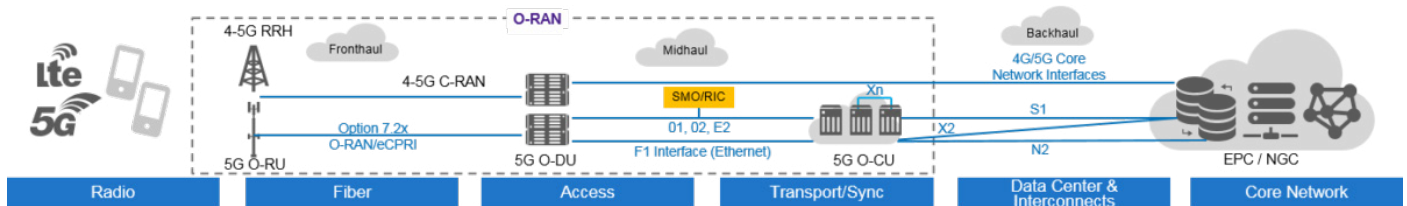


Open RAN Q&A

RAN Intelligent Controller (RIC)

At the [O-RAN Alliance Plugfest](#) at the end of 2020, VIAVI, alongside partners AT&T, Samsung and Nokia, demonstrated an end-to-end traffic steering use case based on a number of open source components. One of these was the near real-time RAN Intelligent Controller platform, or RIC. Central to the demo was the [VIAVI TeraVM O-RAN RIC Tester](#), a virtualized tool which developers can use to ensure that the RIC is working as planned.

What is the RIC? How does this function as part of an open network? Which RIC products are currently available to the operator market? And how can operators ensure that the RIC is tested thoroughly to ensure easy, streamlined network development and roll-out



VIAVI answers your quick RIC questions...

1. What is a RAN Intelligent Controller and how does it help operators?

The RAN intelligent Controller is cloud native, and a central component of an open and virtualized RAN network. The RIC aligns with 3GPP Release 15 and beyond and supports network slicing, eMBMS, MCx etc.

It helps operators to optimize and launch new services by allowing them to make the most of network resources. It also helps operators to ease network congestion.

2. How does the RIC work?

The RIC enables interoperability across different hardware (O-RU servers) and software (O-DU/O-CU) components in an O-RAN architecture. It features a standardized interface – called the E2 – from the O-CU and O-DU to the RIC. It's along that interface that the RIC receives measurements from the RAN about the performance of the network.

It then makes intelligent decisions to improve things like subscriber positioning, handover to a cell, and changing to different frequency. It adapts any variables in order to optimize the subscriber experience and network performance. To affect these improvements, network changes are then sent back across the interface to the RAN. A measurement is then made to see if an overall improvement has been achieved.

3. Who's doing what in the RIC market?

At the start of 2021, [Juniper Networks and Türk Telekom](#) announced a global licensing agreement with Netsia, a subsidiary of Türk Telekom, which would see Juniper gaining access to its RIC technology and patents. The move was designed to help Juniper to develop and sell products and solutions that integrate with the RIC.

According to the companies, it will allow Juniper to offer a cloud-native, scalable platform with end-to-end network slicing and orchestration across next-generation access, IP transport and core networks. The ultimate goal? Accelerating innovation in support of the O-RAN ecosystem. Like VIAVI, both are members of the O-RAN Alliance.

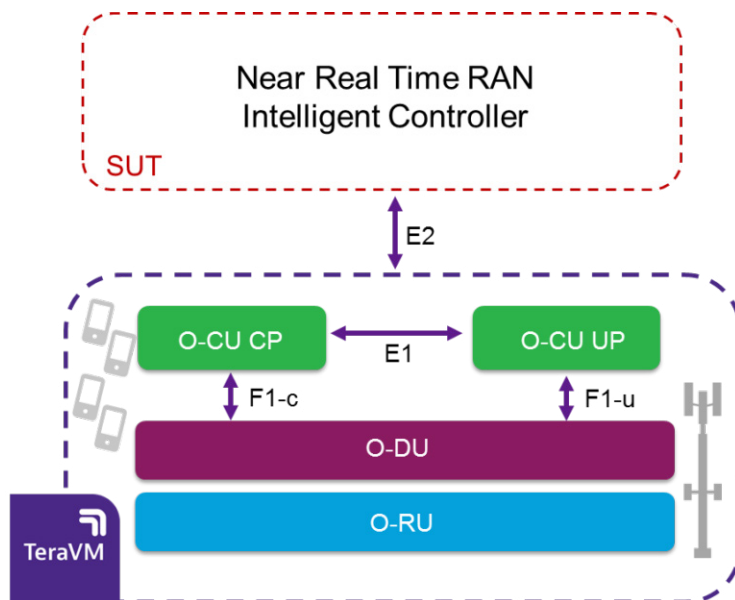
A couple of months later, in March 2021, a new member joined the O-RAN Alliance with the aim of contributing to working groups related to RIC. [Subex](#) will use its experience in machine and deep learning technologies to help develop open RAN architectures that use embedded AI.

Sterlite ([STL](#)) is also in the RIC market. Its product aligns with ORAN specs and, with near real-time control functionalities, enables functions like RAN slicing, QoS control, and radio resource management. It also enables functions such as per UE controlled load balancing, radio database management, interference detection and mitigation.

A number of third-party players are also developing applications (xApp) that sit on the RIC perform analysis and feed recommendations into the RIC.

4. What are the challenges of testing the RIC?

All the messages coming from the RAN into RIC need to go over the E2 interface. However, most developers won't have a RAN to test the RIC with. They therefore need a way to emulate the RAN traffic scenarios in order to test the functions of the RIC. They also need to be able to test in real time, given that much of the RIC's functionality is performed in real time or near real time.



Operators need a way to do all of this in a lab environment, before costly network roll-outs and before they then experience troubleshooting problems which could impact the quality of the end user experience.

5. How is VIAVI enabling RIC testing?

VIAVI is enabling operators to test the RIC and in doing so is helping to expedite the roll-out of open RAN networks and architectures. We've developed a means of testing the E2 interface itself, creating the volume and scale of messages that would go across E2 interface in a real-world network scenario. We can also emulate the O-CU and O-DU, as well as the output from the RIC.

This is thanks to our developments of TeraVM, which can provide the emulated RAN (the measurements) to the RIC under test and then receive the outputs/decisions from the RIC and modify according to the proposed changes from the RIC. This makes it easy to see if changes improve the RAN efficiency.

Extending the capabilities of TeraVM is just one way that we're supporting the evolution of networks, and working with operators to ensure easy, cost-effective ways of testing and readying their networks for their subscribers.



TeraVM O-RAN RIC Tester

Watch the [TeraVM O-RAN RIC Tester in action](#).