



# Monitor RAN Performance with the Network Scorecard rApp

## Award-Winning rApp from VMware Boosts Quality

### SOLUTION AT A GLANCE

The Network Scorecard rApp from VMware gives you visibility on the performance of your radio access network in its different areas, or markets, served by your network.

It automates the detection of RAN performance degradation for each market or region and gathers information on the contextual factors that may have caused them. The information from the rApp empowers you to update RAN configurations to enhance customer experiences.

### FUTURENET WORLD AWARD WINNER

The Network Scorecard rApp from VMware, powered by VMware Centralized RIC, was the winner of the Most Innovative Application of AI and Automation to Enhance Customer Experience category at the 2023 FutureNet Awards. The standout benefit of the rApp was its ability to simplify a range of complex indicators into a clear benchmark for optimizing a network.



### The Need for Accurate RAN Quality Measurements

How can you assess the quality of the service for subscribers across heterogeneous markets or sectors?

The problem, of course, is a complex one: A litany of variables and factors influence coverage and network quality. Sectors with diverse sets of network topologies, user-traffic patterns, and vendor equipment call for continuous monitoring to detect performance issues before they affect subscriber experiences – and that means data. Legacy OSS products and manual processes are no match for the task of placing the vast amount of data generated by modern mobile networks in context and translating those streams into actionable insights by human operators in near-real time.

The Network Scorecard rApp from VMware solves these problems with a fully automated AI-powered process – a solution honored at FutureNet World 2023 in London as the winner of the most innovative application of AI and Automation.

The Network Scorecard rApp from VMware is powered by a non-real-time RAN intelligent controller, called VMware Centralized RIC, which is part of an open, multi-vendor architecture that disaggregates a traditional radio access network and paves the way to use modern techniques like AI/ML for automation, assurance, and optimization.

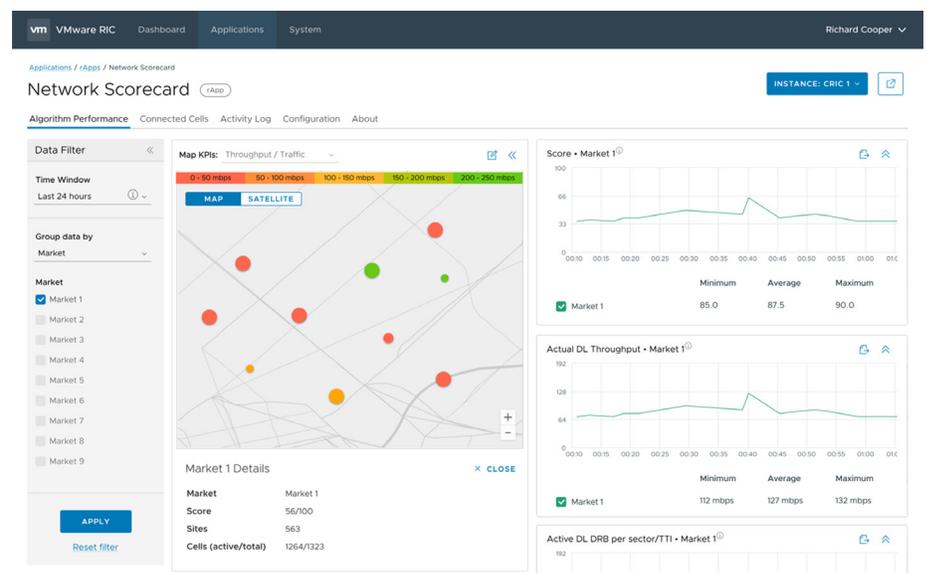


FIGURE 1: The Network Scorecard rApp from VMware uses artificial intelligence to monitor network performance.

By using an AI-based analytical framework and a contextualized performance model, the Network Scorecard rApp from VMware takes a continuous feed of data from VMware Centralized RIC and uses it to deliver a fully automated solution for assessing network quality across markets.

### How the Solution Works

Here's how the app works: It ingests data from all sectors in all markets under its control; adds context to the values it measures, such as SINR (Signal to Interference & Noise Ratio) and CQI (Channel Quality Indicator); and assigns a score to each market based on how its performance compares to an AI-derived benchmark expectation. You can then use the comparison to make changes in the network that restore performance to expected levels.

This automated process is simple yet effective: The Network Scorecard rApp from VMware first trains its contextual performance model using historical sector-level performance data gathered for several days and computes predictive benchmarks based on different context scenarios.

Then, as the rApp starts ingesting current performance data like throughput and pairs it with information on current contextual factors, the app compares the achieved performance with the expected benchmark produced by the AI-predictive model.

The result of this AI-assisted comparison is a score for the market. If, for example, the current performance measures lower than the AI-derived expectation, the market is scored low.

This approach produces a fair comparison of the network quality between different markets with diverse underlying network conditions. But more importantly, it reveals the main factors that contributed to the score so you can quickly take action to remediate the situation.

### Demonstrating the Tangible Benefits of VMware RIC

By onboarding the Network Scorecard rApp from VMware, you can tap assurance and automation to rapidly detect performance degradation by market, gather contextualized information on the causes, and update your RAN configurations where network quality is falling short of expectations.

The Network Scorecard rApp is one of many applications supported by VMware RIC. The Network Scorecard rApp exemplifies how the RIC brings value to telcos. VMware Centralized RIC can run rApps from various vendors, and the near-real-time RIC, called VMware Distributed RIC, runs xApps from various vendors. Both include a software development kit to empower you to develop and deploy applications quickly and easily.

VMware is partnering with RIC developers, RAN vendors, hardware providers, and mobile operators to help realize the O-RAN vision of an open, programmable, and disaggregated RAN.

An open, disaggregated O-RAN ecosystem promises many advantages, but this promise is predicated on the existence of an effective mechanism for measuring the quality of service provided by different combinations of products used in different areas and automating corrective actions to ensure consistency of service across regions. The Network Scorecard rApp ensures that you do just that. By using AI/ML models, it measures the quality of service provided by the RAN stack used in each market, and identifies and corrects the quality issues that it detected.

The FutureNet Award accolade bestowed on the rApp is third-party recognition of the innovative nature of the the application and the benefits it brings to mobile operators.

### RAN PROGRAMMABILITY

The RAN Intelligent Controller from VMware gives applications from different vendors access to the functions running in the control and management planes of your radio access network, empowering you to program and optimize your RAN by using methods like machine learning and artificial intelligence.



*Demo Video: Activating Network Programmability with VMware RIC*

### VMWARE RIC AT A GLANCE

VMware RIC lets you programmatically manage and control your radio access network (RAN). The RAN intelligent controllers from VMware enable third-party application developers to tap into network data, process it, and use it to modify RAN behavior.

VMware Distributed RIC hosts near-real-time applications (xApps), and VMware Centralized RIC runs non-real-time applications (rApps). These apps introduce new use cases — automation, optimization, and service customization — that fuel innovation across a telecommunications network.

#### KEY BENEFITS

- **Multi-vendor interoperability and a vibrant partner ecosystem** – use a vendor- and technology-agnostic platform and tap pioneering solutions.
- **Network optimization** – gain network-wide observability and automate optimization with AI/ML.
- **Efficiency** – reduce energy consumption and improve spectrum utilization by using applications from various partners.

### RIC SDK PARTNER PROGRAM

A rich developer ecosystem is critical to the successful adoption of open RAN technology. The VMware RIC SDK Partner Program expands access to and simplifies the development of RIC applications. The program gives partners access to RIC SDKs as well as training videos and application developer support. To find out more, visit

<https://techpartnerhub.vmware.com/programs/vmware-ric>

#### LEARN MORE

For more information about VMware RIC or the Network Scorecard rApp, call 1-877-VMWARE (outside North America, dial +1-650-427-5000) or visit <https://telco.vmware.com/>



FIGURE 2: The partner ecosystem of xApps and rApps that run on VMware RIC.

### VMware and the Path to a Disaggregated, Programmable RAN

For the past five years, VMware has been methodically introducing new telco cloud solutions and changing expectations in the service provider industry about modernization. With an established footprint in telco cloud deployments globally, VMware has been expanding its capabilities to address the challenges in the disaggregation of the RAN.

With a horizontal platform that enables workload consistency from the core and the RAN to the public cloud, we've revealed what is possible—simplicity, speed, agility, and far-reaching automation. The objective is to enable our customers to modernize their entire networks, simplify their operations with end-to-end consistency, and further disaggregate their RAN.