AirSON

The Power of AirSON

Airspan's small cells are designed to be deployed either as a self-contained LTE network, or as a second layer in a HetNet deployment with an existing Macro layer. As such, Airspan has been at the forefront of SON development, offering an advanced algorithm suite (AirSON) which is specifically designed to address operators' needs when deploying small cells.

AirSON is using a Distributed architecture, embedded in each of Airspan's small cells, thus scaling with the network. Airspan small cells empowered by AirSON, minimize the operational complexity associated with a large-scale LTE network, offering an extensive set of algorithms designed to simplify every aspect of a small cell deployment.

In addition to using AirSON, Airspan small cells are also able to connect to a Centralized SON server, allowing the operator to pick and choose which algorithms should run autonomously in real-time in Airspan's small cells, and which algorithms should be controlled by a central entity, coordinating operations between several layers and vendors in the network.

AirSON not only controls Airspan's LTE Radio Access, but also optimizes Airspan's Point-to-Multipoint wireless backhaul (codename iBridge), creating a seamless end-to-end network supporting self-continuous optimization of backhaul links, ensuring interference between iBridge nodes is minimized and delivering end-to-end QoS across the network with minimal spectrum consumption.

Radio Planning with SON

Airspan small cells are designed to integrate with standardized LTE Access SON solutions. Airspan's AirSON is layered and consists of both Integrated eNodeB Distributed SON technology, as well as a Centralized SON interface for network based SON.

When deployed using iBridge backhaul, Airspan eNodeBs also integrate Backhaul SON into the LTE SON Framework. This allows a network to be optimized for both LTE Access and Backhaul simultaneously without the need for extensive, formal planning. The products self-configure, self-connect, and self-optimize.
In addition, unlike conventional mobile network planning and design, expansion of the coverage area can be optimized and adapted depending on the local need.

The Need for SON

With the proliferation of small cells in LTE, many operators quickly discover that traditional concepts of Macro cell planning and deployment cannot scale to support such a massive and rapid rollout. Self-Organizing/Optimizing Networks (SON) is a set of tools and algorithms aimed at greatly simplifying large-scale network operations, addressing all aspects of the deployment – from RF planning, through installation and commissioning, to continuous network optimization.

AirSON: Key Features

Plug & Play
Automatic Configuration, also known as Plug-n-Play (PnP), is crucial for supporting rapid small-cell deployment. PnP significantly reduces installation time of a small cell, by virtually eliminating any manual configuration needed from Power-Up until the small-cell is commissioned and operating normally.

Dynamic Interference Mitigation
AirSON is able to dynamically adapt to the ever changing environment, minimizing interference within Small cells, as well as between Small cells and Inter-Vendor Macro cells (via Centralized SON integration).

Auto-PCI Selection and Conflict Resolution
AirSON prevents PCI Conflicts (Collision and Confusion) in the network, by maintaining a prioritized list of PCIs available for each small cell to choose from. The operator is able to limit the range of PCIs allocated for Airspan's small cells (to align with its Macro network planning). AirSON is also able to resolve conflicts autonomously by detecting PCI conflicts and changing PCIs accordingly. Reduced management complexity of a dense small cell network.

RACH Optimization
AirSON is able to automatically select Root Sequence Indexes (RSIs) as well as various RACH parameters such as Preambles, Periodicity, Transmit Power, etc…Ensuring the RACH resources are dimensioned as per access requirement in the cell, and also avoiding RACH collisions and decode errors. Improving overall user Quality of Experience.

Automatic Neighbor Relations (ANR)
ANR populates and maintains the Neighbor Relations Table (NRT) automatically based on UE Reports and X2 Setup Requests from new cells, allowing the operator to define White-Listed neighbors and optimize handovers to neighbors based on UE handover reports. Eliminates manual configuration of NRT and reduces management complexity.

Frequent Handover Mitigation (FHM) and Mobility Robustness Optimization (MRO)
By observing UE handover behavior, AirSON is able to set the optimal mobility parameters for idle and connected states, ensuring that handover success rates are consistently met across a network that comprises of multi-vendor eNodeB RAN. AirSON detects ping-ponging and fast moving users and adjusts the mobility parameters per UE to minimize undesirable handovers. Increases user Quality of Experience while reducing the signalling load on the network.

Mobility Load Balancing (MLB)
By exchanging load information over the X2 interface, MLB adjusts mobility parameters and transmit power of small cells for load balancing between Small cells and between Small cells and Macro cells. Improves cell and network utilization.

Self-Healing
Airspan eNodeBs are continuously monitoring their "health" and are able to automatically recover from faults. In case of issues that a specific eNodeB cannot be recovered from, neighboring Airspan eNodeBs can detect the problematic node and adapt the network coverage accordingly, in order to compensate for the missing node and minimize network performance degradation.