

OPEN RAN

NITRO Location Intelligence

Driving Intelligent, Subscriber-Centric RAN Automation





OVERVIEW

The telecom industry is rapidly evolving and nowhere is that more evident than in the RAN domain. As 5G rollouts accelerate and networks become more dynamic, operators are turning to Open RAN (O-RAN) to drive agility, vendor flexibility, and automation across their networks.

O-RAN is an industry initiative that redefines how RAN infrastructure is built—enabling a multi-vendor, software-driven, and disaggregated architecture. The RAN is decomposed into standardized components such as the Open Radio Unit (O-RU), Open Distributed Unit (O-DU), and Open Central Unit (O-CU)—connected via open interfaces. At the heart of this architecture is the RAN Intelligent Controller (RIC), which introduces real-time and non-real-time intelligence into the network via modular applications (xApps and rApps). These can make decisions based on data, policy, and AI/ML insights.

The benefits? Faster innovation, greater operational efficiency, and lower costs—all while unlocking new levels of network automation and subscriber-centric service delivery.

Our Role in the O-RAN Ecosystem

At VIAVI Solutions, we are fully aligned with the vision of O-RAN and continue to invest in next-gen technologies that support intelligent, subscriber-aware network operations. Our deep domain expertise in network measurement, testing, and RAN optimization allows CSPs and network vendors to harness the power of open and intelligent RAN architecture. Our two key cloud-native applications to the O-RAN architecture— Geolocation App and Intent-based Optimizer App each built to maximize RAN automation, reduce operational complexity, and enhance user experience.

VIAVI SOLUTIONS GEOLOCATION R/XAPP: POWERING LOCATION-AWARE RAN INTELLIGENCE

As part of our commitment to enhancing RAN programmability, VIAVI brings its market-leading location intelligence technology to the Distributed RIC. Our Geolocation App delivers precise subscriber-centric data and rich RAN analytics to the different RIC applications, providing foundational capabilities that can be leveraged by other applications for a wide variety of use cases.

What it does:

This xApp/rApp ingests real-time network data to reveal highly accurate UE (User Equipment) positioning alongside true geolocated radio quality metrics. These insights are shared with other RIC applications via standardized APIs, enabling smarter decisions around mobility, resource allocation, and optimization.

Why it matters:

Location-aware intelligence is key to delivering personalized, optimized network experiences. By embedding our Geolocation App into the Distributed RIC, CSPs can:

- Enhance QoS (Quality of Service) through better spatial awareness
- Drive automation and energy efficiency
- Enable monetizable insights via anonymized location-based analytics
- Reduce churn by proactively addressing subscriber pain points



TECHNICAL HIGHLIGHTS

- Cloud-native, microservices-based architecture for flexible deployment
- Ingests network data via standard interfaces
- Parses and processes ANS.1 messages and RRC signalling
- Uses VIAVI patented proprietary algorithms to track and map UE location, mobility, and radio metrics in real time
- Shares insights through RMR Messages or the SDL API for use by other xApps and rApps

By deploying the Geolocation App as a foundational element of the RIC, CSPs unlock powerful synergies across their RAN operations.

VIAVI SOLUTIONS INTENT-BASED OPTIMIZER APP: AUTOMATION WITH PURPOSE

Automation in the RAN must go beyond scripts and static policies—it needs to be intent-driven and subscriber-centric. That's where VIAVI's Intent-based Optimizer App plays a critical role.

What it does:

This rApp/xApp enables CSPs to automate a wide range of RAN optimization tasks—everything from coverage and capacity improvement to voice quality enhancement and energy savings. Unlike traditional tools, our Optimizer supports flexible, goal-driven configurations, where CSPs can define the intent, and the application figures out the best network configuration to meet it.

Why it matters:

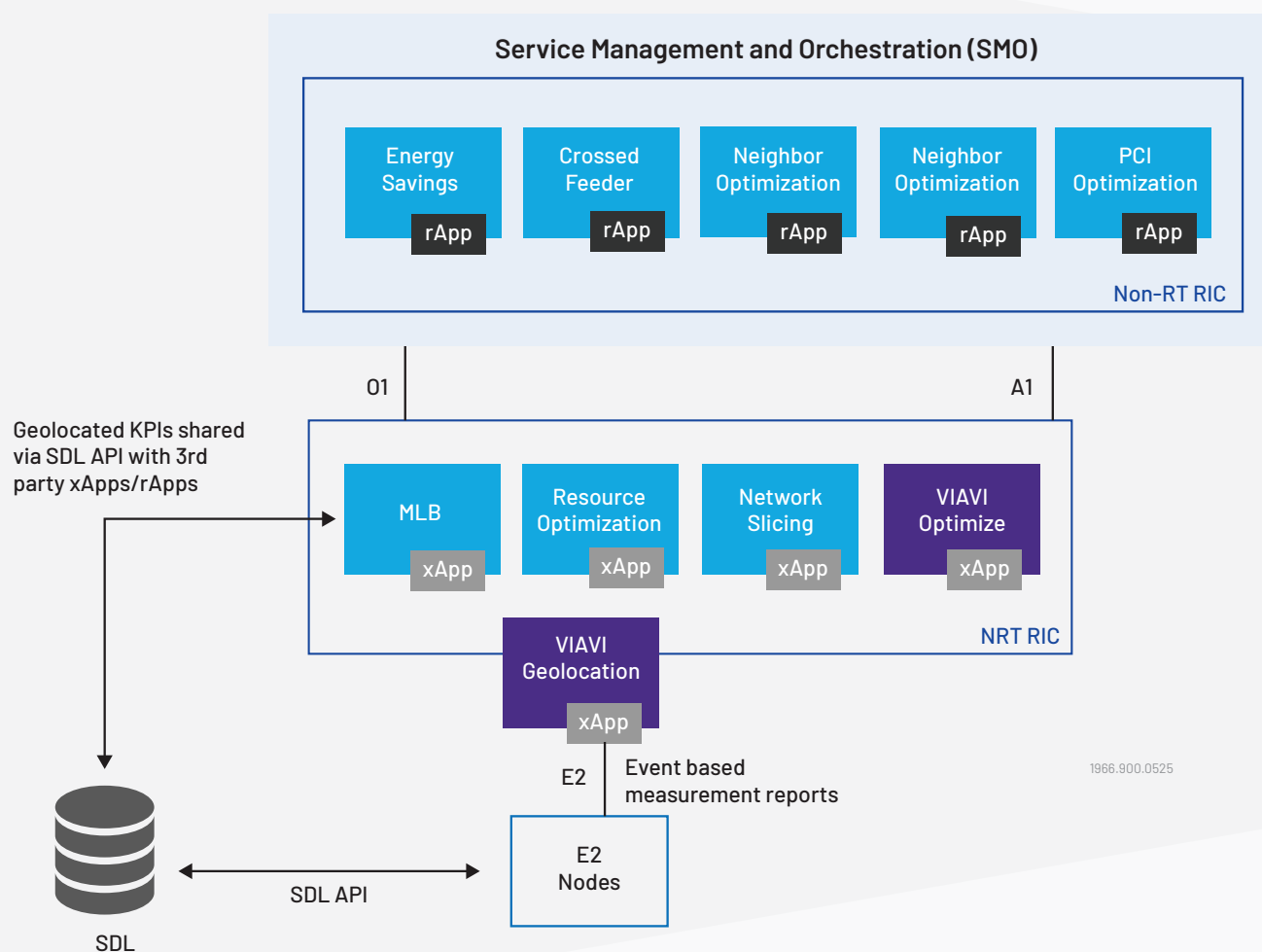
When integrated with the VIAVI Geolocation App, the Optimizer gains spatio-temporal context—allowing it to factor in where subscribers are located, how they move, and the quality of their experience. This results in far more precise and impactful optimization decisions.

With this application, CSPs move closer to the vision of a self-optimizing network that understands the operator's goals and adapts accordingly.



TECHNICAL HIGHLIGHTS

- Cloud-native, microservice-based app
- Integrated with the different Distributed RICs via the RIC SDK
- Utilizes an optimization engine that models and predicts RF performance under various configurations
- Searches the solution space for the best-fit configuration aligned with defined objectives
- Supports diverse intents such as:
 - Maximizing throughput
 - Enhancing voice quality
 - Reducing interference or congestion
 - Lowering energy consumption



VIAVI xApp within ORAN reference architecture

OPEN, INTELLIGENT, AND SUBSCRIBER-CENTRIC

VIAVI is proud to be at the forefront of the O-RAN movement—helping operators unlock the true potential of intelligent, open RANs. By combining digital twin capability and proven geolocation intelligence with our intent-driven optimization engine, we provide CSPs with powerful tools to improve efficiency, elevate the subscriber experience, and monetize network insights.

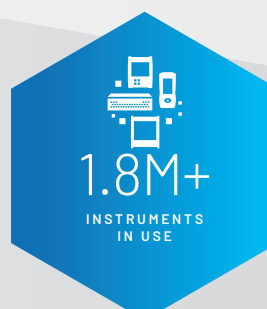
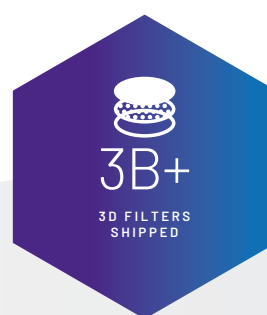
Whether it's reducing churn, optimizing performance, or achieving new levels of automation, our rApps and xApps are ready to power the RAN of the future.

We help to make the network smarter—together.



VIAVI is a company with a diverse and rich history of technological innovations across various industries. In the past, VIAVI has been known by names such as JDSU and Acterna, but our legacy dates back to 1923 with Wandel & Goltermann.

Today, VIAVI Solutions is a global leader in communications test and measurement and optical technologies - helping enable service providers around the globe to deploy flawless fiber networks with smarter testing solutions.



1215-1.901.0824



viavisolutions.com

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

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

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