Pipeline
Knowledge Is Power

October, 2006 | Volume 3, Issue 5

QoS and CRM:
New Grounds for Network Optimization

By Yosi Ben-Dov, Ph.D., CEO, Schema

In the quest for service providers to minimize churn and maximize market share, service quality and customer relations are more important than ever. As rival providers offer an increasing variety of services, traditional market roles and niches are beginning to overlap, producing a trend that clearly increases competitive pressures. Along with this increased competition, subscribers increasingly demand high quality of service and are increasingly willing to switch providers after experiencing service degradation or network down-time. Regardless of local market conditions, this is a trend seen across the globe. For example, in markets with high levels of saturation, such as North America and Western Europe, there is little opportunity left for expansion, making subscriber retention that much more important. In markets like Brazil, Russia, India, and China, there is still room for growth, but a consumer tendency toward a prepaid model requires higher sensitivity to customer satisfaction. Throughout the industry, market share is directly linked to service quality and network availability. Particularly in the case of mobile service, this means providers must maintain a high level of network capacity, coverage, and quality.

In addition to pressures from reduced customer tolerance for inadequate service levels, the actual task of providing quality coverage for mobile service is becoming more complex. The sheer scale of today's mobile networks makes usage patterns and bandwidth demands harder to predict. Mobile traffic, both local and roaming, requires more flexibility from the network to ensure bandwidth availability. The fact that the variety of services and content offered today often has higher bandwidth requirements than traditional services further complicates this issue. Until now, network operators have had limited tools to deal with this aspect of customer satisfaction. Industry specialists in CRM, OSS, and other fields have been addressing this challenge for quite some time. Now, a new solution has been developed from the field of network optimization.

Radio Access Network (RAN) optimization solutions have always had an impact on service quality and therefore on customer satisfaction. However, than influence was relatively indirect and difficult to measure until recently. Optimization was based on data sources that did not measure actual users' experience, but rather on the limited geographical overview that could be generated by prediction-based planning tools and drive tests. Traditionally, network engineering staff would traverse coverage areas with testing equipment to take independent readings of signal quality. Then, the signal data from the narrow testing paths would be used to extrapolate quality to the entire coverage area. This method of network optimization served to reduce a network's operating and capital expenses (OpEx and CapEx) by maximizing current resource utilization and helping to plan future infrastructure investments. However, the results were often inaccurate, and the actual customer experience was assessed exclusively through CRM communication and thought to be outside

the domain of network optimization. If, after a given optimization cycle, the next round of drive tests reflected an improvement in geographical coverage, then perhaps an improvement in service quality could be assumed, but not measured. In reality, data from many high-usage areas, such as in-building coverage, are not collected by drive test paths at all. Data on actual usage patterns certainly could not be collected or extrapolated from drive tests.

When the mobile measurements-based approach to wireless network optimization was launched, network operators gained access to a tool that enables them to optimize their network resources based on actual customer experience, rather than estimated values. Mobile measurements provide data on usage and service quality that is drawn directly from subscribers' mobile devices. In other words, rather than collecting coverage data along a particular route with test equipment, each customer serves as a test point. With this new data source, network engineers can model the actual signal quality of the network as the customers experience it rather than inferring it based on independent test data and theoretical predictions. Furthermore, the data set is more comprehensive. Rather than having data limited to narrow test routes, mobile measurements collect data anywhere customers are accessing the network, including business centers and other in-building traffic.

Not only do mobile measurements eliminate the guesswork in modeling service quality across any given RAN coverage area, they provide new data on usage as well. That is, operators can see when and where their customers are accessing the network, as well as the quality they receive. This data can be easily viewed by network operations staff, as the mobile measurements data can be compiled over Geographical Information System (GIS) maps. Operators can view a clear picture of the coverage area, with layers showing the distribution of traffic, dropped calls and other key performance indicators. As a result, operators can take a more targeted approach to optimization. Rather than trying to balance resources for blanket coverage of a certain area, it is now possible to prioritize certain high-usage areas by adjusting network parameters.

Mobile measurements further connect the optimization process to customer satisfaction by shortening the cycle timeframe. With drive tests, data collection could often take weeks, if not months. By the time network adjustments are actually applied, the data on which they were based was already old. Since the mobile measurements approach is highly automated, this is not an issue. The optimization process can be carried out in a fraction of the time, based on near real- time network data, and have a direct impact on user experience.

In addition to time reduction, mobile measurements reduce the overall cost of optimization, including manpower and other resources. Now, operators cannot only carry out optimization cycles more quickly, but can afford to do so more often. This streamlined process can be utilized for ongoing, continuous optimization. If an operator running a drive test for semi-annual or quarterly optimization discovers a problem area, it could still be months before the situation is corrected. By that time, months of dropped calls may have already convinced

subscribers to move to a competitor. Data collected through mobile measurements identifies drop call hot spots in near real time and can be analyzed automatically to produce adjustment recommendations. Thus, the network operator is able to quickly identify trouble spots and quickly address the problem, thereby sustaining high-quality service, maintaining customer loyalty and minimizing churn.

There is another, indirect way in which this approach to optimization can impact the customer experience. In addition to providing a more customer-centered approach, mobile measurements also provide a more effective means to achieving the original goal of optimization: efficiency. By creating a network model quickly and accurately, this approach enhances the effectiveness of minimizing OpEx and CapEx, as well as reducing the cost of optimization itself, and therefore frees additional resources which the operator can then reinvest in other important tasks within the organization to further improve customer relations.

The fact that traditional optimization methods did not directly address the customer experience was not necessarily a failure; the goals of optimization simply had a narrower focus. Now, an optimization solution based on mobile measurements has changed the field and improved customer relations as well. Mobile service providers now have a powerful tool that can enhance efficiency, reduce costs, and keep customers satisfied.