Lenovo ThinkSystem SD535 V3 Server
Product Guide

The Lenovo ThinkSystem SD535 V3 is a single-socket server in a 2U4N multi-node form factor. Combining the efficiency and density of blades with the value and simplicity of rack-based servers, the SD535 V3 delivers a cost-efficient scale-out platform that is thermally designed to deliver maximum performance in the smallest footprint. The solution consists of a 2U ThinkSystem D3 Chassis containing up to four front-access SD535 V3 servers (nodes). Each node incorporates a 5th Gen or 4th Gen AMD EPYC processor.

The SD535 V3 is well suited for workloads ranging from virtualization, high performance workloads, transaction processing, and Big Data analytics.

The following figure shows four ThinkSystem SD535 V3 servers installed in a D3 Chassis.

Figure 1. Four ThinkSystem SD535 V3 servers installed in a D3 Chassis

360° View | Full 3D Tour

Did you know?

The SD535 V3 combines the efficiency and density of blades with the value and simplicity of rack-based servers. With high-performance features such as a 5th Gen AMD EPYC 9005 series processor, GPU support, and high-performance 400Gb Ethernet, all to power through your most demanding virtualized, transactional, technical computing and AI workloads.

For the ultimate in energy efficiency and to maximize server performance, the SD535 V3 now offers Lenovo Neptune Core open-loop water cooling, where the heat generated by the processor can be removed by water.

Key features

The Lenovo ThinkSystem SD535 V3 server supports one AMD EPYC processor, plus support for the latest low-profile GPUs, and fast networking and storage. Up to four SD535 V3 servers can be installed in the D3 Chassis. Each server has its own fans to ensure proper cooling for installed components and demand of the currently running workload, and its own networking to ensure maximum performance.

The front-accessible design optimized for best-in-class thermal capabilities provides a dense, flexible solution with a low TCO. The half-wide, single-socket server is designed for data centers that require compute density and high performance, but are constrained by floor space.

The ThinkSystem D3 Chassis is an efficient, 2U rack mount enclosure with no built-in networking or switching capabilities; therefore, it requires no enclosure-level management. Sensibly designed to provide shared, high-efficiency power for the housed servers, the D3 Chassis is designed to scale with your business needs.

Scalability and performance

The SD535 V3 server offers numerous features to boost performance, improve scalability, and reduce costs:

- Each SD535 V3 server supports one 5th Gen or 4th Gen AMD EPYC processor, 12 TruDDR5 DIMMs, a PCIe 5.0 x16 slot plus an OCP 3.0 slot for high-speed I/O, and six 2.5-inch hot-swap drive bays, all in a half-wide 1U form factor.
- Up to 4 SD535 V3 servers are installed in the D3 Chassis, occupying only 2U of rack space. It is a highly dense and scalable offering.
- Supports one 5th Gen AMD EPYC 9005 series processors
  - TDP ratings of up to 500W
  - Up to 192 cores
  - Core speeds of up to 4.0 GHz
- Supports one 4th Gen AMD EPYC 9004 series processors
  - TDP ratings of up to 400W
  - Up to 128 cores
  - Core speeds of up to 4.1 GHz
- Support for DDR5 memory DIMMs to maximize the performance of the memory subsystem. Each node supports the following:
  - Up to 12 DDR5 memory DIMMs
  - 12 memory channels per processor (1 DIMM per channel)
  - Memory operates at 6400 MHz with 5th Gen AMD EPYC processors, and 4800 MHz with 4th Gen processors
  - Supports up to 1.5TB of system memory using 12x 128GB 3DS RDIMMs
- Each SD535 V3 server supports six 2.5-inch hot-swap SSDs, either SAS, SATA, or NVMe. NVMe drives each have a PCIe 5.0 x4 interface which maximizes I/O performance in terms of throughput, bandwidth, and latency.
- Supports up to four M.2 SATA or NVMe drives for convenient operating system boot or OS-based storage functions. Optional RAID-1 redundancy on two of the drives.
- The server has a dedicated industry-standard OCP 3.0 slot, with a PCIe 5.0 x16 interface, 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 (NC-SI) to enable out-of-band systems management.
- One PCIe 5.0 x16 low profile half-length slot is supported, providing support for a variety of high-speed network and storage adapters. In some configurations, the server supports an additional internal (CFF) slot for a RAID adapter for internal storage.
- 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 SD535 V3 server and the D3 Chassis provide many features to simplify serviceability and increase system uptime:

- Designed to run 24 hours a day, 7 days a week
- The server offers Single Device Data Correction (SDDC, also known as Chipkill), Adaptive Double-Device Data Correction (ADDDC, also known as Redundant Bit Steering or RBS), and memory mirroring for redundancy in the event of a non-correctable memory failure.
- The server offers hot-swap drives to maximize uptime
- SAS and SATA drives can be configured with a RAID adapter for data protection and greater system uptime.
- Two of the four M.2 drives, are mounted on an M.2 adapter with built-in RAID-1 support.
- The D3 Chassis supports three hot-swap power supplies which are N+1 redundant to provide availability for business-critical applications.
- Toolless access to upgrades and serviceable parts, such as fans, adapters, CPUs, and memory.
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (SSDs and M.2 storage), fans, power supplies, and server ambient and sub-component temperatures. Alerts can be surfaced through the XClarity Controller (XCC) to managers such as Lenovo XClarity Administrator, VMware vCenter, and Microsoft System Center. These proactive alerts let you take appropriate actions in advance of possible failure, thereby increasing server uptime and application availability.
- The built-in XClarity Controller continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Built-in diagnostics in UEFI, using Lenovo XClarity Provisioning Manager, speed up troubleshooting tasks to reduce service time.
- Lenovo XClarity Provisioning Manager supports diagnostics and can save service data to a USB key drive or remote CIFS share folder for troubleshooting and reduce service time.
- Auto restart in the event of a momentary loss of AC power (based on power policy setting in the XClarity Controller service processor)
- Support for the XClarity Administrator Mobile app running on a supported smartphone or tablet and connected to the server through the service-enabled USB port, enables additional local systems management functions.
- Three-year or one-year customer-replaceable unit and onsite limited warranty (varies by geography), 9 x 5 next business day. Optional service upgrades are available.

Manageability and security

Powerful systems management features simplify local and remote management of the SD535 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, 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 Administrator offers comprehensive hardware management tools that help to increase uptime, reduce costs and improve productivity through advanced server management capabilities.
- UEFI-based Lenovo XClarity Provisioning Manager, accessible from F1 during boot, provides system inventory information, graphical UEFI Setup, platform update function, RAID Setup wizard, operating system installation function, and diagnostic functions.

- Support for Lenovo XClarity Energy Manager, which captures real-time power and temperature data from the server and provides automated controls to lower energy costs.
- An integrated industry-standard Unified Extensible Firmware Interface (UEFI) enables improved setup, configuration, and updates, and simplifies error handling.
- Support for industry standard management protocols, IPMI 2.0, SNMP 3.0, Redfish REST API, serial console via IPMI
- 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 AMD Secure Root-of-Trust, Secure Run and Secure Move features to minimize potential attacks and protect data as the OS is booted, as applications are run and as applications are migrated from server to server.
- Supports Secure Boot to ensure only a digitally signed operating system can be used.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.

Energy efficiency

The SD535 V3 and the D3 Chassis offer the following energy efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to a green environment:

- Optional open-loop water cooling of the processor with Lenovo Neptune Core water cooling. Water cooling is more efficient at removing heat from a server than traditional air cooling.
- ASHRAE A2 compliance for certain configurations to enable operation in 35°C data centers
- Energy-efficient planar components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Titanium certifications.
- Next Generation Lenovo Neptune™ Thermal Transfer Module for efficient air cooling of the CPU.
- Optional Lenovo XClarity Energy Manager provides advanced data center power notification and analysis to help achieve lower heat output and reduced cooling needs.

View in Augmented Reality

View the SD535 V3 in augmented reality (AR) using your smartphone or tablet.

Simply follow these steps:

1. Scan the QR code* with the camera app on your phone
2. Point your phone at a flat surface
3. Wait a few seconds for the model to appear

Once the server appears, you can move your phone around it. You can also drag or rotate the server to reposition it.

For more information about the AR viewer, see the article "Introducing the Augmented Reality Viewer for Lenovo Servers", available from https://lenovopress.lenovo.com/lp1952

* If you're viewing this document on your phone or tablet, simply tap the QR code

Components and connectors

The following figure shows the front of the SD535 V3 server.

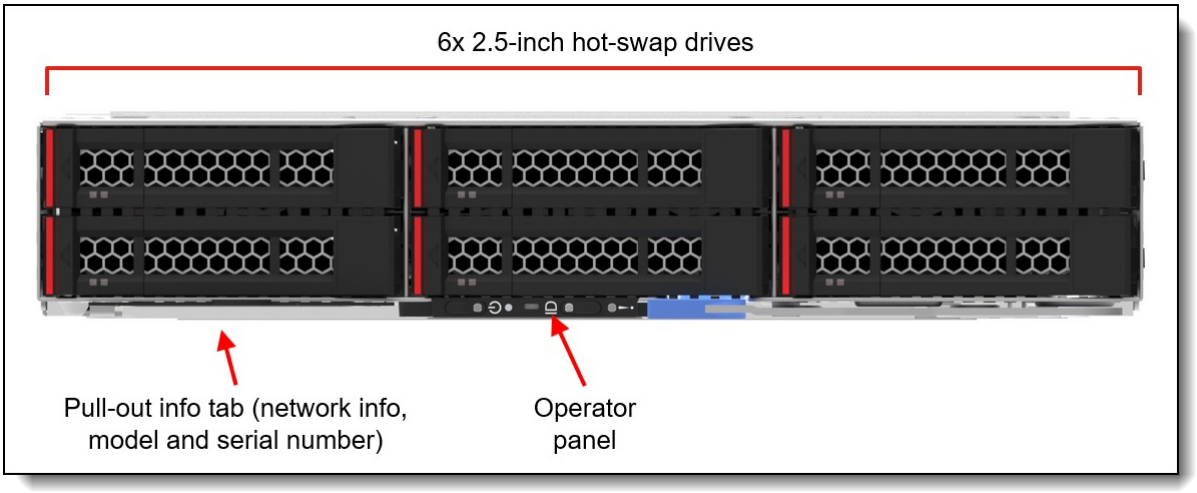

Figure 2. Front view of the SD535 V3 node

The following figure shows the rear of the SD535 V3 server when processor is air-cooled using heatsinks.

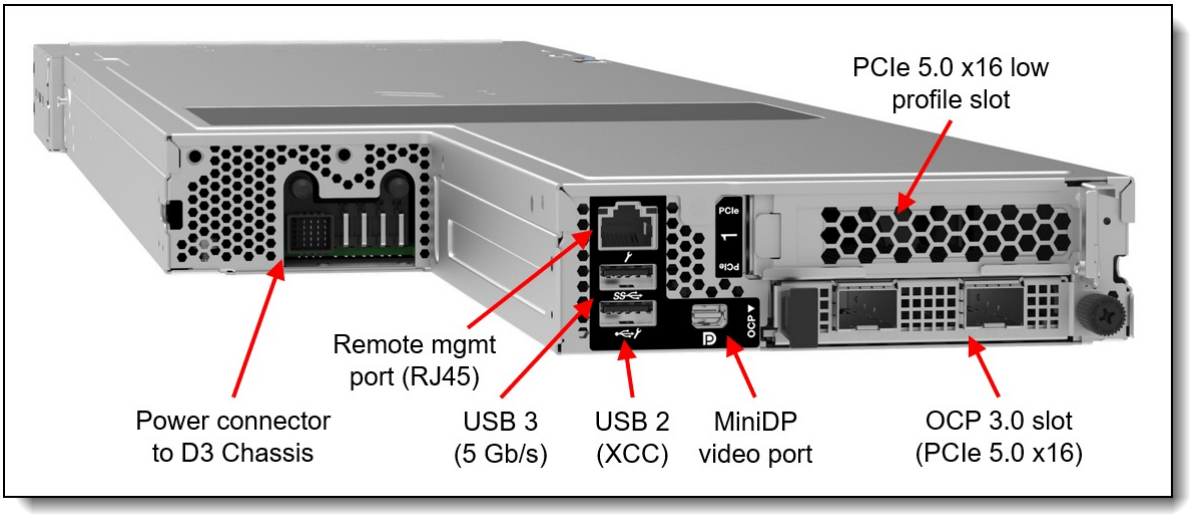

Figure 3. Rear view of the SD535 V3 node - air-cooled processor

The following figure shows the rear of the SD535 V3 server when processor is water-cooled using open-loop cooling.

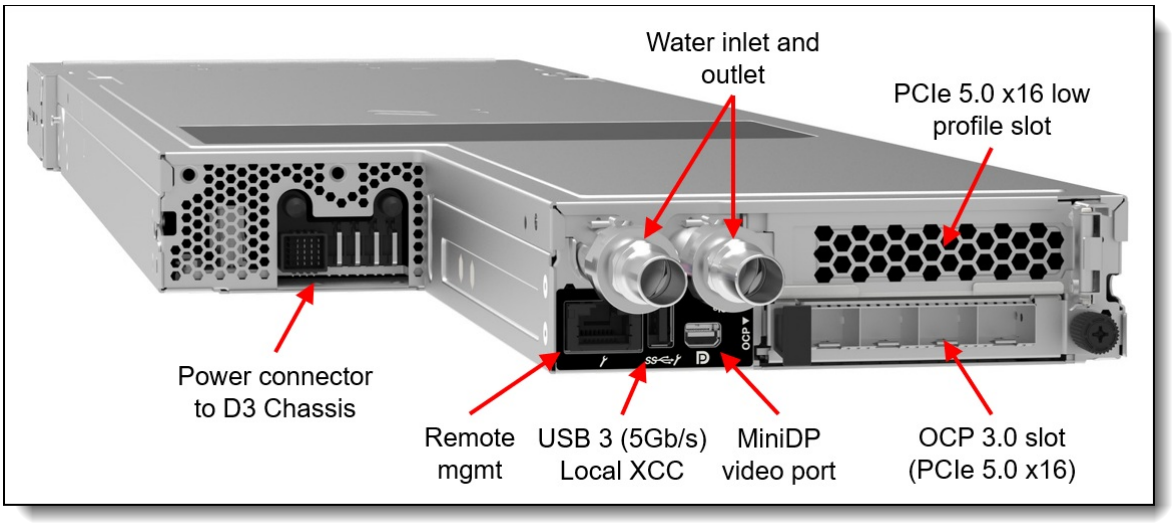

Figure 4. Rear view of the SD535 V3 node - open-loop water cooling

The following figure shows the internals of the SD535 V3 server with air cooling, identifying key components.

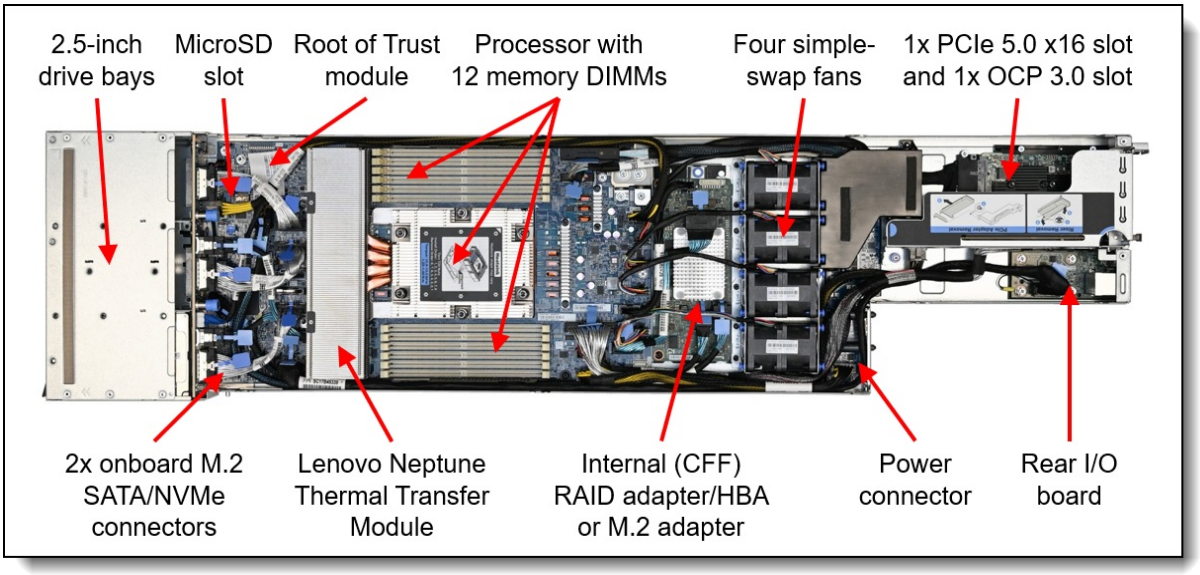

Figure 5. Internal view of the SD535 V3 compute node - air cooled

The following figure shows the internals of the SD535 V3 server with open-loop water cooling, identifying key components.

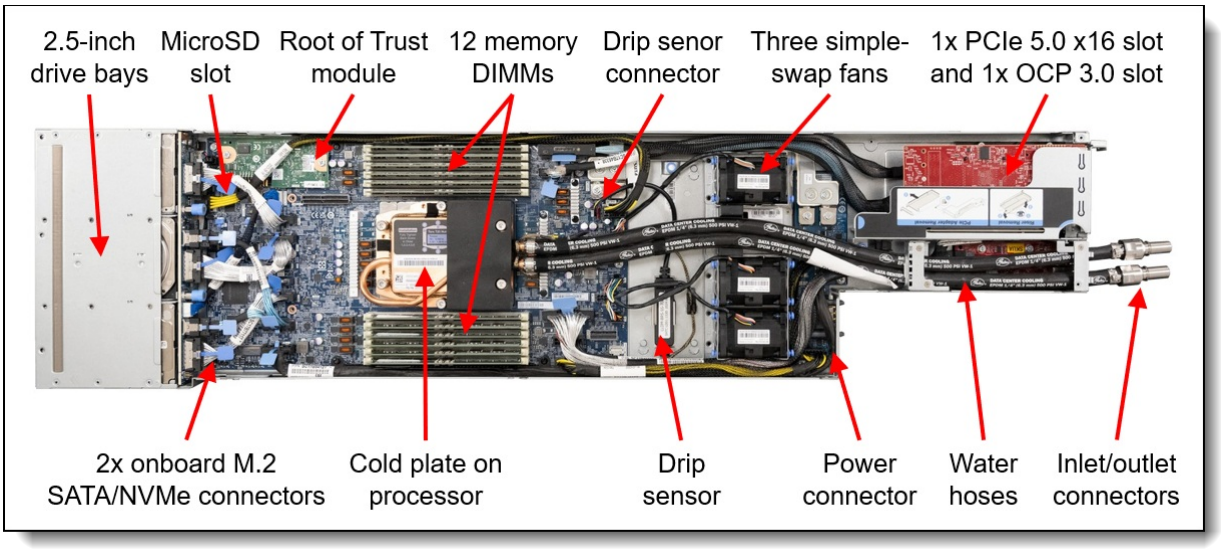

Figure 6. Internal view of the SD535 V3 compute node - open-loop water cooling

The following figure shows the front of the D3 Chassis. The front view shows the four SD535 V3 nodes. The nodes on the right of the chassis are installed upside down.

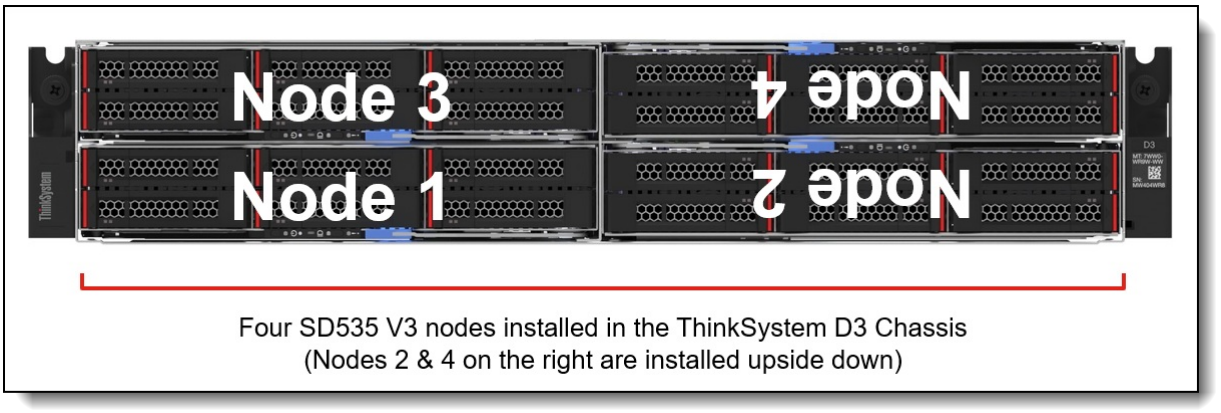

Figure 7. Front view of the ThinkSystem D3 Chassis

The following figure shows the rear of the D3 Chassis.

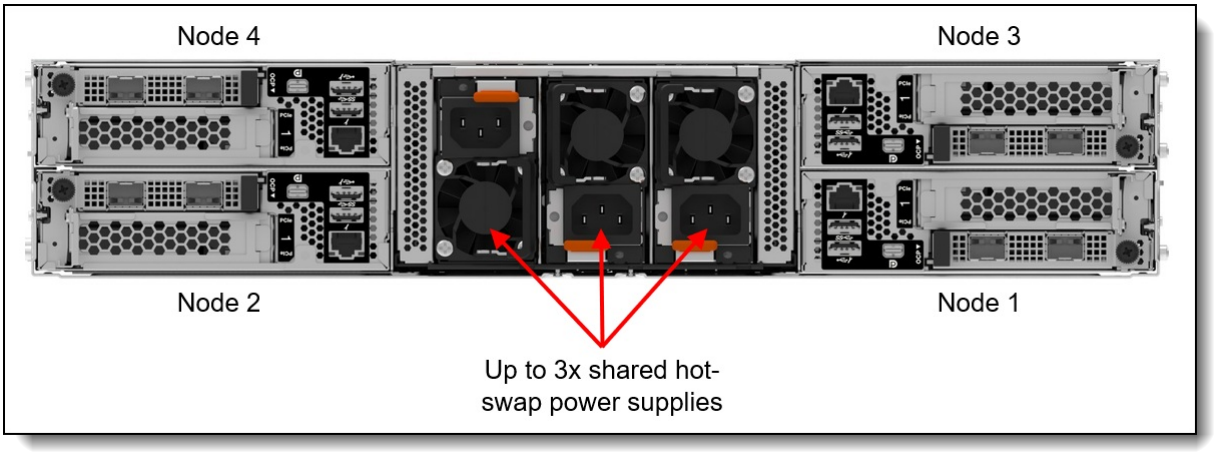

Figure 8. Rear view of the ThinkSystem D3 Chassis (air cooled)

The following figure shows how two servers are installed in the D3 Chassis. The servers have a cutout at the rear where the shared power supplies are connected.

Note: This figure is an artistic representation to show internal detail. The top of the D3 Chassis is fixed and cannot be removed.

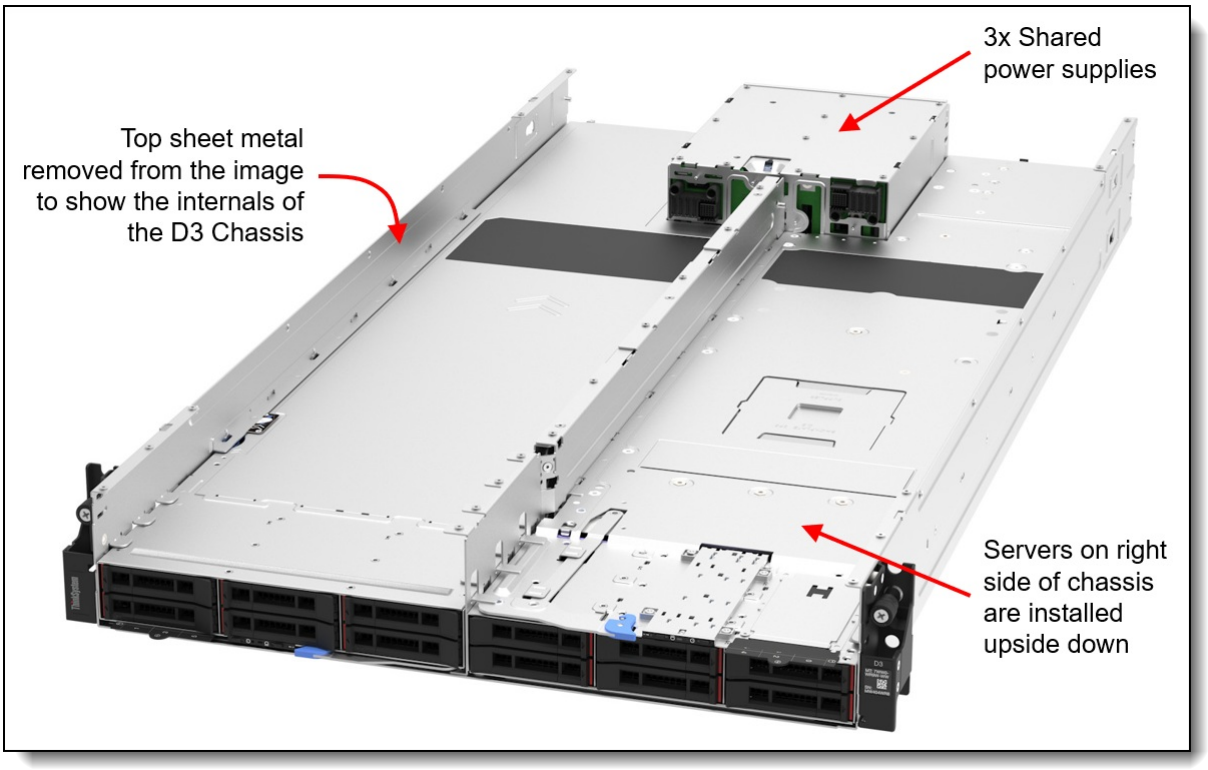

Figure 9. Front view of the D3 Chassis with the top removed (artistic representation)

The D3 Chassis supports mixing the SD535 V3, SD530 V3, and SD550 V3 in the same chassis. The figure below shows the D3 Chassis with two SD530 V3 server and two SD535 V3 servers.

Figure 10. Front view of the ThinkSystem D3 Chassis with 2x SD530 V3 (left) and 2x SD535 V3 (right) servers

System architecture

The following figure shows the architectural block diagram of the SD535 V3, showing the major components and their connections.

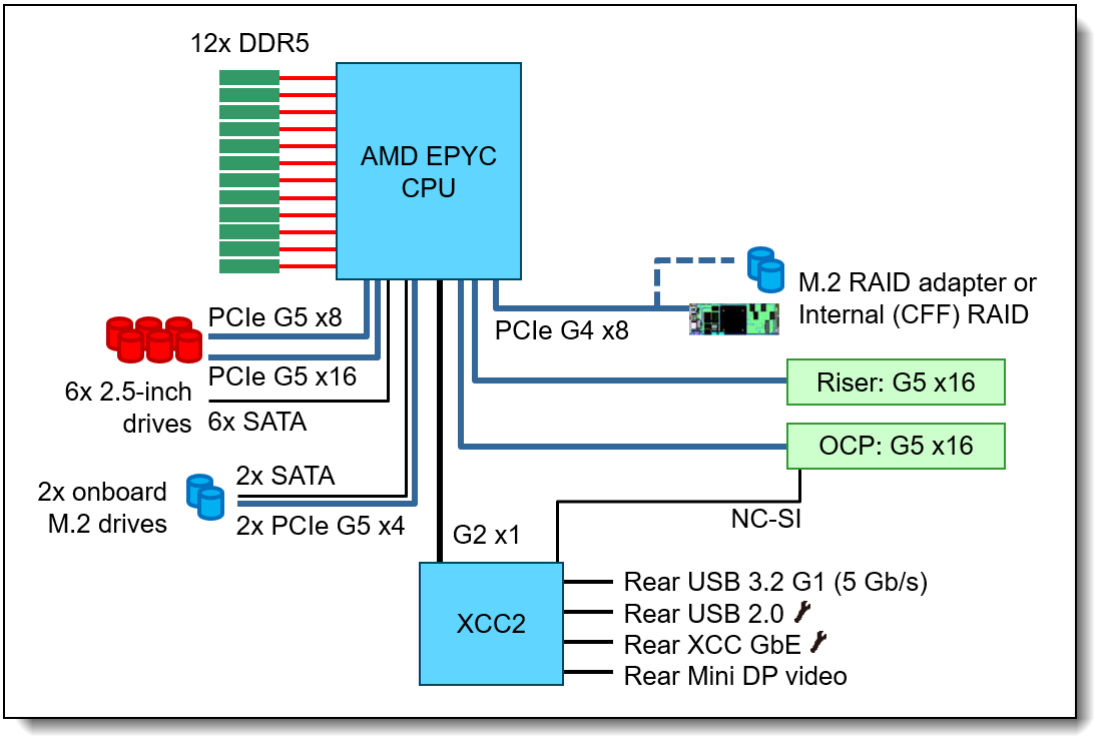

Figure 11. SD535 V3 system architectural block diagram

Standard specifications - SD535 V3 server

The following table lists the standard specifications of the SD535 V3.

Table 1. Standard specifications - ThinkSystem SD535 V3

Components	Specification
Machine type	7DD1 - 3 year warranty 7DD8 - 1 year warranty
Form factor	Half-wide, 1U compute node.
Supported enclosure	ThinkSystem D3 Chassis, 2U high; up to 4 servers per chassis.
Processor	One 5th Gen or 4th Gen AMD EPYC 9004 series processor: • 5th Gen: Up to 192 cores, core speeds of up to 4.0 GHz, and TDP ratings up to 500W • 4th Gen: Up to 128 cores, core speeds of up to 4.1 GHz, and TDP ratings of up to 400W
Chipset	Not applicable (platform controller hub functions are integrated into the processor SOC)
Memory	12 DIMM slots with 12 memory channels from the processor (1 DIMM per channel, DPC). Lenovo TruDDR5 RDIMMs and 3DS RDIMMs are supported, up to 6400 MHz
Persistent memory	Not supported
Memory maximums	Up to 1.5TB of system memory using 12x 128GB 3DS RDIMMs
Memory protection	ECC, SDDC, Patrol/Demand Scrubbing, Bounded Fault, DRAM Address Command Parity with Replay, DRAM Uncorrected ECC Error Retry, On-die ECC, ECC Error Check and Scrub (ECS), Post Package Repair
Drive bays	• 6x 2.5-inch hot-swap AnyBay drive bays supporting SAS, SATA, or PCIe 5.0 x4 NVMe SSDs (HDDs not supported) • 2x M.2 drives on an M.2 adapter with built-in RAID controller • 2x onboard M.2 slots supporting NVMe drives (x4 host interface) or SATA drives (6Gbps host interface)
Maximum internal storage	• 184.32TB using 6x 30.72TB 2.5-inch SAS/SATA SSDs • 184.32TB using 6x 30.72TB 2.5-inch NVMe SSDs
Storage controller	Onboard NVMe ports (No support for RAID) Onboard SATA ports (No support for RAID) Support for Internal (CFF) RAID adapter or PCIe adapter for SAS/SATA drive support
Optical drive bays	No internal bays; use an external USB drive.
Tape drive bays	No internal bays. Use an external USB 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	One PCIe 5.0 x16 slot with low profile form factor
GPU support	Supports 1x single-wide GPU
Ports	Front: None; Rear: One MiniDP port for video, one USB 3 (5 Gb/s) port + 1x USB 2.0 port (also for XCC local management), 1x RJ-45 1GbE systems management port for XCC remote management. In open-loop water cooled configurations, only 1x USB port (USB 3 with XCC local management).
Cooling	Up to 4x 40mm simple-swap dual-rotor fans with N+1 rotor-redundancy. Optional open-loop water cooling of the processor with Lenovo Neptune Core water cooling. With water cooling, only 3x fans are needed.

Components	Specification
Power supply	Supplied by the D3 Chassis.
Hot-swap parts	Drives
Systems management	Operator panel with status LEDs. XClarity Controller 2 (XCC2) embedded management based on the ASPEED AST2600 baseboard management controller (BMC), XClarity Administrator centralized infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. Optional XCC Platinum to enable remote control functions and other features.
Video	Embedded graphics with 16 MB memory with 2D hardware accelerator, integrated into the XClarity Controller 2 management controller. Rear Mini DisplayPort video port. Maximum resolution of both ports is 1920x1200 at 60Hz.
Security	Power-on password, administrator's password, Trusted Platform Module (TPM), supporting TPM 2.0.
Operating systems supported	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi, Ubuntu Server. See the Operating system support section for specifics, including other operating systems that are Vendor Certified or Tested.
Limited warranty	Three-year customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.
Ambient temperature	Up to ASHRAE Class A2: 10°C - 35°C (50°F - 95°F)
Dimensions	Width: 222 mm (8.7 inches), height: 41 mm (1.6 inches), depth 898 mm (35.4 inches)
Weight	Maximum: 8.32 kg (18.34 lbs)

Standard specifications - D3 Chassis

The SD535 V3 servers are supported in the ThinkSystem D3 Chassis. The following table lists the standard specifications of the enclosure.

Table 2. Standard specifications: ThinkSystem D3 Chassis

Components	Specification
Machine type	7DD0 - 3 year warranty 7DD7 - 1 year warranty
Form factor	2U rack-mounted chassis
Server support	Up to four SD535 V3 servers per chassis Up to four SD530 V3 servers per chassis Up to two SD550 V3 servers per chassis Servers can be mixed in the same chassis
Servers per rack	Up to 84x SD535 V3 servers in 21 chassis per 42U rack Up to 96x SD535 V3 servers in 24 chassis per 48U rack
Systems management	None. Management is provided by each node. An incoming remote management connection can be shared using a daisy chain connection.
Ports	None.
I/O architecture	None integrated. Use top-of-rack networking and storage switches.
Power supplies	Three hot-swap power supplies, supplying power to all nodes installed in the chassis. Power supplies are either 1300W, 1600W (some markets), or 2700W, with N+1 redundancy. Power supplies are the CRPS form factor and are either 80 PLUS Platinum or 80 PLUS Titanium certified. All power supplies installed must be identical part numbers. Power supplies require a 200-240 V ac, 50 or 60 Hz supply. Power supplies are installed at the rear of the enclosure.

Components	Specification
Power cords	One AC power cord for each power supply, C13 or C19 depending on the power supplies selected
Cooling	None. Fans are located within each server node. Optional open-loop water cooling of the processors in the nodes with Lenovo Neptune Core water cooling.
Enclosure LEDs	Each power supply has AC, DC and error LEDs.
Hot-swap parts	Power supplies
Limited warranty	Three-year customer-replaceable unit and onsite limited warranty with 9x5/NBD coverage.
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.
Dimensions	Height: 87 mm (3.43 inches), depth: 898 mm (35.36 inches), width: 448 mm (17.64 inches). See Physical and electrical specifications for details.
Weight	Empty (without servers and power supplies): 11.8 kg (26.1 lb) Maximum (4x 1U servers and 3x power supplies): 42.4 kg (93.4 lbs)

SD535 V3 models

ThinkSystem SD535 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 SD535 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.

Controlled GPU models: The "Controlled GPU" base CTO models listed in the table are the only models that support high-performance GPUs and accelerators. 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 SD535 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 SD535 V3 server.

Table 3. Base CTO models

Machine Type/Model General purpose	Machine Type/Model for AI and HPC	Description
7DD1CTO1WW	7DD1CTOLWW	ThinkSystem SD535 V3 - 3yr Warranty
7DD1CTOAWW	7DD1CTOHWW	ThinkSystem SD535 V3 - 3yr Warranty with Controlled GPU
7DD8CTO1WW	7DD8CTOLWW	ThinkSystem SD535 V3 - 1yr Warranty

The following table lists the base choices for CTO configurations of the SD535 V3.

Table 4. Base for CTO models

Feature code	Description	Purpose
BWSY	ThinkSystem SD535 V3 Standard Air Cooled Node	Air cooled server, for processors with TDP ≤ 400W
C63Y	ThinkSystem SD535 V3 High Performance Air Cooled Node	Air cooled server, for 500W TDP processors
C63Z	ThinkSystem SD535 V3 Processor Neptune Core Water Cooled Node	Open-loop water cooling (all processors)

Enclosure models

Up to four SD535 V3 servers are supported in a D3 Chassis.

The following table lists the base CTO models of the D3 Chassis.

Table 5. Base CTO models for the D3 Chassis

Machine Type/Model General purpose	Machine Type/Model for HPC and AI	Description
7DD0CTO1WW	7DD0CTOLWW	ThinkSystem D3 Chassis - 3 year Warranty
7DD7CTO1WW	7DD7CTOLWW	ThinkSystem D3 Chassis - 1 year Warranty

The following table lists the base choices for CTO configurations of the D3 Chassis.

Table 4. Base for CTO models

Feature code	Description
BWJW	ThinkSystem D3 2U Enclosure Base

Processors

The SD535 V3 supports processors in the fourth-generation AMD EPYC family of processors. The server supports one processor.

Topics in this section:

- Processor options
- Processor features
- Air cooling of processors
- Lenovo Processor Neptune Core Module - Open-loop liquid cooling
- UEFI operating modes

Processor options

The SD535 V3 supports the following processor families:

- 5th Gen AMD EPYC processors (formerly codenamed "Turin"):
  - Processors with Zen 5 architecture, with high per-core performance
  - Processors with Zen 5c architecture, with high core density and best power efficiency
- 4th Gen AMD EPYC processors:
  - 4th Gen AMD EPYC processors (formerly codenamed "Genoa")
  - 4th Gen AMD EPYC processors with AMD 3D V-Cache (formerly codenamed "Genoa-X"), with larger L3 caches, suitable for engineering workloads like EDA and CFD
  - 4th Gen AMD EPYC processors with Zen 4c architecture (formerly codenamed "Bergamo"), with higher core counts, suitable for workloads like cloud-native applications

All supported processors have the following characteristics:

- 12 DDR5 memory channels
- 128 PCIe 5.0 I/O lanes, 64 lanes available for PCIe and NVMe devices

Configuration notes:

- All 5th Gen processors support a 6400 MHz memory bus speed provided specific memory DIMMs are installed in the server and the latest system firmware is applied. See the table in the Memory options section to see which DIMMs support 6400 MHz. For all other DIMMs, the memory bus operates at 6000 MHz.

The following table lists the 5th Gen AMD EPYC processors supported by the SD535 V3.

Table 6. 5th Gen AMD EPYC processor support

Feature code	SKU	Description	Quantity supported
5th AMD EPYC processors ("Turin") with Zen 5 architecture			
C2AF	9015	ThinkSystem AMD EPYC 9015 8C 125W 3.6GHz Processor	1
C2AG	9115	ThinkSystem AMD EPYC 9115 16C 125W 2.6GHz Processor	1
C2AK	9135	ThinkSystem AMD EPYC 9135 16C 200W 3.65GHz Processor	1
C2AR	9175F	ThinkSystem AMD EPYC 9175F 16C 320W 4.2GHz Processor	1
C2AP	9255	ThinkSystem AMD EPYC 9255 24C 200W 3.25GHz Processor	1
C2AT	9275F	ThinkSystem AMD EPYC 9275F 24C 320W 4.1GHz Processor	1
C2AQ	9335	ThinkSystem AMD EPYC 9335 32C 210W 3.0GHz Processor	1
C2AZ	9355	ThinkSystem AMD EPYC 9355 32C 280W 3.55GHz Processor	1
C2AV	9355P	ThinkSystem AMD EPYC 9355P 32C 280W 3.55GHz Processor	1
C2AM	9365	ThinkSystem AMD EPYC 9365 36C 300W 3.4GHz Processor	1
C2AJ	9375F	ThinkSystem AMD EPYC 9375F 32C 320W 3.8GHz Processor	1
C2ND	9455	ThinkSystem AMD EPYC 9455 48C 300W 3.15GHz Processor	1
C2NE	9455P	ThinkSystem AMD EPYC 9455P 48C 300W 3.15GHz Processor	1
C2A3	9475F	ThinkSystem AMD EPYC 9475F 48C 400W 3.65GHz Processor	1
C2AL	9535	ThinkSystem AMD EPYC 9535 64C 300W 2.4GHz Processor	1
C2AY	9555	ThinkSystem AMD EPYC 9555 64C 360W 3.2GHz Processor	1
C2AW	9555P	ThinkSystem AMD EPYC 9555P 64C 360W 3.2GHz Processor	1
C2AS	9565	ThinkSystem AMD EPYC 9565 72C 400W 3.15GHz Processor	1
C4H8	9575F	ThinkSystem AMD EPYC 9575F 64C 400W 3.3GHz Processor	1
C2AU	9655	ThinkSystem AMD EPYC 9655 96C 400W 2.6GHz Processor	1
C2AX	9655P	ThinkSystem AMD EPYC 9655P 96C 400W 2.6GHz Processor	1
C2RB	9755	ThinkSystem AMD EPYC 9755 128C 500W 2.7GHz Processor	1
5th AMD EPYC processors ("Turin") with Zen 5c architecture			
C2AN	9645	ThinkSystem AMD EPYC 9645 96C 320W 2.3GHz Processor	1
C2AE	9745	ThinkSystem AMD EPYC 9745 128C 400W 2.4GHz Processor	1
C2AH	9825	ThinkSystem AMD EPYC 9825 144C 390W 2.2GHz Processor	1
C2TD	9845	ThinkSystem AMD EPYC 9845 160C 390W 2.1GHz Processor	1
C5NY	9965	ThinkSystem AMD EPYC 9965 192C 500W 2.25GHz Processor	1

The following table lists the 4th Gen AMD EPYC processors supported by the SD535 V3.

Table 7. 4th Gen AMD EPYC processor support

Feature code	SKU	Description	Quantity supported
4th Gen AMD EPYC processors ("Genoa")			
BREE	9124	ThinkSystem AMD EPYC 9124 16C 200W 3.0GHz Processor	1
BREJ	9174F	ThinkSystem AMD EPYC 9174F 16C 320W 4.1GHz Processor	1
BREH	9224	ThinkSystem AMD EPYC 9224 24C 200W 2.5GHz Processor	1
BRED	9254	ThinkSystem AMD EPYC 9254 24C 200W 2.9GHz Processor	1
BREF	9274F	ThinkSystem AMD EPYC 9274F 24C 320W 4.05GHz Processor	1
BREC	9334	ThinkSystem AMD EPYC 9334 32C 210W 2.7GHz Processor	1
BR30	9354	ThinkSystem AMD EPYC 9354 32C 280W 3.25GHz Processor	1
BREG	9354P	ThinkSystem AMD EPYC 9354P 32C 280W 3.25GHz Processor	1
BR32	9374F	ThinkSystem AMD EPYC 9374F 32C 320W 3.85GHz Processor	1
BREB	9454	ThinkSystem AMD EPYC 9454 48C 290W 2.75GHz Processor	1
BREM	9454P	ThinkSystem AMD EPYC 9454P 48C 290W 2.75GHz Processor	1
BR31	9474F	ThinkSystem AMD EPYC 9474F 48C 360W 3.6GHz Processor	1
BREA	9534	ThinkSystem AMD EPYC 9534 64C 280W 2.45GHz Processor	1
BPVJ	9554	ThinkSystem AMD EPYC 9554 64C 360W 3.1GHz Processor	1
BREL	9554P	ThinkSystem AMD EPYC 9554P 64C 360W 3.1GHz Processor	1
BR2Z	9634	ThinkSystem AMD EPYC 9634 84C 290W 2.25GHz Processor	1
BPVK	9654	ThinkSystem AMD EPYC 9654 96C 360W 2.4GHz Processor	1
BREK	9654P	ThinkSystem AMD EPYC 9654P 96C 360W 2.4GHz Processor	1
4th AMD EPYC processors with AMD 3D V-Cache ("Genoa-X")			
BXFT	9184X	ThinkSystem AMD EPYC 9184X 16C 320W 3.55GHz Processor	1
BW9V	9384X	ThinkSystem AMD EPYC 9384X 32C 320W 3.1GHz Processor	1
BW9U	9684X	ThinkSystem AMD EPYC 9684X 96C 400W 2.55GHz Processor	1
4th Gen AMD EPYC processors with Zen 4c architecture ("Bergamo")			
BW9S	9734	ThinkSystem AMD EPYC 9734 112C 340W 2.2GHz Processor	1
BW9T	9754	ThinkSystem AMD EPYC 9754 128C 360W 2.25GHz Processor	1

Configuration rule:

- With air cooling, the following 500W processors require base C63Y, ThinkSystem SD535 V3 High Performance Air Cooled Node as described in the SD535 V3 models section:
  - ThinkSystem AMD EPYC 9755 128C 500W 2.7GHz Processor
  - ThinkSystem AMD EPYC 9965 192C 500W 2.25GHz Processor

Processor features

The following table lists the features of the supported 5th Gen AMD EPYC processors.

6400 MHz memory support: The processors support memory up to 6400 MHz provided that specific memory DIMMs are installed in the server and the latest system firmware is applied. See the table in the Memory options section to see which DIMMs support 6400 MHz.

Table 8. Processor specifications - 5th Gen AMD EPYC processors

EPYC model	Cores / Threads	Base Frequency	Max Boost Frequency†	L3 Cache	Memory channels	Memory bus	TDP
5th AMD EPYC processors ("Turin") with Zen 5 architecture							
9015	8 / 16	3.6 GHz	4.1 GHz	64 MB	12	6400 MHz	125W
9115	16 / 32	2.6 GHz	4.4 GHz	64 MB	12	6400 MHz	125W
9135	16 / 32	3.65 GHz	4.3 GHz	64 MB	12	6400 MHz	200W
9175F	16 / 32	4.2 GHz	5 GHz	512 MB	12	6400 MHz	320W
9255	24 / 48	3.25 GHz	4.3 GHz	128 MB	12	6400 MHz	200W
9275F	24 / 48	4.1 GHz	4.8 GHz	256 MB	12	6400 MHz	320W
9335	32 / 64	3 GHz	4.4 GHz	128 MB	12	6400 MHz	210W
9355	32 / 64	3.55 GHz	4.4 GHz	256 MB	12	6400 MHz	280W
9355P	32 / 64	3.55 GHz	4.4 GHz	256 MB	12	6400 MHz	280W
9365	36 / 72	3.4 GHz	4.3 GHz	192 MB	12	6400 MHz	300W
9375F	32 / 64	3.8 GHz	4.8 GHz	256 MB	12	6400 MHz	320W
9455	48 / 96	3.15 GHz	4.4 GHz	256 MB	12	6400 MHz	300W
9455P	48 / 96	3.15 GHz	4.4 GHz	256 MB	12	6400 MHz	300W
9475F	48 / 96	3.65 GHz	4.8 GHz	256 MB	12	6400 MHz	400W
9535	64 / 128	2.4 GHz	4.3 GHz	256 MB	12	6400 MHz	300W
9555	64 / 128	3.2 GHz	4.4 GHz	256 MB	12	6400 MHz	360W
9555P	64 / 128	3.2 GHz	4.4 GHz	256 MB	12	6400 MHz	360W
9565	72 / 144	3.15 GHz	4.3 GHz	384 MB	12	6400 MHz	400W
9575F	64 / 128	3.3 GHz	5 GHz	256 MB	12	6400 MHz	400W
9655	96 / 192	2.6 GHz	4.5 GHz	384 MB	12	6400 MHz	400W
9655P	96 / 192	2.6 GHz	4.5 GHz	384 MB	12	6400 MHz	400W
9755	128 / 256	2.7 GHz	4.1 GHz	512 MB	12	6400 MHz	500W
5th AMD EPYC processors ("Turin") with Zen5c architecture							
9645	96 / 192	2.3 GHz	3.7 GHz	256 MB	12	6400 MHz	320W
9745	128 / 256	2.4 GHz	3.7 GHz	256 MB	12	6400 MHz	400W
9825	144 / 288	2.2 GHz	3.7 GHz	384 MB	12	6400 MHz	390W
9845	160 / 320	2.1 GHz	3.7 GHz	320 MB	12	6400 MHz	390W
9965	192 / 384	2.25 GHz	3.7 GHz	384 MB	12	6400 MHz	500W

† The maximum single-core frequency that the processor is capable of operating

The following table lists the features of the supported 4th Gen AMD EPYC processors.

Table 9. Processor specifications - 4th Gen AMD EPYC processors

EPYC model	Cores / Threads	Base Frequency	Max Boost Frequency†	L3 Cache	Memory channels	Memory bus	TDP
4th Gen AMD EPYC processors ("Genoa")							
9124	16 / 32	3.0 GHz	3.7 GHz	64 MB	12	4800 MHz	200W
9174F	16 / 32	4.1 GHz	4.4 GHz	256 MB	12	4800 MHz	320W
9224	24 / 48	2.5 GHz	3.7 GHz	64 MB	12	4800 MHz	200W
9254	24 / 48	2.9 GHz	4.15 GHz	128 MB	12	4800 MHz	200W

EPYC model	Cores / Threads	Base Frequency	Max Boost Frequency†	L3 Cache	Memory channels	Memory bus	TDP
9274F	24 / 48	4.05 GHz	4.3 GHz	256 MB	12	4800 MHz	320W
9334	32 / 64	2.7 GHz	3.9 GHz	128 MB	12	4800 MHz	210W
9354	32 / 64	3.25 GHz	3.8 GHz	256 MB	12	4800 MHz	280W
9354P	32 / 64	3.25 GHz	3.8 GHz	256 MB	12	4800 MHz	280W
9374F	32 / 64	3.85 GHz	4.3 GHz	256 MB	12	4800 MHz	320W
9454	48 / 96	2.75 GHz	3.8 GHz	256 MB	12	4800 MHz	290W
9454P	48 / 96	2.75 GHz	3.8 GHz	256 MB	12	4800 MHz	290W
9474F	48 / 96	3.6 GHz	4.1 GHz	256 MB	12	4800 MHz	360W
9534	64 / 128	2.45 GHz	3.7 GHz	256 MB	12	4800 MHz	280W
9554	64 / 128	3.1 GHz	3.75 GHz	256 MB	12	4800 MHz	360W
9554P	64 / 128	3.1 GHz	3.75 GHz	256 MB	12	4800 MHz	360W
9634	84 / 168	2.25 GHz	3.7 GHz	384 MB	12	4800 MHz	290W
9654	96 / 192	2.4 GHz	3.7 GHz	384 MB	12	4800 MHz	360W
9654P	96 / 192	2.4 GHz	3.7 GHz	384 MB	12	4800 MHz	360W
4th AMD EPYC processors with AMD 3D V-Cache ("Genoa-X")							
9184X	16 / 32	3.55 GHz	4.20 GHz	768 MB	12	4800 MHz	320W
9384X	32 / 64	3.1 GHz	3.9 GHz	768 MB	12	4800 MHz	320W
9684X	96 / 192	2.55 GHz	3.7 GHz	1150 MB	12	4800 MHz	400W
4th Gen AMD EPYC processors with Zen 4c architecture ("Bergamo")							
9734	112 / 224	2.2 GHz	3.0 GHz	256 MB	12	4800 MHz	340W
9754	128 / 256	2.25 GHz	3.2 GHz	256 MB	12	4800 MHz	360W

† The maximum single-core frequency that the processor is capable of operating

Air cooling of processors

The SD535 V3 supports either a standard heatsink or high performance heatsink. The choice of heatsink is automatically selected based on the configuration of the server.

Table 10. Heatsinks

Feature code	Description
BWT7	1U CPU Heatsink
C640	1U CPU Heatsink (High Performance)

With air-cooled heatsinks, processors used in the SD535 V3 have the following thermal restrictions:

- The following CPUs require a 25°C ambient temperature, and have limited drive and adapter support:
  - AMD EPYC 9274F 24C 320W 4.05GHz Processor
  - AMD EPYC 9374F 32C 320W 3.85GHz Processor
  - AMD EPYC 9474F 48C 360W 3.6GHz Processor
- The following CPUs are supported at a 25°C ambient temperature with limited drive and adapter support, however processor performance may be impacted:
  - AMD EPYC 9184X 16C 320W 3.55GHz Processor
  - AMD EPYC 9384X 32C 320W 3.1GHz Processor
- 500W processors (EPYC 9755 and EPYC 9965) are supported only with the following configuration:
  - Base C63Y as listed in the SD535 V3 models section

- 2x NVMe drives maximum
- 12x 128GB DIMMs maximum
- 1x 2-port PCIe adapter
- 25°C ambient temperature required

For details about these processor requirements, and additional ambient temperature requirements, see the Operating environment section.

Lenovo Processor Neptune Core Module - Open-loop liquid cooling

The SD535 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.

The following figure shows the Lenovo Processor Neptune Core Module.

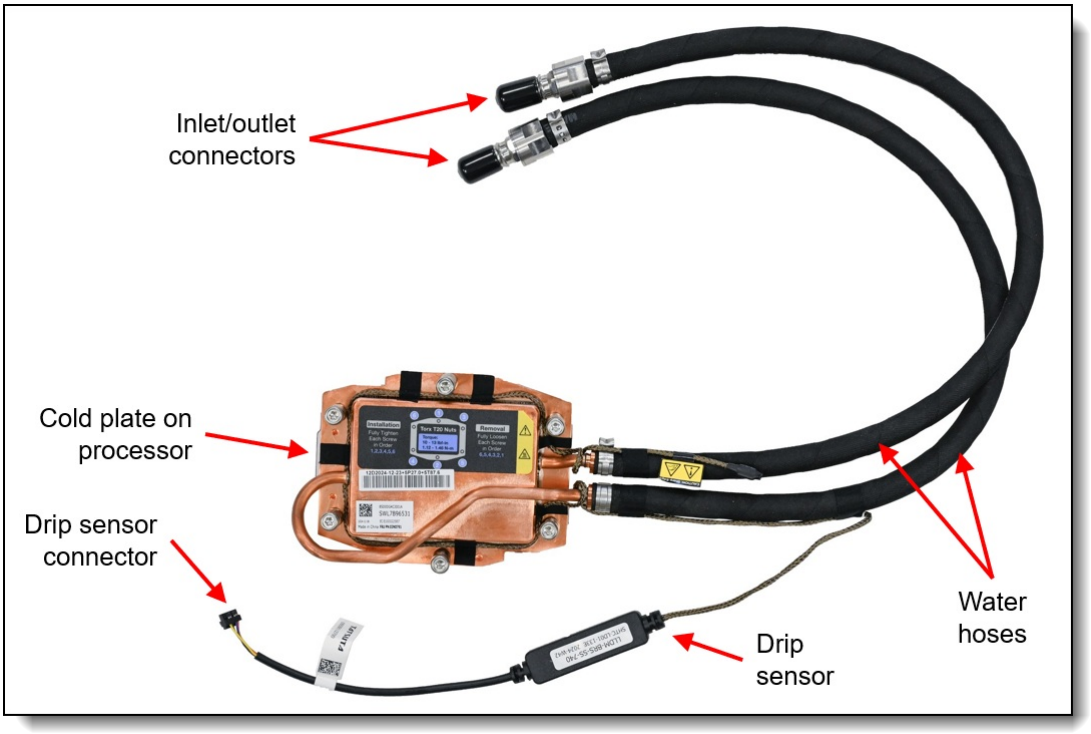

Figure 12. Lenovo Processor Neptune Core Module

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. In the DCSC configurator, to select open-loop water cooling, select the Base feature code listed in the following table. The other necessary components will be automatically included by the configurator.

Table 11. SD535 V3 water-loop components

Feature code	Description
Base selection in the SD535 V3 server	
C63Z	ThinkSystem SD535 V3 Processor Neptune Core Water Cooled Node
Components in the D3 Chassis (automatically derived when base C63Z is selected)	
C8B0	ThinkSystem D3 Processor Neptune Core Water Cooling
C28A	ThinkSystem D3 Processor Neptune Core Enablement Kit (all hoses and couplings to connect the D3 Chassis to the water manifold)

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.
- 1, 2, 3 or 4 nodes can be installed in the D3 Chassis in a water-cooled configuraiton.
- All processor SKUs are supported
- All front drive bay configurations are supported
- The use of the M.2 adapter is not supported as this space is occupied by the water hoses and drip sensor. The internal M.2 connectors at the front of the SD535 V3 are available.
- The use of an internal (CFF) adapter is not supported as this space is occupied by the water hoses and drip sensor.
- Only 1x USB port is offered at the rear of the server instead of two
- Only 3x fans are supported (or needed)
- The use of a cable management arm (CMA) is not supported

UEFI operating modes

The SD535 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 BFYA. For some systems, you may not be able to make a selection, in which case, it will be automatically derived by the configurator.

Table 12. UEFI operating mode presets in DCSC

Feature code	Description
BFYA	Operating mode selection for: "Maximum Efficiency Mode"
BFYB	Operating mode selection for: "Maximum Performance Mode"

The preset modes for the SD535 V3 are as follows:

- **Maximum Efficiency Mode** (feature BFYA): Maximizes performance/watt efficiency while maintaining reasonable performance
- **Maximum Performance Mode** (feature BFYB): Achieves maximum performance but with higher power consumption and lower energy efficiency.

For details about these preset modes, and all other performance and power efficiency UEFI settings offered in the SD535 V3, see the paper "Tuning UEFI Settings for Performance and Energy Efficiency on AMD Processor-Based ThinkSystem Servers", available from https://lenovopress.lenovo.com/lp1267.

Memory options

The SD535 V3 uses Lenovo TruDDR5 memory operating at up to 6400 MHz with 5th Gen AMD EPYC processors, and up to 4800 MHz with 4th Gen AMD EPYC processors. The server supports up to 12 DIMMs. The processor has 12 memory channels and supports 1 DIMM per channel. The server supports up to 1.5TB of memory using 12x 128GB DIMMs.

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 memory options supported in the SD535 V3 with 5th Gen AMD EPYC processors. The table also lists the maximum memory bus speed each memory DIMM supports, either 6000 MHz or 6400 MHz.

Table 13. Memory options for 5th Gen AMD EPYC processors

Part number	Feature code	Description	Maximum speed	DRAM technology
x4 RDIMMs				
4X77A93526	C1PL	ThinkSystem 32GB TruDDR5 6400MHz (1Rx4) RDIMM-A	6000 MHz	16Gb
4X77A93528	C0CK	ThinkSystem 64GB TruDDR5 6400MHz (2Rx4) RDIMM-A	6000 MHz	16Gb
4X77A93533	C0CP	ThinkSystem 96GB TruDDR5 6400MHz (2Rx4) RDIMM-A	6000 MHz	24Gb
4X77A93529	C0CL	ThinkSystem 128GB TruDDR5 6400MHz (2Rx4) RDIMM-A	6000 MHz	32Gb
4X77B07418	CA1J	ThinkSystem 32GB TruDDR5 6400MHz (1Rx4) RDIMM-A v2	6400 MHz	16Gb
4X77B07420	CA1L	ThinkSystem 64GB TruDDR5 6400MHz (2Rx4) RDIMM-A v2	6400 MHz	16Gb
4X77B07424	CA1Q	ThinkSystem 96GB TruDDR5 6400MHz (2Rx4) RDIMM-A v2	6400 MHz	24Gb
4X77B07421	CA1M	ThinkSystem 128GB TruDDR5 6400MHz (2Rx4) RDIMM-A v2	6400 MHz	32Gb
x8 RDIMMs				
4X77A93525	C0CH	ThinkSystem 16GB TruDDR5 6400MHz (1Rx8) RDIMM-A	6000 MHz	16Gb
4X77A93527	C0CJ	ThinkSystem 32GB TruDDR5 6400MHz (2Rx8) RDIMM-A	6000 MHz	16Gb
4X77B07417	CA1H	ThinkSystem 16GB TruDDR5 6400MHz (1Rx8) RDIMM-A v2	6400 MHz	16Gb
4X77B07419	CA1K	ThinkSystem 32GB TruDDR5 6400MHz (2Rx8) RDIMM-A v2	6400 MHz	16Gb

The following table lists the memory options supported in the SD535 V3 with 4th Gen AMD EPYC processors.

Table 14. Memory options for 4th Gen AMD EPYC processors

Part number	Feature code	Description	Maximum speed	DRAM technology
10x4 RDIMMs				
4X77A81438	BQ39	ThinkSystem 32GB TruDDR5 4800MHz (1Rx4) 10x4 RDIMM-A	4800 MHz	16Gb
4X77A81441	BQ3D	ThinkSystem 64GB TruDDR5 4800MHz (2Rx4) 10x4 RDIMM-A	4800 MHz	16Gb
4X77A81448	BUVV	ThinkSystem 96GB TruDDR5 4800MHz (2Rx4) 10x4 RDIMM-A	4800 MHz	24Gb
4X77A96982	C467	ThinkSystem 128GB TruDDR5 5600MHz (2Rx4) RDIMM-A	4800 MHz	32Gb
x8 RDIMMs				
4X77A81437	BQ3C	ThinkSystem 16GB TruDDR5 4800MHz (1Rx8) RDIMM-A	4800 MHz	16Gb
4X77A81440	BQ37	ThinkSystem 32GB TruDDR5 4800MHz (2Rx8) RDIMM-A	4800 MHz	16Gb
4X77A81447	BUVU	ThinkSystem 48GB TruDDR5 4800MHz (2Rx8) RDIMM-A	4800 MHz	24Gb
10x4 3DS RDIMMs				
4X77A81443	BQ3A	ThinkSystem 128GB TruDDR5 4800MHz (4Rx4) 3DS RDIMM-A v2	4800 MHz	16Gb

The following rules apply when selecting the memory configuration:

- Memory rated at 4800 MHz is only supported with 4th Gen processors. Memory rated at 6400 MHz memory is only supported with 5th Gen processors (and operates at 6000 MHz or 6400 MHz as indicated in the table).
- The SD535 V3 supports quantities 1, 2, 4, 6, 8, 10, or 12 DIMMs; other quantities not supported
- The server supports three types of DIMMs: 10x4 RDIMMs, x8 RDIMMs and 3DS RDIMMs
  - 9x4 RDIMMs, UDIMMs, and LRDIMMs are not supported
- Mixing of DIMM types is not supported (for example, 10x4 RDIMMs with 3DS RDIMMs)
- Mixing x4 and x8 DIMMs is not supported
- Mixing of DRAM technology (16Gb, 24Gb, 32Gb) is not supported. See the column in the above table.
- 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. Follow the required installation order installing the larger DIMMs first.

Note: Memory mirroring and memory rank sparing are not supported.

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 12 memory channels with identical DIMMs (same Lenovo part number)

The following memory protection technologies are supported:

- ECC detection/correction
- Bounded Fault detection/correction
- SDDC (for x4-based memory DIMMs; look for "x4" in the DIMM description. Not supported with 9x4 RDIMMs)
- Patrol/Demand Scrubbing
- DRAM Address Command Parity with Replay
- DRAM Uncorrected ECC Error Retry
- On-die ECC
- ECC Error Check and Scrub (ECS)
- Post Package Repair

Internal storage

The SD535 V3 offers six hot-swap drive bays as shown in the figure below. The bays support SAS, SATA, or PCIe 5.0 NVMe solid state drives.

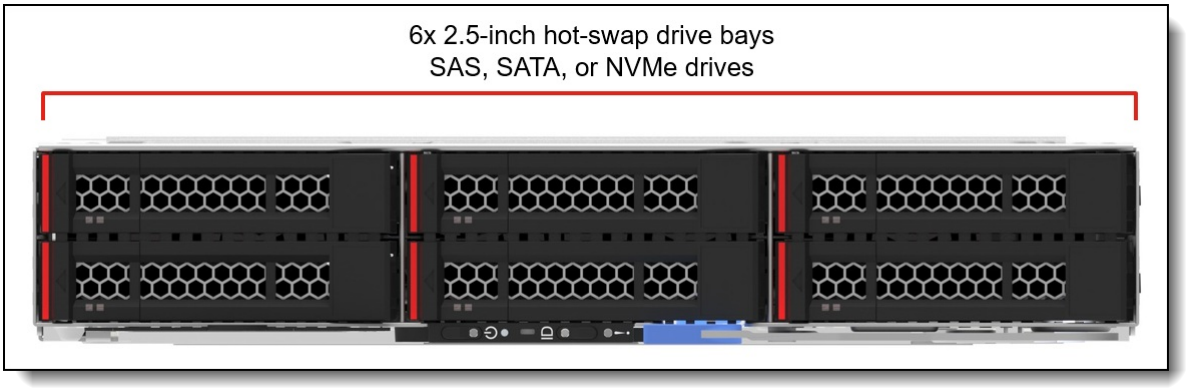

Figure 13. Drive bays in the SD535 V3

Topics in this section:

- Ordering information
- M.2 drives
- SED encryption key management with SKLM

Ordering information

The drive cage is optional in CTO orders and can be added as a field upgrade using the ordering information in the following table.

Table 15. Drive backplane

Part number	Feature code	Description and components in the part number
4TA7A93534	BWJG	ThinkSystem SD535 V3 AnyBay 6 Drive Backplane Kit • AnyBay backplane • 1x SATA cable • 3x NVMe cables • Power and sideband cables

For field upgrades to add support for an Internal (CFF) adapter, in addition to the adapter (see the Controllers for internal storage section), you will also need to order the cable kit listed in the following table.

Note: The use of an Internal (CFF) adapter is mutually exclusive with an M.2 adapter since they share the same location and connections.

Table 16. Field upgrade to add Internal (CFF) adapter

Part number	Description and components
4TA7A91033	ThinkSystem SD535 V3 CFF RAID Card Cable Kit • PCIe x8 host cable • 2x SAS/SATA cables • 1x power cable • 1x supercap holder

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 17. Drive bay fillers for 2.5-inch bays

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

M.2 drives

The SD535 V3 also supports up to four M.2 form-factor SATA or NVMe drives:

- Two M.2 drives mounted on the system board, supporting SATA drives or NVMe drives with a PCIe 5.0 x4 host interface; no RAID support
- Optionally, two M.2 drives connected to an M.2 adapter, supporting SATA drives or NVMe drives with a PCIe 4.0 x1 host interface; RAID is supported via the M.2 adapter's onboard Broadcom RAID controller

The figure below shows the location of these M.2 slots.

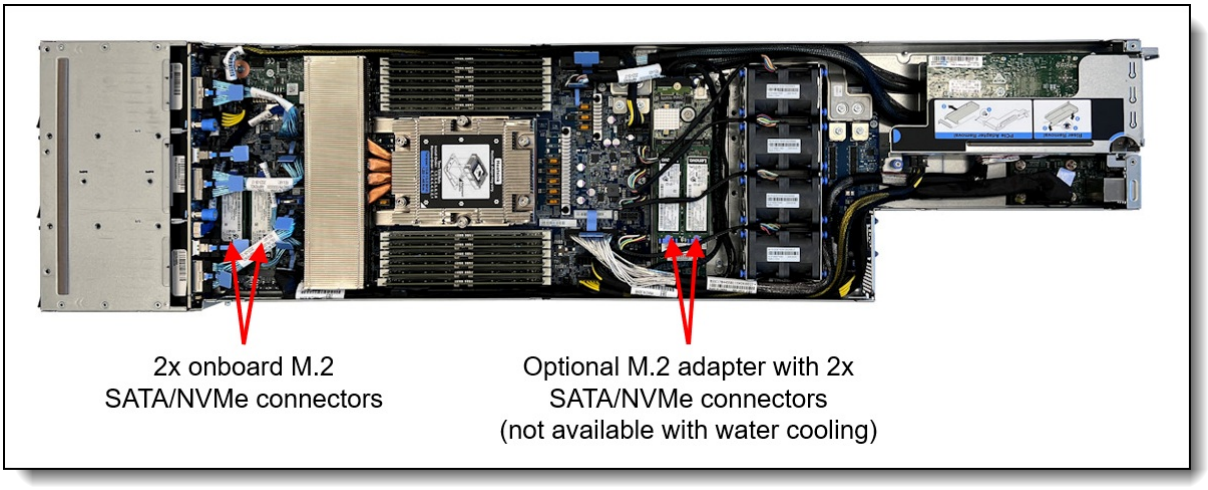

Figure 14. M.2 drives on the SD535 V3

The supported M.2 adapter is listed in the following table.

Table 18. M.2 adapter

Part number	Feature code	Description
4Y37A90063	BYFF	ThinkSystem M.2 RAID B540i-2i SATA/NVMe Adapter

Configurations rules:

- The two M.2 drives mounted on the system board can be either both SATA or both NVMe; mixing is not supported between these two drives
- The two M.2 drives on the M.2 adapter can be either both SATA or both NVMe; mixing is not supported between these two drives
- The M.2 adapter is installed in the same physical space as the Internal (CFF) RAID adapter; these adapters are therefore mutually exclusive
- The M.2 adapter is not supported in configurations with open-loop water cooling

For field upgrades to add the M.2 adapter, in addition to the M.2 adapter itself, you will also need to order the cable kit listed in the following table.

Table 19. M.2 kit for field upgrades

Part number	Description and components
4TA7A91040	ThinkSystem SD535 V3 M.2 NVME + SATA Cable Kit • Tray for the M.2 adapter • Cable

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 20. 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
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		

Part number	Feature	Description
7S0A007MWW	S87A	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A0094WW	SDK0	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 3 Years In Support
7S0A0095WW	SDK1	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 4 Years In Support
7S0A0096WW	SDK2	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & 5 Years In Support
SKLM For Usable Decimal Petabyte Storage		
7S0A007PWW	S87C	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A0097WW	SDK3	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 3 Years Of Support
7S0A0098WW	SDK4	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 4 Years Of Support
7S0A0099WW	SDK5	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & 5 Years Of Support

Controllers for internal storage

The SD535 V3 offers the following connectivity options for internal drives:

- Onboard SATA ports (feature AVUX)
- Onboard NVMe ports (feature BC4V)
- RAID adapter for SAS/SATA drives (PCIe slot-based)
- Internal (CFF) RAID adapters for SAS/SATA drives (cabled in a dedicated space)

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

Table 21. Controllers for internal storage

Part number	Feature code	Description	Quantity
PCIe adapter installed in the PCIe riser slot			
4Y37A78834	BMFT	ThinkSystem RAID 540-8i PCIe Gen4 12Gb Adapter	1
Adapter installed in the dedicated internal (CFF) bay			
4Y37A84028	BRQV	ThinkSystem RAID 5350-8i PCIe 12Gb Internal Adapter	1
4Y37A72484	BJHM	ThinkSystem RAID 9350-8i 2GB Flash PCIe 12Gb Internal Adapter	1

Configuration notes:

- The use of an Internal (CFF) adapter is mutually exclusive with an M.2 adapter since they share the same location and connections.
- The internal (CFF) adapter is not supported in configurations with open-loop water cooling
- For field upgrades to add an internal (CFF) adapter, the ThinkSystem SD535 V3 CFF RAID Card Cable Kit (4TA7A91033) is required. This kit includes the supercap holder needed for the 9350-8i RAID adapter. See the Internal storage section for details.

The onboard SATA controller has the following features:

- Controller integrated into the AMD processor
- JBOD only; no RAID support
- Supports up to 6x SATA drives in the SD535 V3

The onboard NVMe support has the following features:

- Controller integrated into the AMD processor
- Supports up to 6x NVMe drives direct connected to onboard ports
- Each drive has PCIe x4 host interface, up to PCIe Gen5 depending on the drive type
- JBOD only; no RAID support

For specifications about the RAID adapters and HBAs supported by the SD535 V3, see the ThinkSystem RAID Adapter and HBA Reference, available from:
https://lenovopress.lenovo.com/lp1288-thinksystem-raid-adapter-and-hba-reference#sd535-v3-support=SD5355%2520V3

Internal drive options

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

2.5-inch hot-swap drives:

- 2.5-inch hot-swap 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

M.2 drives:

- M.2 SATA drives
- M.2 PCIe 4.0 NVMe drives

M.2 drive support: The use of more than two 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 22. 2.5-inch hot-swap 24 Gb SAS SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 24 Gb SAS - Mixed Use/Mainstream (3-5 DWPD)				
4XB7B07612	CABL	ThinkSystem 2.5" VA 800GB Mixed Use SAS 24Gb HS SSD	Support	6
4XB7B07613	CABR	ThinkSystem 2.5" VA 1.6TB Mixed Use SAS 24Gb HS SSD	Support	6
4XB7B07614	CABQ	ThinkSystem 2.5" VA 3.2TB Mixed Use SAS 24Gb HS SSD	Support	6
4XB7B07615	CABK	ThinkSystem 2.5" VA 6.4TB Mixed Use SAS 24Gb HS SSD	Support	6
4XB7A80340	BNW8	ThinkSystem 2.5" PM1655 800GB Mixed Use SAS 24Gb HS SSD	Support	6
4XB7A80341	BNW9	ThinkSystem 2.5" PM1655 1.6TB Mixed Use SAS 24Gb HS SSD	Support	6
4XB7A80342	BNW6	ThinkSystem 2.5" PM1655 3.2TB Mixed Use SAS 24Gb HS SSD	Support	6
4XB7A80343	BP3K	ThinkSystem 2.5" PM1655 6.4TB Mixed Use SAS 24Gb HS SSD	Support	6
2.5-inch hot-swap SSDs - 24 Gb SAS - Read Intensive/Entry/Capacity (<3 DWPD)				
4XB7B07600	CABS	ThinkSystem 2.5" VA 960GB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7B07601	CABV	ThinkSystem 2.5" VA 1.92TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7B07602	CABT	ThinkSystem 2.5" VA 3.84TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7B07603	CABY	ThinkSystem 2.5" VA 7.68TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7B07604	CABX	ThinkSystem 2.5" VA 15.36TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7B07605	CABW	ThinkSystem 2.5" VA 30.72TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7A80318	BNWC	ThinkSystem 2.5" PM1653 960GB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7A80319	BNWE	ThinkSystem 2.5" PM1653 1.92TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7A80320	BNWF	ThinkSystem 2.5" PM1653 3.84TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7A80321	BP3E	ThinkSystem 2.5" PM1653 7.68TB Read Intensive SAS 24Gb HS SSD	Support	6
4XB7A80322	BP3J	ThinkSystem 2.5" PM1653 15.36TB Read Intensive SAS 24Gb HS SSD	Support	6

Table 23. 2.5-inch hot-swap 6 Gb SATA SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 6 Gb SATA - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A90884	BYM2	ThinkSystem 2.5" VA 480GB Mixed Use SATA 6Gb HS SSD v2	No	6
4XB7A90885	BYM4	ThinkSystem 2.5" VA 960GB Mixed Use SATA 6Gb HS SSD v2	No	6
4XB7A90886	BYM5	ThinkSystem 2.5" VA 1.92TB Mixed Use SATA 6Gb HS SSD v2	No	6
4XB7A90887	BYM6	ThinkSystem 2.5" VA 3.84TB Mixed Use SATA 6Gb HS SSD v2	No	6
2.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7A90872	BYLQ	ThinkSystem 2.5" VA 240GB Read Intensive SATA 6Gb HS SSD v2	No	6
4XB7A90873	BYLR	ThinkSystem 2.5" VA 480GB Read Intensive SATA 6Gb HS SSD v2	No	6
4XB7A90874	BYLS	ThinkSystem 2.5" VA 960GB Read Intensive SATA 6Gb HS SSD v2	No	6
4XB7A90875	BYLT	ThinkSystem 2.5" VA 1.92TB Read Intensive SATA 6Gb HS SSD v2	No	6
4XB7A90876	BYLU	ThinkSystem 2.5" VA 3.84TB Read Intensive SATA 6Gb HS SSD v2	No	6
4XB7A90877	BYLV	ThinkSystem 2.5" VA 7.68TB Read Intensive SATA 6Gb HS SSD v2	No	6

Table 24. 2.5-inch hot-swap PCIe 5.0 NVMe SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch SSDs - U.2 PCIe 5.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A97904	C5X2	ThinkSystem 2.5" U.2 PS1030 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A97905	C5X3	ThinkSystem 2.5" U.2 PS1030 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A97906	C5X4	ThinkSystem 2.5" U.2 PS1030 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A97907	C4C2	ThinkSystem 2.5" U.2 PS1030 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93097	C1WM	ThinkSystem 2.5" U.2 PM9D5a 800GB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93098	C1WN	ThinkSystem 2.5" U.2 PM9D5a 1.6TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93099	C1WP	ThinkSystem 2.5" U.2 PM9D5a 3.2TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93100	C1WR	ThinkSystem 2.5" U.2 PM9D5a 6.4TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93101	C1WQ	ThinkSystem 2.5" U.2 PM9D5a 12.8TB Mixed Use NVMe NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93888	C0ZM	ThinkSystem 2.5" U.2 CD8P 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93889	C0ZL	ThinkSystem 2.5" U.2 CD8P 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93890	C0ZK	ThinkSystem 2.5" U.2 CD8P 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93891	C0ZJ	ThinkSystem 2.5" U.2 CD8P 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6

Part number	Feature code	Description	SED support	Max Qty
4XB7A93127	C0ZR	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93128	C0ZQ	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93129	C0ZP	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93130	C0ZN	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 5.0 x4 HS SSD	Support	6
2.5-inch SSDs - U.2 PCIe 5.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A97900	C5WZ	ThinkSystem 2.5" U.2 PS1010 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A97901	C5X0	ThinkSystem 2.5" U.2 PS1010 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A97902	C5X1	ThinkSystem 2.5" U.2 PS1010 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A97903	C4C1	ThinkSystem 2.5" U.2 PS1010 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93066	C0GK	ThinkSystem 2.5" U.2 PM9D3a 960GB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93067	C0GL	ThinkSystem 2.5" U.2 PM9D3a 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93068	C0GN	ThinkSystem 2.5" U.2 PM9D3a 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93069	C0GP	ThinkSystem 2.5" U.2 PM9D3a 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93095	C1WL	ThinkSystem 2.5" U.2 PM9D3a 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7B04552	CA3Q	ThinkSystem 2.5" PM9D3a 30.72TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93480	C0BB	ThinkSystem 2.5" U.2 CD8P 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93481	C0BA	ThinkSystem 2.5" U.2 CD8P 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93482	C0B9	ThinkSystem 2.5" U.2 CD8P 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93483	C0B8	ThinkSystem 2.5" U.2 CD8P 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93484	C0B7	ThinkSystem 2.5" U.2 CD8P 30.72TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93122	C0ZV	ThinkSystem 2.5" U.2 VA 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93123	C0ZU	ThinkSystem 2.5" U.2 VA 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93124	C0ZT	ThinkSystem 2.5" U.2 VA 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A93125	C0ZS	ThinkSystem 2.5" U.2 VA 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
2.5-inch SSDs - U.3 PCIe 5.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A82366	BTPZ	ThinkSystem 2.5" U.3 PM1743 1.92TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6

Part number	Feature code	Description	SED support	Max Qty
4XB7A82367	BTQ0	ThinkSystem 2.5" U.3 PM1743 3.84TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A82368	BTQ1	ThinkSystem 2.5" U.3 PM1743 7.68TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6
4XB7A82369	BTQ2	ThinkSystem 2.5" U.3 PM1743 15.36TB Read Intensive NVMe PCIe 5.0 x4 HS SSD	Support	6

Table 25. 2.5-inch hot-swap PCIe 4.0 NVMe SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch SSDs - U.2 PCIe 4.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7B01879	C6M2	ThinkSystem 2.5" U.2 Solidigm P5620 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7B01880	C6M3	ThinkSystem 2.5" U.2 Solidigm P5620 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7B01881	C6M4	ThinkSystem 2.5" U.2 Solidigm P5620 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7B01882	C6M5	ThinkSystem 2.5" U.2 Solidigm P5620 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A93896	C18J	ThinkSystem 2.5" U.2 VA 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A93897	C18H	ThinkSystem 2.5" U.2 VA 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A93898	C18G	ThinkSystem 2.5" U.2 VA 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A93899	C18F	ThinkSystem 2.5" U.2 VA 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A17136	BA4V	ThinkSystem 2.5" U.2 P5620 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A13971	BNEL	ThinkSystem 2.5" U.3 7450 MAX 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	6
2.5-inch SSDs - U.2 PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7B01867	C6MA	ThinkSystem 2.5" U.2 Solidigm P5520 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7B01868	C6MB	ThinkSystem 2.5" U.2 Solidigm P5520 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7B01869	C6MC	ThinkSystem 2.5" U.2 Solidigm P5520 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7B01870	C7NZ	ThinkSystem 2.5" U.2 Solidigm P5520 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A13631	BNEQ	ThinkSystem 2.5" U.2 P5520 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A95049	C2BY	ThinkSystem 2.5" U.3 7500 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A79649	BNF4	ThinkSystem 2.5" U.3 7450 PRO 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6

Table 26. M.2 SATA drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7B07587	CAC9	ThinkSystem M.2 VA 240GB Read Intensive SATA 6Gb NHS SSD	Support	4
4XB7B07588	CABU	ThinkSystem M.2 VA 480GB Read Intensive SATA 6Gb NHS SSD	Support	4
4XB7B07589	CACA	ThinkSystem M.2 VA 960GB Read Intensive SATA 6Gb NHS SSD	Support	4
4XB7A90049	BYF8	ThinkSystem M.2 ER3 480GB Read Intensive SATA 6Gb NHS SSD	Support	4
4XB7A90230	BYF9	ThinkSystem M.2 ER3 960GB Read Intensive SATA 6Gb NHS SSD	Support	4
4XB7A82286	BQ1Z	ThinkSystem M.2 5400 PRO 240GB Read Intensive SATA 6Gb NHS SSD	Support	4
4XB7A82287	BQ1Y	ThinkSystem M.2 5400 PRO 480GB Read Intensive SATA 6Gb NHS SSD	Support	4
4XB7A82288	BQ20	ThinkSystem M.2 5400 PRO 960GB Read Intensive SATA 6Gb NHS SSD	Support	4

Table 27. M.2 PCIe 4.0 NVMe drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A90102	BXMH	ThinkSystem M.2 PM9A3 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	4
4XB7A90103	BXMG	ThinkSystem M.2 PM9A3 1.92TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	4
4XB7A90118	BYTD	ThinkSystem M.2 PM9A3 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Support	4
4XB7A90119	BYTE	ThinkSystem M.2 PM9A3 1.92TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Support	4
4XB7A82636	BS2P	ThinkSystem M.2 7450 PRO 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	4
4XB7A13999	BKSR	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	4
4XB7A14000	BKSS	ThinkSystem M.2 7450 PRO 1.92TB Read Intensive Entry NVMe PCIe 4.0 x4 NHS SSD	Support	4
4XB7A83139	BS46	ThinkSystem M.2 7450 PRO 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Support	4
4XB7A82674	BQUJ	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Support	4
4XB7A82675	BQUK	ThinkSystem M.2 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Support	4

Optical drive

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

Table 28. External optical drive

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

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

I/O expansion options

The SD535 V3 has the following I/O slots for adapters:

- Optional riser slot 1: PCIe 5.0 x16 low-profile slot
- Optional OCP 3.0 slot: PCIe 5.0 x16

Both the OCP slot and Riser slot 1 are optional, and ordering information is listed in the following table.

Ordering information is listed in the following table.

Table 29. OCP slot and PCIe slot riser

Part number	Feature code	Description and components in the part number
4TA7A91030	BWSQ	ThinkSystem SD535 V3 OCP Slot Kit • Cable with OCP connector
4TA7A91031	BYQ2	ThinkSystem SD535 V3 PCIe Riser Kit • Riser cage and riser • PCIe cable • Power cable • PCIe slot cover

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 30. OCP slot filler

Part number	Description
4XF7B06188	ThinkSystem OCP3 FILLER

Network adapters

The server supports network adapters installed in the OCP and PCIe slots.

The following table lists the supported OCP adapters.

Table 31. OCP network adapters

Part number	Feature code	Description	Maximum supported
Gigabit Ethernet			
4XC7A08277	B93E	ThinkSystem Intel I350 1GbE RJ45 4-port OCP Ethernet Adapter	1
4XC7A88428	BW97	ThinkSystem Intel I350 1GbE RJ45 4-Port OCP Ethernet Adapter V2	1
10 Gb Ethernet			
4XC7A08236	B5ST	ThinkSystem Broadcom 57416 10GBASE-T 2-port OCP Ethernet Adapter	1
4XC7A08278	BCD5	ThinkSystem Intel X710-T2L 10GBASE-T 2-port OCP Ethernet Adapter	1

Part number	Feature code	Description	Maximum supported
4XC7A80268	BPPY	ThinkSystem Intel X710-T4L 10GBase-T 4-Port OCP Ethernet Adapter	1
25 Gb Ethernet			
4XC7A08237	BN2T	ThinkSystem Broadcom 57414 10/25GbE SFP28 2-Port OCP Ethernet Adapter	1
4XC7A80567	BPPW	ThinkSystem Broadcom 57504 10/25GbE SFP28 4-Port OCP Ethernet Adapter	1
4XC7A08294	BCD4	ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port OCP Ethernet Adapter	1
4XC7A80269	BP8L	ThinkSystem Intel E810-DA4 10/25GbE SFP28 4-Port OCP Ethernet Adapter	1
4XC7A62582	BE4T	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port OCP Ethernet Adapter	1
100 Gb Ethernet			
4XC7A08243	BPPX	ThinkSystem Broadcom 57508 100GbE QSFP56 2-Port OCP Ethernet Adapter	1

The following table lists the supported PCIe adapters.

Table 32. PCIe network adapters

Part number	Feature code	Description	Maximum supported
Gigabit Ethernet			
7ZT7A00535	AUZW	ThinkSystem I350-T4 PCIe 1Gb 4-Port RJ45 Ethernet Adapter	1
10 Gb Ethernet			
7ZT7A00496	AUKP	ThinkSystem Broadcom 57416 10GBASE-T 2-Port PCIe Ethernet Adapter	1
4XC7A80266	BNWL	ThinkSystem Intel X710-T2L 10GBase-T 2-Port PCIe Ethernet Adapter	1
4XC7A79699	BMXB	ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCIe Ethernet Adapter	1
25 Gb Ethernet			
4XC7A08238	BK1H	ThinkSystem Broadcom 57414 10/25GbE SFP28 2-port PCIe Ethernet Adapter	1
4XC7A80566	BNWM	ThinkSystem Broadcom 57504 10/25GbE SFP28 4-port PCIe Ethernet Adapter	1
4XC7A08295	BCD6	ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	1
4XC7A62580	BE4U	ThinkSystem Mellanox ConnectX-6 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	1
100 Gb Ethernet			
4XC7A08297	BK1J	ThinkSystem Broadcom 57508 100GbE QSFP56 2-Port PCIe 4 Ethernet Adapter	1
4XC7A08248	B8PP	ThinkSystem Mellanox ConnectX-6 Dx 100GbE QSFP56 2-port PCIe Ethernet Adapter	1
4C57A14177	B4R9	ThinkSystem Mellanox ConnectX-6 HDR100/100GbE QSFP56 1-port PCIe VPI Adapter	1
200 Gb Ethernet / InfiniBand HDR/NDR200			
4C57A15326	B4RC	ThinkSystem Mellanox ConnectX-6 HDR/200GbE QSFP56 1-port PCIe 4 VPI Adapter	1
4XC7A81883	BQBN	ThinkSystem NVIDIA ConnectX-7 NDR200/200GbE QSFP112 2-port PCIe Gen5 x16 Adapter	1
400 Gb / InfiniBand NDR			
4XC7A80289	BQ1N	ThinkSystem NVIDIA ConnectX-7 NDR OSFP400 1-Port PCIe Gen5 x16 InfiniBand Adapter	1

Configuration rule:

- 4-port OCP and 4-port PCIe adapters are not supported together

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

Fibre Channel host bus adapters

The following table lists the Fibre Channel HBAs supported by the SD535 V3.

Table 33. Fibre Channel host bus adapters

Part number	Feature code	Description	Maximum supported
16 Gb Fibre Channel			
01CV840	ATZV	Emulex 16Gb Gen6 FC Dual-port HBA	1
32 Gb Fibre Channel			
4XC7A76525	BJ3H	ThinkSystem Emulex LPe35002 32Gb 2-port PCIe Fibre Channel Adapter V2	1
4XC7A08276	BA1F	ThinkSystem QLogic QLE2772 32Gb 2-Port PCIe Fibre Channel Adapter	1

SAS adapters for external storage

The following table lists the SAS HBAs for external storage connectivity that are supported by the SD535 V3.

Table 34. SAS adapters for external storage

Part number	Feature code	Description	Maximum supported
4Y37A09724	B8P7	ThinkSystem 440-16e SAS/SATA PCIe Gen4 12Gb HBA	1

GPU adapters

The following table lists the GPUs supported by the SD535 V3.

Table 35. GPU adapters

Part number	Feature code	Description	Controlled GPU	Maximum supported
4X67A84824	BS2C	ThinkSystem NVIDIA L4 24GB PCIe Gen4 Passive GPU	Controlled*	1

* Controlled GPU, not available in some markets. For CTO orders, see the SD535 V3 models section

Flash storage adapters

The SD535 V3 does not support Flash storage adapters.

Cooling

Each SD535 V3 has has 4 simple-swap 40mm dual-rotor N+1 redundant fans which are used to cool all components. All fans are standard. The location of the fans is shown in in the Components and connectors section.

The SD535 V3 optionally open-loop water cooling of the processor with Lenovo Neptune Core water cooling. Water cooling is more efficient at removing heat from a server than traditional air cooling. With water cooling, only 3 fans are needed.

In addition to the system fans, each power supply has its own integrated fan.

There is no ordering information for the fans. All fans are included with the base system.

Power supplies

The D3 Chassis supports three redundant hot-swap power supplies. The power supply choices are listed in the following table.

Supported power supply configurations are the following, depending on the installed components:

- 3x power supplies: 2+1 without over-subscription (optionally, 1 power supply is redundant)
- 2x power supplies: 1+1 without over-subscription (optionally, 1 power supply is redundant)
- 1x power supply: No redundancy, without over-subscription (only supported with 2700W power supplies)

Power management is managed by the XCC2 service processor in one of the servers installed in the chassis (referred to as the "master node"). Management tasks include power supply sensor and fault reading, power policy, throttling in the event of a power supply failure, and power supply firmware updates. If the master node goes offline, another node in the chassis will automatically take on this role.

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 36. Power supply options

Part number	Feature code	Description	Qty	Connector	Markets
80 PLUS Titanium					
4P57A87628	C2Y9	ThinkSystem 1300W 230V/115V Titanium CRPS Hot-Swap Power Supply v2.4	2,3	C14	All markets
4P57A87750	C04Q	ThinkSystem 1600W 230V/115V Titanium CRPS Hot-Swap Power Supply v1.4	2,3	C14	All markets
4P57A95707	C2NC	ThinkSystem 2000W 230V/115V Titanium CRPS Hot-Swap Power Supply v3.4	2,3	C14	All markets
4P57A87629	BYF6	ThinkSystem 2700W 230V/115V Titanium CRPS Hot-Swap Power Supply v1.3	1,2,3	C20	All markets
80 PLUS Platinum					
4P57A89327	BYF2	ThinkSystem 1300W 230V/115V Platinum CRPS Hot-Swap Power Supply v1.3	2,3	C14	All markets except UK and EU countries
4P57A89328	BYF3	ThinkSystem 1300W 230V/115V Platinum CRPS Hot-Swap Power Supply v1.4	2,3	C14	All markets except UK and EU countries
4P57A89330	BYF5	ThinkSystem 2700W 230V/115V Platinum CRPS Hot-Swap Power Supply v1.4	1,2,3	C20	All markets except UK and EU countries

Supported power supplies support 200-240V AC 50/60 Hz input power. For China customers, all power supplies support 240V DC.

Configuration rules:

- Power supplies are available only in certain markets, as indicated in the table.
- All power supplies used in a chassis must be identical part numbers.
- Power supply options do not include a line cord. Configure-to-order models can be configured with or without power cords.

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
  - 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

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

Table 37. Power cords

Part number	Feature code	Description
Rack cables		
00Y3043	A4VP	1.0m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08367	B0N5	1.0m, 13A/100-250V, C13 to C14 Jumper Cord
39Y7937	6201	1.5m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08368	B0N6	1.5m, 13A/100-250V, C13 to C14 Jumper Cord
4L67A08365	B0N4	2.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable
4L67A08369	6570	2.0m, 13A/100-250V, C13 to C14 Jumper Cord
4L67A08366	6311	2.8m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08370	6400	2.8m, 13A/100-250V, C13 to C14 Jumper Cord
39Y7932	6263	4.3m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08371	6583	4.3m, 13A/100-250V, C13 to C14 Jumper Cord
Line cords		
39Y7930	6222	2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord
81Y2384	6492	4.3m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord
39Y7924	6211	2.8m, 10A/250V, C13 to AS/NZS 3112 (Australia/NZ) Line Cord
81Y2383	6574	4.3m, 10A/250V, C13 to AS/NZS 3112 (Australia/NZ) Line Cord
69Y1988	6532	2.8m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord
81Y2387	6404	4.3m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord
39Y7928	6210	2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord
81Y2378	6580	4.3m, 10A/250V, C13 to GB 2099.1 (China) Line Cord
39Y7918	6213	2.8m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord
81Y2382	6575	4.3m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord
39Y7917	6212	2.8m, 10A/250V, C13 to CEE 7/7 (Europe) Line Cord
81Y2376	6572	4.3m, 10A/250V, C13 to CEE 7/7 (Europe) Line Cord
39Y7927	6269	2.8m, 10A/250V, C13 to IS 6538 (India) Line Cord
81Y2386	6567	4.3m, 10A/250V, C13 to IS 6538 (India) Line Cord

Part number	Feature code	Description
39Y7920	6218	2.8m, 10A/250V, C13 to SI 32 (Israel) Line Cord
81Y2381	6579	4.3m, 10A/250V, C13 to SI 32 (Israel) Line Cord
39Y7921	6217	2.8m, 10A/250V, C13 to CEI 23-16 (Italy) Line Cord
81Y2380	6493	4.3m, 10A/250V, C13 to CEI 23-16 (Italy) Line Cord
4L67A08362	6495	4.3m, 12A/200V, C13 to JIS C-8303 (Japan) Line Cord
39Y7922	6214	2.8m, 10A/250V, C13 to SABS 164-1 (South Africa) Line Cord
81Y2379	6576	4.3m, 10A/250V, C13 to SANS 164-1 (South Africa) Line Cord
39Y7925	6219	2.8m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord
81Y2385	6494	4.3m, 12A/250V, C13 to KSC 8305 (S. Korea) Line Cord
39Y7919	6216	2.8m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord
81Y2390	6578	4.3m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord
81Y2375	6317	2.8m, 10A/250V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2389	6531	4.3m, 10A/250V, C13 to CNS 10917 (Taiwan) Line Cord
39Y7923	6215	2.8m, 10A/250V, C13 to BS 1363/A (UK) Line Cord
81Y2377	6577	4.3m, 10A/250V, C13 to BS 1363/A (UK) Line Cord
46M2592	A1RF	2.8m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord
4L67A08361	6373	4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord

Power cords (C19 connectors)

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

Table 38. Power cords (C19 connectors)

Part number	Feature code	Description
Rack cables		
4L67A86677	BPJ0	0.5m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
4L67A86678	B4L0	1.0m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
4L67A86679	B4L1	1.5m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
4L67A86680	B4L2	2.0m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
39Y7916	6252	2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable
4L67A86681	B4L3	4.3m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable
Line cords		
40K9777	6276	4.3m, 220-240V, C19 to IRAM 2073 (Argentina) Line cord
40K9773	6284	4.3m, 220-240V, C19 to AS/NZS 3112 (Aus/NZ) Line cord
40K9775	6277	4.3m, 250V, C19 to NBR 14136 (Brazil) Line Cord
40K9774	6288	4.3m, 220-240V, C19 to GB2099.1 (China) Line cord
40K9769	6283	4.3m, 16A/230V, C19 to IEC 309-P+N+G (Den/Sws) Line Cord
40K9766	6279	4.3m, 220-240V, C19 to CEE7-VII (European) Line cord
40K9776	6285	4.3m, 220-240V, C19 to IS6538 (India) Line cord
40K9771	6282	4.3m, 220-240V, C19 to SI 32 (Israel) Line cord
40K9768	6281	4.3m, 220-240V, C19 to CEI 23-16 (Italy) Line cord
40K9770	6280	4.3m, 220-240V, C19 to SABS 164 (South Africa) Line cord
41Y9231	6289	4.3m, 15A/250V, C19 to KSC 8305 (S. Korea) Line Cord

Part number	Feature code	Description
81Y2391	6549	4.3m, 16A/230V, C19 to SEV 1011 (Sws) Line Cord
41Y9230	6287	4.3m, 16A/250V, C19 to CNS 10917-3 (Taiwan) Line Cord
40K9767	6278	4.3m, 220-240V, C19 to BS 1363/A w/13A fuse (UK) Line Cord
40K9772	6275	4.3m, 16A/208V, C19 to NEMA L6-20P (US) Line Cord
00D7197	A1NV	4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord

Systems management

The SD535 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:

- Local management
- System status with XClarity Mobile
- Remote management
- MicroSD for XCC local storage
- Shared connectivity for remote management
- XCC2 Platinum
- Lenovo XClarity Provisioning Manager
- Lenovo XClarity One
- Lenovo XClarity Administrator
- Lenovo XClarity Integrators
- Lenovo XClarity Essentials
- Lenovo XClarity Energy Manager
- Lenovo Capacity Planner

Local management

The SD535 V3 offers a front operator panel with key LED status indicators:

- Power button with power status LED (green)
- System Error LED (yellow)
- System ID LED (blue)
- NMI button

These are shown in the following figure.

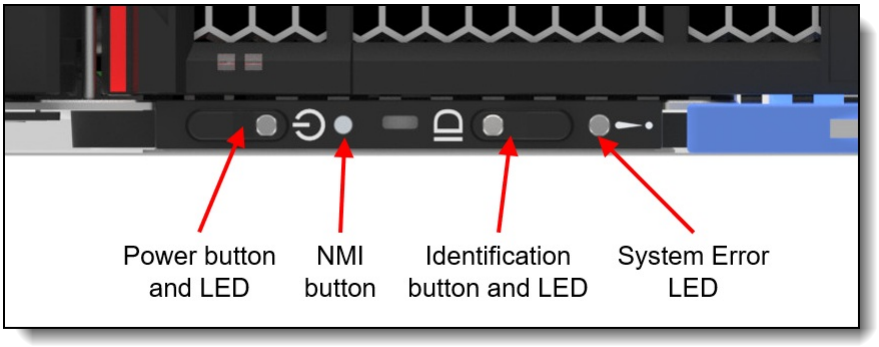

Figure 15. Operator panel

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 Mobile

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

The steps to connect the mobile device are as follows:

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

Once connected you can see the following information:

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

Remote management

The server offers a dedicated RJ45 port at the 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 OCP adapter slot also supports NC-SI to enable out-of-band systems management.

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 39. IPMI-over-LAN settings

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

MicroSD for XCC local storage

The server includes a MicroSD card port to enable the use of a MicroSD card for additional storage for use with the XCC controller. XCC can use the storage as a Remote Disc on Card (RDOC) device (up to 4GB of storage). It can also be used to store firmware updates (including N-1 firmware history) for ease of deployment.

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

Ordering information for the supported Micro SD cards is listed in the following table.

Table 40. Media for use with the MicroSD card port

Part number	Feature code	Description

Shared connectivity for remote management

To reduce the number of Ethernet connections needed for remote management, the SD535 V3 supports an adapter that installs in the OCP slot that allows four servers to share the one Ethernet connection. The adapter implements a 5-port Gigabit switch based on the Microchip KSZ9896 switch chip. Ordering information is listed in the following table.

Table 41. 4-to-1 Management Port Consolidation Adapter

Part number	Feature code	Description
4XC7A90299	BZGE	ThinkSystem OCP 4 to 1 Management Port Consolidation Adapter Contains: • 1x OCP adapter • 2x 0.45m blue Cat5e cable • 1x 0.25m blue Cat5e cable

The adapter is installed in the OCP slot of one server, as shown in the figure below. The adapter connects to the remote management port of up to three other servers via the included (or other) Ethernet cables.

The adapter can connect to any of the servers supported in the D3 Chassis (SD530 V3, SD550 V3 and SD535 V3). Mixing is supported and connections can be made to servers in another D3 Chassis if desired.

The OCP slot in the other three servers can be used for network connectivity, if desired.

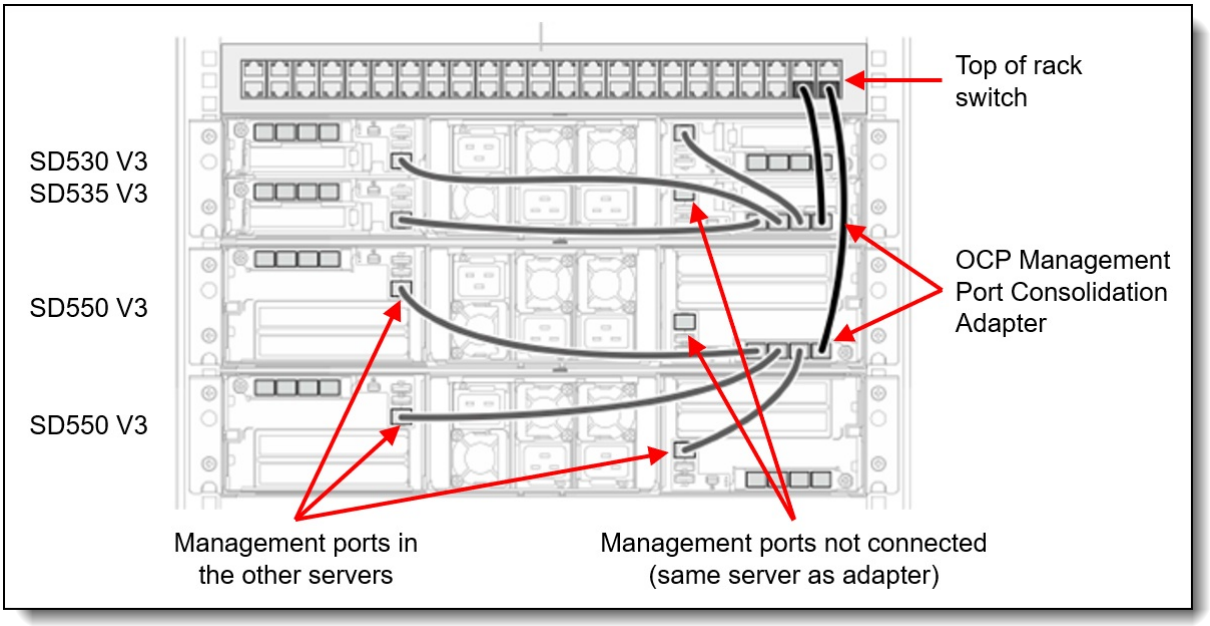

Figure 16. Connections to the ThinkSystem OCP 4 to 1 Management Port Consolidation Adapter

For field upgrades, the adapter requires that the OCP slot be cabled. If the server doesn't already have the OCP slot cabled, you will need to order the OCP kit listed in the following table.

Table 42. OCP slot cable kit

Part number	Description
4TA7A91030	ThinkSystem SD535 V3 OCP Slot Kit

Tip: The ThinkSystem OCP 4 to 1 Management Port Consolidation Adapter uses the OCP connector only for power.

XCC2 Platinum

The XCC2 service processor in the SD535 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
- System utilization data and graphic view
- Single sign on with Lenovo XClarity Administrator
- Update firmware from a repository
- License for XClarity Energy Manager

Note: The SD535 V3 does not support Power capping.

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 43. 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 44. Enable System Guard in the factory (CTO orders)

Feature code	Description
BUT2	Install System Guard

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

Lenovo XClarity Provisioning Manager

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

LXPM provides the following functions:

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

Lenovo XClarity One

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

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

Key features include:

- **AI-powered Automation**

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

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

- **Secure Management Hub**

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

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

- **AI-Powered Management**

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

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

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

Table 45. XClarity One license information

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

For more information, see these resources:

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

Lenovo XClarity Administrator

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

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

Lenovo XClarity Administrator is an optional software component for the SD535 V3. The software can be downloaded and used at no charge to discover and monitor the SD535 V3 and to manage firmware upgrades.

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

The following table lists the Lenovo XClarity software license options.

Table 46. Lenovo XClarity Pro ordering information

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

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

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

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

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

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

Lenovo XClarity Integrators

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

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

Lenovo XClarity Integrators offer the following additional features:

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

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

Lenovo XClarity Essentials

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

- Lenovo Essentials OneCLI

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

- Lenovo Essentials UpdateXpress

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

- Lenovo Essentials Bootable Media Creator

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

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.

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 47. Lenovo XClarity Energy Manager

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

Note: The SD535 V3 does not support the following Energy Manager functions:

- Power capping
- Policy-based management

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 SD535 V3 server offers the following electronic security features:

- Secure Boot function of the AMD EPYC 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
- Self-encrypting drives (SEDs) with support for enterprise key managers - see the SED encryption key management section

The server is NIST SP 800-147B compliant.

Platform Firmware Resiliency - Lenovo ThinkShield

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

The ThinkSystem SD535 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 SD535 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 48. Secure Boot options

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

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

Security standards

The SD535 V3 supports the following security standards and capabilities:

- **Industry Standard Security Capabilities**
  - AMD CPU Enablement
    - AES-NI (Advanced Encryption Standard New Instructions)
    - GMET (Guest Mode Execute Trap)
    - Hardware-based side channel attack resilience enhancements
    - NX (No eXecute)
    - PSB (Platform Secure Boot)
    - Shadow Stack
    - SEV (Secure Encrypted Virtualization)
    - SEV-ES (Encrypted State register encryption)
    - SEV-SNP (Secure Nested Paging)
    - SVM (Secure Virtual Machine)
    - SME (Secure Memory Encryption)
    - UMIP (User Mode Instruction Prevention)
  - Microsoft Windows Security Enablement
    - Credential Guard
    - Device Guard
    - Host Guardian Service
  - TCG (Trusted Computing Group) TPM (Trusted Platform Module) 2.0

- UEFI (Unified Extensible Firmware Interface) Forum Secure Boot

- **Hardware Root of Trust and Security**
  - Independent security subsystem providing platform-wide NIST SP800-193 compliant Platform Firmware Resilience (PFR)
  - Host domain RoT supplemented by AMD Platform Secure Boot (PSB)
  - Management domain RoT supplemented by the Secure Boot features of XCC
- **Platform Security**
  - Boot and run-time firmware integrity monitoring with rollback to known-good firmware (e.g., "self-healing")
  - Non-volatile storage bus security monitoring and filtering
  - Resilient firmware implementation, such as to detect and defeat unauthorized flash writes or SMM (System Management Mode) memory incursions
  - Patented IPMI KCS channel privileged access authorization (USPTO Patent# 11,256,810)
  - Host and management domain authorization, including integration with CyberArk for enterprise password management
  - KMIP (Key Management Interoperability Protocol) compliant, including support for IBM SKLM and Thales KeySecure
  - Reduced "out of box" attack surface
  - Configurable network services
  - FIPS 140-3 (in progress) validated cryptography for XCC
  - CNSA Suite 1.0 Quantum-resistant cryptography for XCC
  - Lenovo System Guard

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

- TAA (Trade Agreements Act) compliant manufacturing, by default in Mexico for North American markets with additional US and EU manufacturing options
- US 2019 NDAA (National Defense Authorization Act) Section 889 compliant

Rack installation

The D3 Chassis can be installed in a 19-inch rack cabinet. Ordering information for the rail kit is listed in the following table.

Table 49. Rail installation kit

Part number	Feature code	Description
4M17A61253	BAFD	ThinkSystem DA240 Static Rail Kit

The rail kit has the specifications listed in the following table.

Table 50. Rail kit specifications

Feature	ThinkSystem DA240 Static Rail Kit
Part number	4M17A61253
Rail type	Static (fixed, no slide)
Toolless installation	Yes
Cable Management Arm (CMA) support	No support
In-rack server maintenance	No
1U PDU support	Yes
0U PDU support	Limited*
Rack type	Lenovo and IBM 4-post, IEC standard-compliant
Mounting holes	Square or round
Mounting flange thickness	2 mm - 3.3 mm (0.08 - 0.13 in.)
Supported rack range	559 mm - 914 mm (22 - 36 in.)
Rail length***	600 mm (23.6 in.)

* For 0U PDU support, the rack must be at least 1100 mm (43.31 in.) deep.
*** Measured when mounted on the rack, from the front surface of the front mounting flange to the rearmost point of the rail.

Supported rack cabinets are listed in the Rack cabinets section.

Rear shipping brackets are needed when multi-node systems, such as the SD535 V3, are shipped fully installed in a rack. This bracket helps the D3 Chassis from sliding during shipment. For Lenovo factory orders, where Lenovo installs and ships the systems fully installed into a Lenovo rack, the shipping brackets (feature BWJS) are preinstalled.

For rack installations performed by integrators and partners where non-Lenovo rack cabinets are used, the shipping brackets listed in the following table are also available.

Table 51. Rear shipping brackets

Part number	Feature code	Description	Supported rack flange gap*
4B47A96641	BWJS	ThinkSystem D3 EIA28.31" Bracket	28.31” (suitable for Lenovo racks)
4B47A96410	C2FA	ThinkSystem D3 EIA 29 Bracket	29.0"
4B47A96411	C2N6	ThinkSystem D3 EIA 29.5" Bracket	29.5"

* This is the distance between the front and rear mounting flanges of the rack cabinet

For information on how these brackets are removed or installed, see these documentation pages:

- Removal: https://pubs.lenovo.com/d3-chassis/remove_eia_brackets
- Installation: https://pubs.lenovo.com/d3-chassis/install_chassis_to_rack

Operating system support

The SD535 V3 with 5th Gen AMD EPYC processors supports the following operating systems:

- Microsoft Windows Server 2022
- Microsoft Windows Server 2025
- Red Hat Enterprise Linux 8.10
- Red Hat Enterprise Linux 9.4
- Red Hat Enterprise Linux 9.5
- Red Hat Enterprise Linux 9.6
- Red Hat Enterprise Linux 10.0
- SUSE Linux Enterprise Server 15 SP6
- SUSE Linux Enterprise Server 15 SP7
- Ubuntu 22.04 LTS 64-bit
- Ubuntu 24.04 LTS 64-bit
- VMware ESXi 8.0 U3
- VMware ESXi 9.0

The SD535 V3 with 4th Gen AMD EPYC processors supports the following operating systems:

- 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 10.0
- 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
- Ubuntu 20.04 LTS 64-bit
- Ubuntu 22.04 LTS 64-bit
- Ubuntu 24.04 LTS 64-bit
- VMware ESXi 7.0 U3
- VMware ESXi 8.0 U2
- VMware ESXi 8.0 U3
- VMware ESXi 9.0

For a complete list of supported, certified and tested operating systems, plus additional details and links to relevant web sites, see the Operating System Interoperability Guide:

- 5th Gen AMD EPYC: https://lenovopress.lenovo.com/osig#servers=sd535-v3-5th-gen-epyc-7dd1&support=all
- 4th Gen AMD EPYC: https://lenovopress.lenovo.com/osig#servers=sd535-v3-4th-gen-epyc-7dd1&support=all

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

For configure-to-order configurations, the SD535 V3 can be preloaded with VMware ESXi. Ordering information is listed in the following table.

Table 52. VMware ESXi preload

Part number	Feature code	Description
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)

Configuration rule:

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

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

Physical and electrical specifications

Up to four SD535 V3 are installed in the D3 Chassis. Each SD535 V3 has the following dimensions:

- Width: 222 mm (8.7 inches)
- Height: 41 mm (1.6 inches)
- Depth: 898 mm (35.4 inches)

The D3 Chassis has the following overall physical dimensions, excluding components that extend outside the standard chassis, such as EIA flanges, front security bezel (if any), and power supply handles:

- Width: 448 mm (17.6 inches)
- Height: 87 mm (3.4 inches)
- Depth: 900 mm (35.4 inches)

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

Table 53. Detailed dimensions

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

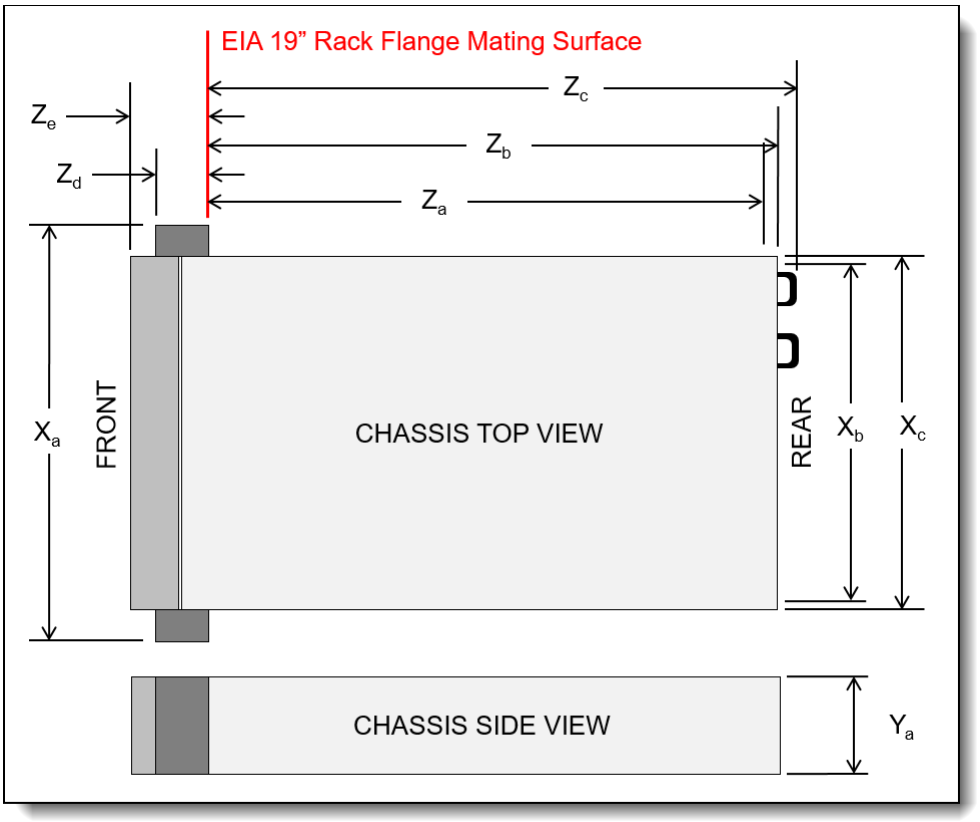

Figure 17. Server dimensions

The shipping (cardboard packaging) dimensions of the SD535 V3 are as follows:

- Width: 343 mm (13.5 inches)
- Height: 158 mm (6.2 inches)
- Depth: 1067 mm (42.0 inches)

The shipping (cardboard packaging) dimensions of the D3 Chassis are as follows:

- Width: 596 mm (23.5 inches)
- Height: 298 mm (11.7 inches)
- Depth: 1180 mm (46.5 inches)

The SD535 V3 has the following weight:

- Maximum: 8.32 kg (18.34 lbs)

The D3 Chassis has the following weight:

- Empty (without servers and power supplies): 11.8 kg (26.1 lb)
- Maximum (4x 1U servers and 3x power supplies): 47.8 kg (105.4 lbs)

The enclosure has the following electrical specifications for AC input power supplies:

- Input voltage:
  - 200 to 240 (nominal) Vac, 50 Hz or 60 Hz
  - 180 to 300 Vdc (China only)
- Inlet current:
  - 1300W power supply: 7.3 A
  - 1600W power supply: 9.0 A
  - 2700W power supply: 15.4 A

Operating environment

The SD535 V3 and D3 Chassis comply with ASHRAE Class A2 specifications with most configurations, and depending on the hardware configuration, also complies with ASHRAE Class H1 specifications.

Depending on the hardware configuration, the SD535 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

See the Ambient temperature management section of the following web page for requirements: https://pubs.lenovo.com/sd535-v3/server_specifications_environmental

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 H1: 5°C to 25°C (41°F to 77°F); the maximum ambient temperature decreases by 1°C for every 300 m (984 ft) increase in altitude above 900 m (2,953 ft).
  - Server off: 5°C to 45°C (41°F to 113°F)
  - Shipment/storage: -40°C to 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 H1: 8% to 80%; maximum dew point: 17°C (62.6°F)
  - Shipment/storage: 8% to 90%

Acoustical noise emissions

The server has the following acoustic noise emissions declaration:

- Sound power level (L_{WAd})
  - Idling: 7.3 Bel (Typical), 7.4 Bel (Max.)
  - Operating 1: 7.3 Bel (Typical), 7.4 Bel (Max.)
  - Operating 2: 8.3 Bel (Typical), 8.8 Bel (Max.)
- Sound pressure level (L_{pAm}):
  - Idling: 57.1 dBA (Typical), 57.8 dBA (Max.)
  - Operating 1: 57.1 dBA (Typical), 57.8 dBA (Max.)
  - Operating 2: 66.4 dBA (Typical), 71.4 dBA (Max.)

Notes:

- These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296.
- Idle mode is the steady state in which the server is powered on but not operating any intended function. Operating mode 1 is 50% of CPU TDP. Operating Mode 2 is 100% of CPU TDP.

- The declared acoustic sound levels are based on the below-specified configurations, which may change depending on configuration/conditions (with four nodes installed in the chassis):
  - Typical: four 300-watt processors (9354P), forty-eight 64 GB RDIMMs, twenty-four SATA SSDs, four 25GB 2-port OCP modules, and two 2700-watt CRPS PSUs
  - Maximum: four 400-watt processors (9554P), forty-eight 64 GB RDIMMs, eight NVMe SSDs, four 1GB 4-port OCP modules, four GPU adapters, and three 2700-watt CRPS PSUs
- 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.

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

When the SD535 V3 nodes are configured for Lenovo Neptune Core water cooling, the necessary water infrastructure also needs to be ordered.

Each D3 Chassis with four SD535 V3 nodes uses two water connections on each side, one for the two left nodes, and one for the two right nodes. This is shown in the figure below.

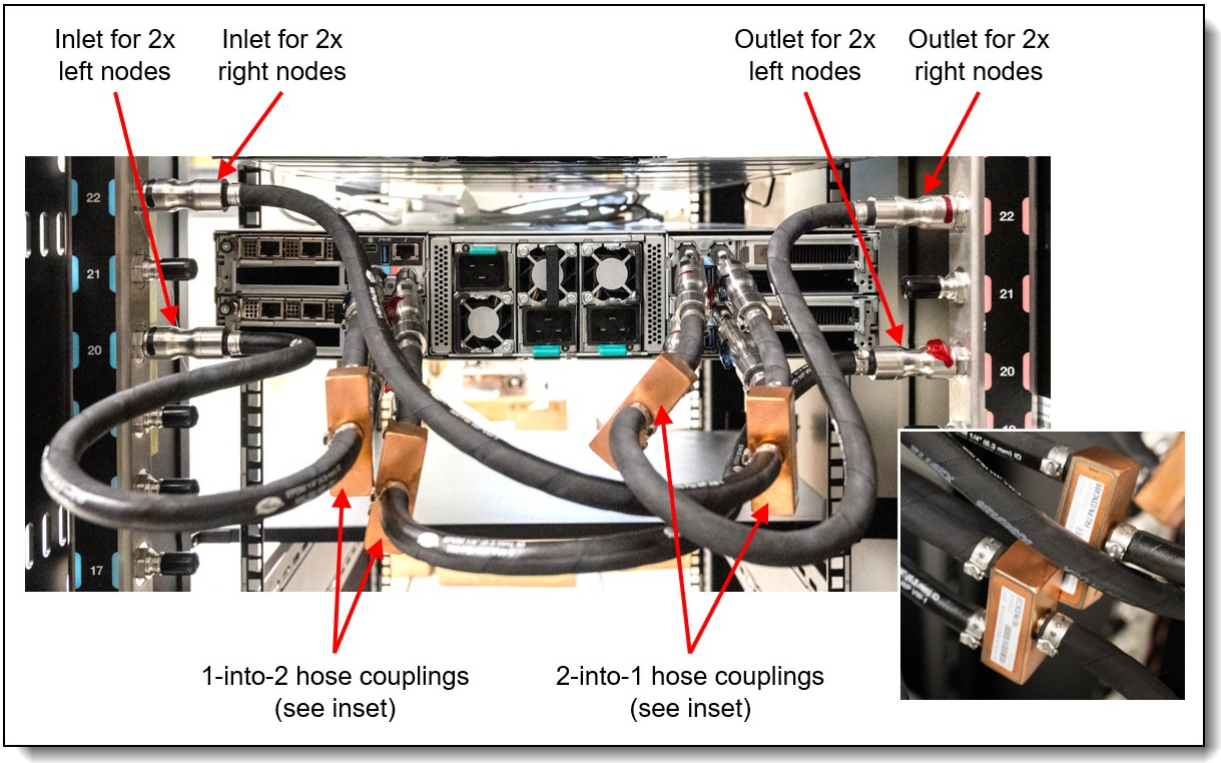

Figure 18. Water hoses to connect the SD535 V3 nodes to the manifold

To connect the SD535 V3 nodes to the water manifold, the following water loop components are required, and will be automatically included by the DCSC configurator

Table 54. D3 Chassis water-loop components

Feature code (7DD0/7DD7)	Description
C8B0	ThinkSystem D3 Processor Neptune Core Water Cooling
C28A	ThinkSystem D3 Processor Neptune Core Enablement Kit (all hoses and couplings to connect the D3 Chassis to the water manifold)

In addition to the enablement kit listed in the table above, the following water infrastructure components are also needed in the rack cabinet and data center:

- Supported 42U or 48U rack cabinet

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

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

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

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

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

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

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

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

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

- Hose kit to connect to the CDU to the manifold

  Ordering information is in the table below.

The following figure shows the major components of the solution.

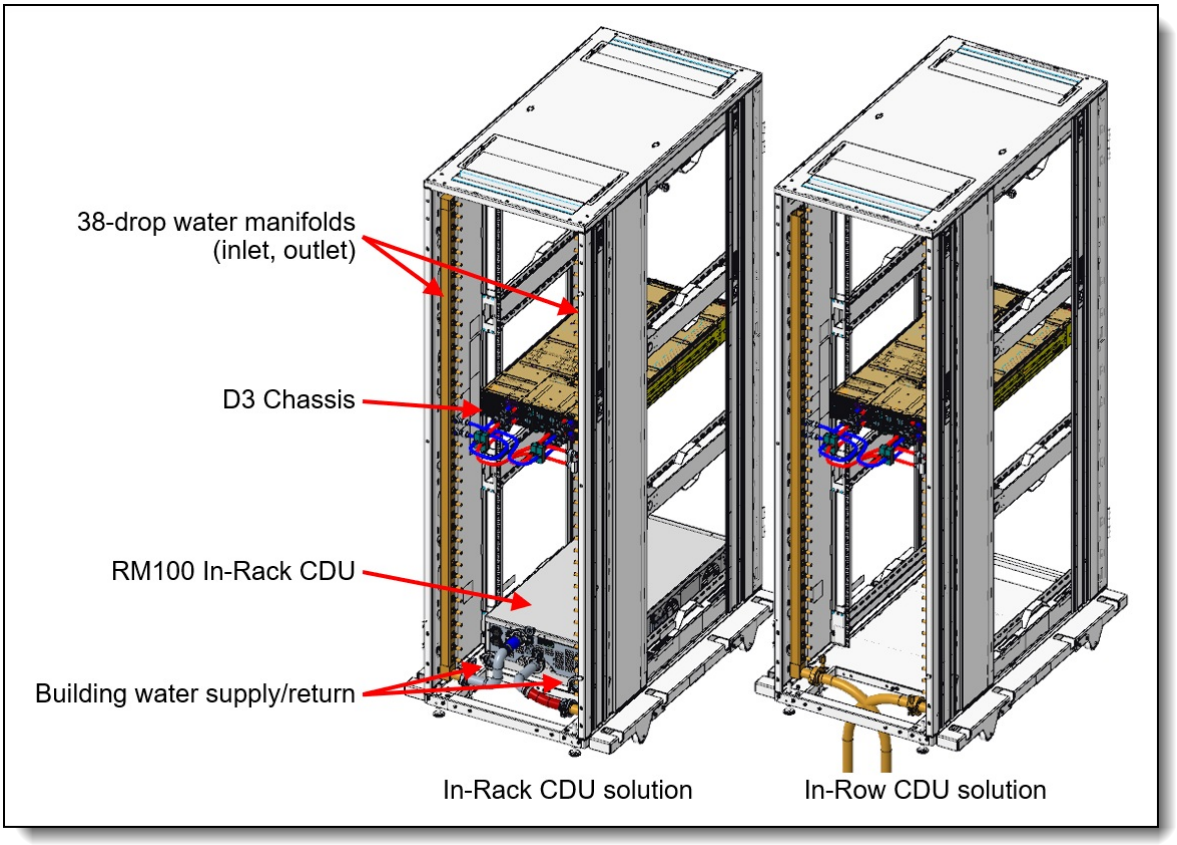

Figure 19. Water manifold connections

Configuration requirements:

- Maximum number of D3 Chassis supported in a rack:
  - 48U rack: 19 enclosures (each 4x SD535 V3 nodes)
  - 42U rack with in-rack CDU: 18 enclosures (each 4x SD535 V3 nodes)
  - 42U rack without in-rack CDU: 19 enclosures (each 4x SD535 V3 nodes)
- 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 55. Water infrastructure ordering information

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

Configuration notes:

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

RM100 In-Rack Coolant Distribution Unit

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

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

The following figure shows the RM100 CDU.

Figure 20. RM100 In-Rack Coolant Distribution Unit

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

Table 56. RM100 ordering information

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

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

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

The following table lists additional feature codes for CTO configurations. They will be auto-derived when you select the in-Rack CDU for the configuration.

Table 57. Base feature code for CTO models

Feature code	Description	Purpose
BRM4	Neptune DWC In-Rack CDU Connection Assembly for DWC Manifold	Assembly to connect in-rack CDUs to Enclosure and Power Supply Manifolds
BRM3	Neptune DWC In-Rack CDU 2.3m Primary Loop Connection Hose	Hose to connect in-rack CDU to the primary datacenter waterloop
BRL3	Neptune DWC In-Rack CDU Filler Kit	Hose to connect to the in-rack CDU for easy filling with water

Warranty upgrades and post-warranty support

The SD535 V3 and D3 Chassis have a 1 year or 3 year warranty, based on the machine type:

- ThinkSystem SD535 V3 (7DD1) - 3 year warranty
- ThinkSystem SD535 V3 (7DD8) - 1 year warranty
- ThinkSystem D3 Chassis (7DD0) - 3 year warranty
- ThinkSystem D3 Chassis (7DD7) - 1 year warranty

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

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

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

Services

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

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

In this section:

Lenovo Advisory Services

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

- **Assessment Services**

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

- **Design Services**

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

Lenovo Plan & Design Services

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

Lenovo Deployment, Migration, and Configuration Services

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

- **Deployment Services for Storage and ThinkAgile**

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

- **Hardware Installation Services**

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

- **DM/DG File Migration Services**

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

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

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

- **Factory Integrated Services**

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

Lenovo Support Services

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

- **Premier Support for Data Centers**

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

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

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

- **Committed Service Repair (CSR)**

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

- **Multivendor Support Services (MVS)**

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

- **Keep Your Drive (KYD)**

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

- **Technical Account Manager (TAM)**

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

- **Enterprise Software Support (ESS)**

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

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

Lenovo Managed Services

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

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

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

Lenovo Sustainability Services

- **Asset Recovery Services**

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

- **CO2 Offset Services**

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

- **Lenovo Certified Refurbished**

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

Lenovo TruScale

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

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

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

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

Regulatory compliance

The SD535 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)
- CE, UKCA Mark (EN55032 Class A, EN62368-1, EN55024, EN55035, EN61000-3-2, EN61000-3-3, (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; Section 5 of CNS15663
- Australia/New Zealand AS/NZS CISPR 32, Class A; AS/NZS 62368.1
- UL Green Guard, UL2819
- SGS, VOC Emission
- Energy Star 4.0
- EPEAT (NSF/ ANSI 426) Bronze
- Japanese Energy-Saving Act
- EU2019/424 Energy Related Product (ErP Lot9)
- 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 58. External drive enclosures

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

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

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

External storage systems

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

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

External backup units

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

Table 59. External backup options

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

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

Fibre Channel SAN switches

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

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

Uninterruptible power supply units

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

Table 60. Uninterruptible power supply units

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

† Only available in China and the Asia Pacific market.

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

Power distribution units

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

Table 61. Power distribution units

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
0U Basic PDUs															
4PU7A93176	C0QH	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93169	C0DA	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93177	C0QJ	0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0U Switched and Monitored PDUs															
4PU7A93181	C0QN	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU v2 (60A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
4PU7A93178	C0QK	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93171	C0D8	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93182	C0QP	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93175	C0CS	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93180	C0QM	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
4PU7A93173	C0D6	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93179	C0QL	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU v2 (30A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
1U Switched and Monitored PDUs															
4PU7A90808	C0D4	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 ETL	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7A81117	BNDV	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - ETL	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7A90809	C0DE	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A90810	C0DD	1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
4PU7A90811	C0DC	1U 12 C19/C13 Switched and monitored 32A 3P WYE PDU V2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A90812	C0DB	1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
71763NU	6051	Ultra Density Enterprise C19/C13 PDU 60A/208V/3PH	N	N	Y	N	N	N	N	N	N	Y	Y	Y	N
71762NX	6091	Ultra Density Enterprise C19/C13 PDU Module	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Line cords for 1U PDUs that ship without a line cord															
40K9611	6504	DPI 32a Cord (IEC 309 3P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	DPI 32a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	DPI 63a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	DPI 30a Cord (NEMA L6-30P)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9615	6501	DPI 60a Cord (IEC 309 2P+G)	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N

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

Rack cabinets

The following table lists the supported rack cabinets.

Table 62. Rack cabinets

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

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

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

KVM console options

The following table lists the supported KVM consoles.

Table 63. 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 65. KVM switches and options

Part number	Description
KVM Console switches	
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
Cables for GCM and LCM Console switches	
46M5383	Virtual Media Conversion Option Gen2 (VCO2)
46M5382	Serial Conversion Option (SCO)

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

Video adapter required: The use of the above KVM consoles and KVM switches with the SD535 V3 will require the use of a Mini DisplayPort-to-VGA converter.

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

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

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

   Tags: Server, ThinkSystem

   Published: 2025-06-23
   Length: 25 minutes

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

   Course code: SXXW1204r14
2. **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

3. **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

4. **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

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

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

   Tags: Artificial Intelligence (AI)

   Published: 2025-05-22
   Length: 60 minutes

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

   Course code: MAY1525

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

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

   Tags: Technical Sales

   Published: 2025-05-05
   Length: 60 minutes

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

   Course code: MAY0225

7. **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

8. **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

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

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

   Tags: Server

   Published: 2024-11-26
   Length: 60 minutes

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

   Course code: 112224

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

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

Tags: Technical Sales

Published: 2024-11-13
Length: 60 minutes

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

Course code: 110824

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

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

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

Tags: Sales, Server, ThinkSystem

Published: 2024-10-31
Length: 90 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DSRTO102

12. **Family Portfolio: Multi-Node Servers Powered by AMD**
2024-10-09 | 18 minutes | Employees and Partners

This course covers the Lenovo ThinkSystem multi-node servers, sometimes called 2U4N servers, powered by AMD processors. You will learn about the servers in this product family and their features, as well as use cases and benefits to the customer. After completing this course about the multi-node server family powered by AMD processors, you will be able to identify products and features within the family, describe the customer benefits of this product family, and recognize when a specific product or products should be selected.

Tags: Server, ThinkSystem

Published: 2024-10-09
Length: 18 minutes

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

Course code: SXXW2520r2

13. **Q3 Solutions Launch AMD EPYC Gen5 Quick Hit**
2024-10-09 | 6 minutes | Employees and Partners

Lenovo announces upgrades to a wide range of ThinkSystem V3 servers powered by AMD processors. Support for the AMD EPYC 9005 Series processors and faster DDR5 memory will enhance the performance and power efficiency of these servers as well as the ThinkAgile systems based on them

Tags: Artificial Intelligence (AI), Server, ThinkAgile, ThinkSystem

Published: 2024-10-09
Length: 6 minutes

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

Course code: SXXW1216r9a

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

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

Tags: Technical Sales

Published: 2024-07-15
Length: 60 minutes

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

Course code: 071224

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

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

Tags: SAP, ThinkAgile, ThinkEdge, ThinkSystem

Published: 2024-06-04
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DSAPF101

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

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

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

Published: 2024-05-22
Length: 60 minutes

Start the training:
Employee link: Grow@Lenovo

Course code: DVCLD212

17. **Family Introduction ThinkSystem Multi-Node Servers**
2024-02-26 | 10 minutes | Employees and Partners

After completing this course about the multi-node server family, the learner will be able to define the characteristics of high-density servers, describe multi-node servers, recognize when a multi-node server might be used, and identify keywords or buzzwords that indicate opportunities to introduce the multi-node server family.

Tags: Artificial Intelligence (AI), DataCenter Products, High-Performance Computing (HPC), Server, ThinkSystem

Published: 2024-02-26
Length: 10 minutes

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

Course code: SXXW2525

Related publications and links

For more information, see these resources:

- ThinkSystem SD535 V3 product page
  https://www.lenovo.com/us/en/p/multi-node/len21ts0033
- ThinkSystem SD535 V3 datasheet
  https://lenovopress.lenovo.com/datasheet/ds0179-lenovo-thinksystem-sd535-v3
- Interactive 3D Tour of the ThinkSystem SD535 V3:
  https://lenovopress.lenovo.com/lp1901-3d-tour-thinksystem-sd535-v3
- ThinkSystem SD535 V3 drivers and support
  http://datacentersupport.lenovo.com/products/servers/thinksystem/sd535v3/7dd1/downloads
- Lenovo ThinkSystem SD535 V3 product publications:
  https://pubs.lenovo.com/sd535-v3/
  - User Guide, which includes:
    - System Configuration Guide
    - Hardware Maintenance Guide
  - Rack Installation Guides
  - Messages and Codes Reference
  - UEFI Manual for ThinkSystem Servers
- SD535 V3 hardware repair & replacement videos:
  https://www.youtube.com/playlist?list=PLYV5R7hVcs-DNsIs2SkwDuQyQ3yXOMkez
- 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:

- Multi-Node Servers
- ThinkSystem SD535 V3 Server

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