

Lenovo ThinkSystem ST550 MT Mini Tower torony szerver



Intel Xeon, Silver 4210, 10x, 2,2GHz, 32GB, DDR4, HDD-k max száma: 8db, 2,5", Hot-plug, 2x 1Gb/s, TPM, 750W, redundáns táp, RAID vezérlő: 930-8i, RAID 0, RAID 1, RAID 10, RAID 5, RAID 50, RAID 6, RAID 60, fekete

Cikkszám: 7X10A0F5EA.

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Introduction

The Lenovo ThinkSystem ST550 2-socket 4U rack-mountable tower server provides outstanding performance and industry-leading reliability. It is ideal for small-to-medium businesses, distributed enterprises, retail, educational institutions, and remote/branch offices.

The ST550 server now supports second-generation Intel Xeon Processor Scalable Family processors with up to 768 GB of TruDDR4 system memory.

Suggested uses: business workloads such as e-mail, workgroup applications, file & print, system management, web serving, and point-of-sale applications

Figure 1 shows the Lenovo ThinkSystem ST550.



Figure 1. Lenovo ThinkSystem ST550

Did you know?

The ThinkSystem ST550 is an enterprise-grade server with support for hot-swap power supplies, fans, and drives. It also offers full support of Lenovo XClarity Administrator for comprehensive systems management and includes the next generation UEFI-based Lenovo XClarity Provisioning Manager for system setup and diagnosis, and the Lenovo XClarity Controller management processor for ongoing systems management and alerting. These tools make the ST550 easy to deploy, integrate, service, and manage.

Key features

The ThinkSystem ST550 is a high-performance dual-socket tower server based on the second-generation Intel Xeon Scalable processors, supporting a wide range of processors to suit a wide range of budgets and application requirements.

Scalability and performance

The ST550 offers the following features to boost performance, improve scalability, and reduce costs:

- Improves productivity by offering superior system performance with up to two processors, each with up to 22 cores, and core speeds up to 3.8 GHz.
- Hyper-Threading Technology to maximize the concurrent execution of multithreaded applications, available with most processors.
- Intelligent and adaptive system performance with energy-efficient Intel Turbo Boost Technology, available with most processors, allows CPU cores to run at maximum speeds during peak workloads by temporarily going beyond processor thermal design power (TDP).
- Intel Virtualization Technology integrates hardware-level virtualization hooks that allow operating system vendors to better use the hardware for virtualization workloads.

- Intel Speed Select Technology provides improvements in server utilization and guaranteed per-core performance service levels with more granular control over processor performance.
- Intel Deep Learning Boost (Vector Neural Network Instruction set or VNNI) is designed to deliver significant, more efficient Deep Learning (Inference) acceleration for high-performance Artificial Intelligence (AI) workloads.
- Intel Advanced Vector Extensions 512 (AVX-512) enable acceleration of enterprise-class workloads, including databases and enterprise resource planning (ERP).
- Each processor has six memory channels with memory speeds of up to 2933 MHz to help maximize system performance
- Up to 768 GB of memory capacity using 12x 64GB DIMMs
- The 12 Gbps SAS internal storage connectivity doubles the data transfer rate compared to 6 Gb SAS solutions to maximize performance of storage I/O-intensive applications.
- Flexible storage configurations support either 2.5-inch or 3.5-inch hot-swap drive bays or a combination of the two (hybrid configuration). Configurations with 3.5-inch simple-swap drive bays are also available.
 - Up to 16x 2.5-inch drive bays with two 5.25-inch media drive bays available
 - Up to 20x 2.5-inch drive bays with the media bays converted to 4x 2.5-inch drive bays
 - Up to 8x 3.5-inch drive bays with two 5.25-inch media drive bays available
 - Up to 8x 3.5-inch + 4x 2.5-inch drive bays with the media bay conversion
 - Up to 8x 3.5-inch simple-swap drive bays
- 3.5-inch drive bays support SAS and SATA HDDs and SSDs. 2.5-inch drive bays support SAS and SATA HDDs and SSDs, as well as NVMe drives.
- Support for up to four NVMe PCIe SSDs in a 2.5-inch form factor maximizes drive I/O performance, in terms of throughput, bandwidth, and latency.
- The use of solid-state drives (SSDs) instead of, or along with, traditional hard disk drives (HDDs) can significantly improve I/O performance. An SSD can support up to 100 times more I/O operations per second (IOPS) than a typical HDD.
- New high-speed RAID controllers from Broadcom provide 12 Gb SAS connectivity to the drive backplanes. A variety of RAID adapters are available, with cache up to 4 GB and support for 20 drives on a single controller.
- Supports a new Lenovo patented-design M.2 adapter for convenient operating system boot functions. Available M.2 adapters support either one M.2 drive or two M.2 drives in a RAID 1 configuration for greater boot drive performance and reliability.
- The server has two integrated Gigabit Ethernet ports.
- The server offers PCI Express 3.0 I/O expansion capabilities that improve the theoretical maximum bandwidth by almost 100% (8 GT/ps per link using 128b/130b encoding) compared to the previous generation of PCI Express 2.0 (5 GT/s per link using 8b/10b encoding).
- The server offers up to six PCIe 3.0 I/O expansion slots plus one slot reserved for the M.2 adapter
- Support for up to two NVIDIA graphics processing units (GPUs) to maximize computing power.

Availability and serviceability

The ST550 provides the following features to simplify serviceability and increase system uptime:

- 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.
- The server offers hot-swap (HS) SSDs and HDDs, and supports RAID redundancy for data protection and greater system uptime.
- Much like HS drives, simple-swap drives are mounted on an easy-to-remove tray and work with the same RAID options. Simple-swap require a system power-down before adding or replacing, however simple-swap drives are less expensive than hot-swap drives.
- The Dual M.2 Boot Adapter supports RAID-1 which enables two installed M.2 drives to be configured as a redundant pair.
- The server supports hot-swap power supplies; with two installed, they form a redundant pair to provide availability for business-critical applications. The server also offers an optional 4th fan which offers redundancy in most server configurations.
- Toolless cover removal provides easy access to upgrades and serviceable parts, such as CPU, memory, and adapter cards.
- Proactive Platform Alerts (including PFA and SMART alerts) for: processors, voltage regulators, memory, internal storage (SAS/SATA HDDs and SSDs), fans, power supplies, RAID controllers, and server ambient and sub-component temperatures. Alerts can be surfaced through the system IMM 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.
- SSDs, with no moving parts, offer significantly better reliability than mechanical HDDs, for greater uptime.

- The built-in XClarity Controller continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Built-in diagnostics in UEFI, using Lenovo XClarity Provisioning Manager, speed up troubleshooting tasks to reduce service time.
- Lenovo XClarity Provisioning Manager supports diagnostics and can save service data to a USB key drive or remote CIFS share folder for troubleshooting and reduce service time.
- Auto restart in the event of a momentary loss of AC power (based on power policy setting in the XClarity Controller service processor)
- Support for the XClarity Administrator Mobile app running on a supported smartphone and connected to the server through the service-enabled USB port, enables additional local systems management functions.
- Three-year or one-year customer-replaceable unit and onsite limited warranty, 9 x 5 next business day. Optional service upgrades are available.

Manageability and security

The following powerful systems management features simplify local and remote management of the ST550:

- The server includes an XClarity Controller (XCC) to monitor server availability. Optional upgrade to XCC Advanced to provide remote control (keyboard video mouse) functions. Optional upgrade to XCC Enterprise enables the additional support for the mounting of remote media files (ISO and IMG image files), boot capture, and power capping.
- Lenovo XClarity Administrator offers comprehensive hardware management tools that help to increase uptime, reduce costs and improve productivity through advanced server management capabilities.
- 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.
- 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.
- Integrated Trusted Platform Module (TPM) 2.0 support enables advanced cryptographic functionality, such as digital signatures and remote attestation.
- Supports Secure Boot to ensure that only a digitally signed operating system can be used. Supported with HDDs and SSDs as well as M.2 drives in the M.2 Adapter.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.
- Intel Execute Disable Bit functionality can prevent certain classes of malicious buffer overflow attacks when combined with a supported operating system.
- Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks, allowing an application to run in its own isolated space, protected from all other software running on a system.
- Physical security measures to prevent unauthorized access: Lockable side cover to prevent access to internal components, a slot at the rear of the server for a Kensington Cable. Optional additional physical security features are a lockable front security door and a chassis intrusion switch (included in some models).

Energy efficiency

The ST550 offers the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to the green environment:

- Energy-efficient planar components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Platinum and Titanium certifications. Energy Star 2.1 certified.
- Intel Intelligent Power Capability powers individual processor elements on and off as needed to reduce power draw.
- Low-voltage 1.2 V DDR4 memory DIMMs use up to 20% less energy compared to 1.35 V DDR3 DIMMs.
- SSDs use as much as 80% less power than traditional spinning 2.5-inch HDDs.
- The server uses hexagonal ventilation holes, which can be grouped more densely than round holes, providing more efficient airflow through the system.
- Optional Lenovo XClarity Energy Manager provides advanced data center power notification, analysis, and policy-based management to help achieve lower heat output and reduced cooling needs.

Components and connectors

The following figure shows the front of the server.



Figure 2. Front view of the ThinkSystem ST550 server

The following figure shows the rear of the server.



Figure 3. Rear view of the ThinkSystem ST550 server

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



Figure 4. Internal view of the ThinkSystem ST550 server

System architecture

The following figure shows the architectural block diagram of the ST550, showing the major components and their connections.



Figure 5. ST550 system architectural block diagram

Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine type	7X09 - 1 year warranty 7X10 - 3 year warranty
Form factor	Tower or 4U Rack.
Processor	One or two second-generation Intel Xeon Processor Scalable Family of processors, either Bronze, Silver, Gold or Platinum-level processors (formerly codename "Cascade Lake"). Supports processors up to 22 cores, core speeds up to 3.8 GHz, and TDP ratings up to 125W. Two Intel Ultra Path Interconnect (UPI) links at 10.4 GT/s each.
Chipset	Intel C624 "Lewisburg" chipset
Memory	Up to 12 DIMM sockets (6 DIMMs per processor) supporting Lenovo TruDDR4 DIMMs at up to 2933 MHz. RDIMMs and LRDIMMs (Load Reduced DIMMs) are supported, but memory types cannot be intermixed.
Memory maximums	Up to 768 GB with 12x 64 GB RDIMMs and two processors
Memory protection	ECC, SDDC (for x4-based memory DIMMs), ADDDC (for x4-based memory DIMMs, requires Intel Xeon Gold or Platinum processors), memory mirroring, and memory sparing.
Disk drive bays	Available configurations: • 8, 16, or 20x 2.5-inch SAS/SATA hot-swap (optional support for NVMe drives) • 4 or 8x 3.5-inch SAS/SATA hot-swap • Both 8x 3.5-inch + 4x 2.5-inch SAS/SATA hot-swap • 4 or 8x 3.5-inch SATA simple-swap Additional drive bays (except for 20-bay and hybrid configurations): • Two 5.25-inch drive bays for optical drives
Maximum internal storage	• 153.6 TB with 20x 7.68TB 2.5-inch SAS hot-swap SSDs • 142.7 TB with 8x 14TB 3.5-inch HDDs + 4x 7.68TB 2.5-inch SSDs • 112 TB with 8x 14TB 3.5-inch NL SAS or NL SATA hot-swap HDDs • 80 TB with 8x 10TB 3.5-inch NL SAS or NL SATA simple-swap HDDs • Intermix of SAS and SATA is supported.
Storage controller	• Onboard 6 Gb SATA for simple-swap drive configurations, using embedded Intel RSTe software RAID, supporting RAID 0, 1, 10, 5, 50 • 12 Gb SAS/SATA RAID for hot-swap drive configurations: ◦ RAID 530i (cacheless) supports RAID 0, 1, 10, 5, 50 ◦ RAID 730-8i with 1GB cache supports RAID 0, 1, 10, 5, 50 ◦ RAID 730-8i with 2GB flash-backed cache supports RAID 0, 1, 10, 5, 50, 6, 60 ◦ RAID 930-8i with 2GB flash-backed cache supports RAID 0, 1, 10, 5, 50, 6, 60 ◦ RAID 930-16i and 24i with 4GB flash-backed cache supports RAID 0, 1, 10, 5, 50, 6, 60 • 12 Gb SAS/SATA non-RAID: 430-8i and 430-16i HBAs
Optical drive bays	Two half-height 5.25-inch bays for optical or tape drives. Supports DVD-ROM or Multiburner. Hot-swap bays can be converted to 4x 2.5-inch hot-swap drive bays. (Not available with simple-swap drive configurations.)
Tape drive bays	Two half-height 5.25-inch bays for optical or tape drives. Support for one RDX drive or LTO tape drive.

Network interfaces	Two integrated Gigabit Ethernet 1000BASE-T ports (RJ-45) based on Intel X722 embedded controller (No 10/100 Mbps support)
PCI Expansion slots	Up to 7 PCIe slots: 6 general purpose PCIe 3.0 slots plus one slot reserved for the M.2 adapter. General purpose slots are as follows: - Slot 1: PCIe 3.0 x8 (25W) FHHL - Slot 2: PCIe 3.0 x16 (75W); FHHL - Slot 3: PCIe 3.0 x16 (75W); FHFL - Slot 4: PCIe 3.0 x16 (x8 wired) (25W); FHFL (requires second processor) - Slot 5: PCIe 3.0 x16 (75W); FHFL (requires second processor) - Slot 6: PCIe 3.0 x8 (x4 wired) (25W); FHFL Slots 3 and 5 support double-wide GPUs
Ports	- Front: Two USB ports (one USB 3.0, one USB 2.0 port) - Rear: Six USB ports (four USB 2.0, two USB 3.0), one VGA video, one RJ-45 systems management, two RJ-45 GbE network ports, optional serial port. - Internal: One internal USB 3.0 port for RDX drive
Cooling	Supports ASHRAE A2 environments as well as A3/A4 with some limitations. Up to four simple-swap fans: two fans shipped standard on single processor models and three fans shipped on dual processor models or models where there are drive bays in lieu of the optical drive bays. The fourth rear-mounted fan is N+1 redundant, except for certain configurations.
Power supply	Up to two redundant hot-swap 550 W, 750 W or 1100 W High Efficiency Platinum AC power supplies, or 750 W High Efficiency Titanium AC power supplies. Also available is a 450 W fixed (non-hot-swap) power supply. In China only, all hot-swap power supplies also support 240V DC.
Hot-swap parts	Hard drives, power supplies, and fans
Systems management	Operator panel with status LEDs. XClarity Controller embedded management, XClarity Administrator centralized infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. Optional XClarity Controller Advanced to enable remote control functions.
Security features	Power-on password, administrator's password, Trusted Platform Module (TPM), supporting TPM 1.2 or TPM 2.0. In China only, optional Trusted Cryptographic Module (TCM). Kensington cable slot. Lockable side cover. Optional lockable front security door and chassis intrusion switch (included with some models).
Video	G200 graphics with 16 MB memory with 2D hardware accelerator, integrated into the XClarity Controller. Maximum resolution is 1920x1200 32bpp at 60Hz.
Operating systems supported	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi. See the Operating system support section for specifics.
Limited warranty	Three-year or one-year (model dependent) customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.
Dimensions	<i>Tower</i> : width, without foot stands: 176 mm (6.9 in), width, with foot stands: 272 mm (10.7 in), depth: 670 mm (26.4 in), height: 438 mm (17.2 in). <i>With rack conversion kit</i> : Width: 482 mm (18.97 inches), depth: 670 mm (26.4 in), height: 176 mm (6.9 in)
Weight	Fully configured: 36 kg (79.36 lb)

HDD-k max száma	8
RAID 50	Van
RAID 60	Van
Gyártó	Lenovo
formátum	MT Mini Tower
HDD mérete	2.5
Hot-Plug	Van

LAN	2× 1Gb/s
memória foglalat típusa	DDR4
memória mérete	32 GB
memória órajele	2933
modulok száma	1
processzor alap órajele	2.2 GHz
processzor család	Intel Xeon
processzor foglalat típusa	LGA3647
processzor magok száma	10
processzor modellszám	Silver 4210
processzorok maximális száma	2 db
processzorok száma	1
RAID 0	Van
RAID 1	Van
RAID 10	Van
RAID 5	Van
RAID 6	Van
RAID funkció	Van
RAID vezérlő	930-8i
redundáns táp	Van
tápegység teljesítménye	750
tápegységek száma	2
TPM	Van
USB2.0	2
USB3.0	4
szín	fekete