unit - Max 48U
SAS backup drives for TS4300 Tape Library	
01KP937	LTO 7 HH SAS Drive
01KP953	LTO 8 HH SAS Drive
02JH836	LTO 9 HH SAS Drive
Full High 8 Gb Fibre Channel for TS4300	
01KP938	LTO 7 FH Fibre Channel Drive
01KP954	LTO 8 FH Fibre Channel Drive
02JH837	LTO 9 FH Fibre Channel Drive
Half High 8 Gb Fibre Channel for TS4300	
01KP936	LTO 7 HH Fibre Channel Drive
01KP952	LTO 8 HH Fibre Channel Drive
02JH835	LTO 9 HH Fibre Channel Drive
Half High 6 Gb SAS for TS4300	
01KP937	LTO 7 HH SAS Drive
01KP953	LTO 8 HH SAS Drive
02JH836	LTO 9 HH SAS Drive

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

Fibre Channel SAN switches

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

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

Uninterruptible power supply units

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

Table 71. Uninterruptible power supply units

Part number	Description
Rack-mounted or tower UPS units - 100-125VAC	
7DD5A001WW	RT1.5kVA 2U Rack or Tower UPS-G2 (100-125VAC)
7DD5A003WW	RT3kVA 2U Rack or Tower UPS-G2 (100-125VAC)
Rack-mounted or tower UPS units - 200-240VAC	
7DD5A002WW	RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC)
7DD5A005WW	RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)
7DD5A007WW	RT5kVA 3U Rack or Tower UPS-G2 (200-240VAC)
7DD5A008WW	RT6kVA 3U Rack or Tower UPS-G2 (200-240VAC)
7DD5A00AWW	RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)

† Only available in China and the Asia Pacific market.

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

Power distribution units

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

Table 72. Power distribution units

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
0U Basic PDUs															
4PU7A93176	C0QH	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93169	C0DA	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93177	C0QJ	0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0U Switched and Monitored PDUs															
4PU7A93181	C0QN	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU v2 (60A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
4PU7A93178	C0QK	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93171	C0D8	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93182	C0QP	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93175	C0CS	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93180	C0QM	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93173	C0D6	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93179	C0QL	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU v2 (30A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
1U Switched and Monitored PDUs															
4PU7A90808	C0D4	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 ETL	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7A81117	BNDV	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - ETL	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7A90809	C0DE	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A90810	C0DD	1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7A90811	C0DC	1U 12 C19/C13 Switched and monitored 32A 3P WYE PDU V2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A90812	C0DB	1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
71763NU	6051	Ultra Density Enterprise C19/C13 PDU 60A/208V/3PH	N	N	Y	N	N	N	N	N	N	Y	Y	Y	N
71762NX	6091	Ultra Density Enterprise C19/C13 PDU Module	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
Line cords for 1U PDUs that ship without a line cord															
40K9611	6504	DPI 32a Cord (IEC 309 3P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	DPI 32a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	DPI 63a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	DPI 30a Cord (NEMA L6-30P)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9615	6501	DPI 60a Cord (IEC 309 2P+G)	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N

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

Rack cabinets

The following table lists the supported rack cabinets.

Table 73. Rack cabinets

Model	Description
93072RX	25U Standard Rack (1000mm)
93072PX	25U Static S2 Standard Rack (1000mm)
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 74. 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 76. 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

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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. **Family Portfolio: Large Memory Servers Powered by Intel**
   2025-06-27 | 15 minutes | Employees and Partners

   This course is designed to give Lenovo sales and partner representatives the foundation of the Intel-based Large Memory server family of products. As an introduction to the servers, this course also includes family features and when to select a specific product.

   Tags: ThinkSystem SR850 V3, SR850 V4, SR860 V3, SR860 V4, SR950 V3, Large Memory servers, Intel Xeon Scalable Family, Intel Xeon 6

   Learning Objectives:
   • Identify servers within the family
   • Describe features used in this server family
   • Recognize when a server should be selected

   Published: 2025-06-27
   Length: 15 minutes

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

   Course code: SXXW1209r7
2. **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

3. **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

4. **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

5. **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

6. **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

7. **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

8. **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

9. **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

10. **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

11. **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

12. **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

13. **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

14. **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

15. **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

16. **VTT Cloud Architecture: NVIDIA Using Cloud for GPUs and AI**
2024-05-22 | 60 minutes | Employees Only

Join JD Dupont, NVIDIA Head of Americas Sales, Lenovo partnership and Veer Mehta, NVIDIA Solution Architect on an interactive discussion about cloud to edge, designing cloud Solutions with NVIDIA GPUs and minimizing private\hybrid cloud OPEX with GPUs. Discover how you can use what is done at big public cloud providers for your customers. We will also walk through use cases and see a demo you can use to help your customers.

Tags: Artificial Intelligence (AI), Cloud, Nvidia, Software Defined Infrastruture (SDI), Technical Sales

Published: 2024-05-22
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DVCLD212

Related publications and links

For more information, see these resources:

- Lenovo SR860 V4 product page:
https://www.lenovo.com/us/en/p/servers-storage/servers/mission-critical/thinksystem-sr860-v4/len21ts0045
- ThinkSystem SR860 V4 datasheet
https://lenovopress.lenovo.com/datasheet/DS0197
- ThinkSystem SR860 V4 drivers and support
http://datacentersupport.lenovo.com/products/servers/thinksystem/sr860v4/7djn/downloads
- 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:

- 4-Socket Rack Servers
- Large Memory Capacity Servers
- ThinkSystem SR860 V4 Server

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