Indoor (Enterprise Femto) Solution Overview

Scalable, Quality, Resilient In-building Coverage for Much Lower Cost and with Ease of Install and Maintenance

Parallel WIRELESS

The Challenge

Considering 80% of mobile usage initiate or terminate indoor, there is a need for operators to constantly invest and improve this part of their network. Wireless solution available today require high CAPEX and high on-going OPEX investments; they are complex to install and maintain. Also, current indoor/enterprise solutions such as DAS, WiFi, and in-building small cells are not scalable as they require separate core gateways and/or donor base stations.

Overview

The Parallel Wireless 4G solution for indoor coverage is a 3GPP standards-based solution that is easily scalable to suit any size enterprise. The solution enables service providers to deploy reliable in-building coverage at pennies per square foot to deliver quality voice and data while at the same time reducing the complexity of deployment and maintenance.

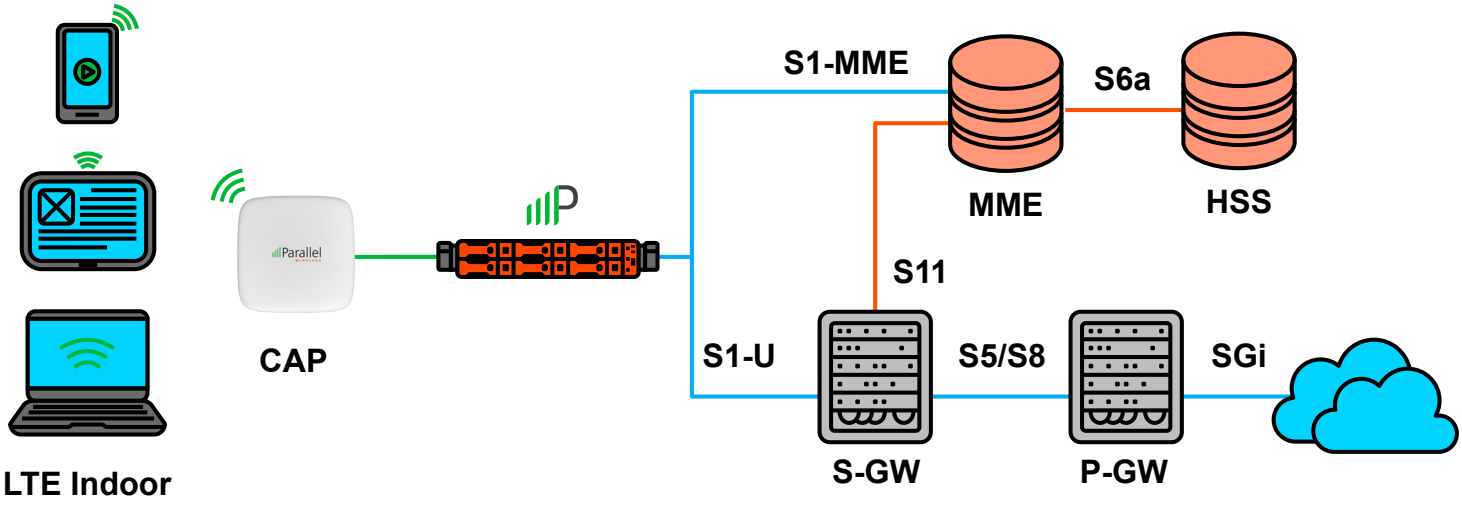
The solution is based on the cellular access point (CAP)/enterprise femtocell and integrates 4G/LTE with real-time network orchestration, flexible scheduling, interference mitigation, resource optimization, traffic prioritization and enterprise-grade security through OpenRAN software suite. Orchestration with real-time network SON, resource optimization, and traffic mitigation on the OpenRAN software, enables seamless mobility for users indoors and out and makes network deployments fast and simple with no RF planning or complex system integration required.

The Solution

The Parallel Wireless indoor solution is based on the OpenRAN software suite acting as the enterprise gateway between operators' core networks and the indoor radio access network based on associated Cellular Access Points (CAPs). From the core network's perspective the software acts as a single eNodeB (E-UTRAN) or NodeB (UTRAN), reducing the number of signaling messages and overhead for core networks due to the large number of CAPs in small cell deployments. Unlike the DAS approach, this solution can scale easily with the support of orchestration functionalities on the automation software module.

Our Cellular Access Point is a low-cost, software-defined, multi-tech (4G) OpenRAN femtocell that provides 4G coverage. This design approach helps to achieve the right level of deployment flexibility and attractive economics for Service Providers to deliver variants for a wide variety of Enterprise deployments with the lowest cost per unit and coverage bringing overall CAPEX expenditures down with over 90% savings.

OpenRAN controller is a cloud-based network orchestrator/enterprise gateway that logically sits between enterprise RAN and the Core. It runs on any Intel x86 COTS server, configures and optimizes the indoor network and manages Enterprise Femtos, including integration with macros, to provide a seamless user experience for voice and data. The initial install will require very little RF planning or complex system integration and can be done in under a day. As a result, indoor coverage can be provided at a much lower cost, making it as easy and as cost-effective as enterprise WiFi. The OpenRAN software suite also enables network sharing, private LTE, and several voice services such as VoLTE and low-cost VoWiFi. As all services are anchored on the software, handoff between voice services is made seamless so there are less dropped calls. The controller also enables seamless handoff between different macro networks so users' calls will not drop once they leave the building.



Benefits

The solution delivers these benefits:

- A scalable solution with simple deployment
  - Low skill installation and automatic operation to make this indoor coverage femto solution affordable for the smallest business – just like WiFi.
  - Multiple mounting options
  - Orchestration, interference management, traffic prioritization/security on the software
  - Ability to add another 32 users by simply adding another CAP – no RF planning or reconfiguration is required
- Quality of voice and data experience for end users
  - No single point of failure
  - Real-time optimization and complete interference management between different network layers with remote RF management to enable end user QoS for voice and data
- Lower overall TCO
  - Low CAPEX with low cost “OpenRAN femto HW and OpenRAN software suite that has all functionality in software (no additional gateways required as in femto gateway, security gateway, HNBGW, etc.)
  - Pennies per square foot to maintain (Low OPEX-SON does hands-free orchestration, distributed scheduling, interference mitigation, etc.
  - Scalable for higher capacity:
    - Real-time SON manages new cells as they are added to the network
    - Scalability means you can easily add new cells to handle an increase in users

Summary

The Parallel Wireless Enterprise (Femto) solution not only improves indoor coverage at a significantly reduced cost, but also enables new service offerings (voice, IoT, Private LTE) for both operators and business owners. Auto-configuration, self-optimization, and traffic mitigation capabilities can all be provided by the software to improve network resource utilization and to optimize user traffic to improve the experience. This results in SPs being able to extend existing network investments in the core and reduce the impact on the overall network performance while providing better in-building coverage services to generate new revenue.

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