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Reducing Wireless Network CAPEX through Streamlined Planning

As the quality of mobile operator's network coverage is the primary criteria by which subscribers choose service providers, MNOs are actively looking to combat churn by improving network coverage and performance.

Additional capacity can be attained through an array of network-technology migrations, such as TDM to Ethernet in the backhaul and 2G/3G to LTE and LTE-Advanced in the radio access networks (RANs). In parallel, the utilization of small cells and Wi-Fi offloading can also achieve the goal of releasing traffic pressure in MNO's wireless networks. However, when you evaluate the total amounts of capital expenditure (CAPEX) required to roll out these technologies, it becomes abundantly clear that MNOs must embrace new strategies (such as network optimization) to protect their diminishing margins.

In its May 2013 white paper "Optimization Automation: Immediate Gains for Today, SON Enabler for the Future," the research firm Analysys Mason indicates that as much as 5 percent of any given MNO's network capacity is stranded, demonstrating that opportunities do exist for MNOs to rightsize capacity by improving their planning process, thereby increasing their margins. Planning and optimization teams often rely on network-usage information that can take weeks to be produced by transport or service-quality departments; by the time it's made available, traffic patterns are likely to have already changed.

So how can an MNO improve the accuracy of its network planning if it has to depend on outdated information? What good is spending money to add more capacity if it's being deployed in the wrong part of the network?

IMPROVING THE MARGINS

Paramount to identifying and reducing stranded capacity, thus reducing the cost of network extensions, is the ability to shorten the

planning and optimization cycle. The annoying Catch-22 is that, with the fast increase in subscriber's bandwidth requirements, MNOs need to design and deploy next generation networks while continuing to optimize their existing network technology; which makes the planning and optimization process more complex and time consuming.

In that new paradigm MNOs can't afford to approach the planning and optimization process with a segmented strategy in which multiple siloed tools operate independently of one another and are based on data snapshots that are already three to six months old. MNOs need to embrace comprehensive, unified systems over individual tools, for which data and plans across multiple technologies throughout the network can be properly synchronized in order to provide an instant and accurate view of network quality and performance.

With the right platform, RAN engineering and optimization departments can gain access to up-to-date network intelligence, information traditionally controlled by transport or service-quality departments, allowing them to automatically generate usage and coverage simulations based on current network intelligence and streamline network planning and optimization processes so that new capacity and technology deployments are made strategically, at the right times and in the right places. Planning and optimization tools with real-time network intelligence will ultimately minimize OPEX and CAPEX and improve MNOs' margins.

An additional benefit is the ability to innovate by providing predictive coverage maps to departments like marketing or customer care. The most accurate planning solutions allow

you to leverage predicted traffic levels from the network-intelligence platform to identify the exact locations where subscribers are about to experience service-quality degradations, offering companies another advantage when it comes to stopping problems before they start, and allowing them to stand out among the competition by improving their subscribers' quality of experience.

IMPROVING SMALL CELLS' ROI

The most efficient planning methodologies begin with a thorough analysis of the current state of the network, the key word being "current."

Optimizing the strategic deployment of small cells is a perfect example. Due to the nature of today's heterogeneous networks, or HetNets, and the constant evolution of new network technologies, there's no single, all-encompassing small-cell strategy. Instead, there is a wide range of potential strategies, all with their own merits and applications based on the specific needs of individual MNOs. From a technical point of view, it's important to remember that small cells are primarily deployed to build out cellular networks and capture more traffic, easing the stress on those networks' macro layers.

So, for starters, operators should determine if their networks are fully optimized and utilizing the entire available spectrum. The true nature of small cells—how they interact with and optimize cellular networks—must be understood in order for MNOs to reap all the potential benefits. This knowledge could mean the difference between missed opportunities and huge gains, and therefore MNOs have to ask themselves four critical questions:

• Is the current network optimized?

Determine whether the network can be optimized to carry even more traffic. The existing network must be optimized in order to reveal where small cells are

needed most; the location of their deployment is dependent upon the current network's macro-layer coverage and capacity.

• Where is the traffic load so high that small cells make sense?

Determine which areas, based on current and expected traffic, have traffic loads of such intensity that they warrant small-cell deployments. Where and when are additional resources needed?

• How can you use frequency resources?

Analyze spectral efficiency so that the current use of frequencies may be optimized. Is it more efficient to use the available frequencies for another technology, such as spectrum refarming? Do you need additional frequency resources?

• Which technologies, both cellular and backhaul, should be deployed?

Evaluate and compare different frequency, technology, topology, and backhaul scenarios based on CAPEX, OPEX, throughput, quality, spectral efficiency, and time to market (TTM). Which options are most appropriate from those points of view?

A SIMPLE SOLUTION FOR A COMPLEX PROBLEM

Integrating network planning and service assurance solutions while leveraging real-time network intelligence is a logical, pragmatic and simple way of protecting margins right now. Optimizing new technology deployments such as small cells and reducing stranded capacity allows MNOs to plan strategic OPEX and CAPEX investments, making their networks more efficient and thus more appealing to subscribers.