



Four key benefits of Open RAN and whether “open” matters

Open RAN is an umbrella term encompassing three key pillars: virtualisation (vRAN), centralisation (C-RAN), and RAN function disaggregation through non-proprietary interfaces (open-RAN). This article outlines 4 key benefits of these three aspects of open RAN and evaluates whether these benefits are contingent on the third pillar – operators deploying disaggregated, multi-vendor open-RAN.

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This article is the third in a series exploring the topic of open RAN, preceded by [Why do open RAN? C-RAN, vRAN & open-RAN](#) and [What is open RAN and where are we at in 2021?](#)

The benefits of deploying open RAN have been a contentious topic. Proponents of open-RAN tout its potential to help telcos avoid vendor lock-in and allow an operator or system integrator to assemble “best of breed” network components from a multi-vendor ecosystem. For open-RAN sceptics, including some network equipment vendors (NEPs), the downsides are clear: using open-source code without established safeguards and standardisation practices may expose the network to security vulnerabilities, and the added burden on operators to act as “system integrator” will undo any CapEx savings that RAN disaggregation has offered in the first place. [Ericsson](#), one of the big three vendors, expects as little as 3% Open RAN-specified offerings by 2025, highlighting ongoing challenges around intellectual property rights and interoperability that must be resolved before the technology sees massive uptake.

Disaggregated open RAN may be the ultimate ambition for operators, but open-RAN deployments are still nascent and its full benefits may not be realised until 6G. For many operators, vRAN will serve as a stepping stone in the near term. As a result, this article will outline 4 benefits of open RAN technologies (C-RAN, vRAN, open-RAN) and evaluate whether these benefits are contingent on operators deploying a fully disaggregated RAN – i.e., “open-RAN”, with an open, disaggregated interface between the BBU and the RRU.

Maximising the 4 key benefits of open RAN

1. Diversify the supplier ecosystem

This is arguably open RAN’s biggest claim – the potential to enable telcos to avoid vendor lock-in by replacing vendor-proprietary interfaces with a fully disaggregated RAN based on open standards. It should be stressed that with open-RAN the functions themselves remain proprietary. Open-RAN should not be confused with opensource.

C-RAN and vRAN still boast significant improvements to legacy RAN. As open-RAN is implemented at a larger scale in macro networks, the benefits of a truly white-box solution may be offset by the difficult process of having to integrate open-RAN components with proprietary RAN technology, such as the radio portion of the network, as was the case with Rakuten Mobile’s 4G open RAN deployment. This explains why, in the near term, we will continue to see incumbent vendors offering ready-made vRAN stacks with pre-integrated proprietary software as a trade-off between flexibility and reliability/compatibility with legacy networks and management.

2. Introduce new innovation models

Open RAN opens new avenues of service innovation and agility for telcos by breaking the RAN up into component parts, each of which can be separately reconfigured. O-RAN standards are freely accessible to all third-party software developers, who can develop new types of services and innovate on the RAN Intelligent Controller (RIC) by building xApps and rApps. This enables telcos to make their networks a much more relevant resource for both enterprise and consumer applications.

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Without the open, standards-based fronthaul interface offered by open-RAN, operators have little scope to evolve disaggregated RAN components in-house in a DevOps manner, and take control of shaping new network features and use cases.

3. Lower total cost of ownership (TCO)

Automation will be key to managing the lifecycle of disaggregated, cloud-native RAN functions. Open RAN can bring down the network TCO – e.g., energy use, resource distribution, operations – by evolving the network in a continuous integration/ continuous delivery (CI/CD) manner rather than through generational investment cycles. One APAC operator described automation and a DevOps approach as being essential to their ability to roll out a greenfield open RAN network and accelerate 4G site commissioning from 3-4 days to 8 minutes.

In terms of hardware, centralisation and virtualisation can reduce deployment, operation, and maintenance costs of physical equipment at base stations. By consolidating baseband processing, C-RAN deploys lower volumes of expensive physical kit than legacy RAN, and improves energy efficiency by eliminating under-used capacity of idle network equipment and implementing centralised management tools.

Virtualised BBUs (vBBUs) can intelligently adjust network loads to limited physical infrastructure and reduce the proportion of redundant equipment that is operating below capacity. Both vRAN and open-RAN host baseband processing in commercial-off-the-shelf (COTS) servers, which are readily available and cost-efficient compared to vendor-proprietary baseband hardware. The interoperability of open-RAN components further allows telcos to deploy to varied sites in a resource-efficient manner because the same vBBUs can interchange between radio type (macro, small, micro cells), vendor, mobile generation, or spectrum.

4. Unlock new revenue opportunities in private cellular networks and shared/wholesale neutral hosting

Recent CBRS shared spectrum auctions suggest that private LTE networks for enterprises will rapidly advance in 2021. Telcos can customise RAN hardware and software in an open-RAN deployment to deliver bespoke features based on the enterprise use case and deployment scenario. For instance, they may incorporate additional security or system integration with a management layer. As the network architecture is software-based, operators can prioritize specific locations with targeted upgrades (e.g., URLLC capabilities for industrial campuses) without requiring a massive macro-level license upgrade.

Private cellular networks also serve as an opportunity for telecoms operators to build expertise and experience in operating the open RAN in a smaller-scale confined environment, which will be key when deployments are extended to the macro network. Find out more about how operators can benefit from virtualising private LTE networks in STL's article, [Private LTE: new business model opportunity for vRAN](#).

Figure 1: Comparing 4 key benefits of open RAN

Benefit	Features	C-RAN	vRAN	Open-RAN
1. Diversify the supplier ecosystem	Open fronthaul interface			√
2. Introduce alternative innovation ecosystems	Open fronthaul interface			√
3. Lower total cost of ownership (TCO)	Centralised BBUs	√	√	√
	Physical BBUs optimised for specific baseband and radio loads, as compared to commodity hardware	√		
	Pre-integrated solutions	√	√	
	COTS-based BBUs		√	√
4. Unlock revenue opportunities in private cellular networks and neutral host networks	“Best of breed” features to meet custom use case requirements			√
	Ability to use non-ideal fronthaul to serve low-density, remote sites		√	√

Source: STL Partners

How should operators deploy open RAN?

To find out more about Open RAN and different deployment roadmaps for telcos, check out STL Partner’s [Open RAN: What should telcos do?](#) report.

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