Lenovo ThinkSystem SR650 V3 Server
Product Guide

The Lenovo ThinkSystem SR650 V3 is an ideal 2-socket 2U rack server for small businesses up to large enterprises that need industry-leading reliability, management, and security, as well as maximizing performance and flexibility for future growth. The SR650 V3 is based on the new 5th generation Intel Xeon Scalable processor family (formerly codenamed "Emerald Rapids").

The SR650 V3 is designed to handle a wide range of workloads, such as databases, virtualization and cloud computing, virtual desktop infrastructure (VDI), infrastructure security, systems management, enterprise applications, collaboration/email, streaming media, web, and HPC.



Figure 1. Lenovo ThinkSystem SR650 V3 with 2.5-inch front drive bays (3.5-inch drive configurations also available)

360° View | Full 3D Tour

Did you know?

The SR650 V3 server has been designed to take advantage of the features of the 5th generation Intel Xeon Scalable processors, such as the full performance of 385W 64-core processors, support for 5600 MHz memory and PCIe Gen 5.0 support. The SR650 V3 is a very configuration-rich offering, supporting more than 30 different drive bay configurations in the front, middle and rear of the server and 5 different slot configurations at the rear of the server. This level of flexibility ensures that you can configure the server to meet the needs of your workload.

Key features

Combining performance and flexibility, the SR650 V3 server is a great choice for enterprises of all sizes. The server offers a broad selection of drive and slot configurations and offers numerous high performance features. Outstanding reliability, availability, and serviceability (RAS) and high-efficiency design can improve your business environment and can help save operational costs.

Scalability and performance

The SR650 V3 offers numerous features to boost performance, improve scalability and reduce costs:

- Supports one or two fifth-generation Intel Xeon Processor Scalable processors
  - Up to 64 cores and 128 threads
  - Core speeds of up to 3.9 GHz
  - TDP ratings of up to 385 W
- Supports one or two fourth-generation Intel Xeon Processor Scalable processors
  - Up to 60 cores and 120 threads
  - Core speeds of up to 3.7 GHz
  - TDP ratings of up to 350 W
- Support for DDR5 memory DIMMs to maximize the performance of the memory subsystem:
  - Up to 32 DDR5 memory DIMMs, 16 DIMMs per processor
  - 8 memory channels per processor (2 DIMMs per channel)
  - Supports 1 DIMM per channel operating at 5600 MHz (5th Gen processors) or 4800 MHz (4th Gen processors)
  - Supports 2 DIMMs per channel operating at 4800 MHz (5th Gen processors) or 4400 MHz (4th Gen processors)
  - Using 256GB 3DS RDIMMs, the server supports up to 8TB of system memory
- Supports up to eight single-width GPUs or three double-wide GPUs, for substantial processing power in a 2U system.
- The server is Compute Express Linsk (CXL) v1.1 Ready. With CXL 1.1 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.
- Supports up to 40x 2.5-inch drive bays, by using combinations of front-accessible (up to 24 bays), mid bays (8 bays) and rear-accessible (8 bays).
- Supports 20x 3.5-inch drive bays for lower-cost high-capacity HDD storage. 2.5-inch and 3.5-inch drive bays can be mixed if desired.
- Supports 36x NVMe drives without oversubscription of PCIe lanes (1:1 connectivity). The use of NVMe drives maximizes drive I/O performance, in terms of throughput and latency.
- Supports 14x SATA drives using the onboard SATA controller (no additional adapter needed), enabling lower cost, high capacity storage solution for cold or archival storage workloads.
- Supports high-speed RAID controllers from Broadcom providing 12 Gb SAS connectivity to the drive backplanes. A variety of PCIe 3.0 and PCIe 4.0 RAID adapters are available.
- Supports up to two externally accessible 7mm hot-swap drives for operating system boot functions. Optional RAID-0 or RAID-1.
- Supports M.2 drives for convenient operating system boot functions. Available M.2 adapters support either one M.2 drive or two M.2 drives. Optional RAID-0 or RAID-1.
- Up to 12x PCIe slots (10x rear, 2x front), plus a slot dedicated to an OCP 3.0 adapter. 2.5-inch drive configurations also support an additional internal bay for a cabled RAID adapter or HBA.

- The server has a dedicated industry-standard OCP 3.0 small form factor (SFF) slot, supporting a variety of Ethernet network adapters. A simple-swap mechanism with a thumbscrew and pull-tab enables tool-less installation and removal of the adapter. The adapter supports shared BMC network sideband connectivity to enable out-of-band systems management.
- 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.

Availability and serviceability

The SR650 V3 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. Note: ADDDC in not supported with 9x4 RDIMMs.
- The server offers hot-swap drives, supporting RAID redundancy for data protection and greater system uptime.
- Available M.2 adapters support RAID-1 (using Intel VROC) which can enable two SATA or two NVMe M.2 drives to be configured as a redundant pair.
- The server has up to two hot-swap redundant power supplies and up to six hot-swap redundant fans to provide availability for business-critical applications.
- Optional front-accessible slots and drives so that most major components and cables (except power) are located at the front of the server
- 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 One, 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 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 SR650 V3:

- The server includes XClarity Controller 2 (XCC2) to monitor server availability. Optional upgrade to XCC Platinum to provide remote control (keyboard video mouse) functions, support for the mounting of remote media files (ISO and IMG image files), boot capture, power capping and new XCC2 Platinum features. New XCC2 Platinum features include System Guard, new security modes including a CNSA-compliant mode, a FIPS 140-3-compliant mode and enhanced NIST 800-193 support, and a new Neighbor Group feature.
- Dedicated Ethernet port at the rear of the server for remote management (BMC management).
- Lenovo XClarity One 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
- 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 7mm and 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 SR650 V3 offers the following energy-efficiency features to save energy, reduce operational costs, and increase energy availability:

- The server supports an advanced direct-water cooling (DWC) capability with the Lenovo Neptune Processor DWC Module, 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 Platinum and Titanium certifications
- Solid-state drives (SSDs) consume as much as 80% less power than traditional spinning 2.5-inch HDDs.
- The server uses hexagonal ventilation holes, which can be grouped more densely than round holes, providing more efficient airflow through the system and thus keeping your system cooler.

- Optional Lenovo XClarity Energy Manager provides advanced data center power notification, analysis, and policy-based management to help achieve lower heat output and reduced cooling needs.

Performance benchmarks

At Lenovo, we know customers care most about how their workloads perform in real-world environments, which is why we carefully tune our server hardware, firmware, and drivers to help deliver strong benchmark results that reflect practical business needs. The goal is simple: to help customers run their critical applications more efficiently and achieve better outcomes.

The following table lists the current world record performance benchmarks that Lenovo performance engineers have achieved on the SR650 V3. This reinforces that the server is an excellent choice for a server to run wide range of application workloads.

The SR650 V3 has a total of 11 current performance benchmark world records.

Results referenced are current as of November 1, 2026.

Table 1. Current world record performance benchmark results for SR650 V3

Benchmark	Sub-benchmark	Benchmark metric	Current world records	Lenovo result	Link
TPCx-AI v2	-	AIUCpm and USD per AIUCpm	2	Best 2P performance @ SF3 and Best 2P price/performance @ SF3	TPCx-AI link
MLperf Inference v4.1 Closed Datacenter Division	Medical Imaging, 99.0% Accuracy, Offline Scenario (3d-unet)	Samples/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	Natural language processing, 99.0% Accuracy, Offline Scenario (Bert)	Samples/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	Natural language processing, 99.0% Accuracy, Server Scenario (Bert)	Queries/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	LLM, 99.0% Accuracy, Offline Scenario (GPT-J)	Tokens/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	LLM, 99.0% Accuracy, Server Scenario (GPT-J)	Tokens/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	Image classification, 99% Accuracy, Offline Scenario (ResNet50-v1.5)	Samples/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	Image classification, 99% Accuracy, Server Scenario (ResNet50-v1.5)	Queries/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	Object Detection, 99% Accuracy, Offline Scenario (RetinaNet)	Samples/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link
MLperf Inference v4.1 Closed Datacenter Division	Object Detection, 99% Accuracy, Server Scenario (RetinaNet)	Queries/s	1	#1 Performance for Available configurations with 3 GPUs	MLperf link

See the complete list of current world records in the Lenovo Press article Performance Benchmark World Record Summary for Lenovo ThinkSystem Servers.

The Lenovo Server Performance Team also publishes reports on key performance world records at the time the world record is announced. See all published Performance Benchmark Reports.

Comparing the SR650 V3 to the SR650 V2

The ThinkSystem SR650 V3 improves on the previous generation SR650 V2, as summarized in the following table.

Table 2. Comparing the ThinkSystem SR650 V3 to the previous generation SR650 V2

Feature	SR650 V2	SR650 V3	Benefits
Processor	• 2x 3rd Gen Intel Xeon Scalable Processors • Up to 40 cores • TDP ratings up to 270W • 64x PCIe 4.0 lanes per processor	• 2x 4th Gen Intel Xeon Scalable Processors • Up to 60 cores • TDP ratings up to 385W • 80x PCIe 5.0 lanes per processor	• Significant increase in cores per processor • Increased performance • Consolidation of more apps on same number of servers, reducing costs • New PCIe 5.0 support means higher performance networking and NVMe storage
Memory	• DDR4 memory operating up to 3200 MHz • 8 channels per CPU • 32 DIMMs (16 per processor), 2 DIMMs per channel • Supports RDIMMs and 3DS RDIMMs • Up to 8TB of system memory • Intel Optane Persistent Memory 200 Series	• DDR5 memory operating up to 4800 MHz • 8 channels per CPU • 32 DIMMs (16 per processor), 2 DIMMs per channel • Supports RDIMMs, 3DS RDIMMs and 9x4 RDIMMs • Up to 8TB of system memory • No support for Intel Optane Persistent Memory	• New DDR5 memory offers significant performance improvements over DDR4 • Support for lower-cost 9x4 DIMMs
Internal storage	• 20x 3.5” SAS/SATA/NVMe (12 front, 4 mid, 4 rear) • 40x 2.5” SAS/SATA/NVMe (24 front, 8 mid, 8 rear) • Up to 4x 3.5” or 8x 2.5” mid-chassis drive bays • Up to 4x 3.5” or 8x 2.5” rear drive bays • 2x Internal M.2 (optional RAID support) • 8x Onboard NVMe ports • NVMe Retimer adapters for 16x NVMe • 2x rear 7mm hot swap SAS/SATA/NVMe; optional RAID	• 20x 3.5” SAS/SATA/NVMe (12 front, 4 mid, 4 rear) • 40x 2.5” SAS/SATA/NVMe (24 front, 8 mid, 8 rear) • Up to 4x 3.5” or 8x 2.5” mid-chassis drive bays • Up to 4x 3.5” or 8x 2.5” rear drive bays • 2x Internal M.2 (optional RAID support) • 20x Onboard NVMe ports • NVMe Retimer adapters for 16x NVMe • 2x rear 7mm hot swap SAS/SATA/NVMe	• Flexible storage offerings • Up to 32x NVMe drives for high-performance storage • 7mm hot swap drives as boot drives

Feature	SR650 V2	SR650 V3	Benefits
RAID	• 8-, 16- and 32-port RAID adapters with up to 8GB flash • Support for Lenovo and Broadcom adapters • Support for PCIe or Internal cabled (CFF) form factor adapters • Support for NVMe drives connected to 940 RAID adapters (Tri-Mode) • Storage HBAs available • PCIe Gen 3 and Gen 4 adapter choices	• 8-, 16- and 32-port RAID adapters with up to 8GB flash • Support for Lenovo and Broadcom adapters • Support for PCIe or Internal cabled (CFF) form factor adapters • Support for NVMe drives connected to 940 RAID adapters (Tri-Mode) • Storage HBAs available • PCIe Gen 3 and Gen 4 adapter choices with support for Gen 5 adapters when available	• Consistent RAID/HBA support • Flexible config solution • PCIe Gen 5 allows for greater storage performance
Networking	• OCP 3.0 slot with PCIe Gen 4 x16 interface (rear of server) • Additional PCIe adapters supported • 1GbE dedicated Management port	• OCP 3.0 slot with PCIe Gen 5 x16 interface (rear) or PCIe Gen4 x16 interface (front) • Additional PCIe adapters supported • 1GbE dedicated Management port	• Improved performance with PCIe Gen 5 • Optional front-accessible OCP slot
PCIe	• Supports PCIe 4.0 • Up to 8x PCIe slots (all full-height slots) • Supports a RAID/HBA in CFF form factor (does not occupy a PCIe slot) • 1x OCP 3.0 slot (rear)	• Supports PCIe 5.0 • Up to 10x PCIe slots (6x full height, 4x low-profile) or 8x PCIe slots (all full-height slots) • Up to 9x slots can be PCIe 5.0 • Supports a RAID/HBA in CFF form factor (does not occupy a PCIe slot) • 1x OCP 3.0 slot, either rear or front • Support for 3x front-accessible slots (2x FH PCIe + 1x OCP) with 16 drive bays	• PCIe Gen 5 allows for greater I/O performance • Flexible PCIe offerings • Front-accessible slots available • More PCIe connections for greater PCIe/NVMe support
GPU support	• Supports up to 8x single-wide GPUs or up to 3x double-wide GPUs	• Supports up to 8x single-wide GPUs or up to 3x double-wide GPUs	• High performance GPU support
Management and security	• XClarity Controller • Support for full XClarity toolset • Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) • Tamper Switch security solution (intrusion switch)	• Integrated XClarity Controller 2 • Support for full XClarity toolset • Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) • Tamper Switch security solution (intrusion switch)	• New XCC2 offers improved management capabilities • Same system management tool with previous generation • Silicon-level security solution

Feature	SR650 V2	SR650 V3	Benefits
Power	• Choice of 500W, 750W, 1100W, 1800W AC Hot Plug PSUs • Available in Titanium and Platinum efficiency levels • 1100W -48VDC Platinum general support • 240V HVDC support for PRC customers • Active-Standby mode	• Choice of 750W, 1100W, 1800W, 2400W, 2600W AC Hot Plug PSUs • Available in Titanium and Platinum efficiency levels • 1100W -48VDC Platinum general support • 240V HVDC support for PRC customers • Active-Standby mode	• Multiple PSU offerings to suit the configuration selected • New ErP Lot 9-compliant offerings • Support for Telco customers with -48V requirements

Components and connectors

The following figure shows the front of the SR650 V3.

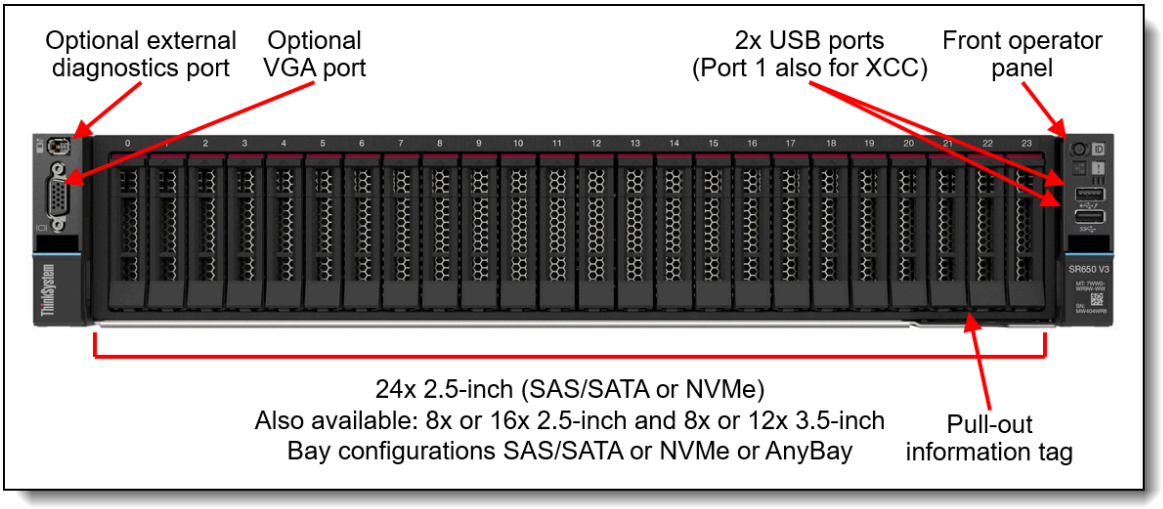


Figure 2. Front view of the ThinkSystem SR650 V3 with 2.5-inch drive bays

For details on the front ports, including the optional front VGA port and optional external diagnostic port, see the Local management section.

The following figure shows the front configurations of the SR650 V3. The server supports either 2.5-inch hot-swap drives (8, 16 or 24 drive bays) or 3.5-inch hot-swap drives (8 or 12 bays) at the front. The server also supports three front PCIe slots (2 full-height, 1 OCP) in addition to 16x 2.5-inch drive bays.

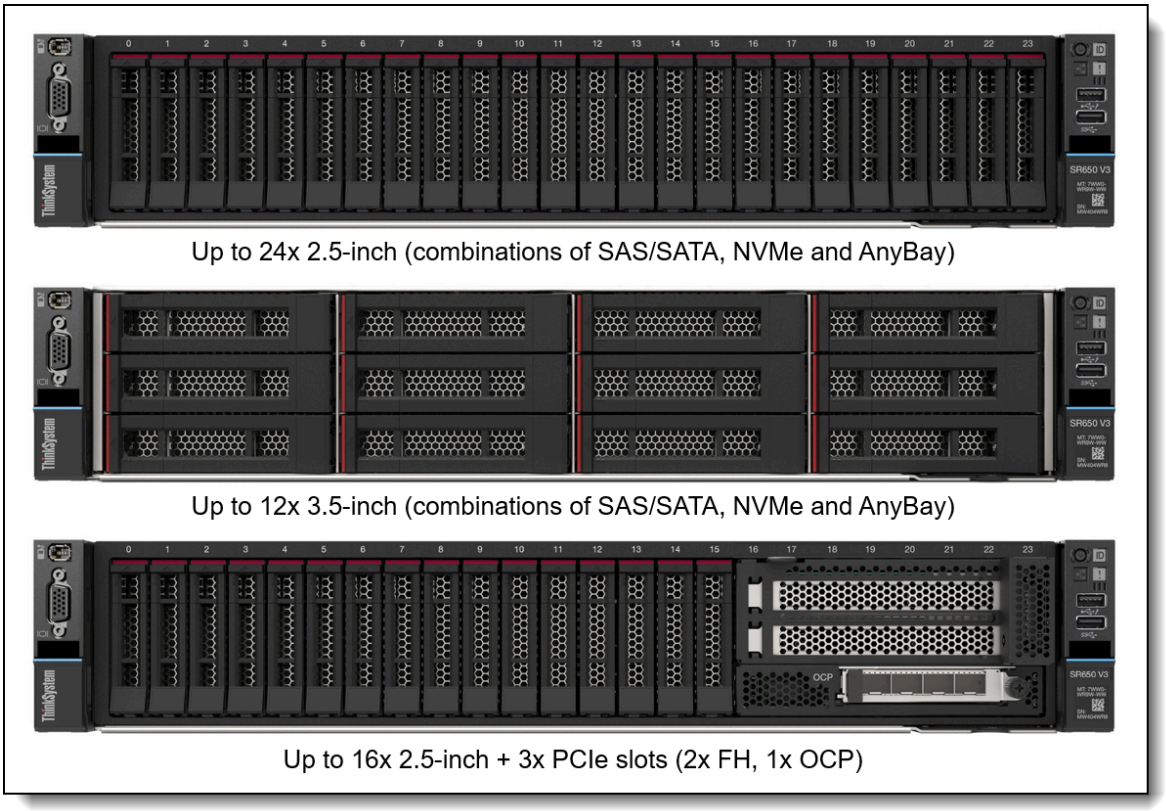


Figure 3. Front view of the ThinkSystem SR650 V3

The following figure shows the components visible from the rear of the server. The figure shows one configuration, with eight PCIe slots, however there are additional rear configurations which include 3.5-inch drive bays, 2.5-inch drive bays, or 7mm drive bays.

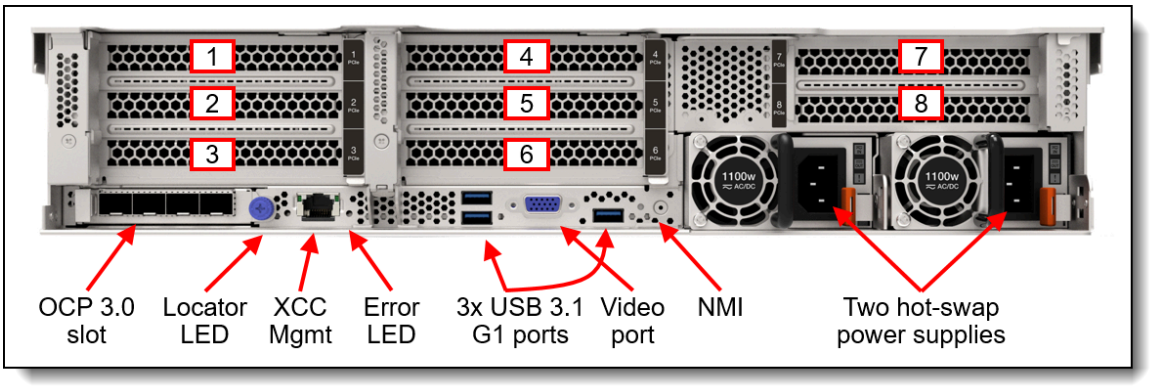


Figure 4. Rear view of the ThinkSystem SR650 V3 (configuration with eight PCIe slots)

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

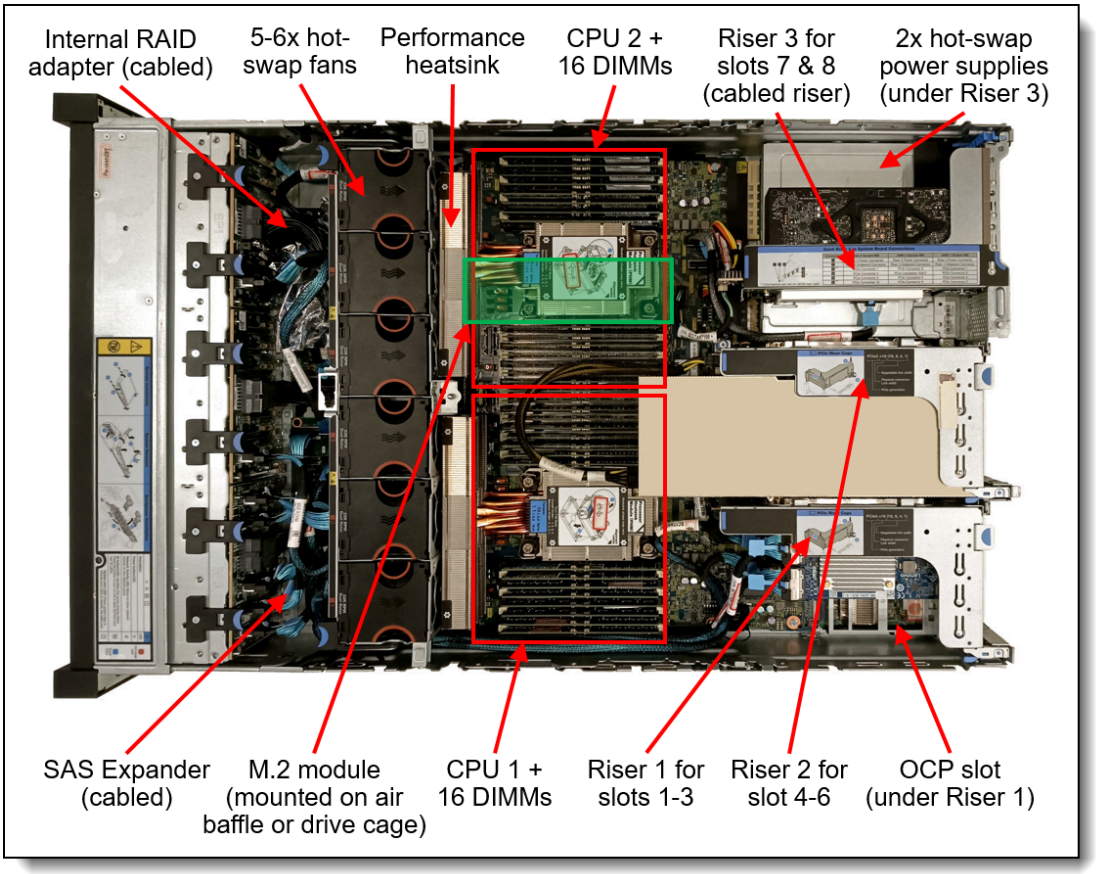


Figure 5. Internal view of the ThinkSystem SR650 V3

System architecture

The following figure shows the architectural block diagram of the SR650 V3, showing the major components and their connections.

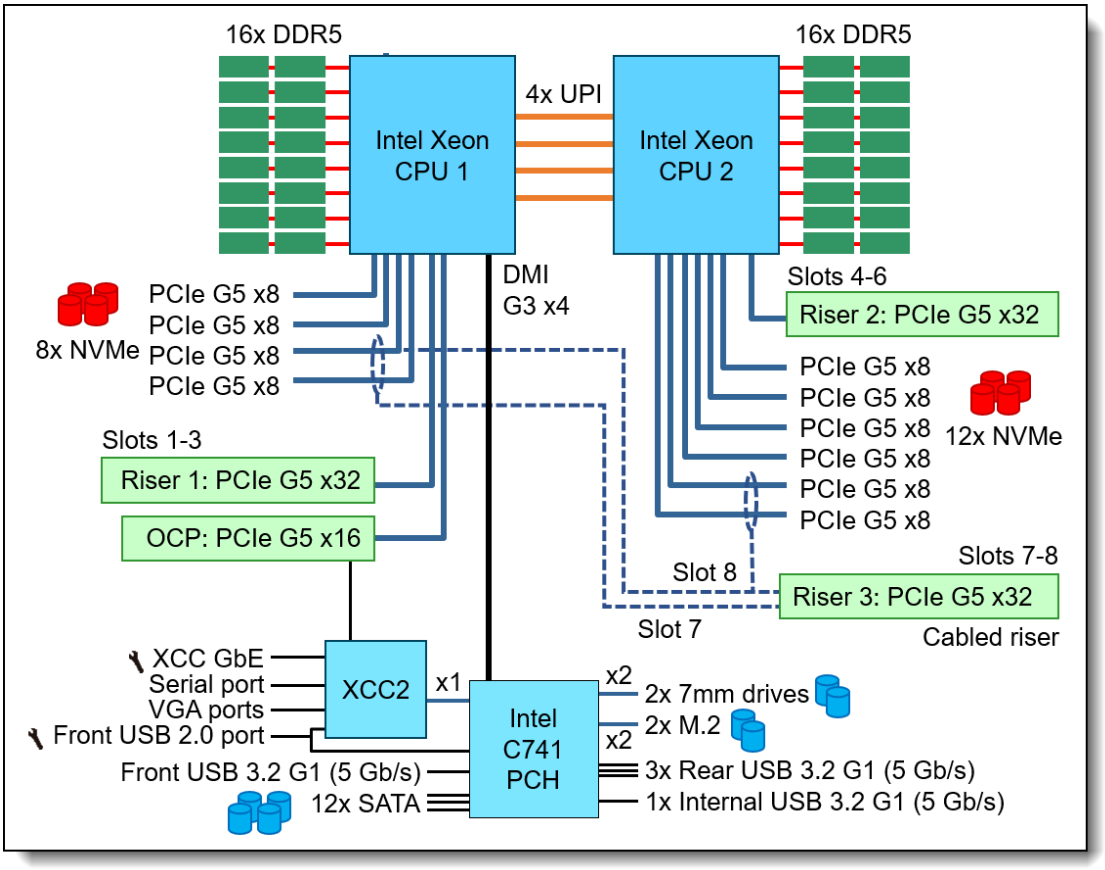


Figure 6. SR650 V3 system architectural block diagram

Standard specifications

The following table lists the standard specifications.

Table 3. Standard specifications

Components	Specification
Machine types	7D75 - 1 year warranty 7D76 - 3 year warranty
Form factor	2U rack
Processor	One or two 5th Gen Intel Xeon Scalable processors (formerly codenamed "Emerald Rapids"), or one or two 4th Gen Intel Xeon Scalable processors (formerly codenamed "Sapphire Rapids"). Supports processors up to 64 cores, core speeds of up to 3.9 GHz, and TDP ratings of up to 385 W.
Chipset	Intel C741 "Emmitsburg" chipset, part of the platform codenamed "Eagle Stream"
Memory	32 DIMM slots with two processors (16 DIMM slots per processor). Each processor has 8 memory channels, with 2 DIMMs per channel (DPC). Lenovo TruDDR5 RDIMMs, 9x4 RDIMMs, and 3DS RDIMMs are supported. DIMMs operate at up to 5600 MHz at 1 DPC and up to 4800 MHz at 2 DPC.
Persistent memory	No support.
Memory maximum	Up to 8TB by using 32x 256GB 3DS RDIMMs
Memory protection	ECC, SDDC (for x4-based memory DIMMs), ADDDC (for x4-based memory DIMMs excluding 9x4 RDIMMs, requires Platinum or Gold processors), and memory mirroring.
Disk drive bays	Up to 20x 3.5-inch or 40x 2.5-inch hot-swap drive bays: • Front bays can be 3.5-inch (8 or 12 bays) or 2.5-inch (8, 16 or 24 bays) • Middle bays can be 3.5-inch (4 bays) or 2.5-inch (8 bays) simple-swap • Rear bays can be 3.5-inch (2 or 4 bays) or 2.5-inch (4 or 8 bays) • Combinations of SAS/SATA, NVMe, or AnyBay (supporting SAS, SATA or NVMe) are available The server also supports these drives for OS boot or drive storage: • Two 7mm drives at the rear of the server (in addition to any 2.5-inch or 3.5-inch drive bays) • Internal M.2 module supporting up to two M.2 drives See Supported drive bay combinations for details.

Maximum internal storage	• 2.5-inch drives:
	  ◦ 1228.8TB using 40x 30.72TB 2.5-inch SAS SSDs
	  ◦ 307.2TB using 40x 7.68TB 2.5-inch SATA SSDs
	  ◦ 4,423.68TB using 36x 122.88TB 2.5-inch NVMe SSDs
	  ◦ 96TB using 40x 2.4TB 2.5-inch SAS HDDs
	• 3.5-inch drives:
	  ◦ 480TB using 20x 24TB 3.5-inch SAS HDDs
	  ◦ 480TB using 20x 24TB 3.5-inch SATA HDDs
	  ◦ 307.2TB using 20x 15.36TB 3.5-inch SAS SSDs
	  ◦ 153.6TB using 20x 7.68TB 3.5-inch SATA SSDs
	  ◦ 153.6TB using 12x 12.8TB 3.5-inch NVMe SSDs

Components	Specification

Storage controller	• 14x Onboard SATA ports (Intel VROC SATA RAID, formerly known as Intel RSTe RAID)
	• Up to 20x Onboard NVMe ports (includes Intel VROC NVMe RAID, with optional license for non-Intel NVMe SSDs)
	• NVMe Retimer Adapter (supports Intel VROC NVMe RAID)
	• 12 Gb SAS/SATA RAID adapters
	  ◦ 8, 16 or 32 ports
	  ◦ Up to 8GB flash-backed cache
	  ◦ PCIe 4.0 or PCIe 3.0 host interface
	• 12 Gb SAS/SATA HBA (non-RAID)
	  ◦ 8-port and 16-port
	  ◦ 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	Dedicated OCP 3.0 SFF slot with PCIe 5.0 x16 host interface. Supports a variety of 2-port and 4-port adapters with 1, 10, 25 or 100 GbE network connectivity. One port can optionally be shared with the XClarity Controller 2 (XCC2) management processor for Wake-on-LAN and NC-SI support.
PCIe slots	Up to 12x PCIe slots (10x rear, 2x front), plus a slot dedicated to an OCP 3.0 adapter. 2.5-inch drive configurations also support an additional internal bay for a cabled RAID adapter or HBA. *Rear*: Up to 10x PCIe slots, plus a slot dedicated to the OCP adapter. Slot are either PCIe 5.0 or 4.0 depending on riser selection and rear drive bay selection. The use of some slots requires two processors. Slots are configured using three riser cards. Riser 1 (slots 1-3) and Riser 2 (slots 4-6) are installed in slots in the system board, Riser 3 (slots 7-8) and Riser 4 (9-10) are cabled to ports on the system board. A variety of riser cards are available. See the I/O expansion for details. Front: The server also supports slots at the front of the server (configurations with up to 16 drive bays): 2x PCIe x16 full-height half-length slots, plus 1x OCP 3.0 slot *Internal*: For 2.5-inch front drive configurations, the server supports the installation of a RAID adapter or HBA in a dedicated area that does not consume any of the PCIe slots.
GPU support	Supports up to 8x single-wide GPUs or up to 3x double-wide GPUs
Ports	Front: 1x USB 3.2 G1 (5 Gb/s) port, 1x USB 2.0 port (also for XCC local management), External diagnostics port, optional VGA port. Rear: 3x USB 3.2 G1 (5 Gb/s) ports, 1x VGA video port, 1x RJ-45 1GbE systems management port for XCC remote management. Optional DB-9 COM serial port (installs in a PCIe slot). Internal: 1x USB 3.2 G1 (5 Gb/s) connector for operating system or license key purposes
Cooling	6x (with two processors installed) or 5x (with one processor installed) single-rotor or dual-rotor hot swap 60 mm fans, configuration dependent. Fans are N+1 redundant, tolerating a single-rotor failure. One fan integrated in each power supply. For customers with water infrastructure in their data center, the SR650 V3 also supports open-loop water cooling for efficient heat removal.
Power supply	Up to two hot-swap redundant AC power supplies, 80 PLUS Platinum or 80 PLUS Titanium certification. 750 W, 1100 W, 1800 W, 2400 W and 2600W AC options, supporting 220 V AC. 750 W and 1100 W options also support 110V input supply. In China only, all power supply options support 240 V DC. Also available is a 1100W power supply with a -48V DC input.
Video	Embedded graphics with 16 MB memory with 2D hardware accelerator, integrated into the XClarity Controller 2 management controller. Maximum resolution is 1920x1200 32bpp at 60Hz.
Hot-swap parts	Drives, power supplies, and fans.

Components	Specification
Systems management	Operator panel with status LEDs. Optional External Diagnostics Handset with LCD display. Models with 8x or 16x 2.5-inch front drive bays can optionally support an Integrated Diagnostics Panel. XClarity Controller 2 (XCC2) embedded management controller, XClarity One centralized infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. Optional XClarity Controller Platinum to enable remote control and other functions.
Security features	Chassis intrusion switch, Power-on password, administrator's password, Root of Trust module supporting TPM 2.0 and Platform Firmware Resiliency (PFR). In China only, optional Nationz TPM 2.0. Optional lockable front security bezel.
Operating systems supported	Microsoft Windows Server, Microsoft Windows 10 & 11, 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: 445 mm (17.5 in.), height: 87 mm (3.4 in.), depth: 766 mm (30.1 in.). See Physical and electrical specifications for details.
Weight	Maximum: 38.8 kg (85.5 lb)

Lenovo Top Choice

Lenovo offers two “quick-ship” programs to make it easy for our customers to get quick delivery of our offerings:

- **Lenovo Top Choice Express:** A Configure-to-Order (CTO) model that uses a "best of" subset of components. It allows for customization while maintaining significantly faster lead times than standard CTO.

  Top Choice Express (TCE) is the way to get custom configurations as quickly as possible. It allows DCSC configurator users to configure systems in **CTO Mode**, selecting the required hardware components while still benefiting from faster turnaround than traditional CTO. These configurations are built and fully integrated by Lenovo Manufacturing, with simple configuration steps, instant pricing, and quicker delivery.

  To see which components are TCE, check the TCE column in the various component tables in this product guide. Green cells mean that the component is enabled for ordering with Top Choice Express in all regions world-wide. Orange cells with the ℹ symbol mean that the component is enabled for Top Choice Express in only some regions. Mouse over or tap on the cell to see which regions have it enabled for TCE.

  Note: Top Choice Express is for configure-to-order builds only, not for standalone option part numbers.

- **Lenovo Top Choice Stock:** Pre-built, fixed-configuration units held in distribution. They are the "Ready-to-Ship" inventory options for customers who need a server quickly.

  Top Choice Stock (TCS) is used in **Preconfigured Mode** in DCSC, starting from a standard pre-built configuration and adding option components as needed. Systems are assembled and fulfilled by Lenovo partners, enabling quick order processing and fast shipment through distribution. This path supports rapid delivery while maintaining flexibility through add-on options. For details of TCS models, see the Preconfigured Models section.

Note: Ship dates are estimates only; actual ship times may vary based on platform and component availability, order processing, logistics, and external factors beyond Lenovo’s control. Lenovo is not liable for delays.

Models

ThinkSystem SR650 V3 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Topics in this section:

- CTO models
- CTO models for Windows 10 and Windows 11
- Base feature codes
- Preconfigured models

CTO models

ThinkSystem SR650 V3 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Configure-to-order (CTO) models are used to create models with factory-integrated server customizations. For CTO models, two types of base CTO models are available for the SR650 V3 as listed in the columns in the following table:

- General purpose base CTO models are for general business (non-HPC) and is selectable by choosing **General Purpose** mode in DCSC.
- AI and HPC base models are intended for Artificial Intelligence (AI) and High Performance Computing (HPC) configurations and solutions are enabled using the **AI & HPC Hardware - ThinkSystem Hardware** mode in DCSC. These configurations, along with Lenovo EveryScale Solutions, can also be built using System x and Cluster Solutions Configurator (x-config). **Tip**: Some HPC and AI models are not listed in DCSC and can only be configured in x-config.

"For AI" models: The base CTO models listed in the table with "for AI" in the names are the only base models that support high-performance GPUs and accelerators (Controlled GPUs). These models are classified under US Government ECCN regulations and have limited market and customer availability. All other base models do not support high-performance GPUs.

Preconfigured server models may also be available for the SR650 V3, 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 SR650 V3 server.

Table 4. Base CTO models

Machine Type/Model General purpose	Machine Type/Model for AI and HPC	Description
7D76CTO1WW	7D76CTOLWW	ThinkSystem SR650 V3 - 3yr warranty
7D76CTOEWW	7D76CTOPWW	ThinkSystem SR650 V3 - 3yr warranty for AI
7D75CTO1WW	7D75CTOLWW	ThinkSystem SR650 V3 - 1yr warranty
7D77CTO1WW	7D77CTOLWW	ThinkSystem SR650 V3 – SAP HANA configurations with 3-year base warranty

CTO models for Windows 10 and Windows 11

The SR650 V3 can run Windows 10 and Windows 11, however only a subset of adapters and drives can be installed. For ease of configuration, the following Base CTO models have been announced to assist building a configuration that can be used with the client operating systems. For more information, see the Windows 10 and Windows 11 section.

Table 5. Base CTO models for SR650 V3 with Windows 10 and Windows 11

Machine Type/Model	Description
7D76CTO3WW	ThinkSystem SR650 V3 - 3yr Warranty for Windows Client OS
7D76CTOFWW	ThinkSystem SR650 V3 - 3yr Warranty for Windows Client OS for AI
7D75CTO3WW	ThinkSystem SR650 V3 - 1yr Warranty for Windows Client OS

Base feature codes

Models of the SR650 V3 are defined based on whether the server has 2.5-inch drive bays at the front (called the 2.5-inch chassis) or whether it has 3.5-inch drive bays at the front (called the 3.5-inch chassis). For models, the feature codes for these chassis bases are as listed in the following table.

Table 6. Chassis base feature codes

Feature code	Description	Top Choice Express
BLKK	ThinkSystem SR650 V3 24x2.5" Chassis	-
BLKJ	ThinkSystem SR650 V3 12x3.5" Chassis	-

Preconfigured models

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

- Models for Asia Pacific region
- Models for Brazil
- Models for EMEA region
- Models for India

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

Common to all models:

- Power supplies are Platinum unless otherwise stated
- All models include a Toolless Slide Rail Kit

Models for Asia Pacific region

The following table lists the models for the Asia Pacific region: Australia, Bangladesh, Brunei, Hong Kong, India, Japan, Korea, Sri Lanka, Malaysia, New Zealand, Philippines, Singapore, Thailand, Taiwan, Vietnam

Table 7. Models for Asia Pacific markets

Model	Top Choice Stock	Intel Xeon Scalable processor†	Memory	RAID	Drive bays	OCP	Slots	Power supply	Fans	Front VGA	Front diag	XCC2	Intru switch
Models with a 3-year warranty (machine type 7D76)													
Models with 5th Gen Intel Xeon Scalable processors													
7D76A0A2AP	N	1x Silver 4509Y 8C 125W 2.6G	1x16GB	940-8i 4GB	8x 2.5" SAS Open bay	4-1G 5719	3 (x16, x8, x8) Gen4	1x750W	5x Std	Yes	Yes	Std	Opt
7D76A09VAP	N	1x Silver 4510 12C 150W 2.4G	1x16GB	940-8i 4GB	8x 2.5" SAS Open bay	4-1G 5719	3 (x16, x8, x8) Gen4	1x750W	5x Std	Yes	Yes	Std	Opt

† Processor description: Processor model, number of cores, thermal design power (TDP), core frequency

Models for Brazil

Table 9. Models for Brazil

Model	Top Choice Stock	Intel Xeon Scalable processor†	Memory	RAID	Drive bays	OCP	Slots	Power supply	Fans	Front VGA	Front diag	XCC2	Intru switch
Models with a 3-year warranty (machine type 7D76)													
Models with 5th Gen Intel Xeon Scalable processors													
7D76A0BABR	N	1x Silver 4509Y 8C 125W 2.6G	1x64GB 2Rx4	540-8i	8x 2.5" SAS 2x 1.92TB VA MU SATA	4-1G 5719	3 (x16, x8, x8) Gen4	2x 1100W	5x Perf	Opt	Opt	Plat	Opt
7D761012BR	N	1x Silver 4514Y 16C 150W 2.0G	1x32GB 2Rx8	Option	Option 2.5" Open bay	Open	Open	1x1100W	5x Perf	Opt	Opt	Plat	Yes
7D761016BR	N	1x Silver 4514Y 16C 150W 2.0G	1x32GB 2Rx8	940-8i 4GB	8x 2.5" SAS Open bay	Open	3 (x16, x8, x8) Gen4	1x1100W	5x Perf	Opt	Opt	Plat	Yes
7D761018BR	N	1x Silver 4514Y 16C 150W 2.0G	1x64GB 2Rx4	940-8i 4GB	8x 2.5" SAS Open bay	Open	3 (x16, x8, x8) Gen4	1x1100W	5x Perf	Opt	Opt	Plat	Yes
7D76101ABR	N	1x Gold 6526Y 16C 195W 2.8G	1x64GB 2Rx4	940-8i 4GB	8x 2.5" SAS Open bay	Open	3 (x16, x8, x8) Gen4	1x1100W	5x Perf	Opt	Opt	Plat	Yes

† Processor description: Processor model, number of cores, thermal design power (TDP), core frequency

Models for EMEA region

Table 11. Models for EMEA region

Model	Top Choice Stock	Intel Xeon Scalable processor†	Memory	RAID	Drive bays	OCP	Slots	Power supply	Fans	Front VGA	Front diag	XCC2	Intru switch
Models with a 3-year warranty (machine type 7D76)													
Models with 5th Gen Intel Xeon Scalable processors													

† Processor description: Processor model, number of cores, thermal design power (TDP), core frequency

Models for India

AP models: Customers in India also have access to the Asia Pacific region models.

Table 13. Models for India

Model	Top Choice Stock	Intel Xeon Scalable processor†	Memory	RAID	Drive bays	OCP	Slots	Power supply	Fans	Front VGA	Front diag	XCC2	Intru switch
Models with a 3-year warranty (machine type 7D76)													
Models with 5th Gen Intel Xeon Scalable processors													
7D76A0AASG	N	1x Silver 4516Y+ 24C 185W 2.2G	1x32GB 2Rx8	940-8i 4GB	8x 2.5" SAS Open bay	2-10GT 57416	3 (x16, x8, x8) Gen4	2x 750W	5x Std	Yes	Yes	Plat	Yes
7D76A0ABSG	N	1x Gold 6530 32C 270W 2.1G	4x32GB 2Rx8	940-8i 4GB	8x 2.5" SAS Open bay	2-10GT 57416	3 (x16, x8, x8) Gen4	2x 1800W	5x Perf	Yes	Yes	Plat	Yes

† Processor description: Processor model, number of cores, thermal design power (TDP), core frequency

Processors

The SR650 V3 supports processors in either the 5th Gen Intel Xeon Scalable Processor family ("Emerald Rapids") or the 4th Gen Intel Xeon Scalable Processor family ("Sapphire Rapids"). The server supports one or two processors.

Topics in this section:

- Processor options
- Processor features
- One-processor configurations
- Thermal requirements for processors
- Lenovo Processor Neptune Core Module - Open-loop liquid cooling
- UEFI operating modes

Processor options

All supported processors have the following characteristics:

- 8 DDR5 memory channels at 2 DIMMs per channel
- Up to 4 UPI links between processors at up to 20 GT/s
- Up to 80 PCIe 5.0 I/O lanes

The following table lists the 5th Gen processors that are currently supported by the SR650 V3. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Table 17. 5th Gen Intel Xeon Processor support

Part number	Feature code	SKU	Description	Top Choice Express	Quantity supported
CTO only	BYVT	3508U	Intel Xeon Bronze 3508U 8C 125W 2.1GHz Processor	-	1*
4XG7A91456	BYW3	4509Y	ThinkSystem SR650 V3 Intel Xeon Silver 4509Y 8C 125W 2.6GHz Processor Option Kit w/o Fan	-	2
4XG7A91455	BYW4	4510	ThinkSystem SR650 V3 Intel Xeon Silver 4510 12C 150W 2.4GHz Processor Option Kit w/o Fan	-	2
4XG7A91468	BYVS	4510T	ThinkSystem SR650 V3 Intel Xeon Silver 4510T 12C 115W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A91454	BYVP	4514Y	ThinkSystem SR650 V3 Intel Xeon Silver 4514Y 16C 150W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A91453	BYW6	4516Y+	ThinkSystem SR650 V3 Intel Xeon Silver 4516Y+ 24C 185W 2.2GHz Processor Option Kit w/o Fan	-	2
CTO only	BYVU	5512U	Intel Xeon Gold 5512U 28C 185W 2.1GHz Processor	-	1*
4XG7A91467	BYVW	5515+	ThinkSystem SR650 V3 Intel Xeon Gold 5515+ 8C 165W 3.2GHz Processor Option Kit w/o Fan	-	2
4XG7A91452	BYW7	5520+	ThinkSystem SR650 V3 Intel Xeon Gold 5520+ 28C 205W 2.2GHz Processor Option Kit w/o Fan	-	2
4XG7A91466	BYVX	6526Y	ThinkSystem SR650 V3 Intel Xeon Gold 6526Y 16C 195W 2.8GHz Processor Option Kit w/o Fan	-	2
4XG7A91451	BYWK	6530	ThinkSystem SR650 V3 Intel Xeon Gold 6530 32C 270W 2.1GHz Processor Option Kit w/o Fan	-	2
4XG7A91463	BYW0	6534	ThinkSystem SR650 V3 Intel Xeon Gold 6534 8C 195W 3.9GHz Processor Option Kit w/o Fan	-	2
4XG7A91831	BYVQ	6538N	ThinkSystem SR650 V3 Intel Xeon Gold 6538N 32C 205W 2.1GHz Processor Option Kit w/o Fan	-	2
4XG7A91450	BYW8	6538Y+	ThinkSystem SR650 V3 Intel Xeon Gold 6538Y+ 32C 225W 2.2GHz Processor Option Kit w/o Fan	-	2
4XG7A91465	BYVY	6542Y	ThinkSystem SR650 V3 Intel Xeon Gold 6542Y 24C 250W 2.9GHz Processor Option Kit w/o Fan	-	2
4XG7A91462	BYW1	6544Y	ThinkSystem SR650 V3 Intel Xeon Gold 6544Y 16C 270W 3.6GHz Processor Option Kit w/o Fan	-	2
4XG7A91830	BYVR	6548N	ThinkSystem SR650 V3 Intel Xeon Gold 6548N 32C 250W 2.8GHz Processor Option Kit w/o Fan	-	2
4XG7A91464	BYVZ	6548Y+	ThinkSystem SR650 V3 Intel Xeon Gold 6548Y+ 32C 250W 2.5GHz Processor Option Kit w/o Fan	-	2
4XG7A91470	BYW9	6554S	ThinkSystem SR650 V3 Intel Xeon Gold 6554S 36C 270W 2.2GHz Processor Option Kit w/o Fan	-	2

Part number	Feature code	SKU	Description	Top Choice Express	Quantity supported
CTO only	BYVV	6558Q	Intel Xeon Gold 6558Q 32C 350W 3.2GHz Processor	-	2
4XG7A91449	BYW5	8558	ThinkSystem SR650 V3 Intel Xeon Platinum 8558 48C 330W 2.1GHz Processor Option Kit w/o Fan	-	2
4XG7A91469	BYWA	8558P	ThinkSystem SR650 V3 Intel Xeon Platinum 8558P 48C 350W 2.7GHz Processor Option Kit w/o Fan	-	2
CTO only	BYWE	8558U	Intel Xeon Platinum 8558U 48C 300W 2.0GHz Processor	-	1*
4XG7A91461	BYW2	8562Y+	ThinkSystem SR650 V3 Intel Xeon Platinum 8562Y+ 32C 300W 2.8GHz Processor Option Kit w/o Fan	-	2
4XG7A91460	BYWF	8568Y+	ThinkSystem SR650 V3 Intel Xeon Platinum 8568Y+ 48C 350W 2.3GHz Processor Option Kit w/o Fan	-	2
4XG7A91459	BYWG	8570	ThinkSystem SR650 V3 Intel Xeon Platinum 8570 56C 350W 2.1GHz Processor Option Kit w/o Fan	-	2
CTO only	BYWD	8571N	Intel Xeon Platinum 8571N 52C 300W 2.4GHz Processor	-	1*
4XG7A91458	BYWH	8580	ThinkSystem SR650 V3 Intel Xeon Platinum 8580 60C 350W 2.0GHz Processor Option Kit w/o Fan	-	2
CTO only	BYWC	8581V	Intel Xeon Platinum 8581V 60C 270W 2.0GHz Processor	-	1*
4XG7A91457	BYWJ	8592+	ThinkSystem SR650 V3 Intel Xeon Platinum 8592+ 64C 350W 1.9GHz Processor Option Kit w/o Fan	-	2
4XG7A91832	BYWB	8592V	ThinkSystem SR650 V3 Intel Xeon Platinum 8592V 64C 330W 2.0GHz Processor Option Kit w/o Fan	-	2
CTO only	BYXG	8593Q	Intel Xeon Platinum 8593Q 64C 385W 2.2GHz Processor	-	2

* These processors are single-socket capable processors and are only available in configure-to-order builds or in preconfigured models. Not available as option part numbers.

The following table lists the 4th Gen processors that are currently supported by the SR650 V3.

Table 18. 4th Gen Intel Xeon Processor support

Part number	Feature code	SKU	Description	Top Choice Express	Maximum quantity
CTO only	BQ68	3408U	Intel Xeon Bronze 3408U 8C 125W 1.8GHz Processor	-	1*
4XG7A84164	BQ64	4410T	ThinkSystem SR650 V3 Intel Xeon Silver 4410T 10C 150W 2.7GHz Processor Option Kit w/o Fan	-	2
4XG7A84167	BQ67	4410Y	ThinkSystem SR650 V3 Intel Xeon Silver 4410Y 12C 150W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A84169	BQ69	4416+	ThinkSystem SR650 V3 Intel Xeon Silver 4416+ 20C 165W 2.0GHz Processor Option Kit w/o Fan	-	2
CTO only	BQ6J	5411N	Intel Xeon Gold 5411N 24C 165W 1.9GHz Processor	-	1*
CTO only	BU1V	5412U	Intel Xeon Gold 5412U 24C 185W 2.1GHz Processor	-	1*
4XG7A84163	BQ63	5415+	ThinkSystem SR650 V3 Intel Xeon Gold 5415+ 8C 150W 2.9GHz Processor Option Kit w/o Fan	-	2
4XG7A84178	BQ6L	5416S	ThinkSystem SR650 V3 Intel Xeon Gold 5416S 16C 150W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A84176	BQ6H	5418N	ThinkSystem SR650 V3 Intel Xeon Gold 5418N 24C 165W 1.8GHz Processor Option Kit w/o Fan	-	2
4XG7A84166	BQ66	5418Y	ThinkSystem SR650 V3 Intel Xeon Gold 5418Y 24C 185W 2.0GHz Processor Option Kit w/o Fan	-	2

Part number	Feature code	SKU	Description	Top Choice Express	Maximum quantity
4XG7A84165	BQ65	5420+	ThinkSystem SR650 V3 Intel Xeon Gold 5420+ 28C 205W 2.0GHz Processor Option Kit w/o Fan	-	2
CTO only	BXHX	5423N	Intel Xeon Gold 5423N 20C 145W 2.1GHz Processor	-	1*
CTO only	BXHY	5433N	Intel Xeon Gold 5433N 20C 160W 2.3GHz Processor	-	1*
CTO only	BYQK	6403N	Intel Xeon Gold 6403N 24C 185W 1.9GHz Processor	-	1*
CTO only	BPPD	6414U	Intel Xeon Gold 6414U 32C 250W 2.0GHz Processor	-	1*
4XG7A84172	BQ6C	6416H	ThinkSystem SR650 V3 Intel Xeon Gold 6416H 18C 165W 2.2GHz Processor Option Kit w/o Fan	-	2
4XG7A84171	BQ6B	6418H	ThinkSystem SR650 V3 Intel Xeon Gold 6418H 24C 185W 2.1GHz Processor Option Kit w/o Fan	-	2
CTO only	BYQH	6423N	Intel Xeon Gold 6423N 28C 195W 2.0GHz Processor	-	1*
4XG7A84160	BPQF	6426Y	ThinkSystem SR650 V3 Intel Xeon Gold 6426Y 16C 185W 2.5GHz Processor Option Kit w/o Fan	-	2
4XG7A84175	BQ6F	6428N	ThinkSystem SR650 V3 Intel Xeon Gold 6428N 32C 185W 1.8GHz Processor Option Kit w/o Fan	-	2
4XG7A82861	BPPC	6430	ThinkSystem SR650 V3 Intel Xeon Gold 6430 32C 270W 2.1GHz Processor Option Kit w/o Fan	-	2
CTO only	BYQJ	6433N	Intel Xeon Gold 6433N 32C 205W 2.0GHz Processor	-	1*
4XG7A84158	BPQC	6434	ThinkSystem SR650 V3 Intel Xeon Gold 6434 8C 195W 3.7GHz Processor Option Kit w/o Fan	-	2
4XG7A84174	BQ6E	6434H	ThinkSystem SR650 V3 Intel Xeon Gold 6434H 8C 195W 3.7GHz Processor Option Kit w/o Fan	-	2
4XG7A84177	BQ6K	6438M	ThinkSystem SR650 V3 Intel Xeon Gold 6438M 32C 205W 2.2GHz Processor Option Kit w/o Fan	-	2
4XG7A84173	BQ6D	6438N	ThinkSystem SR650 V3 Intel Xeon Gold 6438N 32C 205W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A84161	BQ62	6438Y+	ThinkSystem SR650 V3 Intel Xeon Gold 6438Y+ 32C 205W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A84159	BPQE	6442Y	ThinkSystem SR650 V3 Intel Xeon Gold 6442Y 24C 225W 2.6GHz Processor Option Kit w/o Fan	-	2
CTO only	BYQG	6443N	Intel Xeon Gold 6443N 32C 195W 1.6GHz Processor	-	1*
4XG7A84157	BPQB	6444Y	ThinkSystem SR650 V3 Intel Xeon Gold 6444Y 16C 270W 3.6GHz Processor Option Kit w/o Fan	-	2
4XG7A84170	BQ6A	6448H	ThinkSystem SR650 V3 Intel Xeon Gold 6448H 32C 250W 2.4GHz Processor Option Kit w/o Fan	-	2
4XG7A84162	BPQD	6448Y	ThinkSystem SR650 V3 Intel Xeon Gold 6448Y 32C 225W 2.1GHz Processor Option Kit w/o Fan	-	2
4XG7A82872	BPPM	6454S	ThinkSystem SR650 V3 Intel Xeon Gold 6454S 32C 270W 2.2GHz Processor Option Kit w/o Fan	-	2
CTO only	BPQG	6458Q	Intel Xeon Gold 6458Q 32C 350W 3.1GHz Processor	-	2
4XG7A82869	BPPH	8444H	ThinkSystem SR650 V3 Intel Xeon Platinum 8444H 16C 270W 2.9GHz Processor Option Kit w/o Fan	-	2
4XG7A82867	BPPG	8450H	ThinkSystem SR650 V3 Intel Xeon Platinum 8450H 28C 250W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A82862	BPPB	8452Y	ThinkSystem SR650 V3 Intel Xeon Platinum 8452Y 36C 300W 2.0GHz Processor Option Kit w/o Fan	-	2

Part number	Feature code	SKU	Description	Top Choice Express	Maximum quantity
4XG7A82866	BPPF	8454H	ThinkSystem SR650 V3 Intel Xeon Platinum 8454H 32C 270W 2.1GHz Processor Option Kit w/o Fan	-	2
4XG7A82879	BPPT	8458P	ThinkSystem SR650 V3 Intel Xeon Platinum 8458P 44C 350W 2.7GHz Processor Option Kit w/o Fan	-	2
4XG7A82865	BPPN	8460H	ThinkSystem SR650 V3 Intel Xeon Platinum 8460H 40C 330W 2.2GHz Processor Option Kit w/o Fan	-	2
4XG7A82873	BPPQ	8460Y+	ThinkSystem SR650 V3 Intel Xeon Platinum 8460Y+ 40C 300W 2.0GHz Processor Option Kit w/o Fan	-	2
CTO only	BPPK	8461V	Intel Xeon Platinum 8461V 48C 300W 2.2GHz Processor	-	1*
4XG7A86665	BPQA	8462Y+	ThinkSystem SR650 V3 Intel Xeon Platinum 8462Y+ 32C 300W 2.8GHz Processor Option Kit w/o Fan	-	2
4XG7A82880	BPPU	8468	ThinkSystem SR650 V3 Intel Xeon Platinum 8468 48C 350W 2.1GHz Processor Option Kit w/o Fan	-	2
4XG7A82864	BPPE	8468H	ThinkSystem SR650 V3 Intel Xeon Platinum 8468H 48C 330W 2.1GHz Processor Option Kit w/o Fan	-	2
4XG7A82875	BPPP	8468V	ThinkSystem SR650 V3 Intel Xeon Platinum 8468V 48C 330W 2.4GHz Processor Option Kit w/o Fan	-	2
4XG7A82881	BN0N	8470	ThinkSystem SR650 V3 Intel Xeon Platinum 8470 52C 350W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A82870	BPPJ	8470N	ThinkSystem SR650 V3 Intel Xeon Platinum 8470N 52C 300W 1.7GHz Processor Option Kit w/o Fan	-	2
CTO only	BN0P	8470Q	Intel Xeon Platinum 8470Q 52C 350W 2.1GHz Processor	-	2
4XG7A82882	BN0M	8480+	ThinkSystem SR650 V3 Intel Xeon Platinum 8480+ 56C 350W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A90892	BXNW	8480CL	ThinkSystem SR650 V3 Intel Xeon Platinum 8480CL 56C 350W 2.0GHz Processor Option Kit w/o Fan	-	2
4XG7A82878	BPPS	8490H	ThinkSystem SR650 V3 Intel Xeon Platinum 8490H 60C 350W 1.9GHz Processor Option Kit w/o Fan	-	2

* These processors are single-socket capable processors and are only available in configure-to-order builds or in preconfigured models. Not available as option part numbers.

Configuration notes:

- Processor options include a heatsink but do not include a system fan
- Single-processor configurations are not supported

Processor features

Processors supported by the SR650 V3 introduce new 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.

- Intel Advanced Matrix Extensions (Intel AMX)

  Intel Advanced Matrix Extensions (Intel AMX) is a built-in accelerator in all Silver, Gold, and Platinum processors that significantly improves deep learning training and inference. With Intel AMX, you can fine-tune deep learning models or train small to medium models in just minutes. Intel AMX offers discrete accelerator performance without added hardware and complexity.

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 all supported 5th Gen processors in the SR650 V3.

Table 19. 5th Gen Intel Xeon Processor features

CPU model	Die	Cores/ threads	Core speed (Base / TB max†)	L3 cache*	Max memory speed	UPI 2.0 links & speed	PCIe lanes	TDP	Accelerators				SGX Enclave Size
									QAT	DLB	DSA	IAA	
3508U	EE LCC	8 / 8**	2.1 / 2.2 GHz	22.5 MB*	4400 MHz	None‡	80	125W	0	0	1	0	64GB
4509Y	EE LCC	8 / 16	2.6 / 4.1 GHz	22.5 MB*	4400 MHz	2 / 16 GT/s	80	125W	0	0	1	0	64GB
4510	EE LCC	12 / 24	2.4 / 4.1 GHz	30 MB*	4400 MHz	2 / 16 GT/s	80	150W	0	0	1	0	64GB
4510T	EE LCC	12 / 24	2.0 / 3.7 GHz	30 MB*	4400 MHz	2 / 16 GT/s	80	115W	0	0	1	0	64GB
4514Y	MCC	16 / 32	2.0 / 3.4 GHz	30 MB	4400 MHz	2 / 16 GT/s	80	150W	0	0	1	0	64GB
4516Y+	MCC	24 / 48	2.2 / 3.7 GHz	45 MB	4400 MHz	2 / 16 GT/s	80	185W	1	1	1	1	64GB
5512U	MCC	28 / 56	2.1 / 3.7 GHz	52.5 MB	4800 MHz	None‡	80	185W	0	0	1	0	128GB
5515+	MCC	8 / 16	3.2 / 4.1 GHz	22.5 MB*	4800 MHz	3 / 20 GT/s	80	165W	1	1	1	1	128GB
5520+	MCC	28 / 56	2.2 / 4.0 GHz	52.5 MB	4800 MHz	3 / 20 GT/s	80	205W	1	1	1	1	128GB
6526Y	MCC	16 / 32	2.8 / 3.9 GHz	37.5 MB*	5200 MHz	3 / 20 GT/s	80	195W	0	0	1	0	128GB
6530	XCC	32 / 64	2.1 / 4.0 GHz	160 MB*	4800 MHz	3 / 20 GT/s	80	270W	0	0	1	0	128GB
6534	MCC	8 / 16	3.9 / 4.2 GHz	22.5 MB*	4800 MHz	3 / 20 GT/s	80	195W	0	0	1	0	128GB
6538N	MCC	32 / 64	2.1 / 4.1 GHz	60 MB	5200 MHz	3 / 20 GT/s	80	205W	2	2	1	0	128GB
6538Y+	MCC	32 / 64	2.2 / 4.0 GHz	60 MB	5200 MHz	3 / 20 GT/s	80	225W	1	1	1	1	128GB
6542Y	MCC	24 / 48	2.9 / 4.1 GHz	60 MB*	5200 MHz	3 / 20 GT/s	80	250W	0	0	1	0	128GB
6544Y	MCC	16 / 32	3.6 / 4.1 GHz	45 MB*	5200 MHz	3 / 20 GT/s	80	270W	0	0	1	0	128GB
6548N	MCC	32 / 64	2.8 / 4.1 GHz	60 MB	5200 MHz	3 / 20 GT/s	80	250W	2	2	1	0	128GB
6548Y+	MCC	32 / 64	2.5 / 4.1 GHz	60 MB	5200 MHz	3 / 20 GT/s	80	250W	1	1	1	1	128GB
6554S	XCC	36 / 72	2.2 / 4.0 GHz	180 MB*	5200 MHz	4 / 20 GT/s	80	270W	4	4	4	0	128GB
6558Q	MCC	32 / 64	3.2 / 4.1 GHz	60 MB	5200 MHz	3 / 20 GT/s	80	350W	0	0	1	0	128GB
8558	XCC	48 / 96	2.1 / 4.0 GHz	260 MB*	5200 MHz	4 / 20 GT/s	80	330W	0	0	1	0	512GB
8558P	XCC	48 / 96	2.7 / 4.0 GHz	260 MB*	5600 MHz	3 / 20 GT/s	80	350W	1	1	1	1	512GB
8558U	XCC	48 / 96	2.0 / 4.0 GHz	260 MB*	4800 MHz	None‡	80	300W	0	0	1	0	512GB
8562Y+	MCC	32 / 64	2.8 / 4.1 GHz	60 MB	5600 MHz	3 / 20 GT/s	80	300W	1	1	1	1	512GB
8568Y+	XCC	48 / 96	2.3 / 4.0 GHz	300 MB*	5600 MHz	4 / 20 GT/s	80	350W	1	1	1	1	512GB
8570	XCC	56 / 112	2.1 / 4.0 GHz	300 MB*	5600 MHz	4 / 20 GT/s	80	350W	0	0	1	0	512GB
8571N	XCC	52 / 104	2.4 / 4.0 GHz	300 MB*	4800 MHz	None‡	80	300W	4	4	4	4	512GB
8580	XCC	60 / 120	2.0 / 4.0 GHz	300 MB*	5600 MHz	4 / 20 GT/s	80	350W	0	0	1	0	512GB
8581V	XCC	60 / 120	2.0 / 3.9 GHz	300 MB*	4800 MHz	None‡	80	270W	1	1	1	1	512GB
8592+	XCC	64 / 128	1.9 / 3.9 GHz	320 MB*	5600 MHz	4 / 20 GT/s	80	350W	1	1	1	1	512GB
8592V	XCC	64 / 128	2.0 / 3.9 GHz	320 MB*	4800 MHz	3 / 20 GT/s	80	330W	1	1	1	1	512GB
8593Q	XCC	64 / 128	2.2 / 3.9 GHz	320 MB*	5600 MHz	4 / 20 GT/s	80	385W	1	1	1	1	512GB

† The maximum single-core frequency at with the processor is capable of operating
* L3 cache is 1.875 MB per core or larger. Processors with a larger L3 cache per core are marked with an *
** Bronze 3508U aprocessor does not support Hyper-Threading Technology
‡ SKUs with a U suffix as well as some other SKUs have no UPI links and are are single-socket only

The following table summarizes the key features of all supported 4th Gen processors in the SR650 V3.

Table 20. 4th Gen Intel Xeon Processor features

CPU model	Die	Cores/ threads	Core speed (Base / TB max†)	L3 cache*	Max memory speed	UPI 2.0 links & speed	PCIe lanes	TDP	Accelerators				SGX Enclave Size
									QAT	DLB	DSA	IAA	
3408U	MCC	8 / 8**	1.8 / 1.9 GHz	22.5 MB*	4000 MHz	None‡	80	125W	0	0	1	0	64GB

CPU model	Die	Cores/ threads	Core speed (Base / TB max†)	L3 cache*	Max memory speed	UPI 2.0 links & speed	PCIe lanes	TDP	Accelerators				SGX Enclave Size
									QAT	DLB	DSA	IAA	
4410T	MCC	10 / 20	2.7 / 4.0 GHz	26.25 MB*	4000 MHz	2 / 16 GT/s	80	150W	0	0	1	0	64GB
4410Y	MCC	12 / 24	2.0 / 3.9 GHz	30 MB*	4000 MHz	2 / 16 GT/s	80	150W	0	0	1	0	64GB
4416+	MCC	20 / 40	2.0 / 3.9 GHz	37.5 MB	4000 MHz	2 / 16 GT/s	80	165W	1	1	1	1	64GB
5411N	MCC	24 / 48	1.9 / 3.9 GHz	45 MB	4400 MHz	None‡	80	165W	2	2	1	0	128GB
5412U	MCC	24 / 48	2.1 / 3.9 GHz	45 MB	4400 MHz	None‡	80	185W	0	0	1	0	128GB
5415+	MCC	8 / 16	2.9 / 4.1 GHz	22.5 MB*	4400 MHz	3 / 16 GT/s	80	150W	1	1	1	1	128GB
5416S	MCC	16 / 32	2.0 / 4.0 GHz	30 MB	4400 MHz	3 / 16 GT/s	80	150W	2	2	1	0	128GB
5418N	MCC	24 / 48	1.8 / 3.8 GHz	45 MB	4000 MHz	3 / 16 GT/s	80	165W	2	2	1	0	128GB
5418Y	MCC	24 / 48	2.0 / 3.8 GHz	45 MB	4400 MHz	3 / 16 GT/s	80	185W	0	0	1	0	128GB
5420+	MCC	28 / 56	2.0 / 4.1 GHz	52.5 MB	4400 MHz	3 / 16 GT/s	80	205W	1	1	1	1	128GB
5423N	LCC	20 / 40	2.1 / 4.0 GHz	37.5 MB	4000 MHz	None‡	48	145W	0	0	1	0	128GB
5433N	LCC	24 / 48	1.9 / 3.6 GHz	45 MB	4000 MHz	None‡	48	160W	0	0	1	0	128GB
6403N	MCC	24 / 48	1.9 / 3.6 GHz	45 MB	4000 MHz	None‡	64	185W	0	0	1	0	128GB
6414U	XCC	32 / 64	2.0 / 3.4 GHz	60 MB	4800 MHz	None‡	80	250W	0	0	1	0	128GB
6416H	MCC	18 / 36	2.2 / 4.2 GHz	45 MB*	4800 MHz	3 / 16 GT/s	80	165W	0	0	1	1	512GB
6418H	MCC	24 / 48	2.1 / 4.0 GHz	60 MB*	4800 MHz	3 / 16 GT/s	80	185W	0	0	1	1	512GB
6423N	MCC	28 / 56	2.0 / 3.6 GHz	52.5 MB	4400 MHz	None‡	64	195W	0	0	1	0	128GB
6426Y	MCC	16 / 32	2.5 / 4.1 GHz	37.5 MB*	4800 MHz	3 / 16 GT/s	80	185W	0	0	1	0	128GB
6428N	MCC	32 / 64	1.8 / 3.8 GHz	60 MB	4000 MHz	3 / 16 GT/s	80	185W	2	2	1	0	128GB
6430	XCC	32 / 64	2.1 / 3.4 GHz	60 MB	4400 MHz	3 / 16 GT/s	80	270W	0	0	1	0	128GB
6433N	MCC	32 / 64	2.0 / 3.6 GHz	60 MB	4400 MHz	None‡	64	205W	0	0	1	0	128GB
6434	MCC	8 / 16	3.7 / 4.1 GHz	22.5 MB*	4800 MHz	3 / 16 GT/s	80	195W	0	0	1	0	128GB
6434H	MCC	8 / 16	3.7 / 4.1 GHz	22.5 MB*	4800 MHz	3 / 16 GT/s	80	195W	0	0	1	1	512GB
6438M	MCC	32 / 64	2.2 / 3.9 GHz	60 MB	4800 MHz	3 / 16 GT/s	80	205W	0	0	1	1	128GB
6438N	MCC	32 / 64	2.0 / 3.6 GHz	60 MB	4800 MHz	3 / 16 GT/s	80	205W	2	2	1	0	128GB
6438Y+	MCC	32 / 64	2.0 / 4.0 GHz	60 MB	4800 MHz	3 / 16 GT/s	80	205W	1	1	1	1	128GB
6442Y	MCC	24 / 48	2.6 / 4.0 GHz	60 MB*	4800 MHz	3 / 16 GT/s	80	225W	0	0	1	0	128GB
6443N	MCC	32 / 64	2.0 / 3.6 GHz	60 MB	4400 MHz	None‡	64	195W	0	0	1	0	128GB
6444Y	MCC	16 / 32	3.6 / 4.1 GHz	45 MB*	4800 MHz	3 / 16 GT/s	80	270W	0	0	1	0	128GB
6448H	MCC	32 / 64	2.4 / 4.1 GHz	60 MB	4800 MHz	3 / 16 GT/s	80	250W	2	2	1	1	512GB
6448Y	MCC	32 / 64	2.1 / 4.1 GHz	60 MB	4800 MHz	3 / 16 GT/s	80	225W	0	0	1	0	128GB
6454S	XCC	32 / 64	2.2 / 3.4 GHz	60 MB	4800 MHz	4 / 16 GT/s	80	270W	4	4	4	0	128GB
6458Q	MCC	32 / 64	3.1 / 4.0 GHz	60 MB	4800 MHz	3 / 16 GT/s	80	350W	0	0	1	0	128GB
8444H	XCC	16 / 32	2.9 / 4.0 GHz	45 MB*	4800 MHz	4 / 16 GT/s	80	270W	0	0	4	4	512GB
8450H	XCC	28 / 56	2.0 / 3.5 GHz	75 MB*	4800 MHz	4 / 16 GT/s	80	250W	0	0	4	4	512GB
8452Y	XCC	36 / 72	2.0 / 3.2 GHz	67.5 MB	4800 MHz	4 / 16 GT/s	80	300W	0	0	1	0	128GB
8454H	XCC	32 / 64	2.1 / 3.4 GHz	82.5 MB*	4800 MHz	4 / 16 GT/s	80	270W	4	4	4	4	512GB
8458P	XCC	44 / 88	2.7 / 3.8 GHz	82.5 MB	4800 MHz	3 / 16 GT/s	80	350W	1	1	1	1	512GB
8460H	XCC	40 / 80	2.2 / 3.8 GHz	105 MB*	4800 MHz	4 / 16 GT/s	80	330W	0	0	4	4	512GB
8460Y+	XCC	40 / 80	2.0 / 3.7 GHz	105 MB*	4800 MHz	4 / 16 GT/s	80	300W	1	1	1	1	128GB
8461V	XCC	48 / 96	2.2 / 3.7 GHz	97.5 MB*	4800 MHz	None‡	80	300W	1	1	1	1	128GB
8462Y+	XCC	32 / 64	2.8 / 4.1 GHz	60 MB	4800 MHz	3 / 16 GT/s	80	300W	1	1	1	1	128GB
8468	XCC	48 / 96	2.1 / 3.8 GHz	105 MB*	4800 MHz	4 / 16 GT/s	80	350W	0	0	1	0	512GB
8468H	XCC	48 / 96	2.1 / 3.8 GHz	105 MB*	4800 MHz	4 / 16 GT/s	80	330W	4	4	4	4	512GB
8468V	XCC	48 / 96	2.4 / 3.8 GHz	97.5 MB*	4800 MHz	3 / 16 GT/s	80	330W	1	1	1	1	128GB

CPU model	Die	Cores/ threads	Core speed (Base / TB max†)	L3 cache*	Max memory speed	UPI 2.0 links & speed	PCIe lanes	TDP	Accelerators				SGX Enclave Size
									QAT	DLB	DSA	IAA	
8470	XCC	52 / 104	2.0 / 3.8 GHz	105 MB*	4800 MHz	4 / 16 GT/s	80	350W	0	0	1	0	512GB
8470N	XCC	52 / 104	1.7 / 3.6 GHz	97.5 MB	4800 MHz	4 / 16 GT/s	80	300W	4	4	4	0	128GB
8470Q	XCC	52 / 104	2.1 / 3.8 GHz	105 MB*	4800 MHz	4 / 16 GT/s	80	350W	0	0	1	0	512GB
8480+	XCC	56 / 112	2.0 / 3.8 GHz	105 MB	4800 MHz	4 / 16 GT/s	80	350W	1	1	1	1	512GB
8480CL	XCC	56 / 112	2.0 / 3.8 GHz	105 MB	4800 MHz	4 / 16 GT/s	80	350W	1	1	1	1	512GB
8490H	XCC	60 / 120	1.9 / 3.5 GHz	112.5 MB	4800 MHz	4 / 16 GT/s	80	350W	4	4	4	4	512GB

† The maximum single-core frequency at with the processor is capable of operating
* L3 cache is 1.875 MB per core or larger. Processors with a larger L3 cache per core are marked with an *
** Bronze 3408U processor does not support Hyper-Threading Technology
‡ SKUs with a U suffix as well as some other SKUs have no UPI links and are are single-socket only

One-processor configurations

The SR650 V3 can be used with only one processor installed. Most core functions of the server (including the XClarity Controller) are connected to processor 1 as shown in the System architecture section.

With only one processor, the server has the following capabilities:

- 16 memory DIMMs for a 4TB maximum
- Rear slots: Slot 1-3 (riser 1) and slots 7-8 (riser 3) are available; (Slots 4-6 in Riser 2 are not available)
- Front slots: Slot 12 (Slot 11 is not available)

Drive support is as follows (see the Storage configurations section for specifics):

- Front SAS/SATA drives are supported - 8, 16, 24 drives (2.5-inch) or 8, 12 drives (3.5-inch)
- Front NVMe drives are supported - up to 8 drives (2.5-inch) or 4 drives (3.5-inch)
- Rear SAS/SATA drives are supported - 4x 3.5-inch drives or up to 4x 2.5-inch drives
- M.2 drives are supported
- 7mm rear drives are supported

Controller support is as follows:

- 12x onboard SATA
- 12x NVMe (8x onboard + 1x 4-port retimer adapter)
- RAID adapters/HBAs installed in slots 1-3
- Internal RAID/HBA controller (CFF form factor) with SAS/SATA-only configurations

Riser 3 is supported under the following conditions:

- No onboard NVMe connections are available
- With the x8/x8 PCIe Riser3 (BPKH or BPKF) selected, Slots 7 and 8 are both connected each with x8 lanes
- With the x16/x16 PCIe Riser3 (BLL9 or BPKG) selected, Slot 7 is connected with x16 lanes; Slot 8 is not connected
- The processor selected is not one of the following vRAN processors (insufficient PCIe lanes): 5423N, 5433N, 6403N, 6423N, 6433N, 6443N

The following components are not supported:

- Middle NVMe drive bays are not supported (SAS/SATA is supported)

Thermal requirements for processors

For thermal requirements for processors, see the Thermal Rules section in the Information Center for the SR650 V3:
https://pubs.lenovo.com/sr650-v3/thermal_rules

Lenovo Processor Neptune Core Module - Open-loop liquid cooling

The SR650 V3 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.

Typical power saving of 23% (up to 9.9KW per rack) are possible, based on 18x SR650 V3 servers in a rack (DC level PUE weighted) at 30°C ambient temperature. Power savings are configuration dependent.

The following figure shows the Lenovo Processor Neptune Core Module.

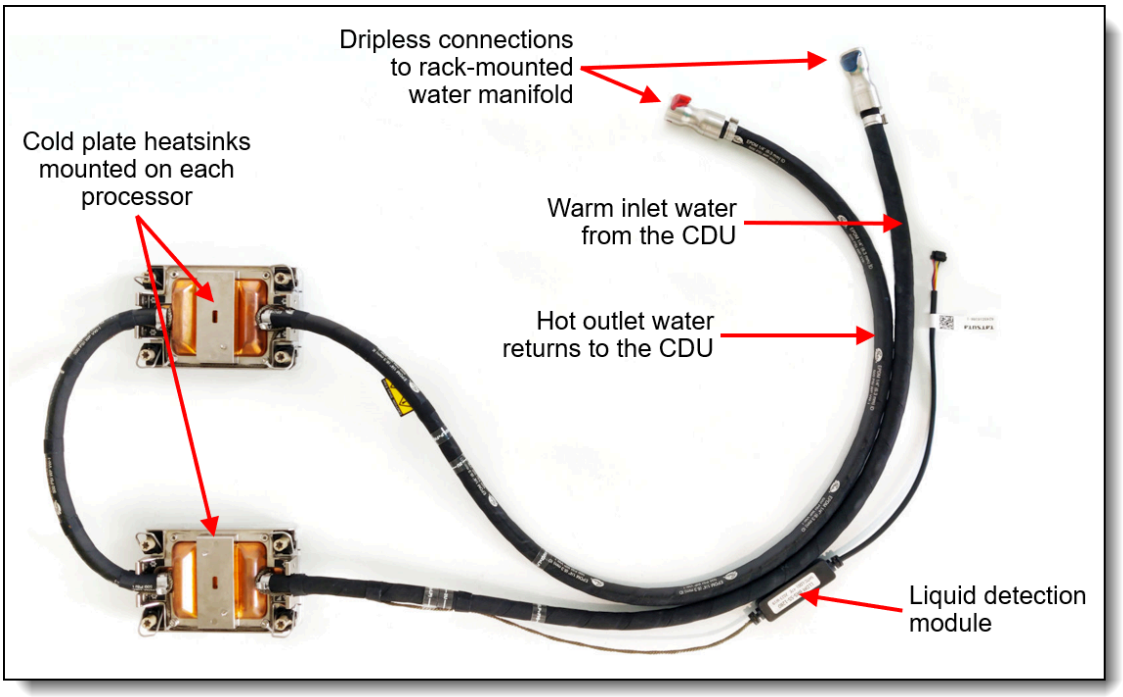


Figure 7. Lenovo Processor Neptune Core Module

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 21. Lenovo Processor Neptune Core Module

Part number	Feature code	Description	Lenovo Top Choice Express
CTO only	BXBC*	ThinkSystem 1U/2U Neptune Processor Direct Water Cooling Solution	-

* 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 one or two CPUs are supported
- All front drive bay configurations are supported
- Slot 6 is not available for adapters - the water loop is routed through the space otherwise occupied by slot 6
- Rear drive bays are supported
- 7mm drive bays are supported only in slot 3
- 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

For more information, see the Thermal Rules page:
https://pubs.lenovo.com/sr650-v3/thermal_rules
The following figure shows the Lenovo Neptune Processor DWC Module installed in the SR650 V3 (risers removed to show internal components).

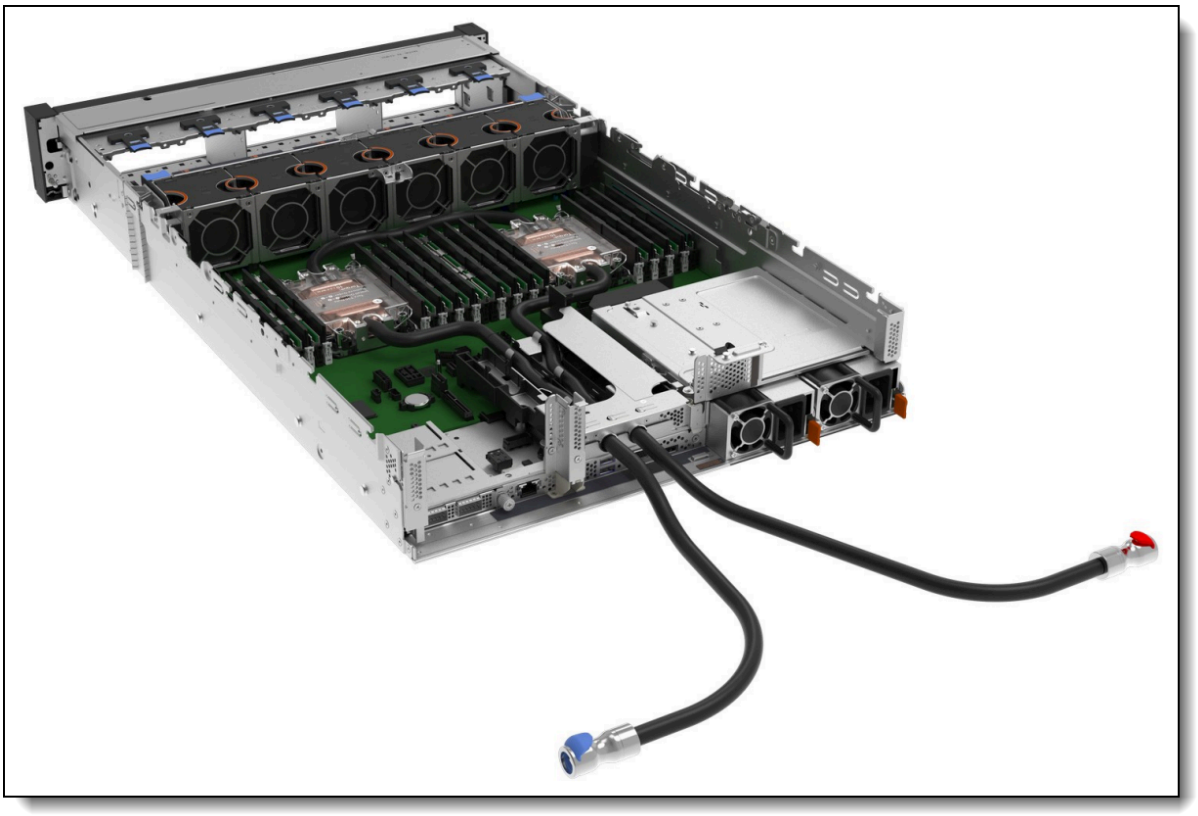


Figure 8. Lenovo Neptune Processor DWC Module installed in the SR650 V3

UEFI operating modes

The SR650 V3 offers preset operating modes that affect energy consumption and performance. These modes are a collection of predefined low-level UEFI settings that simplify the task of tuning the server to suit your business and workload requirements.

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

for CTO orders.

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

Table 22. UEFI operating mode presets in DCSC

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

The preset modes for the SR650 V3 are as follows:

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

For details about these preset modes, and all other performance and power efficiency UEFI settings offered in the SR650 V3, see the paper "Tuning UEFI Settings for Performance and Energy Efficiency on Intel Xeon Scalable Processor-Based ThinkSystem Servers", available from https://lenovopress.lenovo.com/lp1477.

Memory options

The SR650 V3 uses Lenovo TruDDR5 memory operating at up to 5600 MHz. The server supports up to 32 DIMMs with 2 processors. The processors have 8 memory channels and support 2 DIMMs per channel (DPC). The server supports up to 8TB of memory using 32x 256GB 3DS RDIMMs and two processors.

With 5th Gen Intel Xeon processors, DIMMs operate at the following speeds, up to the memory bus speed of the processor selected. See the Processor features section for specifics.

- 1 DIMM per channel (DPC) using RDIMMs: Up to 5600 MHz
- 1 DPC using 3DS RDIMMs: Up to 5200 MHz
- 2 DPC using RDIMMs or 3DS RDIMMs: Up to 4400 MHz
- 2 DPC using Performance+ RDIMMs: Up to 4800 MHz

With 4th Gen Intel Xeon processors, DIMMs operate at the following speeds, up to the memory bus speed of the processor selected:

- 1 DPC: Up to 4800 MHz
- 2 DPC: Up to 4400 MHz

Lenovo TruDDR5 memory uses the highest quality components that are sourced from Tier 1 DRAM suppliers and only memory that meets the strict requirements of Lenovo is selected. It is compatibility tested and tuned to maximize performance and reliability. From a service and support standpoint, Lenovo TruDDR5 memory automatically assumes the system warranty, and Lenovo provides service and support worldwide.

The following table lists the 5600 MHz memory options that are currently supported by the SR650 V3. These DIMMs are only supported with 5th Gen Intel Xeon processors, with the exceptions listed in the memory rules below.

Table 23. 5600 MHz memory options

Part number	Feature code	Description	Top Choice Express	DRAM technology
10x4 RDIMMs - 5600 MHz				
4X77A88052	BWHS	ThinkSystem 64GB TruDDR5 5600MHz (2Rx4) RDIMM	-	16Gb
4X77A88058	BWHV	ThinkSystem 96GB TruDDR5 5600MHz (2Rx4) RDIMM	-	24Gb
4X77A93887	C4EA	ThinkSystem 128GB TruDDR5 5600MHz (2Rx4) RDIMM	-	32Gb
x8 RDIMMs - 5600 MHz				
4X77A88087	BWJE	ThinkSystem 16GB TruDDR5 5600MHz (1Rx8) RDIMM	-	16Gb
4X77A88051	BWJC	ThinkSystem 32GB TruDDR5 5600MHz (2Rx8) RDIMM	-	16Gb
3DS RDIMMs - 5600 MHz				
4X77A88054	BWHU	ThinkSystem 128GB TruDDR5 5600MHz (4Rx4) 3DS RDIMM	-	16Gb
4X77A88055	BX8X	ThinkSystem 256GB TruDDR5 5600 MHz (8Rx4) 3DS RDIMM	-	16Gb

The following table lists the 4800 MHz memory options that are currently supported by the SR650 V3. These DIMMs are only supported with 4th Gen Intel Xeon processors plus four specific 5th Gen processors as listed in the memory rules below. The 128GB 5600MHz RDIMM is also supported with 4th Gen processors.

Table 24. 4800 MHz memory options

Part number	Feature code	Description	Top Choice Express	DRAM technology
10x4 RDIMMs - 4800 MHz				
4X77A77032	BNF9	ThinkSystem 64GB TruDDR5 4800MHz (2Rx4) 10x4 RDIMM	-	16Gb
4X77A87034	BZC2	ThinkSystem 96GB TruDDR5 4800MHz (2Rx4) RDIMM	-	24Gb
4X77A93887	C4EA	ThinkSystem 128GB TruDDR5 5600MHz (2Rx4) RDIMM	-	32Gb
x8 RDIMMs - 4800 MHz				
4X77A77029	BKTL	ThinkSystem 16GB TruDDR5 4800MHz (1Rx8) RDIMM	-	16Gb
4X77A77031	BKTM	ThinkSystem 32GB TruDDR5 4800MHz (2Rx8) RDIMM	-	16Gb

For more information on DDR5 memory, see the Lenovo Press paper, *Introduction to DDR5 Memory*, available from https://lenovopress.com/lp1618.

The following rules apply when selecting the memory configuration:

- In DCSC, 4800 MHz memory can only be selected with 4th Gen Intel Xeon Scalable processors, and 5600 MHz memory can only be selected with 5th Gen Intel Xeon Scalable processors. The only exceptions are listed below.
- An exception to the above rule is the following 5600 MHz DIMM which is supported with both 4th Gen and 5th Gen processors (operates at up to 4800 MHz with 4th Gen processors):
  - ThinkSystem 128GB TruDDR5 5600MHz (2Rx4) RDIMM, 4X77A93887
- An additional exception to the above rule are the following 5th Gen processors:
  - Intel Xeon Bronze 3508U 8C 125W 2.1GHz Processor
  - Intel Xeon Silver 4509Y 8C 125W 2.6GHz Processor
  - Intel Xeon Silver 4510 12C 150W 2.4GHz Processor
  - Intel Xeon Silver 4510T 12C 115W 2.0GHz Processor

  These 4 processors support:

  - All 4800 MHz memory DIMMs
  - ThinkSystem 16GB TruDDR5 5600MHz (1Rx8) RDIMM, 4X77A88087
  - ThinkSystem 32GB TruDDR5 5600MHz (2Rx8) RDIMM, 4X77A88051
  - ThinkSystem 64GB TruDDR5 5600MHz (2Rx4) RDIMM, 4X77A88052
  - ThinkSystem 128GB TruDDR5 5600MHz (2Rx4) RDIMM, 4X77A93887
- The SR650 V3 only supports quantities of 1, 2, 4, 6, 8, 12, or 16 DIMMs per processor; other quantities not supported. Additional quantity requirements:
  - 5th Gen Intel Xeon processors:
    - 24GB and 48GB DIMMs are only supported in quantities 1, 6, 8 per processor (2, 4, 12, 16 not supported)
    - 96GB DIMMs are only supported in quantities 1, 6, 8, 12, 16 per processor (2, 4 not supported)
  - 4th Gen Intel Xeon processors:
    - 24GB and 48GB DIMMs are only supported in quantity 8 per processor
    - 96GB DIMMs are only supported in quantities 8, 16 per processor
- The 48GB RDIMM (4X77A87033) and 96GB RDIMM (4X77A87034) are supported with all 4th Gen processors
- The server supports three types of DIMMs: 9x4 RDIMMs, RDIMMs, and 3DS RDIMMs; UDIMMs and LRDIMMs are not supported

- Mixing of DIMM types is not supported (9x4 DIMMs with 10x4 RDIMMs, 9x4 DIMMs with 3DS RDIMMs, 10x4 RDIMMs with 3DS RDIMMs)
- Mixing of DRAM technology (16Gb, 24Gb, 32Gb) is not supported. See the column in the above table.
- Mixing of 24GB, 48GB and 96GB DIMMs (24Gb DRAM) is not supported; if using any of these DIMMs then all installed memory must be the same part number
- Mixing x4 and x8 DIMMs is not supported
- Mixing of DIMM rank counts is supported. Follow the required installation order installing the DIMMs with the higher rank counts first.
- Mixing of DIMM capacities is supported, however only two different capacities are supported across all channels of the processor. Follow the required installation order installing the larger DIMMs first.
- Memory mirroring is not supported with 9x4 DIMMs
- The mixing of 128GB 3DS RDIMMs and 256GB 3DS RDIMMs is supported
- The use of the 128GB 3D RDIMM feature BY8F has the following requirements for thermal reasons:
  - If the front drive bays are 12x 3.5-inch, then middle and rear drive bays are not supported
  - Additional ambient temperature requirements - see https://pubs.lenovo.com/sr650-v3/thermal_rules for information

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 8 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, not supported with 9x4 DIMMs)
- Memory mirroring

See the Lenovo Press article, RAS Features of the Lenovo ThinkSystem Intel Servers for more information about memory RAS features.

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.

Memory DIMM filler

When a GPU (or another high-thermal component) is added as a field upgrade, all empty DIMM slots must have a DIMM filler (also called a dummy DIMM or DIMM blank) installed in each DIMM slot, to ensure the optimal air flow. Ordering information is in the following table. For CTO orders, the DIMM fillers are derived by the configurator.

Table 25. ThinkSystem Dummy DIMM Package Kit

Part number	Feauture code	Description
4M27A11810	AURS*	ThinkSystem Dummy DIMM Package Kit (contains 24x DIMM fillers)

* In CTO orders, feature code AURS is derived and is 1x DIMM filler

Internal storage

The SR650 V3 has three drive bay zones and supports up to 20x 3.5-inch or 40x 2.5-inch hot-swap drive bays or a combination of drive bays, depending on the selected chassis and backplane configuration. The server also supports configurations without any drive bays if desired.

The three drive bay zones are as follows:

- Front:
  - Up to 12x 3.5-inch hot-swap bays, or
  - Up to 24x 2.5-inch hot-swap bays
- Middle:
  - 4x 3.5-inch simple-swap bays, or
  - 8x 2.5-inch simple-swap bays
- Rear:
  - Up to 4x 3.5-inch hot-swap bays, or
  - Up to 8x 2.5-inch hot-swap bays
  - Also supports 2x 7mm hot-swap drives bays

The server also supports one or two M.2 drives, installed in an M.2 adapter internal to the server.

In this section:

- NVMe drive support
- Tri-Mode support - RAID 940 adapters
- Front drive bays
- Mid drive bays
- Rear drive bays
- Storage configurations
- Field upgrades
- RAID flash power module (supercap) support
- 7mm drives
- M.2 drives
- SED encryption key management with SKLM
- Encryption Enablement

NVMe drive support

The SR650 V3 supports NVMe drives to maximize storage performance.

- Up to 36 NVMe drives in a 2.5-inch drive configuration, without oversubscription (that is, each x4 drive has a dedicated x4 (4 lanes) connection to the processor, either direct to the processor or via a retimer adapter)
  - Up to 24 installed in front bays
  - Up to 28 installed in the front and rear bays
  - Up to 32 installed in front and mid bays
  - Up to 36 installed in front, mid and rear bays
- Up to 8 NVMe drives in a 3.5-inch drive configuration, without oversubscription
  - All installed in mid bays

Riser 3 support with onboard NVMe: When Riser 3 is configured, the use of the onboard NVMe connections is supported up to 12x NVMe drives. Two 8-bay backplanes are required, with 4 bays unused. A quantity of 16x or more NVMe drives requires the use of an adapter if Riser 3 is configured.

The specifics of these configurations are covered in the Storage configurations section. The tables in those

sections indicate the number of NVMe drives in each configuration.

In addition, the SR650 V3 supports two 7mm NVMe drives for use as boot drives.

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.

Front drive bays

The front drive bay zone supports the following configurations:

- 8x or 12x 3.5-inch drive bays (all hot-swap)
- 8x, 16x or 24x 2.5-inch drive bays (all hot-swap)
- 4x 2.5-inch drive bays (all hot-swap) with support for front PCIe slots
- No backplanes and no drives (supports field upgrades)

The specific combinations that are supported in the SR650 V3 are shown in the following figures. The feature codes listed are the backplane feature codes when ordering CTO and correspond to the feature codes listed in the table below the figure. Note that NVMe and AnyBay backplanes may be available either PCIe Gen4 (G4) or PCIe Gen5 (G5) as listed in the figures.

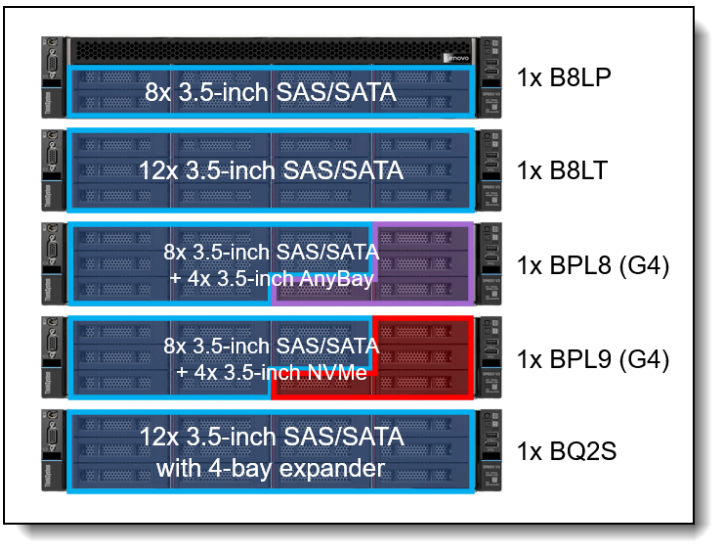


Figure 9. SR650 V3 front drive bay configurations - 3.5-inch drive bays

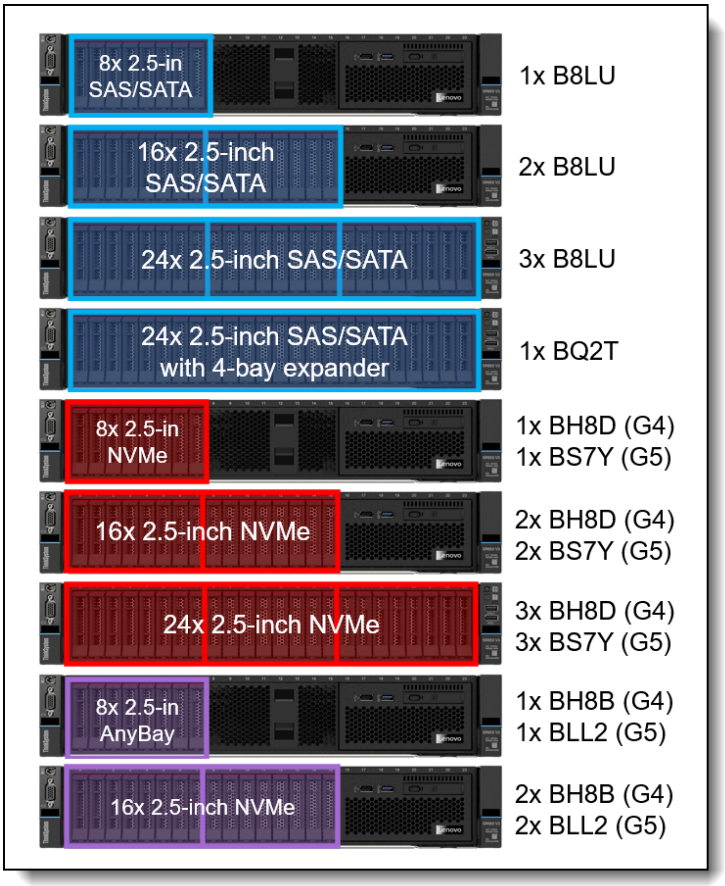


Figure 10. SR650 V3 front drive bay configurations - 2.5-inch drive bays, all the same drive type

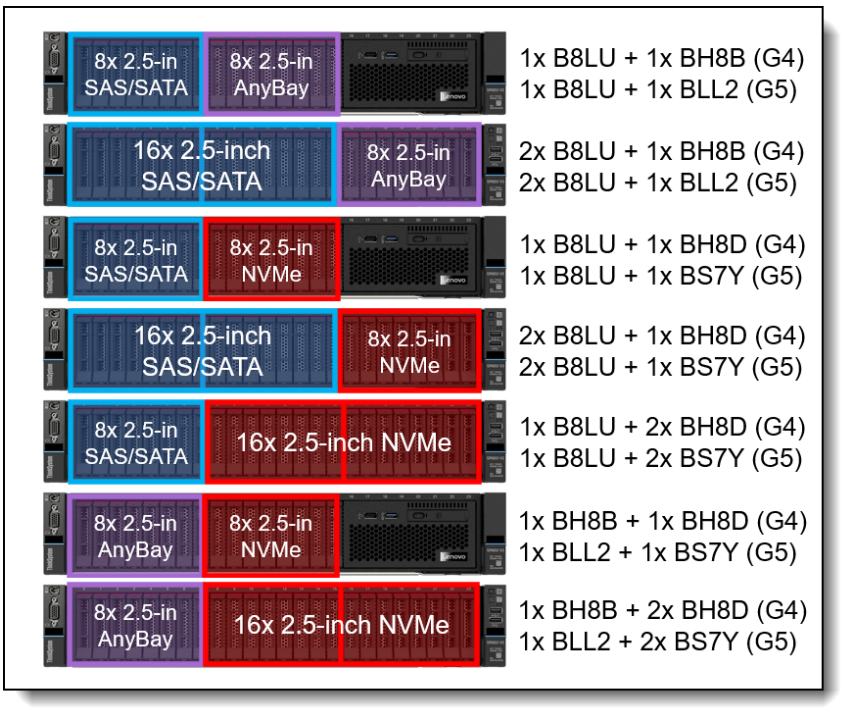


Figure 11. SR650 V3 front drive bay configurations - 2.5-inch drive bays, combinations

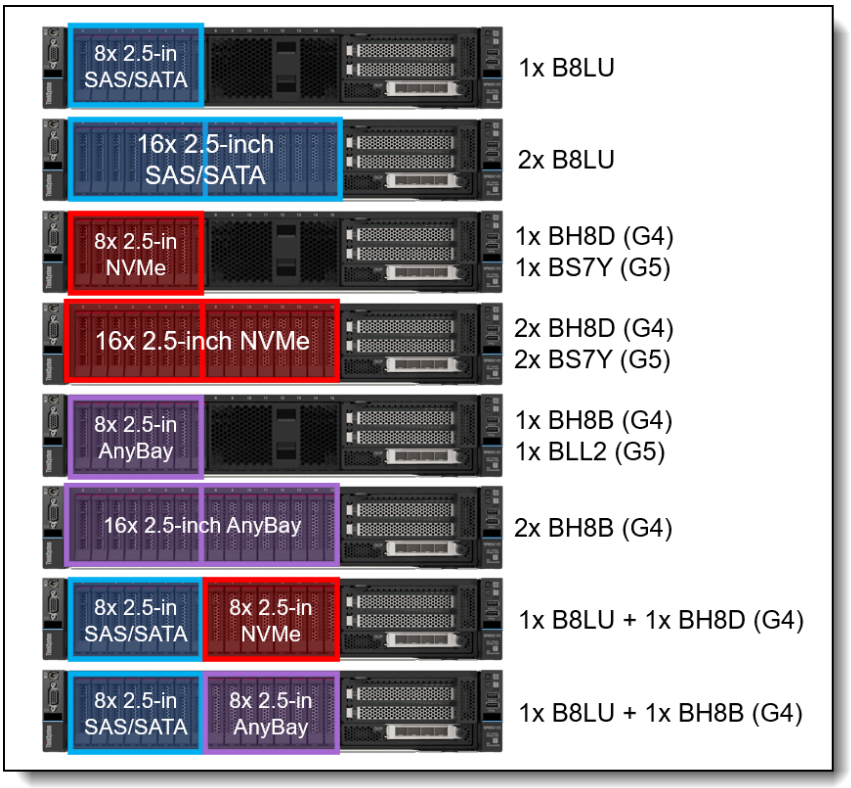


Figure 12. SR650 V3 front drive bay configurations - 2.5-inch drive bays with front PCIe slots

The backplanes used to provide these drive bays are listed in the following table. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Field upgrades: All front backplanes are available as part numbers for field upgrades along with require cable option kits, as described in the Field upgrades section below.

Table 26. Backplanes for front drive bays

Feature	Description	Top Choice Express	Bays	PCIe Gen	SAS Gen	Max qty
Front 3.5-inch drive backplanes						
B8LP	ThinkSystem 2U 8x3.5" SAS/SATA Backplane	-	8	-	12Gb	1
B8LT	ThinkSystem 2U 12x3.5" SAS/SATA Backplane	-	12	-	12Gb	1
BPL8	ThinkSystem 2U 8x3.5" SAS/SATA+4 AnyBay Backplane	-	12	Gen4	24Gb	1
BPL9	ThinkSystem 2U 8x3.5" SAS/SATA+4 NVMe Backplane	-	12	Gen4	24Gb	1
BQ2S	ThinkSystem 2U 12x3.5" SAS/SATA with Rear 4-Bay Expander Backplane	-	12*	-	12Gb	1
Front 2.5-inch drive backplanes						
B8LU	ThinkSystem 2U 8x2.5" SAS/SATA Backplane	-	8	-	12Gb	3
BH8D	ThinkSystem 2U/4U 8x2.5" NVMe Backplane	-	8	Gen4	-	3
BS7Y	ThinkSystem V3 2U 8x2.5" NVMe Gen5 Backplane	-	8	Gen5	-	3
BH8B	ThinkSystem 2U/4U 8x2.5" AnyBay Backplane	-	8	Gen4	24Gb	3
BLL2	ThinkSystem V3 2U 8x2.5" AnyBay Gen5 Backplane	-	8	Gen5	24Gb	3
BQ2T	ThinkSystem 2U 24x2.5" SAS/SATA with Rear 4-Bay Expander Backplane	-	24*	-	12Gb	1
Integrated Diagnostics Panel (for 2.5-inch configurations with 8 or 16 bays only)						
BMJA	ThinkSystem 2U 16x2.5" Front Operator Panel v2	-	-	-	-	1

* Backplane has an onboard SAS expander that provides connectivity to front SAS/SATA drive bays using only an 8-port controller, plus support for 4x rear drives in a separate backplane (order the rear backplane separately). See below for additional information and requirements.

The use of front drive bays has the following configuration rules:

- The SR650 V3 also supports configurations without any drive bays, allowing for drive bay upgrades as described in the field upgrades section.
- Most backplanes require connections to controllers that provides enough ports to connect each drive (eg 8 ports for an 8-bay backplane). The only exceptions to that are the backplanes with built-in SAS expanders - these backplanes require a fewer number of controller ports to connect to the front drives, and also include a connection to up to 4x rear drive bays. Connections to mid-chassis backplanes or to 8x rear drive bays require additional controller ports. Supported connections are as follows:
  - For the ThinkSystem 2U 12x3.5" SAS/SATA with Rear 4-Bay Expander Backplane, feature BQ2S:
    - 12x3.5" front drives only: requires a single 8i controller
    - 12x3.5” + 4x3.5” (Rear): requires a single 8i controller, 8i to front+rear
    - 12x3.5” + 4x3.5” (Mid): requires 16i controller - 8i to front, 8i to middle
    - 12x3.5” + 4x3.5” (Mid) + 4x3.5” (Rear): requires 16i controller, 8i to front+rear, 8i to middle

    - For the ThinkSystem 2U 24x2.5" SAS/SATA with Rear 4-Bay Expander Backplane, feature BQ2T:
        - 24x2.5” front drives only: requires a single 8i controller
        - 24x2.5” + 4x2.5” (Rear): requires a single 8i controller, 8i to front+rear
        - 24x2.5” + 8x2.5” (Mid): requires 16i controller - 8i to front, 8i to middle
        - 24x2.5” + 8x2.5” (Mid) + 8x2.5” (Rear): requires 32i controller - 8i to front, 8i to middle, 8i to rear

  For specifics configurations, see the Storage configurations section.

- If you are building a server configuration that includes the ThinkSystem 2U 24x2.5" SAS/SATA with Rear 4-Bay Expander Backplane (feature BQ2T) and the order also includes a rack cabinet, then you can configure at most 6 drives to be installed in the factory. The remaining drives must be ordered separately using the option part numbers for the drives. This requirement does not apply if the order does not include a rack cabinet. The requirement is due to the shock/vibration limits of the 24x 2.5-inch backplane.
- If 3.5-inch front drive bays are used, an internal (CFF) RAID adapter or HBA is not supported as the adapter and bays occupy the same physical space
- Any 8x 2.5-inch and 16x 2.5-inch drive configuration (SAS/SATA, AnyBay, or NVMe) can optionally be configured for use with the Integrated Diagnostics Panel as described in the Local management section. 3.5-inch drive configurations do not support the Integrated Diagnostics Panel. With the Integrated Diagnostics Display, 8-bay configurations can be upgrade to 16 bays, however 16-bay configurations cannot be upgrade to 24 bays.
- The use of ThinkSystem 2U 12x3.5" SAS/SATA with Rear 4-Bay Expander Backplane (BQ2S, 4XH7A86133) is not supported with Windows Server or Windows 10/11 when used with the following:
    - Any of these mid or rear backplanes:
        - ThinkSystem 2U 4x3.5" SAS/SATA Middle Backplane (BCQK)
        - ThinkSystem 2U 2x3.5" SAS/SATA Rear Backplane (BAG7)
        - ThinkSystem 1U/2U 4x3.5" SAS/SATA Backplane (B8L3)
        - ThinkSystem V3 1U/2U 4x2.5" AnyBay Backplane (BQ2U)
    - Any of these SAS HBAs:
        - ThinkSystem 440-8i SAS/SATA PCIe Gen4 12Gb HBA (BM51)
        - ThinkSystem 440-16i SAS/SATA PCIe Gen4 12Gb HBA (BM50)
        - ThinkSystem 440-16i SAS/SATA PCIe Gen4 12Gb Internal HBA (B8P1)
- The following backplanes with integrated SAS expanders are not supported with cluster applications. For more information see Support Tip TT3693:
    - ThinkSystem 2U 12x3.5" SAS/SATA with Rear 4-Bay Expander Backplane (BQ2S)
    - ThinkSystem 2U 24x2.5" SAS/SATA with Rear 4-Bay Expander Backplane (BQ2T)
- The following backplane is not supported with an intrusion switch (ThinkSystem 2U Intrusion Cable, BAJJ):
    - ThinkSystem 2U 12x3.5" SAS/SATA with Rear 4-Bay Expander Backplane (BQ2S)

Mid drive bays

The SR650 V3 supports simple-swap drives installed in the middle of the server chassis. The drive bays are accessible by removing the top lid of the server and levering the mid drive chassis up at the front.

The following configurations are supported:

- 4x 3.5-inch simple-swap SAS/SATA drive bays
- 8x 2.5-inch simple-swap SAS/SATA drive bays
- 8x 2.5-inch simple-swap NVMe drive bays

The drive bays in the open position are shown in the following figure.

Simple-swap drive bays: The drives that are installed in the mid-chassis drive bays are simple-swap, not hot-swap, even though the drives use hot-swap drive trays.

M.2 support: When mid drive bays are configured, the M.2 adapter is installed on the mid drive bay mechanical as shown in the images.

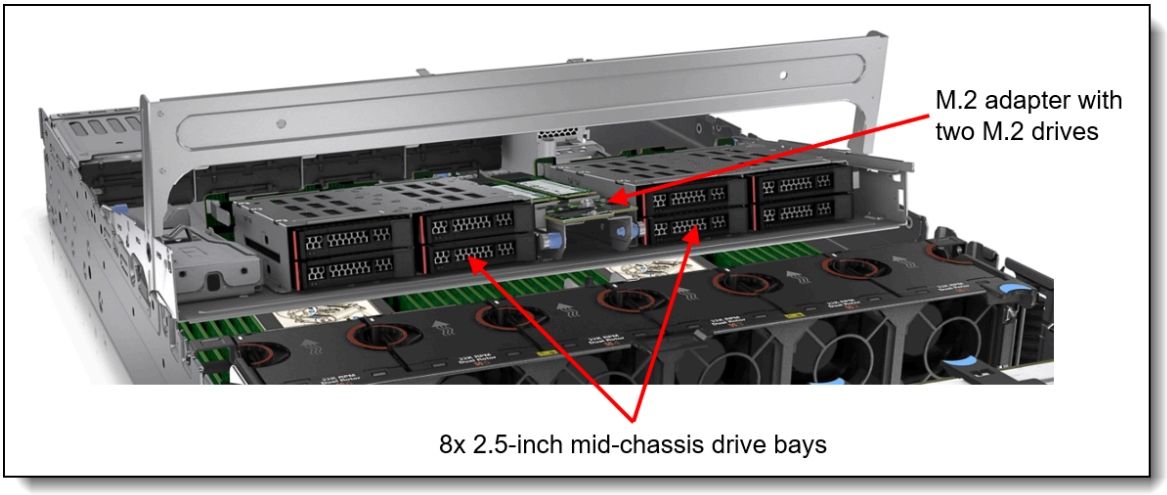


Figure 13. Mid-chassis drive bays

The backplanes used to provide these drive bays are listed in the following table. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Table 27. Backplanes for mid-chassis drive bays

Feature code	Description	Top Choice Express	PCIe Gen	Maximum supported
Mid - 3.5-inch drive backplane				
BCQK	ThinkSystem 2U 4x3.5" SAS/SATA Middle Backplane	-	-	1
Mid - 2.5-inch drive backplane				
BCQL	ThinkSystem 2U 4x2.5" SAS/SATA Middle Backplane	-	-	2‡
BDY7	ThinkSystem 2U 4x2.5" Middle NVMe Backplane	-	Gen4	2‡
BS81	ThinkSystem 2U 4x2.5" Middle NVMe Gen5 Backplane	-	Gen5	2‡

‡ 2.5-inch drive backplanes for the mid-chassis area must be installed in pairs. NVMe and SAS/SATA cannot be mixed.

Field upgrades: Backplanes are available as part numbers for field upgrades along with require cable option kits, as described in the Field upgrades section below.

The use of drive bays in the mid-chassis area has the following configuration rules:

- All processors are supported. Higher TDP processors will require the performance heatsinks.
- Full-length adapter cards are not supported
- GPUs (including low profile GPUs such as the NVIDIA A2) are not supported
- The use of mid drive bays requires Riser 1 be installed, since power for the mid bay backplanes comes from Riser 1

Rear drive bays

The SR650 V3 supports hot-swap drives installed at the rear of the server chassis. Supported configurations are as follows:

- 3.5-inch hot-swap drives
  - 2x SAS/SATA drive bays
  - 4x SAS/SATA drive bays
- 2.5-inch hot-swap drives
  - 4x SAS/SATA drive bays
  - 4x NVMe Gen5 drive bays
  - 4x AnyBay Gen5 drive bays
  - 8x SAS/SATA drive bays

The configurations are shown in the following figure.

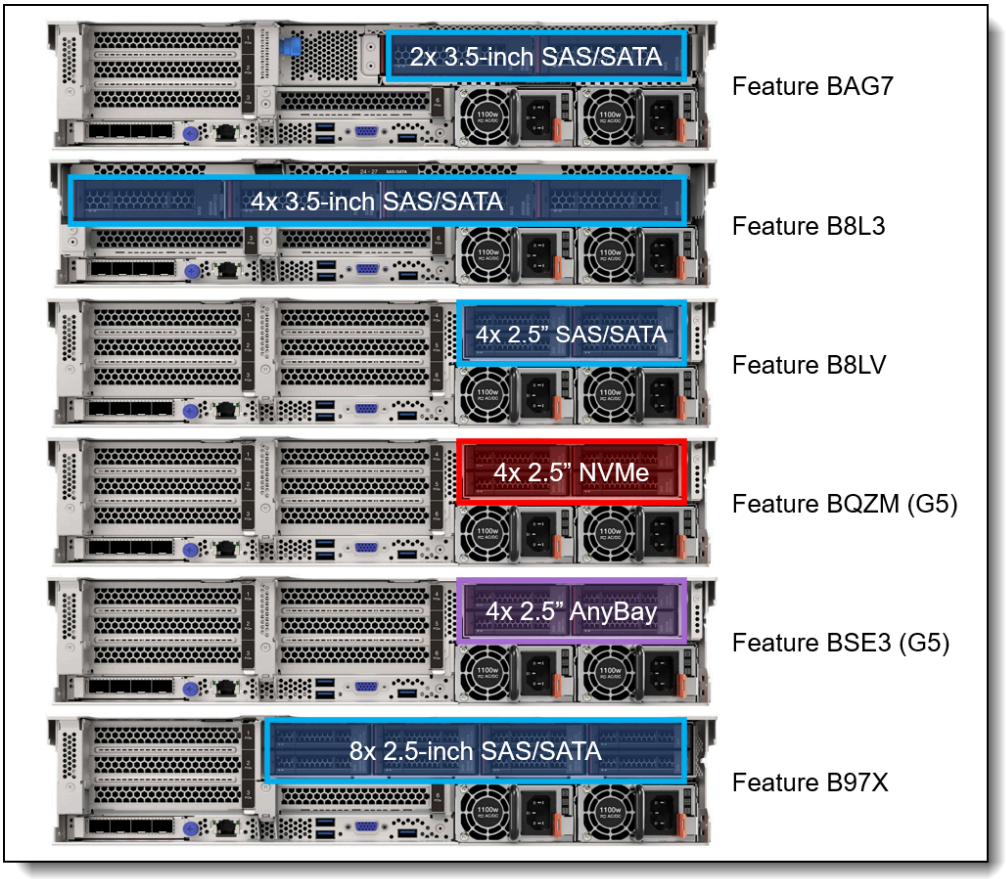


Figure 14. Rear 2.5-inch and 3.5-inch drive bay configurations

The backplanes used to provide these drive bays are listed in the following table. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

7mm drives: The SR650 V3 supports two 7mm drives. See the 7mm drives section for details.

Table 28. Backplanes for rear drive bays

Feature code	Description	Top Choice Express	PCIe Gen	Maximum supported
Rear - 3.5-inch drive backplanes				
BAG7	ThinkSystem 2U 2x3.5" SAS/SATA Rear Backplane	-	-	1
B8L3	ThinkSystem 1U/2U 4x3.5" SAS/SATA Backplane	-	-	1
Rear - 2.5-inch drive backplanes				
B8LV	ThinkSystem 2U 4x2.5" SAS/SATA Backplane	-	-	1
BQZM	ThinkSystem 4x2.5" NVMe Gen 5 Backplane	-	Gen5	
BSE3	ThinkSystem 4x2.5" AnyBay Gen5 Backplane	-	Gen5	1
B97X	ThinkSystem 2U 8x2.5" SAS/SATA Rear Backplane	-	-	1

Field upgrades: Backplanes are available as part numbers for field upgrades along with require cable option kits, as described in the Field upgrades section below.

The use of rear drive bays has the following configuration rules:

- The use of rear bays restricts the number of slots and the choice of risers that are supported. See the I/O expansion section for details.
- The use of rear drive bays may require that Riser 1 or Riser 2 be installed, since power for the rear backplane comes from that riser.
- Configurations with 4x 2.5-inch rear drive bays are not supported with 7mm drive bays, as they use the same power connector

Storage configurations

This section describes the various combinations of front and rear drives that the server supports, as well as M.2 support.

Tip: These tables are based on Config Matrix V6.0 in TRD V3.88

In this section:

- Overview of configurations - 3.5-inch front drive bays
- Overview of configurations - 2.5-inch front drives supporting rear slots (no front PCIe slots)
- Overview of configurations - 2.5-inch front drives supporting 12 PCIe slots (front & rear)
- Details - 3.5-inch front drive bays
- Details - 2.5-inch front drives supporting rear slots (no front PCIe slots)
- Details - 2.5-inch front drives supporting 12 PCIe slots (front & rear)

The following tables summarize the storage configurations for the SR650 V3. For details, including processor requirements, M.2 and 7mm support, and controller selections, see each of the Details tables.

Platinum processor support: Some storage configurations are only supported with certain processors:

- Configurations with "NP" (No Platinum) in the CPU column are supported with Bronze, Silver and Gold processors, but not Platinum processors.
- Configurations with "PO" (Platinum Only) in the CPU column are only supported with Platinum processors

For example, config 98-1 is only for Platinum processors, however config 98-2 is for all other processors.

Overview - 3.5-inch front drives

The following table summarizes the configurations that use 3.5-inch front drive bays.

Click to jump down to the details of the 3.5-inch front drive configurations.

Return to Storage configurations.

Field upgrades: For part number upgrades, see the Drive bays field upgrades - 3.5-inch chassis section.

Table 29. Overview - 3.5-inch front drives

Config	Total drives (NVMe)	Front			Mid			Rear				Backplanes
		SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
1	8 (0)	8	0	0	0	0	0	0	0	0	0	8x3.5" SAS/SATA (B8LP)
7A	12 (4)	8	4	0	0	0	0	0	0	0	0	1x 8x3.5" SAS/SATA + 4x3.5" AnyBay G4 (BPL8)
7B	12 (4)	8	0	4	0	0	0	0	0	0	0	1x 8x3.5" SAS/SATA + 4x3.5" NVMe G4 (BPL9)
8A	16 (4)	8	4	0	0	0	0	4	0	0	0	**Front**: 1x 8x3.5" SAS/SATA + 4x3.5" AnyBay G4 (BPL8); **Rear**: 4x3.5" SAS/SATA (B8L3)
8B	16 (4)	8	0	4	0	0	0	4	0	0	0	**Front**: 1x 8x3.5" SAS/SATA + 4x3.5" NVMe G4 (BPL9); **Rear**: 4x3.5" SAS/SATA (B8L3)
42	12 (0)	12	0	0	0	0	0	0	0	0	0	12x3.5" SAS/SATA with Expander (BQ2S)
43	16 (0)	12	0	0	0	0	0	4	0	0	0	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Rear**: 4x3.5" SAS/SATA (B8L3)
44	16 (4)	12	0	0	0	0	0	0	0	0	4	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Rear**: 4x 2.5" AnyBay G5 (BSE3)
45	14 (0)	12	0	0	0	0	0	2	0	0	0	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Rear**: 2x3.5" SAS/SATA (BAG7)
46	20 (0)	12	0	0	4	0	0	4	0	0	0	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Mid**: 4x3.5" SAS/SATA (BCQK); **Rear**: 4x3.5" SAS/SATA (B8L3)

Overview - 2.5-inch front drives supporting rear slots (no front PCIe slots)

The following table summarizes the configurations that use 2.5-inch front drives supporting rear slots (no front PCIe slots).

Click to jump down to the details of the 2.5-inch front drive configurations.

Return to Storage configurations.

Field upgrades: For part number upgrades, see the following:

- Drive bay field upgrades - 2.5-inch chassis with SAS/SATA and Gen4 front bays
- Drive bay field upgrades - 2.5-inch chassis with Gen5 front bays

Table 30. Overview - 2.5-inch front drives supporting rear slots (no front PCIe slots)

Config	Total drives (NVMe)	Front			Mid			Rear				Backplanes
		SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
9	8 (0)	8	0	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU)
10	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)
11	8 (8)	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G4 (BH8D)
12	16 (0)	16	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU)
13	16 (16)	0	8	8	0	0	0	0	0	0	0	8x2.5" NVMe G4 (BH8D) + 8x2.5" AnyBay G4 (BH8B)

Config	Total drives (NVMe)	Front			Mid			Rear				Backplanes
		SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
14A	16 (16)	0	0	16	0	0	0	0	0	0	0	2x 8xNVMe G4 (BH8D)
14B	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)
15	16 (8)	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B)
16	16 (8)	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G4 (BH8D)
17	24 (8)	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B)
18	24 (8)	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G4 (BH8D)
19A	24 (16)	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G4 (BH8D)
19B	24 (16)	8	16	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8xAnyBay G4 (BH8B)
20	24 (0)	24	0	0	0	0	0	0	0	0	0	3x 8x2.5" SAS/SATA (B8LU)
21A	24 (24)	0	0	24	0	0	0	0	0	0	0	3x 8xNVMe G4 (BH8D)
21B	24 (24)	0	24	0	0	0	0	0	0	0	0	3x 8x2.5" AnyBay G4 (BH8B)
21C	24 (24)	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B) + 2x 8x2.5" NVMe G4 (BH8D)
22	28 (8)	16	8	0	0	0	0	0	4	0	0	**Front**: 2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B); **Rear**: 4x2.5" SAS/SATA (B8LV)
23	28 (0)	24	0	0	0	0	0	0	4	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Rear**: 4x2.5" SAS/SATA (B8LV)
23A	32 (0)	24	0	0	0	0	0	0	8	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Rear**: 8x2.5" SAS/SATA (B97X)
24	32 (32)	0	0	24	0	0	8	0	0	0	0	**Front**: 3x 8xNVMe G4 (BH8D); **Mid**: 2x 4x2.5" NVMe G4 (BDY7)
25	40 (0)	24	0	0	0	8	0	0	8	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 2x 4x2.5" SAS/SATA (BCQL); **Rear**: 8x2.5" SAS/SATA (B97X)
25A	28 (0)	24	0	0	0	4	0	0	0	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 4x2.5" SAS/SATA (BCQL)
25B	32 (0)	24	0	0	0	8	0	0	0	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 2x 4x2.5" SAS/SATA (BCQL)
25C	36 (0)	24	0	0	0	8	0	0	4	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 2x 4x2.5" SAS/SATA (BCQL); **Rear**: 4x2.5" SAS/SATA (B8LV)
27	14 (0)	14	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) (14 bays max)
29A	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)
29B	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)
41	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)
47	24 (0)	24	0	0	0	0	0	0	0	0	0	24x2.5" SAS/SATA with Expander (BQ2T)
48	28 (0)	24	0	0	0	0	0	0	4	0	0	**Front**: 24x2.5" SAS/SATA with Expander (BQ2T); **Rear**: 4x2.5" SAS/SATA (B8LV)
49	28 (4)	24	0	0	0	0	0	0	0	0	4	**Front**: 24x2.5" SAS/SATA with Expander (BQ2T); **Rear**: 4x 2.5" AnyBay G5 (BSE3)
50	32 (0)	24	0	0	0	0	0	0	8	0	0	**Front**: 24x2.5" SAS/SATA with Expander (BQ2T); **Rear**: 8x2.5" SAS/SATA (B97X)
51	28 (28)	0	0	24	0	0	0	0	0	4	0	**Front**: 3x 8xNVMe G4 (BH8D); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)

Config	Total drives (NVMe)	Front			Mid			Rear				Backplanes
		SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
52	36 (36)	0	0	24	0	0	8	0	0	4	0	**Front**: 3x 8xNVMe G4 (BH8D); **Mid**: 2x 4x2.5" NVMe G4 (BDY7); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)
55	28 (4)	24	0	0	0	0	0	0	0	0	4	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Rear**: 4x 2.5" AnyBay G5 (BSE3)
60	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)
61	8 (8)	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)
62	16 (16)	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)
63	16 (16)	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)
64	16 (8)	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)
65	16 (8)	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)
67	24 (8)	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)
68	24 (8)	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)
69	24 (16)	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G5 (BS7Y)
70	24 (24)	0	0	24	0	0	0	0	0	0	0	3x 8x2.5" NVMe G5 (BS7Y)
71	24 (24)	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 2x 8x2.5" NVMe G5 (BS7Y)
72	28 (8)	16	8	0	0	0	0	0	4	0	0	**Front**: 2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2); **Rear**: 4x2.5" SAS/SATA (B8LV)
75A	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
75B	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
82A	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)
82B	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)
83A	8 (8)	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)
83B	8 (8)	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)
84A	16 (8)	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)
84B	16 (8)	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)
85A	16 (8)	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)
85B	16 (8)	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)
86A	24 (8)	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)
86B	24 (8)	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)
87A	24 (8)	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)
87B	24 (8)	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)
88	12 (12)	0	0	12	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)
89A	16 (16)	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)
89B	16 (16)	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)

Config	Total drives (NVMe)	Front			Mid			Rear				Backplanes
		SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
89C	16 (16)	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)
90A	16 (16)	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)
90B	16 (16)	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)
90C	16 (16)	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)
91A	24 (16)	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G5 (BS7Y)
91B	24 (16)	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G5 (BS7Y)
92	16 (12)	4	12	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
93A	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
93B	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
93C	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
93D	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
94A	24 (24)	0	0	24	0	0	0	0	0	0	0	3x 8x2.5" NVMe G5 (BS7Y)
94B	24 (24)	0	0	24	0	0	0	0	0	0	0	3x 8x2.5" NVMe G5 (BS7Y)
95A	24 (24)	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 2x 8x2.5" NVMe G5 (BS7Y)
95B	24 (24)	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 2x 8x2.5" NVMe G5 (BS7Y)
96	28 (8)	16	8	0	0	0	0	0	4	0	0	**Front**: 2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2); **Rear**: 4x2.5" SAS/SATA (B8LV)
98	28 (28)	0	0	24	0	0	0	0	0	4	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)
98	28 (28)	0	0	24	0	0	0	0	0	4	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)
103	32 (32)	0	0	24	0	0	8	0	0	0	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Mid**: 2x 4x2.5" NVMe G5 (BS81)
104	36 (36)	0	0	24	0	0	8	0	0	4	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Mid**: 2x 4x2.5" NVMe G5 (BS81); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)
105	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)
106	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)
107	24 (16)	8	16	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" AnyBay G5 (BLL2)
108	24 (24)	0	24	0	0	0	0	0	0	0	0	3x 8x2.5" AnyBay G5 (BLL2)

Overview - 2.5-inch front drives supporting 12 PCIe slots (front & rear)

The following table summarizes the configurations that use 2.5-inch front drives supporting 12 PCIe slots (front & rear). Such a configuration supports up to 16x 2.5-inch drive bays + PCIe slots at the front of the server.

Click to jump down to the details of the 2.5-inch front drive configurations.

Return to Storage configurations.

Field upgrades: For part number upgrades, see the Drive bay field upgrades - 2.5-inch chassis with front slots section.

Table 31. Overview - 2.5-inch front drives supporting 12 PCIe slots (front & rear)

Config	Total drives (NVMe)	Front			Mid			Rear				Backplanes
		SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
31	8 (0)	8	0	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU)
32	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)
33	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)
34	8 (8)	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G4 (BH8D)
35	16 (0)	16	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU)
36	16 (8)	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B)
37	16 (8)	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G4 (BH8D)
38	16 (16)	0	0	16	0	0	0	0	0	0	0	2x 8xNVMe G4 (BH8D)
39	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)
40	14 (0)	14	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) (14 bays max)
100	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)
101	8 (8)	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)
102	16 (16)	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)
109	8 (8)	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)
110	16 (16)	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)

Details - 3.5-inch front bays

The following table details the configurations that use 3.5-inch front drive bays.

Click to go to the overview of the 3.5-inch front drive configurations.

Return to Storage configurations.

In the table:

- **M.2 + VROC (SATA)** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with SATA drives. RAID is optional, provided using VROC.
- **M.2 + VROC (NVMe)** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with NVMe drives. RAID is optional, provided using VROC.
- **M.2 + RAID adapter** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with either a RAID 5350-8i adapter (supporting SATA drives) or a RAID 540-8i (supporting NVMe drives). Adapter installs in a rear PCIe slot.
- **M.2 Integrated RAID** means the M.2 RAID NVMe adapter (B8P9) with a Marvell controller or the M.2 RAID B540i-2i SATA/NVMe Adapter with a Broadcom controller. RAID-0 and RAID-1 are supported.
- **7mm + VROC (SATA)** means the 7mm SATA/NVMe kit (BU0N) with SATA drives. RAID is optional, provided using VROC.
- **7mm + VROC (NVMe)** means the 7mm SATA/NVMe kit (BU0N) with NVMe drives. RAID is optional, provided using VROC.
- **7mm + RAID adapter** means the 7mm SATA/NVMe kit (BU0N) with either a RAID 5350-8i adapter (supporting SATA drives) or a RAID 540-8i (supporting NVMe drives). Adapter installs in a rear PCIe slot.
- **7mm Integrated RAID** means the 7mm NVMe RAID kit (B8P3) with a Marvell controller or the 7mm SATA/NVMe RAID kit (BYFG) with a Broadcom controller. RAID-0 and RAID-1 are supported.

Tip: M.2 and 7mm are mutually exclusive: they are not supported together in the same configuration

Table 32. Details - 3.5-inch front bays

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
1-1	1 or 2	8	0	0	0	0	0	0	0	0	0	8x3.5" SAS/SATA (B8LP)	Y	Y	Y	Y	Y	Y	Y	Y	OB SATA
1-3	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i)
7A-1	1 or 2	8	4	0	0	0	0	0	0	0	0	1x 8x3.5" SAS/SATA + 4x3.5" AnyBay G4 (BPL8)	Y	N	Y	Y	Y	N	Y	Y	OB SATA + OB NVMe
7A-3	1 or 2												Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
7B-1	1 or 2	8	0	4	0	0	0	0	0	0	0	1x 8x3.5" SAS/SATA + 4x3.5" NVMe G4 (BPL9)	Y	N	Y	Y	Y	N	Y	Y	OB SATA + OB NVMe
7B-3	1 or 2												Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
8A-2	1 or 2	8	4	0	0	0	0	4	0	0	0	**Front**: 1x 8x3.5" SAS/SATA + 4x3.5" AnyBay G4 (BPL8); **Rear**: 4x3.5" SAS/SATA (B8L3)	Y	Y*	Y*	Y	N	Y*	N	N	(940-16i or 540-16i or 440-16i) + OB NVMe
8B-2	1 or 2	8	0	4	0	0	0	4	0	0	0	**Front**: 1x 8x3.5" SAS/SATA + 4x3.5" NVMe G4 (BPL9); **Rear**: 4x3.5" SAS/SATA (B8L3)	Y	Y*	Y*	Y	N	Y*	N	N	(940-16i or 540-16i or 440-16i) + OB NVMe
42-2	1 or 2	12	0	0	0	0	0	0	0	0	0	12x3.5" SAS/SATA with Expander (BQ2S)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i)
43-2	1 or 2	12	0	0	0	0	0	4	0	0	0	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Rear**: 4x3.5" SAS/SATA (B8L3)	Y	Y	Y	Y	N	N	N	N	(940-8i or 540-8i)
44-2	2 only	12	0	0	0	0	0	0	0	0	4	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Rear**: 4x 2.5" AnyBay G5 (BSE3)	Y	Y	Y	Y	N	N	N	N	**Front**: (940-8i or 540-8i); **Rear**: OB NVMe
45-2	1 or 2	12	0	0	0	0	0	2	0	0	0	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Rear**: 2x3.5" SAS/SATA (BAG7)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i)
46-2	1 or 2	12	0	0	4	0	0	4	0	0	0	**Front**: 12x3.5" SAS/SATA with Expander (BQ2S); **Mid**: 4x3.5" SAS/SATA (BCQK); **Rear**: 4x3.5" SAS/SATA (B8L3)	N	N	N	Y	N	N	N	N	(940-16i or 540-16i)

* For M.2 or 7mm: Requires 2 processors; 1P not supported

Details - 2.5-inch front bays supporting rear slots (no front PCIe slots)

The following table details the configurations that use 2.5-inch front bays supporting rear slots (no front PCIe

slots).

Click to go to the overview of the 2.5-inch front drive configurations.

Return to Storage configurations.

In the table:

- **M.2 + VROC (SATA)** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with SATA drives. RAID is optional, provided using VROC.
- **M.2 + VROC (NVMe)** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with NVMe drives. RAID is optional, provided using VROC.
- **M.2 + RAID adapter** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with either a RAID 5350-8i adapter (supporting SATA drives) or a RAID 540-8i (supporting NVMe drives)
- **M.2 Integrated RAID** means the M.2 RAID NVMe adapter (B8P9) with a Marvell controller or the M.2 RAID B540i-2i SATA/NVMe Adapter with a Broadcom controller. RAID-0 and RAID-1 are supported.
- **7mm + VROC (SATA)** means the 7mm SATA/NVMe kit (BU0N) with SATA drives. RAID is optional, provided using VROC.
- **7mm + VROC (NVMe)** means the 7mm SATA/NVMe kit (BU0N) with NVMe drives. RAID is optional, provided using VROC.
- **7mm + RAID adapter** means the 7mm SATA/NVMe kit (BU0N) with either a RAID 5350-8i adapter (supporting SATA drives) or a RAID 540-8i (supporting NVMe drives)
- **7mm Integrated RAID** means the 7mm NVMe RAID kit (B8P3) with a Marvell controller or the 7mm SATA/NVMe RAID kit (BYFG) with a Broadcom controller. RAID-0 and RAID-1 are supported.

Tip: M.2 and 7mm are mutually exclusive: they are not supported together in the same configuration

Table 33. Details - 2.5-inch front bays supporting rear slots (no front PCIe slots)

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
9-1	1 or 2	8	0	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU)	Y	Y	Y	Y	Y	Y	Y	Y	OB SATA
9-3	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i)
9-5	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i)
9-6	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF)
9-6-1	1 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF)

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
10-2	2 only	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
10-4	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
10-5	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
10-7	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
10-9	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
11-1	2 only	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G4 (BH8D)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe
11-2	1 only												Y	N	Y	Y	Y	N	Y	Y	OB NVMe
12-2	1 or 2	16	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i)
12-4	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	2x (940-8i or 540-8i or 440-8i)
12-5	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF)
12-5-1	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-16i CFF or 440-16i CFF)
12-7	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB SATA
13-2	2 only	0	8	8	0	0	0	0	0	0	0	8x2.5" NVMe G4 (BH8D) + 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
13-3	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
14A-1	2 only	0	0	16	0	0	0	0	0	0	0	2x 8xNVMe G4 (BH8D)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
14B-1	1 or 2	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)	Y	Y*	Y	Y	Y	Y*	Y	Y	940-16i Tri-mode
14B-2	1 or 2												Y	Y*	Y	Y	Y	Y*	Y	Y	2x 940-8i Tri-mode

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
15-2	2 only	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
15-4	2 only												Y	Y	Y	Y	Y	Y	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe
15-5	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
15-7	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
15-9	1 only												Y	N*	Y	Y	Y	N*	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe
16-1	2 only	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G4 (BH8D)	Y	Y	Y	Y	Y	Y	Y	Y	OB SATA + OB NVMe
16-3	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
16-3-1	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
16-4	1 only												Y	N*	Y	Y	Y	N*	Y	Y	OB SATA + OB NVMe
16-6	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
17-1	2 only	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B)	Y	N	Y	Y	Y	N	Y	Y	940-32i + OB NVMe
17-3	2 only												Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
17-5	2 only												Y	Y	N	Y	Y	Y	N	Y	3x (940-8i or 540-8i or 440-8i) + OB NVMe
17-6	1 only												Y	N	Y	Y	Y	N	Y	Y	940-32i + OB NVMe
17-8	1 only												Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
18-1	2 only	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G4 (BH8D)	Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
18-3	2 only												Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
18-5	1 only												Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
19A-2	2 only	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G4 (BH8D)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
19B-1	1 or 2	8	16	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8xAnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + 940-16i Tri-mode
20-1	1 or 2	24	0	0	0	0	0	0	0	0	0	3x 8x2.5" SAS/SATA (B8LU)	Y	Y	Y	Y	Y	Y	Y	Y	940-32i
20-2	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + 48-port Expander
20-2-1	1 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + 48-port Expander
20-4	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + 48-port Expander
20-6	1 or 2												Y	Y*	N	Y	Y	Y*	N	Y	3x (940-8i or 540-8i or 440-8i)
20-8	1 or 2												Y	Y*	Y	Y	Y	Y*	N	Y	(940-16i or 540-16i or 440-16i) + (940-8i or 540-8i or 440-8i)
21A-1	2 only	0	0	24	0	0	0	0	0	0	0	3x 8xNVMe G4 (BH8D)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe + Retimer
21B-1	1 or 2	0	24	0	0	0	0	0	0	0	0	3x 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	940-16i Tri-mode + 940-8i Tri-mode
21B-2	1 or 2												Y	Y	N	Y	Y	Y	N	Y	3x 940-8i Tri-mode
21C-2	2 only	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B) + 2x 8x2.5" NVMe G4 (BH8D)	Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
22-1	2 only	16	8	0	0	0	0	0	4	0	0	**Front**: 2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B); **Rear**: 4x2.5" SAS/SATA (B8LV)	Y	Y	Y	Y	N	N	N	N	940-32i + OB NVMe
22-3	2 only												Y	Y	Y	Y	N	N	N	N	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
22-4	2 only												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
22-6	2 only												Y	Y	N	Y	N	N	N	N	4x (940-8i or 540-8i or 440-8i) + OB NVMe
22-7	1 only												Y	N*	Y	Y	N	N	N	N	940-32i + OB NVMe
22-9	1 only												Y	N*	Y	Y	N	N	N	N	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
23-1	1 or 2	24	0	0	0	0	0	0	4	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Rear**: 4x2.5" SAS/SATA (B8LV)	Y	Y	Y	Y	N	N	N	N	940-32i
23-3	1 or 2												Y	Y	Y	Y	N	N	N	N	(940-8i or 540-8i or 440-8i) + 48-port Expander
23-5	1 or 2												Y	Y	Y	Y	N	N	N	N	(940-16i or 540-16i or 440-16i) + 48-port Expander
23-6	2 only												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + 48-port Expander
23-6-1	1 only												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + 48-port Expander

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
23A-1	1 or 2	24	0	0	0	0	0	0	8	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Rear**: 8x2.5" SAS/SATA (B97X)	Y	Y	Y	Y	Y	Y	Y	Y	940-32i
23A-3	1 or 2												Y	Y	Y	Y	Y	Y	N	Y	2x (940-16i or 540-16i or 440-16i)
23A-5	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + (940-16i or 540-16i or 440-16i)
23A-5-1	1 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + (940-16i or 540-16i or 440-16i)
23A-7	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + 48-port Expander
23A-9	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + 48-port Expander
23A-10	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + 48-port Expander
23A-10-1	1 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + 48-port Expander
24-1	2 only	0	0	24	0	0	8	0	0	0	0	**Front**: 3x 8xNVMe G4 (BH8D); **Mid**: 2x 4x2.5" NVMe G4 (BDY7)	Y	N	N	Y	Y	N	N	Y	**Front**: OB NVMe + Retimer; **Mid**: 2x Retimer
25-2	1 or 2	24	0	0	0	8	0	0	8	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 2x 4x2.5" SAS/SATA (BCQL); **Rear**: 8x2.5" SAS/SATA (B97X)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + 48-port Expander
25-3	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + 48-port Expander
25-3-1	1 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + 48-port Expander
25A-1	1 or 2	24	0	0	0	4	0	0	0	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 4x2.5" SAS/SATA (BCQL)	Y	Y	Y	Y	Y	Y	Y	Y	940-32i
25A-3	1 or 2												Y	Y	Y	Y	Y	Y	N	Y	2x (940-16i or 540-16i or 440-16i)

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
25B-1	1 or 2	24	0	0	0	8	0	0	0	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 2x 4x2.5" SAS/SATA (BCQL)	Y	Y	Y	Y	Y	Y	Y	Y	940-32i
25B-3	1 or 2												Y	Y	Y	Y	Y	Y	N	Y	2x (940-16i or 540-16i or 440-16i)
25C-1	1 or 2	24	0	0	0	8	0	0	4	0	0	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Mid**: 2x 4x2.5" SAS/SATA (BCQL); **Rear**: 4x2.5" SAS/SATA (B8LV)	Y	Y	Y	Y	N	N	N	N	**Front**: 940-32i; **Mid**: (940-8i or 540-8i or 440-8i)
25C-3	1 or 2												Y	Y	Y	Y	N	N	N	N	(940-8i or 540-8i or 440-8i) + 48-port Expander
25C-5	1 or 2												Y	Y	Y	Y	N	N	N	N	(940-16i or 540-16i or 440-16i) + 48-port Expander
25C-6	1 or 2												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + 48-port Expander
25C-6-1	1 or 2												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + 48-port Expander
27-1	1 or 2	14	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) (14 bays max)	N	Y	Y	N	N	Y	Y	N	OB SATA
29A-2	2 only	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
29B-2	2 only	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)	Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
41-1	1 or 2	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	940-8i Tri-mode
47-2	1 or 2	24	0	0	0	0	0	0	0	0	0	24x2.5" SAS/SATA with Expander (BQ2T)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i)
48-2	1 or 2	24	0	0	0	0	0	0	4	0	0	**Front**: 24x2.5" SAS/SATA with Expander (BQ2T); **Rear**: 4x2.5" SAS/SATA (B8LV)	Y	Y	Y	Y	N	N	N	N	(940-8i or 540-8i or 440-8i)
49-2	2 only	24	0	0	0	0	0	0	0	0	4	**Front**: 24x2.5" SAS/SATA with Expander (BQ2T); **Rear**: 4x 2.5" AnyBay G5 (BSE3)	Y	Y	Y	Y	N	N	N	N	**Front**: (940-8i or 540-8i or 440-8i) + OB NVMe; **Rear**: OB NVMe
50-1	1 or 2	24	0	0	0	0	0	0	8	0	0	**Front**: 24x2.5" SAS/SATA with Expander (BQ2T); **Rear**: 8x2.5" SAS/SATA (B97X)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF)
50-3	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i)

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
51-1	2 only	0	0	24	0	0	0	0	0	4	0	**Front**: 3x 8xNVMe G4 (BH8D); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)	Y	N	Y	Y	N	N	N	N	**Front**: Retimer + OB NVMe; **Rear**: Retimer
52-1	2 only	0	0	24	0	0	8	0	0	4	0	**Front**: 3x 8xNVMe G4 (BH8D); **Mid**: 2x 4x2.5" NVMe G4 (BDY7); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)	Y	N	N	Y	N	N	N	N	**Front**: Retimer + OB NVMe; **Mid**: 2x Retimer; **Rear**: Retimer
55-1	2 only	24	0	0	0	0	0	0	0	0	4	**Front**: 3x 8x2.5" SAS/SATA (B8LU); **Rear**: 4x 2.5" AnyBay G5 (BSE3)	Y	Y	Y	Y	N	N	N	N	940-32i + OB NVMe
55-3	2 only												Y	Y	Y	Y	N	N	N	N	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
55-5	2 only												Y	Y	Y	Y	N	N	N	N	(940-16i or 540-16i or 440-16i) + OB NVMe + 48-port Expander
55-6	2 only												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
55-6-1	1 only												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
60-2	2 only (NP)†	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
60-4	2 only (NP)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
60-5	2 only (NP)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
60-7	1 only (NP)†												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
60-9	1 only (NP)†												Y	N*	Y	Y	Y	N*	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
61-1	2 only	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
61-A	2 only												Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
61-2	1 only												Y	N*	Y	Y	Y	N*	Y	Y	OB NVMe

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
62-2	2 only	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
62-3	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
63-1	2 only	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
64-2	2 only	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe + 1x Retimer
64-4	2 only												Y	Y	Y	Y	Y	Y	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer
64-5	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe + 1x Retimer
64-7	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe + 1x Retimer
64-9	1 only												Y	N*	Y	Y	Y	N*	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer
65-1	1 or 2	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y*	Y	Y	Y	Y*	Y	Y	OB SATA + OB NVMe
65-3	1 or 2												Y	Y*	Y	Y	Y	Y*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
65-4	1 or 2												Y	Y*	Y	Y	Y	Y*	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
65-5	1 or 2												Y	Y*	Y	Y	Y	Y*	Y	Y	OB SATA + OB NVMe
65-7	1 or 2												Y	Y*	Y	Y	Y	Y*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
67-1	2 only	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	940-32i + OB NVMe
67-3	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
67-4	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
67-5	2 only												Y	Y	N	Y	Y	Y	N	Y	3x (940-8i or 540-8i or 440-8i) + OB NVMe
67-6	1 only												Y	N*	Y	Y	Y	N*	Y	Y	940-32i + OB NVMe
67-8	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
68-2	2 only	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
68-4	2 only												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
68-6	1 only												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
69-2	2 only	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
70-1	2 only (NP)†	0	0	24	0	0	0	0	0	0	0	3x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe + Retimer
71-2	2 only	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 2x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	N	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
72-1	1 or 2	16	8	0	0	0	0	0	4	0	0	**Front**: 2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2); **Rear**: 4x2.5" SAS/SATA (B8LV)	Y	Y*	Y	Y	N	N	N	N	940-32i + OB NVMe
72-3	1 or 2														Y				N		(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
72-4	1 or 2												Y	Y*	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
72-6	1 or 2												Y	Y*	N	Y	N	N	N	N	4x (940-8i or 540-8i or 440-8i) + OB NVMe
72-7	1 or 2												Y	Y*	Y	Y	N	N	N	N	940-32i + OB NVMe
72-9	1 or 2														Y				N		(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
75A-2	2 only (NP)†	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
75B-2	2 only (NP)†	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
82A-2	2 only (PO)†	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
82A-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
82A-5	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
82A-7	1 only (PO)†												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
82A-9	1 only (PO)†												Y	N*	Y	Y	Y	N*	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
82B-2	2 only (PO)†	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
82B-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
82B-5	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
83A-1	2 only (PO)†	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
83A-2	1 only (PO)†												Y	N*	Y	Y	Y	N*	Y	Y	OB NVMe
83B-1	2 only (PO)†	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
84A-2	2 only (PO)†	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
84A-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe
84A-5	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
84A-7	1 only (PO)†												Y	N*	Y	Y	Y	N*	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe + 1x Retimer
84A-9	1 only (PO)†												Y	N*	Y	Y	Y	N*	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer
84B-2	2 only (PO)†	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe + 1x Retimer
84B-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer
84B-5	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe + 1x Retimer
85A-1	2 only (PO)†	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB SATA + OB NVMe
85A-3	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
85A-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
85A-5	1 or 2 (PO)†												Y	Y*	Y	Y	Y	Y*	Y	Y	OB SATA + OB NVMe
85A-7	1 or 2 (PO)†												Y	Y*	Y	Y	Y	Y*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
85B-1	2 only (PO)†	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB SATA + OB NVMe
85B-3	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
85B-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
86A-1	2 only (PO)†	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	940-32i + OB NVMe
86A-3	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
86A-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
86A-5	2 only (PO)†												Y	Y	N	Y	Y	Y	N	Y	3x (940-8i or 540-8i or 440-8i) + OB NVMe
86A-6	1 only (PO)†												Y	N*	Y	Y	Y	N*	Y	Y	940-32i + OB NVMe
86A-8	1 only (PO)†												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
86B-1	2 only (PO)†	16	8	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	940-32i + OB NVMe
86B-3	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
86B-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
86B-5	2 only (PO)†												Y	Y	N	Y	Y	Y	N	Y	3x (940-8i or 540-8i or 440-8i) + OB NVMe

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
87A-2	2 only (PO)†	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	N	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
87A-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
87A-6	1 only (PO)†												Y	N*	Y	Y	Y	N*	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
87B-2	2 only (PO)†	16	0	8	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
87B-4	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
88-1	2 only (PO)†	0	0	12	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
89A-1	2 only (PO)†	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe
89B-1	2 only (PO)†	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe
89C-1	2 only (PO)†	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	OB NVMe + 1x Retimer
90A-2	2 only (PO)†	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
90A-3	2 only (PO)†												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i CFF or 440-16i CFF) + OB NVMe
90B-2	2 only (PO)†	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
90C-2	2 only (PO)†	0	8	8	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 1x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer
91A-2	2 only (PO)†	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
91B-2	2 only (PO)†	8	0	16	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer
92-2	2 only (PO)†	4	12	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
93A-2	2 only (PO)†	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
93B-2	2 only (PO)†	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
93C-2	2 only (PO)†	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe + 1x Retimer
93D-2	2 only (PO)†	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe + 1x Retimer
94A-1	2 only (PO)†	0	0	24	0	0	0	0	0	0	0	3x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe + 1x Retimer
94B-1	2 only (PO)†	0	0	24	0	0	0	0	0	0	0	3x 8x2.5" NVMe G5 (BS7Y)	Y	Y	N	Y	Y	Y	N	Y	OB NVMe + 2x Retimer
95A-2	2 only (PO)†	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 2x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	N	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 1x Retimer
95B-2	2 only (PO)†	0	8	16	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2) + 2x 8x2.5" NVMe G5 (BS7Y)	Y	Y	N	Y	Y	Y	N	Y	(940-8i or 540-8i or 440-8i) + OB NVMe + 2x Retimer
96-1	2 only (PO)†	16	8	0	0	0	0	0	4	0	0	**Front**: 2x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G5 (BLL2); **Rear**: 4x2.5" SAS/SATA (B8LV)	Y	Y	Y	Y	N	N	N	N	940-32i + OB NVMe
96-3	2 only (PO)†												Y	Y	Y	Y	N	N	N	N	(940-8i or 540-8i or 440-8i) + OB NVMe + 48-port Expander
96-4	2 only (PO)†												Y	Y	Y	Y	N	N	N	N	(940-16i CFF or 440-16i CFF) + OB NVMe + 48-port Expander
96-6	2 only (PO)†												Y	Y	N	Y	N	N	N	N	4x (940-8i or 540-8i or 440-8i) + OB NVMe
98-1	2 only (PO)†	0	0	24	0	0	0	0	0	4	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)	Y	Y	Y	Y	Y	Y	N	Y	OB NVMe + 3x Retimer
98-2	2 only (NP)†	0	0	24	0	0	0	0	0	4	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)	Y	N	Y	Y	Y	N	N	Y	OB NVMe + 2x Retimer

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
103-1	2 only	0	0	24	0	0	8	0	0	0	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Mid**: 2x 4x2.5" NVMe G5 (BS81)	Y	N	N	Y	Y	N	N	Y	**Front**: OB NVMe + Retimer; **Mid**: 2x Retimer
104-1	2 only	0	0	24	0	0	8	0	0	4	0	**Front**: 3x 8x2.5" NVMe G5 (BS7Y); **Mid**: 2x 4x2.5" NVMe G5 (BS81); **Rear**: 1x 4x2.5" NVMe G5 (BQZM)	Y	N	N	Y	Y	N	N	Y	**Front**: OB NVMe + Retimer; **Mid**: 2x Retimer; **Rear**: Retimer
105-1	1 or 2	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	940-8i Tri-mode
106-1	1 or 2	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	Y*	Y	Y	Y	Y*	Y	Y	940-16i Tri-mode
106-2	1 or 2												Y	Y*	Y	Y	Y	Y*	Y	Y	2x 940-8i Tri-mode
107-1	1 or 2	8	16	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 2x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + 940-16i Tri-mode
108-1	1 or 2	0	24	0	0	0	0	0	0	0	0	3x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	940-16i Tri-mode + 940-8i Tri-mode
108-2	1 or 2												Y	Y	N	Y	Y	Y	N	Y	3x 940-8i Tri-mode

* For M.2 or 7mm: Requires 2 processors; 1P not supported
† NP (No Platinum) means the configuration does not support Platinum processors — only Bronze, Silver and Gold are supported. PO (Platinum Only) means the configuration only supports Platinum processors.

Details - 2.5-inch front drives supporting 12 PCIe slots (front & rear)

The following table details the configurations that use 2.5-inch front drives supporting 12 PCIe slots (front & rear). Such a configuration supports up to 16x 2.5-inch drive bays + PCIe slots at the front of the server.

Click to go to the overview of the 2.5-inch front drive configurations.

Return to Storage configurations.

In the table:

- **M.2 + VROC (SATA)** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with SATA drives. RAID is optional, provided using VROC.
- **M.2 + VROC (NVMe)** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with NVMe drives. RAID is optional, provided using VROC.
- **M.2 + RAID adapter** means the M.2 SATA/x4 NVMe adapter (4Y37A79663) with either a RAID 5350-8i adapter (supporting SATA drives) or a RAID 540-8i (supporting NVMe drives)
- **M.2 Integrated RAID** means the M.2 RAID NVMe adapter (B8P9) with a Marvell controller or the M.2 RAID B540i-2i SATA/NVMe Adapter with a Broadcom controller. RAID-0 and RAID-1 are supported.
- **7mm + VROC (SATA)** means the 7mm SATA/NVMe kit (BU0N) with SATA drives. RAID is optional, provided using VROC.

- **7mm + VROC (NVMe)** means the 7mm SATA/NVMe kit (BU0N) with NVMe drives. RAID is optional, provided using VROC.
- **7mm + RAID adapter** means the 7mm SATA/NVMe kit (BU0N) with either a RAID 5350-8i adapter (supporting SATA drives) or a RAID 540-8i (supporting NVMe drives)
- **7mm Integrated RAID** means the 7mm NVMe RAID kit (B8P3) with a Marvell controller or the 7mm SATA/NVMe RAID kit (BYFG) with a Broadcom controller. RAID-0 and RAID-1 are supported.

Tip: M.2 and 7mm are mutually exclusive: they are not supported together in the same configuration

Table 34. Details - 2.5-inch front drives supporting 12 PCIe slots (front & rear)

		Front			Mid			Rear					M.2				7mm				
Config	CPUs	SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay	Backplanes	M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	Supported controllers
31-1	1 or 2	8	0	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU)	Y	Y	Y	Y	Y	Y	Y	Y	OB SATA + OB NVMe
31-3	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
31-5	1 or 2												Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
32-2	2 only	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)	Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
32-4	2 only												Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
33-1	1 or 2	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	940-8i Tri-mode
34-1	2 only	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G4 (BH8D)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe
35-2	1 or 2	16	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU)	Y	Y	Y	Y	Y	Y	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
35-4	1 or 2												Y	Y	Y	Y	Y	Y	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe
36-2	2 only	8	8	0	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" AnyBay G4 (BH8B)	Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
36-4	2 only												Y	N	Y	Y	Y	N	N	Y	2x (940-8i or 540-8i or 440-8i) + OB NVMe
37-1	2 only	8	0	8	0	0	0	0	0	0	0	1x 8x2.5" SAS/SATA (B8LU) + 1x 8x2.5" NVMe G4 (BH8D)	Y	N	Y	Y	Y	N	Y	Y	OB SATA + OB NVMe
37-3	2 only												Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
38-1	2 only	0	0	16	0	0	0	0	0	0	0	2x 8xNVMe G4 (BH8D)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe + 2x Retimer
39-1	1 or 2	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G4 (BH8B)	Y	Y	Y	Y	Y	Y	Y	Y	940-16i Tri-mode
39-2	1 or 2												Y	Y	Y	Y	Y	Y	N	Y	2x 940-8i Tri-mode
40-1	1 or 2	14	0	0	0	0	0	0	0	0	0	2x 8x2.5" SAS/SATA (B8LU) (14 bays max)	N	Y	Y	N	N	Y	Y	N	OB SATA + OB NVMe

Config	CPUs	Front			Mid			Rear				Backplanes	M.2				7mm				Supported controllers
		SAS/SATA	AnyBay	NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	3.5" SAS/SATA	2.5" SAS/SATA	2.5" NVMe	2.5" AnyBay		M.2 + VROC (SATA)	M.2 + VROC (NVMe)	M.2 + RAID adapter	M.2 Integrated RAID	7mm + VROC (SATA)	7mm + VROC (NVMe)	7mm + RAID adapter	7mm Integrated RAID	
100-2	2 only	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)	Y	N	Y	Y	Y	N	Y	Y	(940-8i or 540-8i or 440-8i) + OB NVMe
100-4	2 only												Y	N	Y	Y	Y	N	Y	Y	(940-16i or 540-16i or 440-16i) + OB NVMe
101-1	2 only	0	0	8	0	0	0	0	0	0	0	1x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe
102-1	2 only	0	0	16	0	0	0	0	0	0	0	2x 8x2.5" NVMe G5 (BS7Y)	Y	N	Y	Y	Y	N	Y	Y	OB NVMe + 2x Retimer
109-1	1 or 2	0	8	0	0	0	0	0	0	0	0	1x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	940-8i Tri-mode
110-1	1 or 2	0	16	0	0	0	0	0	0	0	0	2x 8x2.5" AnyBay G5 (BLL2)	Y	Y	Y	Y	Y	Y	Y	Y	940-16i Tri-mode
110-2	1 or 2												Y	Y	Y	Y	Y	Y	N	Y	2x 940-8i Tri-mode

* For M.2 or 7mm: Requires 2 processors; 1P not supported

Field upgrades

The SR650 V3 is orderable without drive bays, allowing you to add a backplane, cabling and controllers as field upgrades. The server also supports upgrading some configurations by adding additional front drive bays (for example, upgrading from 8 to 16x 2.5-inch drive bays).

Upgrade path: The key criteria for upgrade support is to ensure that the target configuration is one of the supported drive bay configurations as listed in the Storage configurations section.

For example, if you are upgrading a 2.5-inch SAS/SATA drive configuration from 8 bays (Config 9) to 16 bays (Config 12), you will need these additional options:

- 4XH7A60930, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit
- 4X97A82935, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit

To add drive bays you will need to order both drive backplanes and cable kits. Backplane kits do not include cables.

In this section:

- Drive bay field upgrades - 3.5-inch chassis
- Drive bay field upgrades - 2.5-inch chassis with SAS/SATA and Gen4 front bays
- Drive bay field upgrades - 2.5-inch chassis with Gen5 front bays
- Drive bay field upgrades - 2.5-inch chassis with front slots
- Upgrading to an internal (CFF) adapter
- 2.5-inch drive bay fillers

Drive bay field upgrades - 3.5-inch chassis

The table below lists the backplane kits and cable kits needed to build one of the supported 3.5-inch chassis configurations.

The Config numbers listed here match the configuration listed in the Storage configuration Overview and Details sections.

Return to Field upgrades.

For more information about the backplane kits and cable kits, see the Lenovo server options site: https://serveroption.lenovo.com/cable_kit_options/

Table 35. Drive bay field upgrade for the 3.5-inch chassis (Blue = SAS/SATA, Purple = AnyBay, Red = NVMe)

Config	3.5" front bays			Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
1	8	0	0	0	0	0	0	0	0	0	• **4XH7A60932**, ThinkSystem V2/V3 2U 8x3.5" SAS/SATA Backplane Option Kit • **4X97A87506**, ThinkSystem SR650 V3 8x3.5" Chassis Front Backplane SAS/SATA Cable Kit
2	12	0	0	0	0	0	0	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit
3	12	0	0	0	0	0	2	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A60940**, ThinkSystem V2/V3 2U 2x3.5" SAS/SATA Rear Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82930**, ThinkSystem SR650 V3 3.5" Chassis Rear Backplane SAS/SATA Cable Kit
4	12	0	0	0	0	0	4	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A60939**, ThinkSystem V2/V3 2U Rear 4x3.5" SAS/SATA Rear Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82930**, ThinkSystem SR650 V3 3.5" Chassis Rear Backplane SAS/SATA Cable Kit
6	12	0	0	4	0	0	4	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A82916**, ThinkSystem SR650 V3 Middle 4x3.5" SAS/SATA Backplane Option Kit • **4XH7A60939**, ThinkSystem V2/V3 2U Rear 4x3.5" SAS/SATA Rear Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82931**, ThinkSystem SR650 V3 3.5" Chassis Middle Backplane SAS/SATA Cable Kit • **4X97A82930**, ThinkSystem SR650 V3 3.5" Chassis Rear Backplane SAS/SATA Cable Kit
5	12	0	0	0	0	0	0	4	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A60938**, ThinkSystem V3 2U 4x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit

Config	3.5" front bays			Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
54	12	0	0	0	0	0	0	0	0	4	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A87545**, ThinkSystem 2U V3 Rear 4x2.5" Gen5 NVMe Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit • **4X97A87062**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane NVMe Cable Kit
6A	12	0	0	4	0	0	0	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A82916**, ThinkSystem SR650 V3 Middle 4x3.5" SAS/SATA Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82931**, ThinkSystem SR650 V3 3.5" Chassis Middle Backplane SAS/SATA Cable Kit
6B	12	0	0	0	4	0	0	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A87509**, ThinkSystem SR650 V3 Middle 4x2.5" SAS/SATA Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82939**, ThinkSystem SR650 V3 2.5" Chassis Middle Backplane SAS/SATA Cable Kit
26	12	0	0	0	0	8	0	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A82915**, ThinkSystem SR650 V3 Middle 8x2.5" NVMe Backplane Option Kit • **4X97A59804**, ThinkSystem SR650 V2 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A82940**, ThinkSystem SR650 V3 2.5" Chassis Middle Backplane NVMe Cable Kit
7B	8	0	4	0	0	0	0	0	0	0	• **4XH7A87508**, ThinkSystem V3 2U 8xSAS/SATA+4xNVMe 3.5" Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A87504**, ThinkSystem SR650 V3 4x3.5" Chassis Front Backplane NVMe Cable Kit
8B	8	0	4	0	0	0	4	0	0	0	• **4XH7A87508**, ThinkSystem V3 2U 8xSAS/SATA+4xNVMe 3.5" Backplane Option Kit • **4XH7A60939**, ThinkSystem V2/V3 2U Rear 4x3.5" SAS/SATA Rear Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A87504**, ThinkSystem SR650 V3 4x3.5" Chassis Front Backplane NVMe Cable Kit • **4X97A59806**, ThinkSystem SR650 V2 3.5" Chassis Rear Backplane SAS/SATA Cable Kit
7A	8	4	0	0	0	0	0	0	0	0	• **4XH7A87507**, ThinkSystem V3 2U 8xSAS/SATA+4xAnyBay 3.5" Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A87504**, ThinkSystem SR650 V3 4x3.5" Chassis Front Backplane NVMe Cable Kit

Config	3.5" front bays			Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
8A	8	4	0	0	0	0	4	0	0	0	• **4XH7A87507**, ThinkSystem V3 2U 8xSAS/SATA+4xAnyBay 3.5" Backplane Option Kit • **4XH7A60939**, ThinkSystem V2/V3 2U Rear 4x3.5" SAS/SATA Rear Backplane Option Kit • **4X97A82928**, ThinkSystem SR650 V3 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A87504**, ThinkSystem SR650 V3 4x3.5" Chassis Front Backplane NVMe Cable Kit • **4X97A59806**, ThinkSystem SR650 V2 3.5" Chassis Rear Backplane SAS/SATA Cable Kit
42	12-EXP	0	0	0	0	0	0	0	0	0	• **4XH7A86133**, ThinkSystem SR665 V3/SR655 V3 12x3.5" Expander Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit
43	12-EXP	0	0	0	0	0	4	0	0	0	• **4XH7A86133**, ThinkSystem SR665 V3/SR655 V3 12x3.5" Expander Backplane Option Kit • **4XH7A60939**, ThinkSystem V2/V3 2U Rear 4x3.5" SAS/SATA Rear Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit • **4X97A82930**, ThinkSystem SR650 V3 3.5" Chassis Rear Backplane SAS/SATA Cable Kit
44	12-EXP	0	0	0	0	0	0	0	0	4	• **4XH7A86133**, ThinkSystem SR665 V3/SR655 V3 12x3.5" Expander Backplane Option Kit • **4XH7A87545**, ThinkSystem 2U V3 Rear 4x2.5" Gen5 NVMe Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit • **4X97A87062**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane NVMe Cable Kit
45	12-EXP	0	0	0	0	0	2	0	0	0	• **4XH7A86133**, ThinkSystem SR665 V3/SR655 V3 12x3.5" Expander Backplane Option Kit • **4XH7A82918**, ThinkSystem V3 2U Rear 4x3.5" SAS/SATA Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit • **4X97A82930**, ThinkSystem SR650 V3 3.5" Chassis Rear Backplane SAS/SATA Cable Kit
46	12-EXP	0	0	4	0	0	4	0	0	0	• **4XH7A86133**, ThinkSystem SR665 V3/SR655 V3 12x3.5" Expander Backplane Option Kit • **4XH7A82916**, ThinkSystem SR650 V3 Middle 4x3.5" SAS/SATA Backplane Option Kit • **4XH7A60939**, ThinkSystem V2/V3 2U Rear 4x3.5" SAS/SATA Rear Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit • **4X97A82931**, ThinkSystem SR650 V3 3.5" Chassis Middle Backplane SAS/SATA Cable Kit • **4X97A82930**, ThinkSystem SR650 V3 3.5" Chassis Rear Backplane SAS/SATA Cable Kit

Drive bay field upgrades - 2.5-inch chassis with SAS/SATA and Gen4 front bays

The tables below lists the backplane kits and cable kits needed to build one of the supported 2.5-inch chassis configurations with either SAS/SATA or Gen4 front backplanes.

The Config numbers listed here match the configuration listed in the Storage configuration Overview and Details sections.

Return to Field upgrades.

Note: Front drive cable kits are based on the location of the backplane in the server. The three backplane locations are BP1, BP2 and BP3 as shown in the following figure.

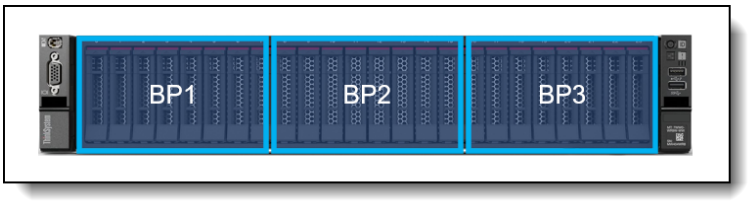


Figure 15. Backplane numbering

For more information about the backplane kits and cable kits, see the Lenovo server options site: https://serveroption.lenovo.com/cable_kit_options/

Table 36. Drive bay field upgrade for the 2.5-inch chassis (SAS/SATA and Gen4 NVMe/AnyBay) (Blue = SAS/SATA, Purple = AnyBay, Red = NVMe)

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
9	8	0	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit
10	0	8	0	0	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit
11	0	0	8	0	0	0	0	0	0	0	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit
41	0	0	0	8	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit
27	14	0	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
12	16	0	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit
29A/B	0	16	0	0	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82934**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 NVMe Cable Kit
14A	0	0	16	0	0	0	0	0	0	0	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit • **4X97A82934**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 NVMe Cable Kit
14B	0	0	0	16	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit
13	0	8	8	0	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit • **4X97A82934**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 NVMe Cable Kit
15	8	8	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82934**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
16	8	0	8	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82934**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 NVMe Cable Kit
19-1/2	8	0	16	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82934**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 NVMe Cable Kit • **4X97A82936**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 NVMe Cable Kit
19-3	8	0	0	16	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit
18	16	0	8	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82936**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 NVMe Cable Kit
17	16	8	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82936**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
22	16	8	0	0	0	0	0	0	4	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60934**, ThinkSystem SR665 8x2.5" AnyBay Backplane Option Kit • **4XH7A60938**, ThinkSystem V3 2U 4x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82936**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 NVMe Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit
20	24	0	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit
21A	0	8	16	0	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit • **4X97A82934**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 NVMe Cable Kit • **4X97A82936**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 NVMe Cable Kit
21-2/3	0	0	0	24	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
23	24	0	0	0	0	0	0	0	4	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60938**, ThinkSystem V3 2U 4x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit
23A	24	0	0	0	0	0	0	0	8	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60941**, ThinkSystem V2/V3 2U 8x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit
25	24	0	0	0	0	8	0	0	8	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A82914**, ThinkSystem SR650 V3 Middle 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60941**, ThinkSystem V2/V3 2U 8x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82939**, ThinkSystem SR650 V3 2.5" Chassis Middle Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit
21-1	0	0	24	0	0	0	0	0	0	0	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82942**, ThinkSystem SR650 V3 24x2.5" NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
24	0	0	24	0	0	0	8	0	0	0	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A82915**, ThinkSystem SR650 V3 Middle 8x2.5" NVMe Backplane Option Kit • **4X97A82943**, ThinkSystem SR650 V3 32x2.5" NVMe Cable Kit
‘25C	24	0	0	0	0	8	0	0	4	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A82914**, ThinkSystem SR650 V3 Middle 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60938**, ThinkSystem V3 2U 4x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82939**, ThinkSystem SR650 V3 2.5" Chassis Middle Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit
25A	24	0	0	0	0	4	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A87509**, ThinkSystem SR650 V3 Middle 4x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82939**, ThinkSystem SR650 V3 2.5" Chassis Middle Backplane SAS/SATA Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
25B	24	0	0	0	0	8	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A82914**, ThinkSystem SR650 V3 Middle 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A82939**, ThinkSystem SR650 V3 2.5" Chassis Middle Backplane SAS/SATA Cable Kit
47	24-EXP	0	0	0	0	0	0	0	0	0	0	• **4XH7A86134**, ThinkSystem SR665 V3/SR655 V3 24x2.5" Expander Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit
48	24-EXP	0	0	0	0	0	0	0	4	0	0	• **4XH7A86134**, ThinkSystem SR665 V3/SR655 V3 24x2.5" Expander Backplane Option Kit • **4XH7A60938**, ThinkSystem V3 2U 4x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit
49	24-EXP	0	0	0	0	0	0	0	0	0	4	• **4XH7A86134**, ThinkSystem SR665 V3/SR655 V3 24x2.5" Expander Backplane Option Kit • **4XH7A87545**, ThinkSystem 2U V3 Rear 4x2.5" Gen5 NVMe Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit • **4X97A87062**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane NVMe Cable Kit
50	24-EXP	0	0	0	0	0	0	0	8	0	0	• **4XH7A86134**, ThinkSystem SR665 V3/SR655 V3 24x2.5" Expander Backplane Option Kit • **4XH7A60941**, ThinkSystem V2/V3 2U 8x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A87505**, ThinkSystem SR650 V3 3.5"/2.5" Chassis Front Expander Backplane SAS/SATA Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
51	0	0	24	0	0	0	0	0	0	4	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A86661**, ThinkSystem 1U 4x2.5" AnyBay Backplane • **4X97A82942**, ThinkSystem SR650 V3 24x2.5" NVMe Cable Kit • **4X97A90339**, ThinkSystem SR650 V3 2.5" Chassis Middle Backplane Gen5 NVMe Cable Kit
52	0	0	24	0	0	0	8	0	0	4	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A82915**, ThinkSystem SR650 V3 Middle 8x2.5" NVMe Backplane Option Kit • **4XH7A87545**, ThinkSystem 2U V3 Rear 4x2.5" Gen5 NVMe Backplane Option Kit • **4X97A90336**, ThinkSystem SR650 V3 36x2.5" Gen4 NVMe Cable Kit

Drive bay field upgrades - 2.5-inch chassis with Gen5 front bays

The tables below lists the backplane kits and cable kits needed to build one of the supported 2.5-inch chassis configurations with Gen5 NVMe or AnyBay front backplanes.

The Config numbers listed here match the configuration listed in the Storage configuration Overview and Details sections.

Return to Field upgrades.

Table 37. Drive bay field upgrades for the 2.5-inch chassis (Gen5 NVMe/AnyBay) (Blue = SAS/SATA, Purple = AnyBay, Red = NVMe)

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
60, 82A/B	0	8	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit
61, 83A/B	0	0	8	0	0	0	0	0	0	0	0	• **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
75A/B, 93A/B/C/D	0	16	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit
63, 89A/B/C	0	0	16	0	0	0	0	0	0	0	0	• **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit
62, 90A/B/C	0	8	8	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit
64, 84A/B	8	8	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
65, 85A/B	8	0	8	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit
69, 91A/B	8	0	16	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit • **4X97A88460**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 Gen5 NVMe Cable Kit
68, 87A/B	16	0	8	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A88460**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 Gen5 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
67, 86A/B	16	8	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A88460**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 Gen5 NVMe Cable Kit
72, 96	16	8	0	0	0	0	0	0	4	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A60938**, ThinkSystem V3 2U 4x2.5" SAS/SATA Rear Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit • **4X97A88460**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 Gen5 NVMe Cable Kit • **4X97A82938**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane SAS/SATA Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
71, 95A/B	0	8	16	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit • **4X97A88460**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 Gen5 NVMe Cable Kit
70, 94A/B	0	0	24	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A88461**, ThinkSystem SR650 V3 24x2.5" Gen5 NVMe Cable Kit
92	4	12	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A88459**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 Gen5 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
98	0	0	24	0	0	0	0	0	0	0	4	• **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87545**, ThinkSystem 2U V3 Rear 4x2.5" Gen5 NVMe Backplane Option Kit • **4X97A88461**, ThinkSystem SR650 V3 24x2.5" Gen5 NVMe Cable Kit • **4X97A87062**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane NVMe Cable Kit
99	12	0	0	0	0	0	8	0	0	0	0	• **4XH7A60929**, ThinkSystem V2/V3 2U 12x3.5" SAS/SATA Backplane Option Kit • **4XH7A90334**, ThinkSystem V3 2U Middle 8x2.5" Gen5 NVMe Backplane Option Kit • **4X97A59804**, ThinkSystem SR650 V2 3.5" Chassis Front Backplane SAS/SATA Cable Kit • **4X97A90338**, ThinkSystem SR650 V3 2.5" Chassis Rear Backplane NVMe Cable Kit
103	0	0	24	0	0	0	8	0	0	0	0	• **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A90334**, ThinkSystem V3 2U Middle 8x2.5" Gen5 NVMe Backplane Option Kit • **4X97A90335**, ThinkSystem SR650 V3 32x2.5" Gen5 NVMe Cable Kit
104	0	0	24	0	0	0	8	0	0	4	0	• **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A90334**, ThinkSystem V3 2U Middle 8x2.5" Gen5 NVMe Backplane Option Kit • **4XH7A87545**, ThinkSystem 2U V3 Rear 4x2.5" Gen5 NVMe Backplane Option Kit • **4X97A90337**, ThinkSystem SR650 V3 36x2.5" Gen5 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
105	0	8	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit
106-1/106-2	0	16	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit
107-1	8	16	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit
108-1/108-2	0	24	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit • **4X97A82937**, ThinkSystem SR650 V3 2.5" Chassis Front BP3 SAS/SATA Cable Kit

Drive bay field upgrades - 2.5-inch chassis with front slots

The tables below lists the backplane kits and cable kits needed to build one of the supported 2.5-inch chassis configurations with front and rear.

The Config numbers listed here match the configuration listed in the Storage configuration Overview and Details sections.

Return to Field upgrades.

Table 38. Drive bay field upgrades for the 2.5-inch chassis with front PCIe slots (Blue = SAS/SATA, Purple = AnyBay, Red = NVMe)

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
31	8	0	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit
32	0	8	0	0	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit
34	0	0	8	0	0	0	0	0	0	0	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit
33	0	0	0	8	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit
40	14	0	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A90341**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 Gen5 NVMe Cable Kit
35	16	0	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A90341**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 Gen5 NVMe Cable Kit
38	0	0	16	0	0	0	0	0	0	0	0	• **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82932**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 NVMe Cable Kit • **4X97A90342**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 NVMe Cable Kit
39	0	0	0	16	0	0	0	0	0	0	0	• **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A90341**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 Gen5 NVMe Cable Kit

Config	2.5" front bays				Mid bays			Rear bays				Backplane and cable kits required (all required)
	SAS/ SATA	Any Bay	NVMe	Tri-Mode	3.5" SAS	2.5" SAS	2.5" NVMe	3.5" SAS	2.5" SAS	2.5" NVMe	2.5" Any	
36	8	8	0	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A82913**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A90341**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 Gen5 NVMe Cable Kit • **4X97A90342**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 NVMe Cable Kit
37	8	0	8	0	0	0	0	0	0	0	0	• **4XH7A60930**, ThinkSystem V3 2U 8x2.5" SAS/SATA Backplane Option Kit • **4XH7A61076**, ThinkSystem V2/V3 2U 8x2.5" NVMe Backplane Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A90342**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 NVMe Cable Kit
100	0	8	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit
109-1	0	8	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit
101	0	0	8	0	0	0	0	0	0	0	0	• **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit
102	0	0	16	0	0	0	0	0	0	0	0	• **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4XH7A87748**, ThinkSystem V3 2U 8x2.5" NVMe Backplane Gen5 Option Kit • **4X97A88458**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 Gen5 NVMe Cable Kit • **4X97A90343**, ThinkSystem SR650 V3 2.5" Chassis Front I/O BP2 SAS/SATA Cable Kit
110-1/110-2	0	16	0	0	0	0	0	0	0	0	0	• **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4XH7A86660**, ThinkSystem V3 2U 8x2.5" AnyBay Backplane Gen5 Option Kit • **4X97A82933**, ThinkSystem SR650 V3 2.5" Chassis Front BP1 SAS/SATA Cable Kit • **4X97A82935**, ThinkSystem SR650 V3 2.5" Chassis Front BP2 SAS/SATA Cable Kit

Upgrading to an internal (CFF) adapter

If you want to add an internal (CFF) storage adapter (HBA, RAID adapter or SAS expander) to a configuration, you will need to order the cable kit as listed in the following table. Suitable upgrades are either replacing an existing adapter in a rear PCIe slot, or adding the CFF adapter to a server without any storage adapter installed.

The cable kit to order is listed in the following table.

Table 39. Cable kit when upgrading to an Internal HBA/RAID adapter

Part number	Description
4X97A82941	ThinkSystem SR650 V3 Internal HBA/RAID Adapter Cable Kit

The cable kit includes the cables need to connect to backplanes. Contents of the kit is listed in the following page:
https://serveroption.lenovo.com/cable_kit_options/cable_kit_sr650v3_internal_hba_raid_adapter

When adding drive bays, you will also need to add the appropriate CFF storage controller.

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 40. 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)

RAID flash power module (supercap) support

If you plan to add one of the RAID adapters that includes a RAID flash power module (supercap) as a field upgrade, then you may also need to order a Supercap installation kit for the supercap, depending on the location where the supercap will be installed. For CTO orders, the components needed are automatically derived when you select the RAID adapter.

The adapters that this applies to are as follows:

- Any supported RAID 940 adapter

The location of the supercaps depends on the mid-chassis drive cage used in the server, as shown in the following table.

Table 41. Supercap support

Mid drive cage	Supercaps supported	Location of supercaps	Supercap holder
No mid drive cage	4	Mounted on the air baffle	Not needed
2.5-inch drives	2	Mounted on the left side of the mid drive cage	Integrated into the left side of the 2.5-inch mid drive cage
3.5-inch drives	1	Mounted under the system fan cage	Included with the server or part of ThinkSystem SR650 V3 Middle 4x3.5" SAS/SATA Backplane Option Kit (4XH7A82916) (see below)

For 3.5-inch drive bay configurations, if the server already has 3.5-inch mid-chassis drive bays, then the supercap holder is already present under the system fan cages. If you plan to add 3.5-inch mid-chassis drive bays by adding ThinkSystem SR650 V3 Middle 4x3.5" SAS/SATA Backplane Option Kit (4XH7A82916), then the supercap holder is part of the option kit.

7mm drives

The SR650 V3 supports two 7mm drives, either both SATA or both NVMe, at the rear of the server. These drives go in place of either PCIe slot 3 (Riser 1) or PCIe slot 6 (Riser 2) as shown in the following figure.

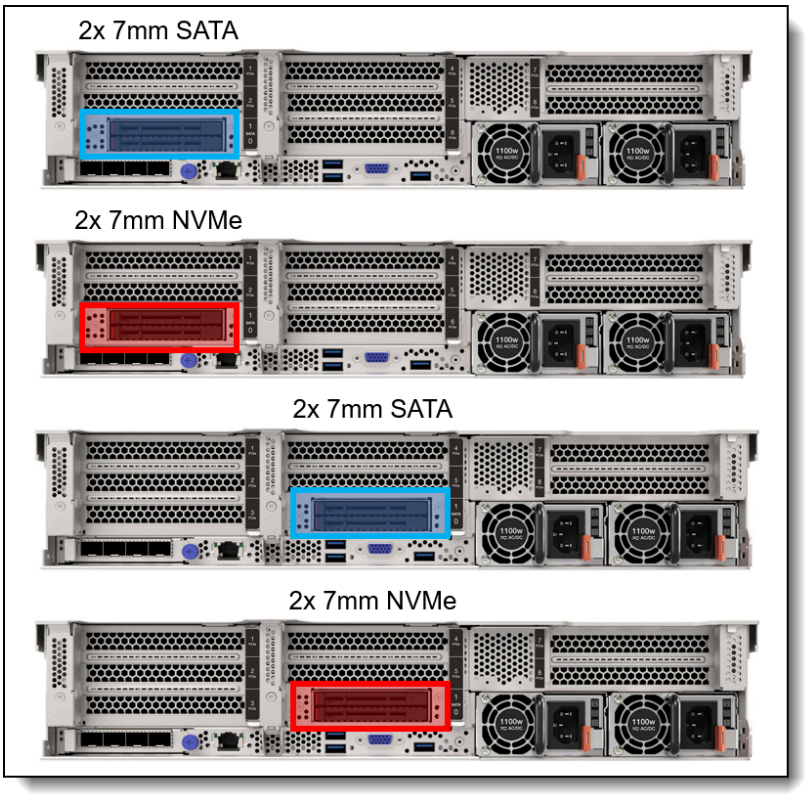


Figure 16. Rear 7mm drive bay configurations

For CTO orders, the configuration includes the drive bays and the cage the the drive bays are mounted on to.The cage required depends on where the 7mm drives are located (Riser 1 or Riser 2) and whether there are PCIe slots above the 7mm drive bays.

The following table lists the ordering information. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Table 42. CTO feature code for 7mm drives

Feature code	Description	Top Choice Express	RAID	Max qty
Backplane - 7mm drives				
BYFG	ThinkSystem 7mm SATA/NVMe 2-Bay Rear Hot-Swap RAID Enablement Kit	-	Integrated (Broadcom)	1
VROC RAID support for ThinkSystem 7mm SATA/NVMe 2-Bay Rear Enablement Kit v2 (BU0N) (optional)				
BS7U	On Board SATA Software RAID Mode for 7mm	-	-	1
BS7R	Intel VROC (VMD NVMe RAID) Standard for 7mm	-	-	1
Hardware RAID support for ThinkSystem 7mm SATA/NVMe 2-Bay Rear Enablement Kit v2 (BU0N) (optional; an alternative to VROC)				
BVL4	ThinkSystem Raid 540-8i for 7MM NVMe boot Enablement	-	Broadcom	1

The use of the 7mm rear drive bays has the following configuration rules:

- The 7mm rear drive kit is supported in either slot 3 or slot 6 but not both at the same time.
- 7mm drive bays are not supported in configurations with 4x 2.5-inch rear drive bays, as they use the same power connector

- M.2 and 7mm are mutually exclusive: they are not supported together in the same configuration
- For ThinkSystem 7mm SATA/NVMe 2-Bay Rear Enablement Kit v2 (feature BU0N):
  - The 7mm drive bays support either SATA drives or NVMe drives but not both. You specify SATA or NVMe in the configurator using feature codes BTTV (SATA) or BTTW (NVMe).
  - RAID support is implemented using VROC (no adapter needed) or with the use of an additional RAID adapter installed in a slot
  - If RAID is enabled using VROC, select these feature codes:
    - VROC SATA support: On Board SATA Software RAID Mode for 7mm (feature BS7U)
    - VROC NVMe support:
      - Intel VROC (VMD NVMe RAID) Standard for 7mm (feature BS7R)
      - Intel VROC RAID1 Only for 7mm (feature BZ4Y)
  - If RAID is enabled using a RAID adapter, the adapter is installed in any of PCIe slots 1-6:
    - RAID support for 7mm NVMe drives requires a RAID 540-8i adapter operating in Tri-Mode (feature BVL4)
  - The use of VROC SATA RAID is not supported by virtualization hypervisors such as ESXi, KVM, Xen, and Hyper-V. VROC NVMe RAID is supported by hypervisors, however.
- For ThinkSystem 2U 7mm Drive Kit w/ NVMe RAID (feature B8P3)
  - The adapter only supports NVMe drives
  - RAID functionality is integrated into the 7mm adapter using a Marvell 88NR2241 NVMe RAID Controller
- For ThinkSystem 7mm SATA/NVMe 2-Bay Rear Hot-Swap RAID Enablement Kit (feature BYFG)
  - The adapter supports either SATA or NVMe drives
  - RAID functionality is integrated into the 7mm adapter using a Broadcom RAID Controller

7mm drive field upgrades

For field upgrades, using the following ordering information. The kit includes two cages for use depending on your PCIe slot configuration. The cages are for either Riser 1 or Riser 2.

HW RAID support: The 7mm Enablement Kit part numbers below do not include the RAID adapter optionally used for 7mm HW RAID support. If you wish to enable hardware RAID support for 7mm, you will need to order the 540-8i for NVMe RAID support. In addition, the 540-8i, once installed, will need to be configured to operate in Tri-mode to enable NVMe RAID.

Table 43. Field upgrade part number for 7mm drives

Part number	Description	Purpose
7mm Enablement Kits		
4XH7A93807	ThinkSystem SR650 V3 7mm RAID B540p-2HS SATA/NVMe Enablement Kit	7mm drive bays for NVMe drive support. RAID support is integrated into the adapter using an onboard Broadcom RAID controller.
4X97A90536	ThinkSystem SR650 V3 x4 M.2/7mm CFF RAID Cable Kit	Cable kit when adding 7mm drives and connecting to an internal (CFF) RAID adapter instead of a regular PCIe (SFF) RAID adapter. Requires 4XH7A88465.
RAID adapters for optional 7mm HW RAID support (for use with 4XH7A88465)		
4Y37A78834	ThinkSystem RAID 540-8i PCIe Gen4 12Gb Adapter	RAID adapter for NVMe RAID-1 with 2x 7mm NVMe drives **Tip**: Once the 540-8i adapter is installed, it will need to be configured to operate in Tri-mode to enable NVMe RAID.

M.2 drives

The SR650 V3 supports one or two M.2 form-factor SATA or NVMe drives for use as an operating system boot solution or as additional storage. The M.2 drives install into an M.2 module which is mounted horizontally in the server:

- In servers without mid-chassis drives, the M.2 module is mounted on the air baffle
- With a mid-chassis drive cage (2.5-inch or 3.5-inch), the M.2 module is mounted on the drive cage, as shown in the Mid drive bays section.

The supported M.2 module is listed in the following table. For field upgrades see the M.2 field upgrades section below. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Table 44. M.2 modules

Part number	Feature code	Description	Top Choice Express	SATA drives	NVMe drives	RAID	Maximum supported	Windows 10/11 support
4Y37A79663	BM8X	ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter	-	Yes	Yes (x4 lanes)	VROC or adapter	1	Supported
4Y37A09750	B8P9	ThinkSystem M.2 NVMe 2-Bay RAID Adapter	-	No	Yes (x1 lane)	Integrated (Marvell)	1	No
4Y37A90063	BYFF	ThinkSystem M.2 RAID B540i-2i SATA/NVMe Adapter	-	Yes	Yes (x1 lane)	Integrated (Broadcom)	1	Supported

ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter (4Y37A79663) optionally supports RAID with the addition of either VROC or a separate RAID adapter. For CTO orders, ordering information is listed in the following table.

Table 45. CTO feature codes to select M.2 RAID (ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter only)

Feature code	Description	Top Choice Express	RAID support	Maximum supported
VROC for M.2 drives (optional, for RAID support)				
BS7Q	On Board SATA Software RAID Mode for M.2 (VROC SATA)	-	SATA	1
BS7M	Intel VROC (VMD NVMe RAID) Standard for M.2 (VROC NVMe)	-	NVMe	1
Controllers for RAID support of M.2 drives (optional; an alternative to VROC)				
BVL3	ThinkSystem RAID 540-8i for M.2 NVMe boot Enablement	-	NVMe	1

Configuration notes:

- M.2 is not supported with all storage configurations - see Storage configurations for details.
- M.2 and 7mm are mutually exclusive: they are not supported together in the same configuration
- For field upgrades, an additional cable is needed as described in the M.2 field upgrades section below
- For ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter (4Y37A79663):
  - RAID support is implemented using VROC (no adapter needed) or with the use of an additional RAID adapter installed in a slot
  - If RAID is enabled using VROC, select these feature codes:
    - VROC SATA support: On Board SATA Software RAID Mode for M.2 (feature BS7Q)
    - VROC NVMe support:
      - Intel VROC (VMD NVMe RAID) Standard for M.2 (feature BS7M)

        - Intel VROC RAID1 Only for M.2 (feature BZ4X)
    - If RAID is enabled using a RAID adapter, the adapter is installed in in any of PCIe slots 1-6:
        - RAID support for M.2 NVMe drives requires a RAID 540-8i adapter operating in Tri-Mode (feature BVL3)
    - The adapter is not supported with 3.5-inch mid-chassis drive bays due to physical limitations
    - The use of VROC SATA RAID is not supported by virtualization hypervisors such as ESXi, KVM, Xen, and Hyper-V. VROC NVMe RAID is supported by hypervisors, however.
- For ThinkSystem M.2 NVMe 2-Bay RAID Adapter (4Y37A09750):
    - RAID is implemented using an onboard Marvell 88NR2241 NVMe RAID controller
- For ThinkSystem M.2 RAID B540i-2i SATA/NVMe Adapter (4Y37A90063):
    - RAID is implemented using an onboard Broadcom RAID controller

The ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter has the following features:

- Supports one or two M.2 drives, either SATA or NVMe
- When two drives installed, they must be either both SATA or both NVMe
- Support 42mm, 60mm, 80mm and 110mm drive form factors (2242, 2260, 2280 and 22110)
- On the SR650 V3, RAID support is implemented using VROC or a separate RAID adapter
- Either 6Gbps SATA or PCIe 4.0 x4 interface to the drives depending on the drives installed
- Supports monitoring and reporting of events and temperature through I2C
- Firmware update via Lenovo firmware update tools
- When connected to a separate PCIe RAID adapter, supports SED drive encryption via the RAID adapter, otherwise no SED support

The ThinkSystem M.2 NVMe 2-Bay RAID Adapter (4Y37A09750) has the following features:

- Supports one or two NVMe M.2 drives
- Support 42mm, 60mm, 80mm and 110mm drive form factors (2242, 2260, 2280 and 22110)
- RAID support via an onboard Marvell 88NR2241 NVMe RAID Controller
- With 1 drive, supports single-drive RAID-0
- With 2 drives, supports 2-drive RAID-0, 2-drive RAID-1, or two single-drive RAID-0 arrays
- PCIe 3.0 x2 host interface; PCIe 3.0 x1 connection to each drive
- Management and configuration support via UEFI and OS-based tools
- Supports monitoring and reporting of events and temperature through I2C
- Firmware update via Lenovo firmware update tools
- No support for SED drive encryption

The ThinkSystem M.2 RAID B540i-2i SATA/NVMe Adapter (4Y37A90063) has the following features:

- Supports one or two M.2 drives, either SATA or NVMe
- Support 42mm, 60mm, 80mm and 110mm drive form factors (2242, 2260, 2280 and 22110)
- 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
- 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 field upgrades, the SR650 V3 also requires an additional M.2 cable kit. Ordering information is listed in the following table.

Table 46. M.2 Cable Kits for field upgrades

Part number	Description	Purpose
M.2 Cable kits		
4X97A82924	ThinkSystem SR650 V3 M.2 x4 SATA/NVMe Cable Kit	Cable kit for ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter (4Y37A79663) directly connect to system board (either no RAID, or VROC RAID)
4X97A88464	ThinkSystem SR650 V3 M.2 SATA/x4 NVMe SFF RAID Cable Kit	Cable kit for ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter (4Y37A79663) connected to a PCIe RAID adapter
4X97A90536	ThinkSystem SR650 V3 x4 M.2/7mm CFF RAID Cable Kit	Cable kit for ThinkSystem M.2 SATA/x4 NVMe 2-Bay Adapter (4Y37A79663) connected to a Internal (CFF) RAID adapter
4X97A82925	ThinkSystem SR650 V3 M.2 NVMe 2-Bay RAID Cable Kit	Cable kit for ThinkSystem M.2 NVMe 2-Bay RAID Adapter (4Y37A09750)
4X97A93808	ThinkSystem SR650 V3/SR655 V3 M.2 RAID B540i-2i SATA/NVMe Cable Kit	Cable kit for ThinkSystem M.2 RAID B540i-2i SATA/NVMe Adapter (4Y37A90063)
RAID adapters for M.2 RAID support (4Y37A79663 only)		
4Y37A78834	ThinkSystem RAID 540-8i PCIe Gen4 12Gb Adapter	RAID adapter to provide M.2 NVMe support using Tri-Mode **Tip**: Once the 540-8i adapter is installed, it will need to be configured to operate in Tri-mode to enable NVMe RAID.

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 47. 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
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

Part number	Feature	Description
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

Encryption Enablement

For CTO orders, the configurator allows you to specify that you want to create an "encryption-ready" server, and to ensure that only components that support encryption are selectable in the configurator. This is done in DCSC and x-config configurator tools by selecting the feature code listed in the following table.

Table 48. Encryption Enablement

Part number	Feature code	Description	Top Choice Express
CTO only	CES1*	Drive Encryption Enablement (not supported with vSAN)	-

* In DCSC, this feature is in **Storage > Internal Storage** under the heading "Encryption Enablement"

Tip: This feature will not be selectable until an SED-capable drive is selected.

By selecting this feature code, the following requirements will be enabled in the configurator:

- SED drives will be required
- XCC2 Platinum will be required
- VROC SATA RAID (RSTe) cannot be selected

- VROC NVMe RAID cannot be selected
- The ThinkSystem M.2 NVMe 2-Bay RAID Adapter (B8P9) cannot be selected
- 440-8i and 440-16i HBAs cannot be selected

Configuration notes:

- Do not use this feature code for VMware vSAN or Nutanix servers, since these virtualization offerings do not support HW RAID adapter-based encryption
- Selecting this feature code does not enable encryption at the factory
- If you don't select this feature code, you will still be able to enable encryption in your server, however you will need to ensure that you have suitable storage controllers and drives installed in the server

Controllers for internal storage

The SR650 V3 offers a variety of controller options for internal drives:

- For 2.5-inch and 3.5-inch drives:
  - Onboard SATA ports with software RAID support (Intel VROC SATA RAID, formerly known as Intel RSTe)
  - Onboard NVMe ports with software RAID support (Intel VROC NVMe RAID)
  - RAID adapters and HBAs for SAS/SATA drives (PCIe slot-based)
  - RAID adapters and HBAs for SAS/SATA drives (cabled in a dedicated space)
- For 7mm drive bays in the rear of the server (see the 7mm drives section)
  - SATA controller integrated into the 7mm drive bay enclosure
  - NVMe controller integrated into the 7mm drive bay enclosure (Intel VROC for RAID)
- For M.2 drives internal to the server (see M.2 drives section)
  - SATA controller integrated on the M.2 adapters
  - NVMe controller integrated on the M.2 adapters (Intel VROC for RAID)

As well as supporting RAID adapters and HBAs that install in a PCIe slot, the SR650 V3 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. CFF adapters are not supported with 3.5-inch front drives due to a lack of physical space.

The following table lists the adapters used for the internal storage of the server. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Table 49. Internal Storage adapter support

Part number	Feature code	Description	Top Choice Express	RAID levels	Maximum supported	Slots supported	Windows 10/11 support
Onboard SATA - Intel VROC SATA RAID (Intel RSTe)							
None	AVV0	On Board SATA Software RAID Mode	-	See VROC	1	Not applicable	Supported
Onboard NVMe - Intel VROC NVMe RAID							
None	BR9B	Intel VROC (VMD NVMe RAID) Standard (supports RAID 0, 1, 10 for all brands of drives)	-	See VROC	1	Not applicable	Supported
4L47A39164	B96G	Intel VROC (VMD NVMe RAID) Premium (license upgrade - to enable RAID-5 support)	-	See VROC	1	Not applicable	Supported
12Gb SAS/6Gb SATA HBA - Broadcom PCIe 4.0							
4Y37A78601	BM51	ThinkSystem 440-8i SAS/SATA PCIe Gen4 12Gb HBA	-	None	4	1,2,3,4,5,6	No

Part number	Feature code	Description	Top Choice Express	RAID levels	Maximum supported	Slots supported	Windows 10/11 support
4Y37A78602	BM50	ThinkSystem 440-16i SAS/SATA PCIe Gen4 12Gb HBA	-	None	2	1,2,3,4,5,6	No
4Y37A09725	B8P1	ThinkSystem 440-16i SAS/SATA PCIe Gen4 12Gb Internal HBA	-	None	1	CFF bay	No
12Gb SAS/6Gb SATA RAID Adapters - Broadcom PCIe 4.0							
4Y37A78834	BMFT	ThinkSystem RAID 540-8i PCIe Gen4 12Gb Adapter	-	0, 1, 10	4	1,2,3,4,5,6	Supported
4Y37A78835	BNAX	ThinkSystem RAID 540-16i PCIe Gen4 12Gb Adapter	-	0, 1, 10	2	1,2,3,4,5,6	Supported
4Y37A09728	B8NY	ThinkSystem RAID 940-8i 4GB Flash PCIe Gen4 12Gb Adapter	-	0, 1, 10, 5, 50, 6, 60	4	1,2,3,4,5,6	Supported
4Y37A09729	B8NW	ThinkSystem RAID 940-8i 8GB Flash PCIe Gen4 12Gb Adapter	-	0, 1, 10, 5, 50, 6, 60	4	1,2,3,4,5,6	Supported
4Y37A78600	BM35	ThinkSystem RAID 940-16i 4GB Flash PCIe Gen4 12Gb Adapter	-	0, 1, 10, 5, 50, 6, 60	2	1,2,3,4,5,6	Supported
4Y37A09730	B8NZ	ThinkSystem RAID 940-16i 8GB Flash PCIe Gen4 12Gb Adapter	-	0, 1, 10, 5, 50, 6, 60	2	1,2,3,4,5,6	Supported
4Y37A09735	B8P0	ThinkSystem RAID 940-16i 8GB Flash PCIe Gen4 12Gb Internal Adapter	-	0, 1, 10, 5, 50, 6, 60	1	CFF bay	Supported
4Y37A09733	B8P8	ThinkSystem RAID 940-32i 8GB Flash PCIe Gen4 12Gb Adapter	-	0, 1, 10, 5, 50, 6, 60	1	1,2,3,4,5,6	Supported
12Gb SAS/6Gb SATA expander							
4Y37A09736	B8P6	ThinkSystem 48 port 12Gb Internal Expander	-	None	1	CFF bay	Supported
NVMe using Tri-Mode (NVMe x1) (no support for NVMe U.2 drives)							
4Y37A09728	BGM1	ThinkSystem RAID 940-8i 4GB Flash PCIe Gen4 12Gb Adapter for U.3	-	0, 1, 10, 5, 50, 6, 60	3	1,2,3,4,5,6	Supported
4Y37A09729	BGM0	ThinkSystem RAID 940-8i 8GB Flash PCIe Gen4 12Gb Adapter for U.3	-	0, 1, 10, 5, 50, 6, 60	3	1,2,3,4,5,6	Supported
4Y37A78600	BM36	ThinkSystem RAID 940-16i 4GB Flash PCIe Gen4 12Gb Adapter for U.3	-	0, 1, 10, 5, 50, 6, 60	1	1,2,3,4,5,6	Supported
4Y37A09730	BDY4	ThinkSystem RAID 940-16i 8GB Flash PCIe Gen4 12Gb Adapter for U.3	-	0, 1, 10, 5, 50, 6, 60	1	1,2,3,4,5,6	Supported
NVMe using x4 interface							
4C57A65446	B98C	ThinkSystem 4-Port PCIe Gen4 NVMe Retimer Adapter (4x drives)	-	None	4	1,2,3,4,5,6	Supported
4TA7A84579	BLKY	ThinkSystem PCIe Gen5 NVMe Retimer Adapter (4x drives)	-	None	4	1,2,3,4,5,6	Supported

* Only supported with 2.5-inch front drive bays. Not supported in configurations with 3.5-inch front drive bays.
‡ Internal adapters (CFF) do not occupy any of the rear slots.

Configuration notes:

- **Supercap support limits the number of RAID adapters installable**: RAID 940 adapters include a power module (supercap) to power the flash memory. The server supports between 1 and 4 supercaps depending on the server configuration as described in the RAID flash power module (supercap) support section. The number of supercaps supported also determines the maximum number of RAID adapters with flash that can be installed in the server.
- **Field upgrades**: If you are adding a RAID adapter with supercap to the server as a field upgrade, you may need a supercap holder as described in the RAID flash power module (supercap) support section.
- **7mm drive support**: The storage adapters listed in the table below do *not* provide connectivity to the 7mm drive bays that are optionally available at the rear of the server. The 7mm drives have their own independent RAID controller. See the 7mm drives section for details.
- **Tri-Mode support and U.3 drives**: The use of a RAID adapter with Tri-Mode enabled requires U.3 drives (U.2 drives are not supported). Also, in the DCSC configurator, 7500 PRO and 7500 MAX U.3 drives can only be selected when a Tri-Mode RAID adapter is also selected.

The onboard SATA controller has the following features:

- Controller integrated into the Intel PCH
- 6 Gbps SATA host interface
- Supports up to 14x SATA drives
- Supports RAID-0, 1, 5, 10 (Intel VROC SATA RAID, previously known as RSTe)
- Supports JBOD
- Supports HDDs and SSDs; can be mixed

The onboard NVMe support has the following features:

- Controller integrated into the Intel processor
- Supports up to 20x NVMe drives direct connected to onboard ports; additional drives through retimer/switch adapters
- Each drive has PCIe 5.0 x4 host interface
- Supports JBOD - Intel and non-Intel NVMe SSDs
- Supports RAID-0, 1, 10 on Intel and non-Intel NVMe SSDs - Intel VROC Standard
- VROC Premium adds RAID-5 support on Intel and non-Intel NVMe SSDs

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.

There are two separate functions of VROC in the SR650 V3:

- Intel VROC SATA RAID, formerly known as Intel RSTe
- Intel VROC NVMe RAID

VROC SATA RAID (RSTe) is available and supported with all SATA drives. It offers a 6 Gb/s connection to each drive and on the SR650 V3 implements RAID levels 0, 1, 5, and 10. 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.

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 SR650 V3, 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 SR650 V3 supports the VROC NVMe RAID offerings listed in the following table.

Tip: These feature codes and part numbers are only for VROC RAID using NVMe drives, not SATA drives

Table 50. Intel VROC NVMe RAID ordering information and feature support

Part number	Feature code	Description	Lenovo Top Choice Express	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.
- SED functionality is not supported with VROC NVMe RAID

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

- **VROC SATA RAID (RSTe)**: VROC SATA RAID is supported with Windows, RHEL and SLES, however it is not supported by virtualization hypervisors such as ESXi, KVM, Xen, and Hyper-V. Virtualization is only supported on the onboard SATA ports in AHCI (non-RAID) mode.
- **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.

For specifications about the RAID adapters and HBAs supported by the SR650 V3, see the ThinkSystem RAID Adapter and HBA Comparison, available from:
https://lenovopress.com/lp1288-lenovo-thinksystem-raid-adapter-and-hba-reference#sr650-v3-

support=SR650%2520V3

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

Internal drive options

VMware vSAN and Microsoft S2D configurations: Vendor Agnostic (VA) drives are based on drives from multiple vendors, and not all vendor variants are VMware vSAN or Microsoft S2D certified. Additionally, ISVs require a single drive vendor per host and cluster to ensure optimal performance; a requirement that VA drives may not consistently meet. To ensure certification compliance, hardware uniformity, and alignment with VMware and Microsoft best practices, use ThinkAgile VX or ThinkAgile FX for all vSAN configurations and ThinkAgile MX for all S2D configurations, instead of general purpose ThinkSystem servers.

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 24 Gb SAS SSDs
- 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

2.5-inch 7mm hot-swap drives:

- 7mm 2.5-inch hot-swap 6 Gb SATA SSDs

3.5-inch hot-swap drives:

- 3.5-inch hot-swap 12 Gb SAS HDDs
- 3.5-inch hot-swap 6 Gb SATA HDDs
- 3.5-inch hot-swap 24 Gb SAS SSDs
- 3.5-inch hot-swap 6 Gb SATA SSDs
- 3.5-inch hot-swap PCIe 5.0 NVMe SSDs
- 3.5-inch hot-swap PCIe 4.0 NVMe SSDs

M.2 drives (for M.2 adapters except B350/B550):

- M.2 SATA non-hot-swap drives
- M.2 PCIe 4.0 NVMe non-hot-swap 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 51. 2.5-inch hot-swap 12 Gb SAS HDDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
2.5-inch hot-swap HDDs - 12 Gb SAS 15K					
2.5-inch hot-swap HDDs - 12 Gb SAS 10K					
7XB7A00025	AULZ	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD	-	No	40
7XB7A00027	AUM1	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	-	No	40

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
7XB7A00028	AUM2	ThinkSystem 2.5" 1.8TB 10K SAS 12Gb Hot Swap 512e HDD	-	No	40
4XB7A83970	BRG7	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD v2	-	No	40
2.5-inch hot-swap SED HDDs - 12 Gb SAS 10K					
7XB7A00031	AUM5	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD SED	-	Support	40
7XB7A00033	B0YX	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD SED	-	Support	40
4XB7A84038	BRG8	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD FIPS v2	-	Support	40

Table 52. 2.5-inch hot-swap 24 Gb SAS SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
2.5-inch hot-swap SSDs - 24 Gb SAS - Mixed Use (3-5 DWPD)					
4XB7B07612	CABL	ThinkSystem 2.5" VA 800GB Mixed Use SAS 24Gb HS SSD	-	Support	40
4XB7B07613	CABR	ThinkSystem 2.5" VA 1.6TB Mixed Use SAS 24Gb HS SSD	-	Support	40
4XB7B07614	CABQ	ThinkSystem 2.5" VA 3.2TB Mixed Use SAS 24Gb HS SSD	-	Support	40
4XB7B07615	CABK	ThinkSystem 2.5" VA 6.4TB Mixed Use SAS 24Gb HS SSD	-	Support	40
4XB7A97308	C4KR	ThinkSystem 2.5" PM7 1.6TB Mixed Use SAS 24Gb HS SSD FIPS	-	Support	40
2.5-inch hot-swap SSDs - 24 Gb SAS - Read Intensive (<3 DWPD)					
4XB7B07600	CABS	ThinkSystem 2.5" VA 960GB Read Intensive SAS 24Gb HS SSD	-	Support	40
4XB7B07601	CABV	ThinkSystem 2.5" VA 1.92TB Read Intensive SAS 24Gb HS SSD	-	Support	40
4XB7B07602	CABT	ThinkSystem 2.5" VA 3.84TB Read Intensive SAS 24Gb HS SSD	-	Support	40
4XB7B07603	CABY	ThinkSystem 2.5" VA 7.68TB Read Intensive SAS 24Gb HS SSD	-	Support	40
4XB7B07604	CABX	ThinkSystem 2.5" VA 15.36TB Read Intensive SAS 24Gb HS SSD	-	Support	40
4XB7B07605	CABW	ThinkSystem 2.5" VA 30.72TB Read Intensive SAS 24Gb HS SSD	-	Support	40

Table 54. 2.5-inch hot-swap 6 Gb SATA SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
2.5-inch hot-swap SSDs - 6 Gb SATA - Mixed Use (3-5 DWPD)					
4XB7B09972	CBV9	ThinkSystem 2.5" VA 480GB Mixed Use SATA 6Gb HS SSD SED	-	Support	40
4XB7B09973	CBV8	ThinkSystem 2.5" VA 960GB Mixed Use SATA 6Gb HS SSD SED	-	Support	40

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
4XB7B09974	CBV7	ThinkSystem 2.5" VA 1.92TB Mixed Use SATA 6Gb HS SSD SED	-	Support	40
4XB7B09975	CBV6	ThinkSystem 2.5" VA 3.84TB Mixed Use SATA 6Gb HS SSD SED	-	Support	40
4XB7A90884	BYM2	ThinkSystem 2.5" VA 480GB Mixed Use SATA 6Gb HS SSD v2	-	No	40
4XB7A90885	BYM4	ThinkSystem 2.5" VA 960GB Mixed Use SATA 6Gb HS SSD v2	-	No	40
4XB7A90886	BYM5	ThinkSystem 2.5" VA 1.92TB Mixed Use SATA 6Gb HS SSD v2	-	No	40
4XB7A90887	BYM6	ThinkSystem 2.5" VA 3.84TB Mixed Use SATA 6Gb HS SSD v2	-	No	40
2.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive (<3 DWPD)					
4XB7B09967	CBVE	ThinkSystem 2.5" VA 480GB Read Intensive SATA 6Gb HS SSD SED	-	Support	40
4XB7B09968	CBVD	ThinkSystem 2.5" VA 960GB Read Intensive SATA 6Gb HS SSD SED	-	Support	40
4XB7B09969	CBVC	ThinkSystem 2.5" VA 1.92TB Read Intensive SATA 6Gb HS SSD SED	-	Support	40
4XB7B09970	CBVB	ThinkSystem 2.5" VA 3.84TB Read Intensive SATA 6Gb HS SSD SED	-	Support	40
4XB7B09971	CBVA	ThinkSystem 2.5" VA 7.68TB Read Intensive SATA 6Gb HS SSD SED	-	Support	40
4XB7A90873	BYLR	ThinkSystem 2.5" VA 480GB Read Intensive SATA 6Gb HS SSD v2	-	No	40
4XB7A90874	BYLS	ThinkSystem 2.5" VA 960GB Read Intensive SATA 6Gb HS SSD v2	-	No	40
4XB7A90875	BYLT	ThinkSystem 2.5" VA 1.92TB Read Intensive SATA 6Gb HS SSD v2	-	No	40
4XB7A90876	BYLU	ThinkSystem 2.5" VA 3.84TB Read Intensive SATA 6Gb HS SSD v2	-	No	40
4XB7A90877	BYLV	ThinkSystem 2.5" VA 7.68TB Read Intensive SATA 6Gb HS SSD v2	-	No	40

Table 55. 2.5-inch hot-swap PCIe 5.0 NVMe SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
2.5-inch SSDs - U.2 PCIe 5.0 NVMe - Mixed Use (3-5 DWPD)					
4XB7A93097	C1WM	ThinkSystem 2.5" U.2 PM9D5a 800GB Mixed Use NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93127	C0ZR	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93128	C0ZQ	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93129	C0ZP	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	-	Support	36

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
4XB7A93130	C0ZN	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	-	Support	36
2.5-inch SSDs - U.3 PCIe 5.0 NVMe - Mixed Use (3-5 DWPD)					
4XB7A94637	C4D4	ThinkSystem 2.5" U.3 PM1745 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	-	Support	36
2.5-inch SSDs - U.2 PCIe 5.0 NVMe - Read Intensive (<3 DWPD)					
4XB7B10396	CFD6	ThinkSystem 2.5" U.2 SN861 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B10397	CFD5	ThinkSystem 2.5" U.2 SN861 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B10398	CFD4	ThinkSystem 2.5" U.2 SN861 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B10399	CFD3	ThinkSystem 2.5" U.2 SN861 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B08330	CBSW	ThinkSystem 2.5" U.2 6550 30.72TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B08331	CBSX	ThinkSystem 2.5" U.2 6550 61.44TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B02475	C8DH	ThinkSystem 2.5" U.2 BM1743 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B09031	CBSY	ThinkSystem 2.5" U.2 BM1743 122.88TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93066	C0GK	ThinkSystem 2.5" U.2 PM9D3a 960GB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7B04552	CA3Q	ThinkSystem 2.5" PM9D3a 30.72TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93122	C0ZV	ThinkSystem 2.5" U.2 VA 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93123	C0ZU	ThinkSystem 2.5" U.2 VA 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93124	C0ZT	ThinkSystem 2.5" U.2 VA 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93125	C0ZS	ThinkSystem 2.5" U.2 VA 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A93126	C1W7	ThinkSystem 2.5" U.2 VA 30.72TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
2.5-inch SSDs - U.3 PCIe 5.0 NVMe - Read Intensive (<3 DWPD)					
4XB7A82366	BTPZ	ThinkSystem 2.5" U.3 PM1743 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A82367	BTQ0	ThinkSystem 2.5" U.3 PM1743 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A82368	BTQ1	ThinkSystem 2.5" U.3 PM1743 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36
4XB7A82369	BTQ2	ThinkSystem 2.5" U.3 PM1743 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	36

Table 56. 2.5-inch hot-swap PCIe 4.0 NVMe SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
2.5-inch SSDs - U.2 PCIe 4.0 NVMe - Write Intensive (10+ DWPD)					
2.5-inch SSDs - U.2 PCIe 4.0 NVMe - Mixed Use (3-5 DWPD)					
4XB7B11682	CCZE	ThinkSystem 2.5" U.2 VA 800GB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93896	C18J	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93897	C18H	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93898	C18G	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93899	C18F	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Mixed Use (3-5 DWPD)					
4XB7A95054	C2BG	ThinkSystem 2.5" U.3 7500 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95055	C2BV	ThinkSystem 2.5" U.3 7500 MAX 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95056	C2BW	ThinkSystem 2.5" U.3 7500 MAX 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95057	C2BF	ThinkSystem 2.5" U.3 7500 MAX 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95058	C2BX	ThinkSystem 2.5" U.3 7500 MAX 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	36
2.5-inch SSDs - U.2 PCIe 4.0 NVMe - Read Intensive (<3 DWPD)					
4XB7A95047	C2BL	ThinkSystem 2.5" U.2 P5336 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95048	C2BK	ThinkSystem 2.5" U.2 P5336 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7B11683	CCZF	ThinkSystem 2.5" U.2 VA 960GB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93892	C18N	ThinkSystem 2.5" U.2 VA 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93893	C18M	ThinkSystem 2.5" U.2 VA 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93894	C18L	ThinkSystem 2.5" U.2 VA 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A93895	C18K	ThinkSystem 2.5" U.2 VA 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Read Intensive (<3 DWPD)					
4XB7A95049	C2BY	ThinkSystem 2.5" U.3 7500 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95050	C2BR	ThinkSystem 2.5" U.3 7500 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95051	C2BS	ThinkSystem 2.5" U.3 7500 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
4XB7A95052	C2BT	ThinkSystem 2.5" U.3 7500 PRO 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A95053	C2BU	ThinkSystem 2.5" U.3 7500 PRO 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A81952	BPKY	ThinkSystem 2.5" U.3 PM1733a 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36
4XB7A81954	BPL0	ThinkSystem 2.5" U.3 PM1733a 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	36

U.3 drives: In the DCSC configurator, 7500 PRO and 7500 MAX U.3 drives can only be selected when a Tri-Mode controller is also selected. See the Controllers for internal storage section.

Table 57. 7mm 2.5-inch hot-swap 6 Gb SATA SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
7mm 2.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive (<3 DWPD)					
4XB7A17107	BK7A	ThinkSystem 7mm S4520 480GB Read Intensive SATA 6Gb HS SSD	-	No	2
4XB7A17108	BK7B	ThinkSystem 7mm S4520 960GB Read Intensive SATA 6Gb HS SSD	-	No	2

Table 59. 3.5-inch hot-swap 12 Gb SAS HDDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
3.5-inch hot-swap HDDs - 12 Gb NL SAS					
4XB7B01233	C5WY	ThinkSystem 3.5" 2TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00042	AUU5	ThinkSystem 3.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD	-	No	20
4XB7B01235	C5X9	ThinkSystem 3.5" 4TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00043	AUU6	ThinkSystem 3.5" 4TB 7.2K SAS 12Gb Hot Swap 512n HDD	-	No	20
4XB7B01237	C5XB	ThinkSystem 3.5" 6TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
4XB7B01239	C5XD	ThinkSystem 3.5" 8TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00045	B0YR	ThinkSystem 3.5" 8TB 7.2K SAS 12Gb Hot Swap 512e HDD	-	No	20
4XB7B01241	C5XF	ThinkSystem 3.5" 10TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00046	AUUG	ThinkSystem 3.5" 10TB 7.2K SAS 12Gb Hot Swap 512e HDD	-	No	20
7XB7A00067	B117	ThinkSystem 3.5" 12TB 7.2K SAS 12Gb Hot Swap 512e HDD	-	No	20
4XB7A93788	C4DA	ThinkSystem 3.5" 12TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
4XB7A13911	B7EZ	ThinkSystem 3.5" 16TB 7.2K SAS 12Gb Hot Swap 512e HDD	-	No	20

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
4XB7A93786	C4D8	ThinkSystem 3.5" 16TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
4XB7A80353	BPKU	ThinkSystem 3.5" 20TB 7.2K SAS 12Gb Hot Swap 512e HDD	-	No	20
4XB7A93784	C4D6	ThinkSystem 3.5" 20TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
4XB7A83766	BTR7	ThinkSystem 3.5" 22TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
4XB7A93007	C2BH	ThinkSystem 3.5" 24TB 7.2K SAS 12Gb Hot Swap 512e HDD v2	-	Support	20
3.5-inch hot-swap SED HDDs - 12 Gb NL SAS					
7XB7A00066	B0YQ	ThinkSystem 3.5" 8TB 7.2K SAS 12Gb Hot Swap 512e HDD FIPS	-	Support	20

Table 60. 3.5-inch hot-swap 6 Gb SATA HDDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
3.5-inch hot-swap HDDs - 6 Gb NL SATA					
4XB7A97045	C5X6	ThinkSystem 3.5" 1TB 7.2K SATA 6Gb Hot Swap 512n HDD v2	-	Support	20
4XB7B01234	C5X8	ThinkSystem 3.5" 2TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
4XB7B01236	C5XA	ThinkSystem 3.5" 4TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00051	AUU8	ThinkSystem 3.5" 4TB 7.2K SATA 6Gb Hot Swap 512n HDD	-	No	20
4XB7B01238	C5XC	ThinkSystem 3.5" 6TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00052	AUUA	ThinkSystem 3.5" 6TB 7.2K SATA 6Gb Hot Swap 512e HDD	-	No	20
4XB7B01240	C5XE	ThinkSystem 3.5" 8TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00053	AUU9	ThinkSystem 3.5" 8TB 7.2K SATA 6Gb Hot Swap 512e HDD	-	No	20
4XB7B01242	C5X7	ThinkSystem 3.5" 10TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
7XB7A00054	AUUB	ThinkSystem 3.5" 10TB 7.2K SATA 6Gb Hot Swap 512e HDD	-	No	20
7XB7A00068	B118	ThinkSystem 3.5" 12TB 7.2K SATA 6Gb Hot Swap 512e HDD	-	No	20
4XB7A93787	C4D9	ThinkSystem 3.5" 12TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
4XB7A13907	B497	ThinkSystem 3.5" 14TB 7.2K SATA 6Gb Hot Swap 512e HDD	-	No	20
4XB7A93785	C4D7	ThinkSystem 3.5" 16TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
4XB7A38130	BCFH	ThinkSystem 3.5" 18TB 7.2K SATA 6Gb Hot Swap 512e HDD	-	No	20
4XB7A80354	BPKV	ThinkSystem 3.5" 20TB 7.2K SATA 6Gb Hot Swap 512e HDD	-	No	20
4XB7A93783	C4D5	ThinkSystem 3.5" 20TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20
4XB7A83765	BTR8	ThinkSystem 3.5" 22TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
4XB7A93008	C2BJ	ThinkSystem 3.5" 24TB 7.2K SATA 6Gb Hot Swap 512e HDD v2	-	Support	20

Table 61. 3.5-inch hot-swap 24 Gb SAS SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
3.5-inch hot-swap SSDs - 24 Gb SAS - Mixed Use (3-5 DWPD)					
4XB7B07616	CABM	ThinkSystem 3.5" VA 800GB Mixed Use SAS 24Gb HS SSD	-	Support	20
4XB7B07617	CABP	ThinkSystem 3.5" VA 1.6TB Mixed Use SAS 24Gb HS SSD	-	Support	20
4XB7B07618	CABN	ThinkSystem 3.5" VA 3.2TB Mixed Use SAS 24Gb HS SSD	-	Support	20
4XB7B07619	CAC8	ThinkSystem 3.5" VA 6.4TB Mixed Use SAS 24Gb HS SSD	-	Support	20
3.5-inch hot-swap SSDs - 24 Gb SAS - Read Intensive/Capacity (<3 DWPD)					
4XB7B07606	CAFQ	ThinkSystem 3.5" VA 960GB Read Intensive SAS 24Gb HS SSD	-	Support	20
4XB7B07607	CAFN	ThinkSystem 3.5" VA 1.92TB Read Intensive SAS 24Gb HS SSD	-	Support	20
4XB7B07608	CAFP	ThinkSystem 3.5" VA 3.84TB Read Intensive SAS 24Gb HS SSD	-	Support	20
4XB7B07609	CAFM	ThinkSystem 3.5" VA 7.68TB Read Intensive SAS 24Gb HS SSD	-	Support	20
4XB7B07610	CAFR	ThinkSystem 3.5" VA 15.36TB Read Intensive SAS 24Gb HS SSD	-	Support	20

Table 63. 3.5-inch hot-swap 6 Gb SATA SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
3.5-inch hot-swap SSDs - 6 Gb SATA - Mixed Use (3-5 DWPD)					
4XB7B11652	CCZK	ThinkSystem 3.5" VA 480GB Mixed Use SATA 6Gb HS SSD SED	-	Support	20
4XB7B11653	CCZJ	ThinkSystem 3.5" VA 960GB Mixed Use SATA 6Gb HS SSD SED	-	Support	20
4XB7B11655	CCZG	ThinkSystem 3.5" VA 3.84TB Mixed Use SATA 6Gb HS SSD SED	-	Support	20
4XB7A90888	BYM3	ThinkSystem 3.5" VA 480GB Mixed Use SATA 6Gb HS SSD v2	-	No	20
4XB7A90889	BYM7	ThinkSystem 3.5" VA 960GB Mixed Use SATA 6Gb HS SSD v2	-	No	20
4XB7A90890	BYM8	ThinkSystem 3.5" VA 1.92TB Mixed Use SATA 6Gb HS SSD v2	-	No	20
4XB7A90891	BYLX	ThinkSystem 3.5" VA 3.84TB Mixed Use SATA 6Gb HS SSD v2	-	No	20
3.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive (<3 DWPD)					
4XB7B11648	CCZP	ThinkSystem 3.5" VA 480GB Read Intensive SATA 6Gb HS SSD SED	-	Support	20

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
4XB7B11649	CCZN	ThinkSystem 3.5" VA 960GB Read Intensive SATA 6Gb HS SSD SED	-	Support	20
4XB7B11651	CCZL	ThinkSystem 3.5" VA 3.84TB Read Intensive SATA 6Gb HS SSD SED	-	Support	20
4XB7A90879	BYLJ	ThinkSystem 3.5" VA 480GB Read Intensive SATA 6Gb HS SSD v2	-	No	20
4XB7A90880	BYLY	ThinkSystem 3.5" VA 960GB Read Intensive SATA 6Gb HS SSD v2	-	No	20
4XB7A90881	BYLZ	ThinkSystem 3.5" VA 1.92TB Read Intensive SATA 6Gb HS SSD v2	-	No	20
4XB7A90882	BYM0	ThinkSystem 3.5" VA 3.84TB Read Intensive SATA 6Gb HS SSD v2	-	No	20

Table 64. 3.5-inch hot-swap PCIe 5.0 NVMe SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
3.5-inch SSDs - U.2 PCIe 5.0 NVMe - Read Intensive (<3 DWPD)					
4XB7B13984	CFA6	ThinkSystem 3.5" U.2 VA 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	12
4XB7B13985	CFA5	ThinkSystem 3.5" U.2 VA 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	12
4XB7B13986	CFA4	ThinkSystem 3.5" U.2 VA 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	12
4XB7B13987	CFA3	ThinkSystem 3.5" U.2 VA 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	-	Support	12

Table 65. 3.5-inch hot-swap PCIe 4.0 NVMe SSDs

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
3.5-inch SSDs - U.2 PCIe 4.0 NVMe - Write Intensive (10+ DWPD)					
3.5-inch SSDs - U.2 PCIe 4.0 NVMe - Mixed Use (3-5 DWPD)					
4XB7B01885	C6M8	ThinkSystem 3.5" U.2 Solidigm P5620 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	-	Support	12
3.5-inch SSDs - U.2 PCIe 4.0 NVMe - Read Intensive (<3 DWPD)					
4XB7B01871	C6MD	ThinkSystem 3.5" U.2 Solidigm P5520 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	12
4XB7B01872	C6ME	ThinkSystem 3.5" U.2 Solidigm P5520 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	12
4XB7B01873	C6MF	ThinkSystem 3.5" U.2 Solidigm P5520 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	-	Support	12

U.3 drives: In the DCSC configurator, 7500 PRO and 7500 MAX U.3 drives can only be selected when a Tri-Mode controller is also selected. See the Controllers for internal storage section.

Table 66. M.2 SATA non-hot-swap drives

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
M.2 SSDs - 6 Gb SATA - Read Intensive (<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

Table 67. M.2 PCIe 4.0 NVMe non-hot-swap drives

Part number	Feature code	Description	Top Choice Express	SED support	Max Qty
M.2 SSDs - PCIe 4.0 NVMe - Read Intensive (<3 DWPD)					
4XB7B09650	CBSZ	ThinkSystem M.2 VA 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	-	Support	2
4XB7A90102	BXMH	ThinkSystem M.2 PM9A3 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	-	Support	2

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 68. USB memory key

Part number	Feature	Description	Lenovo Top Choice Express
4X77A77065	BNWN	ThinkSystem USB 32GB USB 3.0 Flash Drive	-

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 69. External optical drive

Part number	Feature code	Description	Lenovo Top Choice Express
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 SR650 V3 supports a total of up to 12x PCIe slots, 10x at the rear and 2x at the front, plus 1x OCP 3.0 SFF slot for networking. The OCP slot can be either at the front or at the rear (but not both). Slot availability is based on riser selection and drive bays configured. The use of some slots requires that both processors be installed as listed below.

Topics in this section:

- Slot layout and connections
- Ordering information
- Serial port
- Slot field upgrades
- OCP slot filler

Slot layout and connections

The rear slots are provided by riser cards:

- Riser 1: Slots 1, 2 and 3, all full-height slots (connect to CPU 1)
- Riser 2: Slots 4, 5, and 6, all full-height slots (connect to CPU 2)
- Riser 3: Slot 7 and 8
  - When configured as Riser 3 only, where slots 7 and 8 are full-height slots:
    - Slot 7 connects to CPU 1
    - Slot 8 connects to CPU 2 (for a 2-socket server) or to CPU 1 (for a 1-socket server)
  - When configured as Riser 3+Riser 4, where slots 7 and 8 are low-profile slots:
    - Both slots connect to CPU 1
- Riser 4: Slots 9 and 10, both low-profile slots (connect to CPU 2)

The rear of the server also contains an OCP 3.0 slot, numbered as Slot 13 (connects to CPU 1).

Riser 3 support with onboard NVMe: When Riser 3 is configured, the use of the onboard NVMe connections is supported up to 12x NVMe drives. Two 8-bay backplanes are required, with 4 bays unused. A quantity of 16x or more NVMe drives requires the use of an adapter if Riser 3 is configured.

The slots in each riser are either PCIe x16 or PCIe x8 depending on the riser card selected as listed in the table below. All x8 slots are open-ended and physically support x16 adapters. Depending on the risers selected, slots are either PCIe 5.0 or PCIe 4.0. The OCP slot has a PCIe 5.0 x16 host interface when located at the rear of the server or PCIe 4.0 x16 when located at the front of the server.

The SR650 V3 also supports front-accessible PCIe slots: 2x PCIe 4.0 x16 slots plus a dedicated OCP 3.0

SFF slot with PCIe 4.0 interface for networking. Front-accessible slots are as follows:

- Slot 11: PCIe 4.0 x16 FHHL (connects to CPU 2)
- Slot 12: PCIe 4.0 x16 FHHL (connects to CPU 1)
- Front OCP slot (slot 14): PCIe 4.0 x16 (connects to CPU 1)

OCP slot: When front slots are configured, the rear OCP slot is disconnected and cannot be used.

As discussed in the Internal storage section, the server supports drive bays in the rear of the server. Depending on the drive bays selected, the number of slots available for adapters is reduced. The figure below shows the supported combinations of slots and drive bays.

Internal HBA/RAID adapter: For configurations with 2.5-inch front drive bays, an internal RAID adapter or HBA can be installed in a dedicated space and cabled to a PCIe x8 connector, thereby freeing up a slot for other purposes.

The following figure shows the locations of the rear-accessible slots for each configuration selection. The OCP slot in located in the lower-left corner.

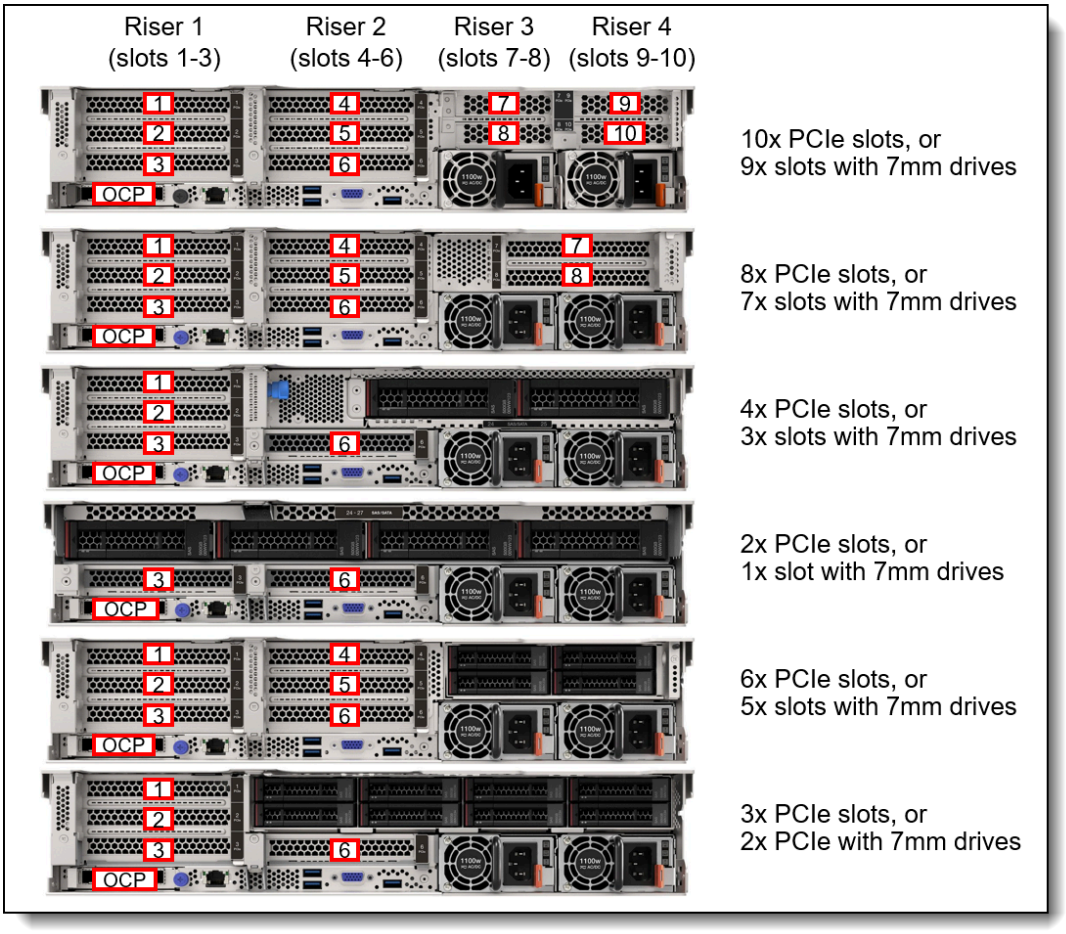


Figure 17. SR650 V3 rear slot configurations

The following figure shows the locations of the front-accessible slots.

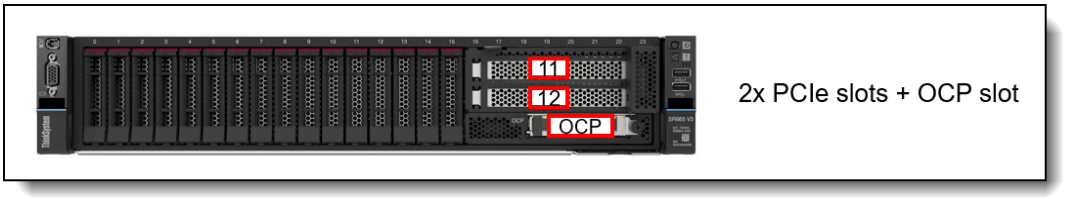


Figure 18. SR650 V3 front slots

Ordering information

The following table lists the riser cards available for CTO builds and for field upgrades. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

No slots: It is also possible to build a configuration without any slots, in which case slot fillers will be derived in the configurator. Slots can be added later as field upgrades using option part numbers as listed in the table.

Table 70. Riser cards

Part number	Feature code	Description	Top Choice Express	Purpose	Slot configuration* (Green = Gen5, Blue = Gen4)			
Rear Riser 1 (FH slots)					**Slot 1**	**Slot 2**	**Slot 3**	
4XH7A91474	BYPY	ThinkSystem SR650 V3 x16/x8/x8 PCIe Gen5 Riser1 or 2 v2	-	3 slots PCIe 5.0	Gen5 x16	Gen5 x8	Gen5 x8	
4XH7A82898	BPQU	ThinkSystem V3 2U x16/x8/x8 PCIe Gen5 Riser 1 or 2	-	3 slots PCIe 5.0	Gen5 x16	Gen5 x8	Gen5 x8	
4XH7A82896	BLKL	ThinkSystem V3 2U x16/x8/x8 PCIe Gen4 Riser1 or 2	-	3 slots PCIe 4.0	Gen4 x16	Gen4 x8	Gen4 x8	
4XH7A91475	BYPZ	ThinkSystem SR650 V3 x16/x16/E PCIe Gen5 Riser1 or 2 v2	-	2 slots PCIe 5.0; COM port or 7mm drives in slot 3	Gen5 x16	Gen5 x16	No slot	
4XH7A82900	BPQV	ThinkSystem V3 2U x16/x16/E PCIe Gen5 Riser1 or 2	-	2 slots PCIe 5.0; COM port or 7mm drives in slot 3	Gen5 x16	Gen5 x16	No slot	
4XH7A82892	BLKM	ThinkSystem V3 2U x16/x16/E PCIe Gen4 Riser1 or 2	-	2 slots PCIe 4.0; COM port or 7mm drives in slot 3	Gen4 x16	Gen4 x16	No slot	
4XH7A91476	BYQ0	ThinkSystem SR650 V3 E/x16/x16 PCIe Gen5 Riser1 or 2 v2	-	2 slots PCIe 5.0; DW GPU in slot 2	No slot	Gen5 x16	Gen5 x16	
4XH7A82902	BPQW	ThinkSystem V3 2U E/x16/x16 PCIe Gen5 Riser1 or 2	-	PCIe 5.0 in slot 2; DW GPU in slot 2	No slot	Gen5 x16	Gen4 x16	

Part number	Feature code	Description	Top Choice Express	Purpose	Slot configuration* (Green = Gen5, Blue = Gen4)			
4XH7A82894	BLKN	ThinkSystem V3 2U G4 E/x16/x16 PCIe Riser1 or 2	-	2 slots PCIe 4.0; DW GPU in slot 2	No slot	Gen4 x16	Gen4 x16	
4XH7A82890	BLKP	ThinkSystem V3 2U x16 PCIe Gen4 Riser1 or 2	-	1 slot PCIe 4.0; For 4x 3.5-inch rear drives	No slot	No slot	Gen4 x16	
Rear Riser 2 (FH slots)					**Slot 4**	**Slot 5**	**Slot 6**	
4XH7A82898	BPQU	ThinkSystem V3 2U x16/x8/x8 PCIe Gen5 Riser 1 or 2	-	3 slots PCIe 5.0	Gen5 x16	Gen5 x8	Gen5 x8	
4XH7A82896	BLKL	ThinkSystem V3 2U x16/x8/x8 PCIe Gen4 Riser1 or 2	-	3 slots PCIe 4.0	Gen4 x16	Gen4 x8	Gen4 x8	
4XH7A82900	BPQV	ThinkSystem V3 2U x16/x16/E PCIe Gen5 Riser1 or 2	-	2 slots PCIe 5.0; COM port or 7mm drives in slot 6	Gen5 x16	Gen5 x16	No slot	
4XH7A82892	BLKM	ThinkSystem V3 2U x16/x16/E PCIe Gen4 Riser1 or 2	-	2 slots PCIe 4.0; COM port or 7mm drives in slot 6	Gen4 x16	Gen4 x16	No slot	
4XH7A82902	BPQW	ThinkSystem V3 2U E/x16/x16 PCIe Gen5 Riser1 or 2	-	PCIe 5.0 in slot 5; DW GPU in slot 5	No slot	Gen5 x16	Gen4 x16	
4XH7A82894	BLKN	ThinkSystem V3 2U G4 E/x16/x16 PCIe Riser1 or 2	-	2 slots PCIe 4.0; DW GPU in slot 5	No slot	Gen4 x16	Gen4 x16	
4XH7A82890	BLKP	ThinkSystem V3 2U x16 PCIe Gen4 Riser1 or 2	-	1 slot PCIe 4.0; For 2x or 4x 3.5-inch rear drives	No slot	No slot	Gen4 x16	
Rear Riser 3 (2x FH slots)					**Slot 7**	**Slot 8**		
4XH7A82907	BLL9	ThinkSystem V3 2U x16/x16 PCIe Gen5 Riser3 Kit	-	2x PCIe 5.0 x16 slots; DW GPU in slot 7 (use of both slots requires 2 CPUs)	Gen5 x16	Gen5 x16		
4XH7A82905	BPKG	ThinkSystem V3 2U x16/x16 PCIe Gen4 Riser3 Kit with Cage	-	2x PCIe 4.0 x16 slots; DW GPU in slot 7 (use of both slots requires 2 CPUs)	Gen4 x16	Gen4 x16		
4XH7A82906	BPKH	ThinkSystem V3 2U x8/x8 PCIe Gen5 Riser3 Kit with Cage	-	2x PCIe 5.0 x8 slots	Gen5 x8	Gen5 x8		
4XH7A82904	BPKF	ThinkSystem V3 2U x8/x8 PCIe Gen4 Riser3 Kit with Cage	-	2x PCIe 4.0 x8 slots	Gen4 x8	Gen4 x8		
Rear Riser 3 & 4 (4x LP slots)					**Slot 7**	**Slot 8**	**Slot 9**	**Slot 10**

Part number	Feature code	Description	Top Choice Express	Purpose	Slot configuration* (Green = Gen5, Blue = Gen4)			
4XH7A86662	BQ2W†	ThinkSystem V3 2U PCIe Gen5 Riser 3/4-part 1 for Rear 10 slots	-	2x PCIe 5.0 x8 slots	Gen5 x8	Gen5 x8		
	BTMS†	ThinkSystem V3 2U PCIe Gen5 Riser 3/4-part 2 for Rear 10 slots	-	2x PCIe x8 slots (Gen 5, Gen4)			Gen5 x8	Gen4 x8
Front Riser					**Slot 11**	**Slot 12**		
CTO only	BQ2X	ThinkSystem V3 2U Front x16/x16 PCIe G4 Riser	-	2x PCIe 4.0 x16 front-accessible slots	Gen4 x16	Gen4 x16		

* All PCIe x8 slots are open ended and will physically support x16 adapters
† In the configurator, when feature BQ2W is selected, BTMS is automatically derived and provides slots 9 & 10. 4XH7A86662 contains both risers. (Note: see the configuration rule below regarding the front drive bay support for 10x rear slots)

Configuration rules:

- For best performance, install PCIe 5.0 adapters in PCIe 5.0 (Gen5) slots
- The server only supports one OCP slot, either in the rear of the server or the front of the server, not both
- The use of Riser 3 is mutually exclusive to onboard NVMe support as they use the same PCIe connectors.
- Only the following drive bay configurations at the front of the server support the use of 10x rear slots (risers 1, 2, 3 and 4). These correspond to storage configs 9, 12, 14, 41, 31, 33, 35, 39, 40. All other configurations may require special bid support.
  - 8x 2.5-inch SAS/SATA
  - 8x 2.5-inch AnyBay
  - 16x 2.5-inch SAS/SATA
  - 16x 2.5-inch AnyBay
- If you configure Riser 3 using a x16/x16 FH riser (feature BLL9 or BPKG) with only 1 processor installed, Slot 7 will be connected with x16 lanes, however Slot 8 will not be connected. If you later install the second processor as a field upgrade, you will need to order the necessary cable kit (4X97A82946 or 4X97A82944) to enable Slot 8. See Slot field upgrades for information.
- With only 1 processor installed, Riser 3 can only be enabled using using a x8/x8 FH riser (feature BPKH or BPKF)
- If you want to configure 4x low profile slots for slots 7-10, select feature BQ2W which provides riser 3 (slots 7, 8). Feature BTMS will then be automatically derived to provide riser 4 (slots 9 & 10), along with the necessary cables. Option part number 4XH7A86662 contains both of these risers and the cables.
- The following vRAN processors have fewer PCIe lanes (see the Processor features section) and therefore do not support Riser 3. They are also 1-socket processors, so they also don't support Riser 2. Only Riser 1 and the OCP slot are supported.
  - Intel Xeon Gold 5423N 20C 145W 2.1GHz Processor
  - Intel Xeon Gold 5433N 20C 160W 2.3GHz Processor
  - Intel Xeon Gold 6403N 24C 185W 1.9GHz Processor
  - Intel Xeon Gold 6423N 28C 195W 2.0GHz Processor
  - Intel Xeon Gold 6433N 32C 205W 2.0GHz Processor
  - Intel Xeon Gold 6443N 32C 195W 1.6GHz Processor

- If you want to add both a 7mm drive enclosure plus 2x PCIe slots above it, you will need to order the 7mm drive option (either 4XH7A85898 or 4XH7A85899) plus the x16/x16/E riser kit (4XH7A82900 for PCIe Gen 5 or 4XH7A82892 for Gen 4). The riser kit part number provides the 2-slot riser card.
- All PCIe x8 slots are open ended and will physically support x16 adapters

Serial port

The SR650 V3 optionally supports a RS-232 serial port by adding a COM port bracket to either slot 3 or slot 6. Ordering information is shown in the following table.

Front PCIe slots: The serial port is not supported in the front PCIe slots

Table 71. Serial port

Part number	Feature code	Description	Top Choice Express	Max quantity	Slots supported
4X97A82921	BMNJ	ThinkSystem V2/V3 1U COM Port Upgrade Kit	-	1	3, 6

Configuration rules:

- If double-wide GPUs are installed, the serial port is only supported in slot 6 due to a cable length limitation.

The bracket is shown in the following figure. The option part number includes both Low Profile and Full Height brackets.

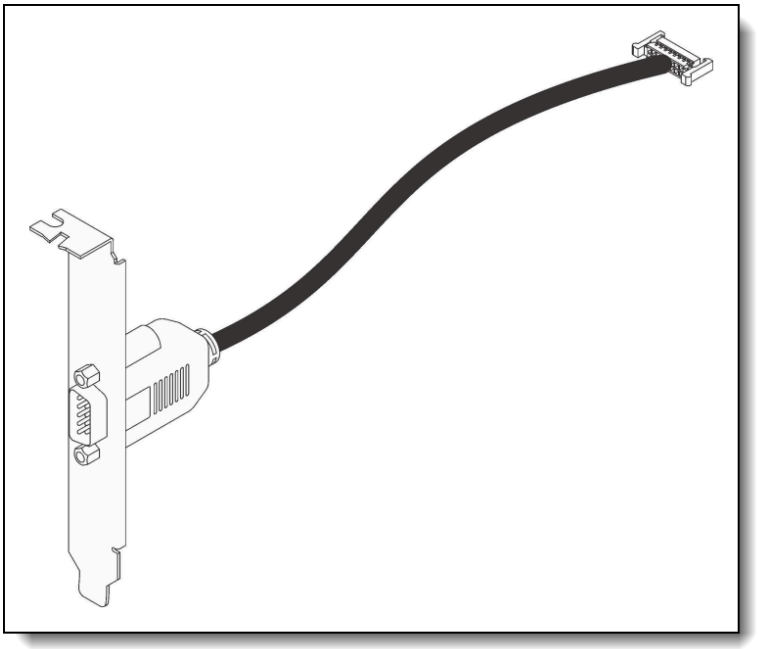


Figure 19. ThinkSystem COM Port Upgrade Kit v2

Slot field upgrades

Slot configurations can also be ordered as field upgrades using option part numbers, as listed in the following table.

Table 72. Slot field upgrades

Part number	Description
Riser 1 and Riser 2 field upgrades - PCIe Gen5	
4XH7A82898	ThinkSystem V3 2U x16/x8/x8 PCIe Gen5 Riser 1/2 Option Kit
4XH7A82900	ThinkSystem V3 2U x16/x16/E PCIe Gen5 Riser 1/2 Option Kit
4XH7A82902	ThinkSystem V3 2U E/x16/x16 PCIe Gen5 Riser 1/2 Option Kit
Riser 1 and Riser 2 field upgrades - PCIe Gen4	
4XH7A82896	ThinkSystem V3 2U x16/x8/x8 PCIe Gen4 Riser 1/2 Option Kit
4XH7A82892	ThinkSystem V3 2U x16/x16/E PCIe Gen4 Riser 1/2 Option Kit
4XH7A82894	ThinkSystem V3 2U E/x16/x16 PCIe Gen4 Riser 1/2 Option Kit
4XH7A82890	ThinkSystem V3 2U x16 PCIe Gen4 Riser 1/2 Option Kit
Riser 3 and 4 field upgrades - PCIe Gen5	
4XH7A82906	ThinkSystem SR650 V3 x8/x8 PCIe Gen5 Riser3 Option Kit (To support Riser 3 when 2 processors are installed)
4XH7A82907	ThinkSystem SR650 V3 x16/x16 PCIe Gen5 Riser3 Option Kit
4XH7A86662	ThinkSystem V3 2U PCIe Gen5 Riser 3/4-part 2 for Rear 10 slots
4XH7A87512	ThinkSystem Single Processor SR650 V3 x8/x8 PCIe Gen5 Riser3 Kit (To support Riser 3 when only 1 processor is installed)
4X97A82946	ThinkSystem 2nd Processor Upgrade SR650 V3 PCIe Gen5 Riser3 Cable Kit (For use when adding a second processor to the server, to enable all Riser 3 slots; replaces existing Riser 3 cabling)
Riser 3 and 4 field upgrades - PCIe Gen4	
4XH7A82904	ThinkSystem SR650 V3 x8/x8 PCIe Gen4 Riser3 Option Kit (To support Riser 3 when 2 processors are installed)
4XH7A82905	ThinkSystem SR650 V3 x16/x16 PCIe Gen4 Riser3 Option Kit
4XH7A87511	ThinkSystem Single Processor SR650 V3 x8/x8 PCIe Gen4 Riser3 Kit (To support Riser 3 when only 1 processor is installed)
4X97A82944	ThinkSystem 2nd Processor Upgrade SR650 V3 PCIe Gen4 Riser3 Cable Kit (For use when adding a second processor to the server, to enable all Riser 3 slots; replaces existing Riser 3 cabling)

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 73. OCP slot filler

Part number	Feature code	Description
4XF7B06188	B5WJ	ThinkSystem OCP3 FILLER

Network adapters

The server has a dedicated OCP 3.0 SFF slot with a PCIe x16 host interface. See Figure 3 for the location of the OCP slot. When located at the rear of the server, the OCP slot operates at PCIe 5.0 speed (once PCIe 5.0 OCP adapters are supported); when located at the front of the server, the OCP slot operates at PCIe 4.0 speed.

The following table lists the supported OCP adapters. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

One port can optionally be shared with the XCC management processor for Wake-on-LAN and NC-SI support. Only 1 OCP card can be installed in the server, either rear-accessible or front-accessible.

Table 74. Supported OCP adapters

Part number	Feature code	Description	Top Choice Express	Max Qty	Windows 10/11 support
Gigabit Ethernet					
4XC7A08235	B5T1	ThinkSystem Broadcom 5719 1GbE RJ45 4-port OCP Ethernet Adapter	-	1	Supported
4XC7A88428	BW97	ThinkSystem Intel I350 1GbE RJ45 4-Port OCP Ethernet Adapter V2	-	1	Supported
10 Gb Ethernet - 10GBASE-T					
4XC7A95696	C4GB	ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter	-	1	Supported
4XC7A08236	B5ST	ThinkSystem Broadcom 57416 10GBASE-T 2-port OCP Ethernet Adapter	-	1	Supported
4XC7A08278	BCD5	ThinkSystem Intel X710-T2L 10GBASE-T 2-port OCP Ethernet Adapter	-	1	Supported
4XC7A80268	BPPY	ThinkSystem Intel X710-T4L 10GBase-T 4-Port OCP Ethernet Adapter	-	1	Supported
25 Gb Ethernet					
4XC7A08237	BN2T	ThinkSystem Broadcom 57414 10/25GbE SFP28 2-Port OCP Ethernet Adapter	-	1	Supported
4XC7A80567	BPPW	ThinkSystem Broadcom 57504 10/25GbE SFP28 4-Port OCP Ethernet Adapter	-	1	Supported
4XC7A08294	BCD4	ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port OCP Ethernet Adapter	-	1	Supported
4XC7A80269	BP8L	ThinkSystem Intel E810-DA4 10/25GbE SFP28 4-Port OCP Ethernet Adapter	-	1	Supported
4XC7A62582	BE4T	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port OCP Ethernet Adapter	-	1	Supported
100 Gb Ethernet					
4XC7A08243	BPPX	ThinkSystem Broadcom 57508 100GbE QSFP56 2-Port OCP Ethernet Adapter	-	1	Supported

The following table lists additional supported network adapters that can be installed in the regular PCIe slots. The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Table 75. Supported PCIe Network Adapters

Part number	Feature	Description	Top Choice Express	Max Qty	Slots supported	PCIe lanes	Windows 10/11 support
Gigabit Ethernet							
7ZT7A00484	AUZV	ThinkSystem Broadcom 5719 1GbE RJ45 4-Port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
7ZT7A00535	AUZW	ThinkSystem I350-T4 PCIe 1Gb 4-Port RJ45 Ethernet Adapter	-	12	1 - 12	x4	Supported
10 Gb Ethernet - 10GBASE-T							
4XC7A95697	C4GC	ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter	-	10	1 - 12‡	x8	Supported
7ZT7A00496	AUKP	ThinkSystem Broadcom 57416 10GBASE-T 2-Port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
4XC7A80266	BNWL	ThinkSystem Intel X710-T2L 10GBase-T 2-Port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
4XC7A79699	BMXB	ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
25 Gb Ethernet							
4XC7A08238	BK1H	ThinkSystem Broadcom 57414 10/25GbE SFP28 2-port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
4XC7A80566	BNWM	ThinkSystem Broadcom 57504 10/25GbE SFP28 4-port PCIe Ethernet Adapter	-	6	1-8,11,12	x16	Supported
4XC7A08295	BCD6	ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
4XC7A80267	BP8M	ThinkSystem Intel E810-DA4 10/25GbE SFP28 4-Port PCIe Ethernet Adapter	-	10	1-8,11,12	x16	Supported
4XC7A62580	BE4U	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
4XC7A62581	BHE2	ThinkSystem Solarflare X2522-Plus 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	-	12	1 - 12	x8	Supported
100 Gb Ethernet / InfiniBand HDR							
4XC7A08297	BK1J	ThinkSystem Broadcom 57508 100GbE QSFP56 2-Port PCIe 4 Ethernet Adapter	-	6	1-8,11,12	x16	Supported
4XC7A08248	B8PP	ThinkSystem Mellanox ConnectX-6 Dx 100GbE QSFP56 2-port PCIe Ethernet Adapter	-	6	1-8,11,12	x16	Supported
4C57A14177	B4R9	ThinkSystem Mellanox ConnectX-6 HDR100/100GbE QSFP56 1-port PCIe VPI Adapter	-	6	1-8,11,12	x16	No
200 Gb Ethernet / InfiniBand HDR/NDR200							
4XC7B08942	CCVX	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	-	2*	1,2,4,5	x16	No
4C57A15326	B4RC	ThinkSystem Mellanox ConnectX-6 HDR/200GbE QSFP56 1-port PCIe 4 VPI Adapter	-	6	1-8,11,12	x16	No

Part number	Feature	Description	Top Choice Express	Max Qty	Slots supported	PCIe lanes	Windows 10/11 support
4XC7A81883	BQBN	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 InfiniBand Adapter	-	6	1-8,11,12	x16	No
400Gb Ethernet / NDR InfiniBand							
4XC7A95508	C51C	ThinkSystem NVIDIA ConnectX-7 NDR400 OSFP 1-port PCIe Gen5 VPI Adapter	-	6	1-8,11,12	x16	No

* Field upgrades to add BlueField-3 adapters require a power cable. See below.
‡ Requires a PCIe Gen4 riser; Not supported in a PCIe Gen5 riser
When adding a BlueField-3 adapter as a field upgrade, the power cable listed in the following table will also need to be ordered.

Table 76. Power cable for BlueField-3 adapters

Part number	Feature code	Description	Top Choice Express
4X97B02426	BMJL	ThinkSystem V3 2U BlueField-3 B3220 Power Cable Kit	-

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

Configuration requirements:

- Adapters with a x16 host interface require a x16 slot to maximize performance
- PCIe Gen5 adapters will require a Gen5 riser to maximize performance

GPU adapters

This section describes the supported GPUs.

- GPU part numbers
- GPU Ready configurations
- Riser selections for double-wide GPUs
- GPU Full Length Thermal Option Kit
- GPU cable kits

GPU part numbers

The SR650 V3 supports the following graphics processing units (GPUs). The table includes a Top Choice Express column; for CTO orders, select a TCE component for faster delivery. See the Top Choice section for more information.

Table 77. Supported GPUs

Part number	Feature code	Description	Top Choice Express	Controlled GPU	Max qty	Slots supported	PCIe width	TDP	Aux power	Windows 10/11 support
Single-wide GPUs										
4X67A84824	BS2C	ThinkSystem NVIDIA L4 24GB PCIe Gen4 Passive GPU	-	Controlled	8	1 - 8	x16	72W	No	Supported
4X67A96431	C39N	ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU	-	No	8	1 - 8	x8	50 W	No	Supported
4X67B03688	C9KE	ThinkSystem NVIDIA RTX A400 4GB PCIe Gen4 Active GPU	-	No	8	1 - 8	x8	50 W	No	Supported
Double-wide GPUs										
4X67A90669	BYFH	ThinkSystem NVIDIA L40S 48GB PCIe Gen4 Passive GPU	-	Controlled	3	2,5,7*	x16	350W	Yes	Supported

* When a double-wide GPU is installed in slot 2, 5 or 7, the adjacent slot 1, 4 and 8 respectively is not available
† Windows Server 2022 does not support more than 16 displays attached to the server

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

GPU Ready configurations

For CTO orders, the SR650 V3 also supports the selection of a placeholder for a GPU. This selection results in a "GPU ready" configuration which ensures that the server ships with the components needed for GPU installation (GPU power cables, air ducts, power supplies, fans, etc) without actually including the GPUs

themselves. The following table lists the ordering information for CTO orders.

Tip: These GPU-Ready feature codes can only be selected with general purpose CTO models such as 7D76CTO1WW. They are not offered in "for AI" models such as 7D76CTOEWW. See the Models section for more information.

Table 78. GPU-Ready configurations - ordering information

Part number	Feature code	Description	Lenovo Top Choice Express
CTO only	BW40	ThinkSystem NVIDIA A4500 GPU-Ready Installation	-
CTO only	BVLL	ThinkSystem NVIDIA H100 GPU-Ready Installation	-
CTO only	BW3Z	ThinkSystem NVIDIA L40 GPU-Ready Installation	-
CTO only	BZUS	ThinkSystem NVIDIA L40S GPU-Ready Installation	-
CTO only	BP4X	ThinkSystem Double Width GPU-Ready Installation (for all other supported DW GPUs)	-

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 most markets.
- GPUs can be configured in CTO orders as follows:
  - A Controlled GPU can only be configured using one of the Base CTO models designated with "for AI", such as 7D76CTOEWW, as listed in the Models section.
  - A GPU that is not controlled can only be configured using one of the Base CTO models that is *not* named "for AI", such as 7D76CTO1WW, as listed in the Models section.
- All GPUs installed must be identical
- When a double-wide GPU is installed in slot 2, 5 or 7, the adjacent slot 1, 4 and 8 respectively is not available
- Flash storage adapters are not supported.
- Middle drive bays and Rear drive bays are not supported
- 12x 3.5-inch backplanes are not supported
- The following GPUs are not supported with PCIe Gen 5 risers:
  - ThinkSystem NVIDIA RTX A400 4GB PCIe Gen4 Active GPU, 4X67B03688
    ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU, 4X67A96431
  - ThinkSystem NVIDIA T1000 8GB PCIe Active GPU, 4X67A79777
  - ThinkSystem NVIDIA T400 4GB PCIe Active GPU, 4X67A79778
- Some NVIDIA A Series GPUs are available as two feature codes, one with a CEC chip and one without a CEC chip (ones without the CEC chip have "w/o CEC" in the name). The CEC is a secondary Hardware Root of Trust (RoT) module that provides an additional layer of security, which can be used by customers who have high regulatory requirements or high security standards. NVIDIA uses a multi-layered security model and hence the protection offered by the primary Root of Trust embedded in the GPU is expected to be sufficient for most customers. The CEC defeatured products still offer Secure Boot, Secure Firmware Update, Firmware Rollback Protection, and In-Band Firmware Update Disable. Specifically, without the CEC chip, the GPU does not support Key Revocation or Firmware Attestation. CEC and non-CEC GPUs of the same type of GPU can be mixed in field upgrades.

The server supports up to 3x double-wide GPUs, however due to thermal requirements, GPU support is

affected by the front drive bay configuration and by ambient temperature:

- With 16x 2.5-inch front drives bays:
  - Up to 3x double-wide GPUs are supported, in slots 2, 5, 7
  - For the NVIDIA A40, H100:
    - The use of 3x GPUs requires ambient temperature no higher than 25°C
    - The use of 2x GPUs (slots 2, 5) requires ambient temperature no higher than 30°C
  - All other GPUs: No ambient temperature restrictions-
- With 24x 2.5-inch front drive bays:
  - Up to 2x double-wide GPUs are supported, in slots 2, 5
  - NVIDIA A40: No support
  - All other GPUs: Ambient temperature no higher than 25°C

For additional GPU requirements, see the Thermal rules page in the User Guide:
https://pubs.lenovo.com/sr650-v3/thermal_rules

Riser selections for double-wide GPUs

When a double-wide GPU is installed in slot 2, 5 or 7, the adjacent slot 1, 4 and 8 respectively is not available. The riser cards listed in the following table are used with double-wide GPUs.

Table 79. Risers needed for double-wide GPUs

Riser	Part number	Feature code	Description	Top Choice Express
Riser 1 (GPU in slot 2) - PCIe Gen5	4XH7A82902	BPQW	ThinkSystem V3 2U E/x16/x16 PCIe Gen5 Riser1 or 2	-
Riser 1 (GPU in slot 2) - PCIe Gen4	4XH7A82894	BLKN	ThinkSystem V3 2U G4 E/x16/x16 PCIe Riser1 or 2	-
Riser 2 (GPU in slot 5) - PCIe Gen5	4XH7A82902	BPQW	ThinkSystem V3 2U E/x16/x16 PCIe Gen5 Riser1 or 2	-
Riser 2 (GPU in slot 5) - PCIe Gen4	4XH7A82894	BLKN	ThinkSystem V3 2U G4 E/x16/x16 PCIe Riser1 or 2	-
Riser 3 (GPU in slot 7) - PCIe Gen5	4XH7A82907	BLL9	ThinkSystem V3 2U x16/x16 PCIe Gen5 Riser3 Kit	-
Riser 3 (GPU in slot 7) - PCIe Gen4	4XH7A82905	BPKG	ThinkSystem V3 2U x16/x16 PCIe Gen4 Riser3 Kit with Cage	-

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 A2, L4, T1000 and T400.

Table 80. ThinkSystem SR650 V3 GPU Full Length Thermal Option Kit

Part number	Description	Maximum supported
4X67A82883	ThinkSystem SR650 V3 GPU Full Length Thermal Option Kit • 2x 1U processor performance heatsinks - replace existing 2U heatsinks (SBB7A53929, BP4Z) • 1x ThinkSystem 2U GPU air duct - replaces main air baffle (SBB7A43701, BLL5) • 3x GPU extend air ducts - needed in a zone if an A10 or other single-wide GPU > 75W is installed in the upper slot (SBB7A43702, BLL4) • 3x Air duct fillers - needed in each riser zone if no GPU is installed in that zone (SBB7A17338, B8MB) • 3x 8-pin GPU power cables for double-wide GPUs (SBB7A49792, BMPQ) • 3x 16-pin GPU power cables for double-wide GPUs (SBB7A66338, BRWK) • 3x GPU power cables for single-wide GPUs and the RTX A4500 (SBB7A44786, BMJL) • 3x GPU power Y-cables when 2x single-wide GPUs installed on one riser (SBB7A23757, BC09)	1

The following figure shows the GPU air duct with GPU air duct fillers and GPU extend air ducts installed.

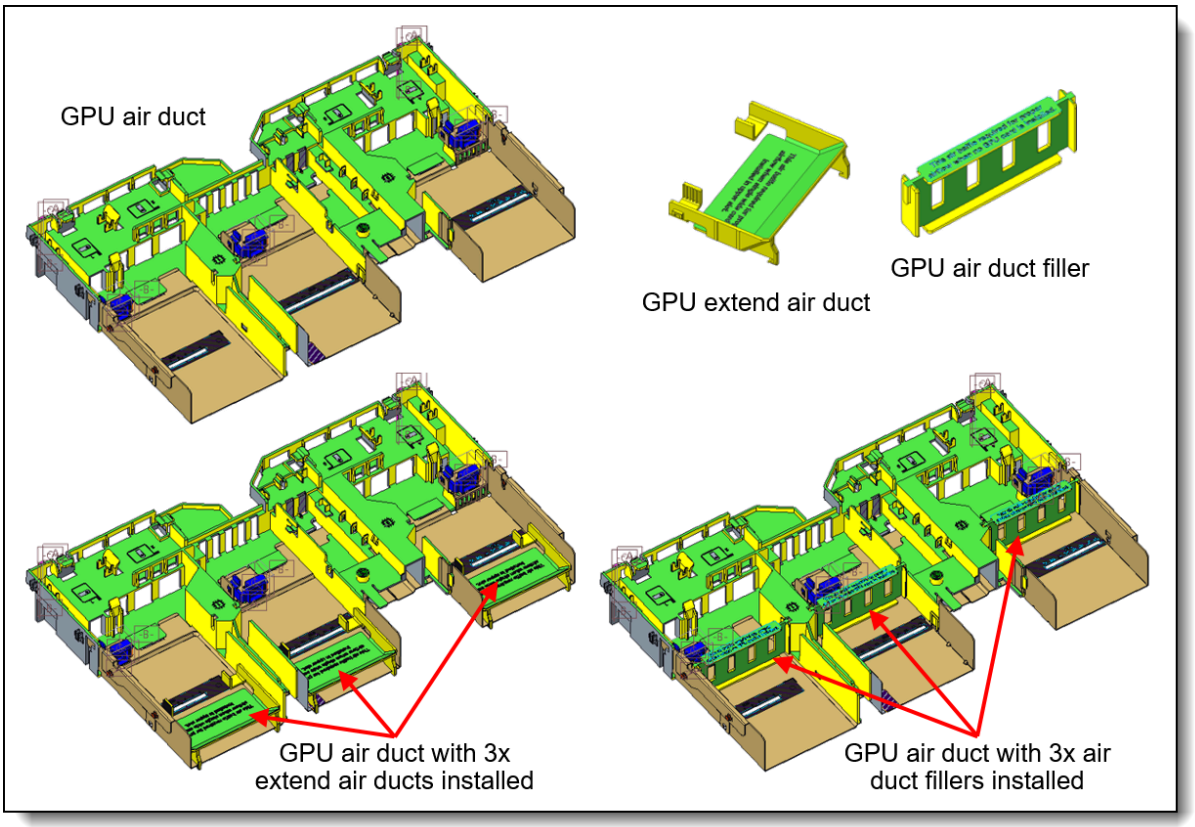


Figure 20. SR650 V3 GPU air duct

GPU cable kits

The following cable kits are 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 kits are only required for field upgrades; factory (CTO) orders will automatically include any required cables.
- For double-wide GPUs, The DW (double-wide) cable kit is only required if you are adding *additional* double-wide GPUs to a server that already has a DW 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 SR650 V3 GPU Full Length Thermal Option Kit, 4X67A82883 instead, since 4X67A82883 includes the necessary power cables.

Table 81. GPU cable kits

Part number	Description
4X97A82948	ThinkSystem SR650 V3 DW GPU Cable Kit • 3x 8-pin GPU power cables for double-wide GPUs (SBB7A49792) • 3x GPU power cables for single-wide GPUs and the RTX A4500 (SBB7A44786) • 3x GPU power Y-cables when 2x single-wide GPUs installed on one riser (SBB7A23757) • 3x 16-pin GPU power cables for double-wide GPUs (SBB7A66338)

Fibre Channel host bus adapters

The following table lists the Fibre Channel HBAs supported by the SR650 V3.

No Windows 10/11 support: None of the adapters listed in the table are supported with Windows 10 or Windows 11.

Table 82. Fibre Channel HBAs

Part number	Feature code	Description	Top Choice Express	Max qty	Slots supported	PCIe lanes
64 Gb Fibre Channel HBAs						
4XC7A77485	BLC1	ThinkSystem Emulex LPe36002 64Gb 2-port PCIe Fibre Channel Adapter	-	12	All slots	Gen4 x8
32 Gb Fibre Channel HBAs						
4XC7A76498	BJ3G	ThinkSystem Emulex LPe35000 32Gb 1-port PCIe Fibre Channel Adapter v2	-	12	All slots	Gen4 x8
4XC7A76525	BJ3H	ThinkSystem Emulex LPe35002 32Gb 2-port PCIe Fibre Channel Adapter V2	-	12	All slots	Gen4 x8
4XC7A08279	BA1G	ThinkSystem QLogic QLE2770 32Gb 1-Port PCIe Fibre Channel Adapter	-	12	All slots	Gen4 x8
4XC7A08276	BA1F	ThinkSystem QLogic QLE2772 32Gb 2-Port PCIe Fibre Channel Adapter	-	12	All slots	Gen4 x8
16 Gb Fibre Channel HBAs						
01CV840	ATZV	Emulex 16Gb Gen6 FC Dual-port HBA	-	12	All slots	Gen3 x8
01CV830	ATZU	Emulex 16Gb Gen6 FC Single-port HBA	-	12	All slots	Gen3 x8
01CV760	ATZC	QLogic 16Gb Enhanced Gen5 FC Dual-port HBA	-	12	All slots	Gen3 x8
01CV750	ATZB	QLogic 16Gb Enhanced Gen5 FC Single-port HBA	-	12	All slots	Gen3 x8

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

SAS adapters for external storage

The following table lists SAS HBAs and RAID adapters supported by SR650 V3 server for use with external storage.

No Windows 10/11 support: None of the adapters listed in the table are supported with Windows 10 or Windows 11.

Table 83. Adapters for external storage

Part number	Feature code	Description	Top Choice Express	Max qty	Slots supported	PCIe lanes
SAS HBAs						
4Y37A78837	BNWK	ThinkSystem 440-8e SAS/SATA PCIe Gen4 12Gb HBA	-	12	All slots	Gen4 x8
4Y37A09724	B8P7	ThinkSystem 440-16e SAS/SATA PCIe Gen4 12Gb HBA	-	12	All slots	Gen4 x8
4Y37A85156	BWKP	ThinkSystem 450W-16e SAS/SATA PCIe Gen4 24Gb HBA	-	6	1-7,11,12	Gen4 x16
External RAID adapters						
4Y37A78836	BNWJ	ThinkSystem RAID 940-8e 4GB Flash PCIe Gen4 12Gb Adapter	-	4*	All slots	Gen4 x8

* See below regarding supercap requirements

For a comparison of the functions of the supported storage adapters, see the ThinkSystem RAID Adapter and HBA Reference:
https://lenovopress.lenovo.com/lp1288#sr650-v3-support=SR650%2520V3&internal-or-external-ports=External

The RAID 940-8e adapter uses a flash power module (supercap), which can be installed in one of up to 4 locations in the server depending on the server configuration. See the RAID flash power module (supercap) support section for details. The number of 940-8e RAID adapters supported is based on how many supercaps can be installed in the server. If an internal RAID adapter with flash power modules is installed, the maximum number of 940-8e adapters supported is reduced by 1.

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 SR650 V3 server has up to six 60 mm hot-swap variable-speed fans. Five fans are needed when one processor is installed and six fans are required when two processors are installed. Certain 1-processor configurations may also require 6 fans, as described below. The server offers N+1 redundancy. The server also has one or two additional fans integrated in each of the two power supplies.

Depending on the configuration, the server will need either Standard fans (single-rotor 17K RPM) or Performance fans (dual-rotor 21K RPM).

Under the following conditions, Standard fans can be used:

- Processor TDP < 270W
- No 128 GB or 256GB 3DS RDIMMs
- No mid-chassis or rear drive backplanes
- No GPUs
- No low profile slots 7, 8, 9 & 10
- No internal (CFF) HBA/RAID adapter
- A configuration with 24x 2.5" or 12x 3.5" front backplanes and without any following network adapters:
  - Any 100Gb, 200Gb or 400Gb adapter
  - ThinkSystem Broadcom 57454 10GBASE-T 4-port OCP Ethernet Adapter, 4XC7A08240
  - ThinkSystem Broadcom 57416 10GBASE-T 2-port OCP Ethernet Adapter, 4XC7A08236
  - ThinkSystem NVIDIA BlueField-2 25GbE SFP56 2-Port PCIe Ethernet DPU w/BMC & Crypto, BRPK
- Not the following configurations:
  - 12x 3.5-inch front drive bays with an OCP adapter installed
- Ambient temperature 35°C or lower

If any conditions are not met, Performance fans are required.

The quantity of fans required are as follows:

- 6 fans:
  - 2 processor configurations
  - 1 processor configurations with middle drive backplanes
  - 1 processor configurations with rear drive backplanes
  - 1 processor configurations with Riser 3
- 5 fans:
  - 1 processor configuration without middle/rear drive backplanes or Riser 3

Ordering information for the fans is listed in the following table.

Table 84. Fan ordering information

Part number	Feature code	Description	Top Choice Express	Quantity required
4F17A14497	BH8F	ThinkSystem V3 2U Standard Fan Option Kit	-	1x CPU: 5 or 6 2x CPUs: 6
4F17A82884	BLL6	ThinkSystem V3 2U Performance Fan Option Kit	-	1x CPU: 5 or 6 2x CPUs: 6

Power supplies

The SR650 V3 supports up to two redundant hot-swap power supplies.

- Power supply ordering information
- Power supply LEDs
- Power cords (C13 connectors)
- Power cords (C19 connectors)
- -48V DC power cord

Power supply ordering information

The power supply choices are listed in the following table. Both power supplies used in 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 85. Power supply options

Part number	Feature code	Description	Top Choice Express	Connector	Max quantity	110V AC	220V AC	240V DC PRC only	-48V DC
AC input power - 80 PLUS Titanium efficiency									
4P57A82019	BR1X	ThinkSystem 750W 230V Titanium Hot-Swap Gen2 Power Supply v3	-	C13	2	No	Yes	Yes	No
CTO only	C07V	ThinkSystem 750W 230V Titanium Hot-Swap Gen2 Power Supply v4	-	C13	2	No	Yes	Yes	No
4P57A72666	BLKH	ThinkSystem 1100W 230V Titanium Hot-Swap Gen2 Power Supply	-	C13	2	No	Yes	Yes	No
4P57A78359	BPK9	ThinkSystem 1800W 230V Titanium Hot-Swap Gen2 Power Supply	-	C13	2	No	Yes	Yes	No
CTO only	C8L4	ThinkSystem 1800W 230V Titanium Hot-Swap Gen2 Power Supply v5	-	C13	2	No	Yes	Yes	No
4P57A72667	BKTJ	ThinkSystem 2600W 230V Titanium Hot-Swap Gen2 Power Supply v4	-	C19	2	No	Yes	Yes	No
AC input power - 80 PLUS Platinum efficiency									
4P57A72670	BNFG	ThinkSystem 750W 230V/115V Platinum Hot-Swap Gen2 Power Supply v3	-	C13	2	Yes	Yes	Yes	No
4P57A72671	BNFH	ThinkSystem 1100W 230V/115V Platinum Hot-Swap Gen2 Power Supply v3	-	C13	2	Yes	Yes	Yes	No

Part number	Feature code	Description	Top Choice Express	Connector	Max quantity	110V AC	220V AC	240V DC PRC only	-48V DC
4P57A78362	BMUF	ThinkSystem 1800W 230V Platinum Hot-Swap Gen2 Power Supply v2	-	C13	2	No	Yes	Yes	No
4P57A26295	B962	ThinkSystem 2400W 230V Platinum Hot-Swap Gen2 Power Supply	-	C19	2	No	Yes	Yes	No
-48V DC input power									
4P57A89415	CCTL	ThinkSystem 1100W -48V DC Hot-Swap Gen2 Power Supply v2	-	DC	2	No	No	No	Yes

Supported power supplies are auto-sensing dual-voltage units, supporting both 110V AC (100-127V 50/60 Hz) and 220V AC (200-240V 50/60 Hz) power. For China customers, all power supplies support 240V DC.

AC power supplies up to 1800W have a C14 connector. AC power supplies 2400W and above have a C20 connector. Power supply options do not include a line cord. For server configurations, the inclusion of a power cord is model dependent. Configure-to-order models can be configured without power cords if desired.

The ThinkSystem 1100W -48V DC Hot-Swap Gen2 Power Supply v2 (4P57A89415) has a Weidmuller TOP 4GS/3 7.6 terminal as shown in the following figure.

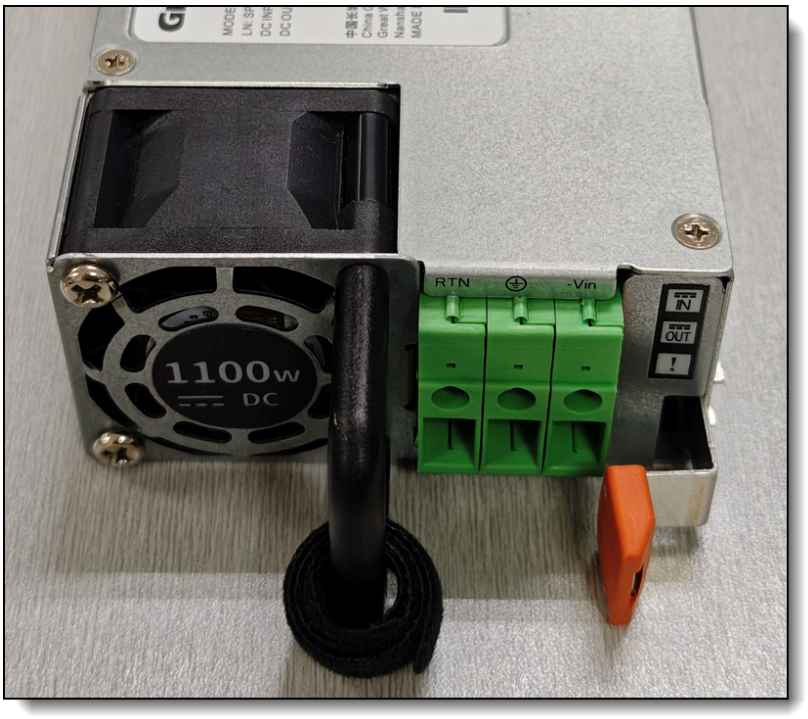


Figure 21. Connector on the ThinkSystem 1100W -48V DC Hot-Swap Gen2 Power Supply v2 (4P57A89415)

Power supply LEDs

The supported hot-swap power supplies have the following LEDs:

- Power input LED:
  - Green: The power supply is connected to the AC power source
  - Off: The power supply is disconnected from the AC power source or a power problem has occurred
- Power output LED:
  - Green: The server is on and the power supply is working normally
  - Blinking green: The power supply is in Zero-output/Standby mode (see below)
  - Off: The server is powered off, or the power supply is not working properly
- Power supply error LED:
  - Off: The power supply is working normally
  - Yellow: The power supply has failed

Power cords (C13 connectors)

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 1100W 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 86. Power cords

Market/region	Part number	Feature code	Description
Rack cables - C13 to C14			
Worldwide	00Y3043	A4VP	1.0m, 10A/100-250V, C13 to C14 Jumper Cord
Worldwide	4L67A08367	B0N5	1.0m, 10A/13A, 100-250V, C13 to C14 Jumper Cord
Worldwide	39Y7937	6201	1.5m, 10A/100-250V, C13 to C14 Jumper Cord
Worldwide	4L67A08368	B0N6	1.5m, 10A/13A, 100-250V, C13 to C14 Jumper Cord
Worldwide	4L67A08365	B0N4	2.0m, 10A/100-250V, C13 to C14 Jumper Cord
Worldwide	4L67A08369	6570	2.0m, 10A/13A, 100-250V, C13 to C14 Jumper Cord
Worldwide	4L67A08366	6311	2.8m, 10A/100-250V, C13 to C14 Jumper Cord
Worldwide	4L67A08370	6400	2.8m, 10A/13A, 100-250V, C13 to C14 Jumper Cord
Worldwide	39Y7932	6263	4.3m, 10A/100-250V, C13 to C14 Jumper Cord
Worldwide	4L67A08371	6583	4.3m, 10A/13A, 100-250V, C13 to C14 Jumper Cord
Rack cables for India - C13 to C14			
India	4L67B10326	CC6R	2.0m, 10A/100-250V, C13 to C14 Jumper Cord (India)
India	4L67B10327	CC6S	2.8m, 10A/100-250V, C13 to C14 Jumper Cord (India)
India	4L67B10328	CC6T	4.3m, 10A/100-250V, C13 to C14 Jumper Cord (India)
Rack cables - C13 to C20			
Worldwide	39Y7938	6204	2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable
Rack cables - C13 to C20 (Y-cable)			
Worldwide	47C2491	A3SW	1.2m, 16A/100-250V, 2 Short C13s to Short C20 Rack Power Cable
Worldwide	47C2492	A3SX	2.5m, 16A/100-250V, 2 Long C13s to Short C20 Rack Power Cable
Worldwide	47C2493	A3SY	2.8m, 16A/100-250V, 2 Short C13s to Long C20 Rack Power Cable
Worldwide	47C2494	A3SZ	4.1m, 16A/100-250V, 2 Long C13s to Long C20 Rack Power Cable

Market/region	Part number	Feature code	Description
Line cords			
Argentina	39Y7930	6222	2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord
Argentina	81Y2384	6492	4.3m,10A/250V, C13/IRAM 2073 (Argentina) Line Cord
Australia/NZ	39Y7924	6211	Australia/NZ 10A line C13 to SAA-AS C112 (2.8M)
Australia/NZ	81Y2383	6574	4.3m,10A/250V, C13/AS/NZS 3112/2000 (Australia) Line Cord
Brazil	69Y1988	6532	2.8m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord
Brazil	81Y2387	6404	4.3m,10A/250V, C13/NBR 14136 (Brazil) Line Cord
China	39Y7928	6210	2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord
China	81Y2378	6580	4.3m,10A/250V, C13/GB2099.1 (China) Line Cord
Europe	39Y7917	6212	European 10A line C13 to CEE 7/7 (2.8M)
Europe	81Y2376	6572	4.3m,10A/230V, C13 to CEE7-VII (Europe) Line Cord
India	39Y7927	6269	2.8m, 6A Line C13 to Fig 68 (India) Line Cord
India	81Y2386	6567	4.3m, 10A/250V, C13 to IS 6538 (India) Line Cord
Israel	39Y7920	6218	Israel 10A line C13 to SI 32 (2.8M)
Italy/Chile	39Y7921	6217	Italy 10A line C13 to CEE 7/7 (2.8M)
Italy/Chile	81Y2380	6493	4.3m,10A/250V, C13/CEI 23-16 (IT) Line cord
Japan	46M2593	A1RE	Japan 12A/125V C13 to JIS C-8303 2.8m line cord
Japan	39Y7926	6335	4.3m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord
South Africa	39Y7922	6214	South Africa 10A line C13 to SABS 164/1 (2.8M)
South Africa	81Y2379	6576	4.3m,10A/250V, C13/SANS 164-1 (South Africa) Line Cord
South Korea	39Y7925	6219	Korea 7A line C13 to KETI 15A/250V (2.8M)
South Korea	81Y2385	6494	4.3m, 12A/250V C13/KSC 8305 (Korea) Line Cord
Switzerland	39Y7919	6216	Switzerland 10A line C13 to SEV 1011 (2.8M)
Switzerland	81Y2390	6578	4.3m,10A/250V, C13/SEV 1011 (Switzerland)Line Cord
Taiwan	23R7158	6386	Line cord - 2.8m, 10A/125V, C13 to CNS 10917-3 (Taiwan)
Taiwan	81Y2375	6317	Taiwan 10A/250V C13/CNS 10917 2.8m line cord
Taiwan	81Y2374	6402	2.8m, 13A/125V, C13 to CNS 60799 (Taiwan) Line Cord
Taiwan	4L67A08363	AX8B	4.3m, 10A/125V, C13 to CNS 10917 (Taiwan) Line Cord
Taiwan	81Y2389	6531	4.3m, 10A/250V, C13/CNS 10917 (Taiwan) Line Cord
Taiwan	81Y2388	6530	Taiwan 13A/125V C13/CNS 10917 4.3m line cord
Thailand	90Y3017	6496	Line cord - 1.8m, 10 AMP/125 VAC - IEC 320 C13 Inline (Thailand)
UK	39Y7923	6215	United Kingdom 10A line C13 to BS 1363 (2.8M)
UK	81Y2377	6577	4.3m,10A/230V, C13 to BS 1363/A (UK) Line Cord
USA/Canada	90Y3016	6313	2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord
USA/Canada	46M2592	A1RF	10A/250V C13 to NEMA 6-15P 2.8m line cord
USA/Canada	00WH545	6401	2.8m, 13A/120V, C13 to NEMA 5-15P (US) Line Cord
USA/Canada	4L67A08359	6370	4.3M, 10A/125V, C13 to NEMA 5-15P (US) Line Cord
USA/Canada	4L67A08361	6373	4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord
USA/Canada	4L67A08360	AX8A	4.3m, 13A/125V, 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 87. Power cords (C19 connectors)

Market/region	Part number	Feature code	Description	Top Choice Express
C19 to C20 Rack cables				
Worldwide	4L67A86677	BPJ0	0.5m, 16A/100-250V, C19 to C20 Jumper Cord	
Worldwide	4L67A86678	B4L0	1.0m, 16A/100-250V, C19 to C20 Jumper Cord	
Worldwide	4L67A86679	B4L1	1.5m, 16A/100-250V, C19 to C20 Jumper Cord	
Worldwide	4L67A86680	B4L2	2.0m, 16A/100-250V, C19 to C20 Jumper Cord	
Worldwide	39Y7916	6252	2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable	
Worldwide	4L67A86681	B4L3	4.3m, 16A/100-250V, C19 to C20 Jumper Cord	
C19 to C20 Rack cables for India				
India	4L67B10323	CC6N	2.0m, 16A/100-250V, C19 to C20 Jumper Cord (India)	
India	4L67B10324	CC6P	2.8m, 16A/100-250V, C19 to C20 Jumper Cord (India)	
India	4L67B10325	CC6Q	4.3m, 16A/100-250V, C19 to C20 Jumper Cord (India)	
C19 Line cords				
Argentina	40K9777	6276	4.3m, 16A/250V, C19 to IRAM 2073 (Argentina) Line Cord	
Brazil	40K9775	6277	4.3m, 16A/250V, C19 to NBR 14136 (Brazil) Line Cord	
China	40K9774	6288	4.3m, 15A/220V, C19 to GB 2099.1 (China) Line Cord	
Europe	40K9766	6279	4.3m, 16A/250V, C19 to CEE 7/7 (Europe) Line Cord	
Italy	40K9768	6281	4.3m, 16A/250V, C19 to CEI 23-16 (Italy) Line Cord	
South Korea	41Y9231	6289	4.3m, 16A/220V, C19 to KSC 8305 (S. Korea) Line Cord	
UK	40K9767	6278	4.3m, 13A/250V, C19 to BS 1363/A (UK) Line Cord	
USA/Canada	40K9772	6275	4.3m, 18A/250V, C19 to NEMA L6-20P (US) Line Cord	
USA/Canada	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 88. -48V DC power cable

Part number	Feature code	Description	Top Choice Express
4X97A59831	BE4V	2.5m, -48VDC Interconnecting Cable	-

Systems management

The SR650 V3 contains an integrated service processor, XClarity Controller 2 (XCC2), which provides advanced control, monitoring, and alerting functions. The XCC2 is based on the AST2600 baseboard management controller (BMC) using a dual-core ARM Cortex A7 32-bit RISC service processor running at 1.2 GHz.

Topics in this section:

- System I/O Board
- Local management
- System status with XClarity One Mobile
- Remote management
- XCC2 Platinum
- Lenovo XClarity Provisioning Manager
- Lenovo XClarity One
- Lenovo XClarity Essentials
- Lenovo XClarity Energy Manager
- Lenovo Capacity Planner

System I/O Board

The SR650 V3 implements a separate System I/O Board that connects to the Processor Board. The location of the System I/O Board is shown in the Components and connectors section. The System I/O Board contains all the connectors visible at the rear of the server as shown in the following figure.

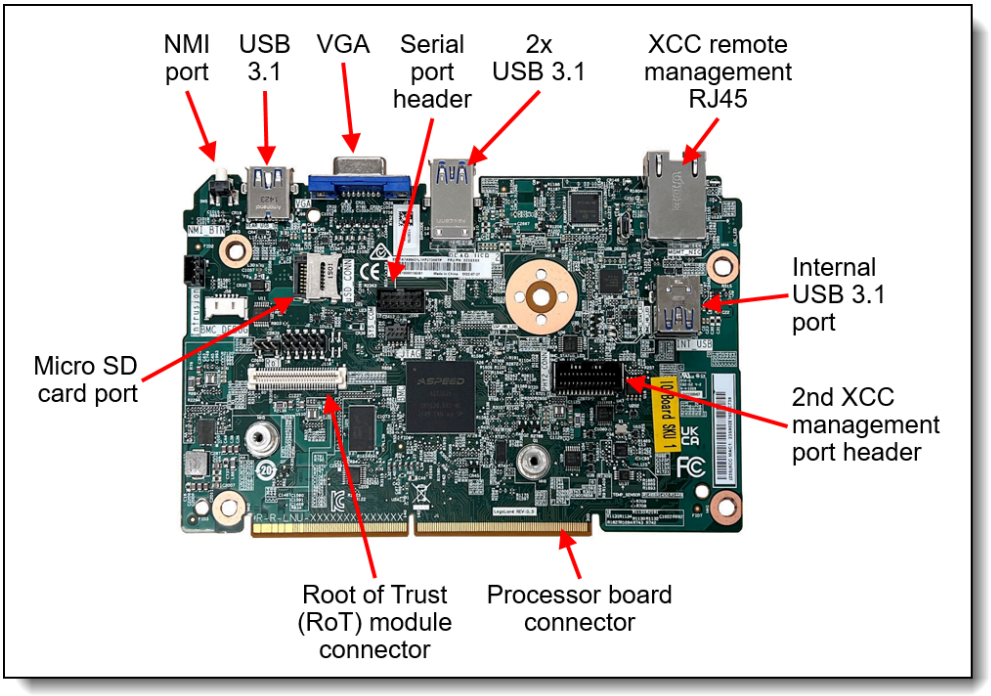


Figure 22. System I/O Board

The board also has the following components:

- XClarity Controller 2, implemented using the ASPEED AST2600 baseboard management controller (BMC).
- Root of Trust (RoT) module - a daughter card that 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.

- Connector to enable an additional redundant Ethernet connection to the XCC2 controller. The connector is used in conjunction with the ThinkSystem V3 Management NIC Adapter Kit (4XC7A85319). For details, see the Remote management section.
- Internal USB port - to allow the booting of an operating system from a USB key. The VMware ESXi preloads use this port for example. Preloads are described in the Operating system support section.
- MicroSD card port to enable the use of a MicroSD card for additional storage for use with the XCC2 controller. XCC2 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 XCC2 controller will have 100MB of available RDOC storage.

Ordering information for the supported USB drive and Micro SD card are listed in the following table.

Table 89. Media for use with the System I/O Board

Part number	Feature code	Description	Top Choice Express
4X77A77065	BNWN	ThinkSystem USB 32GB USB 3.0 Flash Drive	-
4X77A77064	BNWP	ThinkSystem MicroSD 32GB Class 10 Flash Memory Card	-
4X77A92672	C0BC	ThinkSystem MicroSD 64GB Class 10 Flash Memory Card	-

Local management

The SR650 V3 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 the installed OCP network adapter.

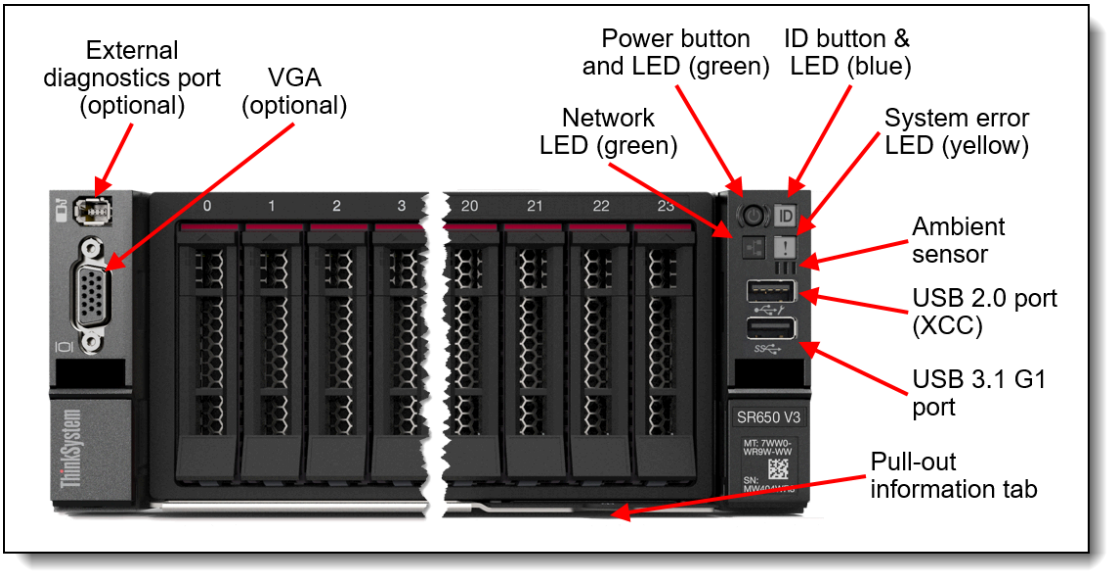


Figure 23. Front operator controls are on the left and right side of the server

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

Front VGA and External Diagnostics ports

The VGA port at the rear of the server is included in all models, however the VGA port at the front of the server is optional. When the front VGA is in use, the rear VGA port is automatically disabled.

Also optional is the External Diagnostics port which enables the use of the External Diagnostics Handset, described in the next section.

To configure either the VGA port or the External Diagnostics port at the front of the server, select one of the following feature codes when configuring the server.

Table 90. Front VGA port

Part number	Feature code	Description	Top Choice Express	Front VGA port	External diagnostics port
CTO only	BQQ2	ThinkSystem 2U V3 EIA Latch Standard	-	No	No
4XH7A86164	BQQ1	ThinkSystem V3 2U EIA Latch with VGA & External Diagnostics Ports	-	Included	Included
4X97A87065	BQQ4	ThinkSystem SR650 V3 EIA Latch with External Diagnostics Port	-	No	Included

Part number	Feature code	Description	Top Choice Express	Front VGA port	External diagnostics port
4X97A87067	BQQ3	ThinkSystem SR650 V3 EIA Latch with VGA Port	-	Included	No

External Diagnostics Handset

The SR650 V3 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.

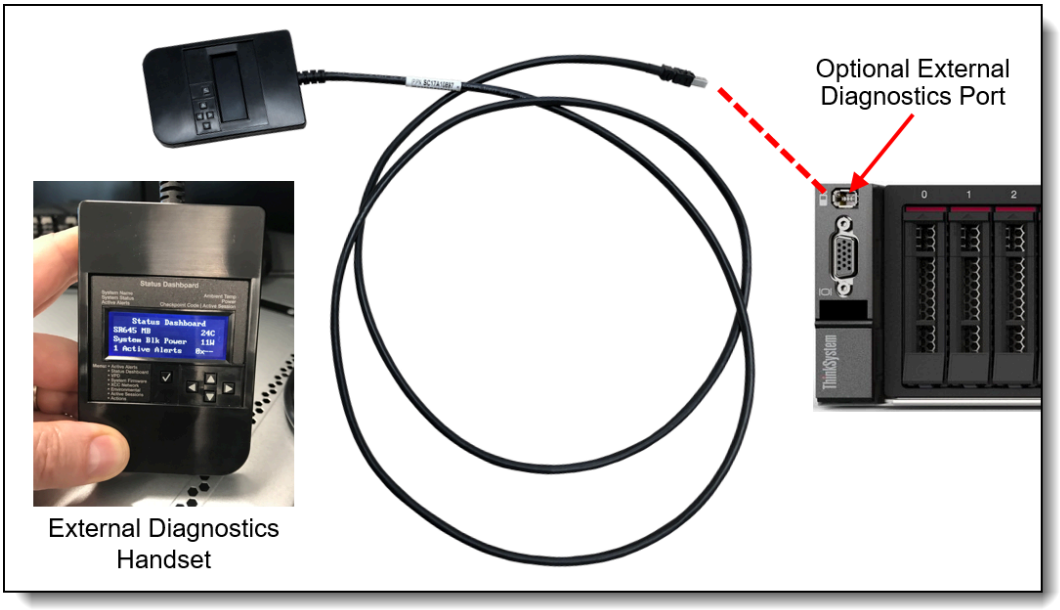


Figure 24. External Diagnostics Handset

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

Table 91. External Diagnostics Handset ordering information

Part number	Feature code	Description	Top Choice Express
4TA7A64874	BEUX	ThinkSystem External Diagnostics Handset	-

Integrated Diagnostics Panel for 8x 2.5-inch and 16x 2.5-inch drive bay configurations

For configurations with 8x 2.5-inch or 16x 2.5-inch drive bays at the front, the server can optionally be configured to have a pull-out Integrated Diagnostics Panel. The following figure shows the standard (fixed) operator panel and the optional Integrated Diagnostics Panel.

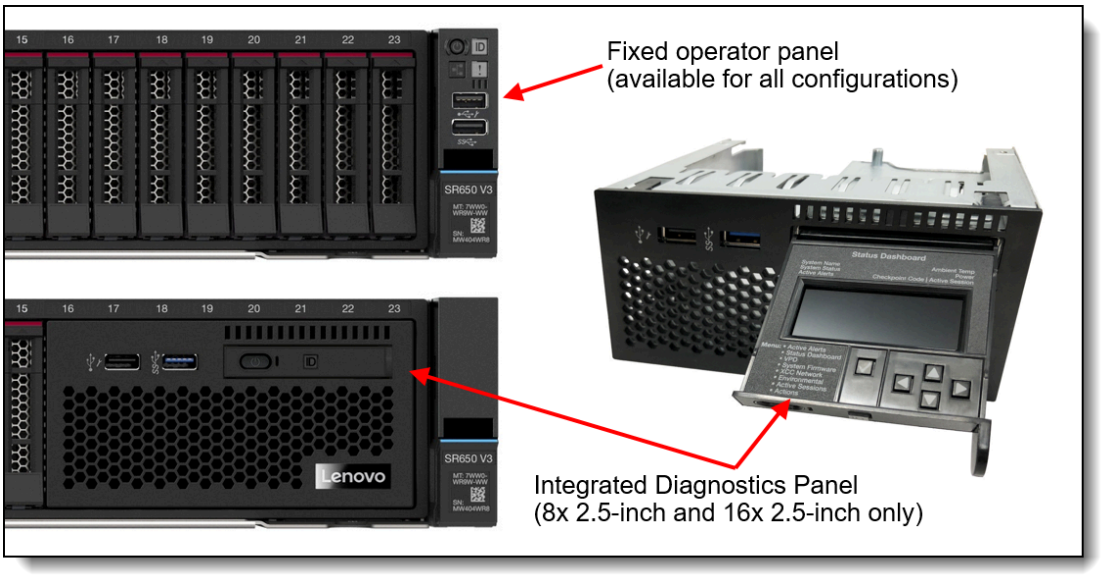


Figure 25. Operator panel choices for the 8x 2.5-inch drive bay configuration

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

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

The Integrated Diagnostics Panel can be configured as listed in the following table. It is only available configure-to-order (CTO); not available as a field upgrade.

Table 92. Ordering information for the Integrated Diagnostics Panel

Part number	Feature code	Description	Top Choice Express
CTO only	BMJA	ThinkSystem 2U 16x2.5" Front Operator Panel v2	-

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.

System status with XClarity One Mobile

The XClarity One 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.

Download the XClarity One Mobile app from these sites:

- Google Play Store
- Apple App Store

The steps to connect the mobile device to the server are as follows:

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

Once connected you can see the following information:

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

Remote management

The server offers a dedicated RJ45 port at the 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

The SR650 V3 also supports the use of an OCP adapter that provides an additional redundant Ethernet connection to the XCC2 controller. Ordering information is listed in the following table.

Table 93. Redundant System Management Port Adapter

Part number	Feature code	Description	Top Choice Express	Maximum quantity
4XC7A85319	BTMQ	ThinkSystem V3 Management NIC Adapter Kit	-	1

The use of this adapter allows concurrent remote access using both the connection on the adapter and the onboard RJ45 remote management port provided by the server. The adapter and onboard port have separate IP addresses.

Configuration rules:

- The Redundant System Management Port Adapter is installed in the OCP adapter slot at the rear of the server and is mutually exclusive with any OCP network adapter.

- It is not supported installed in the front OCP slot (if the front OCP slot is configured)
- If the Redundant System Management Port Adapter is installed in the rear slot, then the front OCP slot (if configured) cannot be used.

The following figure shows the server with the Redundant System Management Port Adapter installed in the OCP slot.

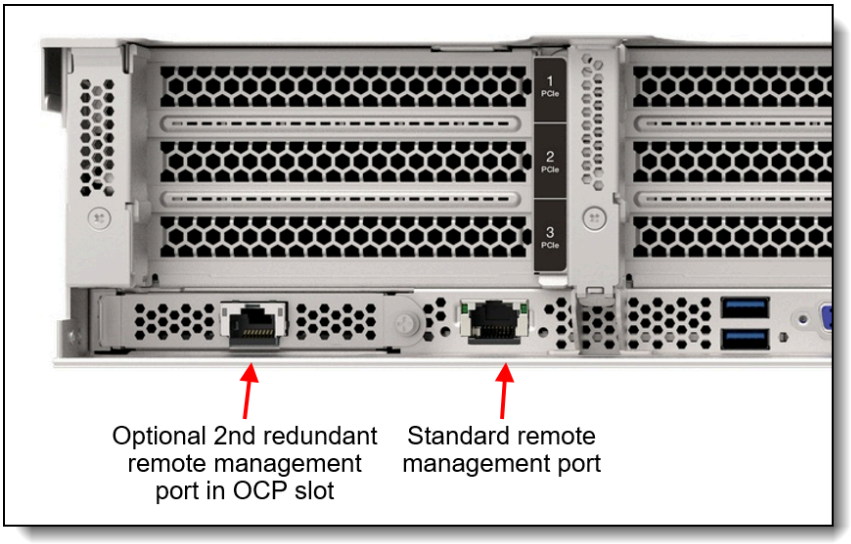


Figure 26. SR650 V3 with the Redundant System Management Port Adapter installed

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 94. IPMI-over-LAN settings

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

XCC2 Platinum

The XCC2 service processor in the SR650 V3 supports an upgrade to the Platinum level of features. Compared to the XCC functions of ThinkSystem V2 and earlier systems, Platinum adds the same features as Enterprise and Advanced levels in ThinkSystem V2, plus additional features.

XCC2 Platinum adds the following Enterprise and Advanced functions:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 23 bits per pixel, regardless of the system state
- Remotely accessing the server using the keyboard and mouse from a remote client
- International keyboard mapping support
- Syslog alerting
- Redirecting serial console via SSH
- Component replacement log (Maintenance History log)
- Access restriction (IP address blocking)
- Lenovo SED security key management
- Displaying graphics for real-time and historical power usage data and temperature
- 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
- 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
- System utilization data and graphic view
- Single sign on with Lenovo XClarity Administrator
- Update firmware from a repository
- License for XClarity Energy Manager

XCC2 Platinum also adds the following features that are new to XCC2:

- System Guard - Monitor hardware inventory for unexpected component changes, and simply log the event or prevent booting
- Enterprise Strict Security mode - Enforces CNSA 1.0 level security
- Neighbor Group - Enables administrators to manage and synchronize configurations and firmware level across multiple servers

Ordering information is listed in the following table. XCC2 Platinum is a software license upgrade - no additional hardware is required.

Table 95. XCC2 Platinum license upgrade

Part number	Feature code	Description
7S0X000KWW	SBCV	Lenovo XClarity Controller 2 (XCC2) Platinum Upgrade

With XCC2 Platinum, 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 DCSC configurator.

Table 96. Enable System Guard in the factory (CTO orders)

Feature code	Description	Top Choice Express
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 cloud-native unified Management-as-a-Service (MaaS) platform, engineered to

modernize IT infrastructure. .

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 platform for the deployment, management, and maintenance of your infrastructure through a single, centralized platform that delivers a consistent user experience across all Lenovo products.

XClarity One's primary architectural value is divided into three key areas:

- How it predicts issues (AI/Analytics)
- How it securely connects (Secure Management Hubs),
- How it actually configures the hardware at scale (Template-Driven Lifecycle Control)

AI-powered Automation

XClarity One 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** - XC1 utilizes machine learning infrastructure to look at live device telemetries. The platform securely collects memory-diagnostic logs and pushes them into an active MPFA AI model infrastructure to analyze health patterns and predict probable hardware degradation before it manifests as a hard failure.
- **AI-Powered Call-Home** - A Call-Home serviceable event opens a support ticket automatically, leveraging AI technology (in the case of MPFA) for problem determination and fast resolution automatically dispatching 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.

Template-Driven Lifecycle Control

Lenovo's unified management model eliminates fragmented server administration, allowing you to deploy, track, and maintain your entire infrastructure fleet from a single cloud-native dashboard.

- **Automated Configuration and Compliance:** Leverage scalable, repeatable device templates to rapidly deploy firmware updates, operating systems, and core baseboard management controller (BMC/UEFI) simultaneously across multiple sites. XClarity One continuously analyzes hardware compliance, shifting out-of-compliance systems to a critical status until a template re-deployment aligns them back to corporate standards.
- **Global Asset Visibility and Fleet Telemetry:** Centralize real-time tracking of component health, warranty status, and comprehensive hardware inventories. The platform aggregates live usage data, including memory allocation, power consumption, and processor thermal trends, giving you total operational awareness whether a server resides in a centralized data center or a remote edge environment.

Centralized management via Lenovo XClarity One can be integrated into your environment as an optional component. License information for XClarity One is listed in the following table.

Table 97. XClarity One license information

Part number	Feature code	Description
Starter licenses (limited to 10 devices per organization)		
7S0X001EWW	SF8Y	XClarity One - Starter, Per Endpoint w/1 Yr SW S&S
7S0X001FWW	SF8Z	XClarity One - Starter, Per Endpoint w/2 Yr SW S&S
7S0X001GWW	SF90	XClarity One - Starter, Per Endpoint w/3 Yr SW S&S
7S0X001HWW	SF91	XClarity One - Starter, Per Endpoint w/4 Yr SW S&S
7S0X001JWW	SF92	XClarity One - Starter, Per Endpoint w/5 Yr SW S&S
Standard licenses		
7S0X000LWW	SCJC	XClarity One - Standard, Per Endpoint w/1 Yr SW S&S
7S0X001CWW	SENW	XClarity One - Standard, Per Endpoint w/2Yr SW S&S
7S0X000MWW	SCJD	XClarity One - Standard, Per Endpoint w/3 Yr SW S&S
7S0X001DWW	SENX	XClarity One - Standard, Per Endpoint w/4Yr SW S&S
7S0X000NWW	SCJE	XClarity One - Standard, Per Endpoint w/5 Yr SW S&S
7S0X000VWW	SFQ1	XClarity One - Standard, Per Endpoint w/6Yr SW S&S
7S0X000WWW	SFQ2	XClarity One - Standard, Per Endpoint w/7Yr SW S&S

Licensing notes:

- One license is needed per physical managed device.
- Starter license is functionally identical to Standard license but is limited to 10 devices per organization maximum.

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
- Migrating to Lenovo XClarity One: An Overview:
  https://lenovopress.lenovo.com/lp2429-migrating-to-lenovo-xclarity-one-an-overview

Lenovo XClarity Essentials

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

- Lenovo Essentials OneCLI

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

- Lenovo Essentials UpdateXpress

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

- Lenovo Essentials Bootable Media Creator

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

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

Lenovo XClarity 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 Platinum upgrade as described in the XCC2 Platinum section. If your server does not have the XCC Platinum upgrade, Energy Manager licenses can be ordered as shown in the following table.

Table 98. 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 SR650 V3 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 XCC Platinum) - Proactive monitoring of hardware inventory for unexpected component changes
- Administrator and power-on password
- Integrated Trusted Platform Module (TPM) supporting TPM 2.0
- Optional Nationz TPM 2.0, available only in China (CTO only)
- 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 SR650 V3 server also offers the following 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.

Front PCIe slots: The use of the security bezel is not supported when the server has front PCIe slots.



Figure 27. Lockable front security bezel

The dimensions of the security bezel are:

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

The following table lists the security options for the SR650 V3.

Table 99. Security features

Part number	Feature code	Description	Top Choice Express
4X97A82927	BAJJ	ThinkSystem SR650 V3/SR655 V3 Intrusion Cable	-
4XH7A09886	B8M2	ThinkSystem V2 2U Security Bezel Option Kit	-
4XH7A90300	BXBQ	ThinkSystem V3 2U Security Bezel Option Kit	-

Tip: The only difference between security bezels 4XH7A09886 and 4XH7A90300 is the Lenovo logo: On 4XH7A09886, the logo is made from plastic; on 4XH7A90300, the logo is made from aluminum alloy.

For customers in China, a Nationz TPM 2.0 module is optional for CTO orders, as listed in the following table.

Table 100. Nationz TPM 2.0 module for customers in PRC

Part number	Feature code	Description
CTO only	BPKS	ThinkSystem PRC NationZ TPM 2.0

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 SR650 V3 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 SR650 V3 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 101. Secure Boot options

Part number	Feature code	Description	Lenovo Top Choice Express	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 SR650 V3 supports the following security standards and capabilities:

- **Industry Standard Security Capabilities**
  - Intel CPU Enablement
    - AES-NI (Advanced Encryption Standard New Instructions)
    - CBnT (Converged Boot Guard and Trusted Execution Technology)
    - CET (Control flow Enforcement Technology)
    - Hardware-based side channel attack resilience enhancements
    - MKTME/TME (Multi-Key Total Memory Encryption)
    - SGX (Software Guard eXtensions)
    - SGX-TEM (Trusted Environment Mode)
    - TDX (Trust Domain Extensions)
    - TXT (Trusted eXecution Technology)
    - VT (Virtualization Technology)
    - XD (eXecute Disable)
  - Microsoft Windows Security Enablement
    - Credential Guard
    - Device Guard
    - Host Guardian Service
  - TPM 2.0 (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 provided by the Secure Boot feature of the Baseboard Management Controller (BMC)
- **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 validated cryptography for XCC (Certificate # 5548)
- CNSA Suite 1.0 Quantum-resistant cryptography for XCC (included with XCC2 Platinum)

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
  - FIPS 140-3 validated cryptography for XCC (Certificate # 5548)
  - CNSA Suite 1.0 Quantum-resistant cryptography for XCC (included with XCC2 Platinum)
  - 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 SR650 V3.

Table 102. Rack installation options

Part number	Feature	Description	Top Choice Express
Rail Kits			
4XF7A99129	C4TL	ThinkSystem Toolless Stab-in Slide Rail Kit V3	-
4XF7A99131	C4TN	ThinkSystem Toolless Stab-in Slide Rail Kit V3 with 2U CMA	-
4M17A13564	BK7W	ThinkSystem SR250/SR150 Toolless Friction Rail	-
4M17A11754	B8LA	ThinkSystem Toolless Slide Rail Kit v2	-
4M17A11756	B91Y	ThinkSystem Toolless Slide Rail Kit v2 with 2U CMA	-
Enhanced Rail Kits for > 34 kg server weight*			
4M17A11755	B8LB	ThinkSystem Toolless Slide Rail Kit v2 Enhanced	-
4M17A11757	B97N	ThinkSystem Toolless Slide Rail Kit v2 Enhanced with 2U CMA	-
Separate Cable Management Arm			
7M27A05698	Upgrade only	ThinkSystem 2U CMA Upgrade Kit for Toolless Slide Rail	-

* The Enhanced Slide Rail Kits are used when the server is shipped in a rack and the server is 34 kg or heavier (configuration with 20x 3.5-inch HDDs for example)

For the specification of the rail kits, see the ThinkSystem and ThinkEdge Rail Kit Reference: https://lenovopress.lenovo.com/lp1838-thinksystem-and-thinkedge-rail-kit-reference#sr650-v3-support=SR650%2520V3

Operating system support

The SR650 V3 with 5th Gen Intel Xeon Scalable processors supports the following operating systems:

- Microsoft Windows 10 (x64)
- Microsoft Windows 11
- Microsoft Windows Server 2019
- Microsoft Windows Server 2022
- Microsoft Windows Server 2025
- Red Hat Enterprise Linux 8.8
- Red Hat Enterprise Linux 8.9
- Red Hat Enterprise Linux 8.10
- Red Hat Enterprise Linux 9.2
- Red Hat Enterprise Linux 9.3
- Red Hat Enterprise Linux 9.4
- Red Hat Enterprise Linux 9.5
- Red Hat Enterprise Linux 9.6
- Red Hat Enterprise Linux 9.7
- Red Hat Enterprise Linux 9.8
- Red Hat Enterprise Linux 9.9
- Red Hat Enterprise Linux 10.0
- Red Hat Enterprise Linux 10.1
- Red Hat Enterprise Linux 10.2
- Red Hat Enterprise Linux 10.3
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 SP6
- SUSE Linux Enterprise Server 15 SP7
- SUSE Linux Enterprise Server 15 Xen SP5
- SUSE Linux Enterprise Server 16
- SUSE Linux Enterprise Server 16.1
- Ubuntu 20.04 LTS 64-bit
- Ubuntu 22.04 LTS 64-bit
- Ubuntu 24.04 LTS 64-bit
- Ubuntu 26.04 LTS 64-bit
- VMware ESXi 7.0 U3
- VMware ESXi 8.0 U2
- VMware ESXi 8.0 U3
- VMware ESXi 9.0
- VMware ESXi 9.1

The SR650 V3 with 4th Gen Intel Xeon Scalable processors supports the following operating systems:

- Microsoft Windows 10 (x64)
- Microsoft Windows 11
- Microsoft Windows Server 2019
- Microsoft Windows Server 2022
- Microsoft Windows Server 2025
- Red Hat Enterprise Linux 8.6
- Red Hat Enterprise Linux 8.7
- Red Hat Enterprise Linux 8.8
- Red Hat Enterprise Linux 8.9
- Red Hat Enterprise Linux 8.10
- Red Hat Enterprise Linux 9.0
- Red Hat Enterprise Linux 9.1
- Red Hat Enterprise Linux 9.2
- Red Hat Enterprise Linux 9.3
- Red Hat Enterprise Linux 9.4

- Red Hat Enterprise Linux 9.5
- Red Hat Enterprise Linux 9.6
- Red Hat Enterprise Linux 9.7
- Red Hat Enterprise Linux 9.8
- Red Hat Enterprise Linux 9.9
- Red Hat Enterprise Linux 10.0
- Red Hat Enterprise Linux 10.1
- Red Hat Enterprise Linux 10.2
- Red Hat Enterprise Linux 10.3
- SUSE Linux Enterprise Server 15 SP4
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 SP6
- SUSE Linux Enterprise Server 15 SP7
- SUSE Linux Enterprise Server 15 Xen SP4
- SUSE Linux Enterprise Server 15 Xen SP5
- SUSE Linux Enterprise Server 16
- SUSE Linux Enterprise Server 16.1
- Ubuntu 20.04 LTS 64-bit
- Ubuntu 22.04 LTS 64-bit
- Ubuntu 24.04 LTS 64-bit
- Ubuntu 26.04 LTS 64-bit
- VMware ESXi 7.0 U3
- VMware ESXi 8.0
- VMware ESXi 8.0 U1
- VMware ESXi 8.0 U2
- VMware ESXi 8.0 U3
- VMware ESXi 9.0
- VMware ESXi 9.1

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=sr650-v3-7d75-7d76-7d77

For configure-to-order configurations, the SR650 V3 can be preloaded with VMware ESXi. Ordering information is listed in the following table.

Table 103. VMware ESXi preload

Part number	Feature code	Description	Lenovo Top Choice Express
CTO only	BMEY	VMware ESXi 7.0 U3 (Factory Installed)	-
CTO only	BYC7	VMware ESXi 8.0 U2 (Factory Installed)	-
CTO only	BZ97	VMware ESXi 8.0 U3 (Factory Installed)	-
CTO only	C91V	VMware ESXi 9.0 (Factory Installed)	-
CTO only	CHGN	VMware ESXi 9.1 (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/

Windows 10 and Windows 11

The SR650 V3 can now run Windows 10 and Windows 11, however only a subset of adapters and drives can be installed. For ease of configuration, additional Base CTO models 7D76CTO3WW and 7D75CTO3WW have been created to assist building a configuration that can be used with the client operating systems. See the Models section for details.

The XClarity management toolset is supported with Windows 10 and Windows 11.

Windows client license: A Windows client license for the system cannot be ordered from Lenovo nor can the OS be preloaded on the system in the factory. For the Windows license and for preloads, please contact your Lenovo business partner. A Windows Pro license is required as a qualifying base OS license in order to use a client Volume License offering.

See the part number tables in the following sections to see which adapters are supported with Windows 10 and Windows 11:

- Controllers for internal storage
- M.2 adapters
- Network adapters
- GPU adapters

GPU recommended: Lenovo recommends that if you plan to install Windows 10 or 11 on this server to run graphics-intensive applications, then you should selected a dedicated graphics adapter (GPU).

The following components are not supported:

- Fibre Channel adapters
- InfiniBand and VPI adapters
- External storage adapters
- Flash storage adapters

Physical and electrical specifications

The SR650 V3 has the following overall physical dimensions, excluding components that extend outside the standard chassis, such as EIA flanges, front security bezel (if any), and power supply handles:

- Width: 445 mm (17.5 inches)
- Height: 87 mm (3.4 inches)
- Depth: 766 mm (30.1 inches)

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

Table 104. Detailed dimensions

Dimension	Description
482 mm	X_a = Width, to the outsides of the front EIA flanges
435 mm	X_b = Width, to the rack rail mating surfaces
445 mm	X_c = Width, to the outer most chassis body feature
87 mm	Y_a = Height, from the bottom of chassis to the top of the chassis
698 mm	Z_a = Depth, from the rack flange mating surface to the rearmost I/O port surface
732 mm	Z_b = Depth, from the rack flange mating surface to the rearmost feature of the chassis body
732 mm (≤1100W PSU) 755 mm (1800W PSU) 781 mm (2400W PSU)	Z_c = Depth, from the rack flange mating surface to the rearmost feature such as power supply handle
34 mm	Z_d = Depth, from the forwardmost feature on front of EIA flange to the rack flange mating surface
46 mm	Z_e = Depth, from the front of security bezel (if applicable) or forwardmost feature to the rack flange mating surface

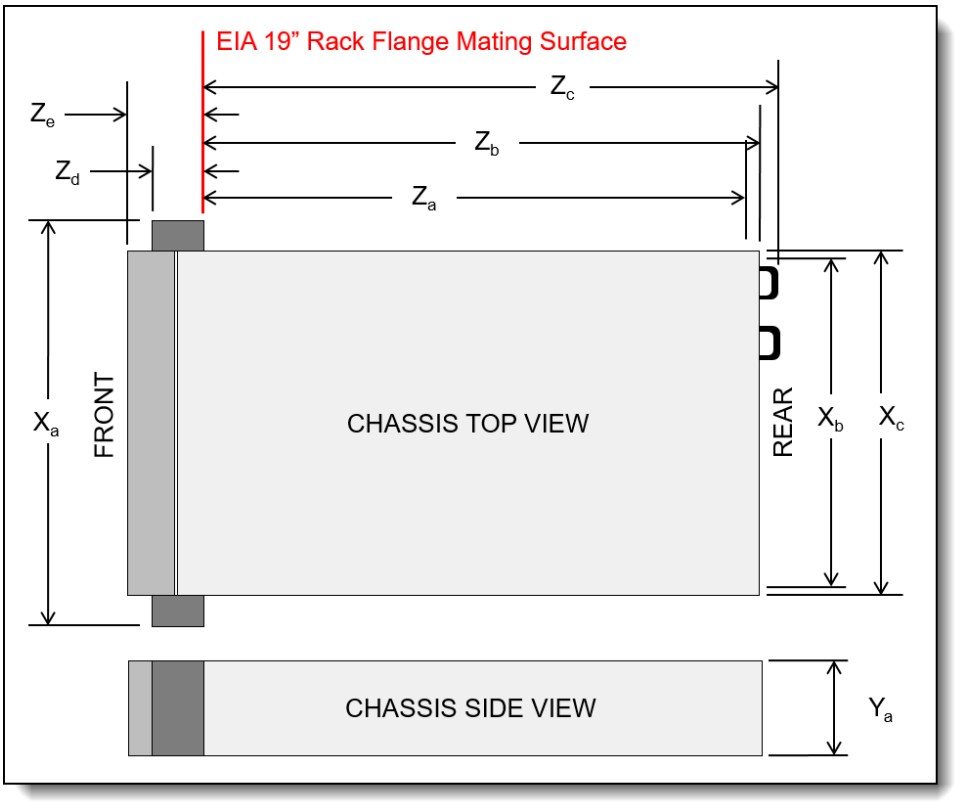


Figure 28. Server dimensions

The shipping (cardboard packaging) dimensions of the SR650 V3 are as follows:

- Width: 592 mm (23.3 inches)
- Height: 282 mm (11.1 inches)
- Depth: 992 mm (39.1 inches)

The server has the following weight:

- Base configuration: 21.4 kg (47.2 lb)
- Maximum weight: 38.8 kg (85.5 lb)

Electrical specifications for AC input power supplies:

- Input voltage:
  - 100 to 127 (nominal) Vac, 50 Hz or 60 Hz
  - 200 to 240 (nominal) Vac, 50 Hz or 60 Hz
  - 180 to 300 Vdc (China only)
- Inlet current: See the following table.

Table 105. Maximum inlet current

Part number	Description	100V AC	200V AC	220V AC	240V DC
AC input power - 80 PLUS Titanium efficiency					
4P57A82019	ThinkSystem 750W 230V Titanium Hot-Swap Gen2 Power Supply v3	No support	4A	3.6A	3.3A
4P57A72666	ThinkSystem 1100W 230V Titanium Hot-Swap Gen2 Power Supply	No support	5.9A	5.3A	5A

Part number	Description	100V AC	200V AC	220V AC	240V DC
4P57A78359	ThinkSystem 1800W 230V Titanium Hot-Swap Gen2 Power Supply	No support	9.7A	8.7A	8.3A
4P57A72667	ThinkSystem 2600W 230V Titanium Hot-Swap Gen2 Power Supply v4	No support	13.2A	13A	11.9A
AC input power - 80 PLUS Platinum efficiency					
4P57A72670	ThinkSystem 750W 230V/115V Platinum Hot-Swap Gen2 Power Supply v3	8.4A	4.1A	3.69A	3.5A
4P57A72671	ThinkSystem 1100W 230V/115V Platinum Hot-Swap Gen2 Power Supply v3	12A	6A	5.4A	5.1A
4P57A78362	ThinkSystem 1800W 230V Platinum Hot-Swap Gen2 Power Supply v2	No support	10A	9.1A	9A
4P57A26295	ThinkSystem 2400W 230V Platinum Hot-Swap Gen2 Power Supply	No support	14A	12.6A	12A

Electrical specifications for DC input power supply:

- Input voltage: -48 to -60 Vdc
- Inlet current (1100W power supply): 26 A

Operating environment

The SR650 V3 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.

Depending on the hardware configuration, the SR650 V3 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:

- Ambient temperature requirements
- Temperature and humidity
- Acoustical noise emissions
- Shock and vibration
- Particulate contamination

Ambient temperature requirements

The restrictions to ASHRAE support are as follows (cooling by air):

- The ambient temperature must be limited to 35°C or lower if the server has any of the following components:
  - Broadcom 57416 10GBASE-T 2-port OCP
  - Broadcom 57454 10GBASE-T 4-port OCP
  - PCIe network interface card (NIC) at a rate greater than or equal to 100 Gb
  - Part with AOC and at the rate of 40 Gb
- The ambient temperature must be limited to 30°C or lower if the server has any of the following components:
  - 24 x 2.5" or 12 x 3.5" front bay with middle bay or rear bay
  - GPU adapters
  - 256 GB 3DS RDIMM
  - 350 W processor
  - part with AOC and at a rate greater than 40 Gb
  - 5600 MHz RDIMMs with capacity greater than or equal to 96 GB
  - ThinkSystem 96GB TruDDR5 4800MHz (2Rx4) RDIMM
  - ThinkSystem 128GB TruDDR5 4800MHz (4Rx4) 3DS RDIMM v1
  - 4800 MHz 256 GB RDIMMs (except ThinkSystem 256GB TruDDR5 4800MHz (8Rx4) 3DS RDIMM v1)
- The ambient temperature must be limited to 25°C or lower if the server has any of the following components or configurations:
  - 350 W processor installed in the chassis with 24 x 2.5" or 12 x 3.5" front drives
  - 350 W processor installed in the 16 x 2.5" + FIO non-GPU configuration
  - processor (270 W <=TDP <= 300 W) installed in the chassis with middle or rear drives
  - GPU adapter installed in the chassis with 24 x 2.5" front drives
  - GPU adapter and processor with TDP rating greater than 300 W installed in the chassis with 16 x 2.5" or 8 x 3.5" front drives
  - drives larger than 3.84 TB installed in Gen 5 rear or middle NVMe drive bays
  - 36 NVMe configuration
  - 16 x 2.5" + FIO GPU configuration
  - ThinkSystem 256GB TruDDR5 4800MHz (8Rx4) 3DS RDIMM v1
  - ThinkSystem 96GB TruDDR5 4800MHz (2Rx4) RDIMM and ThinkSystem 128GB TruDDR5 5600MHz (2Rx4) RDIMM installed in the following configurations:
    - 12 x 3.5" configurations including processors with TDP greater than to 350W
    - 12 x 3.5" + middle/rear drive bay configurations including processors with TDP greater than 250W

    - Intel Max 1100 GPU
    - The following NVMe SSDs installed in the front 12 x 3.5" SAS/SATA + middle 8 x 2.5" NVMe or front 12 x 3.5" SAS/SATA + rear 4 x 2.5" NVMe configuration:
        - ThinkSystem 2.5" U.2 P5336 61.44TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
        - ThinkSystem 2.5" U.2 P5336 30.72TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
        - ThinkSystem 2.5" U.2 P5336 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
    - H100 NVL GPU adapter
    - BlueField-3 DPU adapters

The restrictions to ASHRAE support are as follows (cooling by Direct Water Cooling Module (DWCM)):

- The ambient temperature must be limited to 35°C or lower if the server has any of the following components or configurations:
    - Broadcom 57416 10GBASE-T 2-port OCP
    - Broadcom 57454 10GBASE-T 4-port OCP
    - PCIe network interface card (NIC) at a rate greater than or equal to 100 Gb
    - Part with AOC and at the rate of 40 Gb
    - GPU adapters (< 300 W) installed in 8 x 3.5" or 16 x 2.5" configurations
    - 64 GB < DIMM < 256 GB
    - 8 x 2.5" GPU configuration
    - storage configuration without middle or rear NVMe backplane
- The ambient temperature must be limited to 30°C or lower if the server has any of the following components:
    - 256 GB 3DS RDIMM
    - part with AOC and at a rate greater than 40 GB
    - GPU adapters (>= 300 W) installed in 8 x 3.5" or 16 x 2.5" configurations
    - three A40 GPU adapters installed in 24 x 2.5" configurations
    - storage configuration with middle or rear NVMe backplane
    - 5600 MHz RDIMMs with capacity greater than or equal to 96 GB
    - ThinkSystem 96GB TruDDR5 4800MHz (2Rx4) RDIMM
    - ThinkSystem 128GB TruDDR5 4800MHz (4Rx4) 3DS RDIMM v1
    - 4800 MHz 256 GB RDIMMs (except ThinkSystem 256GB TruDDR5 4800MHz (8Rx4) 3DS RDIMM v1)
    - H100 NVL GPU adapter
- The ambient temperature must be limited to 25°C or lower if the server has any of the following components:
    - three H800/H100 GPU adapters installed in 24 x 2.5" configurations
    - three H800/H100 GPU adapters installed in 16 x 2.5" + FIO configurations
    - ThinkSystem 256GB TruDDR5 4800MHz (8Rx4) 3DS RDIMM v1
    - The following NVMe SSDs installed in the front 12 x 3.5" SAS/SATA + middle 8 x 2.5" NVMe or front 12 x 3.5" SAS/SATA + rear 4 x 2.5" NVMe configuration:
        - ThinkSystem 2.5" U.2 P5336 61.44TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
        - ThinkSystem 2.5" U.2 P5336 30.72TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
        - ThinkSystem 2.5" U.2 P5336 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
    - BlueField-3 DPU adapters

Server shutdown: When the ambient temperature is greater than the supported max temperature (ASHARE A4 45°C), the server will shut down. The server will not power on again until the ambient temperature falls within the supported temperature range.

For additional information, see the Environmental specifications and Thermal rules sections in the product documentation:
https://pubs.lenovo.com/sr650-v3/server_specifications_environmental
https://pubs.lenovo.com/sr650-v3/thermal_rules

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: 5°C to 45°C (41°F to 113°F)
  - Shipment/storage: -40°C to 60°C (-40°F to 140°F)
- Maximum altitude: 3,050 m (10,000 ft)
- Relative Humidity (non-condensing):
  - Operating
    - ASHRAE Class A2: 8% to 80%; maximum dew point: 21°C (70°F)
    - ASHRAE Class A3: 8% to 85%; maximum dew point: 24°C (75°F)
    - ASHRAE Class A4: 8% to 90%; maximum dew point: 24°C (75°F)
    - 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:

Table 106. Noise emissions

Configuration	Typical	Storage	GPU
Sound power levels (L_{WAd})	• Idling: 5.6 Bel • Operating: 5.6 Bel	• Idling: 7.3 Bel • Operating: 7.3 Bel	• Idling: 7.3 Bel • Operating: 8.9 Bel
Sound pressure level (L_{pAm})	• Idling: 41.5 dBA • Operating: 41.5 dBA	• Idling: 60.2 dBA • Operating: 60.2 dBA	• Idling: 60.2 dBA • Operating: 74.1 dBA

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 acoustic sound levels are based on the following configurations, which may change depending on configuration/conditions :
  - Typical configuration: 8x 2.5-inch front drive bays, 6x standard fans, 2x 205 W CPUs, 8x 64 GB RDIMMs, 8x 2.4 TB SAS HDDs, 1x RAID 940-8i, 1x Intel X710-T2L 10GBASE-T 2-port OCP, 2x 750 W PSUs, No GPUs
  - Storage configuration: 12x 3.5-inch front drive bays, 6x high performance fans, 2x 205 W CPUs, 16x 64 GB RDIMMs, 20x 14 TB SAS HDDs, 1x RAID 940-32i, 1x Intel X710-T2L 10GBASE-T 2-port OCP, 2x 1100 W PSUs, No GPUs
  - GPU configuration: 16x 2.5-inch front drive bays, 6x high performance fans, 2x 205 W CPUs, 32x 64 GB RDIMMs, 16x 2.4 TB SAS HDDs, 1 x RAID 940-16i, 1x Intel X710-T2L 10GBASE-T 2-port OCP, 2x 1800 W PSUs, 3x A100 GPUs
- 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:
    - 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 (20x 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 Neptune Processor DWC Module

The Lenovo Processor Neptune Core Module is the liquid-based processor cooling offering for the SR650 V3, 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. Note: With a rack full of SR650 V3 servers, only up to 19 of the manifold ports are used.

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

  In-rack CDUs are installed at the bottom of the rack cabinet.

  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):

  - Vertiv XDU450 CDU
  - Vertiv XDU600 CDU
  - Vertiv XDU100 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.

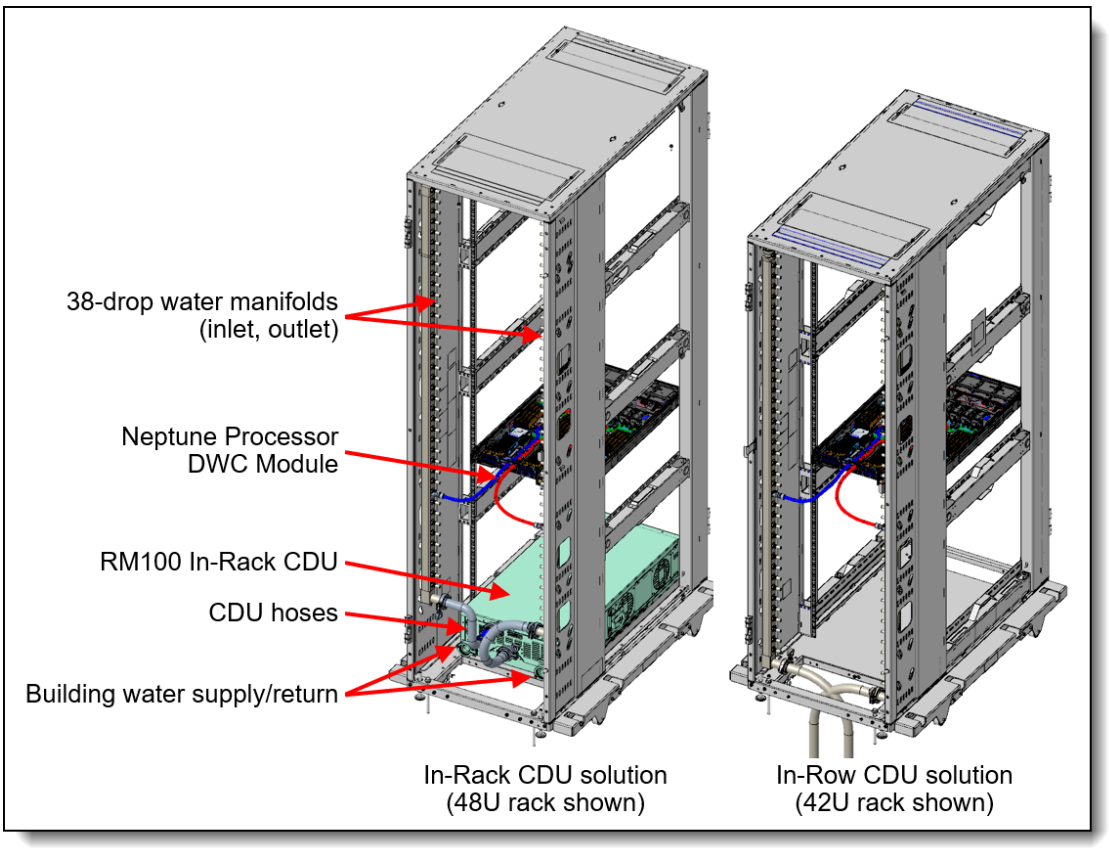


Figure 29. Water manifold connections

Configuration requirements:

- Maximum number of SR650 V3 servers supported in a rack:
  - 48U rack: 19 servers
  - 42U rack with in-rack CDU: 18 servers
  - 42U rack without in-rack CDU: 19 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 107. 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		

Part number	Feature code	Description
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

Warranty upgrades and post-warranty support

The SR650 V3 has a 1-year or 3-year warranty based on the machine type of the system:

- 7D75 - 1 year warranty
- 7D76 - 3 year warranty
- 7D77 - 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 Support Plus 24x7 4-Hour Response** – Best choice for systems where maximum uptime is critical.

For more information, consult our Lenovo Operational Support Services for Data Centers Services Brochure.

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

Services

Lenovo Infrastructure 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 Implementation Services
- Infrastructure Deployment Services
- Lenovo Support Services

- Lenovo Managed Services
- Lenovo Sustainability Services

Lenovo Advisory Services

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

- **Assessment Services**

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

Lenovo Implementation 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.

Infrastructure Configuration Services

- **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.

Infrastructure Deployment Services

Lenovo Infrastructure Deployment Services help you move from hardware delivery toward production with the planning, installation, configuration, integration, validation, documentation, and operational handoff support your project requires. Choose from clearly defined Premier Deploy for Infrastructure options, Specialized Deployment Services, or Hardware Installation Services based on your platform, project complexity, internal IT capabilities, and desired level of assurance.

For more information, consult our Lenovo Infrastructure Deployment Services Catalog.

- **Premier Deploy for Infrastructure**

  Clearly defined deployment options for eligible ThinkSystem servers, ThinkSystem storage arrays, and ThinkAgile solutions.

  Table 108. Premier Deploy for Infrastructure

	Standard Deploy	Premier Deploy	Premier Deploy Plus
Choose when:	You need straightforward physical hardware installation and customer acceptance.	You need operating system installation and/or system configuration, integration and validation.	You need extended post-deployment assurance and visibility after implementation.
You gain:	An installed, accepted, and documented hardware foundation.	A validated, integrated environment ready to move into production.	Added assurance as your team transitions into ongoing operations.

  For more information, see the Premier Deploy for Infrastructure 1-pager.

- **Specialized Deployment Services**

  Focused deployment expertise for specific technologies or project requirements when Premier Deploy for Infrastructure is not supported or is not the right fit for your project. Services can support ThinkSystem storage arrays, ThinkAgile solutions, HPC, liquid cooling, and private cloud environments through activities such as readiness planning, configuration, integration, validation, documentation, knowledge transfer, and operational handoff, as applicable. Availability and scope vary by platform, project requirements, geography, and service scope.

- **Hardware Installation Services**

  Expert physical installation for eligible hardware outside the Premier Deploy for Infrastructure scope, or for projects that require installation only.

- **Hardware Installation Plus**

  Extends Hardware Installation Services with:

  - RAID configuration
  - Supported operating system installation
  - Driver-level verification

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 Infrastructure**

  Helps you build business resilience with expert-led support, responsive issue resolution, and coordinated troubleshooting across supported Lenovo server and storage environments. Direct access to Lenovo expertise and accountable end-to-end case ownership help reduce disruption and simplify ongoing infrastructure operations.

- **Premier Support Plus for Infrastructure**

  Gain all the benefits of Premier Support for Infrastructure, with proactive and predictive support capabilities, designated account oversight, preventative maintenance guidance, and Keep Your Drive to help identify potential issues earlier, plan service more effectively, and maintain control of sensitive data.

- **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 a 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 our Lenovo Operational Support Services for Data Centers Services Brochure.

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.

- **Managed Services**

  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 the latest patches, critical updates, and firmware levels, to ensure your systems are providing business value through optimized performance.

Lenovo Sustainability Services

Lenovo Sustainability Services helps you address sustainability priorities across the IT lifecycle, from offsetting emissions associated with device purchases and extending equipment life to securely managing assets at end of life. Together, these services support more circular IT practices while helping you protect data, manage costs, and recover value from technology investments.

- **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 Simplify IT Asset Recovery 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 SR650 V3 conforms to the following standards:

- ANSI/UL 62368-1
- IEC 62368-1 (CB Certificate and CB Test Report)
- CSA C22.2 No. 62368-1
- Mexico NOM-019
- India BIS 13252 (Part 1)
- Germany GS
- TUV-GS (EN62368-1, and EK1-ITB2000)
- Brazil INMETRO
- South Africa NRCS LOA
- Ukraine UkrCEPRO
- Morocco CMIM Certification (CM)
- Russia, Belorussia and Kazakhstan, TP EAC 037/2016 (for RoHS)
- Russia, Belorussia and Kazakhstan, EAC: TP TC 004/2011 (for Safety); TP TC 020/2011 (for EMC)
- CE, UKCA Mark (EN55032 Class A, EN62368-1, EN55024, EN55035, EN61000-3-2, EN61000-3-3, (EU) 2019/424, and EN IEC 63000 (RoHS))
- 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 KN32, Class A, KN35
- 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
- UL Green Guard, UL2819
- Energy Star 4.0
- EPEAT (NSF/ ANSI 426) Bronze
- Japanese Energy-Saving Act
- EU2019/424 Energy Related Product (ErP Lot9)
- China CCC certificate, GB17625.1; GB4943.1; GB/T9254
- China CECP certificate, GB43630
- 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 109. External drive enclosures

Model	Description
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 ThinkSystem D4390
  https://lenovopress.lenovo.com/lp1681

External storage systems

Lenovo offers the ThinkSystem DE Series, ThinkSystem DG Series, ThinkSystem DM Series and ThinkSystem DS 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 DS Series Storage
  https://lenovopress.lenovo.com/storage/thinksystem/ds-series
- 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 110. External backup options

Part number	Description
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	

Part number	Description
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#rt=product-guide

Uninterruptible power supply units

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

Table 111. Uninterruptible power supply units

Part number	Description
Rack-mounted or tower UPS units - 200-240VAC	
7DD5A002WW	RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC)
7DD5A005WW	RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)

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 112. 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	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	C0D9	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 Monitored PDUs															
4PU7B08150	CD17	0U 3 C13 and 18 C19 Monitored 80A 3 Phase WYE PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7B08148	CD15	0U 3 C13 and 18 C19 Monitored 48A 3 Phase WYE PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7B08149	CD16	0U 3 C13 and 18 C19 Monitored 63A 3 Phase WYE PDU	N	N	N	Y	N	N	Y	Y	N	N	N	N	N
4PU7B08151	CD18	0U 21 Saf-D-Grid 300 Monitored 80A 3 Phase WYE High Voltage PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
0U Switched and Monitored PDUs															
4PU7A93181	C0D5	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 60A 3 Phase Delta PDU v2	N	Y	N	N	Y	N	N	Y	N	Y	N	Y	N
4PU7A93178	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	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	Y	Y	Y	Y
4PU7A93180	C0D6	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
4PU7A93179	C0D7	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 30A 1 Phase PDU v2	N	Y	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7B08152	CD19	0U 21 Saf-D-Grid 300 Switched and Monitored 80A 3 Phase WYE High Voltage PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
1U Basic PDUs															
4PU7B12339	CE6L	1U Basic 16A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
1U Switched and Monitored PDUs															
4PU7B13376	CJVY	1U 18 C19/C13 Switched and Monitored 48A 3 Phase WYE PDU v3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
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	Y	N	N	N	N	Y	N	Y	Y	Y	N
Line cords for 1U PDUs that ship without a line cord															

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
40K9611	6504	4.3m, 32A/380-415V, EPDU/IEC 309 3P+N+G 3ph wye (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	4.3m, 32A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	4.3m, 63A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	4.3m, 30A/208V, EPDU to NEMA L6-30P (US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9615	6501	4.3m, 60A/208V, EPDU to IEC 309 2P+G (US) Line Cord	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N

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 113. Rack cabinets

Model	Description
7D6DA007WW	ThinkSystem 42U Onyx Primary Heavy Duty Rack Cabinet (1200mm)
7D6DA008WW	ThinkSystem 42U Pearl Primary Heavy Duty Rack Cabinet (1200mm)
7D6EA009WW	ThinkSystem 48U Onyx Primary Heavy Duty Rack Cabinet (1200mm)
7D6EA00AWW	ThinkSystem 48U Pearl Primary Heavy Duty Rack Cabinet (1200mm)
1410O42	Lenovo EveryScale 42U Onyx Heavy Duty Rack Cabinet
1410P42	Lenovo EveryScale 42U Pearl Heavy Duty Rack Cabinet
1410O48	Lenovo EveryScale 48U Onyx Heavy Duty Rack Cabinet
1410P48	Lenovo EveryScale 48U Pearl Heavy Duty Rack Cabinet
93072RX	25U Standard Rack (1000mm)
93072PX	25U Static S2 Standard Rack (1000mm)
93074RX	42U Standard Rack (1000mm)
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 114. 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 116. KVM switches and options

Part number	Description
KVM Console switches	
1754A1X	Local 1x8 Console Manager (LCM8)
Cables for GCM and LCM Console switches	
46M5383	Virtual Media Conversion Option Gen2 (VCO2)
46M5382	Serial Conversion Option (SCO)

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

Lenovo Financial Services

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

- **Flexible**

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

- **100% Solution Financing**

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

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

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

- **24/7 Asset management**

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

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

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

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

Seller training courses

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

1. **联想数据中心销售认证考试学习指南**
   2026-11-04 | 10 minutes | Employees and Partners

   本指南包含相关信息，旨在帮助考生准备并报名参加数据中心销售（Data Center Sales）实践考试及认证考试。

   Published: 2026-11-04
   Length: 10 minutes

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

   Course code: LENU-125C-SG-CHS

2. **レノボ データセンターセールス認定試験対策ガイド**
   2026-11-04 | 10 minutes | Employees and Partners

   本ガイドには、候補者がデータセンター・セールス分野の練習試験および認定試験に向けて準備し、登録を行う際に役立つ情報が記載されています。

   Published: 2026-11-04
   Length: 10 minutes

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

   Course code: LENU-125C-SG-JPN

3. **Vente pour centres de données Lenovo Guide de préparation à l’examen de certification**
   2026-11-04 | 10 minutes | Employees and Partners

   Ce guide contient des informations destinées à aider les candidats à se préparer et à s’inscrire aux examens d’entraînement et de certification liés aux ventes de centres de données (Data Center Sales).

   Published: 2026-11-04
   Length: 10 minutes

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

   Course code: LENU-125C-SG-FRA

4. **VTT: Driving Flexible Infrastructure with ThinkSystem Disaggregated Solutions Powered by Nutanix**
   2026-10-14 | 47 minutes | Employees Only

   Join Paula Contreras, Lenovo Senior Project Manager, and Alejandro Perez Quintero, Lenovo Sr. Enterprise IT Solution Manager, for a technical webinar focused on Nutanix Compute Cluster on Lenovo ThinkSystem Servers. This solution combines Nutanix AHV with Lenovo ThinkSystem infrastructure to deliver a flexible virtualization platform that enables customers to modernize their environments, simplify operations, and preserve existing storage investments.
   In this session, you'll learn how Lenovo and Nutanix help organizations deploy right-sized virtualization environments using supported ThinkSystem servers, with the flexibility to leverage external storage when Nutanix distributed storage is not required. We'll cover architecture, sizing recommendations, deployment considerations, and practical sales positioning for customers evaluating virtualization modernization strategies.
   What You'll Learn
   - Solution Architecture: Understand the Nutanix AHV-based compute cluster architecture running on Lenovo ThinkSystem servers and supported external storage options.
   - Sizing and Planning: Learn about the suggested small, medium, and large deployment models, workload sizing methodology, and key capacity-planning considerations.
   - Customer Use Cases: Identify opportunities involving virtualization modernization, external storage preservation, branch offices, mid-market deployments, and server consolidation.
   - Sales Positioning: Gain guidance on positioning Nutanix Compute Cluster versus traditional HCI approaches and articulating the value of flexible compute scaling and operational simplicity.

   Tags: Nutanix, HCI, Hyperconverged, Disaggregated, Disaggregated Solution, ThinkSystem, Storage

   Published: 2026-10-14
   Length: 47 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DVCLD238

5. **Lenovo Data Center Sales Certification Exam Study Guide**
   2026-10-09 | 10 minutes | Employees and Partners

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

   Published: 2026-10-09
   Length: 10 minutes

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

   Course code: LENU-125C-SG

6. **VTT: Navigating SAP’s ERP Transformation - Positioning Lenovo Infrastructure for Growth**
2026-10-07 | 49 minutes | Employees and Partners

SAP customers are entering a critical phase of ERP modernization as they transition from legacy SAP ECC environments to SAP S/4HANA and increasingly adopt cloud and hybrid cloud operating models. Join Graeme Trevayne, Lenovo ISG SAP Alliance Director, and Catherine Maina, Lenovo Sr. Product Manager for understanding why the technical and business implications of this shift is essential for designing the right infrastructure solutions and helping customers make informed decisions throughout their transformation journey.
This webinar provides an overview of SAP's ERP and cloud strategy, the current state of customer migration to SAP S/4HANA, and the expected impact on traditional SAP infrastructure investments. Attendees will gain insight into the market outlook for Lenovo's SAP business and learn how Lenovo is adapting its portfolio and go-to-market approach to maximize revenue and profitability during this transition period.
The session will cover Lenovo's SAP-certified infrastructure solutions for both traditional SAP ECC and modern SAP S/4HANA deployments, including sizing, performance, scalability, and modernization considerations. You will also learn how to position ThinkSystem servers as the foundation for mission-critical SAP workloads while incorporating ThinkAgile VX as a strategic platform for virtualization, infrastructure consolidation, operational simplification, and hybrid cloud readiness.
In addition, the webinar will explore emerging growth opportunities across the SAP ecosystem, including SAP migration projects, infrastructure refreshes, private cloud initiatives, data and analytics platforms, AI-enabled business processes, and managed services opportunities. Attendees will leave with practical technical positioning guidance, solution-selling strategies, and customer conversation frameworks that align Lenovo solutions with evolving SAP customer requirements.
Webinar Objectives
• Explain SAP's ERP modernization strategy and cloud transformation roadmap.
• Describe the current progress and adoption trends of SAP S/4HANA migrations.
• Understand the outlook for traditional Lenovo SAP infrastructure opportunities.
• Articulate Lenovo's strategy for maintaining growth and profitability during the SAP transition.
• Differentiate Lenovo solutions supporting SAP ECC and SAP S/4HANA environments.
• Position ThinkSystem servers for performance, reliability, scalability, and SAP-certified deployments.
• Position ThinkAgile VX alongside ThinkSystem to support virtualization, infrastructure modernization, and hybrid cloud architectures.
• Identify new business opportunities within the evolving SAP ecosystem.

Tags: SAP, SAP EcoSystem, Cloud, Large Memory, Database

Published: 2026-10-07
Length: 49 minutes

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

Course code: DVCLD237

7. **AI Express & AI Token Economics**
   2026-10-07 | 60 minutes | Employees and Partners

   In this 60-minute replay, Mark Bica reviews the newly announced AI Express solutions, while Nicholas Borsotto explains Token Economics.

   Published: 2026-10-07
   Length: 60 minutes

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

   Course code: OCT0226

8. **VTT: Beyond Kubernetes - Driving AI and Enterprise Innovation with Red Hat OpenShift**
   2026-10-01 | 65 minutes | Employees Only

   Discover how Red Hat OpenShift is redefining the hybrid cloud landscape. This presentation will provide Lenovo with a comprehensive overview of the OpenShift ecosystem, breaking down its architecture and highlighting the critical differences between enterprise-ready OpenShift and upstream Kubernetes. We will explore high-impact use cases, from seamless container orchestration and developer empowerment to cutting-edge OpenShift Virtualization and Red Hat AI integrations. Finally, we will preview the highlights of the next major OpenShift release and host an interactive discussion on strategic partnership opportunities, exploring how Lenovo and Red Hat can collaborate to shape the future of the OpenShift community.
   Tags: Red Hat, Openshift, Open Shift, Kubernetes, AI, Cloud, Hybrid Cloud,

   Published: 2026-10-01
   Length: 65 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DVCLD236

9. **VTT: Simplifying Private Cloud and Edge Infrastructure with Canonical MicroCloud**
   2026-09-24 | 56 minutes | Employees and Partners

   As organizations expand their IT footprint across data centers, branch locations, and edge environments, the need for a cloud platform that is simple to deploy, easy to manage, and built for scale has never been greater. Join Miona Aleksic and Leonardo Queirolo from Canonical and Jakob Andersen from Lenovo for an engaging webinar exploring MicroCloud, a lightweight, open-source cloud platform designed to deliver production-grade private cloud infrastructure with minimal operational overhead.
   Built with simplicity, security, and automation at its core, MicroCloud enables organizations to rapidly deploy and manage scalable clusters for both on-premises and edge environments. Its streamlined architecture reduces complexity while providing a prescriptive cloud experience that helps organizations achieve a true "zero-ops" approach in distributed environments.
   During this session, our experts will discuss:
   • Key features and benefits of MicroCloud and how it simplifies private cloud deployment
   • Use cases for both on-premises cloud infrastructure and edge computing environments
   • How MicroCloud's lightweight architecture supports distributed deployments with reduced operational complexity
   • The role of automation and built-in security in enabling a zero-ops cloud experience
   • Best practices and available resources for positioning MicroCloud with prospective customers
   • How Lenovo and Canonical are helping organizations modernize infrastructure with open, scalable cloud solutions
   This webinar will provide practical insights into how MicroCloud can accelerate cloud adoption while reducing operational burden.

   Tags: Cloud, Micro Cloud, Microcloud, Canonical, VTT

   Published: 2026-09-24
   Length: 56 minutes

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

   Course code: DVCLD235

10. **AMD Update**
    2026-09-22 | 60 minutes | Employees and Partners

    In this 60 minute replay, Maxwell Blackington, Field Applications Engineer at AMD, covered the latest AMD data center processor topics and strategies.

    Published: 2026-09-22
    Length: 60 minutes

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

    Course code: SEP1826

11. **Partner Technical Webinar: Intel Xeon 6 & Ethernet NIC update**
    2026-07-14 | 60 minutes | Employees and Partners

    In this 60 minute replay, Madhu Bramharouthu and Raj Pathak from Intel presented the latest information on Xeon 6 processors and Intel Ethernet adapters.

    Published: 2026-07-14
    Length: 60 minutes

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

    Course code: JUL1026

12. **Lenovo Data Center Technical Certification Exam Study Guide**
    2026-07-13 | 10 minutes | Employees and Partners

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

    Published: 2026-07-13
    Length: 10 minutes

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

    Course code: LENU-322C-SG

13. **Partner Technical Webinar - TCE, DCSC, Enterprise Solutions, & LBPe ISG Financing**
    2026-06-09 | 60 minutes | Employees and Partners

    In this 60-minute replay, we received updates from George Scarbrough on TCE, Amit Chandok on the DCSC, Tracie Heath Garcia on LBPe ISG Financing, and Alejandro Perez Quintero on Enterprise IT Solutions.

    Published: 2026-06-09
    Length: 60 minutes

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

    Course code: JUN0526

14. **Partner Technical Webinar - mAInstream Volume Enterprise AI**
2026-05-11 | 45 minutes | Employees and Partners

In this 45 minute replay, Alex “Doc” Docherty, Lenovo AI Technology for NA Channel, discussed Mainstream and volume Servers for enterprise AI solutions. He talked about the need, the supply and some new programs for the channel.

Published: 2026-05-11
Length: 45 minutes

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

Course code: MAY0826

15. **Partner Technical Webinar - AI Servers**
2026-04-20 | 30 minutes | Employees and Partners

In this 30 minute replay, Mark Bica, Lenovo NA ISG Server Product Manager, presented the Lenovo AI Servers. Mark also gave an update on M.2 changes the latest with TCE (Top Choice Express).

Published: 2026-04-20
Length: 30 minutes

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

Course code: APR1726

16. **Partner Technical Webinar - Server Review Racks, Towers & Edge**
2026-03-16 | 60 minutes | Employees and Partners

In this 60-minute replay, the Channel Solution Architect team provides an overview of the Lenovo ISG server portfolio. Eugene Grandberry, Ian Sloan, and Chris Laffey cover Towers, Racks, Edge, and TCE.

Published: 2026-03-16
Length: 60 minutes

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

Course code: MAR1326

17. **ISG Smarter Tools, Faster Deals and Better Outcomes**
2026-02-27 | 40 minutes | Employees and Partners

In this 40-minute video, we review several tools and programs from Lenovo ISG to help our Partners' Data Center selling efforts: Smarter Tools / Faster Deals / Better Outcomes. We cover Top Choice Express, our premier program for supply optimized solutions. We next demonstrated DCSC, the Data Center Solution Configurator, Compete Tool for comparisons with our competition, and XClarity One, the next evolution of our XClarity Systems Management tool.

Tags: DataCenter Products

Published: 2026-02-27
Length: 40 minutes

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

Course code: FEB2426

18. **ThinkSystem Rackmount and Tower Servers powered by AMD**
2026-02-23 | 25 minutes | Employees and Partners

This course presents the key products and features of the ThinkSystem Rackmount and Tower server family powered by AMD processors. It describes customer benefits and will help you recognize when a specific product should be selected.

By the end of this course, you should be able to:
- Identify products and features within the family
- Describe customer benefits offered by this family
- Recognize when a specific product should be selected

Last updated: 2/24/2026

Tags: Server, ThinkSystem

Published: 2026-02-23
Length: 25 minutes

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

Course code: SXXW1216r11

19. **OneIQ Overview and Demo**
2026-02-10 | 35 minutes | Employees and Partners

In this 35-minute video, Peter Grant, Head of Customer Experience for OneIQ, presents and overview and demo of OneIQ for Lenovo Partners.

Tags: Sales Tools

Published: 2026-02-10
Length: 35 minutes

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

Course code: ONEIQ101

20. **Family Portfolio: ThinkSystem Rack and Tower Servers Powered by Intel**
2026-02-04 | 25 minutes | Employees and Partners

This course is designed to give Lenovo sales and partner representatives a foundation of the ThinkSystem Intel Rackmount 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: 2026-02-04
Length: 25 minutes

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

Course code: SXXW1204r15

21. **ThinkSystem Rack & Tower Server Primer - Module 2**
2025-12-17 | 45 minutes | Employees Only

This course builds on the foundational concepts from the prework modules, helping Client Managers deepen their understanding of ThinkSystem Rack and Tower Servers and apply that knowledge to confidently initiate value-driven customer conversations. Please Note: The videos in this course are taken from the Module 2 live session led by Tikiri Wandregala.

By the end of this course, you will be able to:

- Demonstrate the ability to initiate a data center discussion with a customer.
- Analyze and evaluate potential data center opportunities.
- Apply criteria to effectively qualify an opportunity.
- Locate and differentiate key resources and contacts.

Tags: DataCenter Products, ThinkSystem

Published: 2025-12-17
Length: 45 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DSRTB101

22. **FY26Q2 Easy SMB Quick Hit**
2025-09-22 | 8 minutes | Employees and Partners

This Quick Hit introduces Lenovo Easy SMB, smarter business made simple. It allows businesses to move quickly, deploy modern AI-ready IT infrastructure with ease, and scale confidently, inside data centers or at the edge.

Tags: Artificial Intelligence (AI), Infrastructure as a Service (IaaS), Microsoft, ThinkEdge, ThinkSystem, XClarity

Published: 2025-09-22
Length: 8 minutes

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

Course code: SXXW2548a

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

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

Topics include:

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

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

Published: 2025-08-01
Length: 55 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DTAIW145

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

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

Topics will include:

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

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

Published: 2025-07-30
Length: 87 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DVHPC224

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

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

Tags: Server, Storage

Published: 2025-07-21
Length: 20 minutes

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

Course code: SXXW1109r2

26. **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

27. **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

28. **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

29. **Lenovo Cloud Architecture VTT: Supercharge Your Enterprise AI with NVIDIA AI Enterprise on Lenovo Hybrid AI Platform**
2025-04-17 | 75 minutes | Employees and Partners

Join us for an in-depth webinar with Justin King, Principal Product Marketing Manager for Enterprise AI exploring the power of NVIDIA AI Enterprise, delivering Generative and Agentic AI outcomes deployed with Lenovo Hybrid AI platform environments.
In today's data-driven landscape, AI is evolving at high speed, with new techniques delivering more accurate responses. Enterprises are seeking not just an understanding but also how they can achieve AI-driven business outcomes.
With this, the demand for secure, scalable, and high-performing AI operations-and the skills to deliver them-is top of mind for many. Learn how NVIDIA AI Enterprise, a comprehensive software suite optimized for NVIDIA GPUs, provides the tools and frameworks, including NVIDIA NIM, NeMo, and Blueprints, to accelerate AI development and deployment while reducing risk-all within the control and security of your Lenovo customer's hybrid AI environment.

Tags: Artificial Intelligence (AI), Cloud, Data Management, Nvidia, Technical Sales

Published: 2025-04-17
Length: 75 minutes

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

Course code: DVCLD221

30. **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

31. **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

32. **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

33. **Introduction to DDR5 Memory**
2022-08-23 | 10 minutes | Employees and Partners

This course introduces DDR5 memory, describes new features of this memory generation, and discusses the advantages to customers of this new memory generation.

Tags: Server, Technology solutions

Published: 2022-08-23
Length: 10 minutes

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

Course code: SXXW2502

Related publications and links

For more information, see these resources:

- ThinkSystem SR650 V3 product page:
  https://www.lenovo.com/us/en/p/racks/len21ts0013
- ThinkSystem SR650 V3 datasheet
  https://lenovopress.com/ds0143
- Interactive 3D Tour of the ThinkSystem SR650 V3:
  https://lenovopress.lenovo.com/lp1621-thinksystem-sr650-v3-interactive-3d-tour
- ThinkSystem SR650 V3 drivers and support
  http://datacentersupport.lenovo.com/products/servers/thinksystem/sr650v3/7d76/downloads
- Lenovo Hardware Installation & Removal Videos on the SR650 V3:
  https://www.youtube.com/playlist?list=PLYV5R7hVcs-BmyijyY0-INvapM4fTV5Gf
- Lenovo ThinkSystem SR650 V3 product publications:
  https://pubs.lenovo.com/sr650-v3/
  - User Guide, which includes:
    - System Configuration Guide
    - Hardware Maintenance Guide
  - Rack Installation Guides
  - Messages and Codes Reference
  - UEFI Manual for ThinkSystem Servers
- User Guides for options:
  https://serveroption.lenovo.com
- ServerProven hardware compatibility:
  http://serverproven.lenovo.com

Related product families

Product families related to this document are the following:

- 2-Socket Rack Servers
- ThinkSystem SR650 V3 Server

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This document, LP1601, was created or updated on October 13, 2026.

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