ThinkEdge SE455 V3

Edge optimized processing for AI, Telco and workload consolidation



Edge-optimized processing for AI, Telco, and workload consolidation

Computing at the Edge has been evolving at a rapid pace in recent years, bringing innovation, opportunity, and a new set of challenges. Lenovo has been at the forefront of this area, tackling the challenges, liberating innovation, and allowing opportunities to become a reality.

This effort has not limited itself to simply making groundbreaking hardware offerings, it has also brought to life new tools for deploying, managing, and securing the data on that hardware.

Lenovo has not stopped there though and it is fostering partnerships across the industry and developing exciting collaborations, such as the AI Innovators program.

To support this growing need, Lenovo has developed the ThinkEdge SE455 V3. The SE455 V3 brings innovation to many key areas that are important to Edge users, including AI and Telco specific solutions. It also supports the emerging workload consolidation strategies, as Edge goes mainstream.

Lenovo and AMD: partnership is at the heart of all good solutions

At the computing heart of the SE455 V3 is the AMD EPYC™ 8004 Series Processor.

The AMD EPYC 8004 series is perfect for the Edge. It uses the same Zen4c architecture as the AMD EPYC 97X4 series, but it packages the cores into a physically smaller footprint. This reduces the maximum core count from the massive 128 cores that excels in a Data center to more Edge-friendly 64 cores. This clever approach means that the SE455 V3 can deliver Data center levels of performance, with a power profile that fits the needs of the Edge.

The AMD EPYC 8004 series further benefits from the latest range of technical abilities from AMD. This includes using energy efficient DDR5 memory and the blazing performance of PCIe Gen5, for the most demanding GPU and I/O solutions.

Ready to support your needs

The SE455 V3 brings a new modular approach to Edge computing, allowing it to be tailored to the specific needs of the solution. Build on the core of an OCP 3.0 LOM, two M.2 for boot, four hot-swap 2.5” SSDs for storage, and three PCIe slots, and then add a further four drives internally and three more PCIe slots if the I/O or accelerators demand it.

For solutions that need maximum storage, this delivers over 490TB of NVMe storage or if I/O is key, more than 250GB/s of PCIe slot bandwidth. For processing, the 75W 8-core offering is the power-sensitive entry point but a 200W 64-core offering is also available for the most demanding tasks.

Lenovo knows that when building a solution is important to be flexible, so many of the elements of the system can be modified and enhanced after it has left the factory. You can add more PCIe slots, change the GPU configuration, add a RAID adapter, and even have a spare fan to hand just in case. There is a wide range of upgrade options, as the SE455 V3 shares many parts (such as storage, adapters, OCP, and memory) with the wider ThinkSystem portfolio.

Being flexible goes beyond the hardware; Lenovo offers support levels for a wide range of operating systems including Alma Linux, Citrix XenServer, Microsoft Windows Server, Red Hat, Rocky Linux, SLES, Ubuntu, and VMware. Visit lenovopress.com/osig for full details.

Management and control of remote assets is another critical area to consider when looking at the Edge. The SE455 V3 comes with the XClarity Controller BMC, which is used across the wider ThinkSystem range.

The latest XCC2 level of hardware and software is used by SE455 V3 to ensure you are always in control, no matter where you or the system might be. Add to this the Lenovo Open Cloud Automation solution and you can deploy and manage the remote Edge at scale and with ease.

All of this stands ready to support you for years to come. The long-life processors from AMD mean that the SE455 V3 can be your reliable offering, not just for today but also tomorrow, making the SE455 V3 a solid base for your Edge needs, no matter what direction the future may take you.

Being the considerate guest

When deploying solutions at the Edge there is one critical element that can often be overlooked. This is that there are the people who already work there, and who may now find themselves sharing their space with a new guest. Lenovo understands that ThinkEdge needs to fit into these situations with ease, and not be annoying, distracting, or get in the way!

That's why across the range you'll see innovative ways to mount the systems so that they can find a spot that suits both the system and the users. For the SE455 V3, it can be deployed into a 2-post or 4-post rack, and the short depth means that it can fit into many wall-mounted cabinets.

Noise levels are also important to many Edge locations. The SE455 V3 is designed to operate as quietly as possible during normal operations, by sensing components' temperature and adjusting the fans. This ensures that they deliver just the right amount of cooling and not too little such that parts overheat, but also not too much so that they're making noise unnecessarily. Boot up noise levels are also optimised to ensure quietness of operation at all times.

In addition to this, the considerate SE455 V3 can also operate in an Acoustic Mode whereby the fans are capped to either 40dbA or 45dbA at temperatures up to 25°C with reduced noise levels up to 35°C. This ensures that the system is respectful of the acoustic landscape and manages itself to ensure it stays that way.

Securing your physical and data assets

At Lenovo, security begins with design, and continues through supply chain, delivery, and the full lifecycle of the system.

Physical protection for the SE455 V3 includes a lockable top cover, a lockable security bezel, and a security bolt to secure the system into a rack. If the system is compromised, then the intrusion detection sensors can be configured to lock the system down, including locking the SED drives, so that no data can be stolen.

The system can then only be powered on again by the administrator's command directly in the XClarity Controller, or centrally via the ThinkShield Key Vault Portal, effectively rendering the system useless to a thief.

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Protection of a system in transit is also important. To ensure that the system that arrives untouched, System Guard can profile the system to spot any hardware changes and by using lockdown mode, the data can be protected from access and modification and as well as minimizing the hardware's value.

Once up and running the built-in technologies of AMD Infinity Guard including Secure Memory Encryption, Secure Encrypted Virtualization, Secure Nested Paging, and Secure Boot are ready to protect your data. These technologies include the ability to encrypt VMs, to add strong memory integrity protection from hypervisor-based attacks, and even to hardware encrypt system memory with no performance impact.

When Secure Boot is enabled, the system validates each component's digital signature to ensure protection from rootkits and boot kits. The SE455 V3 also complies with NIST SP800-193 compliant Platform Firmware Resilience (PFR).

Tough enough for the most challenging environments

For more challenging situations, the SE455 V3 is designed to meet the rigors of NEBS Level 3 certification. This means it can keep operating even if hit by 40G of shock (Mil Spec 810G) and 1.31 Grms of vibration. Design points such as the PCIe card side supports, and riser rear supports, ensure that components are held tightly in place for shipment and operation.

This ruggedness allows the SE455 V3 to pass tests including NEBS GR-63-CORE issue 5, 4.4.1 Earthquake Environment and Criteria and survive drop tests documented in NEBS GR-63-CORE issue 5, 4.3.2 Unpackaged equipment shock criteria. The system also has dedicated grounding points, ready to accept a grounding cable.

The SE455 V3 can also be fitted with a dust filter meeting MERV 4 standards, ensuring the system can keep the dust out.

To ensure this filtration is maintaining acceptable levels, the system also has an air flow sensor, so that it can detect when that filter is clogged and needs replacing.

There is also the temperature environment to consider. The SE455 V3 has been subjected to a variety of tests to ensure we know its limits. This allows Lenovo to offer configurations that support, not only a reasonable 25°C, but also up to 30°C, 35°C, 40°C, 45°C, 50°C and 55°C. At each level, Lenovo has tuned the available configurations to ensure you can rely on your system to deliver the best computing solution: including running 64 processing cores with NVIDIA GPUs and NVMe storage at 55°C.

Elevating Telco Efficiency to New Levels

Edge technologies are changing the way Telcos work at the Edge, and the pressure to adopt the new technology is significant. New technology can appear complex as absolute performance is not the only consideration. Telcos must balance processing power against power consumption whilst ensuring the system has sufficient bandwidth for efficient packet routing. The Flexible and modular SE455 V3 can help to meet these challenges.

Built for the Edge from the ground up, the SE455 V3 with AMD EPYC 8004 Series Processors, has many features that help strike the right balance for Telco. The NEBS friendly processors in particular offer outstanding performance per watt and also support operating temperatures up to 55°C on either AC or -48V DC power.

Flowing data through the system is enhanced by Gen5 PCIe x16 slots which double the throughput per slot over PCIe Gen4 x16, making the SE455 V3 ready for the next generation of accelerators, to process even more data. And Security is built into the core of every ThinkEdge system to ensure that even if someone takes the system, they won't get the data.

This all adds up to an amazing building block for Telco, whether the challenge is to reduce power consumption for RAN, enable more subscribers per system or supporting private 5G.

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Specifications

Form Factor	2U rack server 440mm (17.3in)
Processor	1x AMD EPYC™ 8004 Series Processor (4th Generation AMD EPYC), up to 64 cores, up to 225W TDP
Drive Bays	Up to 4x 2.5-inch SAS/SATA/NVMe 15mm front accessible hot-swap drives Up to 4x 2.5-inch SAS/SATA/NVMe 15mm internal drives (using hot-swap trays) Up to 2x M.2 boot drives (RAID 0/1)
Memory	6x TruDDR5 memory slots; Maximum 768GB using 6x 128GB RDIMMs
Expansion Slots	Up to 2x PCIe 5.0 x16 slots Up to 4x PCIe 4.0 x8 slots 1x OCP 3.0 PCIe 5.0 x16 slot
GPUs	Up to 6x single-width GPUs or 2x double-width GPUs
Network Interface	LOM adapter installed in the OCP 3.0 slot Up to 6x PCIe adapters
Ports	Front: 1x USB-C, 2x USB 3.0, 1x USB 2.0 for XCC2, 1x RJ45 for XCC2, 1x Diagnostic handset, COM port via PCI slot Rear: No ports or buttons
HBA/RAID Support	Optional HW RAID or SAS HBA
Power	Dual redundant power supplies AC (1100W/1800W Platinum, 1100W Titanium) or Dual redundant power supplies -48V DC 1100W
Systems Management	Lenovo XClarity Controller
OS Support	Alma Linux, Citrix, Microsoft, Red Hat, Rocky Linux, SLES, Ubuntu, VMware Support levels vary: Visit lenovopress.com/osig for details.
Environmental	-5°C to 55°C operation with selected configurations Designed for NEBS Up to 40G shock (Mil Spec 810G) and 1.31 Grms vibration Optional Dust Filter with airflow sensor
Security	NIST SP800-193 compliant Platform Firmware Resilience (PFR) Integrated SED Key Management TPM 2.0 with optional Secure Boot System Guard System lockdown on intrusion detection managed with XClarity Controller or ThinkShield Key Vault Portal (Optional) Security EIA Bracket (Optional) Lockable Security Bezel with air filter (Optional) AMD Infinity Guard technologies including Secure Memory Encryption, Secure Encrypted Virtualization, Secure Nested Paging and Secure Boot
Limited Warranty	3-year customer replaceable unit and onsite service, next business day 9x5; optional service upgrades

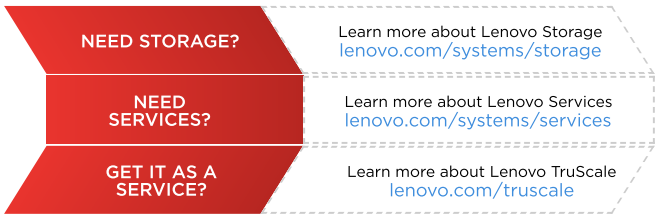
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About Lenovo

Lenovo is a US$83 billion revenue global technology powerhouse, ranked #153 in the Fortune Global 500, and serving millions of customers every day in 180 markets. Guided by its **vision** of "Smarter Technology for All", Lenovo is executing a **Hybrid AI strategy** that spans Personal AI – one personal AI, multiple devices; and Enterprise AI – helping customers turn data into insights and value. This strategy is delivered through the Group's commitment to **world-class innovation** and a full-stack AI portfolio, including devices, infrastructure solutions, software, and services. Lenovo is widely recognized for its **operational excellence**, with a global footprint spanning more than 20 R&D locations and a supply chain that includes more than 30 manufacturing sites across 10 markets.

For More Information

To learn more about the ThinkEdge SE455 V3, contact your Lenovo representative or Business Partner, or visit lenovo.com/systems/servers. For more details consult the SE455 V3 Product Guide.



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