

# VIAMI

## TeraVM near Real Time RIC Test

### Overview

The VIAMI TeraVM near Real Time RIC Test provides a comprehensive validation test suite for the RAN Interface Controller element of the O-RAN ecosystem.

The near-real time RAN intelligent controller (nRT RIC) enables near-real time RAN optimization by direct communication and control of O-RAN elements O-DU and O-CU over the O-RAN Alliance standardized E2 interface.

The nRT RIC will host container based microservices – called xApps – which use the E2 interface to collect near real-time RAN information on RAN aspects such as network admission control, resource utilization, QoS fulfillment and other RAN network KPIs.

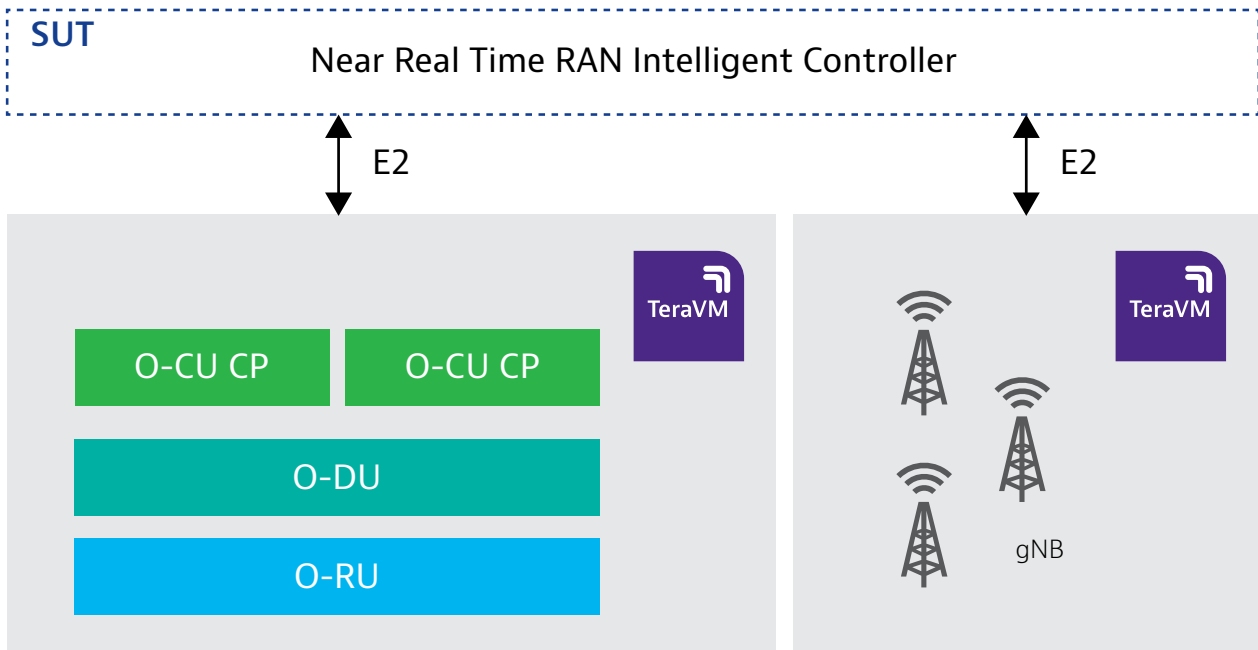
nRT RIC developers face several challenges:

- How to generate gNB, O-DU and O-CU traffic to ensure the RIC interpretation of the E2 standard is implemented correctly
- How to configure multiple load, capacity and mobility scenarios as inputs to RIC for optimization algorithms.
- How to stimulate xApps with rich stream of UE simulations and scenarios to test xApp performance and interoperability
- How to close the loop and check RIC recommendations have the desired effect on the RAN

### Features

- First to market nRT RIC Test compliant with O-RAN Alliance standards
- Runs in lightweight VM on standard x86 hardware
- Full Cloud native deployment support (GCP, Amazon etc.)
- Microservice (container based) architecture
- Latest O-RAN Alliance E2 Interface standards version supported
- Various E2 Service models support (AP, KPM, NI, RC)
- Rich RAN scenario emulator for xAPP Testing and Benchmark
- Accelerated Time Run environment support
- UE, gNB, O-CU, O-DU Emulation
- Easy scale options

This is where TeraVM near Real time RIC Test comes in. Emulating UEs, gNBs, O-DUs, O-CUs, mobility patterns path loss propagation models etc. allows the above challenges to be met using the TeraVM x86 based SW tool nRT RIC Test.



## 1. E2 Interface Performance Testing

How does E2 implementation perform according to O-RAN Alliance standards. Measure metrics such as:

- How many SCTP Links from gNB to RIC
- How many TPS per E2 interface
- How many RICs for a large MNO network
- How many E2 set up messages per second
- How many UE reports generated per second

## 2. RAN Scenario Generator

xAPPs require mobile traffic to train their algorithm under different scenarios for a complete and all round RAN experience. With TeraVM RAN scenario generator rich traffic scenarios can be emulated and pushed towards the xAPPs to offer a diverse set of UE behaviors thereby fully training the xApp prior to live network deployment.

- RAN Scenarios can be generated :
- RF/performance anomaly simulations
- Mobility pattern simulations
- RF propagation models including pathloss model, indoor/outdoor user pattern emulation
- Fading (shadow, fast)

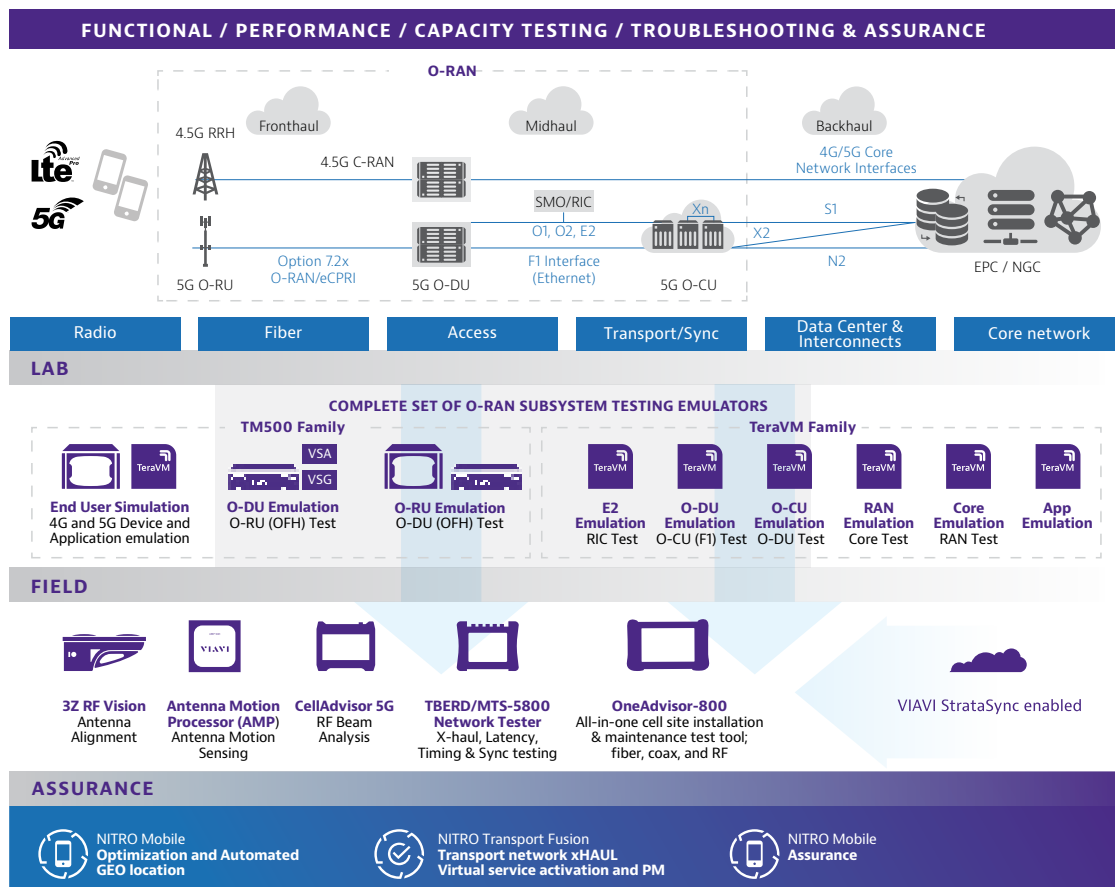
### 3. xAPP Functionality Testing

How effective are the decisions taken by the xAPPs housed on the near real time RIC. Measure the effectiveness of xAPP recommendations by performing the changes in the emulated RAN and measuring the change to see if the desired improvement is achieved.

- Typical supported xAPP use cases:
- Traffic Steering
- Anomaly Detection and Mitigation
- Geo Location xAPP
- Massive MIMO
- Network Slice QoS Assurance

### Why VIAVI RIC Test

- VIAVI is a regular contributor to O-RAN Alliance work groups helping define the RIC interface standards. VIAVI has also developed a RIC prototype for the O-RAN community using OSC RIC SW.
- The VIAVI nRT RIC test is built leveraging the in-depth RAN knowledge form the market leading TM-500 UE emulator and adapted to support specific O-RAN scenarios through engagement with the O-RAN OSC vendor community.
- The VIAVI nRT RIC test is part of a complete end-to-end suite of O-RAN test tools.



## Order Codes

Near real time RIC Test is available with the following product codes:

Part Number	Description	Capacity
TVM6200	E2 RIC Test base Single License	-
TVM6201	RIC Data x86 Server	-
TVM6202	RIC Test Data License	100 E2 Nodes, 300 Cells, 2000 UEs, 200k reports/s
TVM6203	RIC Test Advanced NS3 model Integration for RAN Scenario Generator	-
SWSUPPPG-NR-RIC-Test	SW Support	-



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