Implement open RAN with Mavenir and Red Hat

Overview

The expanding open RAN market

The global open RAN market is expected to reach $32 billion by 2030 with a growth rate of 42% for the forecast period between 2022 and 2030.[1]

Prepare for the future of telecommunications

The telecommunications industry is in the midst of a transformation as the next generation of 5G technology is needed to facilitate emerging use cases, and organizations race to upgrade operations to meet this new era of innovative 5G applications.

One of the most notable challenges for communications service providers (CSPs) and enterprises is the increasing complexity of the radio access network (RAN) technology needed to accommodate the performance and latency needs of 5G.

Many of the CSPs and other enterprises moving to the next evolution of RAN to facilitate those needs are calling for an open approach to the technology. Without such an approach, these organizations are left facing significant operational challenges that slow down their ability to innovate and provide value. These challenges include:

- **Vendor lock-in.** Since the components of a RAN system are traditionally closed, organizations are often locked into a long-term contract with one vendor who provides all of the components of the system as they see fit and not in the way the operator envisions it.
- **Bottlenecks.** Because traditional RAN systems are built using set baseband unit (BBU) components, they are often difficult to upgrade and cause bottlenecks due to their scale-out limitations.
- **A lack of specialized solutions.** Organizations are unable to use best-in-class, specialized solutions for each component of their RAN, or implement third-party services to increase the efficiency of their system, such as artificial intelligence or machine learning (AI/ML).

The partnership of Red Hat and Mavenir, and the joint open RAN solutions they are engineering, directly addresses these challenges and provides a solution built using two distinct elements: Red Hat's expertise in open hybrid cloud and Mavenir's leadership in the open RAN solution space.

Red Hat built its business with open source technologies, resulting in solutions such as Red Hat® OpenShift® that provide the flexibility and control needed for organizations to deploy new technologies, like 5G, and continue innovating for their customers.

Mavenir brings expertise and leadership in the open RAN space to help CSPs and enterprises make the shift to 5G solutions with minimal disruption.

[1] "Global OPEN RAN Market Outlook: An Opportunity worth $32 Billion by 2030" *Globenewswire*, 8 March 2022.

The increasing popularity of open RAN

Open RAN installs are expected to rise from 1.37 million in 2021 to 22.52 million by 2026[2]

Together, Mavenir and Red Hat are committed to a future of mobile communication that will be built on the open hybrid cloud, Linux containers, and cloud-native microservices, and give organizations the ability to implement 5G services, such as network slicing and edge computing, in an agile and automated way.

Red Hat and Mavenir provide jointly developed open RAN solutions that deliver the scalability, agility, performance, and cost efficiency needed by CSPs and enterprises adopting 5G and other modern network practices.

Open RAN's importance to the future of telecommunications

New revenue opportunities that have emerged in recent years—such as the growing market for Internet of Things (IoT) devices or maturing 5G-supported and edge technologies—have made traditional RANs untenable.

Traditional RANs have proven themselves incapable of providing the low latency and high performance needed by 5G and are too inefficient and costly to scale to the expectations of users.

Many organizations have begun to look to the next evolution of RANs because of these deficiencies, with an aim to decouple software from hardware and deliver more cloud-native solutions. From this need to evolve mobile communications network architecture, came the open RAN architecture model, which started being certified by the O-RAN Alliance in 2018.

Open RAN architecture prioritizes open source technologies, uses open application programming interfaces (APIs), and commonly disaggregates and virtualizes the three main components of the RAN—the radio unit (RU), the centralized unit (CU), and the distributed unit (DU).

All of this allows users to avoid the vendor lock-in that has often slowed down innovation in the telecommunications industry and facilitates the cloud-native approach many see as the future of the industry.

Other benefits of using open RAN include:

- **Improved performance.** This can be gained by using modern hardware and software platforms that can scale out on demand.
- **Deployment flexibility.** This can be achieved through the disaggregation of software from the underlying hardware, as network functions can be placed in the most optimal locations.
- **Cost flexibility.** Operators are not tied to the usual hardware providers and can control which hardware they use, based on their organization's needs, and can attain significant cost flexibility in this area.
- **Improved efficiency, performance, resiliency, security, and agility.** Service providers can boost innovation and differentiation by using virtualization technologies, such as network function virtualization (NFV) and containers.
- **Automated infrastructure, workload life cycle, and operations management.** Operators can benefit from a consistent approach to the deployment and operations of open RAN architectures.
- **Interoperability with third-party services**. With an open RAN architectural approach, third-party services, such as those using AI/ML can be integrated to increase efficiency and open opportunities for innovation.

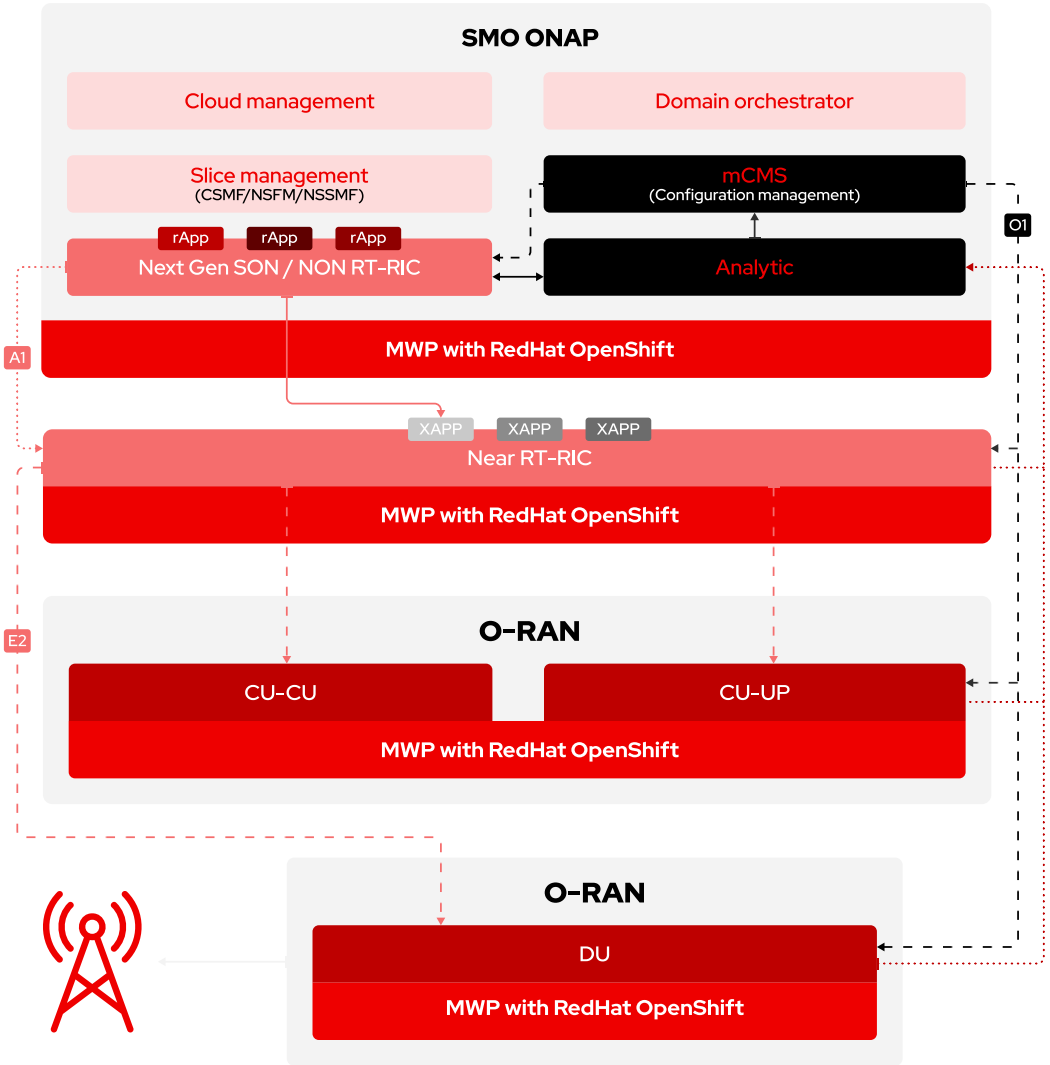
[2] "Over 22 million Open RAN installs in 2026 and 37 other technology stats you need to know" *ABI Research,* 15 Feb. 2022.

Despite the benefits that CSPs can achieve with open RAN technologies used in their operations, many organizations still see significant challenges to adoption.

Because open RAN is a new operational model comprising multiple vendors, these solutions often require more moving parts compared to traditional RAN. This has left many organizations hesitant to piece together an open RAN solution stack through software from multiple vendors, and looking for a complete open RAN stack that is ready to deploy and able to deliver the scalability, agility, performance, and cost efficiency they need.

This has created the need for a partnership between vendors who understand the demands of the market and the nuances of the technology—such as Red Hat and Mavenir—to create a jointly engineered solution that provides O-RAN compliant open RAN technology, delivered on a cloud platform that can support multiple RAN functions and can span the entire network.

Service management and orchestration open network automation platform



Mavenir leading the open RAN revolution

Despite open RAN still being a relatively new technology standard, Mavenir has quickly become a leader and innovator in the space.

It has long had a focus on open interfaces, interoperability, and using AI to create new ways for automated networks to support evolving use cases and data demands. This has made it the ideal choice for Red Hat to partner with for a jointly engineered open RAN CU/DU solution working to solve current market challenges.

Over the past several years, Mavenir proved its commitment to providing the entire open RAN stack as a full end-to-end solution, rather than focusing solely on a single piece of the stack at a time, and because of its cloud-native approach, Mavenir's solutions support many deployment options, including public, hybrid, and private cloud environments.

Open RAN solutions from Mavenir provide a single architecture that can address the needs of all traditional networks—including 2G, 3G, and 4G—while supporting the shift to 5G by densifying coverage with aggregation of CU and DU processing.

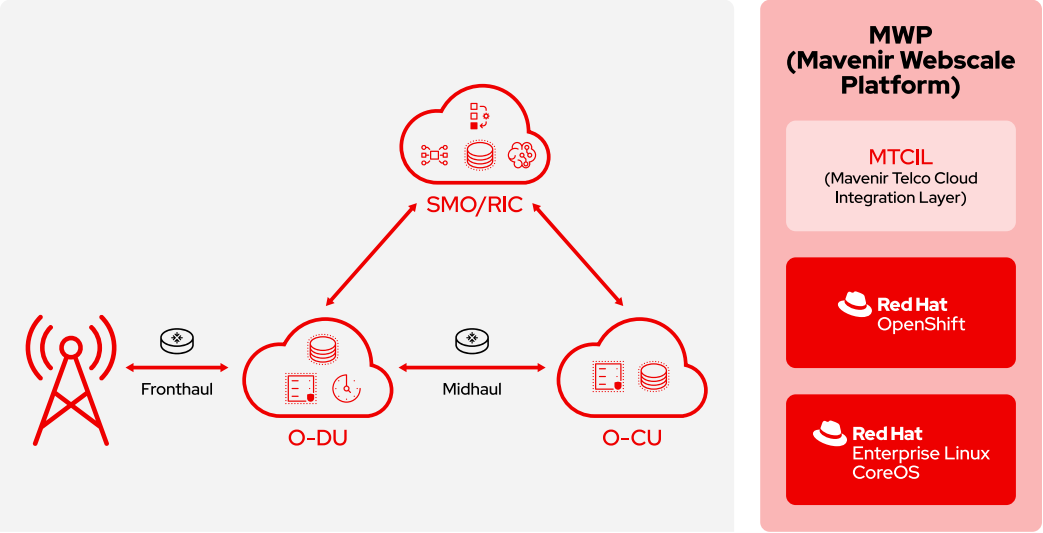
Mavenir's software applications use data in tandem with AI/ML services to fully optimize networks by tapping into service context, local content, and real-time information on local-access network conditions.

Mavenir provide the key functionalities needed to facilitate the future of telecommunications practices, including:

- **100% cloud-native solutions.** With applications and services that are built for a cloud model, it provides scaling, hardware decoupling, agility, portability, and resilience across multiple cloud environments. With a cloud-native environment building, testing, releasing, and deploying can happen at a rapid and consistent pace, and an automated path for CD allows developers to more rapidly deploy to production environments.
- **Service-based architecture.** Application services are decoupled from network and platform infrastructure, and open APIs provide flexibility and extensibility for service agility.
- **Service velocity and automation.** Launch new services with increased speed thanks to service deployment agility and AI/ML capabilities for network scaling.
- **Network slicing.** Operators can customize their network to fit their needs with traffic isolation, and security-focused and differentiated performance.
- **Continuous integration (CI) and continuous development.** Use DevOps-based software release and upgrade cycles to reduce time to market, cost, and lengthy integration processes.
- **Access agnostic core or access independence.** With a common core that caters to 3GPP and non-3GPP access types, Mavenir's solutions allow for continuous interworking and operational efficiency between them.
- **Flexible and scalable CU.** Mavenir's CU is virtualized and containerized, so that it can be scaled up if the buffer queue becomes an issue for a particular CU and provides flexibility with support for Packet Data Convergence Protocol (PDCP) and Radio Resource Control (RRC) layers and the ability to run on commercially available off-the-shelf (COTS) hardware which can then be deployed on a public or private cloud environment.

- **High-performance DU.** Benefit from lower hardware footprint and computing costs with Mavenir's cloud-native, highly optimized packet processing design for DU, which uses Data Plan Development Kit (DPDK), Precision Time Protocol (PTP), and the real-time kernel.

Using Red Hat and Mavenir's joint CU/DU solution, open RAN and its various components can now be delivered through a flexible and powerful hybrid cloud platform—Red Hat OpenShift—to provide organizations with the complete technology stack they need to manage their open RAN operations.



Red Hat and Mavenir deliver the future of open RAN

Together, Red Hat and Mavenir are committed to solving the challenge of open RAN and the next generation of 5G and providing the solution as a full stack.

As a newly emerging technology standard, open RAN solutions often come missing key building blocks and cannot be deployed right away.

Mavenir RAN preintegrated with Red Hat OpenShift brings a full stack solution to operationalize RAN.

With cloud infrastructure, a cloud infrastructure platform, and open RAN software as part of a fully integrated stack that includes life cycle management, orchestration, and automation, CSPs and enterprises making the shift to 5G can benefit from two solutions that complement each other's value and create new competencies when operated together.

Operators also receive testing, engineering, and customization support—both before and after deployment—to ensure the solution fits the needs of their organization, its network, and any complex use cases they are looking to operate. Because the integration and solution engineering have already been done—and customization is provided at no cost—organizations can save significant integration and customization costs that would normally be required.

This joint solution from Red Hat and Mavenir provides great value to any organization adopting cloud-native 5G RAN solutions or any organization looking for an intermediary solution to use while they make the move from 4G to 5G.

Learn more about the joint solutions from Red Hat and Mavenir

To learn more about the partnership between Red Hat and Mavenir and the joint engineering they are conducting to create solutions ready to take on the challenges of open RAN and the next generation of 5G networks, read this Red Hat blog.

For more background on Red Hat's work in network infrastructure with their partners, visit the network infrastructure page.

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

About Mavenir

Mavenir is building the future of networks and pioneering advanced technology, focusing on the vision of a single, software-based automated network that runs on any cloud. As the industry's only end-to-end, cloud-native network software provider, Mavenir is transforming the way the world connects, accelerating software network transformation for 250+ Communications Service Providers in over 120 countries, which serve more than 50% of the world's subscribers.

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