

# Lenovo ThinkEdge SE455 V3 Server and VMware Telco Cloud Platform RAN Solution for 5G Radio Access Networks

## Solution Brief

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 Radio Access Network (RAN) elements and Telco Edge applications.



Figure 1. Lenovo ThinkEdge SE455 V3 Edge Server

### 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 Telecom's unique challenges.

- 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 double the orchestrated workloads per socket while achieving a 50% reduction in overall vRAN power consumption (based on 3rd-party testing), enabling operators to lower costs and meet subscribers' performance needs
- 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.
- Secure system and data with tamper protection, intrusion detection, system lock down, HW root of trust and encryption.
- Meet sustainability goals with reduced power consumption.

## **VMware Telco Cloud Platform RAN**

To get the maximum benefit of 5G, CSPs must modernize their RAN. This is because traditional RAN is too inflexible in terms of both cost and time-to-market to serve as a viable delivery method of new 5G services. Achieving the needed agility and spurring innovation requires virtualization that eliminates reliance on proprietary hardware and enables the use of emerging industry standards for RAN interfaces to disaggregate RAN functions. In short, CSPs need an evolutionary path from traditional RAN to vRAN and then to Open RAN.

To help CSPs transform their RAN, VMware has developed the VMware Telco Cloud Platform RAN. VMware Telco Cloud Platform RAN helps CSPs to virtualize RAN functions now on a horizontal platform specifically optimized for RAN. The platform enables CSPs to monetize their RAN investments by providing flexibility, scalability, and increased performance. CSPs can leverage commercial off the shelf (COTS) hardware and choose vRAN functions from their preferred vendors. The same platform can be utilized for O-RAN, providing CSPs flexibility and a smooth evolution towards the future without disrupting their operations and overhauling network design.

By design, VMware Telco Cloud Platform RAN enables low latency and the potential to convert the RAN into a 5G multiservice hub. The platform serves as a common horizontal infrastructure that supports centralized automation, simplifies RAN operations, and enables end-to-end visibility, root cause analysis and automatic remediation.

## **Integrated Lenovo and VMware Solution**

Lenovo and VMware have successfully integrated and tested VMware Telco Cloud Platform RAN on the AMD EPYC-powered Lenovo ThinkEdge SE455 V3 server. The combination of the ThinkEdge SE455 V3 server and VMware Telco Cloud Platform RAN is a compelling solution for Communication Service Providers 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. As we stand on the cusp of the virtualized 5G RAN, the solution provided by the 2 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 Communication Service Providers 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 offered by Lenovo and VMware stands as a beacon of innovation, promising to reshape how we connect and communicate in a world that's 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's not just fast, but also robust, secure, and sustainable.

## Benefits for Mobile Operators

The SE455 V3 with VMware Telco Cloud Platform RAN offers numerous benefits to mobile operators.

### Power efficiency, sustainability and performance

The Lenovo ThinkEdge SE455 V3 is a single-socket server based on the AMD EPYC 8004 Series processor, and is 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, sustainability and performance.

### Security and reliability

To enhance overall security posture, VMware Telco Cloud Platform RAN provides intrinsic 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 intrinsic 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 intrinsic 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 NEBS 3 compliant, shock and vibration resistant, and it has extended temperature support up to 55 °C. With lockable security bezel, tamper detection and encrypted storage your data is safe, on unauthorized access the encryption key is deleted rendering all information on the system immediately inaccessible.

### Designed for profitable, 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.

[Lenovo XClarity](#) integrates into leading platforms, orchestration and IT services to provide full equipment insights and system management capabilities.

### Edge services

VMware Telco Cloud Platform RAN is designed to allow Communication Service Providers and their customers to develop custom 5G services at RAN sites, providing a tool for Communication Service Providers to offer superior edge computing services compared to 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.

## Learn More

For more information, see the following pages:

- Lenovo-AMD alliance page:  
<https://www.lenovo.com/us/en/servers-storage/alliance/amd/>
- ThinkEdge SE455 V3 product page:  
<https://www.lenovo.com/us/en/p/servers-storage/servers/edge/thinkedge-se455-v3/len21te0003>
- VMware Telco Cloud Platform RAN page:  
<https://telco.vmware.com/products/telco-cloud-platform-ran.html>

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## Related product families

Product families related to this document are the following:

- [Edge Servers](#)
- [ThinkEdge SE455 V3 Server](#)

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