Dr. Wolfgang Knospe, Detecon

Enhanced Capacity Management – how to monitor, control, and steer your service quality!

In telecommunications, engineers regard capacity as a measure of the user's data volume that can be transported per time interval. Depending on the interval's length it can be expressed in volume per hour or in volume per second often called throughput or bandwidth.

For customers, the perception of these two capacity flavors is completely different: services with sporadic data transportation like web browsing require a high bandwidth, but only a low volume. Services with a continuous data flow like video streaming require lower bandwidth, but a large volume. However, the perceived service quality in both cases is determined by the available capacity – which obviously is key to customer satisfaction.

Surprisingly many operators claim to have a lack of capacity. Once customers started to adopt smartphones and began to use mobile internet services the long-awaited traffic growth on 3G networks occurred, driving the currently deployed capacity close to exhaustion. Additionally, driven by marketing, higher and higher throughputs are advertised as offering superior service quality. The typical engineering response is additional infrastructure deployed in a proactive manner: new carriers, new software releases allowing improved spectral efficiencies (i.e. the number of bits per second transported per used spectrum unit), and ultimately the next generation mobile technology called LTE are planned for deployment – of course, on a country-wide level to be prepared for the unknown…

However, there is one more issue: the budget. In contrast to the golden age of telecommunications, budgets for such infrastructure expansion are nowadays sparse or non-existent. So a prioritization of all these expansion needs is required based on the Pareto-principle: try to solve as much of the problems with only a fraction of the budget. In other words, apply a purely demand driven expansion to the network!

Sounds easy, but where is the demand? This simple question often cannot be answered, so area-wide strategies are applied instead in order to somehow cover the growing demand somewhere. Moreover, how do I know when demand will exceed capacity? Of course many operators have a multitude of KPIs, tools and measurement systems. But only through understanding the correlations of these KPIs and measurements can one get a true overview of the current resource utilization.

Theoretically this is not rocket science, but is obviously difficult enough for operators. An enhanced capacity management system would help them to expand their network – in a demand driven and thus budget optimal way. Such a system introduces a paradigm change to the organization: a descriptive approach ensures that all of the strategic and operational decisions as well as guidelines are based on measurement feedback of the network – and are continuously recalibrated. The system consists of a formal process and and organization framework that aligns marketing and technology functions. It also uses a geomarketing methodology that provides a spatially differentiated demand forecast and applies a hierarchical KPI framework that captures all relevant correlations.

In this talk an enhanced capacity management system will be outlined and examples of its application will given.