Lenovo ThinkSystem SN550 V2 Server
Product Guide

The Lenovo ThinkSystem SN550 V2 is a high-performance blade server that offers enhanced security, efficiency, and reliability features to handle business-critical workloads. The server incorporates up to two third-generation Intel Xeon Scalable processors which feature up to 36 cores each, core speeds up to 3.6 GHz, and TDP values up to 205W.

Suggested uses: database, virtualization, enterprise applications, collaboration and email, streaming media, Web, HPC, and cloud applications.

Figure 1 shows the ThinkSystem SN550 V2 server.



Figure 1. Lenovo ThinkSystem SN550 V2 server

Did you know?

The SN550 V2 server uses the new third-generation Intel Xeon Scalable Silver, Gold and Platinum processors and memory can now operate at speeds up to 3200 MHz. The server also supports six EDSFF form-factor NVMe drives as an alternative to standard 2.5-inch SSDs and HDDs to maximize internal storage.

Key features

The ThinkSystem SN550 V2 is a high-availability blade server that is optimized to support the next-generation microprocessor technology. It is ideally suited for medium and large businesses. This section describes the key features of the server.

Scalability and performance

The SN550 V2 offers the following features to boost performance, improve scalability, and reduce costs:

- Up to 14 SN550 V2 servers can be installed in one Flex System Enterprise chassis.
- Supports one or two third-generation Intel Xeon Processor Scalable processors
  - Up to 36 cores and 72 threads
  - Core speeds of up to 3.6 GHz
  - TDP ratings of up to 205W
- Support for up to 16 TruDDR4 memory DIMMs operating at up to 3200 MHz means you have the fastest available memory subsystem.
- Each processor supports 8 DIMMS, each with its own memory channel.
- Using 128GB 3DS RDIMMs, the server supports up to 2TB of system memory.
- Supports the new Intel Optane Persistent Memory 200 Series for advanced in-memory database applications, dense-virtualization; up to eight PMem Modules can be installed in conjunction with regular system memory.
- Optional support for high-performance PCIe-attached NVMe SSDs can significantly improve I/O performance.
- Support for high-bandwidth PCIe 3.0 I/O adapters; up to two in each SN550 V2 server.
- Support for up to 50 Gb Ethernet and 16 Gb Fibre Channel

Availability and serviceability

The SN550 V2 provides the following features to simplify serviceability and increase system up-time:

- Designed to run 24 hours a day, 7 days a week
- The blade server design of the SN550 V2 and Enterprise Chassis makes it very easy to service the servers, since there are no cables to disconnect and reconnect.
- 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.
- Tool-less cover removal provides easy access to upgrades and serviceable parts, such as CPU, memory, and adapter cards.
- The Dual M.2 Boot Adapter supports RAID-1 which enables two installed M.2 drives to be configured as a redundant pair.
- Hot-swap drives support integrated RAID-1 redundancy for data protection and greater system up-time.
- Solid-state drives (SSDs), which offer significantly better reliability than mechanical HDDs for greater uptime.
- The power source independent light path diagnostics functionality provides individual LEDs that lead the technician to failed (or failing) components, which simplifies servicing, speeds up problem resolution, and helps improve system availability.
- The built-in XClarity Controller continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (SAS/SATA HDDs and SSDs, NVMe SSDs, flash storage adapters), RAID

controllers, and server ambient and sub-component temperatures. Alerts can be surfaced through the system XClarity Controller to managers such as Lenovo XClarity Administrator, VMware vCenter, and Microsoft System Center. These proactive alerts let you take appropriate actions in advance of possible failure, thereby increasing server uptime and application availability.

- Built-in diagnostics in UEFI with Lenovo XClarity Provisioning Manager that supports the collection of service data to USB key drive or remote CIFS share folder for troubleshooting and reduced 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 and connected to the server through the service-enabled USB port, enables additional local systems management functions.
- Three-year customer replaceable unit and on-site limited warranty; next business day 9x5. Optional service upgrades are available.

Manageability and security

The following powerful systems management features simplify the local and remote management of the SN550 V2:

- Support for Lenovo XClarity Administrator, providing auto-discovery, inventory tracking, monitoring, policy-based firmware updates, address pool management, configuration patterns and operating system installation.
- The server includes an XClarity Controller (XCC) management processor to monitor server availability and perform remote management. XCC Enterprise is supported as standard, which enables remote KVM, mounting of remote media files (ISO and IMG image files), boot capture, and power capping.
- UEFI-based Lenovo XClarity Provisioning Manager, accessible from F1 during boot, provides system inventory information, graphical UEFI Setup, platform update function, RAID Setup wizard, operating system installation function, and diagnostic functions
- Integrated Trusted Platform Module (TPM) 2.0 support enables advanced cryptographic functionality, such as digital signatures and remote attestation.
- Supports Secure Boot to ensure only a digitally signed operating system can be used. Supported with HDDs and SSDs as well as M.2 SSD.
- 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.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.
- Intel Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.
- Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks, which allows an application to run in its own isolated space that is protected from all other software that is running on a system.

Energy efficiency

The SN550 V2 offers the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to a green environment:

- The component-sharing design of the Flex System chassis provides ultimate power and cooling savings.
- The Intel Xeon Processor Scalable Family of processors offer significantly better performance than previous generations of processors, while fitting into the same TDP limits.
- Intel Intelligent Power Capability powers individual processor elements on and off as needed, which reduces power draw.
- Solid state drives (SSDs) use as much as 80% less power than traditional spinning 2.5-inch HDDs.

Components and connectors

The following figure shows the front of the server.

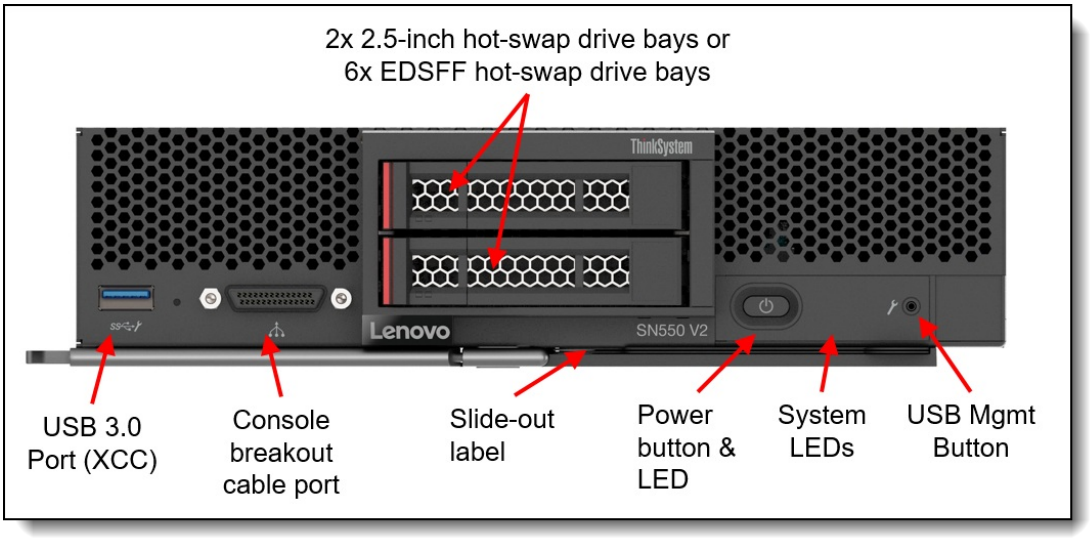


Figure 2. Front view of the ThinkSystem SN550 V2 server

The following figure shows the locations of key components inside the SN550 V2 with a RAID adapter installed and the M.2 adapter and drives installed.

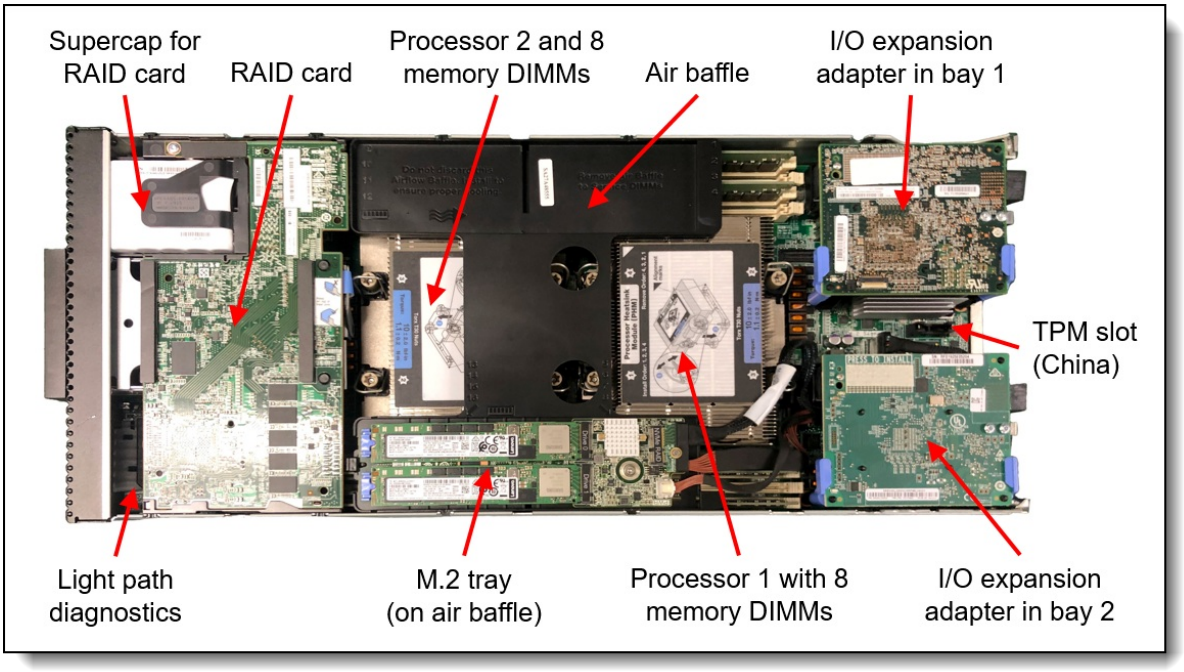


Figure 3. Inside view of the ThinkSystem SN550 V2 server with RAID

The following figure shows inside the SN550 V2 with EDSFF drives installed.

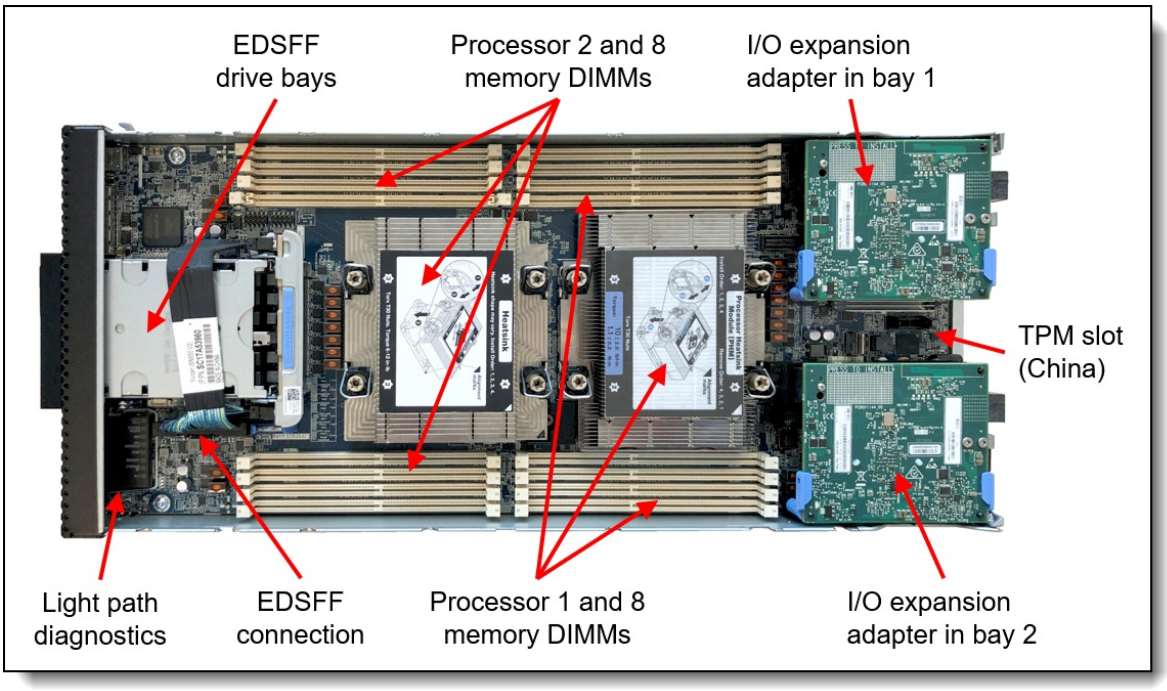


Figure 4. Inside view of the ThinkSystem SN550 V2 server with EDSFF drives

System architecture

The following figure shows the architectural block diagram of the SN550 V2, showing the major components and their connections.

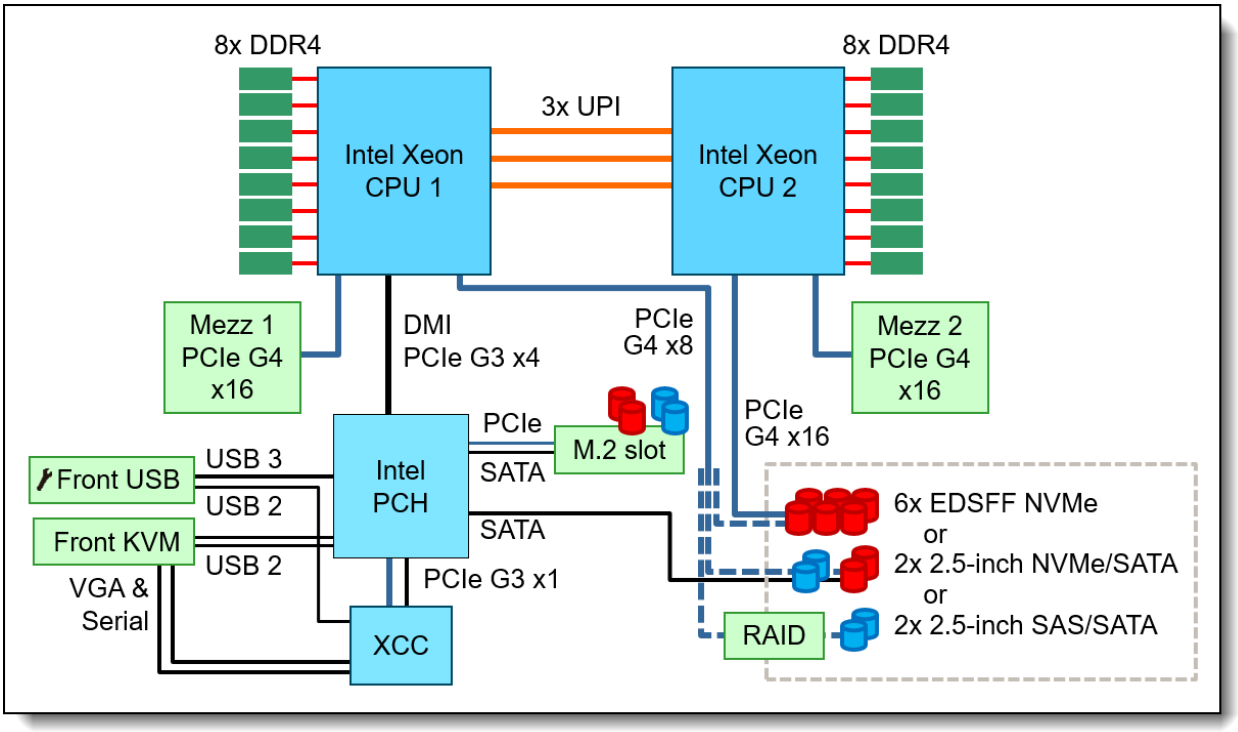


Figure 5. SN550 V2 system architectural block diagram

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine Type	7Z69
Form factor	Standard-width Flex System compute node.
Chassis support	Flex System Enterprise Chassis with CMM2.
Processor	One or two third-generation Intel Xeon Scalable processor (formerly codenamed "Ice Lake"). Supports processors up to 36 cores, core speeds of up to 3.6 GHz, and TDP ratings of up to 205W. Two or three UPI links between the processors depending on the processor selected.
Chipset	Intel C621A "Lewisburg" chipset, part of the platform codenamed "Whitley"
Memory	16 DIMM slots with two processors (8 DIMM slots per processor). Each processor has 8 memory channels, with 1 DIMM per channel (DPC). Lenovo TruDDR4 RDIMMs and 3DS RDIMMs are supported. DIMM slots are shared between standard system memory and persistent memory. DIMMs operate at up to 3200 MHz.
Persistent memory	Supports up to 8x Intel Optane Persistent Memory 200 Series modules (4 per processor) installed in the DIMM slots. Persistent memory (Pmem) is installed in combination with system memory DIMMs.

Components	Specification
Memory maximums	With RDIMMs: Up to 2TB by using 16x 128GB 3DS RDIMMs With Persistent Memory: Up to 2TB by using 8x 128GB 3DS RDIMMs and 8x 128GB Pmem modules
Memory protection	ECC, SDDC (for x4-based memory DIMMs), ADDDC (for x4-based memory DIMMs, requires Platinum or Gold processors), and memory mirroring.
Disk drives	Either 2x 2.5-inch hot-swap drive bays or 6x EDSFF E1.S hot-swap drive bays. 2.5-inch drive bays support SSDs or HDDs and drives can be either SAS/SATA or NVMe/SATA, depending on the backplane selected. Optional support for up to two M.2 SSD.

Maximum internal storage	• 2.5-inch drives:
	  ◦ 61.44TB using 2x 30.72TB 2.5-inch SAS/SATA SSDs
	  ◦ 30.72TB using 2x 15.36TB 2.5-inch NVMe SSDs
	  ◦ 4.8TB using 2x 2.4TB 2.5-inch HDDs
	• EDSFF drives
	  ◦ 46.08TB using 6x 7.68TB EDSFF NVMe SSDs

Storage controller	• Onboard SATA ports (Intel VROC SATA RAID, formerly known as Intel RSTe RAID)
	• Onboard NVMe ports (includes Intel VROC NVMe RAID, with optional license for non-Intel NVMe SSDs)
	• 12 Gb SAS/SATA RAID adapters:
	  ◦ RAID 530i-4i (cacheless) supports RAID 0, 1 in the SN550 V2
	  ◦ RAID 930-4i with 2GB flash-backed cache supports RAID 0, 1 in the SN550 V2

PCI Expansion slots	Two I/O connectors supporting Ethernet or Fibre Channel adapters. PCI Express 4.0 x16 interface.
Ports	Front: One USB 3.0 port, one console breakout cable port. The breakout port supports a KVM Breakout Cable that provides a video port, serial port and two USB 2.0 ports. Breakout cable ships standard with chassis; more cables optional with part number 4X97A83021 or 81Y5286.
Systems management	UEFI, Lenovo XClarity Provisioning Manager, Lenovo XClarity Controller with Pilot4 XE401 baseboard management controller (BMC), Predictive Failure Analysis, light path diagnostics panel, automatic server restart, remote presence. Support for Lenovo XClarity Administrator and Lenovo XClarity Energy Manager.
Security features	Power-on password, administrator's password, Trusted Platform Module 2.0 (TPM 2.0), Trusted Cryptographic Module (TCM) - China only.
Video	G200 graphics with 16 MB memory and 2D hardware accelerator, integrated into the XClarity Controller. Maximum resolution is 1920x1200 32bpp at 60Hz.
Limited warranty	Three-year customer-replaceable unit and on-site limited warranty with 9x5/NBD (upgrades available).
Operating systems supported	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi. See the Operating system support section for specifics.
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.
Dimensions	Width: 218 mm (8.5 in), height: 56 mm (2.2 in), depth: 507 mm (20.0 in)
Weight	Maximum configuration: 6.6 kg (14 lb).

SN550 V2 servers are shipped with the following items:

- Documentation flyer

Models

ThinkSystem SN550 V2 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 base CTO models are available for the SN550 V2 as listed in the following table, CTO1WW and CTOLWW:

- The CTO1WW base CTO model is for general business and is selectable by choosing **General Purpose** mode in DCSC.
- The CTOLWW base model is intended for High Performance Computing (HPC) and Artificial Intelligence (AI) configurations and solutions, including configurations for Lenovo Scalable Infrastructure (LeSI), and is enabled using either the **HPC & AI LeSI Solutions** mode or **HPC & AI Hardware** mode in DCSC. CTOLWW configurations can also be built using System x and Cluster Solutions Configurator (x-config).

Preconfigured server models may also be available for the SN550 V2, 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 SN550 V2 server.

Table 2. Base CTO models

Machine Type/Model General purpose	Machine Type/Model for HPC and AI	Description
7Z69CTO1WW	7Z69CTOLWW	ThinkSystem SN550 V2 – 3-year Warranty

The following table lists the base feature code for CTO configurations of the SN550 V2.

Table 3. Base chassis for CTO models

Feature code	Description
B98M	Lenovo ThinkSystem SN550 V2 Server

Chassis support

Up to 14 SN550 V2 server are supported in the Lenovo Flex System Enterprise Chassis, as shown in the following figure.



Figure 6. ThinkSystem SN550 V2 servers installed in the Flex System Enterprise Chassis

The SN550 V2 server is supported in the Flex System chassis as listed in the following table.

Table 4. Chassis support

Chassis models	Description	Supports SN550 V2
8721-HC1 based: 8721-A1x, LRx, DCx 8721-K1G, E1Y, E2Y	Lenovo Flex System Enterprise Chassis with CMM (68Y7030) standard	No
8721-HC2 based: 8721-ALx, DLx 8721-E3Y, E4Y	Lenovo Flex System Enterprise Chassis with CMM2 (00FJ669) standard	Yes
7385-DCx	Lenovo Flex System Carrier-Grade Chassis	No

Note: CMM2 firmware should be 2.7.0 or later to support the SN550 V2.

Up to 14 SN550 V2 servers can be installed in the chassis; however, the actual number that can be installed in a chassis depends on the following factors:

- TDP power rating for the processors that are installed in the SN550 V2
- Number of power supplies that are installed in the chassis
- Capacity of the installed power supplies (2100 W or 2500 W)
- The voltage of in the input power

- Chassis power redundancy policy that is used (N+1 or N+N)
- Whether node throttling is permitted

The following table provides general guidelines about what number of SN550 V2 servers can be installed. For a more specific determination on how many servers can be installed for a detailed hardware configuration, use Lenovo Capacity Planner, which is found at the following web page: https://datacentersupport.lenovo.com/us/en/products/solutions-and-software/software/lenovo-capacity-planner/solutions/ht504651

The following color coding was used In the table:

- Green = No restriction on the number of SN550 V2 servers that can be installed
- Yellow = Some bays must be left empty in the chassis

Table 5. Maximum number of SN550 V2 servers that can be installed based on input voltage and power redundancy policy used (2500 W power supply)

	2500W (200-208VAC input voltage)						2745W (220-240VAC input voltage)					
TDP	6 PSUs, N+1, with throttle	6 PSUs, N+1, no throttle	6 PSUs, N+N, with throttle	6 PSUs, N+N, no throttle	5 PSUs, N+1, with throttle	4 PSUs, N+1, with throttle	6 PSUs, N+1, with throttle	6 PSUs, N+1, no throttle	6 PSUs, N+N, with throttle	6 PSUs, N+N, no throttle	5 PSUs, N+1, with throttle	4 PSUs, N+1, with throttle
105W	14	14	14	9	14	14	14	14	14	10	14	14
120W	14	14	14	8	14	13	14	14	14	9	14	13
135W	14	13	13	8	14	12	14	14	13	9	14	12
140W	14	13	13	8	14	12	14	14	13	9	14	12
150W	14	12	12	7	14	12	14	13	12	8	14	12
165W	14	12	11	7	14	11	14	13	11	8	14	11
185W	14	11	10	6	13	10	14	12	11	7	14	11
195W	14	10	9	6	13	9	14	11	10	6	14	10
205W	14	10	9	6	13	9	14	11	10	6	14	10
230W	14	9	9	5	12	9	14	10	9	6	13	9
235W*	14	8	9	5	12	9	14	9	9	5	13	9
250W*	14	8	9	5	12	9	14	9	9	5	13	9

* Processors only supported by special bid order process

Processors

The SN550 V2 supports processors in the third-generation Intel Xeon Scalable Processor family. The server supports one or two processors.

Topics in this section:

- Processor options
- Processor features
- One-processor configurations
- Thermal restrictions by processor
- Processor restriction by power supply
- UEFI operating modes

Processor options

The table below lists the processors that are supported.

Additional processors, including those up to 250W TDP, may be supported via the Special Bid process. Contact your Lenovo representative for more information.

Some processors include a suffix letter in the processor model number:

- M: Media Processing optimized
- N: NFV optimized
- P: High frequency-optimized for IaaS virtualization customers
- Q: Optimized for liquid cooling
- S: Large (512GB) SGX Enclave size
- T: High Tcase
- U: Single socket
- V: High density/low power-optimized for SaaS virtualization customers
- Y: Speed Select

Memory tiers: All processors support up to 6TB of memory. There are no L or M suffix processors.

Options part numbers only for second processor : The option part numbers listed in the table are only for use when adding a second processor. It is not supported to upgrade any processors already installed.

Table 6. Processor options

Part number	Feature code	Description	Maximum quantity†
4XG7A63543	BB2N	SN550 V2 Intel Xeon Silver 4309Y 8C 105W 2.8GHz Option Kit w/o Fan	2
4XG7A63540	BB3C	SN550 V2 Intel Xeon Silver 4310 12C 120W 2.1GHz Option Kit w/o Fan	2
4XG7A63539	BB2Z	SN550 V2 Intel Xeon Silver 4314 16C 135W 2.4GHz Option Kit w/o Fan	2
4XG7A63544	BB39	SN550 V2 Intel Xeon Silver 4316 20C 150W 2.3GHz Option Kit w/o Fan	2
4XG7A63542	BB3M	SN550 V2 Intel Xeon Gold 5315Y 8C 140W 3.2GHz Option Kit w/o Fan	2
4XG7A63541	BB30	SN550 V2 Intel Xeon Gold 5317 12C 150W 3.0GHz Option Kit w/o Fan	2
4XG7A63546	BB3E	SN550 V2 Intel Xeon Gold 5318N 24C 150W 2.1GHz Option Kit w/o Fan	2
4XG7A63545	BB35	SN550 V2 Intel Xeon Gold 5318Y 24C 165W 2.1GHz Option Kit w/o Fan	2
4XG7A63535	BB2R	SN550 V2 Intel Xeon Gold 5320 26C 185W 2.2GHz Option Kit w/o Fan	2
4XG7A63536	BB4E	SN550 V2 Intel Xeon Gold 6326 16C 185W 2.9GHz Option Kit w/o Fan	2
4XG7A63527	BB3H	SN550 V2 Intel Xeon Gold 6330 28C 205W 2.0GHz Option Kit w/o Fan	2
4XG7A63538	BB3N	SN550 V2 Intel Xeon Gold 6330N 28C 165W 2.2GHz Option Kit w/o Fan	2
4XG7A63534	BB3D	SN550 V2 Intel Xeon Gold 6334 8C 165W 3.6GHz Option Kit w/o Fan	2
4XG7A63533	BB3S	SN550 V2 Intel Xeon Gold 6336Y 24C 185W 2.4GHz Option Kit w/o Fan	2
4XG7A63526	BB3P	SN550 V2 Intel Xeon Gold 6338 32C 205W 2.0GHz Option Kit w/o Fan	2
4XG7A63532	BB31	SN550 V2 Intel Xeon Gold 6338N 32C 185W 2.2GHz Option Kit w/o Fan	2
4XG7A63537	BB3B	SN550 V2 Intel Xeon Gold 6342 24C 230W 2.8GHz Option Kit w/o Fan	2
4XG7A63529	BB2W	SN550 V2 Intel Xeon Gold 6346 16C 205W 3.1GHz Option Kit w/o Fan	2
4XG7A63528	BB2U	SN550 V2 Intel Xeon Gold 6354 18C 205W 3.0GHz Option Kit w/o Fan	2
4XG7A63657	BKDB	SN550 V2 Intel Xeon Platinum 8352M 32C 185W 2.3GHz Option Kit w/o Fan	2
4XG7A63531	BB2S	SN550 V2 Intel Xeon Platinum 8352V 36C 195W 2.1GHz Option Kit w/o Fan	2
4XG7A63530	BB2V	SN550 V2 Intel Xeon Platinum 8352Y 32C 205W 2.2GHz Option Kit w/o Fan	2

† The server supports two processors. In the configurator, you can select 1 or 2 processor feature codes. However for option part numbers, only 1 is supported per server. The option part numbers are only for use when adding a second processor. It is not supported to use the option part numbers to upgrade any processors already installed.

Processor features

Supported processors have the following features:

- Third-generation Intel Xeon Scalable processors (formerly codenamed "Ice Lake")
- 10 nm process technology
- 8x DDR4 memory channels
- 64x PCIe 4.0 I/O lanes available for PCIe and NVMe devices
- 1.25 MB L2 cache per core
- 1.5 MB or more L3 cache per core
- Intel Deep Learning Boost, which provides built-in Artificial Intelligence (AI) acceleration with the Vector Neural Network Instruction set (VNNI). DL Boost and VNNI are designed to deliver significant, more efficient Deep Learning (Inference) acceleration for high-performance AI workloads.
- Intel Hyper-Threading Technology, which boosts performance for multithreaded applications by enabling simultaneous multithreading within each processor core, up to two threads per core.
- Intel Turbo Boost Technology 2.0, which allows processor cores to run at maximum speeds during peak workloads by temporarily going beyond processor TDP.
- Intel Virtualization Technology (includes VT-x and VT-d), which integrates hardware-level virtualization hooks that allow operating system vendors to better use the hardware for virtualization workloads.
- Intel Speed Select Technology, supported on some processor models, enables increased core Turbo Boost frequency on specific individual cores to maximize application performance.
- Intel Advanced Vector Extensions 512 (AVX-512), to enable acceleration of enterprise-class workloads, including databases and enterprise resource planning (ERP).
- Up to two Intel AVX-512 Fused-Multiply Add (FMA) units
- Intel SGX (Software Guard Extensions) and Intel TME (Total Memory Encryption) security features
- Two or three Intel Ultra Path Interconnect (UPI) links at up to 11.2 GT/s, to maximize inter-processor communication

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

Abbreviations used in the table:

- TB: Turbo Boost 2.0
- UPI: Ultra Path Interconnect
- TDP: Thermal Design Power
- SGX: Software Guard Extensions
- PMem: Persistent Memory support

Table 7. Processor features

CPU model	Cores/ threads	Core speed (Base / TB max)	L3 cache*	Max memory speed	UPI links & speed	TDP	SGX Enclave Size	Pmem
4309Y	8 / 16	2.8 GHz / 3.6 GHz	12 MB	2667 MHz	2 / 10.4 GT/s	105W	8 GB	No
4310	12 / 24	2.1 GHz / 3.3 GHz	18 MB	2667 MHz	2 / 10.4 GT/s	120W	8 GB	No
4314	16 / 32	2.4 GHz / 3.4 GHz	24 MB	2667 MHz	2 / 10.4 GT/s	135W	8 GB	Yes

CPU model	Cores/ threads	Core speed (Base / TB max)	L3 cache*	Max memory speed	UPI links & speed	TDP	SGX Enclave Size	Pmem
4316	20 / 40	2.3 GHz / 3.4 GHz	30 MB	2667 MHz	2 / 10.4 GT/s	150W	8 GB	No
5315Y	8 / 16	3.2 GHz / 3.6 GHz	12 MB	2933 MHz	3 / 11.2 GT/s	140W	64 GB	Yes
5317	12 / 24	3.0 GHz / 3.6 GHz	18 MB	2933 MHz	3 / 11.2 GT/s	150W	64 GB	Yes
5318N	24 / 48	2.1 GHz / 3.4 GHz	36 MB	2667 MHz	3 / 11.2 GT/s	150W	64 GB	Yes
5318Y	24 / 48	2.1 GHz / 3.4 GHz	36 MB	2933 MHz	3 / 11.2 GT/s	165W	64 GB	Yes
5320	26 / 52	2.2 GHz / 3.4 GHz	39 MB	2933 MHz	3 / 11.2 GT/s	185W	64 GB	Yes
6326	16 / 32	2.9 GHz / 3.5 GHz	24 MB	3200 MHz	3 / 11.2 GT/s	185W	64 GB	Yes
6330	28 / 56	2.0 GHz / 3.1 GHz	42 MB	2933 MHz	3 / 11.2 GT/s	205W	64 GB	Yes
6330N	28 / 56	2.2 GHz / 3.4 GHz	42 MB	2667 MHz	3 / 11.2 GT/s	165W	64 GB	Yes
6334	8 / 16	3.6 GHz / 3.7 GHz	18 MB*	3200 MHz	3 / 11.2 GT/s	165W	64 GB	Yes
6336Y	24 / 48	2.4 GHz / 3.6 GHz	36 MB	3200 MHz	3 / 11.2 GT/s	185W	64 GB	Yes
6338	32 / 64	2.0 GHz / 3.2 GHz	48 MB	3200 MHz	3 / 11.2 GT/s	205W	64 GB	Yes
6338N	32 / 64	2.2 GHz / 3.5 GHz	48 MB	2667 MHz	3 / 11.2 GT/s	185W	64 GB	Yes
6342	24 / 48	2.8 GHz / 3.5 GHz	36 MB	3200 MHz	3 / 11.2 GT/s	230W	64 GB	Yes
6346	16 / 32	3.1 GHz / 3.6 GHz	36 MB*	3200 MHz	3 / 11.2 GT/s	205W	64 GB	Yes
6354	18 / 36	3.0 GHz / 3.6 GHz	39 MB*	3200 MHz	3 / 11.2 GT/s	205W	64 GB	Yes
8352M	32 / 64	2.3 GHz / 3.5 GHz	48 MB	3200 MHz	3 / 11.2 GT/s	185W	64 GB	Yes
8352V	36 / 72	2.1 GHz / 3.5 GHz	54 MB	2933 MHz	3 / 11.2 GT/s	195W	8 GB	Yes
8352Y	32 / 64	2.2 GHz / 3.4 GHz	48 MB	3200 MHz	3 / 11.2 GT/s	205W	64 GB	Yes

* L3 cache is 1.5 MB per core or larger. Processors with a larger L3 cache per core are marked with an *

One-processor configurations

The SN550 V2 can be used with only one processor installed. Core functions of the server (including the XClarity Controller) are connected to processor 1 as shown in the System architecture section.

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

- 8 memory DIMMs for a 1TB maximum
- I/O expansion slot 1 is available
- 2x 2.5-inch drive support, SAS/SATA or NVMe/SATA

The following functions are not supported with only 1 processor installed:

- I/O expansion slot 2
- Use of EDSFF drives

Thermal restrictions by processor

Processors with a high TDP value or high thermal profile require a lower ambient temperature. See the Supported environment section for details.

Processor restriction by power supply

For existing Flex System customers where the SN550 V2 will be installed in an existing Flex System Enterprise Chassis, if you configure the SN550 V2 to have processors with a TDP of 135W or larger, then check which power supplies are installed in the chassis. If the chassis has Delta power supplies, then the processors will be capped at 125W due to an issue with the Delta power supplies. To prevent this from happening, replace the power supplies with Artesyn power supplies.

For new Flex System customers, if your order includes a new Enterprise Chassis, then the correct power supplies will already be configured so no further action is needed.

UEFI operating modes

The SN550 V2 offers preset operating modes that affect energy consumption and performance. These modes are a collection of predefined low-level UEFI settings that simplify the task of tuning the server to suit your business and workload requirements.

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

Table 8. UEFI operating mode presets in DCSC

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

The preset modes for the SN550 V2 are as follows:

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

For details about these preset modes, and all other performance and power efficiency UEFI settings offered in the SN550 V2, see the paper "Tuning UEFI Settings for Performance and Energy Efficiency on Intel Xeon Scalable Processor-Based ThinkSystem Servers", available from https://lenovopress.lenovo.com/lp1477.

Memory options

The SN550 V2 uses Lenovo TruDDR4 memory and supports 8 DIMMs per processor or 16 DIMMs with two processors installed. Each processor has eight memory channels with one DIMM per channel. With 128 GB 3DS RDIMMs installed, the SN550 V2 supports a total of 2 TB of system memory.

The SN550 V2 also supports Intel Optane Persistent Memory 200 Series, as described in the Persistent Memory section.

Memory operates at up to 3200 MHz , depending on the memory DIMMs and processor model selected. If the processor selected has a lower memory bus speed, then all DIMMs will operate at that lower speed.

The following table lists the memory options that are available for the server.

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

Table 9. Memory options

Part number	Feature code	Description	Maximum supported
RDIMMs			
4X77A08632	B963	ThinkSystem 16GB TruDDR4 3200MHz (2Rx8 1.2V) RDIMM	16 (8 per processor)
4X77A08633	B964	ThinkSystem 32GB TruDDR4 3200MHz (2Rx4 1.2V) RDIMM	16 (8 per processor)
4X77A08634	B965	ThinkSystem 32GB TruDDR4 3200MHz (2Rx8 1.2V) RDIMM	16 (8 per processor)
4X77A08635	B966	ThinkSystem 64GB TruDDR4 3200MHz (2Rx4 1.2V) RDIMM	16 (8 per processor)
3DS RDIMMs			
4X77A08636	BA62	ThinkSystem 128GB TruDDR4 3200 MHz (2S2Rx4 1.2V) 3DS RDIMM	16 (8 per processor)

The following rules apply when selecting the memory configuration:

- In the SN550 V2, the following DIMM quantities are supported per processor: 1, 2, 4, 6, and 8. Other quantities per processor are not supported.
- The server supports RDIMMs and 3DS RDIMMs; UDIMMs and LRDIMMs are not supported
- Mixing RDIMMs and 3DS RDIMMs is not supported
- Mixing x4 and x8 DIMMs is supported

For best performance, consider the following:

- Populate memory DIMMs in quantities of 8 per processor, so that all memory channels are used.
- Populate memory channels so they all have the same total memory capacity.
- Ensure all memory controllers on a processor socket have the same DIMM configuration.
- All processor sockets on the same physical server should have the same DIMM configuration.

The following memory protection technologies are supported:

- ECC
- SDDC (for x4-based memory DIMMs; look for "x4" in the DIMM description)
- ADDDC (for x4-based memory DIMMs)
- Memory mirroring

Note: Memory sparing is not supported

If memory channel mirroring is used, then DIMMs must be installed in pairs or sets of three (minimum of one pair or set of three per processor), and all DIMMs in the pair or set of three must be identical in type and size. 50% of the installed capacity is available to the operating system. Memory rank sparing is not supported.

Persistent Memory

The SN550 V2 server supports Intel Optane Persistent Memory 200 Series, a new class of memory and storage technology explicitly architected for data center usage. Persistent memory is an innovative technology that delivers a unique combination of affordable large memory capacity and persistence (non-volatility). It offers significantly lower latency than fetching data from SSDs, even NVMe SSDs, and offers higher capacities than system memory.

Persistent memory technology can help boost the performance of data-intensive applications such as in-memory analytics, databases, content delivery networks, and high performance computing (HPC), as well as deliver consistent service levels at scale with higher virtual machine and container density. When data is stored closer to the processor on nonvolatile media, applications can see significant overall improvement in performance.

The following table lists the ordering information for the supported persistent memory modules.

Table 10. Persistent memory module part numbers

Part number	Feature code	Description	Maximum supported
4ZC7A08732	B98B	ThinkSystem 128GB TruDDR4 3200MHz (1.2V) Intel Optane Persistent Memory	8 (4 per processor)

The following are the requirements when installing persistent memory (PMem) modules when installed in a two-socket server with third-generation Intel Xeon Scalable processors ("Ice Lake" processors):

- App Direct Mode and Memory Mode are supported. Mixed Mode is not supported.
- All PMem modules operate at 3200 MHz when the installed processor runs the memory bus at 3200 MHz.
- All installed PMem modules must be the same size. Mixing PMem modules of different capacities is not supported.
- Maximum 4 PMem modules per processor.
- Both interleaved and non-interleaved modes are supported.
- Memory mirroring is not supported with PMem modules installed

For details, including App Direct Mode and Memory Mode configuration requirements, see the Intel Optane Persistent Memory 200 Series product guide, https://lenovopress.com/LP1380

Internal storage

In this section:

- Drive bays
- M.2 drives
- EDSFF drives
- SED encryption key management

Drive bays

The SN550 V2 server supports drives accessible from the front of the blade server (see Figure 2). The drives can be any one of the following configurations, depending on the drive backplane configured:

- 2x 2.5-inch hot-swap drive bays either 12Gb SAS or 6 Gb SATA (mixing supported), connected to a RAID 530-4i adapter
- 2x 2.5-inch hot-swap drive bays either 12Gb SAS or 6 Gb SATA (mixing supported), connected to a RAID 930-4i adapter with 2GB flash-backed cache
- 2x 2.5-inch hot-swap drive bays either both NVMe or both 6Gb SATA (no mixing supported), connected to onboard NVMe and SATA ports. Each NVMe drive is connected to CPU 1 a using PCIe 4.0 x4 connection.
- 6x EDSFF E1.S hot-swap NVMe drive bays. Each NVMe drive is connected using PCIe 4.0 x4 connection. 2 drives connect to CPU 1 and 4 drives connect to CPU 2

The 2.5-inch drive bay and EDSFF drive bay alternatives are shown in the following figure.

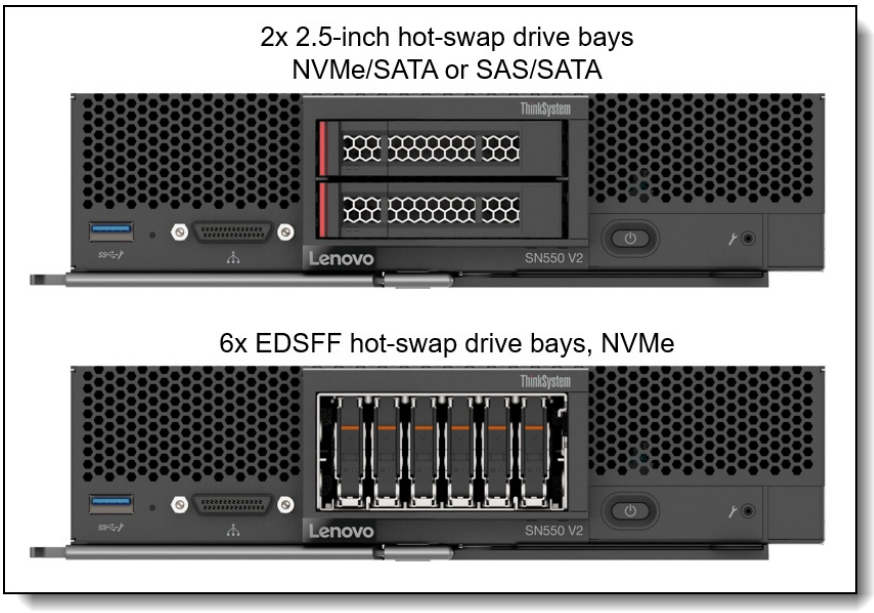


Figure 7.SN550 V2 front drive bays

See the System architecture section to see how these connections are made.

The following table lists the backplane ordering information. For details about EDSFF, see the EDSFF drives section.

Tip: The SAS/SATA backplane part numbers and feature codes include the RAID adapter.

Table 11. Backplane selections

Part number	Feature code	Description
4M27A39665	B98Y	ThinkSystem SN550 V2 RAID 530-4i 2 Drive Adapter Kit • 2-drive SAS/SATA backplane • RAID 530-4i adapter • Drive bay bezel
4M27A39664	B98X	ThinkSystem SN550 V2 RAID 930-4i-2GB 2 Drive Adapter Kit • 2-drive SAS/SATA backplane • RAID 930-4i adapter with 2GB onboard cache • Supercap Flash Power Module • Drive bay bezel
4M27A39661	B98V	ThinkSystem SN550 V2 NVMe/SATA Backplane • 2-drive NVMe/SATA backplane • Drive bay bezel
4M27A39663	B98W	ThinkSystem SN550 V2 EDSFF Backplane • 6-drive EDSFF backplane and PCIe cable • 6-drive bay cage with front cover • Drive bay bezel

M.2 drives

The SN550 V2 also supports one or two M.2 form-factor SATA or NVMe drives for use as an operating system boot solution or as additional storage. The M.2 drives install into an M.2 module which is mounted horizontally in the server on top of memory DIMMs as shown in the Internal view of the server.

There are three M.2 modules supported, as listed in the following table.

Table 12. M.2 modules

Part number	Feature code	Description	SATA drives	NVMe drives	RAID	Maximum supported
4Y37A09739	B5XH	ThinkSystem M.2 SATA 2-Bay RAID Enablement Kit	Yes	No	Yes	1
4Y37A09750	B8P9	ThinkSystem M.2 NVMe 2-Bay RAID Enablement Kit	No	Yes	Yes	1
4Y37A09738	B5XJ	ThinkSystem M.2 SATA/NVMe 2-Bay Enablement Kit	Yes	Yes	VROC	1

Supported drives are listed in the Internal drive options section.

The M.2 SATA 2-Bay RAID Enablement Kit has the following features:

- Supports one or two SATA M.2 drives
- Support 42mm, 60mm, 80mm and 110mm drive form factors (2242, 2260, 2280 and 22110)
- RAID support via an onboard Marvell 88SE9230 SATA RAID Controller
- Support JBOD, RAID-0 and RAID-1 (RAID support requires two M.2 drives)
- PCIe 2.0 x2 host interface; 6Gbps SATA connection to the drives
- Management and configuration support via UEFI and OS-based tools
- Supports monitoring and reporting of events and temperature through I2C
- Firmware update via Lenovo firmware update tools

The M.2 NVMe 2-Bay RAID Enablement Kit has the following features:

- Supports one or two NVMe M.2 drives
- Support 42mm, 60mm, 80mm and 110mm drive form factors (2242, 2260, 2280 and 22110)
- RAID support via an onboard Marvell 88NR2241 NVMe RAID Controller
- With 1 drive, supports single-drive RAID-0
- With 2 drives, supports 2-drive RAID-0, 2-drive RAID-1, or two single-drive RAID-0 arrays
- PCIe 3.0 x2 host interface; PCIe 3.0 x1 connection to each drive
- Management and configuration support via UEFI and OS-based tools
- Supports monitoring and reporting of events and temperature through I2C
- Firmware update via Lenovo firmware update tools

The M.2 SATA/NVMe 2-Bay Enablement Kit has the following features:

- Supports one or two M.2 drives, either SATA or NVMe
- When two drives installed, they must be either both SATA or both NVMe
- Support 42mm, 60mm, 80mm and 110mm drive form factors (2242, 2260, 2280 and 22110)
- JBOD native support; no built-in RAID support (RAID can be enabled via Intel VROC)
- Either 6Gbps SATA or PCIe 3.0 x1 interface to the drives depending on the drives installed
- Supports monitoring and reporting of events and temperature through I2C
- Firmware update via Lenovo firmware update tools

For field upgrades, the SN550 V2 also requires an additional M.2 cable kit. Ordering information is listed in the following table.

Table 13. M.2 Cable for field upgrades

Part number	Description
4X97A69394	ThinkSystem SR670 V2/ SR675 V3/ SN550 V2 M.2 SATA/NVMe Cable • M.2 Signal & Power Cable

For further details about M.2 components, see the ThinkSystem M.2 Drives and M.2 Adapters product guide:
https://lenovopress.com/lp0769-thinksystem-m2-drives-adapters

EDSFF drives

The SN550 V2 supports EDSFF (Enterprise & Datacenter SSD Form Factor) drives with the E1.S (short) form factor. Up to six hot-swap EDSFF drives can be installed in the server.

EDSFF drives are a new type of NVMe solid-state drive and have the following characteristics:

- NVMe SSD with PCIe 4.0 x4 host interface
- Hot-swap drive tray
- Install vertically in the server
- E1.S form factor defined by SNIA specification SFF-TA-1006
- 112 mm (4.4 inches) long x 32 mm (1.2 inches) tall

A single EDSFF with a ThinkSystem hot-swap tray is shown in the following figure.



Figure 8. EDSFF E1.S form factor drive with hot-swap tray

The SN550 V2 supports 6x EDSFF drives, installed at the front of the server as shown in the following figure. EDSFF drives are installed behind a removable cover.

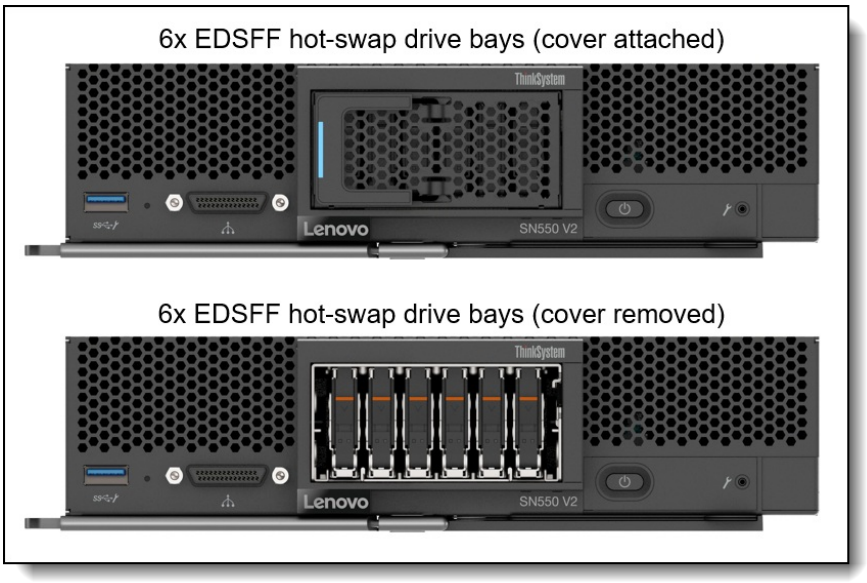


Figure 9. SN550 V2 EDSFF drive bays

SED encryption key management with ISKLM

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. A Lenovo Feature on Demand (FoD) upgrade is used to enable this SKLM support in the management processor of the server.

The following table lists the part numbers and feature codes for the upgrades.

Table 14. FoD upgrades for SKLM support

Part number	Feature code	Description
Security Key Lifecycle Manager - FoD (United States, Canada, Asia Pacific, and Japan)		
00D9998	A5U1	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 1 year S&S
00D9999	AS6C	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 3 year S&S
Security Key Lifecycle Manager - FoD (Latin America, Europe, Middle East, and Africa)		
00FP648	A5U1	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 1 year S&S
00FP649	AS6C	SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 3 year S&S

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

Table 15. IBM Security Key Lifecycle Manager licenses

Part number	Description
7S0A007FWW	IBM Security Key Lifecycle Manager Basic Edition Install License + SW Subscription & Support 12 Months
7S0A007HWW	IBM Security Key Lifecycle Manager For Raw Decimal Terabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A007KWW	IBM Security Key Lifecycle Manager For Raw Decimal Petabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A007MWW	IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months
7S0A007PWW	IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit License + SW Subscription & Support 12 Months

Controllers for internal storage

The SN550 V2 offers a variety of controller options for internal drives:

- For 2.5-inch and EDSFF drives:
  - Onboard SATA ports with software RAID support (Intel VROC SATA RAID, formerly known as Intel RSTe)
  - Onboard NVMe ports with software RAID support (Intel VROC NVMe RAID)
  - RAID 530-4i adapter
  - RAID 930-4i adapter with 2GB onboard cache
- For M.2 drives internal to the server (see M.2 drives section)
  - SATA controller integrated on the M.2 SATA 2-Bay RAID Enablement Kit
  - NVMe controller integrated on the M.2 NVMe 2-Bay RAID Enablement Kit

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

Table 16. Storage controller support for internal drives

Part number	Feature code	Description	Power module (supercap)	Maximum supported
Onboard SATA - Intel VROC SATA RAID (Intel RSTe)				
None	AVV0	On Board SATA Software RAID Mode	No	1
Onboard NVMe - Intel VROC NVMe RAID - see Intel VROC section				
None	B9X7	Intel VROC (VMD NVMe RAID) Intel SSD Only (Standard)	No	1
4L47A39164	B96G	Intel VROC (VMD NVMe RAID) Premium (license upgrade - to enable RAID support for non-Intel NVMe SSDs)	No	1
SAS/SATA RAID adapters				
4M27A39665	B98Y	ThinkSystem SN550 V2 RAID 530-4i 2 Drive Adapter Kit	No	1
4M27A39664	B98X	ThinkSystem SN550 V2 RAID 930-4i-2GB 2 Drive Adapter Kit	Yes*	1

* The RAID 930-4i adapter includes a mount for the included RAID flash power module (supercap)

The onboard SATA controller has the following features:

- Controller integrated into the Intel PCH
- 6 Gbps SATA host interface
- Supports up to 2 SATA drives in the SN550 V2
- Supports RAID-0 and RAID-1 (Intel VROC SATA RAID, previously known as RSTe)
- Supports JBOD
- Supports HDDs and SSDs; can be mixed

The onboard NVMe support has the following features:

- Controller integrated into the Intel processor
- Supports up to 6 NVMe drives in the SN550 V2 (6x EDSFF or 2x 2.5-inch)
- Each drive has PCIe 4.0 x4 host interface
- Supports JBOD - Intel and non-Intel NVMe SSDs - no license required
- Supports RAID-0, 1, 5, 10 (Intel VROC NVMe RAID) - Intel NVMe SSDs only unless VROC Premium license is installed

Intel VROC onboard RAID

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

There are two separate functions of VROC in the SN550 V2:

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

VROC SATA RAID (RSTe) is available and supported with all SATA drives, both SATA SSDs and SATA HDDs. It offers a 6 Gb/s connection to each drive and on the SN550 V2 implements RAID levels 0, 1, 5, and 10. RAID 1 is limited to 2 drives per array, and RAID 10 is limited to 4 drives per array. Hot-spare functionality is also supported.

VROC NVMe RAID offers RAID support for any NVMe drives directly connected to the ports on the server's system board or via adapters such as NVMe retimers or NVMe switch adapters. On the SN550 V2, it implements RAID levels 0, 1, 10 and optionally RAID 5. RAID 1 is limited to 2 drives per array, and RAID 10 is limited to 4 drives per array. Hot-spare functionality is also supported.

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

The SN550 V2 supports the VROC NVMe RAID offerings listed in the following table. The VROC Intel SSD Only offering only supports RAID on Intel branded NVMe SSDs; non-Intel branded NVMe SSDs cannot be configured in a RAID array. The VROC Standard offering supports RAID 0, 1, and 10, however RAID 5 is not supported.

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

Table 17. VROC subsection

Part number	Feature code	Description	Intel SSDs	Non-Intel SSDs	RAID 0	RAID 1	RAID 10	RAID 5
CTO only	B9X7	Intel VROC (VMD NVMe RAID) Intel SSD Only	Yes	No	Yes	Yes	Yes	Yes
4L47A83669	BR9B	Intel VROC (VMD NVMe RAID) Standard	Yes	Yes	Yes	Yes	Yes	No
4L47A39164	B96G	Intel VROC (VMD NVMe RAID) Premium	Yes	Yes	Yes	Yes	Yes	Yes

The part number(s) listed in the table enables field upgrades. These are fulfilled as a Feature on Demand (FoD) license and is activated via the XCC management processor user interface.

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

- **VROC SATA RAID (RSTe)**: VROC SATA RAID is not supported by virtualization hypervisors such as ESXi, KVM, Xen, and Hyper-V. Virtualization is only supported on the onboard SATA ports in AHCI (non-RAID) mode.
- **VROC (VMD) NVMe RAID**: VROC (VMD) NVMe RAID is supported by ESXi, KVM, Xen, and Hyper-V. ESXi support is limited to RAID 1 only; other RAID levels are not supported. Windows and Linux OSes support VROC RAID NVMe, both for host boot functions and for guest OS function, and RAID-0, 1, 5, and 10 are supported.

Internal drive options

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

2.5-inch hot-swap drives:

- 2.5-inch hot-swap 12 Gb SAS HDDs
- 2.5-inch hot-swap 6 Gb SATA HDDs
- 2.5-inch hot-swap 24 Gb SAS SSDs
- 2.5-inch hot-swap 12 Gb SAS SSDs
- 2.5-inch hot-swap 6 Gb SATA SSDs
- 2.5-inch hot-swap PCIe 4.0 NVMe SSDs
- 2.5-inch hot-swap PCIe 3.0 NVMe SSDs

EDSFF hot-swap drives:

- E1.S EDSFF hot-swap PCIe 4.0 NVMe SSDs

M.2 drives:

- M.2 SATA drives
- M.2 PCIe 4.0 NVMe drives
- M.2 PCIe 3.0 NVMe drives

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

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

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

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap HDDs - 12 Gb SAS 15K				
7XB7A00021	AULV	ThinkSystem 2.5" 300GB 15K SAS 12Gb Hot Swap 512n HDD	No	2
7XB7A00022	AULW	ThinkSystem 2.5" 600GB 15K SAS 12Gb Hot Swap 512n HDD	No	2
7XB7A00023	AULX	ThinkSystem 2.5" 900GB 15K SAS 12Gb Hot Swap 512e HDD	No	2
2.5-inch hot-swap HDDs - 12 Gb SAS 10K				
7XB7A00024	AULY	ThinkSystem 2.5" 300GB 10K SAS 12Gb Hot Swap 512n HDD	No	2
7XB7A00025	AULZ	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD	No	2
7XB7A00027	AUM1	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	No	2
7XB7A00028	AUM2	ThinkSystem 2.5" 1.8TB 10K SAS 12Gb Hot Swap 512e HDD	No	2
7XB7A00069	B0YS	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD	No	2
4XB7A83970	BRG7	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD v2	No	2
2.5-inch hot-swap HDDs - 12 Gb NL SAS				
7XB7A00034	AUM6	ThinkSystem 2.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD	No	2
7XB7A00035	AUM7	ThinkSystem 2.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD	No	2
2.5-inch hot-swap SED HDDs - 12 Gb SAS 10K				
7XB7A00031	AUM5	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD SED	Support	2
7XB7A00033	B0YX	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD SED	Support	2
7XB7A00070	B0YV	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD FIPS	Support	2
4XB7A84038	BRG8	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD FIPS v2	Support	2

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

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

Table 20. 2.5-inch hot-swap 24 Gb SAS SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 24 Gb SAS - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A80340	BNW8	ThinkSystem 2.5" PM1655 800GB Mixed Use SAS 24Gb HS SSD	Support	2
4XB7A80341	BNW9	ThinkSystem 2.5" PM1655 1.6TB Mixed Use SAS 24Gb HS SSD	Support	2
4XB7A80342	BNW6	ThinkSystem 2.5" PM1655 3.2TB Mixed Use SAS 24Gb HS SSD	Support	2
4XB7A80343	BP3K	ThinkSystem 2.5" PM1655 6.4TB Mixed Use SAS 24Gb HS SSD	Support	2
2.5-inch hot-swap SSDs - 24 Gb SAS - Read Intensive/Entry/Capacity (<3 DWPD)				
4XB7A80318	BNWC	ThinkSystem 2.5" PM1653 960GB Read Intensive SAS 24Gb HS SSD	Support	2
4XB7A80319	BNWE	ThinkSystem 2.5" PM1653 1.92TB Read Intensive SAS 24Gb HS SSD	Support	2
4XB7A80320	BNWF	ThinkSystem 2.5" PM1653 3.84TB Read Intensive SAS 24Gb HS SSD	Support	2
4XB7A80321	BP3E	ThinkSystem 2.5" PM1653 7.68TB Read Intensive SAS 24Gb HS SSD	Support	2
4XB7A80322	BP3J	ThinkSystem 2.5" PM1653 15.36TB Read Intensive SAS 24Gb HS SSD	Support	2
4XB7A80323	BP3D	ThinkSystem 2.5" PM1653 30.72TB Read Intensive SAS 24Gb HS SSD	Support	2

Table 21. 2.5-inch hot-swap 12 Gb SAS SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 12 Gb SAS - Write Intensive/Performance (10+ DWPD)				
4XB7A83214	BR10	ThinkSystem 2.5" Nytro 3750 400GB Write Intensive SAS 12Gb HS SSD	Support	2
4XB7A83215	BR0Z	ThinkSystem 2.5" Nytro 3750 800GB Write Intensive SAS 12Gb HS SSD	Support	2
4XB7A83216	BR0Y	ThinkSystem 2.5" Nytro 3750 1.6TB Write Intensive SAS 12Gb HS SSD	Support	2
4XB7A83217	BR0X	ThinkSystem 2.5" Nytro 3750 3.2TB Write Intensive SAS 12Gb HS SSD	Support	2
4XB7A70003	BG04	ThinkSystem 2.5" Nytro 3732 3.2TB Performance SAS 12Gb Hot Swap SSD	No	2

Table 22. 2.5-inch hot-swap 6 Gb SATA SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch hot-swap SSDs - 6 Gb SATA - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A82289	BQ21	ThinkSystem 2.5" 5400 MAX 480GB Mixed Use SATA 6Gb HS SSD	Support	2
4XB7A82290	BQ24	ThinkSystem 2.5" 5400 MAX 960GB Mixed Use SATA 6Gb HS SSD	Support	2
4XB7A82291	BQ22	ThinkSystem 2.5" 5400 MAX 1.92TB Mixed Use SATA 6Gb HS SSD	Support	2
4XB7A82292	BQ23	ThinkSystem 2.5" 5400 MAX 3.84TB Mixed Use SATA 6Gb HS SSD	Support	2
4XB7A17090	B8JE	ThinkSystem 2.5" 5300 1.92TB Mainstream SATA 6Gb Hot Swap SSD	No	2
2.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7A89423	BXDY	ThinkSystem 2.5" CM893a 1.92TB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A87524	BWKN	ThinkSystem 2.5" PM893a 480GB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A87525	BWKM	ThinkSystem 2.5" PM893a 960GB Read Intensive SATA 6Gb HS SSD	Support	2

Part number	Feature code	Description	SED support	Max Qty
4XB7A87526	BWKL	ThinkSystem 2.5" PM893a 1.92TB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A87527	BWKK	ThinkSystem 2.5" PM893a 3.84TB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A82258	BQ1Q	ThinkSystem 2.5" 5400 PRO 240GB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A82259	BQ1P	ThinkSystem 2.5" 5400 PRO 480GB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A82260	BQ1R	ThinkSystem 2.5" 5400 PRO 960GB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A82261	BQ1X	ThinkSystem 2.5" 5400 PRO 1.92TB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A82262	BQ1S	ThinkSystem 2.5" 5400 PRO 3.84TB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A82263	BQ1T	ThinkSystem 2.5" 5400 PRO 7.68TB Read Intensive SATA 6Gb HS SSD	Support	2
4XB7A72438	BM8B	ThinkSystem 2.5" PM893 480GB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A72439	BM8A	ThinkSystem 2.5" PM893 960GB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A72440	BM89	ThinkSystem 2.5" PM893 1.92TB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A72441	BM88	ThinkSystem 2.5" PM893 3.84TB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A72442	BM87	ThinkSystem 2.5" PM893 7.68TB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A17072	B99D	ThinkSystem 2.5" S4520 240GB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A17101	BA7G	ThinkSystem 2.5" S4520 480GB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A17102	BA7H	ThinkSystem 2.5" S4520 960GB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A17103	BA7J	ThinkSystem 2.5" S4520 1.92TB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A17104	BK77	ThinkSystem 2.5" S4520 3.84TB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A17105	BK78	ThinkSystem 2.5" S4520 7.68TB Read Intensive SATA 6Gb HS SSD	No	2
4XB7A38273	BCTE	ThinkSystem 2.5" Multi Vendor 960GB Entry SATA 6Gb Hot Swap SSD	No	2
4XB7A38274	BCTF	ThinkSystem 2.5" Multi Vendor 1.92TB Entry SATA 6Gb Hot Swap SSD	No	2
4XB7A38275	BCTG	ThinkSystem 2.5" Multi Vendor 3.84TB Entry SATA 6Gb Hot Swap SSD	No	2
4XB7A17079	B8JP	ThinkSystem 2.5" 5300 3.84TB Entry SATA 6Gb Hot Swap SSD	No	2
4XB7A17080	B8J2	ThinkSystem 2.5" 5300 7.68TB Entry SATA 6Gb Hot Swap SSD	No	2

Table 23. 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 - Write Intensive/Performance (10+ DWPD)				
4XB7A17158	BKKY	ThinkSystem 2.5" U.2 P5800X 400GB Write Intensive NVMe PCIe 4.0 x4 HS SSD	No	2
4XB7A17159	BKKZ	ThinkSystem 2.5" U.2 P5800X 800GB Write Intensive NVMe PCIe 4.0 x4 HS SSD	No	2
4XB7A17160	BMM8	ThinkSystem 2.5" U.2 P5800X 1.6TB Write Intensive NVMe PCIe 4.0 x4 HS SSD	No	2
2.5-inch SSDs - U.2 PCIe 4.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				

Part number	Feature code	Description	SED support	Max Qty
4XB7A17129	BNEG	ThinkSystem 2.5" U.2 P5620 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A17130	BNEH	ThinkSystem 2.5" U.2 P5620 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A17133	BNEZ	ThinkSystem 2.5" U.2 P5620 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A17136	BA4V	ThinkSystem 2.5" U.2 P5620 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A79639	BNF1	ThinkSystem 2.5" U.3 7450 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A13967	BNEJ	ThinkSystem 2.5" U.3 7450 MAX 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A13970	BNEY	ThinkSystem 2.5" U.3 7450 MAX 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A13971	BNEL	ThinkSystem 2.5" U.3 7450 MAX 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A84056	BRG0	ThinkSystem 2.5" U.3 7450 MAX 12.8TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A17112	B96Z	ThinkSystem U.3 Kioxia CM6-V 1.6TB Mainstream NVMe PCIe4.0 x4 Hot Swap SSD	No	2
2.5-inch SSDs - U.2 PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A90099	BXMB	ThinkSystem 2.5" U.2 PM9A3 960GB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A90100	BXMA	ThinkSystem 2.5" U.2 PM9A3 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A90101	BXM9	ThinkSystem 2.5" U.2 PM9A3 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A13941	BMGD	ThinkSystem 2.5" U.2 P5520 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A13942	BMGE	ThinkSystem 2.5" U.2 P5520 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A13943	BNEF	ThinkSystem 2.5" U.2 P5520 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A13631	BNEQ	ThinkSystem 2.5" U.2 P5520 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A17145	BCFT	ThinkSystem 2.5" U.2 P5500 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	2
4XB7A17147	BCFU	ThinkSystem 2.5" U.2 P5500 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	2
2.5-inch SSDs - U.3 PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A81951	BPKX	ThinkSystem 2.5" U.3 PM1733a 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A81952	BPKY	ThinkSystem 2.5" U.3 PM1733a 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2

Part number	Feature code	Description	SED support	Max Qty
4XB7A81953	BPKZ	ThinkSystem 2.5" U.3 PM1733a 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A81954	BPL0	ThinkSystem 2.5" U.3 PM1733a 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A81999	BPL1	ThinkSystem 2.5" U.3 PM1733a 30.72TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A79646	BNF3	ThinkSystem 2.5" U.3 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A79647	BNF2	ThinkSystem 2.5" U.3 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A79648	BNF5	ThinkSystem 2.5" U.3 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A79649	BNF4	ThinkSystem 2.5" U.3 7450 PRO 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2
4XB7A83097	BQAV	ThinkSystem 2.5" U.3 7450 PRO 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	2

Table 24. 2.5-inch hot-swap PCIe 3.0 NVMe SSDs

Part number	Feature code	Description	SED support	Max Qty
2.5-inch SSDs - U.2 PCIe 3.0 NVMe - Write Intensive/Performance (10+ DWPD)				
4XB7A38159	B972	ThinkSystem 2.5" U.2 P4800X 375GB Write Intensive NVMe PCIe 3.0 x4 HS SSD 60DWPD	No	2
2.5-inch SSDs - U.2 PCIe 3.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A10176	B34P	ThinkSystem U.2 PM983 3.84TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	No	2

Table 25. E1.S EDSFF hot-swap PCIe 4.0 NVMe SSDs

Part number	Feature code	Description	SED support	Max Qty
E1.S hot-swap SSDs - PCIe 4.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A13998	BP3L	ThinkSystem E1.S 5.9mm 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6
4XB7A80499	BPKW	ThinkSystem E1.S 5.9mm 7450 PRO 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Support	6

Table 27. M.2 SATA drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD)				
4XB7A90105	BXMK	ThinkSystem M.2 ER2 240GB Read Intensive SATA 6Gb NHS SSD (China only)	Support	2
4XB7A90106	BXMJ	ThinkSystem M.2 ER2 480GB Read Intensive SATA 6Gb NHS SSD (China only)	Support	2
4XB7A82286	BQ1Z	ThinkSystem M.2 5400 PRO 240GB Read Intensive SATA 6Gb NHS SSD	Support	2
4XB7A82287	BQ1Y	ThinkSystem M.2 5400 PRO 480GB Read Intensive SATA 6Gb NHS SSD	Support	2
4XB7A82288	BQ20	ThinkSystem M.2 5400 PRO 960GB Read Intensive SATA 6Gb NHS SSD	Support	2
7N47A00129	AUUL	ThinkSystem M.2 32GB SATA 6Gbps Non-Hot Swap SSD	No	2
7N47A00130	AUUV	ThinkSystem M.2 128GB SATA 6Gbps Non-Hot Swap SSD	No	2
4XB7A17073	B919	ThinkSystem M.2 5300 480GB SATA 6Gbps Non-Hot Swap SSD	No	2
4XB7A17074	B8JJ	ThinkSystem M.2 5300 960GB SATA 6Gbps Non-Hot Swap SSD	No	2

Table 28. M.2 PCIe 4.0 NVMe drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - PCIe 4.0 NVMe - Mixed Use/Mainstream (3-5 DWPD)				
4XB7A84603	BS2Q	ThinkSystem M.2 7450 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 NHS SSD	Support	2
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	2
4XB7A90103	BXMG	ThinkSystem M.2 PM9A3 1.92TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2
4XB7A90104	BXMF	ThinkSystem M.2 PM9A3 3.84TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2
4XB7A82636	BS2P	ThinkSystem M.2 7450 PRO 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2
4XB7A13999	BKSR	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2
4XB7A14000	BKSS	ThinkSystem M.2 7450 PRO 1.92TB Read Intensive Entry NVMe PCIe 4.0 x4 NHS SSD	Support	2
4XB7A84604	BS2R	ThinkSystem M.2 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	Support	2

Table 29. M.2 PCIe 3.0 NVMe drives

Part number	Feature code	Description	SED support	Max Qty
M.2 SSDs - PCIe 3.0 NVMe - Read Intensive/Entry (<3 DWPD)				
4XB7A38177	B8JR	ThinkSystem M.2 PM983 960GB NVMe PCIe 3.0 x4 Non-Hot Swap SSD	No	2

Internal tape drives

The server does not support an internal tape drive. However, it can be attached to external tape drives by using Fibre Channel connectivity.

Optical drives

The server does not support an internal optical drive, however, you can connect an external USB optical drive. Alternatively, use the remote media feature of the XClarity Controller and the Chassis Management Module.

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

Table 30. 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 SN550 V2 has two I/O expansion connectors for attaching I/O adapter cards. The I/O expansion connectors use a high-density, 216-pin PCIe connection. Installing I/O adapter cards allows the server to connect with switch modules in the chassis. Each slot has a PCI Express 4.0 x16 host interface and both slots support the same form-factor adapters.

No Fabric Connector: The SN550 V2 does not support the use of a Fabric Connector as there is no integrated Ethernet controller.

The following figure shows the location of the I/O expansion connectors.

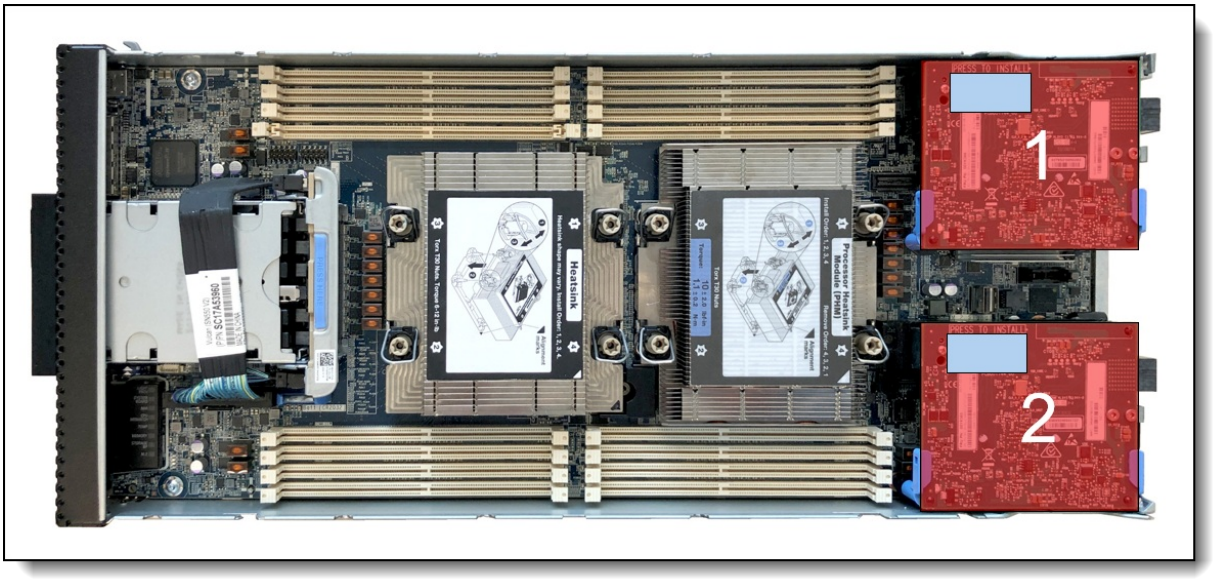


Figure 10. Location of the I/O adapter slots in the SN550 V2

A compatible switch or pass-through module must be installed in the corresponding I/O bays in the chassis, as indicated in the following table. Installing two switches means that all ports of the adapter are enabled, which improves performance and network availability.

Table 31. Adapter to I/O bay correspondence

I/O adapter slot in the server	Port on the adapter	Corresponding I/O module bay in the chassis
Slot 1	Port 1	Module bay 1
	Port 2	Module bay 2
	Port 3 (for 4-port cards)	Module bay 1
	Port 4 (for 4-port cards)	Module bay 2
Slot 2	Port 1	Module bay 3
	Port 2	Module bay 4
	Port 3 (for 4-port cards)	Module bay 3
	Port 4 (for 4-port cards)	Module bay 4

The following figure shows the location of the I/O module bays in the Flex System Enterprise Chassis.

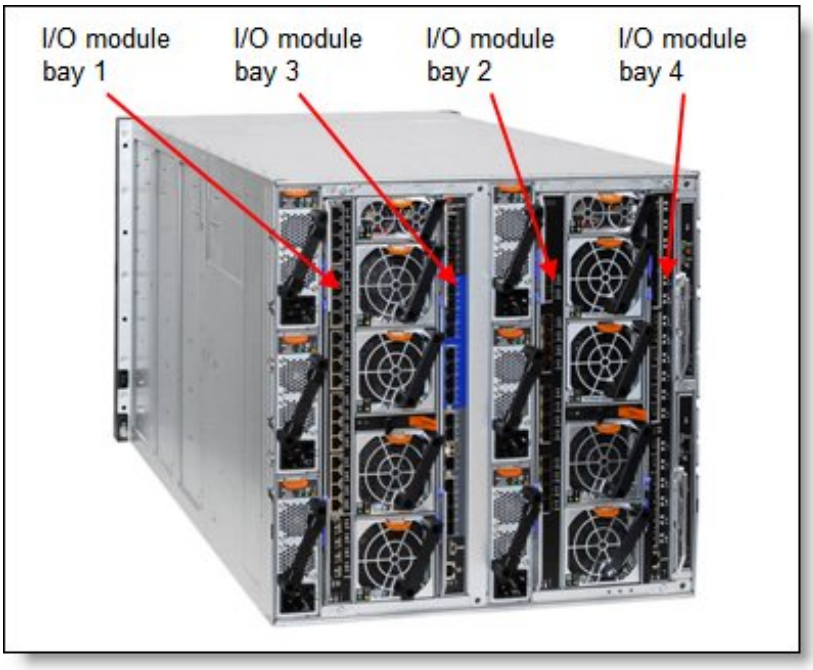


Figure 11. Location of the I/O module bays in the Flex System Enterprise Chassis

The following figure shows how adapters are connected to I/O modules that are installed in the chassis.

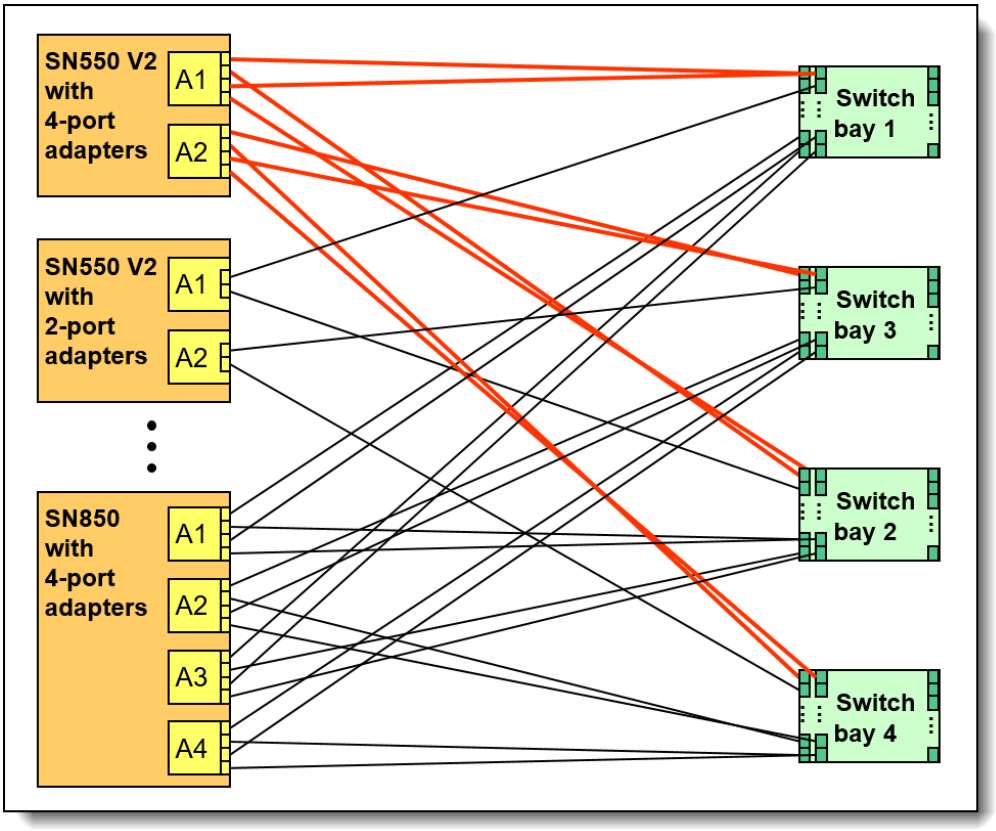


Figure 12. Logical layout of the interconnects between I/O adapters and I/O modules

Network adapters

The SN550 V2 supports network adapters that are installed in I/O slots. The following table lists the supported network adapters. Adapters can be installed in either slot, however, compatible I/O modules must be installed in the corresponding bays of the chassis.

Operating system support: The following adapters do not support the latest operating systems (ESXi 8.x, RHEL 9.x, SLES 16.x):

- ThinkSystem QLogic QL45214 Flex 25Gb 4-Port Ethernet Adapter, 7XC7A05844
- ThinkSystem QLogic QL45212 Flex 50Gb 2-Port Ethernet Adapter, 7XC7A05843
- ThinkSystem QLogic QL45262 Flex 50Gb 2-Port Ethernet Adapter with iSCSI/FCoE, 7XC7A05845

See the product guides for the adapters or ServerProven for the list of supported OSes for these adapters.

Table 32. Network adapters

Part number	Feature code	Description	Maximum supported	Number of ports
10 Gb Ethernet				
00AG540	ATBT	Flex System CN4052S 2-port 10Gb Virtual Fabric Adapter	2	2
00AG590	ATBS	Flex System CN4054S 4-port 10Gb Virtual Fabric Adapter	2	4
25 Gb Ethernet				
4XC7A08315	BHBX	ThinkSystem Mellanox ConnectX-4 Lx 25Gb 2-port Mezz Adapter	2	2
50 Gb Ethernet				
7XC7A05843	B2VT	ThinkSystem QLogic QL45212 Flex 50Gb 2-Port Ethernet Adapter	2	2
7XC7A05845	B2VV	ThinkSystem QLogic QL45262 Flex 50Gb 2-Port Ethernet Adapter with iSCSI/FCoE	2	2

For more details about these adapters, see the Lenovo Press product guides in the Network adapters category: https://lenovopress.com/servers/blades/nic

For more information about adapter-to-switch compatibility, see the Flex System Interoperability Guide: http://lenovopress.com/fsig

Storage host bus adapters

The following table lists Fibre Channel HBAs that are supported by the SN550 V2. HBAs are supported in either slot, however for CTO orders, the HBA is installed in slot 2.

Operating system support: The following adapters do not support the latest operating systems (ESXi 8.x, RHEL 9.x, SLES 16.x):

- ThinkSystem Emulex LPm16002B-L Mezz 16Gb 2-Port Fibre Channel Adapter, 7ZT7A00521
- ThinkSystem Emulex LPm16004B-L Mezz 16Gb 4-Port Fibre Channel Adapter, 7ZT7A00522

See the product guides for the adapters or ServerProven for the list of supported OSes for these adapters.

Table 33. Fibre Channel adapters

Part number	Feature code	Description	Maximum supported	Number of ports
Fibre Channel				
7ZT7A00521	AVCW	ThinkSystem Emulex LPm16002B-L Mezz 16Gb 2-Port Fibre Channel Adapter	1	2
7ZT7A00520	AVCV	ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter	1	2

For details about these adapters, see the Lenovo Press product guides in the Storage adapters category: https://lenovopress.com/servers/blades/hba

For more information about adapter-to-switch compatibility, see the Flex System Interoperability Guide: http://lenovopress.com/fsig

Power supplies

Power to the blade server is derived from the power supplies that are installed in the chassis. There are no server options regarding power supplies.

Existing Flex System customers: If you configure the SN550 V2 to have processors with a TDP of 135W or larger, then check which power supplies are installed in your existing Flex System Enterprise Chassis. If the chassis has Delta power supplies, then the processors will be capped at 125W due to an issue with the Delta power supplies. To prevent this from happening, purchase Artesyn power supplies and install them in the chassis. All new Enterprise Chassis orders will already have the correct power supplies configured so no further action is needed.

For a discussion about quantities of servers supported based on the number of power supplies installed, see the Chassis support section.

System management

The server contains an integrated service processor, XClarity Controller (XCC), which provides advanced service-processor control, monitoring, and alerting functions. The XCC is based on the Pilot4 XE401 baseboard management controller (BMC) using a dual-core ARM Cortex A9 service processor.

Local management

As shown in Figure 2, the SN550 V2 front panel includes a USB port, status indicators, a button to enable management via the USB port and a console breakout cable port. The breakout cable is supplied with the chassis and provides serial, video and two USB 2.0 ports for connecting a local console. The USB ports on the breakout cable support keyboard and mouse; storage devices are not supported.

The following figure shows the breakout cable.

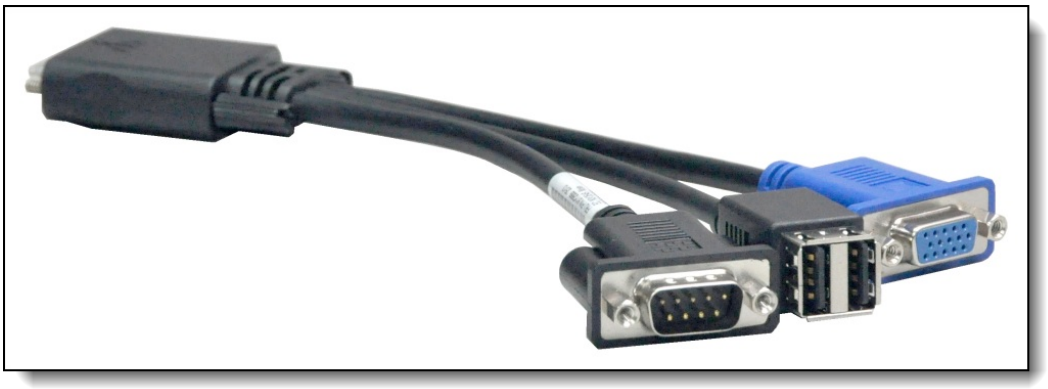


Figure 13. Console Breakout Cable

The breakout cable is supplied with the chassis. Ordering information is as follows:

Table 34. KVM Console Breakout Cable

Part number	Feature code	Description
4X97A83021	BMQ3	System Console Breakout Cable v2
81Y5286	8721 A1NF	System Console Breakout Cable

System status with XClarity Mobile

The Lenovo XClarity Mobile (LXCM) app now 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 pressing and holding for 3 seconds the dedicated USB management button on the front of the server.
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)

Light Path Diagnostics

The SN550 V2 includes light path diagnostics. If an environmental condition exceeds a threshold or if a system component fails, XCC lights LEDs inside the server to help you diagnose the problem and find the failing part.

For quick problem determination when you are physically at the server, the server offers the following three-step guided path:

- Illuminate the fault LED on the front panel.

- Identify the fault in the light path diagnostics panel, as shown in the following figure.
- If a DIMM is faulty, the LED next to it is illuminated.

The SN550 V2 light path diagnostics panel is inside the server near the front panel, as shown in the following figure.

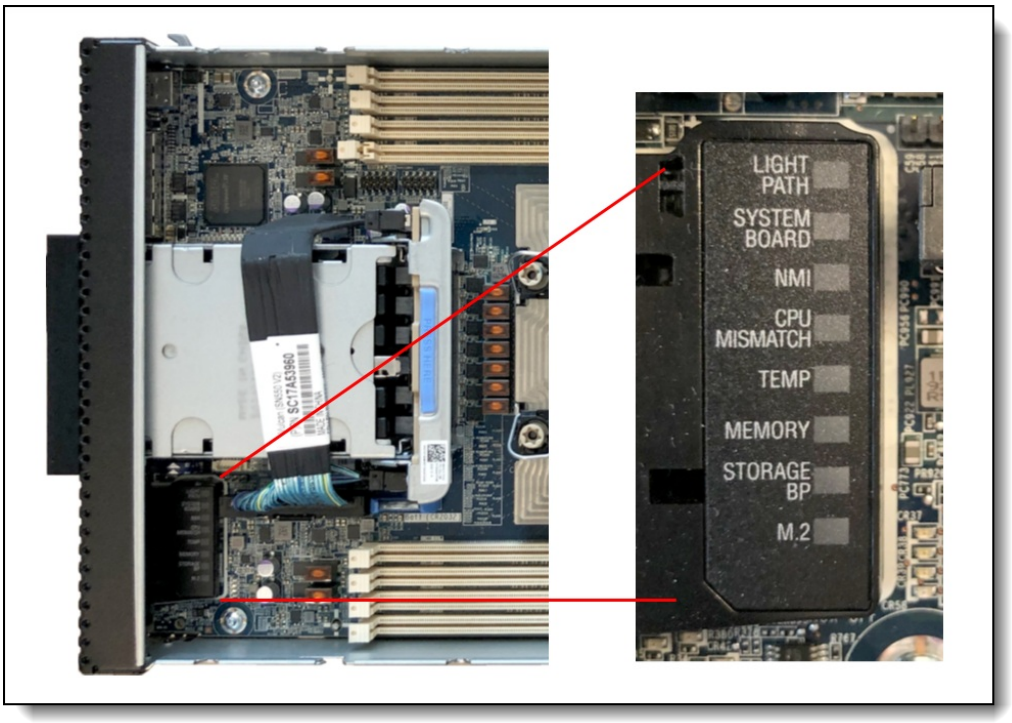


Figure 14. Location of SN550 V2 light path diagnostics panel

To illuminate the light path diagnostics LEDs, power off the server, slide it out of the chassis, and press and hold the power button. The power button doubles as the light path diagnostics reminder button when the server is removed from the chassis.

The meanings of the LEDs in the light path diagnostics panel are listed in the following table.

Table 35. Light path diagnostic panel LEDs

LED	Meaning
LIGHT PATH	The light path diagnostics panel is operational.
SYSTEM BOARD	A system board error is detected.
NMI	A non-maskable interrupt (NMI) occurred.
CPU MISMATCH	The processors are mismatched.
TEMP	An over-temperature condition occurred that was critical enough to shut down the server.
MEMORY	A memory fault occurred. The corresponding DIMM error LEDs on the system board are also lit.
STORAGE BP 1	A hard disk drive backplane error has occurred.
M.2	A M.2 error has occurred.

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

Remote management

Remote server management is provided through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3 (no SET commands; no SNMP v1)
- Common Information Model (CIM-XML)
- Representational State Transfer (REST) support
- Redfish support (DMTF compliant)
- Web browser - HTML 5-based browser interface (Java and ActiveX not required) using a responsive design (content optimized for device being used - laptop, tablet, phone) with NLS support

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

Table 36. IPMI-over-LAN settings

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

The SN550 V2 has XCC Enterprise as a standard feature. XCC Enterprise includes a virtual presence (remote control and remote media) capability for remote server management.

The remote control functions include the following:

- 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
- 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

Lenovo XClarity Energy Manager

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

LXEM is a licensed product. A single-node LXEM license is included with the XClarity Controller Enterprise version. Because the Enterprise version of XCC is standard in the SN550 V2, a license for XClarity Energy Manager is included.

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

- Lenovo Support page:
  https://datacentersupport.lenovo.com/us/en/solutions/lnvo-lxem
- Lenovo Information Center:
  https://sysmgt.lenovofiles.com/help/topic/LXEM/lxem_overview.html?cp=4

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, in addition to ThinkServer, System x, and Flex System 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 SN550 V2. The software can be downloaded and used at no charge to discover and monitor the SN550 V2 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 37. 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 140-2 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 Provisioning Manager

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

LXPM provides the following functions:

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

Lenovo XClarity Essentials

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

- Lenovo Essentials OneCLI

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

- Lenovo Essentials UpdateXpress

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

- Lenovo Essentials Bootable Media Creator

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

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

Security

The server offers the following security features:

- Administrator and power-on password
- Trusted Platform Module supporting TPM 2.0 (TPM 1.2 not supported)
- Optional plugin Trusted Cryptographic Module (TCM) or Nationz TPM, available only in China
- Self-encrypting drives (SEDs) with support for enterprise key managers - see the SED encryption key management section

The server is NIST SP 800-147B compliant.

The TPM plugin module, available only for China customers, is installed in a dedicated socket on the system board, as shown in Figure 3. Ordering information is shown in the following table.

Table 38. Security features

Part number	Feature code	Description
CTO only*	B8LE	ThinkSystem NationZ TPM 2.0 for PRC (China customers only)

* Available configure-to-order or pre-configured models only; Not available as a field upgrade.

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 SN550 V2 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 SN550 V2 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 39. Secure Boot options

Part number	Feature code	Description	Purpose
CTO only	AUK7	TPM 2.0 and Secure Boot	Configure the system in the factory with Secure Boot enabled.
CTO only	B0MK	Enable 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.

Intel Transparent Supply Chain

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

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

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

Table 40. Intel Transparent Supply Chain ordering information

Feature code	Description
BB0P	Intel Transparent Supply Chain

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

Security standards

The SN550 V2 supports the following security standards and capabilities:

- **Industry Standard Security Capabilities**
  - Intel CPU Enablement
    - AES-NI (Advanced Encryption Standard New Instructions)
    - CBnT (Converged Boot Guard and Trusted Execution Technology)
    - CET (Control flow Enforcement Technology)
    - Hardware-based side channel attack resilience enhancements
    - MKTME/TME (Multi-Key Total Memory Encryption)
    - SGX (Software Guard eXtensions)
    - SGX-TEM (Trusted Environment Mode)
    - TDX (Trust Domain Extensions)
    - TXT (Trusted eXecution Technology)
    - VT (Virtualization Technology)
    - XD (eXecute Disable)
  - Microsoft Windows Security Enablement
    - Credential Guard
    - Device Guard
    - Host Guardian Service
  - TCG (Trusted Computing Group) TPM (Trusted Platform Module) 2.0
  - UEFI (Unified Extensible Firmware Interface) Forum Secure Boot
- **Hardware Root of Trust and Security**
  - Independent security subsystem providing platform-wide NIST SP800-193 compliant Platform Firmware Resilience (PFR)
  - Management domain RoT supplemented by the Secure Boot features of XCC
- **Platform Security**

  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.

  - 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
- **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)
    - Manufacturing transparency via Intel Transparent Supply Chain (for details, see https://lenovopress.com/lp1434-introduction-to-intel-transparent-supply-chain-on-lenovo-thinksystem-servers)
    - 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

Operating system support

The server supports the following operating systems:

- Microsoft Windows Server 2016
- Microsoft Windows Server 2019
- Microsoft Windows Server 2022
- Red Hat Enterprise Linux 7.9
- Red Hat Enterprise Linux 8.2
- Red Hat Enterprise Linux 8.3
- Red Hat Enterprise Linux 8.4
- Red Hat Enterprise Linux 8.5
- Red Hat Enterprise Linux 8.6
- Red Hat Enterprise Linux 8.7
- Red Hat Enterprise Linux 8.8
- Red Hat Enterprise Linux 9.0
- Red Hat Enterprise Linux 9.1
- Red Hat Enterprise Linux 9.2
- SUSE Linux Enterprise Server 12 SP5
- SUSE Linux Enterprise Server 12 Xen SP5
- SUSE Linux Enterprise Server 15 SP2
- SUSE Linux Enterprise Server 15 SP3
- SUSE Linux Enterprise Server 15 SP4
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 Xen SP2
- SUSE Linux Enterprise Server 15 Xen SP3
- SUSE Linux Enterprise Server 15 Xen SP4
- SUSE Linux Enterprise Server 15 Xen SP5
- Ubuntu 18.04 LTS 64-bit
- Ubuntu 22.04 LTS 64-bit
- VMware ESXi 6.7 U3
- VMware ESXi 7.0 U2
- VMware ESXi 7.0 U3
- VMware ESXi 8.0
- VMware ESXi 8.0 U1
- VMware ESXi 8.0 U2

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

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

Table 41. VMware ESXi preload

Part number	Feature code	Description
CTO only	B88T	VMware ESXi 6.7 U3 (factory installed)
CTO only	BHSR	VMware ESXi 7.0 U2 (Factory Installed)
CTO only	BMT5	VMware ESXi 8.0 (Factory Installed)
CTO only	BQ8S	VMware ESXi 8.0 U1 (Factory Installed)

You can download supported VMware vSphere hypervisor images from the following web page and load it on the M.2 drives using the instructions provided:
https://vmware.lenovo.com/content/custom_iso/

Physical specifications

The server features the following dimensions and weight (approximate):

- Width: 218 mm (8.5 in)
- Height: 56 mm (2.2 in)
- Depth: 507 mm (20.0 in)
- Maximum weight: 6.6 kg (14 lb).

The shipping dimensions (cardboard packaging) of the SN550 V2 are as follows:

- Width: 430 mm (16.9 inches)
- Height: 201 mm (7.9 inches)
- Depth: 610 mm (24.0 inches)

Supported environment

The SN550 V2 complies with ASHRAE Class A3 specifications. System performance may be impacted when operating temperature is above 35 °C or fan failed condition.

Temperature and humidity:

- Air temperature:
  - Operating:
    - ASHRAE Class A2: 10 °C - 35 °C (50 °F - 95 °F); decrease the maximum ambient temperature by 1 °C for every 300 m (984 ft) increase in altitude above 900 m (2,953 ft)
    - ASHRAE Class A3: 5 °C - 40 °C (41 °F - 104 °F); decrease the maximum ambient temperature by 1 °C for every 175 m (574 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% - 80%, maximum dew point: 21°C (70°F)
    - ASHRAE Class A3: 8% - 85%, maximum dew point: 24°C (75°F)
  - Shipment/Storage: 8% - 90%

The SN550 V2 has the following ambient temperature restrictions:

- The use of EDSFF drives requires the ambient temperature be no more than 25 °C
- The use of processors with TDP of 200W or higher requires the ambient temperature be no more than 30 °C
- The use of the Intel Xeon Gold 6342 24C 230W 2.8GHz processor requires the ambient temperature be no more than 25 °C

Shock and vibration:

The server, installed in the Enterprise Chassis, has the following vibration and shock limits:

- Vibration:
  - Operating: 0.21 G rms at 5 Hz to 500 Hz for 15 minutes across 3 axes
  - Non-operating: 1.04 G rms at 2 Hz to 200 Hz for 15 minutes across 6 surfaces
- Shock:
  - Operating: 15 G for 3 milliseconds in each direction (±X,±Y,±Z axes, total 6 shocks)
  - Non-operating, based on weight of the system (server with/without chassis):
    - Less than 4 kg: 50 G for 180 inches/sec velocity change across 6 surfaces (total 6 shocks)
    - 4 kg to 12 kg: 50 G for 167 inches/sec velocity change across 6 surfaces (total 6

shocks)
  - 12 kg to 23 kg: 50 G for 152 inches/sec velocity change across 6 surfaces (total 6 shocks)
  - 23 kg to 32 kg: 35 G for 152 inches/sec velocity change across 6 surfaces (total 6 shocks)
  - 32 kg to 69 kg: 35 G for 136 inches/sec velocity change across 6 surfaces (total 6 shocks)
  - 69 kg and above: 25 G for 118 inches/sec velocity change across 6 surfaces (total 6 shocks)

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 reactivity rate of copper coupons shall be less than 200 Angstroms per month (Å/month)
  - The reactivity rate of silver coupons 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
  - Data centers must be free of zinc whiskers

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

Warranty and Support

The ThinkSystem SN550 V2 (machine type 7Z69) has a 3-year warranty.

The standard warranty terms are customer-replaceable unit (CRU) and onsite (for field-replaceable units FRUs only) with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Lenovo’s additional support services provide a sophisticated, unified support structure for your data center, with an experience consistently ranked number one in customer satisfaction worldwide. Available offerings include:

- **Premier Support**

  Premier Support provides a Lenovo-owned customer experience and delivers direct access to technicians skilled in hardware, software, and advanced troubleshooting, in addition to the following:

  - Direct technician-to-technician access through a dedicated phone line
  - 24x7x365 remote support
  - Single point of contact service
  - End to end case management
  - Third-party collaborative software support
  - Online case tools and live chat support
  - On-demand remote system analysis

- **Warranty Upgrade (Preconfigured Support)**

  Services are available to meet the on-site response time targets that match the criticality of your systems.

  - 3, 4, or 5 years of service coverage
  - 1-year or 2-year post-warranty extensions
  - **Foundation Service**: 9x5 service coverage with next business day onsite response. YourDrive YourData is an optional extra (see below).
  - **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select markets). Bundled with YourDrive YourData.
  - **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select markets). Bundled with YourDrive YourData.

- **Managed Services**

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

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

- **Technical Account Management (TAM)**

  A Lenovo Technical Account Manager helps you optimize the operation of your data center based on a deep understanding of your business. You gain direct access to your Lenovo TAM, who serves as your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. In addition, your TAM will help proactively make service recommendations and manage your service relationship with Lenovo to make certain your needs are met.

- **Enterprise Server Software Support**

  Enterprise Software Support is an additional support service providing customers with software support on Microsoft, Red Hat, SUSE, and VMware applications and systems. Around the clock availability for critical problems plus unlimited calls and incidents helps customers address challenges fast, without incremental costs. Support staff can answer troubleshooting and diagnostic questions, address product comparability and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

- **YourDrive YourData**

  Lenovo's YourDrive YourData is a multi-drive retention offering that ensures your data is always under your control, regardless of the number of drives that are installed in your Lenovo server. In the unlikely event of a drive failure, you retain possession of your drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The YourDrive YourData service can be purchased in convenient bundles and is optional with Foundation Service. It is bundled with Essential Service and Advanced Service.

- **Health Check**

  Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that your systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovo-supported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spare parts.

Lenovo Service offerings are region-specific. Not all preconfigured support and upgrade options are available in every region. For information about Lenovo service upgrade offerings that are available in your region, refer to the following resources:

- Service part numbers in Lenovo Data Center Solution Configurator (DCSC):
  http://dcsc.lenovo.com/#/services
- Lenovo Services Availability Locator
  http://lenovolocator.com/

For service definitions, region-specific details, and service limitations, please refer to the following documents:

- Lenovo Statement of Limited Warranty for Infrastructure Solutions Group (ISG) Servers and System Storage
  http://pcsupport.lenovo.com/us/en/solutions/ht503310
- Lenovo Data Center Services Agreement
  http://support.lenovo.com/us/en/solutions/ht116628

Services

Lenovo Services is a dedicated partner to your success. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

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

Here's a more in-depth look at what we can do for you:

- **Asset Recovery Services**

  Asset Recovery Services (ARS) helps customers recover the maximum value from their end-of-life equipment in a cost-effective and secure way. On top of simplifying the transition from old to new equipment, ARS mitigates environmental and data security risks associated with data center equipment disposal. Lenovo ARS is a cash-back solution for equipment based on its remaining market value, yielding maximum value from aging assets and lowering total cost of ownership for your customers. For more information, see the ARS page, https://lenovopress.com/lp1266-reduce-e-waste-and-grow-your-bottom-line-with-lenovo-ars.

- **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.

- **Basic Hardware Installation**

  Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing your team to focus on other priorities.

- **Deployment Services**

  When investing in new IT infrastructures, you need to ensure your business will see quick time to value with little to no disruption. Lenovo deployments are designed by development and engineering teams who know our Products & Solutions better than anyone else, and our technicians own the process from delivery to completion. Lenovo will conduct remote preparation and planning, configure & integrate systems, validate systems, verify and update appliance firmware, train on administrative tasks, and provide post-deployment documentation. Customer’s IT teams leverage our skills to enable IT staff to transform with higher level roles and tasks.

- **Integration, Migration, and Expansion Services**

  Move existing physical & virtual workloads easily, or determine technical requirements to support increased workloads while maximizing performance. Includes tuning, validation, and documenting ongoing run processes. Leverage migration assessment planning documents to perform necessary migrations.

Regulatory compliance

The SN550 V2 conforms to the following standards:

- ANSI/UL 62368-1
- IEC 62368-1 (CB Certificate and CB Test Report)
- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 7, Class A
- CSA C22.2 No. 62368-1
- CISPR 32, Class A, CISPR 35
- Japan VCCI, Class A
- Taiwan BSMI CNS13438, Class A; Section 5 of CNS15663
- CE, UKCA Mark (EN55032 Class A, EN62368-1, EN55024, EN55035, EN61000-3-2, EN61000-3-3, (EU) 2019/424, and EN50581-1 (RoHS))
- Korea KN32, Class A, KN35
- Russia, Belorussia and Kazakhstan, TP EAC 037/2016 (for RoHS)
- Russia, Belorussia and Kazakhstan, EAC: TP TC 004/2011 (for Safety); TP TC 020/2011 (for EMC)
- Australia/New Zealand AS/NZS CISPR 32, Class A; AS/NZS 62368.1
- UL Green Guard, UL2819
- Energy Star 3.0
- EPEAT (NSF/ ANSI 426) Bronze
- China CELP certificate, HJ 2507-2011
- Japanese Energy-Saving Act
- India BIS 13252 (Part 1)

Lenovo Financial Services

Lenovo Financial Services reinforces Lenovo's commitment to deliver pioneering products and services that are recognized for their quality, excellence, and trustworthiness. Lenovo Financial Services offers financing solutions and services that complement your technology solution anywhere in the world.

We are dedicated to delivering a positive finance experience for customers like you who want to maximize your purchase power by obtaining the technology you need today, protect against technology obsolescence, and preserve your capital for other uses.

We work with businesses, non-profit organizations, governments and educational institutions to finance their entire technology solution. We focus on making it easy to do business with us. Our highly experienced team of finance professionals operates in a work culture that emphasizes the importance of providing outstanding customer service. Our systems, processes and flexible policies support our goal of providing customers with a positive experience.

We finance your entire solution. Unlike others, we allow you to bundle everything you need from hardware and software to service contracts, installation costs, training fees, and sales tax. If you decide weeks or months later to add to your solution, we can consolidate everything into a single invoice.

Our Premier Client services provide large accounts with special handling services to ensure these complex transactions are serviced properly. As a premier client, you have a dedicated finance specialist who manages your account through its life, from first invoice through asset return or purchase. This specialist develops an in-depth understanding of your invoice and payment requirements. For you, this dedication provides a high-quality, easy, and positive financing experience.

For your region-specific offers, please ask your Lenovo sales representative or your technology provider about the use of Lenovo Financial Services. For more information, see the following Lenovo website:

https://www.lenovo.com/us/en/landingpage/lenovo-financial-services/

Related publications and links

For more information, see the following resources:

- ThinkSystem SN550 V2 server product page
  https://www.lenovo.com/us/en/data-center/servers/flex-blade-servers/compute-nodes/ThinkSystem-SN550/p/77XX7FSFS55
- Interactive 3D Tour of the ThinkSystem SN550 V2:
  https://lenovopress.com/lp1429
- ThinkSystem SN550 V2 drivers and support
  http://datacentersupport.lenovo.com/products/servers/thinksystem/sn550v2/7z69/downloads
- Lenovo ThinkSystem SN550 V2 product publications:
  https://thinksystem.lenovofiles.com/help/topic/7X16/introduction.html?cp=1_0
  - Quick Start
  - Rack Installation Guide
  - Setup Guide
  - Hardware Maintenance Manual
  - Messages and Codes Reference
  - Memory Population Reference
- Flex System Information Center
  http://flexsystem.lenovofiles.com/help/index.jsp
- Operating System Interoperability Guide
  https://lenovopress.com/osig
- Flex System Interoperability Guide
  https://lenovopress.com/fsig
- ServerProven hardware compatibility:
  http://www.lenovo.com/us/en/serverproven
- Lenovo Support Portal
  https://datacentersupport.lenovo.com/us/en/
- Lenovo Data Center Solution Configurator
  https://dcsc.lenovo.com

Related product families

Product families related to this document are the following:

- Blade Servers
- ThinkSystem SN550 V2 Server

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service. Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.
8001 Development Drive
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION ”AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk. Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

© Copyright Lenovo 2023. All rights reserved.

This document, LP1397, was created or updated on August 8, 2023.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:
  https://lenovopress.lenovo.com/LP1397
- Send your comments in an e-mail to:
  comments@lenovopress.com

This document is available online at https://lenovopress.lenovo.com/LP1397.

Trademarks

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo in the United States, other countries, or both. A current list of Lenovo trademarks is available on the Web at https://www.lenovo.com/us/en/legal/copytrade/.

The following terms are trademarks of Lenovo in the United States, other countries, or both:
Lenovo®
Bootable Media Creator
Flex System
Lenovo Services
ServerProven®
System x®
ThinkShield®
ThinkServer®
ThinkSystem®
TruDDR4
UpdateXpress System Packs
XClarity®

The following terms are trademarks of other companies:

Intel®, Intel Optane™, and Xeon® are trademarks of Intel Corporation or its subsidiaries.

Linux® is the trademark of Linus Torvalds in the U.S. and other countries.

ActiveX®, Hyper-V®, Microsoft®, PowerShell, Windows PowerShell®, Windows Server®, and Windows® are trademarks of Microsoft Corporation in the United States, other countries, or both.

SPECpower® is a trademark of the Standard Performance Evaluation Corporation (SPEC).

Other company, product, or service names may be trademarks or service marks of others.