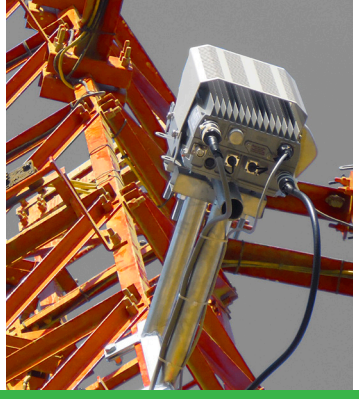


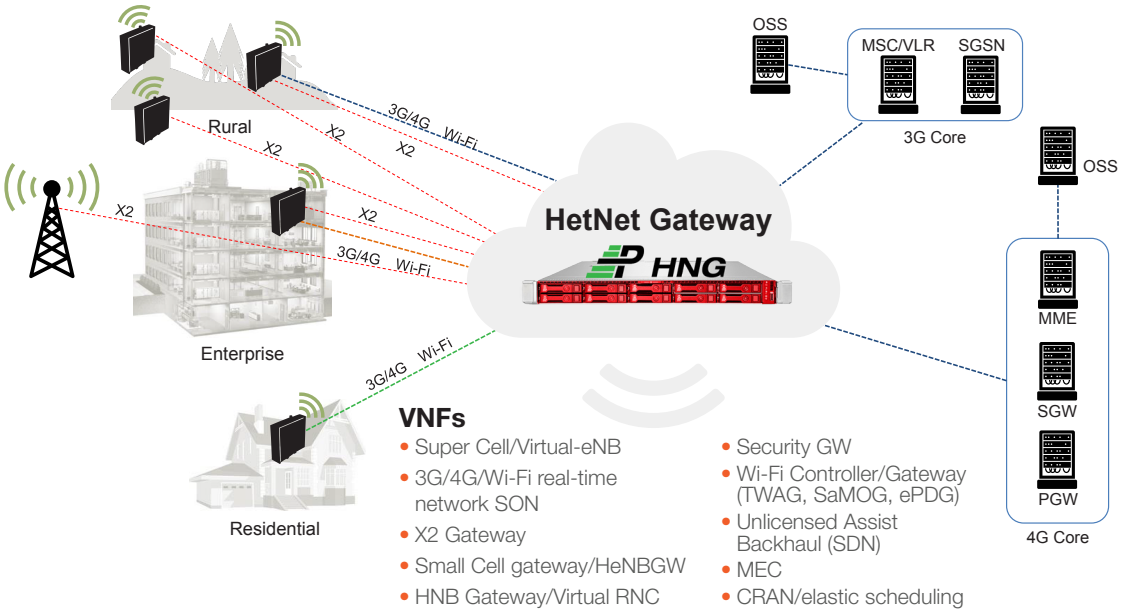

Parallel Wireless Outdoor Solution: Rural

Overview

With over 4.4B of the population still unconnected, it is not economical feasible in many areas for Service Providers to deliver coverage as the required infrastructure components of backhaul, facilities, and power are not readily available. Add to that the high physical installation and ongoing maintenance costs, especially for areas with very limited population. This makes it costlier to operate the sites than what they could potentially generate in terms of direct revenue. Parallel Wireless innovative technology with wireless mesh capabilities helps to deliver coverage to these areas by making deployments easy and affordable to install and maintain. Parallel Wireless outdoor rural solution is a low-cost, low-footprint, low-power, any G, multi-technology coverage solution. It removes deployment and economic constraints by eliminating the need for planning applications or fixed backhaul infrastructure by using ANY haul. This reduces deployment cost by 80% and deployment time to a few months. The solution is easy to install (under 20 minutes per node) and requires minimum on-going maintenance which reduces OPEX. Additional OPEX reductions are delivered through lower site rental fees as a result of a smaller footprint and power savings resulting from lower power consumption.

Figure 1

Parallel Wireless Rural Network Architecture



Components

CWS (Converged Wireless System) Family of products

The Converged Wireless System family of products come in 2x5 W, 2x20 W, 2x40 W RF outputs. CWS is a software-defined, multi-mode, multi-carrier RAN hardware that supports ANY G (2G/3G/4G) in the same form factor, with the ability to connect via PoE to any off the shelf Wi-Fi AP. The CWS is built out of commodity components and integrates baseband, radio, filter, switch, antenna and power supply into a single device. As CWS integrates flexible ANY haul capabilities (Ethernet, fiber, satellite) into the same form factor, the site footprint will be reduced along with CAPEX spending. CWS backhaul capabilities can be enhanced with wireless mesh by simply connecting a wireless mesh

backhaul module via an Ethernet cable. Multiple CWS' can connect to each other and daisy chain to form a mesh cluster – as a result, this eliminates the need for other types of backhaul in backhaul-challenged environments. The wireless mesh capability also adds additional level of resilience. Low power consumption (less than MAC laptop running on full CPU) reduces OPEX expenditures.

The compact/lightweight form factor (i.e. under 18 lbs. for 2x20 W), along with a set of options such as external antenna support, allows for small cell deployment with "lite" planning as a limited number of planning applications is required, even in dense urban areas where site access is difficult and appearance could be an issue. The CWS can be attached to any street furniture to include houses, buildings, utility poles, bus/train stops and advertising signage.

HetNet Gateway from Parallel Wireless makes CWS nodes self-configuring and self-optimizing and also enables seamless mobility and interoperability with the macro network.

Figure 2
CWS Installed on Tower in LATAM

HetNet Gateway

HetNet Gateway (HNG) is the industry's first carrier-grade, NFV/SDN-based, 3GPP compliant RAN orchestrator and 2G/3G/4G gateway enabled by virtualized functionality. HNG is designed to work in conjunction with CWS hardware and provide various gateway functions such as security gateway, X2 GW, HeNBGW, BSC, HNBGW, Wi-Fi GW (ePDG, TWAG), SON server for real-time network SON, resource optimization, flexible scheduling, interference mitigation, traffic prioritization and enterprise-grade/carrier-grade security capabilities to the base station network. It orchestrates cells and makes them self-configuring, self-optimizing, and self-healing.

As a result, rural networks can be built or expanded at much lower cost, making cellular deployments for any market as easy and as cost-effective as enterprise Wi-Fi.

Summary

Parallel Wireless' scalable 2G/3G/4G cellular network solutions accelerate the long-term transition from today's 2G/3G/4G LTE to tomorrow's 5G cellular networks. Service providers can level the economic playing field and enhance outdoor communication with a fast, secure, and cost-effective solution through:

Improved ROI	Self-contained Radio Access Network and HetNet Gateway deliver flexible low-cost hardware/software with easy installation, operations and maintenance.
Flexible Site Locations	Small form factor radio units with integrated backhaul allow a wide range of new low-powered, low-footprint sites, significantly driving costs down.
Flexible Backhaul	Radio units allow flexible backhaul options: wireless, fiber, xDSL, Satellite and/or in-band LTE backhaul and local meshed backhaul to downstream sites.
Simple Install Maintenance	Plug and Play design allows easy initial deployment, centralized configuration and operations, and simple on-site maintenance, without specialized installers.
Low Impact Site Deployments	Small form factor radio units are power-efficient allowing a wide number of location placements: on/in building structures, small poles, power poles, towers, etc.
Resilience Design	Flexible architecture allows lower cost resilient architectures to improve reliability.
Multi-Operator Solution	Flexible design to create a scalable neutral host environment to allow a multi-operator ecosystem.

The result is rural coverage that can finally be affordable for a massive rollout. With wireless broadband in place, rural areas will have the resources necessary to attract new business, sustain existing businesses, decrease the need to commute, and reduce environmental impact.