

A graphic featuring a photograph of a telecommunications tower with various antennas and equipment on the left, set against a sunset sky. The right side of the graphic is a solid orange background with the text '4G SOLUTION OVERVIEW' in white, bold, sans-serif font. A white horizontal line is positioned below the word 'OVERVIEW'.

# 4G SOLUTION OVERVIEW

## OVERVIEW

Parallel Wireless's fully virtualized, software-based unified 2G/3G/4G/5G architecture allows operators to easily deploy, manage, scale, and future-proof their new 4G/LTE networks or cost-effectively migrate their existing networks from 2G/3G to 4G while providing the lowest TCO by making the networks selfconfiguring, self-optimizing, and 5G-ready. Parallel Wireless's solution is ideally suited for:

- Greenfield 4G Deployment: SPs looking to provide new 4G service in rural or urban areas.
- Densification: SPs looking to densify their 4G networks to support increasing user count.

## THE CHALLENGE

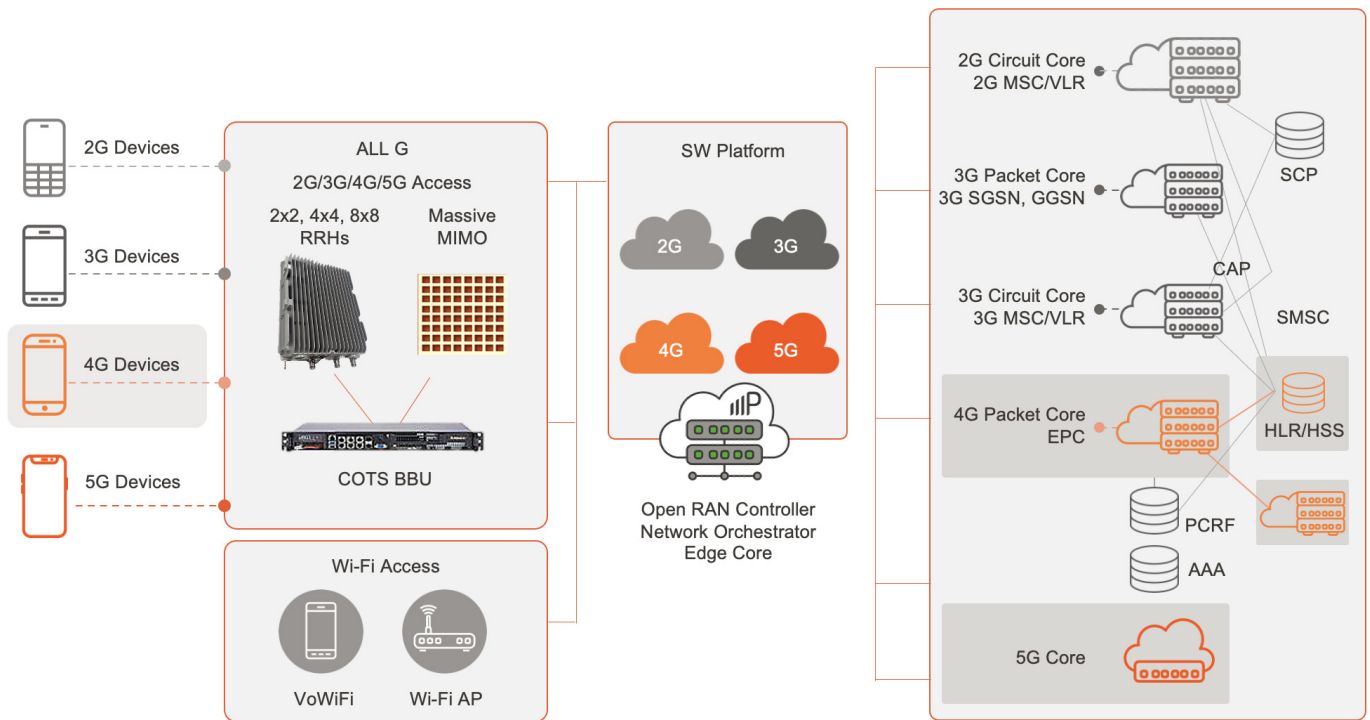
Global MNOs are facing flat or declining ARPU due to increased data consumption that strains their networks. They need new solutions to support different use cases: to expand, densify or build new 4G networks. New greenfield deployments require high speed rollout for coverage at the lowest possible initial cost, while fixed wireless requires targeted high capacity in specific areas. Any densification deployments require a cost-effective strategy for configuration and for on-going optimization. It is very difficult to meet these often- conflicting requirements with traditional 4G architecture where each topology, use case and service type means additional cost from legacy vendors.

## THE SOLUTION

Parallel Wireless's solution is comprised of two main components to provide LTE based functionality. The Open RAN RRH hardware from a variety of ecosystem partners. A COTS vBBU can provide shared capacity or enable Carrier Aggregation (CA) at a much lower cost.

Open RAN Controller software suite consolidates all necessary functionalities to build, expand or densify the 4G RAN (i.e. X2-gateway, small cell gateway, security gateway and SON) to build new or expand/ densify current 4G networks.

The software acts as an aggregator toward the core network (EPC), while orchestrating the RAN. Parallel Wireless Open RAN software suite will help reduce network complexity while improving performance and efficiency. It also provides an easy path towards overall 5G network migration. When operators expand or densify their networks with Parallel Wireless's solution, the abstraction layer will reduce signaling towards the core, which means there is no need for additional capacity from an existing EPC vendor thereby reducing the CAPEX. In addition, the signaling from all the RANs in the densification layer will be absorbed by the Open- RAN software abstraction layer. Parallel Wireless's Automation and Orchestration software module provides SON functionality to enable self-configuration and self-optimization during deployments, resulting in quick and easy rollouts. Interference mitigation by OPEN RAN SOFTWARE simplifies network expansions to make them easy to scale. OPEN RAN SOFTWARE is software-upgradable, removing the cost and complexity of transitioning the networks to 5G.



## BENEFITS TO SERVICE PROVIDERS

### CLOUD-NATIVE ARCHITECTURE:

- Open RAN software abstracts Core and RAN and brings 5G-like benefits to 4G (with low latency and network slicing).
- Data traffic local breakout through utilization of CUPS can deliver low latency into 4G networks today.

### EASY TO DEPLOY, MANAGE, AND SCALE:

- The software platform automates network optimization to reduce deployment cost. Self-configuration makes radios plug-and-play.
- Self-optimization reduces the need for drive testing and results in cost reduction.
- Radio is software-defined to upgrade user count and technologies, so sites can be software upgradable to higher capacity with COTS BBU or 5G when needed.
- Orchestration enables optimal network performance, which results in superior end-user QoE with seamless mobility, preventing subscriber churn.

## SUMMARY

Parallel Wireless's 4G cloud-native solution uses software to create a low-cost, low-footprint, low-power, cellular solution for new or existing 4G networks. It removes deployment and economic constraints by being easy to install and requires minimum on-going maintenance which reduces OPEX. Being software-based, the Parallel Wireless 4G solution is easy to expand and provides a 5G native architecture to future-proof the networks.

### LOWEST TCO:

- OPEN RAN based solution.
- Automation reduces the need to travel on-site or use professional services.
- Hands-free optimization of PW SON saves on on-going maintenance.

### FUTURE-PROOF AND EASY MIGRATION TO 5G:

- Software platform enables 5G-native architecture which is upgradable to any 3GPP release in the future.
- The software enables any 5G migration option.
- Virtualization of gateways (like Security gateway, Small Cells gateway, Wi-Fi gateways, etc.) as VNFs allows flexibility to introduce new components and services within the network.