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OPEN RAN: BREAKING THE PERFORMANCE BARRIER

Webinar: Questions and Answers

Open RAN: Breaking the performance barrier Questions and Answers

This document outlines the questions and answers received from the STL Partners & Red Hat webinar, ***Open RAN: Breaking the performance barrier****, which was hosted on Tuesday 13th December 2022.*

You can watch the recording of the session, and also access the slides, using the link here. *In this document, we seek to address the questions raised in the webinar that we were unable to address in the time available.*

If you have any questions not addressed in the webinar or this Q&A document, or want to hear more about our latest research or from our panellists, please contact:

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• *Joe Hurman, Senior Consultant – joe.hurman@stlpartners.com*

• *Timo Jokiaho, Red Hat – tjokiaho@redhat.com*

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1. **Isn't there a RIC also in vRAN, so it's not a key differentiator between vRAN and O-RAN?**

   STL Partners: The RIC does things that controllers in legacy RAN and vRAN don't do. The RIC is programmable via third-party apps (xApps - near-real-time - and rApps - non-real-time). This means both the baseband and radio can be controlled and adapted around the needs of specific use cases and clients, rather than simply around a more limited set of performance and operational parameters, as per legacy radio.

2. **On what basis STL Partners assume that Opex and Capex of O-RAN decreases below the ones of legacy RAN in a couple of years; what are the biggest reasons for this to happen and how realistic those assumptions are?**

   STL Partners: The assumptions that underpin our O-RAN ROI modelling are based on conversations with industry practitioners and telecoms operators, and also leverage our bank of secondary research.

   We do expect that the Capex/Opex of appliance-based RAN deployments will decrease over time due to developments in technology, but we expect that the Capex/Opex of O-RAN will decrease at an accelerated rate for the following reasons.

   Impact of O-RAN on Capex:

   - Fewer RAN sites will be required (e.g. C-RAN multi-tenancy)

- Reduced vendor power drives prices down through competition
- Use of cheaper, generic hardware
- Neutral hosts reduces need to invest in macro network

But we have also considered the fact that in the short term O-RAN will also increase Capex. This is due to the fact that new sites will have associated costs (fibre, transport etc.) and that there will be re-fitting or retro-fitting required, and there will be an associated integration and transformation cost to go with this.

Impact of O-RAN on Opex:

- Fewer RAN sites will be required
- Reduced vendor power drives prices down (competition)
- More efficient macro coordination, optimisation and maintenance
- Greater energy efficiency
- Fewer truck rolls required with software-isation and AI/ML
- But upskilling may increase costs and there will be operational challegnes to contend with which is why the Opex of O-RAN is higher in the first few years than for legacy RAN deployments

3. **If RAN is responsible of 1-2% of global energy consumption, it would mean that operators would pay 1-2% of global electricity bills which is very very far from the truth. How have you calculated your claim that RAN consumes 1-2% of global energy consumption or that telecoms consume 2-3% of global energy consumption?**

   STL Partners: The claim that telecoms consumes 2-3% of global energy consumption is a figure given by the GSMA, as well as being an average of other industry sources. For example, the likes of TMForum and McKinsey have referenced this GSMA figure, and other estimates tend to be around the 2% range.

   "The telecoms industry currently accounts for 2-3% of global energy consumption" GSMA, 2021

   The GSMA also finds following a survey of seven operators that the RAN is responsible for 73% of an operator's total energy consumption.

   "73% of the energy of the participating operators is consumed in the radio access network" GSMA, 2021

4. **RRU is responsible of maybe 80-90% of the power consumption of a site. On what basis you claim that O-RAN would be more energy efficient than legacy RAN?**

STL Partners: We agree that energy consumption in the RAN is dominated by the radio units, therefore this is a key area of focus for operators and vendors when it comes to reducing power consumption in the RAN. A lot of what drives power consumption in the RRUs is the power amplifiers being used, so this challenge is not a question of Open RAN versus legacy RAN, it's a question of the maturity of the RRU deployment. Open RAN solutions should aim to reduce RRU power consumption by ensuring solutions are effectively integrated, so that solutions designed to optimise overall site power consumption can function as effectively as possible.

Looking beyond the radio unit, there are a variety of ways in which Open RAN solutions have the potential to improve energy efficiency compared to legacy RAN:

- Virtualisation and centralisation of BBU functions eliminates need to power physical BBUs at every cell site. Virtualisation also results in smaller equipment than legacy – consuming less space and power
- Remote capabilities and increased automation (therefore fewer truck rolls and less shipping)
- Management tools such as SON technology and AI enable enhanced energy management by switching off servers / cells / frequencies when they are not being used (RAN is highly variable therefore the ability to decrease reaction times to microseconds can save huge amounts of energy)
- The SMO and the RIC can also play an essential role in orchestrating power saving mechanisms across the RAN infrastructure
- O-RAN provides a more diverse and open environment for CSPs / vendors to innovate around energy efficiency, and competition gives vendors an incentive to design products with reduced power consumption

5. **Timo, can you share a few example mechanisms of latency improvement?**

   Red Hat: I assume you mean latency improvement on the data plane. On the platform level, Red Hat provides as many data plane acceleration features as possible. We leverage well known technologies like SRIOV and NUMA awareness, and optimise the software switch inside the platform product. Accelerating the data plane and minimising latency is a highly critical topic – I would be happy to discuss this in more detail if you reach out via email.

6. **Do you have any quantitative data on the energy consumption savings each driver on slide 28 enables?**

   STL Partners: In terms of quantitative data, we don't have this level of data yet – the industry is keeping its cards close to its chest on the savings enabled by each of these drivers. As noted at the end of the presentation, there is the potential for accelerated development timings if there is greater knowledge sharing within the industry but unfortunately there is currently limited data on this in the public domain.

7. **It sounds like you're saying the majority of the energy efficiency benefits are enabled by vRAN as opposed to Open RAN, why should we move to Open RAN over vRAN?**

   STL Partners: I think the key things are that the vRAN benefits are more easily understood. The benefits are largely similar to those offered by shifting IT workloads to the cloud – including increased flexibility, scalability and the opportunities for resource pooling/ consolidation of hardware.

   However, the additional energy efficiency benefits unlocked by Open RAN are a lot less proven and nebulous than those offered by vRAN. For example, the RIC (including xApps and rApps) is only just moving from concept/discovery phase to trials, and these will allow significant network optimization and automation, both of which will have ensuing energy efficiency benefits.

   This move to Open RAN should be seen as an enabler of further energy efficiency innovation, as opposed to a single step change in RAN energy efficiency.

Get in touch with our panellists to learn more:
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