VIAVI Solutions

NITRO Wireless

RAN Intelligence

Testing and Training Suite for Open RAN RIC and Apps, including AI RAN Scenario Generator

The Challenges Facing Operators

With rising energy costs and power-hungry technologies like Massive MIMO, operators are under pressure to reduce total cost of ownership (TCO) while facing slower subscriber growth and increasing competition. Achieving faster ROI on 5G upgrades demands smarter network intelligence, which can be delivered through a well-optimized RIC and innovative r/xApps. As a new network node with diverse interfaces and apps from various developers, the RIC must be rigorously tested to ensure reliable performance and safeguard against security vulnerabilities.

The VIAVI Solution

The VIAVI **TeraVM AI RAN Scenario Generator** simulates the volume, scale, and types of messages exchanged across the O1, A1, and E2 interfaces in real-world networks. It also serves as an ideal platform for r/xApp training and interoperability testing between multi-vendor O-DU, O-CU, and RIC elements. Additionally, an App Validation Engine (AVE) ensures that proposed changes enhance RAN efficiency without performance degradation.

The **AI RSG** offers capabilities for **MU-MIMO**, including Layer 1 simulation with active antennas and advanced beamforming techniques. It accommodates various antenna types and simulates real neighborhoods in accordance with 3GPP standards.

Additionally, the RSG evolves to support **Non-Terrestrial Networks** (NTN), providing essential NTN KPIs for machine learning training, optimizing satellite resource usage while balancing costs and bandwidth, and enabling efficient handover decisions. A dedicated planning tool for emergency handovers, capacity planning, and IoT coverage enhances its functionality.

For RIC applications, the RSG serves as a cost-effective solution for **training r/xApps** by emulating diverse traffic patterns and user behaviors in dynamic environments while accounting for fluctuating radio conditions. Furthermore, the integration of real network traffic patterns and KPIs enriches the system's realism, creating a comprehensive **Digital Twin** that effectively trains AI/ML optimization algorithms for enhanced network performance.

Business Impact

The RAN Intelligent Controller uses third-party r/xApps with AI/ML algorithms to analyze live network feeds, historical data, and trends. This allows it to predict RAN behavior and quickly adjust parameters for optimal performance. As a result, operators can save energy, protect network slices, optimize spectrum resources, enhance customer experience, automate key operations, and detect security breaches early. However, these benefits can only be achieved with a well-tested RIC and applications, ensuring smooth functionality and delivering value to customers.

Sample Use Cases

Use Case 1: Energy Savings

The RIC and its Energy Saving Apps optimize RAN energy consumption by managing resources, such as turning off cells during low traffic, without compromising user experience. To enhance energy savings, Apps must be exposed to an array of network scenarios so that they are fully trained before deployment. **TeraVM AI RSG** enables realistic evaluation of RIC performance, while an **ML-driven digital twin** predicts energy savings from adjustments for continuous optimization and seamless service.

Use Case 2: Traffic Steering

Traffic steering helps route and balance traffic across multi-access networks, with the RIC using AI/ML algorithms to enhance this process. x/rApps can detect overloaded cells and direct subscribers to alternative cells for better Quality of Experience. A repeatable training and validation environment is essential for ensuring Apps perform optimally without conflicts. **TeraVM AI RSG** emulates user equipment and recreates anomalies to train Apps making them fit for purpose in the field.

VIAVI Benefits

Our extensive portfolio of emulators simulates all aspects of RAN networks, from legacy systems to 3GPP and Open RAN networks. We proudly offer the most advanced testing and training suite for Open RAN RIC and x/rApps, featuring our RAN Scenario Generator (RSG) for AI app training.

Partner with us, whether you're developing or deploying RIC or x/rApps, to ensure you are fully prepared for field deployment.

Get started with RAN Intelligence

Visit: viavisolutions.com/RANintelligence

VIAVI Solutions

Contact Us **+1 844 GO VIAVI**
(+1 844 468 4284)

To reach the VIAVI office nearest you,
visit viavisolutions.com/contact

ranintell-nitwir-br-wir-nse-ae
30194254 900 1024