Smart pipe operations require precise management of each user’s network traffic and tariff plan, while QoS-based policy charging is key to flexible MBB service provisioning.
Social media ubiquity, smartphone and tablet proliferation, and the endless unfolding of new services and applications have revolutionized our lives and jobs, bringing about a surge in demand for mobile data traffic and bandwidth. And while mobile customers are enjoying the convenience of MBB services, OTT players are the ones getting rich from them, with communications service providers (CSPs) fighting for a few crumbs – an 11% compound annual growth rate (CAGR) in MBB revenue, as opposed to 92% for MBB traffic over the same period (Ovum). So where did we go wrong? The missing piece of MBB monetization has been policy charging that balances CSP revenue and MBB investment.

QoS is the key

One key difference between MBB and traditional voice is the relative importance of customer experience for MBB. In days gone by, although there were QoS controls for voice, with some leading CSPs even tiering QoS, it still fell under the network domain, whether it related to customer satisfaction, network congestion, complaint prevention, or network policy optimization; it was not a business operations matter. However, with MBB, a lot more can be done with QoS from a business operational perspective. Service innovation and customer experience improvement are tightly related to QoS policy management, which makes itself known in the amount due.

All-you-can-eat MBB packages are the exact opposite of what CSPs want if they are trying to optimize revenue or network resources, which is why they have added volume-based packages and tiered QoS packages to align with changes in MBB data offerings. With QoS policy as a key factor of product offerings and new services, more innovative products should see the light of day.

However, QoS need not be a package element; it can also be a service element, and the textbook example here is MegaFon’s Turbo Button service,
where users can buy bandwidth on demand for intensive activities such as video, file download, or gaming, and this service is both recognized and profitable. Some European operators are creating fair usage policies for their customers where bandwidth is automatically adjusted based on the package subscribed; VoIP and P2P users need to pay more for bandwidth usage or access these services at a reduced speed.

**Integrating QoS policy with charging**

With modern telco, QoS policy management is no longer a mere network function but a key component of business support and operation that drives differentiation and revenue management. Policy management must be as flexible as what a rule-based charging engine would deliver. Many elements, such as time, location, customer profile, and subscription should be considered when deciding which level of QoS to offer.

**Consumption-based QoS** – This is also known by the unpleasant term *throttling*. Domestic throttling tends to attract unwanted publicity, but it can still prove useful for roaming. For instance, if EUR40 is consumed overseas, bandwidth can be cut back, with notification sent. When the figure hits EUR50, service can be cutoff, also with notification.

**Balance/credit-based QoS** – Bandwidth can be changed according to the customer’s main balance, remaining credit (for postpaid), or sub-account balance. For instance, greater bandwidth can be allocated if a user’s free music downloads are kept at a reasonable number (perhaps under 20).

**Subscription-based QoS** – QoS policies can be assigned for specific packages. For instance, users can get a higher QoS when browsing Facebook or subscribing to a *Facebook@2M* package.

**Profile-based QoS** – This can be useful for family or enterprise customers. For the former, parents might be allocated 2Mbps, while children receive only 512Kbps, which should keep them off YouTube during study time. What’s more, children might only be able to access certain URLs before 10:00pm, which should keep the yawning the next morning to a minimum. Enterprise subscriptions might involve access to certain work-related URLs at very high speeds during working hours, with lower speeds and unlimited access available at other times.

All of these scenarios require tight integration between the policy management and charging systems, especially as certain BSS-related elements such as customer profile, enterprise/family bandwidth hierarchy, and charging functionalities require complex communication and interaction between the Policy and Charging Rules Function (PCRF) and BSS, and this is partially why the 3GPP Sy interface does not meet the needs of all the various policy management and charging...
business scenarios, so vendors and CSPs have to create different workarounds, such as private interface extension, for specific situations.

Revising policy charging architecture

A revised network architecture is needed to better integrate charging with QoS policy management. Apparently, product management will be an obvious issue if the PCRF is separated from the convergent billing solution (CBS), as a typical CBS only provides charging for usage tariff, recurring fees, and their ilk, without considering the QoS policy as a specific charging element.

Integration between the charging and policy management systems is another issue, and could bring heavy customization for both the PCRF and CBS, especially if they are from different vendors. What’s more, additional BSS modules (business analytics, interaction server, CRM, and provisioning system, etc.) must be integrated with policy management for user behavior analysis and precision marketing.

To simplify all this integration and effort, and account for the mutual dependence between policy management and business support, PCRF integration with the charging system is needed, making integrated policy charging a part of online data charging.

Outside-the-box business features – Policy control capability would be combined with charging to enable a variety of product innovations such as bandwidth on demand, tiered speeds, and parental controls.

Product management unification – Unified product management and user data management of charging and policy will enhance O&M efficiency, while O&M costs will also be tamed as there will be no need to synchronize user data between the OCS (online charging system) and PCRF, which will reduce the risk of error as well.

TTM reduction – A unified product catalog (UPC) will shorten production configuration TTM as operators will no longer need to configure charging and policies separately.

Low risk/cost – Heavy customization will no longer be needed between the OCS and PCRF, and the CRM and PCRF, which should reduce the time and cost of delivery.

If there is a legacy PCRF already in place, new MBB monetization services will require PCRF-BSS integration via the 3GPP Sy interface. However, the reality is that different CSPs will have different needs, so any solution must retain architectural flexibility. As customers are always the key asset of a CSP, a solution must focus on service innovation and an improved customer experience, so that CSPs remain competitive in the value chain.

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