Telco Cloud Platform RAN on Lenovo ThinkEdge SE455 V3 Server for 5G

Powered by the AMD EPYC 8004 Series Processor

SOLUTION AT A GLANCE

Lenovo ThinkEdge SE455 V3 Server and VMware Telco Cloud Platform RAN combine to make an ideal foundation for mobile operators building out their Telco Cloud environment for virtualized RAN elements and telco edge applications.

The Lenovo ThinkEdge SE455 V3 server, based on the new Edge-optimized AMD EPYC™ 8004 Series processor, complements the solution by providing the performance-per-watt that telcos need.

LENOVO THINKEDGE SE455 V3 SERVER

The Lenovo ThinkEdge SE455 V3 Server with Edge-optimized AMD EPYC™ 8004 Series Processors is a ruggedized, high-performing, sustainable server for the unique challenges of telecommunications networks. It hosts a single socket AMD Siena Server designed for the performance-per-watt needs of telco edge applications, with up to 64 power-efficient cores. Combined with the virtualization and container management layer provided by VMware Telco Cloud Platform RAN, mobile operators can build out a highly efficient private cloud optimized for power efficiency and performance.

To find out more about Lenovo, visit: https://www.lenovo.com

FIGURE 1: The Lenovo ThinkEdge SE455 V3. Source: Lenovo.

Server Requirements for the RAN and the Edge

As Communication service providers (CSPs) roll out modern, virtualized architectures for their radio access networks (RAN) and edge services, they need an underlying platform for their private clouds that can cope with the demanding operating environment at the network edge. Platforms used to build these private clouds need to be power efficient, rugged and designed for remote management and operation at huge scale.

VMware and Lenovo have combined their RAN-optimized hardware and software products to provide CSPs with the ideal underlying platform for rolling out their private clouds to remote RAN and edge sites. The solution is based on the Lenovo ThinkEdge SE455 V3 server powered by the latest AMD EPYC 8004 Series Processor and VMware Telco Cloud Platform RAN, which allows operators to host and manage virtualized and containerized RAN network elements and edge services.

Lenovo ThinkEdge SE455 V3 Server with Edge-optimized AMD EPYC 8004 Series Processors

The Lenovo ThinkEdge SE455 V3 Server with Edge-optimized AMD EPYC 8004 Series Processors is a ruggedized, high-performing, sustainable server for the unique challenges of telecommunications networks.

- The system handles increased network traffic and subscriber demands with leading system performance, high core count (up to 64) and improved system bandwidth.
- Power-efficient cores provide 1.4x improvement in performance per Watt, enabling operators to lower costs and meet subscribes' performance needs.
- The modular platform design can accommodate multiple RAN accelerator technologies (lookaside, inline, SW based) and RAN deployment options (MU-mimo, mmWave)
- Zero-touch provisioning for rapid, automated deployment and remote system management. simplifying large-scale deployments across thousands of locations.
- System and data security with tamper protection, intrusion detection, system lock down, hardware root of trust, and encryption.
- Meet sustainability goals with reduced power consumption.

Integrated VMware and Lenovo Solution

Lenovo and VMware have successfully integrated and tested VMware Telco Cloud Platform RAN on the AMD-powered Lenovo ThinkEdge SE455 V3 server. The combination of the Lenovo ThinkEdge SE455 V3 Server and VMware Telco Cloud Platform RAN is a compelling solution for CSPs looking for a highly scalable horizontal platform to host their RAN functions as they embark on their evolutionary journey from Legacy RAN to vRAN to O-RAN. With telcos standing on the cusp of virtualized

VMWARE TELCO CLOUD PLATFORM RAN AT A GLANCE

VMware Telco Cloud Platform RAN™ is powered by field-proven virtualized compute coupled with VMware Telco Cloud Automation™ and VMware Tanzu™ for Telco RAN, a telco-grade Kubernetes distribution. VMware Telco Cloud Platform RAN paves a clear path to RAN modernization by enabling CSPs to evolve from their traditional RAN to a disaggregated vRAN and, ultimately, open RAN.

KEY BENEFITS AND CAPABILITIES

• Run virtualized baseband functions, virtualized distributed units (vDUs), and virtualized central units (vCUs) in accordance with stringent RAN performance and latency requirements

• Gain flexibility and agility while maintaining equivalent performance to bare metal solutions

• Automatically provision underpinning infrastructure resources at the time of vDU and vCU instantiation for RAN optimization

• Use the same common platform to disaggregate the RAN now and migrate to open RAN in the future

• Use a security-hardened Linux host called Photon OS that is optimized for running containers on VMware vSphere®

• Isolate vDUs and vCUs on virtual machines and the VMware hypervisor, VMware ESXi™, to establish strong security boundaries

• Automate lifecycle management of infrastructure, Kubernetes clusters, vRAN functions, and 5G services

• Monitor and manage your RAN for high availability with closed-loop automation and remediation
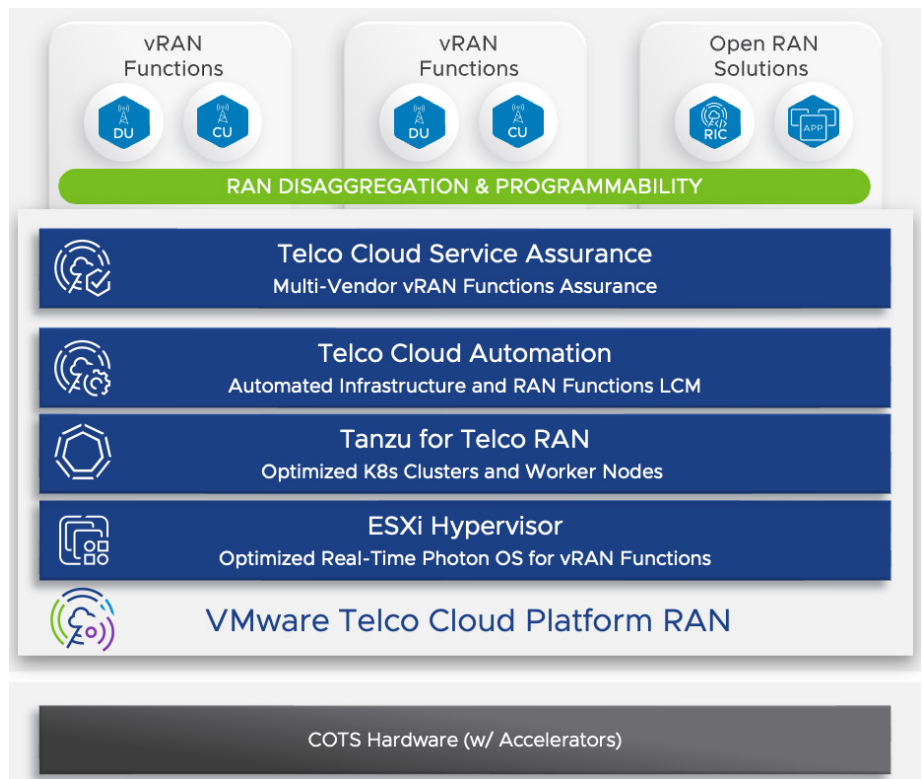

FIGURE 1: VMware Telco Cloud Platform RAN.

5G RAN, the solution provided by the two companies is ideal for the mass deployment of virtualized Distributed Units (DU) in a 5G network rollout.

The horizontal design coupled with operational consistency remove business uncertainties derived from introducing new virtualization technologies to a traditional proprietary-hardware-centric RAN environment, enabling CSPs to accelerate innovation speed, deploy 5G services fast, and scale the services as customers' demands grow.

In addition to RAN network elements, the combination of the new Lenovo Server and VMware Telco Cloud Platform RAN is also well suited to hosting Edge-native applications for residential and corporate customers.

In the ever-evolving landscape of cellular communication, the solution provided by Lenovo and VMware stands as a beacon of innovation, promising to reshape how we connect and communicate in a world that is constantly on the move. As rich content providers continue to push boundaries, this solution emerges as the bridge that links aspiration to realization, empowering networks to rise to the occasion and deliver connectivity that is not only fast, but also robust, secure, and sustainable.

Benefits for Mobile Operators

Power Efficiency and Performance

The Lenovo ThinkEdge SE455 V3 hosts a single socket AMD Siena Server designed for the performance-per-Watt needs of Telco Edge applications, with up to 64 power-efficient cores. Combined with the virtualization and container management layer provided by VMware Telco Cloud Platform RAN, mobile operators will be able to build out a highly efficient private cloud optimized for power efficiency and performance.

FIGURE 3: The benefits of the solution.

Security and Reliability

To enhance overall security posture, VMware Telco Cloud Platform RAN provides built-in security, where security is programmable, automated, and context-aware, with consistent security policies applied across distributed RAN sites, minimizing the risk of configuration errors or other changes that expose vulnerabilities.

With VMware's built-in security, each vRAN function is isolated within the virtualization layer, separating the management of the virtualization plane from other systems. The horizontal design of the platform combined with built-in security makes the platform flexible to run various vRAN functions across distributed RAN sites yet more secure than the conventional parameter-based and reactive security measures.

The SE455 V3 server is designed to meet the security and requirements for the Telco edge. It is ruggedized and NEB3 compliant, shock and vibration resistant, and it has extended temperature support up to 55 Degrees C.

Designed to Be Cost-Effective for Large-Scale Deployments

The combined solution supports rapid, automated deployment for thousands of Telco edge locations. With VMware's Telco Cloud Automation, operators can accelerate network service time-to-market with a simplified vendor-neutral and standard-compliant approach for designing and onboarding network functions and services. In addition, Lenovo XClarity provides hardware equipment insights and system management capabilities.

Edge Services

VMware Telco Cloud Platform RAN is designed to allow CSPs and their customers to develop custom 5G services at RAN sites, providing a tool for CSPs to offer superior edge computing services compared to the technology of the hyperscalers. This is achieved by allowing 5G services, developed on and delivered from VMware Telco Cloud Platform RAN, to directly access ultra-high speed 5G networks end-to-end, from the consumer of the services all way up to the core of the network, making RAN to be truly modernized and transformed into a 5G multi-services hub.

For more information, see:

- *VMware Telco Cloud Platform RAN*
- *Lenovo and AMD Alliance Page*
- *ThinkEdge SE455 V3 Product Page*

LEARN MORE

For more information about the VMware Telco Cloud, call 1-877-VMWARE (outside North America, dial +1-650-427-5000) or visit
https://telco.vmware.com/