

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>

Author

Kelly Robinson is currently serving as a product go-to-market lead at Lenovo. In her role, she focuses on global product commercialization and AI go-to-market strategies for 5G and telecommunications network infrastructure. Based in Kansas City, she has a background in emerging technology and telecommunications, contributing to Lenovo's strategic initiatives in these areas. For more information about Kelly, see her [LinkedIn profile](#).

Related product families

Product families related to this document are the following:

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

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service. Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.
8001 Development Drive
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk. Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

© Copyright Lenovo 2025. All rights reserved.

This document, LP1822, was created or updated on September 18, 2023.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:
<https://lenovopress.lenovo.com/LP1822>
- Send your comments in an e-mail to:
comments@lenovopress.com

This document is available online at <https://lenovopress.lenovo.com/LP1822>.

Trademarks

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo in the United States, other countries, or both. A current list of Lenovo trademarks is available on the Web at <https://www.lenovo.com/us/en/legal/copytrade/>.

The following terms are trademarks of Lenovo in the United States, other countries, or both:

Lenovo®

ThinkEdge®

XClarity®

The following terms are trademarks of other companies:

AMD and AMD EPYC™ are trademarks of Advanced Micro Devices, Inc.

Other company, product, or service names may be trademarks or service marks of others.