Intel Smart Edge Solutions with Lenovo ThinkEdge SE450

Solution Brief

Faster, flexible innovation at the edge

The growing rollout of both public and private 5G services is enabling a new edge computing paradigm. These high-bandwidth, low-latency, and more secure 5G networks provide access to cloud compute resources nearer to the devices that are delivering the data to the users consuming the information.

As edge services continue to gain momentum, the ecosystem and enterprises need a more efficient approach to abstract complexity and simplify development and deployment of infrastructure and apps for the edge. There is a clear demand for cloud-native flexibility to seamlessly move workloads from cloud to edge—where businesses need it.

Intel Smart Edge is a Kubernetes-based portfolio of edge software solutions that enables highly optimized edge platforms to manage applications and network functions with cloud-like agility across any type of network.

The portfolio consists of Intel Smart Edge Open (previously called OpenNESS), a royalty free edge computing software toolkit, and a commercial edge software from Intel, Intel Smart Edge. Intel Smart Edge is based on Intel Smart Edge Open, and is delivered with added differentiated features, business terms and conditions and dedicated support.

Overview

The Intel Smart Edge Controller provides a centralized provisioning and management platform for Mobile Edge Computing Edge Nodes, functions and services. The platform is comprised of five components detailed within this site.

Collectively these modules provide the following core services to an Intel Smart Edge solution:

- Centralized discovery of hardware and orchestration of all required software components for all edge computing Edge Nodes
- Select aggregation and normalization of 3rd party Application Programming Interfaces (API) for services running on the edge
- Lifecycle and configuration management of Edge Node firmware and software (including the operating environment), core Edge Node software features, and 3rd party software
- Centralized reporting and capacity planning
- Role-based Access Control (RBAC) and user provisioning with integration into existing Evolved Packet Core (EPC) modules and 3rd party infrastructure
- Centralized management of service assurance features with configurable Fault Configuration Accounting Performance Security (FCAPS) policies

Lenovo and Intel leverage the best of our capabilities across our edge offerings to deliver better business outcomes.

The new ThinkEdge SE450 server is designed to process a huge amount of data, directly at edge sites and deliver the insights needed for edge AI use cases to become a reality. It is created to deliver the promise of AI at the edge by using the latest Intel technologies and acceleration cards.

Intel Smart Edge portfolio offers edge computing software validated on the SE450, to onboard and manage applications and network functions across On-Premise and the Network Edge.

Delivering advanced capabilities required at the edge for AI, Media, Security, Networking and many more, the Smart Edge portfolio supports workload convergence at the edge across Networking and IoT workloads, thereby enabling our customers and partners with the most optimized platforms for service acceleration at the edge.

“Our collaboration with Lenovo helps enterprises across many sectors drive business value through network transformation and edge computing,” said Jeni Panhorst, Vice President and General Manager of the Network & Edge Platforms Division at Intel. “Resilient and flexible edge servers built with 3rd Gen Intel Xeon Scalable processors provide enhanced performance enabling the delivery of innovative AI-driven services where customers will expect them.”

Lenovo ThinkEdge SE450

The ThinkEdge SE450 is purposely designed to operate outside of the datacenter, where the data is created and where the users need it. The small form factor of the server allows it to be installed in remote locations with no typical IT infrastructure. For example, the SE450 can be installed in a small cabinet, mounted on the wall or self-standing with a floor stand. The server is also built to operate in ruggedized conditions, sustaining wider operating temperature as well as shock and vibration.

Figure 1. Lenovo ThinkEdge SE450

The small form factor and ruggedized server does not compromise on performance by supporting Intel's 3rd Gen Xeon Scalable processors and up to four (4) PCI expansion cards.

Security at the edge is crucial, which is why the SE450 includes the later TPM 2.0 technology and various secure technologies protecting the device and data it contains.

The new SE450 is designed to process a huge amount of data, directly at edge sites and deliver the insights needed for edge AI use cases to become a reality. It is created to deliver the promise of AI at the edge by using the latest Intel technologies and several AI acceleration cards.

While the SE450 is deployed in several remote locations, it is easily configured centrally by xClarity Orchestrator and the Cloud infrastructure is automatically installed and managed with Lenovo Open Cloud Automation (LOC-a). Remote access to the server via a completely out-of-band wireless access avoids any unnecessary trip to the edge locations.

Specifications

Form Factor	2U rack server 300mm (11.8in) depth with 4x FHHL adapters; or 2U rack server 360mm (14.2in) depth with 4x FHFL adapters
Processor	1x 3rd Gen Intel Xeon Platinum processor, up to 36 cores, up to 225W TDP
Drive Bays	Up to 6x 2.5-inch 7mm drives; Up to 6x NVMe drives supported; 2x M.2 boot drives (RAID 1)
Memory	10x DDR4 memory slots; Maximum 1TB using 8x 128GB 3DS RDIMMs; Supports up to 4x Intel Optane™ Persistent Memory 200 Series modules (PMem)
Expansion Slots	Up to 4x PCIe 4.0 slots, 1x OCP 3.0 slot
GPUs	Up to 4x single-width GPUs or 2x double-width GPUs
Network Interface	LOM adapter installed in the OCP 3.0 slot; PCIe adapters
Ports	Front: 1x Power Button, 1x system locator, health with LED, 1x VGA, 2x USB 3.1, 1x Serial Port (optional), 1x RJ-45 1Gb for dedicated management, 1x system locator LED; Optional Wi-Fi (management)
HBA/RAID Support	SW RAID standard; optional HW RAID with or without cache, or SAS HBAs
Power	Dual redundant power supplies AC (up to 1100W Platinum) or Dual redundant power supplies -48V DC 1100W
Systems Management	Lenovo XClarity Controller
OS Support	Microsoft, Red Hat,Ubuntu, CentOS, VMware.
Limited Warranty	3-year customer replaceable unit and onsite service, next business day 9x5; optional service upgrades

The SE450 exceeds the performance benchmarks required to address challenges emerging at the network Edge and has also been verified for Intel Select Solution for vRAN.

You can learn more about SE450 downloading the datasheet for this server.

Conclusion

With the Lenovo ThinkEdge SE450 server and Intel Smart Edge solutions, CoSPs and enterprises can quickly and efficiently deploy edge-centric networks, compute capabilities, and workload convergence across a range of vertical industries. Together, Lenovo and Intel help clients deploy robust network infrastructure to support edge computing from common locations on the network and on-premises edge.

Related product families

Product families related to this document are the following:

- Edge Servers
- ThinkEdge SE450 Edge Server

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