The Need for Small-Cell Virtulization

With the proliferation of small cells in LTE, many operators quickly discover that traditional network planning cannot scale to support such a massive and rapid rollout. Connecting Airspan's Small-Cell Controller (SCC) into the existing infrastructure of the operator, improves user experience and maximised network capacity also in extreme hyper dense femto deployments.
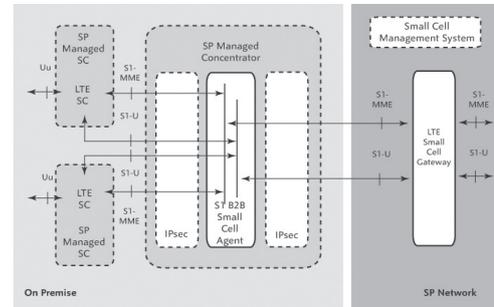
The Power of AirSymphony

Airspan's small cells are designed to be deployed in a hyper dense deployment, either in public venues (malls, shopping centers, airports etc.) or outdoor as a second layer in a Hetnet deployment. AirSymphony is used as a centralised manager, for each of the deployments. It configures and optimizes each of the small cells within its region, improving user experience, maximizing network capacity and simplifying management and configuration. This and more is done utilising standard interfaces defined by 3GPP and SCF, and a set of proprietary enhancements.
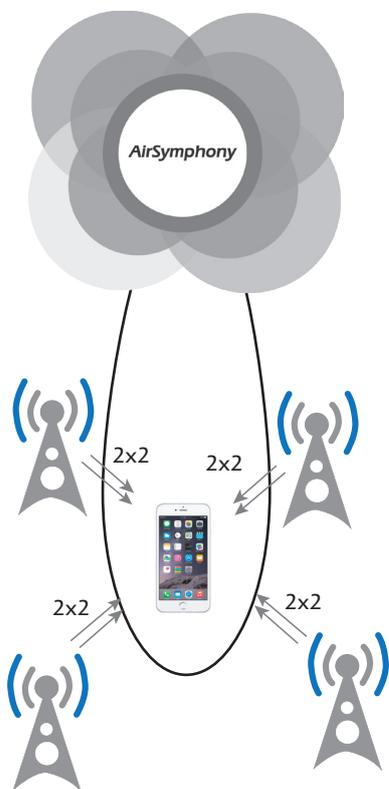
AirSymphony – Next Step in Small Cell Virtualization

One of the unique properties of AirSymphony is its ability to combine different small-cells into a single super cell. Multiple 2x2 small-cells can combine their transmit paths to create a 4x4 MIMO transmission or even higher (8x8) MIMO schemes towards a single UE in the network. Same technics can be used to enhance user capacity, increase gain or reduce interference.

S1 aggregation

Terminates S1 connection towards Airspan eNodeBs and proxies the connections towards a single S1 interface from the SCC to the service provider EPC or (optionally) LTE small cell gateway. The complete deployment will be presented as a single LTE small cell to the service provider EPC.

X2 aggregation

Aggregates X2 interfaces from individual small cells, and presents a single X2 for the entire E-SCN (Enterprise Small Cell Network) to each Macro eNodeB. Reduces the complexity of managing large numbers of X2 links in large scale deployments and enables hierarchical mobility where X2-handover between LTE small cells is fully masked from the core network (no path switch).

IPsec aggregation

Aggregates IPsec tunnels from individual small cell into a single IPsec tunnel between AirSymphony and the service provider network. Simplifies firewall and LAN configurations as only a single IPsec tunnel needs to be supported for a complete deployment.

RRC concentrator

AirSymphony supports Master eNB (MeNB) concentrating RRC layer for all cells, while maintaining a single S1-MME interface per UE within the small cells cluster. MeNB hides inter small cells mobility from the core network and can eliminate the need for path switch for security key exchange.

Hybrid SON

AirSymphony complements distributed SON architecture and provides a Hybrid SON architecture. The centralized SON elements helps optimizing network parameters on cluster level, including power management, interference mitigation and self-healing.

Inter layer eICIC

AirSymphony negotiates resource partition (ABS) with the macro cell on behalf of a cluster of small cells in order to optimize cluster performance. Without it, each small cell will independently try to coordinate ABS pattern with the Macro eNodeB, increasing X2 signaling load on macro cell, providing conflicting requests.

CoMP support

AirSymphony supports DL and UL CoMP schemes by providing L2 pool which helps eliminating inter cell interferences.

LIPA

AirSymphony enables data offloading to a local network using LIPA.

Enhanced MIMO schemes

AirSymphony can combine different small-cells to create a 4x4 MIMO transmission or even higher MIMO schemes towards a single UE in the network. Same technics can be used to enhance user capacity, increase gain or reduce interference.