The elegant way to ensure fair network use

Quality of Service (QoS) differentiation plays a role in ensuring fair use and sufficient capacity, benefiting users and helping CSPs maximize their revenues. It’s the solution taken up by Elisa.

As mobile broadband’s popularity grows, communications service providers (CSPs) are looking at how to tackle the problem of congestion without over-dimensioning their networks. If a customer exceeds his or her monthly broadband quota, a CSP typically throttles back their access speed or makes the customer pay an extra charge to continue using the service.

A fair use policy with Quality of Service (QoS) differentiation is a much more elegant solution. Once the user goes over the monthly quota, a lower priority is allocated to their subscription. They can continue to use the service and the change is only apparent during peak hours if there is network congestion. This enables users to save on peak-hour charges and helps in occasional busy hour use and helps in occasional busy hour congestion situations, thus improving the customer experience.

Elisa moves ahead

The solution was implemented by Finland’s Elisa in May 2010 when it deployed flexible QoS. “We were looking for an effective way to manage network resources cleverly to guarantee a better experience for specific customers and to avoid letting some users spoil the experience of all others” explains Timo Sippola, Head of Radio Network Planning at Elisa. “Because the radio interface is a major investment in mobile networks and its use should be optimized, Elisa will restrict data rates only when needed because our business model is to sell all-you-can-eat mobile broadband subscriptions”.

QoS differentiation does not replace the need for good mobile broadband capacity and coverage, but instead minimizes the effect on the network of excessive data use and helps in occasional busy hour congestion situations, thus improving the customer experience.

Sippola continues: “Currently QoS is used by different HLR profiles to give more bandwidth to customers that pay more when the radio path is congested. Otherwise the effect of QoS is not visible. We are also willing to identify non-desirable usage like peer-to-peer and lower the priority of such traffic if it leads to congestion.”

When asked what advice he has for CSPs considering deploying QoS mechanisms in their network, Sippola says: “Everything starts from the need. So, you must define first what you want and then find the proper solution and what resources you’d like to manage. Regarding QoS there are lots of solutions, but most cannot co-operate with the radio interface in real time, meaning control in milliseconds. Managing core capacity or just blocking traffic is a different thing and even though that may also help radio congestion, there is no guarantee at the cell level that you can use your radio resources in an effective way without radio QoS.

“In my mind QoS is a must. Otherwise the CSP must add more capacity all the time and still the customers are not happy as there is no fairness. I’d say that the fairness is the starting point. That there is a guarantee that all customers are always served according to their subscription and their need at that moment,” he concludes.

Building the world’s largest shared network

Two into one will go, as MBNL is proving by merging the 3G networks of Three UK and T-Mobile into a single shared radio network. Unite talks to MBNL chief Graham Payne who explains the complexity and rewards of the project.

The UK is arguably the world leader in network sharing. The most advanced of the UK network coalitions is undoubtedly Mobile Broadband Network Limited (MBNL), the S050 joint venture between Three UK and T-Mobile set up to run a nationwide 3G network shared by both service providers. MBNL is a small company with about 60 employees, but it’s managing a huge task.

In 2008, Nokia Siemens Networks became sole 3G radio network infrastructure supplier as MBNL ambitiously started to consolidate its parents’ existing 3G networks. In the £200 million deal, Nokia Siemens Networks is replacing most of the base stations and upgrading the rest. Then, in February 2010, Nokia Siemens Networks won a further £450 million contract up to the end of 2012 to enhance the network to meet rapidly growing mobile broadband demand.

“We are aiming for 12,500 base stations by the end of this year, providing 99 percent population coverage across the UK. We hit 10,000 consolidated base stations in July 2010 and have achieved close to a thousand capacity upgrades per month,” says Graham Payne, Managing Director, MBNL. “Merging two existing live networks onto the same infrastructure on this scale is a world-first. It’s completely transformational for Three UK and T-Mobile. Reducing the number of sites by about 30 percent will save them each £1 billion over ten years.”

Reinvesting savings

Payne also says that the consolidation creates more buying power, which MBNL has used to reduce many site rentals by about 25 percent on average. “We have been able to re-invest this money to help us meet our vision of building the biggest and best UK network,” he says.

Most of the network’s sites have been upgraded to Nokia Siemens Networks award-winning Flexi base stations. As well as bringing superior energy efficiency, Flexi is small enough to fit into existing cabinets, achieving even greater cost savings.

The proven Multi-Operator Radio Access Network (MORAN) concept was central to MBNL’s decision to partner with Nokia Siemens Networks. MORAN allows a radio access network to be shared with dedicated carriers for up to four service providers.

“We are aiming for 12,500 base stations by the end of this year, providing 99 percent population coverage across the UK.”

“Above all, you need suppliers that will deliver what they say they will deliver. Nokia Siemens Networks has depth of experience in mobile and network sharing, as well as credibility on delivery. They deliver high quality services at a competitive price, enabling them to stay in the game,” Payne concludes.