

GREENRAN™ xApps Suite for Energy Optimization

GREENRAN™ Power Solutions: Driving Energy Efficiency

Parallel Wireless' GreenRAN™ solutions, aimed at reducing power consumption and assisting operators in achieving Mobile Net Zero targets, are supported by a suite of power-saving xApps. These xApps are designed to help network operators optimize their power consumption by adapting to fluctuating traffic demands. This approach offers two distinct benefits: operators can scale their infrastructure to provide high performance and capacity on demand, and benefit from substantial reductions in energy costs by dynamically powering down transmission channels or even entire layers when not needed.

Real-Time Intelligence: Leveraging Open RAN with Near Realtime RIC

One of the key benefits of the Open-RAN ecosystem is its use of the Near Realtime RIC platform. A vast stream of high-resolution network data flows through the RIC, regarding connections, equipment parameters, measurements and more. Thanks to its open interfaces, this data can be made available to a variety of single-purpose applications that allow operators to optimize the network in ways not possible before. As the data flow is in near real-time, the apps can trigger actions in sub-second intervals to safeguard, among other aspects, the user experience. It is this dynamic decision-making that creates the possibility to power down under-utilized layers or transmission channels without impacting any of the users who are already connected. When it comes to energy savings, the implications are huge. Another advantage is the ability to optimize, across the board, by removing unnecessary safety margins. Big data analysis enable smart predictions of operation windows with a high degree of accuracy while real-time monitoring and anomaly detection allow split-second reaction in unforeseen circumstances.

Applications

The following xApps from Parallel Wireless, designed to improve energy efficiency in mobile networks, can be deployed on the Near-RT RIC, (provided by Parallel Wireless or any standard O-RAN-compliant RIC):

MIMO Channel Shutdown xApp

Similar to the Layer Switch-off xApp, the MIMO Channel Shutdown xApp operates in predefined windows or based on real-time network demand. It can change MIMO modes to conserve energy when possible. When demand drops, the xApp optimizes the user MIMO configuration between MIMO 4x4 and MIMO 2x2, constraining the number of Downlink MIMO layers and reducing related costs by an estimated 35% at the cluster level.

This is achieved while maintaining the UE channel quality. The xApp continuously monitors traffic demand in the area from the UE perspective and can instantly revert back to high-capacity mode if needed.

Layer Switch-off xApp

This app analyzes real-time traffic conditions and patterns to dynamically adjust the use of network layers. It shuts down unnecessary capacity layers when possible or at predefined windows. Additionally, it redirects users (UEs) to optimal layers before shutdown, ensuring an optimal user experience. The xApp also monitors network traffic in the area and can power necessary layers back up based on unfolding traffic demands.



KEY FEATURES AND BENEFITS



Dynamic Layer Adjustment

Adapts to real-time traffic, reducing energy usage.



User experience-aware decision making

Dynamically adjusts network layers based on real-time traffic conditions, ensuring optimal user experience and energy efficiency.



Traffic Visualization and Control

Includes visual tools to monitor network load and manage capacity effectively.



Efficient Network Management

Redirects traffic to optimize network layer usage.



Energy Savings

Significant power savings by shutting down underutilized layers, especially during off-peak hours.



Hardware Agnostic software-RIC and xApps

Allows operators to choose the hardware and chipset that best suits their needs,

About Parallel Wireless

GreenRAN™ from Parallel Wireless is expanding the ecosystem for Open RAN with energy-efficient cross-platform technology. Deployed worldwide, our comprehensive platform independent 2G/3G/4G/5G Macro RAN solutions enhance network energy security while reducing operating expenses. As a leading Open RAN pioneer, we prioritize innovation and technology flexibility, making our commitment to open networks unwavering. Headquartered in the USA with global R&D centers, our most critical mission is to accelerate GSMA's Mobile Net Zero initiative.