

# Dell Technologies Open RAN Reference Architecture Tech Preview with Intel®, Mavenir, and VMware®

## Summary

The Dell Technologies Open RAN reference architecture tech preview is an end-to-end 5G Open RAN solution featuring industry-leading components from Dell Technologies, Intel, Mavenir, and VMware. It supports virtualized, and cloud-native 5G RAN functions deployed in a disaggregated, flexible architecture built around Open RAN specifications. This reference architecture tech preview helps CSPs accelerate their transformation to Open RAN while reducing the cost and minimizing risk.

## The road to Open RAN, and 5G is an open road

Open RAN gives Communications Service Providers (CSPs) more choice and flexibility to deploy their radio networks. It will become a vital part of the value proposition for the future success of 5G. As the RAN buildout is the most significant investment in the 5G network, the ability to extend radio capacity quickly, efficiently, and cost effectively, will be a major driver to enable CSPs to accelerate and monetize 5G services to the market.

Open RAN solutions allow CSPs to mix and match RAN systems using virtualized, disaggregated components from a broad, multivendor ecosystem. Standards Development Organizations such as 3GPP and the Open RAN Alliance have defined a virtualized RAN (vRAN) architecture for 5G that promises to drive down the cost of the RAN while giving CSPs more flexibility and control as they deploy the 5G networks of the future. Dell Technologies is committed to open, standards-based solutions and is proud to help lead in this industry-wide initiative by working closely with Open RAN standards groups and vendors to bring advanced, best-of-breed Open RAN solutions to market.

## Dell Technologies Open RAN Reference Architecture Tech Preview

In partnership with Mavenir, VMware, and Intel, Dell Technologies offers CSPs a best-of-breed path to Open RAN through its reference architectures. This reference architecture is a tech preview that combines industry-leading vRAN software from Mavenir, Intel's FlexRAN technology, VMware's Telco Cloud Platform (TCP), and Dell's ruggedized and short-depth servers for a complete Open RAN solution. By bringing together best-of-breed components from leading Open RAN vendors into a reference architecture tech preview, Dell is taking the first step to helping CSPs accelerate their transformation to Open RAN and, ultimately, launch new 5G services.

Our Open RAN reference architecture tech preview is a best-of-breed solution comprised of advanced technology developed by some of the world's most innovative companies:

- Intel 3rd generation Xeon Scalable server processors, eASIC hardware acceleration, and FlexRAN 5G reference architecture
- Mavenir virtual RAN (vRAN) software, including virtual Centralized Unit (vCU) and Distributed Unit (vDU) functions
- VMware Telco Cloud Platform RAN and Telco Cloud Automation software
- Dell Technologies XR11 and XR12 servers

Dell Technologies	MAVENIR	vmware	intel
<ul style="list-style-type: none"> <li>• XR11</li> <li>• XR12</li> <li>• R750</li> <li>• Professional services</li> <li>• System integration</li> <li>• System engineering</li> </ul>	<ul style="list-style-type: none"> <li>• vCU</li> <li>• vDU</li> <li>• 5G Core</li> <li>• EMS</li> </ul>	<ul style="list-style-type: none"> <li>• Telco Cloud Platform RAN</li> <li>• Telco Cloud Automation</li> </ul>	<ul style="list-style-type: none"> <li>• RAN software stack (FlexRAN)</li> <li>• eASIC Accelerator cards</li> <li>• Intel 3<sup>rd</sup> generation Xeon chips</li> <li>• System engineering</li> </ul>

**Open RAN Reference Architecture Tech Preview**

### An open, validated approach to innovation

Dell Technologies offers reference architectures of open solutions that accelerate the CSP transformations of tomorrow. With its commitment to Open RAN, Dell is leading a cross-industry initiative to bring technology from the world's leading IT vendors to bear on the most critical challenges that CSPs are facing today. Our deep and long-standing relationships with VMware, Intel, and Mavenir allow us to develop and test solutions that embrace open standards, multivendor ecosystems, and the latest market innovations.

### Integration and trust

Dell is a trusted partner to the world, with a global supply chain that delivers millions of servers and computers on time, year after year. CSPs trust Dell to work closely with their network teams and partners to customize and create open solutions that meet their unique requirements. Dell can help CSPs tailor an Open RAN solution that combines the right silicon, performance, total cost of ownership, and security with professional services to reduce the risk and accelerate 5G network deployments.

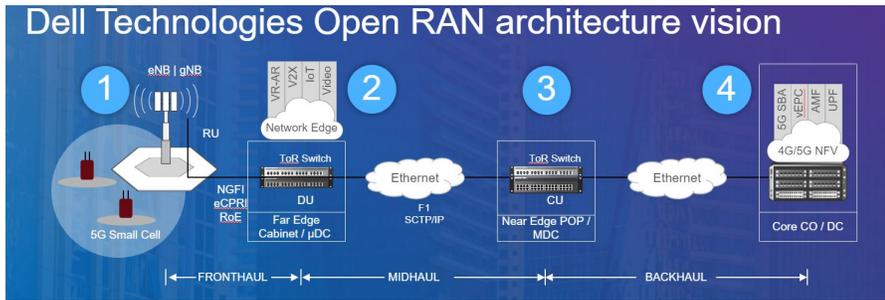
### High-performance systems

Dell Technologies brings the latest technology innovation to the telecommunications industry, from high-performance microprocessors to scalable storage, hybrid cloud architectures to hyper-converged infrastructure. By fast-tracking innovation to CSPs, Dell opens up a new world of possibilities to improve network performance, reduce network costs, and deploy 5G networks in highly flexible, scalable configurations. In addition, we work tirelessly with our technology partners to ensure that our solutions can leverage the latest advancements to deliver a competitive advantage to our customers.

### This is What the Future of 5G RAN Looks Like

Dell Technologies' architectural vision for Open RAN is an end-to-end approach that allows CSPs to strategically and efficiently build out and support network investments from the core to the edge to the RAN. Our Open RAN architecture (see figure below) provides flexible deployments at four critical points in the 5G network:

- At the cell/tower site, CSPs can deploy a Radio Unit (RU) that supports 4G or 5G (5G mmWave, Sub-6GHz) spectrum concurrently
- At the far edge of the network, CSPs can deploy virtual Distributed Units (vDUs) to support resource pooling of virtualized/cloud-native network functions (VNFs/CNFs) for the user plane, multi-access edge computing (MEC) applications, or local breakout capabilities
- At the near edge of the network, CSPs can deploy virtual Centralized Units (vCUs) to host VNFs/CNFs as needed to support optimized control-plane and user-plane activities
- In the converged 4G/5G mobile core, CSPs can choose evolved packet core (EPC) or 5G Core (5GC) solutions from a variety of RAN/vRAN vendors



- 1**
  - Partnerships for single/multicarrier RU
  - 5G millimeter wave/sub 6 GHz
- 2**
  - Hardened, reduced form factor distributed unit
  - Multi-RAN technologies
  - VNF/CNF resource pooling
  - MEC
  - Local breakout
- 3**
  - Centralized unit for improved system capacity
  - Coordination of important 5G capacity improvement features
  - VNF/CNF resource pooling
- 4**
  - Converged core architecture
  - vEPC to 5G CNF migration

Open RAN technology is critical to the success of 5G. It opens the future to more innovation, smoother and more reliable supply chain operation, and competitive pricing. Dell Technologies is committed to Open RAN technology through its partnerships, industry alliances, and its growing investment in 5G research, development, and services. The future of 5G is an open road. Count on Dell Technologies to help you reach your goals on that road faster.

### Solution Highlights

The Dell Technologies Open RAN reference architecture tech preview can support end-to-end 5G RAN systems through a best-of-breed solution that includes:

- Dell Technologies XR11 and XR12 ruggedized and short-depth servers featuring Intel third-generation Xeon Scalable processors, eASIC hardware acceleration, and FlexRAN 5G reference architecture
- Mavenir virtual RAN (vRAN) Open RAN software including DU, CU, and the element management system (EMS)
- VMware Telco Cloud Platform RAN and Telco Cloud Automation software