Lenovo ThinkSystem SN550 Server
Product Guide

The Lenovo ThinkSystem SN550 is a high-performance server that offers enhanced security, efficiency, and reliability features to handle business-critical workloads. The blade server incorporates up to two Intel Xeon Processor Scalable Family of processors. The processors feature up to 28 cores each and use Lenovo TruDDR4 memory, which runs at speeds up to 2666 MHz.

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

Figure 1 shows the ThinkSystem SN550 server

Figure 1. Flex System SN550 server

Did you know?

The SN550 server uses the new Intel Xeon Scalable Bronze, Silver, Gold and Platinum processors and memory can now operate at speeds up to 2666 MHz. It also includes the next generation UEFI-based Lenovo XClarity Provisioning Manager for rapid system setup and diagnosis, and Lenovo XClarity Controller management processor for systems management and alerting.

Key features

The ThinkSystem SN550 is a high-availability, scalable 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 offers the following features to boost performance, improve scalability, and reduce costs:

- Up to 14 SN550 servers can be installed in one Flex System Enterprise chassis.
- Improves productivity by offering superior system performance with up to 28-core processors, up to 38.5 MB of L3 cache, two 10.4 GT/s Ultra Path Interconnect links and a Thermal Design Power (TDP) rating of up to 165W.
- Supports up to two processors, 56 cores, and 112 threads, which maximizes the concurrent execution of multi-threaded applications.
- Intelligent and adaptive system performance with energy-efficient Intel Turbo Boost Technology allows CPU cores to run at maximum speeds during peak workloads by temporarily going beyond processor TDP.
- Intel Hyper-Threading Technology boosts performance for multithreaded applications by enabling simultaneous multithreading within each processor core, up to two threads per core.
- Intel Virtualization Technology integrates hardware-level virtualization hooks that allow operating system vendors to better use the hardware for virtualization workloads.
- Intel Advanced Vector Extensions 512 (AVX-512) enable acceleration of enterprise-class workloads, such as databases and enterprise resource planning.
- Each processor has 6 memory channels with up 2 two DIMMs per channel running at up to 2666 MHz.
- Up to 1.5 TB of memory capacity using 64 GB LRDIMMs (support coming later for 128GB DIMMs and up to 3TB capacity with certain processors).
- Optional support for high-performance PCIe-attached NVMe Flash Storage solid-state drives (SSDs) can significantly improve I/O performance.
- Embedded 4-port 10Gb Intel adapter built into the system board is based on the Intel Ethernet Connection X722 network controller.
- With Intel Integrated I/O Technology, the PCI Express 3.0 controller is integrated into the Intel Xeon processor Scalable family. This integration helps to dramatically reduce I/O latency and increase overall system performance.
- Support for high-bandwidth I/O adapters; up to two in each SN550 server.
- Support for 40 Gb Ethernet, 16 Gb Fibre Channel, and FDR InfiniBand.
- High-speed USB 3.0 port for connectivity to external devices.

Availability and serviceability

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

- 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), memory mirroring, and memory rank sparing 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:

- 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) 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.
- New 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 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.
- The SN550 uses hexagonal ventilation holes, which can be grouped more densely than round holes providing more efficient airflow through the system.

Locations of key components and connectors

Figure 2 shows the front of the server.

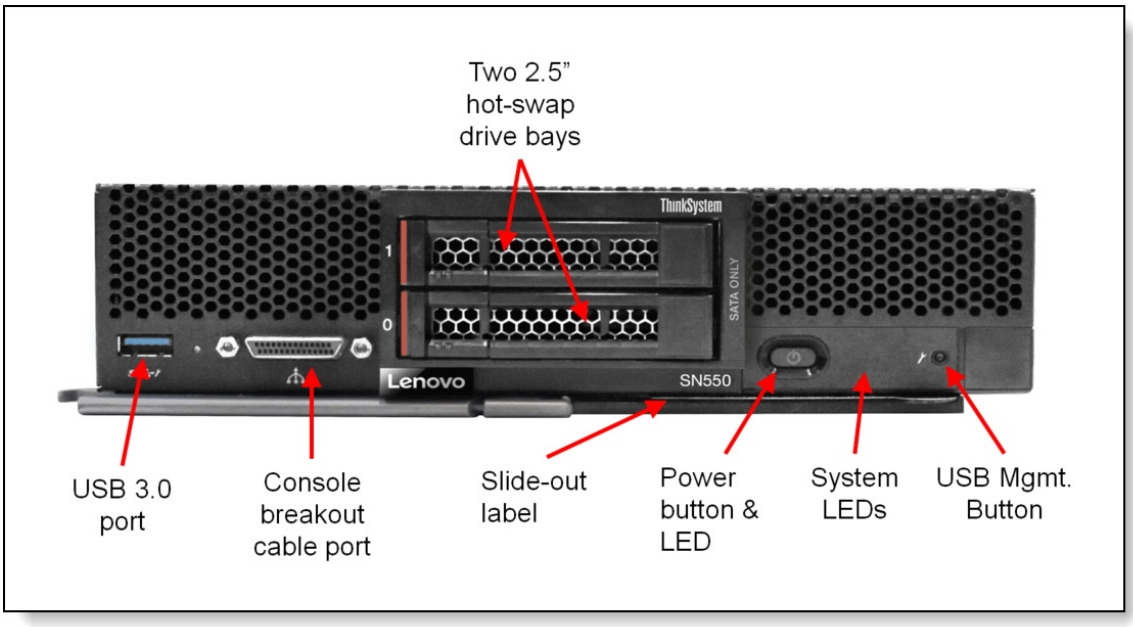

Figure 2. Front view of the Flex System SN550 Compute Node

Figure 3 shows the locations of key components inside the server.

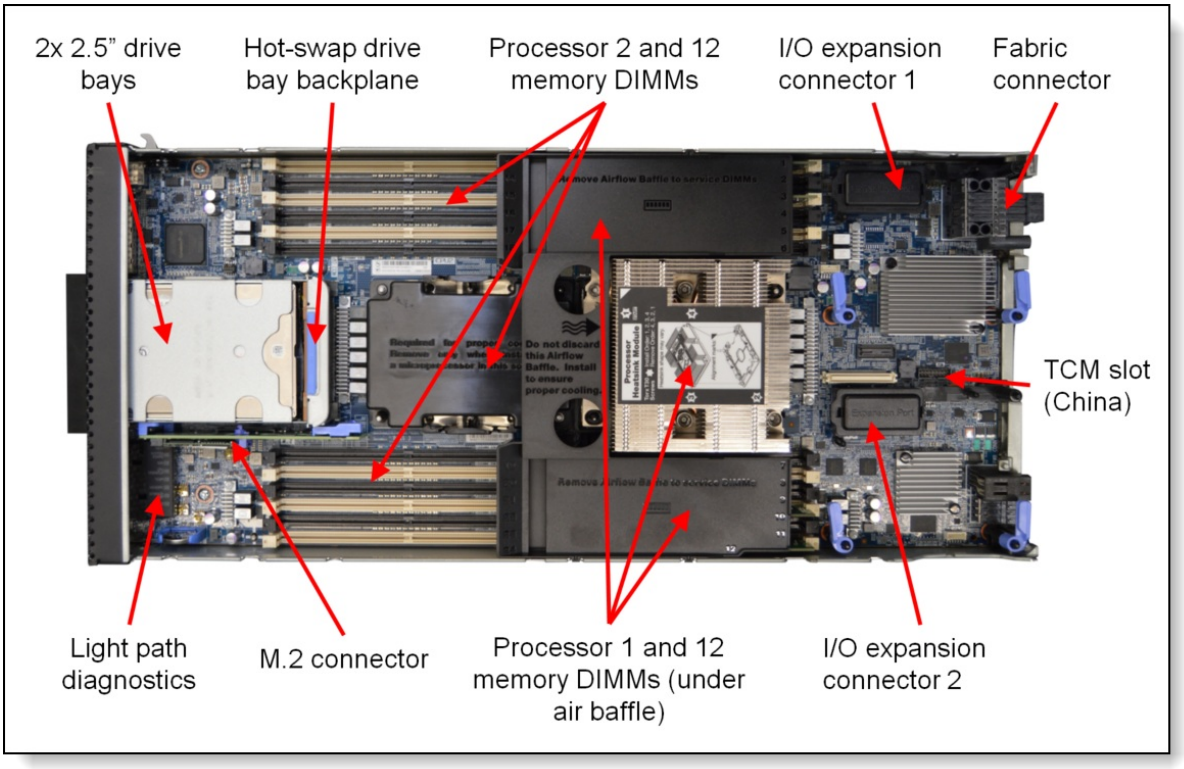

Figure 3. Inside view of the Flex System SN550 server

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine Type	7X16
Form factor	Standard-width Flex System compute node.
Chassis support	Flex System Enterprise Chassis with CMM2.
Processor	Up to two Intel Xeon processor Scalable family CPUs: from 4 cores to 28 cores; core speeds from 1.7 GHz to 3.6 GHz; up to 38.5 MB L3 cache. Two UPI links up to 10.4 GT/s each. Up to 2666 MHz memory speed.
Chipset	Intel C624
Memory	Up to 24 DIMM sockets (12 DIMMs on 6 channels per processor) supporting Lenovo TruDDR4 DIMMs at up to 2666 MHz. RDIMMs and LRDIMMs (Load Reduced DIMMs) are supported, but memory types cannot be intermixed.
Memory maximums	With LRDIMMs: Up to 1.5 TB with 24x 64 GB LRDIMMs and two CPUs With RDIMMs: Up to 768 GB with 24x 32 GB RDIMMs and two CPUs Planned support for up to 3 TB with 24x 128 GB RDIMMs (requires M-suffix processors that support greater than 786 GB memory per processor)
Memory protection	ECC, SDDC (for x4-based memory DIMMs), memory mirroring, and memory sparing.
Disk drives	Two 2.5-inch hot-swap drive bays supporting SSDs or HDDs. Drive bay can be either SATA only, SAS/SATA or NVMe/SATA, depending on the model. Optional support for up to two M.2 SSD.
Maximum internal storage	• With two 2.5-inch hot-swap drives: Up to 15.2 TB using 2x 7.6 TB 2.5-inch SAS SSDs or up to 4 TB using 2x 2 TB NL SAS HDDs. • With two 2.5-inch NVMe SSDs: Up to 7.68 TB using 2x 3.84 TB PCIe 2.5-inch SSDs. • With two internal Non-Hot-Swap M.2: Up to 256 GB using 2x 128 GB SATA SSDs. No support for the Flex System Storage Expansion Node.
RAID support	RAID-0 and RAID-1
Network interfaces	Embedded Intel X722 10 GbE (model specific); optional 1 Gb, 10 GbE, or 40 GbE adapters.
PCI Expansion slots	Two I/O connectors for adapters. PCI Express 3.0 x16 interface. No support for the Flex System PCIe Expansion Node.
Ports	Front: One USB 3.0 port and one console breakout cable port that provides local KVM and serial ports (cable standard with chassis; more cables optional).
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 (TPM) 1.2 and 2.0, Trusted Cryptographic Module (TCM) - China only.

Components	Specification
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 2016, 2012 R2, Red Hat Enterprise Linux 6 and 7 x64, SUSE Linux Enterprise Server 11 and 12 x64, VMware vSphere 6.0 and 6.5. For more information, see Supported operating systems.
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: 215 mm (8.5 inches), height 51 mm (2.0 inches), depth 493 mm (19.4 inches).
Weight	Maximum configuration: 7.1 kg (15.6 lb).

SN550 servers are shipped with the following items:

- Statement of Limited Warranty
- Important Notices

Models

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

- Models for Australia and New Zealand
- Models for South East Asian countries (ASEAN)
- Models for Brazil
- Models for EMEA countries
- Models for Hong Kong, Taiwan, Korea (HTK)
- Models for India
- Models for Japan
- Models for Latin American Countries (except Brazil)
- Models for USA and Canada

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

Models for Australia and New Zealand

Table 2. Models for Australia and New Zealand

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A00FAU	1x Silver 4116 12C 85W 2.1GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03EAU	1x Silver 4116 12C 85W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00MAU	1x Gold 5115 10C 85W 2.4GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02DAU	1x Gold 5118 12C 105W 2.3GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03KAU	1x Gold 5118 12C 105W 2.3GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02EAU	1x Gold 5120 14C 105W 2.2GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02YAU	1x Gold 5120 14C 105W 2.2GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00WAU	1x Gold 6126 12C 125W 2.6GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A033AU	1x Gold 6126 12C 125W 2.6GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A025AU	1x Gold 6130 16C 125W 2.1GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03SAU	1x Gold 6130 16C 125W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03DAU	1x Gold 6134 8C 130W 3.2GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A028AU	1x Gold 6136 12C 150W 3.0GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03PAU	1x Gold 6138 20C 125W 2.0GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A022AU	1x Gold 6140 18C 140W 2.3GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A037AU	1x Gold 6140 18C 140W 2.3GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A01EAU	1x Gold 6148 20C 150W 2.4GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A023AU	1x Gold 6150 18C 165W 2.7GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A020AU	1x Gold 6152 22C 140W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03RAU	1x Platinum 8160 24C 150W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02BAU	1x Platinum 8176 28C 165W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for South East Asian countries (ASEAN)

Table 3. Models for South East Asian countries (ASEAN)

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A01VSG	1x Bronze 3104 6C 85W 1.7GHz	1x 8GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01XSG	1x Bronze 3106 8C 85W 1.7GHz	1x 8GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01YSG	1x Silver 4110 8C 85W 2.1GHz	1x 8GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01ZSG	1x Silver 4114 10C 85W 2.2GHz	1x 8GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01BSG	1x Silver 4116 12C 85W 2.1GHz	1x 8GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01DSG	1x Gold 5120 14C 105W 2.2GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01GSG	1x Gold 6130 16C 125W 2.1GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01KSG	1x Gold 6138 20C 125W 2.0GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for Brazil

Table 4. Models for Brazil

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A03EBR	1x Silver 4116 12C 85W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03KBR	1x Gold 5118 12C 105W 2.3GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02YBR	1x Gold 5120 14C 105W 2.2GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A033BR	1x Gold 6126 12C 125W 2.6GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03SBR	1x Gold 6130 16C 125W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03DBR	1x Gold 6134 8C 130W 3.2GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03PBR	1x Gold 6138 20C 125W 2.0GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A037BR	1x Gold 6140 18C 140W 2.3GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03WBR	1x Gold 6148 20C 150W 2.4GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03VBR	1x Gold 6152 22C 140W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03RBR	1x Platinum 8160 24C 150W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03XBR	1x Platinum 8176 28C 165W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for EMEA countries

Table 5. Models for EMEA countries

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A02CEA	1x Bronze 3106 8C 85W 1.7GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A029EA	1x Silver 4108 8C 85W 1.8GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A026EA	1x Silver 4110 8C 85W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00CEA	1x Silver 4114 10C 85W 2.2GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02NEA	1x Silver 4116 12C 85W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02REA	1x Gold 5118 12C 105W 2.3GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02QEA	1x Gold 5120 14C 105W 2.2GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02PEA	1x Gold 6126 12C 125W 2.6GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02VEA	1x Gold 6130 16C 125W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02LEA	1x Gold 6134 8C 130W 3.2GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02WEA	1x Gold 6138 20C 125W 2.0GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02TEA	1x Gold 6140 18C 140W 2.3GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02SEA	1x Gold 6148 20C 150W 2.4GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02UEA	1x Gold 6152 22C 140W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02MEA	1x Platinum 8160 24C 150W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A02KEA	1x Platinum 8176 28C 165W 2.1GHz	1x 32GB	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for Hong Kong, Taiwan, Korea (HTK)

Table 6. Models for Hong Kong, Taiwan, Korea (HTK)

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A03TCN	1x Bronze 3106 8C 85W 1.7GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A031CN	1x Silver 4110 8C 85W 2.1GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A03GCN	1x Silver 4112 4C 85W 2.6GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A03HCN	1x Silver 4114 10C 85W 2.2GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A003CN	1x Gold 5115 10C 85W 2.4GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A02ACN	1x Gold 5118 12C 105W 2.3GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01TCN	1x Gold 5120 14C 105W 2.2GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01UCN	1x Gold 6130 16C 125W 2.1GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01QCN	1x Gold 6130 16C 125W 2.1GHz	1x 32GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01SCN	1x Gold 6140 18C 140W 2.3GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01RCN	1x Gold 6140 18C 140W 2.3GHz	1x 32GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01NCN	1x Gold 6142 16C 150W 2.6GHz	1x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01PCN	1x Gold 6142 16C 150W 2.6GHz	1x 32GB	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A01LCN	1x Platinum 8160 24C 150W 2.1GHz	2x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max
7X16 A016CN	2x Platinum 8170 26C 165W 2.1GHz	2x 16GB 2Rx8	2x SATA	RSTe RAID	Open	Open	Open	0 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for India

Table 7. Models for India

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A00DSG	1x Silver 4116 12C 85W 2.1GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00QSG	1x Silver 4116 12C 85W 2.1GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00HSG	1x Gold 5115 10C 85W 2.4GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
7X16 A00PSG	1x Gold 5115 10C 85W 2.4GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00ESG	1x Gold 5118 12C 105W 2.3GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00NSG	1x Gold 5118 12C 105W 2.3GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00KSG	1x Gold 5120 14C 105W 2.2GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00LSG	1x Gold 5120 14C 105W 2.2GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00GSG	1x Gold 6126 12C 125W 2.6GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00VSG	1x Gold 6126 12C 125W 2.6GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A009SG	1x Gold 6130 16C 125W 2.1GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00ZSG	1x Gold 6130 16C 125W 2.1GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A004SG	1x Gold 6136 12C 150W 3.0GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00SSG	1x Gold 6136 12C 150W 3.0GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A002SG	1x Gold 6140 18C 140W 2.3GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00XSG	1x Gold 6140 18C 140W 2.3GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A014SG	1x Gold 6148 20C 150W 2.4GHz	1x 32GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A018SG	1x Gold 6148 20C 150W 2.4GHz	1x 32GB	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A010SG	1x Gold 6150 18C 165W 2.7GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A017SG	1x Gold 6150 18C 165W 2.7GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A008SG	1x Gold 6152 22C 140W 2.1GHz	1x 32GB	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A019SG	1x Gold 6152 22C 140W 2.1GHz	1x 32GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A01ASG	1x Platinum 8176 28C 165W 2.1GHz	1x 32GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A01HSG	1x Platinum 8176 28C 165W 2.1GHz	1x 32GB	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency

* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for Japan

Table 8. Models for Japan

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A00TJP	1x Bronze 3104 6C 85W 1.7GHz	1x 16GB 1Rx4	2x SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00JJP	1x Silver 4110 8C 85W 2.1GHz	1x 16GB 1Rx4	2x NVMe/SATA	RSTe RAID	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A012JP	1x Silver 4110 8C 85W 2.1GHz	1x 16GB 1Rx4	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for Latin American Countries (except Brazil)

Table 9. Models for Latin American Countries (except Brazil)

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A00ULA	1x Gold 5118 12C 105W 2.3GHz	1x 16GB 2Rx8	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A01JLA	1x Gold 5120 14C 105W 2.2GHz	1x 16GB 2Rx8	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A01FLA	1x Gold 6130 16C 125W 2.1GHz	1x 16GB 2Rx8	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A01CLA	1x Gold 6140 18C 140W 2.3GHz	1x 16GB 2Rx8	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A007LA	1x Gold 6148 20C 150W 2.4GHz	1x 16GB 2Rx8	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00BLA	1x Platinum 8160 24C 150W 2.1GHz	1x 16GB 2Rx8	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
TopSeller models								
7X16 A030LA	1x Bronze 3104 6C 85W 1.7GHz	1x 8GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03MLA	1x Bronze 3106 8C 85W 1.7GHz	1x 8GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03LLA	1x Silver 4108 8C 85W 1.8GHz	1x 8GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A03JLA	1x Silver 4110 8C 85W 2.1GHz	1x 8GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A032LA	1x Silver 4114 10C 85W 2.2GHz	1x 8GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00YLA	1x Silver 4116 12C 85W 2.1GHz	1x 8GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max
7X16 A00RLA	1x Gold 5115 10C 85W 2.4GHz	1x 8GB	2x SAS/SATA	RAID 530-4i	Open	Open	4x 10 GbE embedded	1 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Models for USA and Canada

Table 10. Models for USA and Canada

Model	Intel Xeon processors†	Memory	Drive bays	RAID	Drives	M.2 drives	10 GbE*	I/O slots
Standard models								
7X16 A00ANA	1x Silver 4110 8C 85W 2.1GHz	1x 16GB 2Rx8	Open	Open	Open	Open	Open	0 used 2 max
7X16 A01WNA	1x Silver 4114 10C 85W 2.2GHz	1x 16GB 2Rx8	Open	Open	Open	Open	Open	0 used 2 max
7X16 A006NA	1x Gold 5118 12C 105W 2.3GHz	1x 16GB 2Rx8	Open	Open	Open	Open	Open	0 used 2 max
7X16 A005NA	1x Gold 5120 14C 105W 2.2GHz	1x 16GB 2Rx8	Open	Open	Open	Open	Open	0 used 2 max
7X16 A024NA	1x Gold 6130 16C 125W 2.1GHz	1x 32GB	Open	Open	Open	Open	Open	0 used 2 max
7X16 A021NA	1x Platinum 8160 24C 150W 2.1GHz	1x 32GB	Open	Open	Open	Open	Open	0 used 2 max

† Processor detail: Quantity, model, core count, TDP, core frequency
* Models with 4x10GbE include a Fabric Connector which routes the embedded X722 10Gb Ethernet controller to I/O slot 1. The Fabric Connector precludes the use of an I/O adapter in slot 1.

Chassis support

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

Table 11. Chassis support

Chassis models	Description	Supports SN550
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 1.6.1 or later to support ThinkSystem compute nodes

Up to 14 SN550 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
- Number of power supplies that are installed in the chassis
- Capacity of the installed power supplies (2100 W or 2500 W)
- Chassis power redundancy policy that is used (N+1 or N+N)

The following table provides guidelines about what number of SN550 servers can be installed. For more information, use the Power Configurator, which is found at the following website:
https://datacentersupport.lenovo.com/us/en/solutions/lnvo-pwrconf

The following color coding was used In the table:

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

Table 12. Maximum number of SN550 servers that can be installed based on installed power supplies and power redundancy policy used

SN550 CPU TDP rating	2100 W power supplies installed				2500 W power supplies installed			
	N+1, N=5 6 power supplies	N+1, N=4 5 power supplies	N+1, N=3 5 power supplies	N+N, N=3 6 power supplies	N+1, N=5 6 power supplies	N+1, N=4 5 power supplies	N+1, N=3 4 power supplies	N+N, N=3 6 power supplies
70 W	14	14	11	11	14	14	14	14
85 W	14	14	11	11	14	14	14	14
105 W	14	14	11	11	14	14	14	14
125 W	14	14	11	11	14	14	13	14
130 W	14	13	11	11	14	14	12	13
140 W	14	13	11	11	14	14	12	13
150 W	14	12	11	11	14	14	12	12
165 W	14	12	11	11	14	14	11	12

Processor options

The SN550 supports the Intel Xeon Processor Scalable Family options that are listed in the following table. The server supports one or two processors.

All supported processors have the following characteristics:

- 14 nm process technology
- Six DDR4 memory channels
- 48 PCIe 3.0 I/O lanes
- 1 MB L2 cache
- 1.375 MB L3 cache per core (except where larger, as noted with ** in the table below)
- Intel Hyper-Threading Technology (except Bronze 3100 Series processors)
- Intel Turbo Boost Technology 2.0 (except Bronze 3100 Series processors)
- Intel Advanced Vector Extensions 512 (AVX-512)
- Intel Ultra Path Interconnect (UPI) links at 10.4 GT/s (replaces QPI)

With two processors installed, the processors are connected together using two UPI links. Processors with the T suffix are those that have more robust thermal characteristics (higher T-case).

Table 13. Processor options

Part number	Feature code	Description	Memory speed	Supports >768 GB per CPU	L3 cache**	AVX-512 FMA units*
7XG7A03985	B0MG	Intel Xeon Bronze 3106 8C 85W 1.7GHz	2133 MHz	No	11 MB	1
7XG7A03980	B0MF	Intel Xeon Silver 4108 8C 85W 1.8GHz	2400 MHz	No	11 MB	1
7XG7A03984	B0MB	Intel Xeon Silver 4109T 8C 70W 2.0GHz	2400 MHz	No	11 MB	1
7XG7A03979	B0ME	Intel Xeon Silver 4110 8C 85W 2.1GHz	2400 MHz	No	11 MB	1
7XG7A03981	B0MD	Intel Xeon Silver 4112 4C 85W 2.6GHz	2400 MHz	No	8.25 MB	1
7XG7A03978	B0MC	Intel Xeon Silver 4114 10C 85W 2.2GHz	2400 MHz	No	13.75 MB	1
7XG7A03977	AXJ9	Intel Xeon Silver 4116 12C 85W 2.1GHz	2400 MHz	No	15.5 MB	1
7XG7A03987	AXJA	Intel Xeon Gold 5115 10C 85W 2.4GHz	2400 MHz	No	13.75 MB	1
7XG7A04650	AXJ7	Intel Xeon Gold 5118 12C 105W 2.3GHz	2400 MHz	No	16.5 MB	1
7XG7A04649	AXJ6	Intel Xeon Gold 5120 14C 105W 2.2GHz	2400 MHz	No	19.25 MB	1
7XG7A04651	AXJ8	Intel Xeon Gold 5120T 14C 105W 2.2GHz	2400 MHz	No	19.25 MB	1
7XG7A04638	AXJ4	Intel Xeon Gold 5122 4C 105W 3.6GHz	2666 MHz*	No	16.5 MB**	2*
7XG7A04634	AXJ2	Intel Xeon Gold 6126 12C 125W 2.6GHz	2666 MHz	No	19.25 MB**	2
7XG7A04628	AXHY	Intel Xeon Gold 6130 16C 125W 2.1GHz	2666 MHz	No	22 MB	2

Part number	Feature code	Description	Memory speed	Supports >768 GB per CPU	L3 cache**	AVX-512 FMA units*
7XG7A04640	AXJ5	Intel Xeon Gold 6130T 16C 125W 2.1GHz	2666 MHz	No	22 MB	2
7XG7A04636	AXJ3	Intel Xeon Gold 6134 8C 130W 3.2GHz	2666 MHz	No	24.75 MB**	2
7XG7A04633	AXJ1	Intel Xeon Gold 6136 12C 150W 3.0GHz	2666 MHz	No	24.75 MB**	2
7XG7A04626	AXHW	Intel Xeon Gold 6138 20C 125W 2.0GHz	2666 MHz	No	27.5 MB	2
7XG7A04627	AXHX	Intel Xeon Gold 6140 18C 140W 2.3GHz	2666 MHz	No	24.75 MB	2
7XG7A04630	AXJ0	Intel Xeon Gold 6142 16C 150W 2.6GHz	2666 MHz	No	22 MB	2
7XG7A04625	AXHV	Intel Xeon Gold 6148 20C 150W 2.4GHz	2666 MHz	No	27.5 MB	2
7XG7A04629	AXHZ	Intel Xeon Gold 6150 18C 165W 2.7GHz	2666 MHz	No	24.75 MB	2
7XG7A04624	AXHU	Intel Xeon Gold 6152 22C 140W 2.1GHz	2666 MHz	No	30.25 MB	2
7XG7A04621	AXHT	Intel Xeon Platinum 8153 16C 125W 2.0GHz	2666 MHz	No	22 MB	2
7XG7A04622	B0MA	Intel Xeon Platinum 8156 4C 105W 3.6GHz	2666 MHz	No	16.5 MB**	2
7XG7A04648	B0M9	Intel Xeon Platinum 8158 12C 150W 3.0GHz	2666 MHz	No	24.75 MB**	2
7XG7A04620	AXHS	Intel Xeon Platinum 8160 24C 150W 2.1GHz	2666 MHz	No	33 MB	2
7XG7A04619	AXHR	Intel Xeon Platinum 8164 26C 150W 2.0GHz	2666 MHz	No	35.75 MB	2
7XG7A04618	AXHQ	Intel Xeon Platinum 8170 26C 165W 2.1GHz	2666 MHz	No	35.75 MB	2
7XG7A04617	AXHP	Intel Xeon Platinum 8176 28C 165W 2.1GHz	2666 MHz	No	38.5 MB	2

* All Gold 5000-level processors, except the 5122, support 2400 MHz memory speeds and have one AVX-512 512-bit FMA units. The 5122 processor supports 2666 MHz and has two FMA units

** L3 cache is 1.375 MB per core except with the processor indicated with ** where the cache size is larger

Memory options

The SN550 uses Lenovo TruDDR4 memory operating at speeds up to 2666 MHz. All DIMMs can operate at a speed of 2666 MHz, both at 1 DIMM per channel and 2 DIMMs per channel. However, if the processor selected has a lower memory bus speed (eg 2400 MHz), then all DIMMs will operate at that lower speed.

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 on every ThinkSystem server to maximize performance and reliability. TruDDR4 Memory has a unique signature that is programmed into the DIMM that enables ThinkSystem servers to verify whether the memory that is installed is qualified and supported by Lenovo.

From a service and support standpoint, Lenovo TruDDR4 memory automatically assumes the Lenovo system warranty and Lenovo provides service and support worldwide.

The following table lists the memory options that are available for the SN550 server.

Table 14. Memory options

Part number	Feature code	Description	Maximum supported
RDIMMs			
7X77A01301	AUU1	ThinkSystem 8GB TruDDR4 2666 MHz (1Rx8 1.2V) RDIMM	24 (12 per processor)
7X77A01302	AUNB	ThinkSystem 16GB TruDDR4 2666 MHz (1Rx4 1.2V) RDIMM	24 (12 per processor)
7X77A01303	AUNC	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	24 (12 per processor)
7X77A01304	AUND	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	24 (12 per processor)
LRDIMMs			
7X77A01305	AUNE	ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	24 (12 per processor)

The following rules apply when selecting the memory configuration:

- The server supports RDIMMs and LRDIMMs. UDIMMs are not supported.
- Mixing RDIMMs and LRDIMMs is not supported.
- Mixing x4 and x8 DIMMs is supported.
- For best performance, populate memory DIMMs in quantities of 6 or 12 per processor, so that all memory channels are used.

The following memory protection technologies are supported:

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

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.

If memory rank sparing is used, then a minimum of one quad-rank DIMM or two single-rank or dual-rank DIMMs must be installed per populated channel (the DIMMs do not need to be identical). In rank sparing mode, one rank of a DIMM in each populated channel is reserved as spare memory. The largest rank in the channel will be automatically selected as the spare rank. The amount of memory available to the operating system depends on the number, capacity and rank counts of the DIMMs installed.

Internal storage

The SN550 server has two 2.5-inch hot-swap drive bays that are accessible from the front of the blade server (see Figure 2). Depending on server configuration and installed backplane, these bays connect to either the included 6 Gbps SATA controller, optional Lenovo RAID controllers or directly to PCIe lanes for NVMe drives. In addition, the SN550 can also support one or two M.2 form factor SSD drives on a separate adapter. Storage backplanes, RAID and M.2 upgrades are listed below.

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

Table 15. Internal storage upgrades

Part number	Feature code	Name and description	Maximum supported
7M27A03915	AUYP	ThinkSystem SATA HDD/SSD Backplane for SN550	1
7M27A03916	AUYQ	ThinkSystem NVMe PCIe SSD Backplane for SN550	1
7M27A03917	AUYS	ThinkSystem RAID 930-4i-2GB 2 Drive Adapter Kit for SN550	1
7M27A03918	AUYR	ThinkSystem RAID 530-4i 2 Drive Adapter Kit for SN550	1
7Y37A01093	AUMV	ThinkSystem M.2 with Mirroring Enablement Kit	1

Supported drives are listed in the Internal drive options section.

M.2 drives

The server supports an adapter that provides two M.2 form-factor SATA drives for use as an operating system boot solution. The drives are configured by default as a RAID-1 mirrored pair for redundancy.

The M.2 drives install into an M.2 adapter which in turn is installed in a dedicated slot on the system board. See the internal view of the server in the Components and connectors section for the location of the M.2 slot.

The M.2 adapter supported is the Dual M.2 Boot Adapter, which supports one or two M.2 drives; available as ThinkSystem M.2 with Mirroring Enablement Kit, 7Y37A01093 (note that the SIngle M.2 adapter is not supported, but a single M.2 drive in the Dual M.2 Adapter is supported).

The Dual M.2 Boot Adapter with one 128GB M.2 drive partially inserted is shown in the following figure. The second M.2 drive is installed on the other side of the adapter.

Figure 4. Dual M.2 Boot Adapter and a 128 GB M.2 drive

Features of the Dual M.2 Boot Adapter:

- PCIe 2.0 x2 host interface (connects to the PCH)
- Based on the Marvell 88SE9230 6 Gbps SATA controller
- Supports two 6 Gbps SATA M.2 drives (it is not supported to have only one drive)
- Supports 3 different physical sizes of M.2 drives: 42mm (2242), 60mm (2260) and 80mm (2280)*
- RAID functionality provided by the M.2 adapter
- RAID 1 by default; also supports RAID 0 and JBOD
- UEFI-based settings to enable/disable RAID mode and to review inventory
- Adapter and drive firmware update using Lenovo firmware tools
- Management via I2C interface

* 2242, 2260 and 2280 are the industry terms for the M.2 drive dimensions. For example, 2280 corresponds to a drive that is 22mm wide and 80mm long.

The M.2 components are listed in the following table.

Table 16. M.2 components

Part number	Feature code	Description	Maximum Supported
7Y37A01093	AUMV	ThinkSystem M.2 with Mirroring Enablement Kit (contains the Dual M.2 Boot Adapter, supports 1 or 2 drives)	1
7N47A00129	AUUL	ThinkSystem M.2 CV1 32GB SATA 6Gbps Non-Hot-Swap SSD	2*
7N47A00130	AUUV	ThinkSystem M.2 CV3 128GB SATA 6Gbps Non-Hot-Swap SSD	2*

* 7Y37A01093 supports a maximum of two M.2 drives; drives must be identical.

The following table lists the specifications of the M.2 drives.

Table 17. M.2 drive specifications

Specification	32 GB M.2	128 GB M.2
Part number	7N47A00129	7N47A00130
Recommended use	Boot drive*	Boot drive*
Interface	6Gb SATA	6Gb SATA
Flash Type	MLC NAND	TLC NAND
4KB Random Read/Write Performance	25,000 IOPS	72,000 IOPS
4KB Random Write Performance	10,500 IOPS	32,000 IOPS
Sequential Read Performance	260 MB/s	530 MB/s
Sequential Write Performance	40 MB/s	470 MB/s
Endurance (total bytes written / drive writes per day)	37.92TB / 0.66 DWPD	63.9 TB / 0.28 DWPD
Vendor model	LiteOn CV1	LiteOn CV3
Dimensions	42 x 22 mm	80 x 22 mm

* These drive options do not have power-loss capacitors, which means they do not have protection against a potential loss of data when a write operation is underway just as a power outage occurs. As a result, these drives are not recommended for general purpose storage functions.

Controllers for Internal Storage

In addition to the optional M.2 RAID-1 enabled adapter, the SN550 supports 3 different RAID controllers as shown in the table below.

Table 18. SN550 RAID controllers with features

Feature	Onboard	RAID 530-4i	RAID 930-4i
Adapter type	Software RAID	RAID controller	RAID controller
Part number	None	7M27A03918	7M27A03917
Form factor	Integrated	Adapter	Adapter
Controller chip	Intel PCH (RSTe)	LSI SAS3404	LSI SAS3504
Host interface	Not applicable	PCIe 3.0x8	PCIe 3.0x8
Port interface	6 Gb SATA	12 Gb SAS	12 Gb SAS
Drive interface	SATA	SAS, SATA	SAS, SATA
Drive type	HDD, SSD	HDD, SED, SSD	HDD, SED, SSD
Hot-swap drives	Yes	Yes	Yes
Max devices	2	2	2
RAID levels	0, 1	0, 1	0, 1
JBOD mode	Yes	Yes	Yes
Cache	No	No	2GB (Standard)
CacheVault cache protection	No	No	Yes (Flash)
Performance Accelerator (FastPath)	No	Yes	Yes
SED support	No	Yes	Yes

Both the 530-4i and 930-4i replace the onboard SATA controller in the server and support high-performance RAID-0 and RAID-1 to the two internal 2.5-inch drive bays. These controllers are installed at the front of the server over the top of the drive bays.

The following figure shows the ThinkSystem RAID 530-4i adapter for the SN550 blade server. Note that the plastic frame in the lower right of the adapter is part of the mechanism that attaches the adapter to the server; this adapter does not support a supercapacitor.

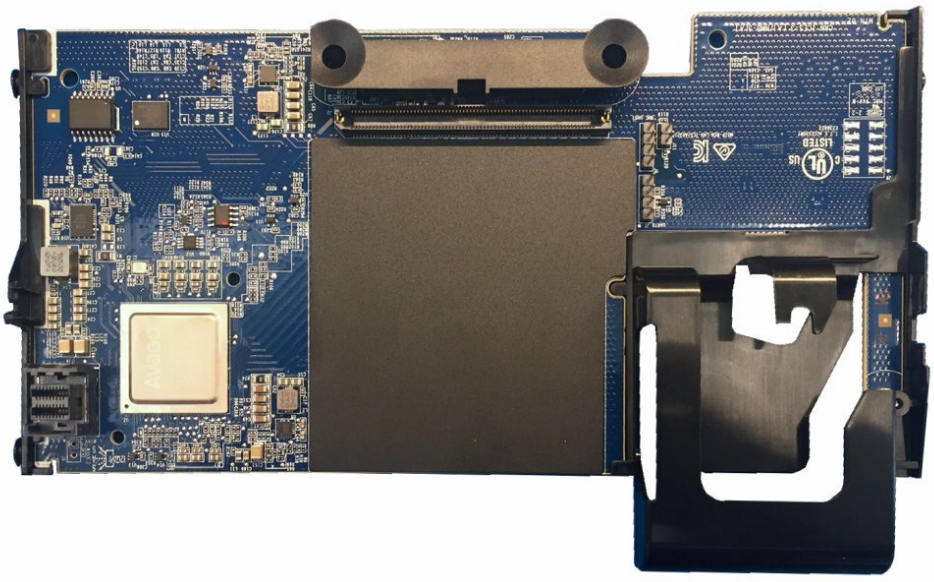

Figure 5. ThinkSystem RAID 530-4i 2 Drive Adapter

Both ThinkSystem RAID Adapters for SN550 include the following components:

- RAID controller
- Replacement 2-drive SAS/SATA backplane

Internal drive options

- Table 19: 2.5-inch hot-swap 12 Gb SAS HDDs
- Table 20: 2.5-inch hot-swap 6 Gb SAS/SATA HDDs
- Table 21: 2.5-inch hot-swap 12 Gb SAS SSDs
- Table 22: 2.5-inch hot-swap 6 Gb SAS/SATA SSDs
- Table 23: 2.5-inch hot-swap* U.2 NVMe SSDs
- Table 24: M.2 SATA 6Gbps Non-Hot-Swap SSD

Table 19. 2.5-inch hot-swap 12 Gb SAS HDDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap HDDs - 12 Gb SAS 10K			
7XB7A00024	AULY	ThinkSystem 2.5" 300GB 10K SAS 12Gb Hot Swap 512n HDD	2
7XB7A00025	AULZ	ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD	2
7XB7A00026	AUM0	ThinkSystem 2.5" 900GB 10K SAS 12Gb Hot Swap 512n HDD	2
7XB7A00027	AUM1	ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	2
7XB7A00028	AUM2	ThinkSystem 2.5" 1.8TB 10K SAS 12Gb Hot Swap 512e HDD	2
2.5-inch hot-swap HDDs - 12 Gb SAS 15K			
7XB7A00021	AULV	ThinkSystem 2.5" 300GB 15K SAS 12Gb Hot Swap 512n HDD	2
7XB7A00022	AULW	ThinkSystem 2.5" 600GB 15K SAS 12Gb Hot Swap 512n HDD	2
7XB7A00023	AULX	ThinkSystem 2.5" 900GB 15K SAS 12Gb Hot Swap 512e HDD	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	2
7XB7A00035	AUM7	ThinkSystem 2.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD	2

Table 20. 2.5-inch hot-swap 6 Gb SAS/SATA HDDs

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap HDDs - 6 Gb NL SATA			
7XB7A00036	AUUE	ThinkSystem 2.5" 1TB 7.2K SATA 6Gb Hot Swap 512n HDD	2
7XB7A00037	AUUJ	ThinkSystem 2.5" 2TB 7.2K SATA 6Gb Hot Swap 512e HDD	2

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

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Capacity			
7N47A00121	AUMK	ThinkSystem 2.5" 3.84TB Capacity SAS 12Gb Hot Swap SSD	2
7N47A00122	AUML	ThinkSystem 2.5" 7.68TB Capacity SAS 12Gb Hot Swap SSD	2
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Performance (10+ DWPD)			
7N47A00124	AUMG	ThinkSystem 2.5" 400GB Performance SAS 12Gb Hot Swap SSD	2
7N47A00125	AUMH	ThinkSystem 2.5" 800GB Performance SAS 12Gb Hot Swap SSD	2
2.5-inch hot-swap SSDs - 12 Gb SAS - Enterprise Mainstream (3-5 DWPD)			
7N47A00117	AUMC	ThinkSystem 2.5" 400GB Mainstream SAS 12Gb Hot Swap SSD	2
7N47A00118	AUMD	ThinkSystem 2.5" 800GB Mainstream SAS 12Gb Hot Swap SSD	2

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

Part number	Feature	Description	Maximum supported
2.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Entry (<3 DWPD)			
7N47A00099	AUM8	ThinkSystem 2.5" Intel S3520 240GB Entry SATA 6Gb Hot Swap SSD	2
7N47A00100	AUUZ	ThinkSystem 2.5" Intel S3520 480GB Entry SATA 6Gb Hot Swap SSD	2
7N47A00101	AVCY	ThinkSystem 2.5" Intel S3520 960GB Entry SATA 6Gb Hot Swap SSD	2
7N47A00111	AUUQ	ThinkSystem 2.5" 240GB Entry SATA 6Gb Hot Swap SSD	2
7N47A00112	AUM9	ThinkSystem 2.5" 480GB Entry SATA 6Gb Hot Swap SSD	2
7N47A00113	AVCZ	ThinkSystem 2.5" 960GB Entry SATA 6Gb Hot Swap SSD	2

Table 23. 2.5-inch U.2 NVMe SSDs

Part number	Feature	Description	Maximum supported
2.5-inch SSDs - NVMe - Enterprise Performance (10+ DWPD)			
7XB7A05923	AWG6	ThinkSystem U.2 800GB Performance NVMe PCIe 3.0 Hot Swap SSD	2
7XB7A05922	AWG7	ThinkSystem U.2 1.6TB Performance NVMe PCIe 3.0 Hot Swap SSD	2
2.5-inch SSDs - NVMe - Enterprise Mainstream (3-5 DWPD)			
7N47A00095	AUUY	ThinkSystem U.2 960GB Mainstream 2.5" NVMe PCIe 3.0 Hot Swap SSD	2
7N47A00096	AUMF	ThinkSystem U.2 1.92TB Mainstream 2.5" NVMe PCIe 3.0 Hot Swap SSD	2
2.5-inch SSDs - NVMe - Enterprise Entry (<3 DWPD)			
7N47A00984	AUV0	ThinkSystem U.2 1.92TB Entry 2.5" NVMe PCIe 3.0 Hot Swap SSD	2
7N47A00985	AUUU	ThinkSystem U.2 3.84TB Entry 2.5" NVMe PCIe 3.0 Hot Swap SSD	2

***Note**: NVMe PCIe SSDs support informed hot removal and hot insertion, provided the operating system supports PCIe SSD hot-swap.

Table 24. M.2 SATA 6Gbps SSD

Part number	Feature	Description	Maximum supported
M.2 SATA 6Gbps Non-Hot-Swap SSD			
7N47A00129	AUUL	ThinkSystem M.2 32GB SATA 6Gbps Non-Hot-Swap SSD	2
7N47A00130	AUUV	ThinkSystem M.2 128GB SATA 6Gbps Non-Hot-Swap SSD	2

Integrated virtualization

The server supports booting from a hypervisor installed on an M.2 solid-state drive. See the M.2 drives section for details and the list of available options.

VMware ESXi is available as a factory installed option for M.2 drives. Feature codes are listed below.

Table 25. VMware factory installed features

Part number	Feature code	Description
CTO only	AXFT	VMware ESXi 6.5 (factory installed)
CTO only	AXFS	VMware ESXi 6.0 U3 (factory installed)

Alternatively, 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:

http://www3.lenovo.com/us/en/data-center/solutions/alliances/vmware/#tab-VMware-tab-main-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 option, however, you can connect an external USB optical drive. See https://datacentersupport.lenovo.com/us/en/solutions/pd011281 for information about available external optical drives from Lenovo. Alternatively, use the remote media feature of the XClarity Controller and the Chassis Management Module.

Embedded 10Gb Network Adapter

The SN550 includes an embedded 4-port 10Gb Intel adapter built into the system board. Each SN550 model that uses the embedded Intel adapter also has the Fabric Connector installed in I/O connector 1 to provide connectivity to the Flex system chassis midplane. The feature code for the Fabric Connector is AUYN. Figure 3 shows the location of the Fabric Connector.

Tip: To provide connectivity for all 4 adapter ports, make sure the associated chassis I/O module has adequate internal switch ports.

The Adapter to I/O bay correspondence table shows how the 4 ports of the embedded controller connect through the Fabric Connector to the corresponding switch ports. The Fabric Connector can be removed, if required, to allow the installation of an I/O adapter on I/O connector 1.

The embedded 10Gb adapter is based on the Intel Ethernet Connection X722 network controller which is part of the Intel C624 "Lewisburg" PCH chipset of the SN550 and other Lenovo ThinkSystem servers.

The Intel X722 controller is optimized for data center, cloud, and mobile applications and includes the following features:

- VXLAN/NVGRE Hardware Offloads: These stateless offloads preserve application performance for overlay networks. With these offloads, it is possible to distribute network traffic across CPU cores. At the same time, the controller offloads LSO, GSO, and checksum from the host software, which reduces CPU overhead.
- Low latency: Intel Ethernet Flow Director delivers hardware-based application steering and Intel Data Direct I/O makes the processor cache the primary destination and source of I/O data rather than main memory.
- Virtualization performance: With Intel Virtualization Technology (VT), the controller delivers outstanding I/O performance in virtualized server environments. The controller reduces I/O bottlenecks by providing intelligent offloads for networking traffic per virtual machine (VM), which enables near-line rate speeds for small packets and supports almost an unlimited amount of isolated traffic flows so that you can scale your cloud environment.
- Next-generation VMDq: The controller supports up to 128 VMDq VMs and offers enhanced Quality of Service (QoS) by providing weighted round-robin servicing for the Tx data. The controller offloads the data-sorting functionality from the hypervisor to the network silicon, which improves data throughput and CPU usage.
- SR-IOV implementation: Provides an implementation of the PCI-SIG standard for I/O Virtualization. The physical configuration of each port is divided into multiple virtual ports. Each virtual port is assigned to an individual VM directly by bypassing the virtual switch in the Hypervisor, which results in near-native performance.
- iWarp RDMA support implements kernel bypass and direct data placement and allows for more efficient high-speed networking by eliminating queues and network related interrupts
- VM load balancing: Provides traffic load balancing (Tx and Rx) across VMs that are bound to the team interface. It also provides fault tolerance if a switch, port, or cable fails or is disconnected.
- Auto-detect (PnP) feature for the LOM adapters, enabling you to change speed (eg from a 1Gb LOM to 10 Gb LOM) and the network interface will automatically reconfigure during the boot process.

I/O expansion options

The SN550 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 3.0 x16 host interface and both slots support the same form-factor adapters. If the SN550 has a Fabric Connector in adapter slot 1, it must be removed first to use that slot for an optional I/O adapter.

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

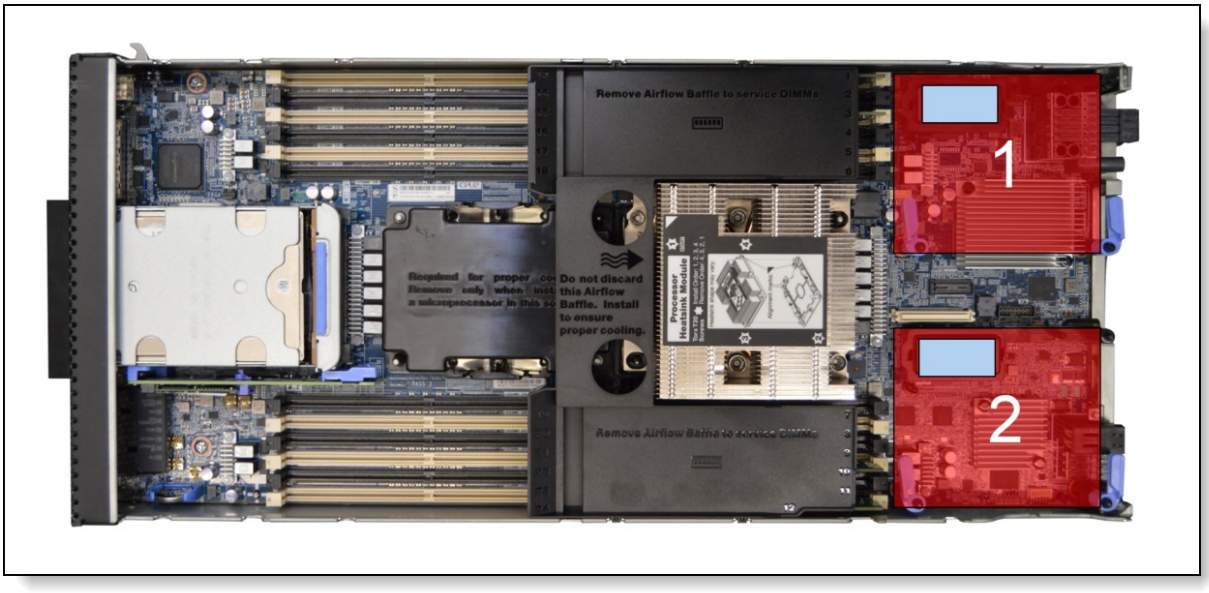

Figure 6. Location of the I/O adapter slots in the ThinkSystem SN550 server

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 26. 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.

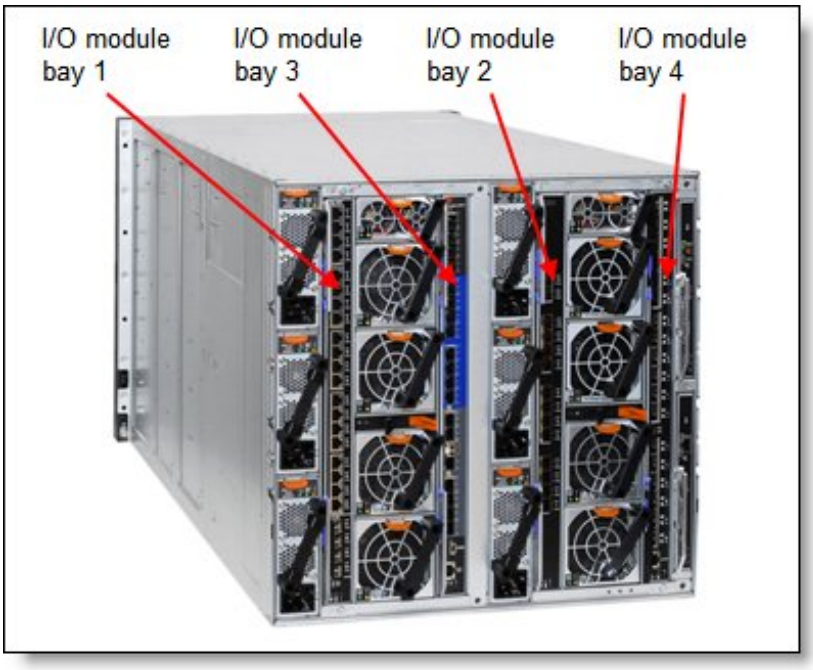

Figure 7. Location of the I/O module bays in the Flex System Enterprise Chassis

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

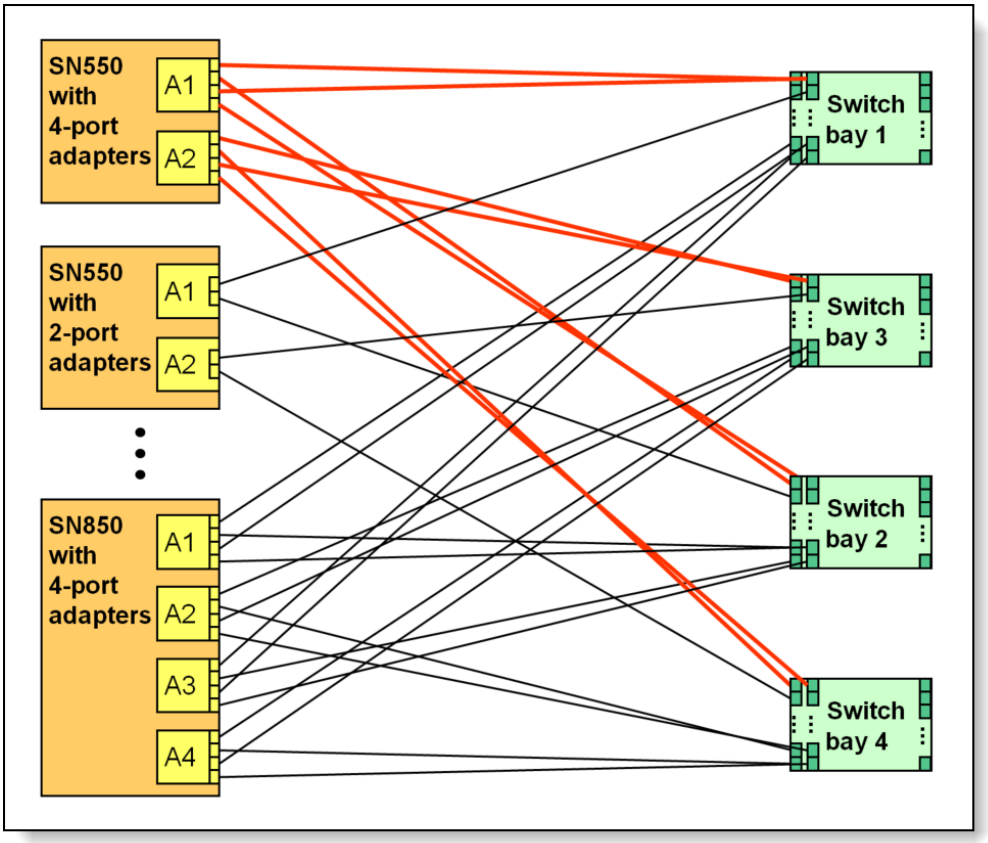

Figure 8. Logical layout of the interconnects between I/O adapters and I/O modules

Network adapters

In addition to the embedded Intel 4-port 10Gb controller (model specific), the SN550 supports other network adapters that can be installed in IO slots.

The following table lists the supported network adapters and upgrades. Adapters can be installed in either slot. However, compatible I/O modules must be installed in the corresponding bays of the chassis.

Table 27. Network adapters

Part number	Feature code	Description	Number of ports
40 Gb Ethernet			
7ZT7A00502	AVCU	ThinkSystem Mellanox ConnectX-3 Mezz 40Gb 2-Port Ethernet Adapter	2
10 Gb Ethernet			
01CV780	AU7X	Flex System CN4052S 2-port 10Gb Virtual Fabric Adapter Advanced (with FCoE / iSCSI)	2
00AG540	ATBT	Flex System CN4052S 2-port 10Gb Virtual Fabric Adapter	2
01CV790	AU7Y	Flex System CN4054S 4-port 10Gb Virtual Fabric Adapter Advanced (with FCoE / iSCSI)	4
00AG590	ATBS	Flex System CN4054S 4-port 10Gb Virtual Fabric Adapter	4
InfiniBand			
7ZT7A00508	AUKV	ThinkSystem Mellanox ConnectX-3 Mezz FDR 2-Port InfiniBand Adapter	2

FCoE and iSCSI support: ThinkSystem server adapters do not support Features on Demand, so the CN4052S and CN4054S 2-port 10Gb basic adapters cannot be upgraded to FCoE support. If you need FCoE or iSCSI support use the 01CV780 or 01CV790 adapters.

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 storage HBAs that are supported by the SN550. HBAs are only supported in Slot 2.

Table 28. Storage adapters

Part number	Feature code	Description	Number of ports
Fibre Channel			
7ZT7A00520	AVCV	ThinkSystem QLogic QML2692 Mezz 16Gb 2-Port Fibre Channel Adapter	2
7ZT7A00521	AVCW	ThinkSystem Emulex LPm16002B-L Mezz 16Gb 2-Port Fibre Channel Adapter	2
7ZT7A00522	AVCX	ThinkSystem Emulex LPm16004B-L Mezz 16Gb 4-Port Fibre Channel Adapter	4

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.

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 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 supplied with the chassis provides serial, video and a USB port for connecting a local console. The USB ports on the breakout cable support keyboard and mouse; storage devices are not supported.

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

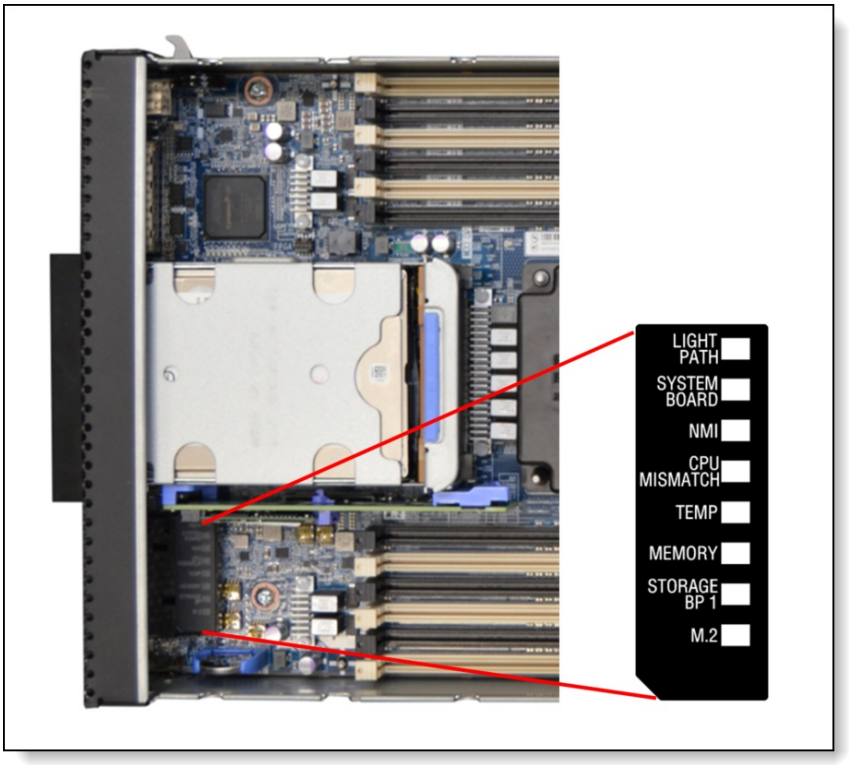

Figure 9. Location of SN550 light path diagnostics panel

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 29. 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

Lenovo XClarity Controller (XCC) is an all-new embedded management engine common in every ThinkSystem server.

There are two ways to access the management processor:

- Command-line interface. To access the CLI interface, use SSH to log in to the management processor.
- Web-based interface. To access the web-based interface, point your browser to the IP address for the management processor. The new intuitive interface includes at-a-glance visualizations and simple access to common system actions. The dashboard is shown in the following figure.

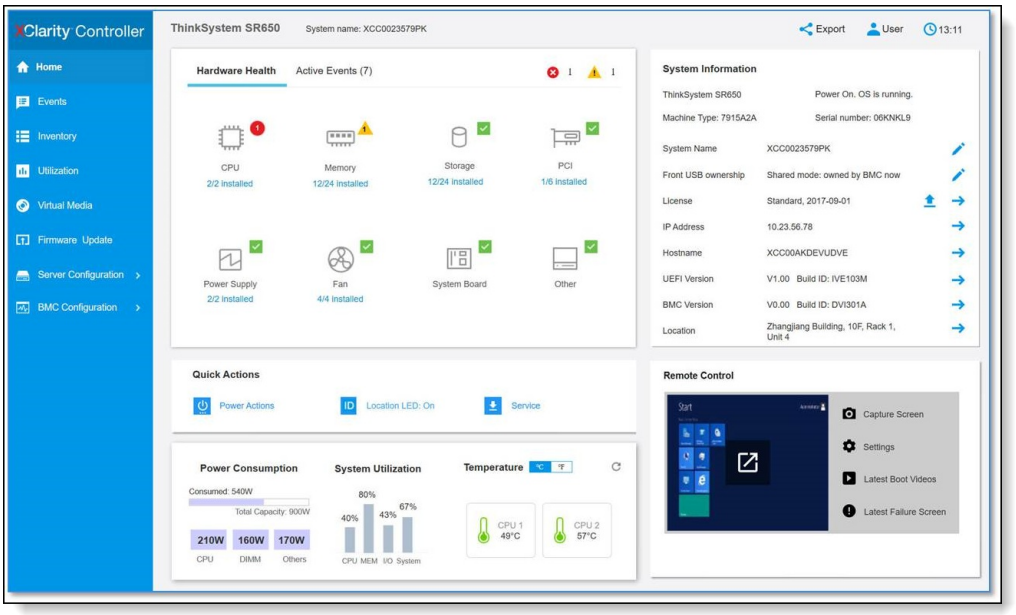

Figure 10. Lenovo XClarity Controller dashboard

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 SMNP 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

Virtual presence (remote control) and virtual media capability also come standard in the SN550. The remote control functions include the following:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 32 bits per pixel, regardless of the system state
- Remotely accessing the server using the keyboard and mouse from a remote client
- Capturing blue-screen errors
- International keyboard mapping support
- LDAP-based authentication
- Remote mounting of ISO and diskette IMG image files as virtual drives that are available for use by the server
- Boot Capture
- Virtual console collaboration
- Power capping

Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager (LXEM) is an agent-less, web-based console that provides power management for ThinkServer, System x and ThinkSystem servers. 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 (XCC Enterprise) version. Because the Enterprise version of XCC is standard in the SN550, a license for XClarity Energy Manager is included. For more information on LXEM, please see the User Guide: http://datacentersupport.lenovo.com/us/en/downloads/ds101160

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.

Lenovo XClarity Administrator 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 provides full management function to ThinkSystem servers, including the following:

- Discovery
- Inventory
- Monitoring and alerting
- Call home
- Centralized user management
- Cryptography modes, server certificates, and encapsulation
- Configuration patterns
- Operating system deployment
- Firmware updates

For more information about Lenovo XClarity Administrator, including ordering part numbers, see the Lenovo XClarity Administrator Product Guide:
https://lenovopress.com/tips1200-lenovo-xclarity-administrator

Lenovo XClarity Provisioning Manager

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

Lenovo XClarity Provisioning Manager 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 setting, 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 (TPM) supporting both TPM 1.2 and TPM 2.0
- Optional Trusted Cryptographic Module (TCM), available only in China

The TCM 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 30. Security features

Part number	Feature code	Description
None*	AVKE	ThinkSystem Trusted Cryptographic Module (China customers only)

* The Trusted Cryptographic Module (TCM) for China customers is not available as a field upgrade. The component is CTO on pre-configured models only.

Supported operating systems

The server supports the following operating systems:

- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Red Hat Enterprise Linux 6 Server x64 Edition
- Red Hat Enterprise Linux 7
- SUSE LINUX Enterprise Server 11 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- SUSE LINUX Enterprise Server 12
- SUSE Linux Enterprise Server 12 with XEN
- VMware vSphere 6.0 (ESXi)
- VMware vSphere 6.5 (ESXi)

For more information about the specific versions and service levels that are supported, see the Operating System Interoperability Guide: https://lenovopress.com/osig

Physical specifications

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

- Height: 55.5 mm (2.2 in)
- Depth: 492.7 mm (19.4 in)
- Width: 215.5 mm (8.5 in)
- Maximum weight: 7.1 kg (15.6 lb)

Supported environment

The Lenovo ThinkSystem SN550 server complies with ASHRAE Class A3 specifications. System performance may be impacted when operating temperature is above ASHRAE A3 specification or fan failed condition.

- 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%

Warranty options

The ThinkSystem SN550 (machine type 7X16) 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.

Also available are Lenovo Services warranty maintenance upgrades and post-warranty maintenance agreements, with a predefined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

Lenovo warranty service upgrade offerings are country-specific. Not all warranty service upgrades are available in every country. For more information about Lenovo warranty service upgrade offerings that are available in your country, go to the Data Center Advisor and Configurator (formerly known as LESC) website http://lesc.lenovo.com, then do the following:

1. In the Customize a Model box in the middle of the page, select the **Services** option in the Customization Option dropdown menu
2. Enter the machine type & model of the system
3. From the search results, you can click either **Deployment Services** or **Support Services** to view the offerings

The following table explains warranty service definitions in more detail.

Table 31. Warranty service definitions

Term	Description
Onsite Service	If a problem with your product cannot be resolved via telephone, a Service Technician will be dispatched to arrive at your location.
Parts Delivered	If a problem with your product cannot be resolved via telephone and a CRU part is required, Lenovo will send a replacement CRU to arrive at your location. If a problem with your product cannot be resolved via telephone and a FRU part is required, a Service Technician will be dispatched to arrive at your location.

Term	Description
Technician Installed Parts	If a problem with your product cannot be resolved via telephone, a Service Technician will be dispatched to arrive at your location.
Hours of coverage	• 9x5: 9 hours/day, 5 days/week, during normal business hours, excluding local public & national holidays • 24x7: 24 hours per day, 7 days per week, 365 days per year.
Response time target	2 hours, 4 hours, or Next Business Day: The time period from when the telephone based troubleshooting is completed and logged, to the delivery of the CRU or arrival of a Service Technician and part at the Customer's location for repair.
Committed Repair	6 hours: The time period between the service request registration in Lenovo's call management system and the restoration of the product to conformance with its specification by a Service Technician.

The following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
  - Three, four, or five years of 9x5 or 24x7 service coverage
  - Parts delivered or technician installed parts from next business day to 4 or 2 hours
  - Committed repair service
  - Warranty extension of up to 5 years
  - Post warranty extensions
- Committed Repair Service

  Committed Repair Services enhances the level of Warranty Service Upgrade or Post Warranty/Maintenance Service offering associated with the selected systems. Offerings vary and are available in select countries.

  - Priority handling to meet defined time frames to restore the failing machine to good working condition
  - 24x7x6 committed repair: Service performed 24 hours per day, 7 days per week, within 6 hours
- YourDrive YourData

  Lenovo's YourDrive YourData service 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 with Lenovo warranty upgrades and extensions.
- Microcode Support

  Keeping microcode current helps prevent hardware failures and security exposure. There are two levels of service: analysis of the installed base and analysis and update where required. Offerings vary by country and can be bundled with other warranty upgrades and extensions.

- Enterprise Software Support

  Lenovo Enterprise Server Software Support can help you troubleshoot your entire server software stack. Choose support for server operating systems from Microsoft, Red Hat, SUSE, and VMware; Microsoft server applications; or both operating systems and applications. Support staff can help answer troubleshooting and diagnostic questions, address product compatibility and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

  In addition, you can access hardware “how to” support for ThinkSystem servers. Staff can help resolve hardware problems not covered under warranty, refer you to the right documentation and publications, provide corrective service information for known defects, and transfer you to a hardware support call center if needed.

- Hardware Installation Services

  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. Your new systems will be configured and ready for your software installation.

Regulatory compliance

The server conforms to the following standards:

- ASHRAE Class A3
- FCC - Verified to comply with Part 15 of the FCC Rules Class A
- Canada ICES-004, issue 3 Class A
- UL/IEC 60950-1
- CSA C22.2 No. 60950-1
- Japan VCCI, Class A
- IEC 60950-1 (CB Certificate and CB Test Report)
- Taiwan BSMI CNS13438, Class A; CNS14336
- Australia/New Zealand AS/NZS CISPR 22, Class A
- Korea KN22, Class A, KN24
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2,
- EN61000-3-3)
- TUV-GS (EN60950-1/IEC 60950-1, EK1-ITB2000)

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:

http://www.lenovofs.com

Related publications and links

For more information, see the following resources:

- ThinkSystem SN550 server product page
  http://www3.lenovo.com/us/en/p/77XX7FSFS55
- Interactive 3D Tour of the ThinkSystem SN550
  https://lenovopress.com/lp0668-3d-tour-thinksystem-sn550
- Flex System Information Center
  http://flexsystem.lenovofiles.com/help/index.jsp
- Operating System Interoperability Guide for SN550
  https://lenovopress.com/osig#servers=SN550&support=all
- Flex System Interoperability Guide
  http://lenovopress.com/fsig
- Support Portal for the SN550
  https://datacentersupport.lenovo.com/us/en/

Related product families

Product families related to this document are the following:

- Blade Servers

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