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Finding the Real Potential of Policy Control

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Over the years, Communications Service Providers (CSPs) have come to expect a steady growth in services and sales—and a corresponding growth in revenue. They have sold more phones and taken on more subscribers; use of services increased, and revenues and profits subsequently grew. But, now the spell seems to have been broken. In mature markets, it's getting harder and more expensive to add new subscribers. Furthermore, while broadband traffic has surged, and costs to add capacity to meet that demand have also rapidly grown, revenues have not increased proportionally. This is clearly an unsustainable situation, forcing many CSPs to look to ways of managing and monetizing their broadband offerings, with policy control as one tool to achieve that.

CSPs now have to manage a fine balancing act between keeping customers happy (or indeed just keeping them) and extracting more money from them, while at the same time managing resources and capacity. Ideally, operators would like to keep customers happy enough for them to spend as much as possible, while using as few resources (such as bandwidth) as possible. Customers, on the other hand, want total satisfaction, using as much capacity as possible, and paying as little as possible.

Until quite recently, the main tool at the disposal of CSPs to balance those potentially conflicting requirements was billing or charging. Price for services was used to optimise revenue and customer satisfaction, as well as limit access to resources—premium price for premium services. But now, policy control adds a new formidable tool to the armoury of CSPs, allowing them to not only make

better use of available resources, but also offer more personalized services to their customers, with the hope of generating more revenue.

Policy control has a multitude of definitions, objectives and solutions, but broadly speaking, it is about managing the access to services by subscribers. Historically, policy control can be thought of as having two very separate origins. In the fixed environment, policy control was about network resources allocation. An early example of policy control in action is the use of Class of Services (CoS) in MPLS networks to differentiate the delivery of enterprise services. In the mobile space, policy control was about charging—for example, taking action when a pre-paid customer's credit runs out.

Now, with the advent of the broadband era, policy control is stepping out of those silos and coming of age. Most importantly, policy control is shifting from a network-centric and defensive approach to one that puts the customer experience first.

To achieve this, policy control has become far more dynamic, taking a multitude of factors into account—in real time. These factors include not only the type of service but also the current network conditions, the user's profile (e.g. business or consumer, gold or standard, high or low spender), the type of device being used to access the service and even the location of the user.

A good illustration of a flexible application that ensures a high customer experience is bandwidth management. The initial problem can still be seen as a classic network-centric one: CSPs want to ensure that the bandwidth available to users does not become squeezed as a result of excessive use by a minority of subscribers who do not contribute proportionately to revenues, such as heavy peer-to-peer (P2P) download users. When that situation occurs, the majority of users experience a reduced quality of experience (QoE), which may lead to churn. This problem is most acute in mobile networks, where bandwidth is clearly limited.

State-of-the-art bandwidth management solutions allow CSPs to monitor usage in real time and, when congestions occur, to dynamically adjust the access for specific services and specific users (at a cell level for mobile operators) to free up capacity. Such a solution is not just about defending the network—it's about providing the optimum broadband experience for the majority of users.

Policy control solutions can also be used to help subscribers manage their spending, by informing them when certain pre-set, personal credit limits are reached. At first glance, it may seem

counterproductive for CSPs to help their subscribers control their spending, but in actual fact, the consequences of a customer receiving an unexpectedly large bill (commonly referred to as "bill-shock") is likely to be far more damaging to the CSP in terms of churn, bad publicity and liability for interconnect charges (regardless of any settlement reached with the subscriber). Furthermore, this "cost control" feature can be offered as a service, enhancing the personalization of the relationship between the CSP and the customer.

This last example reminds us of the important link between policy control and charging. Together, they allow CSPs to offer differentiated and personalized services to subscribers; and by doing so, balance revenue, customer satisfaction and resource usage from the operator's point of view.

Increasingly, CSPs are looking to integrate elements of policy control into their offerings. So, for example, an operator might offer a service based on a monthly flat-fee for a fixed amount of $20 for up to 10 GB of usage, with additional usage charged at one cent per 10 MB, capped at $30. It might offer a fair-usage policy that means, for example, that P2P traffic might be slower at peak times—though a premium package available on-demand would allow optimum bandwidth for all services. Enforcing such a price plan means that policy control needs to be aware of both the price plan and the usage, for individual customers. Of course, it remains to be seen what position authorities will take on such offerings. The U.S. Federal Communications Commission's (FCC) eagerly awaited National Broadband Plan is due to be published before February 17, 2010.

This connection with charging is recognised by the 3GPP standard for policy control. Originally drawn up in the context of IMS (IP Multimedia Subsystem), this standard defines a number of key components, including the Subscriber Profile Repository (SPR), the Policy and Charging Rules Function (PCRF—the part of a policy control solution that makes the decisions), the Policy Control Enforcement Function (PCEF—the part that implements the decisions), as well as the Offline Charging System (OFCS) and Online Charging System (OCS) to handle post and pre-paid charging, respectively.

Many CSPs currently investigating policy control solutions are demanding compliance to the 3GPP and other related standards. However, policy control deployments typically take place in existing environments, and some compromises need to be made. For example, a bandwidth management solution could be deployed using existing network capabilities to throttle usage rather than introducing a standards-compliant PCEF.

It should also be noted that the 3GPP standard is about the logical capability (or functionality), not the physical architecture. So a 3GPP-compliant implementation need not have separate physical "boxes" for each of the components. Formally, the OFCS and the OCS are outside the PCRF, but there is no reason according to the standards why they should not be integrated together. In fact, it makes a great deal of sense to integrate them, not least because of the tight logical link between them and the reduced number of interfaces required.

Ultimately, CSPs must not forget that policy control should be about the customer experience and driven by marketing needs, rather than about network issues. Therein lays the real potential of policy control.