Connecting things and people with Public Safety LTE

# Parallel Wireless Public Safety LTE Solutions

Overview

Parallel Wireless Public Safety LTE communication 3GPP-compliant solution provides unified resilient LTE network across police, fire, ambulance, military, air force, in tactical operations, in emergencies and during natural disasters – all at much lower cost. It allows each government organization to have their own secure LTE network while being one unified platform across these networks. It can be deployed in various tactical and multi-cast environments from police station/military base, to deployable/man portable in ad hoc scenarios. The solution delivers reliable coverage in urban to rural areas, local organizational control, and resilience with self-healing features and flexible backhaul capabilities including multi-homed mesh or LTE backhaul. It provides secure LTE communications consisting of voice, high throughput video, data, Push-to-Talk, MMS, and/or SMS for multiple users in daily operations or in emergency/tactical operations.

Figure 1

Parallel Wireless Public Safety LTE Architecture
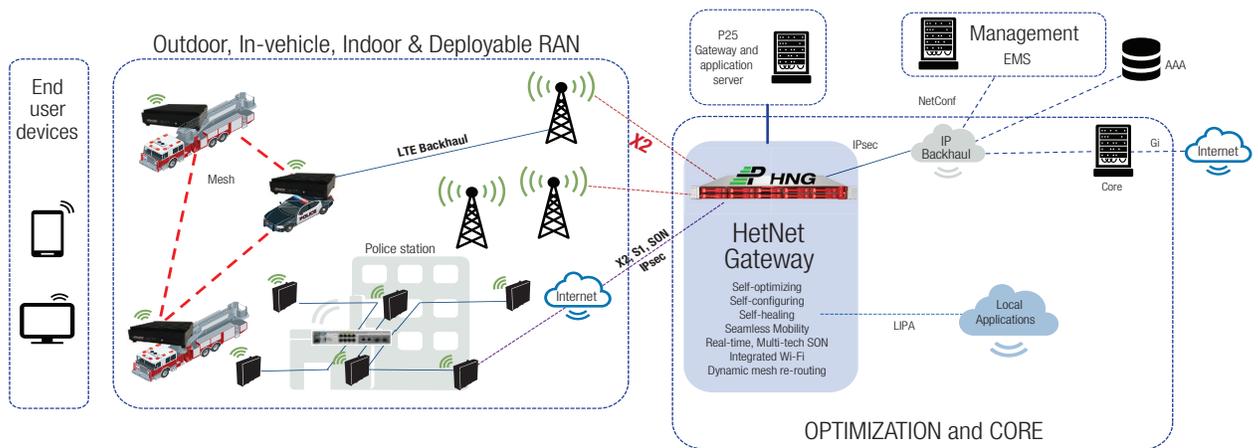
Components

CWS-3000 2x40w

The Converged Wireless System (CWS) is an eNodeB RAN hardware that supports 4G/LTE, with the ability to connect via PoE to any off the shelf Wi-Fi AP. As CWS integrates flexible backhaul 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 to form a mesh cluster and eliminate the need for other types of backhaul in backhaul-challenged environments as connectivity can be wirelessly extended for miles via multiple hops. The wireless mesh capability also adds additional level of resilience.

The traditional COWS do not support advanced mesh backhaul. Current deployable rely heavily on satellite or fixed backhaul to provide emergency networking. It is hard in areas where the entire infrastructure is wiped out. With CWS and HetNet GW, this solution brings an ad hoc and flexible LTE network.

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The compact form factor/light weight (under 18 lbs) of the CWS family, associated with a set of options such as external antenna support, allows for RAN deployment with "lite" planning which is critical in tactical operations hwere CWS-3050 can be part of the CoW/SoW/deployable system.

CWS nodes are auto-configured and managed by the Parallel Wireless HetNet Gateway (HNG).

In-vehicle eNodeB

CWS-210 is a ruggedized in-vehicle eNodeB/Wi-Fi access point with integrated flexible backhaul. It delivers control, security, and traffic prioritization for public safety data and voice communications. CWS-210 has mesh backhaul capabilities built into the base station; when additional vehicles arrive on scene, they can also mesh into this network to extend the coverage area. The in-vehicle nodes are self-configured and self-managed via HetNet Gateway (HNG) from Parallel Wireless that can be installed in the data center or locally in a command vehicle. HNG allows the nodes to be deployed and maintained without any specialized staff. With flexible mounting options, the in-vehicle hardware can be easily installed in any emergency or carried in a backpack.

Enabled by in-vehicle CWS-210, Bring Your Own Coverage (BYOC) is the solution capable of solving coverage issues by either extending a nearby macro's coverage area into areas with no coverage like underground parking garages, basements, etc., or by creating an instant "coverage bubble" via an ad hoc network (isolated, free standing network) when network infrastructure does not exist or is compromised. These capabilities enable BYOC to address coverage shortfalls from geographical or building limitations to network outages and emergency circumstances.

HetNet Gateway

HetNet Gateway (HNG) is the industry's first public safety-grade, NFV/SDN-based, 3GPP-compliant RAN orchestrator and traffic optimizer that can orchestrate any eNodeB and makes them self-configuring, self-optimizing, and self-healing. As a result, public safety LTE networks can be built or expanded at much lower cost. During disasters or emergencies, HNG auto configures/optimizes to allow the network to be operational in minutes. HNG also mitigates the interference from additional first responders as they arrive on scene. This enables seamless handoffs between equipment and coverage footprints. Traditional COWs (Cell on Wheels) require specialized equipment as with the current deployables, a separate truck with emergency networking equipment is required.

EPC

By bringing an embedded EPC as a part of the network coverage configuration, an instant portable local network can be created. In closed network mode, a the solution provides local PTT and voice-relay operation between users connected to that CWS or any other CWS' in the mesh cluster and other custom applications. As this is the standard operating mode for the CWS, no user intervention or configuration is needed to enable this capability – it is on instantly.

Application Server

An application server enables LTE capabilities such as sharing files, images, and videos to be incorporated with legacy systems. The app server allows public safety agencies to use first responder apps that bridge the LMR and LTE worlds.

Handsets

Public safety-grade **handsets** capable of communicating over Push-To-Talk (PTT) or reliable 4G LTE.

Uni-Manage EMS

A web-based application for management, monitoring, and health status for all Parallel Wireless network elements that also comes in a portable tablet/smartphone version.

Summary

Parallel Wireless Public safety LTE commercially available solution has been selected by a Public Safety LTE network in Europe and by US government organizations including FirstNet early adopters; has been tested and deployed in over 25 global military, police, and fire organizations.