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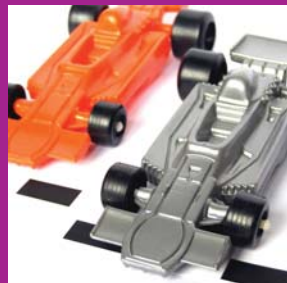


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David Sharpley,
vice president and
general manager of
the Data Experience
Business Unit at
Amdocs

Pervasive, virtualised policy creates endless service differentiation opportunities for CSPs

David Sharpley is vice president and general manager of the Data Experience Business Unit at Amdocs. Here he explains that, as CSPs put greater focus on their network virtualisation projects, policy has an even stronger role to play in monetisation efforts. Critically, as the value chain diversifies, bringing in third parties and over the top providers, the role of policy becomes one of enabling and assuring service differentiation.

VanillaPlus: Policy continues to be at the forefront of discussions with CSPs, what is it that is making policy strategically relevant in 2013 and beyond?

David Sharpley: Policy control solutions have taken centre stage in mobile networks – and are being viewed as not just a solution for controlling network traffic – but increasingly as a vehicle for driving data monetisation. So what is making policy strategic in 2013 and beyond?

Service providers today are truly competing on data plans – which are critical to create customer loyalty, offer differentiated services and reduce customer churn. The creativity and innovation provided by policy use cases are at the core of these data plans, however, this is just the beginning. There are really ten technology game changers that we believe are making policy control strategic for service providers in 2013 and beyond.

One of the game changers is data plan innovation which is at the forefront of service providers plans. With 80% of CSPs planning to offer bolt-on services and 60% planning to offer zero-rating options to deliver any of these services, policy is a key requirement and its' importance will grow as the sophistication of data services continues to grow. The integration of policy control solutions with online charging, using a common product catalogue provides the maximum flexibility for data plan innovation and enables the configuration of use cases which can be leveraged across policy, online charging and ultimately the BSS, enabling rapid time-to-market for the CSP.

With daily data consumption over Wi-Fi being four times that of cellular, CSPs are evaluating their Wi-Fi strategies. As such it is one of the top ten technology game changers ▶

– whether they’re building out their own capabilities or partnering, CSPs know that being able to offload mobile traffic and deliver service differentiation will be key to a successful Wi-Fi deployment. Policy control is critical in delivering intelligent offload as well as service differentiation for operators in Wi-Fi.

Network Functions Virtualisation (NFV) is another hot topic for CSPs today looking at how they can achieve better performance and scalability at a lower cost. A logical place to start their virtualisation strategies is with the network control plane. Virtualising policy control not only enables reduced capex and opex, but it enables service velocity and support for new business models including enterprise, M2M and public safety. This makes NFV another one of the top ten game changers.

Open applications are another technology game changer that CSPs are adapting to address. With almost one million applications in Apple’s App Store as well as Google’s Play Store, it’s clear that customers want access to applications and service providers need a strategy to work with over the top (OTT) players. Policy can help service providers to monetise OTT through advanced application detection, real-time application metering, dynamic preferential QoS on a per-application basis, and notification options for customer upsell.

Check out the rest of the Top Ten Policy Game Changers at <http://www.powerofpolicy.com/top10gamechangers>.

VP: We’re seeing CSPs start to talk about the benefits they get from integrating policy with deep packet inspection (DPI) and optimisation platforms. These are not new technologies, so what’s new in terms of the value operators are deriving from this integration?

DS: DPI and optimisation are indeed not new technologies but the increased importance we are seeing comes from the combined value that integrating DPI and optimisation platforms with policy control systems offers CSPs. And specifically, how this integration can enable some of the top ten policy game changers we just discussed.

This is best illustrated through a policy use case example of toll-free content or free shipping that demonstrates the value of policy and DPI integration. Toll-free content is a term used to describe a use case whereby CSPs are able to promote the usage of key applications with sponsored access that is funded by content partners. A recent example of this was ESPN’s announcement that it is looking at sponsoring content for mobile devices in the US market.

The benefits of this use case for the CSP are that it drives a new revenue stream with preferred OTT application partners, enables tagging and metering of per-app traffic, and provides for preferential QoS for featured services. From a subscriber perspective the experience is very positive, as they have the ability to try new applications with no burden on their existing

plan. In addition, it improves customer loyalty for the CSP by providing free options to their subscribers.

So how does this work? Well, if you consider a real example – a subscriber has a pay-as-you-go plan with unlimited access based on the current balance on her plan. Her service provider can offer her, via SMS, a promotion whereby for one week she will have unlimited access to a music streaming site. She opts in and for the duration of that week, she has access to the site, and any music streaming content is not counted against her pay-as-you-go plan.

This use case – and many others like it – is supported by a combination of policy (PCRF) and DPI capabilities. PCRF provides real-time application metering and drives the appropriate subscriber experience based on the content – such as the QoS level. PCRF also provides the ability to zero-rate specific application access and generate the appropriate accounting records based on usage.

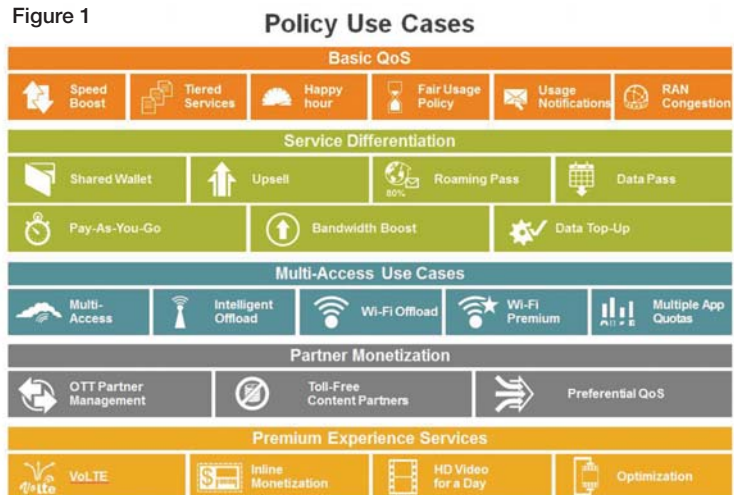
DPI provides the traffic detection and policy enforcement capabilities to offer the sponsored content.

And the unique value for the operator? Well, the combination of policy and DPI in this use case enable the operator to drive new data usage, generate new revenue streams, improve customer loyalty and increase ARPU.

VP: This discussion of monetisation with respect to policy is becoming commonplace. Is this now becoming the key driver for policy deployments?

DS: Monetisation is absolutely becoming the key driver for policy deployments. As I mentioned earlier, policy has moved beyond the early deployments of just performing traffic control. Policy’s role in data monetisation is really to drive some of the unique use cases that I profiled earlier. Integration with online charging, DPI and optimisation capabilities further enhance the policy controller’s ability to support data monetisation for the operator. Consider the set of use cases profiled in Figure 1 – these are only a selection of the types of monetisation use cases that policy can support. ▶

Figure 1





We do see a few key drivers for CSPs to replace or refresh their legacy policy solutions and, data monetisation is definitely one of the key drivers

VP: Many operators are using this time to introduce Policy 2.0 into their networks – a so-called evolution from their early policy deployments. Are monetisation strategies driving this wave of replacement activities?

DS: We do see a few key drivers for CSPs to replace or refresh their legacy policy solutions and data monetisation is definitely one of the key drivers. CSPs need increased flexibility that they don't get with their first generation deployments. They also need to manage the cost and overall time to market for any new applications, services or use-cases they are deploying.

The early deployments of policy were characterised by very limited use case support – focused on fair usage. At the time of these deployments, CSPs weren't concerned about the platforms' flexibility to support new use cases rapidly and this was frequently missing. As the networks and standards have evolved, CSPs have now recognised the crucial link between policy and charging – and the importance of this integration in enabling the range of data monetisation use cases that are planned.

And with time-to-market concerns for CSPs wanting to stay competitive and meet their customers' needs, a new generation of policy control solutions was needed. The flexibility to support literally hundreds of use cases that marketing envisages is certainly a major driver.

This really defines what Policy 2.0 is about – putting policy into that strategic position as a bridge between network, IT and marketing. The ability to deploy a policy control solution that not only addresses the traffic concerns and network management that the CSP's network team requires, but also supports the broadest set of use cases that marketing wants is critical.


VP: Where does virtualisation fit into this? With Network Functions Virtualisation being a hot topic for CSPs – is this relevant for policy?

DS: NFV is certainly relevant for policy control – and it made our top ten technology game changers. We see CSPs putting a lot of focus on their virtualisation strategies – and this is largely driven by the need to lower the cost of operations, scale their networks elastically, and also to increase service velocity.

NFV covers the data plane and the control plane components of the network, but we see service providers focused on virtualising the control plane as a starting point. This includes policy control, subscriber databases and IMS applications.

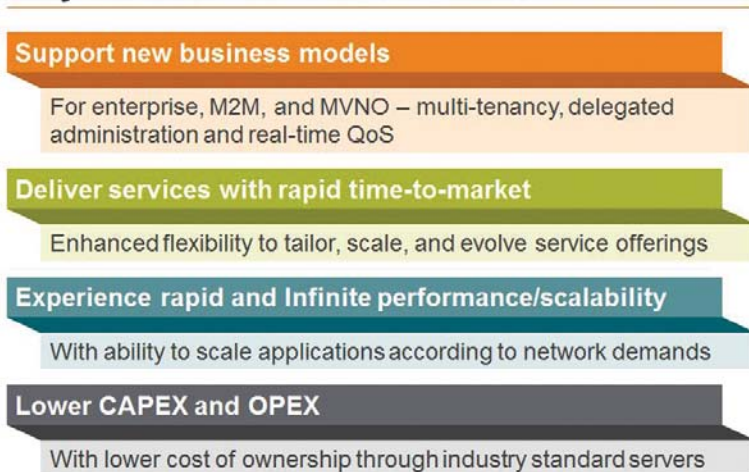
And there are a number of benefits that virtualised policy control can deliver to the CSP beyond the cost savings. These are shown in Figure 2.

VP: What does the future hold for policy control? What will deployments in 2014 and beyond look like?

DS: The future of policy will certainly be in a more significant role in the network control plane – integrated into not just the network gateways, but DPI, optimisation and analytics platforms, as well as OSS, BSS and charging. The policy control platforms of the future will support the broadest set of use cases – use cases that cover network control, basic QoS, service differentiation, multi-access, partner monetisation and premium experiences. These use cases will be supported in not just the mobile network, but across multiple access technologies. As policy becomes pervasive, we can see policy extending to the device, as an enforcement point, and policies and services becoming much more personalised for subscribers. With a fully virtualised policy control solution, the possibilities for service differentiation are endless – and service providers will move in this direction certainly in 2014 and beyond. 

Why Virtualise the Control Plane?

Figure 2





Introduction

Smartphones and tablets enable and promote always on and always available connectivity to an array of advanced data-intensive services and applications heavily dependent on a fast internet connections. Such services apply not just to consumers, but also to small business and enterprise customers, for generally different reasons

Management of the mobile broadband connection needed by these devices can create either a very positive or a less than desirable customer experience. For example, in conditions where traffic-shaping controls – designed to primarily optimise network performance with minimal or no customer focus – are used, high-value customers with high-bandwidth pricing plans are often singled out. When this occurs, major customer disappointment results from a severely curtailed network connection. On the other hand, a customer-centric policy control strategy that engages with the customer at the right time and for reasons that will entice them to try new service offers, if properly administered, accomplishes the needed levels of network attention, but with business results that are much more aligned with customer expectations.

Additional considerations include the view of how customer services are actually used and the level of experience customers receive each time they engage with their smartphone or tablet. All of these factors contribute to the overall customer experience. Some aim more directly at the customer – with flexible pricing plans – while others run in the background to help identify problems and

improve service or network quality, all are necessary ingredients for maintaining a positive customer experience.

While the number of mobile consumers, globally, exceeds business customers by a significant number, on average, the amount of spend per corporate customer is much greater than with consumers. They typically create more data, and therefore spend more money. It is no surprise that they demand the most flexibility in how data is consumed, how they pay, and in how they use mobile services to combine with their products and services for improving the experience of their customers. Addressing these demands, and similar needs from consumers, implies the use of advanced policy management and rating and charging tools, collectively working in real-time to provide customer-defined control, adequate customer notifications, and pricing flexibly.

Policy management is the major enabler of customer usage transparency. But, for many organisations to implement a customer-centric, policy-enabled pricing strategy, it means significant change in both business systems and internal processes to keep the network operationally sound,



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while remaining focused on the customer experience. Without notifications or alerts, all types of customers with metered or tiered-pricing plans can easily accumulate massive overage charges, thereby creating bill shock. Bill shock not only negatively affects the customer experience, but often results in financial write-offs for the communications service provider (CSP).

Bill shock is caused by a delay between an event that is actually happening and visibility into that event. More often than not, bill shock stems from less than optimal tools or lack of customer-friendly business practices to provide the right level of insight and accountability. Again, this is a key reason to provide transparency whenever pricing plans with usage thresholds are involved. To improve the customer experience by combating bill shock, policy management gives the network operator and, under certain conditions, individual customers, a way to customise how a pricing package is consumed or a service is accessed.

The network traffic data explosion continues

The classic relationship between CSP revenue, cost of network upgrades, and data volume growth reveals a major gap between revenue collection from traditional voice, text, and data traffic, compared with the volume of usage data generated and the cost of adding network capacity. This gap is expanding, especially between revenue collection and cost of new network additions. Addressing this challenge has become a major issue for all CSPs globally, as operating a network is not a philanthropic option; contrary to what most customers would like to believe.

First generation policy implementations – what Stratecast and many in the industry refer to as Policy 1.0 – focus heavily on optimising the network, mostly without customer involvement. Network optimisation is still important, as data volumes increase from customer usage of mobile devices including laptops, tablets, smartphones, and purpose-built industry devices – for example, package delivery logistics tracking, in addition to added data carrying capacity from advances in network technologies. A new approach to policy management that takes note of the overall customer experience is essential. Customers cannot or will not pay for network access much beyond their current payment thresholds, and thus the gap between collected revenue and network costs widens. This has driven the realization that mobile network operators must implement new ways to generate revenue. For most, this means offering differentiated pricing plans and policies to better reflect on the value of:

- Service quality
- Innovative services well beyond a simple mobile broadband connection
- Applications that CSPs can bring to market with high customer appeal

While these points should not be new to anyone, a review of what customers are doing now, and the level of data usage that is yet to come, should help to provide better understanding into why the need for data control and service offering differentiation is approaching critical mass. The expanding use of advanced devices further suggests that CSPs need to provide more appealing solutions that address end-to-end customer needs – not just the sale of a broadband connection. It is imperative that such a change in strategy take place to make up for the declining level of revenue generated from both voice and text messaging services, in all global regions.

Policy 2.0 means focus on the customer experience, not just the network

Policy 1.0 has its place. It is designed to:

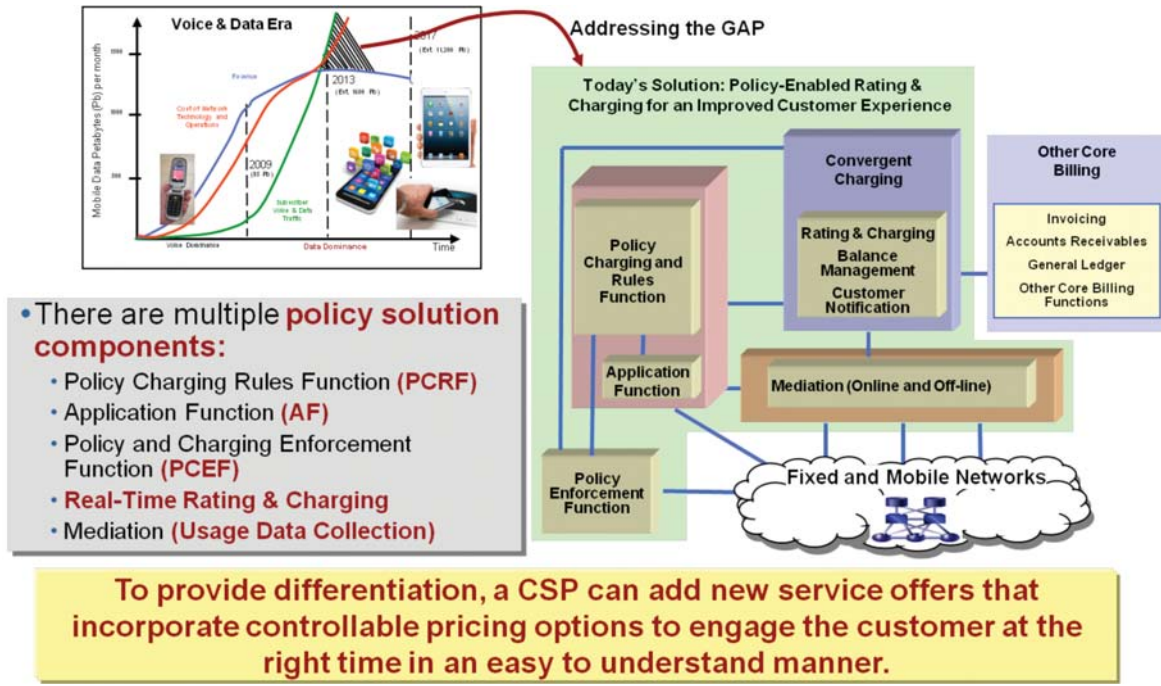
- Maintain security to block out malicious activities
- Implement prescriptive traffic shaping
- Identify content usage from the customer through deep packet inspection (DPI)
- Enforce rules to keep the network strong and to protect it from abuses such as overuse of flat rate data plans

In this environment, network optimisation is the overall goal; but it has a dark side, mostly because Policy 1.0 approaches involve little, if any, customer interaction. Without customer buy-in, this approach has serious consequences. Most importantly, with growing data volumes from the enticement of new mobile user devices, and industries placing communications technology into the goods and services they provide, customer choice and interaction, not just network-focused control, becomes an essential part of maintaining a positive customer experience. This is where second-generation policy management – now known as customer-centric policy management or Policy 2.0 – plays a vital role.

Data service offerings are generally delivered to customers around three parameters: (1) type of device, (2) speed of network connection, and (3) volume of data uploaded or downloaded. Combined with a package of voice minutes and text messages, CSPs are highly focused on selling data service offerings for all smartphones and tablets, since these plans generate much higher average revenue per user (ARPU) than plans for voice and text only. For example, Verizon Wireless and AT&T updated their pricing plan strategies more than 12 months ago, with offers for advanced user devices that provide unlimited voice minutes and text messages within a tiered data plan structure. Connectivity is offered at whatever upload or download speed the network will bear, according to location and network traffic load. These plans allow up to ten user devices to collectively share the data allotment within a subscribed plan.



Figure 1: Policy-Enabled Convergent Charging (Policy 2.0)



Source: Stratecast

Shared device data plans, along with many other types of plans, are enabled through a policy management and real-time rating solution. As a customer consumes the monthly tiered-price plan, a text notification can be sent when a set level of consumption is reached – for example, 50% of plan limit, as a way to increase awareness in hope of curtailing inadvertent usage overages. In the case of Verizon Wireless and AT&T, customers sign up for a data plan based on a gigabyte allotment, priced in unit increments up to 10 gigabytes per month. In addition, these plans carry a per device fee for each device associated with the plan. To power these usage-based data plans, policy solutions that monitor customer usage to allocated levels, and then provide notifications multiple times before a threshold is reached, are now a necessity. In addition, a real-time charging system is required to calculate the level of consumption per device, and in the aggregate, along with a means to block further usage until the customer makes a decision.

While the Policy Charging and Control (PCC) functions for the mobile industry continue to gain attention, as highlighted extensively the past several months in several industry publications, turning the hype into reality is always a lesson in practicality. Shown in Figure 1, the PCC consists of three major functions, as defined by the 3GPP standards:

- **Policy and Charging Rules Function (PCRF)**
 - The PCRF supports the definition of policy rules, and makes policy decisions based on those rules. It directs the enforcement of actions by the Policy and Charging Enforcement Function (PCEF), and interfaces with the rating and charging engine. In addition, the Application Function (AF) defines the indistinguishable control plane function that is companioned with the data plane function within all IP networks. The AF is at the core of any Policy 2.0 strategy, and associates with the PCRF exclusively, to bring to light direct customer interaction through policy-defined pricing plan options.
- **Policy and Charging Enforcement Function (PCEF)**
 - The PCEF provides policy enforcement in the network,

based on actions defined by the PCRF. The PCEF also interacts directly with the rating & charging engine within various situations.

- **Online and Off-line Charging Functions (OCS and OFCS)**
 - These billing functions can be supported by a convergent rating & charging engine, or by separate online and off-line systems. The purpose of the OCS and OFCS is to make sure all services are properly assigned a payment value, regardless of how the customer bill is ultimately paid.

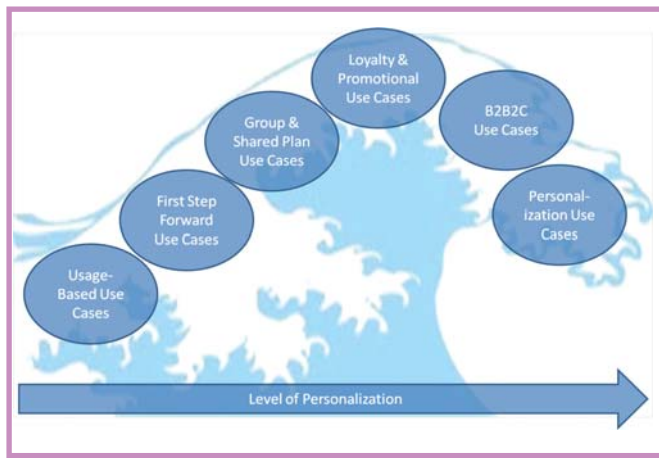
Stratecast believes that the days of pure network focused policy – Policy 1.0 – have passed. While increasing data volumes require policy to keep networks optimised, the focus now must be on the experience of the customer. Providing the customer with consistent and rapid access is required, but is no longer a differentiator. The quality of the customer's experience, and the increasing desire for personalisation of service offers now mandate an evolution in policy strategy – second generation policy or Policy 2.0.

Customer experience use cases in service today

Policy has far reaching benefits to both customers and service providers, with a build toward service personalisation. The practical realities of policy management are often described by use cases –essentially, an example of one way of solving a problem or offering a service. Use case groups, as shown in Figure 2, help to demonstrate how Policy 2.0 pushes business strategy closer to the level of specific service offers, tailored to very small customer groups, or even individuals. When customers accept this level of personalisation, customer stickiness is almost guaranteed.

Achieving a level of customer service personalisation, for attracting new customers and keeping existing ones, must be a strategic business goal for CSPs today. Stratecast believes this is critical since mobile saturation levels in many regions of the world are now beyond 100%. The customer-centric use of policy management becomes the ultimate opportunity window in keeping customer attention.

Figure 2: Second generation policy – the wave of personalisation



Source: Stratecast

The following use cases are in practice today by multiple CSPs – they are not just illustrative examples of what could be done with the right policy management tools. These use cases illustrate ways in which policy allows operators to offer innovative services and pricing plans – personalised service offerings to fit the needs of targeted customer groups. They are:

- **Usage-based service offerings** – Use cases that are strictly usage based tend not to be designed with the customer in mind, but are geared to allow network usage to be controlled and monetised. While Stratecast views this set of service offers as holdovers from Policy 1.0, they are still the most common type of use cases deployed, and form the foundation of more customer-centric use cases to follow. Examples of usage-based offerings are:
 - Straight usage quotas; such as 1 Gb of data per month, per device; no data sharing
 - Tethering – using a mobile device to act as a Wi-Fi hotspot to allow internet access for other devices; for example to allow (or disallow) iPhone tethering, which can be an add-on function to a straight usage plan
 - Quotas with QoS guarantees; for example, 1 Gb of data per month, with a guarantee of at least two Mb per second (Mbps) data throughput speed
 - Application Restrictions; such as allowing any type of network traffic, from email to web surfing; but not allowing video traffic uploads or downloads unless the customer agrees to pay a premium, which can be time-based and combined with other options
 - Roaming Based; for example, 500 Mb per day when roaming outside the customer’s home network for a prepaid amount

Stratecast believes that usage-based service offerings are truly limitations to the customer experience, not invitations to have a good or great experience. They help the CSP limit data traffic on the network and better monetise network usage; but this approach eventually becomes a losing proposition. Customers really want to pay to use a service, not to be discouraged from it. To have quotas based on a measurement, which many have difficulty quantifying, leads to fear of using the service, and opens the door for customers to find alternatives, such as free Wi-Fi.

- **First step forward service offerings** – To remove the fear of usage-based quotas, the first step comes with informing the subscriber of his or her usage. Examples of this may come in the form of an app that tracks customer usage as an event completes, or as real-time notifications when the customer reaches a usage threshold – notifications that are mandated in many geographical regions by bill shock regulation. Adding the ability to know current data consumption, and the ability to change their quota as usage levels reach pre-defined limits set by customers – on device – gives them a sense of control over their experience. This, in turn, relieves fear and built-up distrust of their CSP.
- **Group and shared plan service offerings** – Plans shared among multiple users and devices are not new, with previous iterations allowing free or reduced cost calls between group members – for example, friends and family plans based on voice usage minutes, or allowing a company to share minutes between employees covered by a corporate account. What makes these use cases different today, other than sharing data versus minutes, is that control can now be designated, with the parent or the corporate administrator defining policy on how sharing will take place. This may mean, for instance, that certain members of a family plan account could be limited in the amount of data they can consume at any one time and in the aggregate; the applications they may use; or the time-of-day they can send a text. The administrator of this type of plan, usually a parent, will have fewer restrictions, and the power to change usage parameters as often as desired. Similar conditional uses could also be applied by a corporate IT administrator for business accounts.
- **Loyalty and promotional service offerings** – Receiving awards for customer loyalty promotes customer longevity. This approach works whether the customer is at the grocery store, a frequent airline traveler, or a mobile data customer. This may be used to encourage network data usage at certain low usage times for the network – a happy hour where unlimited, free usage is offered as a reward, or just to engender customer loyalty for a select number of premium customers, to reduce the probability of customer churn. Promotions can be used to



introduce new services, either specifically targeted or broadly based.

Coupled with purpose-built analytics, advanced loyalty service offers to select customers could include packages based on device type, time-of-day, network location, type of content consumed and degree of loyalty status. In this case, a package of, say, HD movie downloads could be provided for a set price, with no data usage measure against an already subscribed data plan.

- **Business-to-business-to-consumer (B2B2C) service offerings** – CSPs partner with other companies to provide consumer services. These types of use cases and the types of partners are diverse; each with different needs and objectives, but the common objective is to offer a service that leads to customer satisfaction.

These partners are often application and content providers that deliver Over the Top (OTT) services. Certain OTT services may be greatly enhanced by increased QoS or network-based, customer-specific detail made possible by a CSP. This situation benefits both providers; and, ultimately, delivers the customer an improved QoE. An example would be a movie streaming company partnering with a CSP; the CSP provides connectivity at a specified quality and priority; the streaming company provides the content and pays the CSP for this enhanced QoS; the consumer receives the best QoE in movie viewing. A good experience often creates another near-term OTT sales opportunity, and the cycle repeats. Additional B2B2C examples include:

- **Device or service including the data connection costs with the hardware** – The most well-known deployed example within this category is with certain Kindle devices from Amazon that include subsidised mobile connectivity provided by AT&T wireless. Others involve services, such as a movie or other content, that are purchased, but do not count against data quotas; with the providing content supplier paying for the data consumed or QoS adjustments needed.
- **Carrier-based mobile payments** – The customer purchases an app or commercial retail item from a third-party store, and it is billed via the CSP account. The CSP settles with third-party provider in a B2B manner, while collecting for the retail transaction from the end-user customer. This can be done regardless of payment method – prepaid or postpaid.

Another set of partnerships focuses on entirely different industries, and often involves machine-to-machine (M2M) communications. Recent developments in the automobile insurance industry are a clear use case on how enterprise

business needs involving M2M are dramatically evolving. Insurance has typically been sold as a flat rate policy for a fixed period, based on the driver's insurability statistics, payment preferences, and type of vehicle involved; for example, how many tickets, age group, location of where the automobile is garaged, distances regularly traveled, and size of premium deductible.

Metered driving management – not the same as pay-as-you-go insurance – is now employed by several insurance companies involves attaching a monitoring device to the vehicle by the owner for an immediate rate discount. The device measures how fast the car is driven, how it accelerates, decelerates and backs up, if it makes abrupt course changes, how far it is driven and at what time of day. Telemetry sent from the automobile to the insurance carrier is then used, often in near real-time, to show how policy premium rates are affected, with suggestions to customers via a smartphone app or through web access on how to improve driving behavior to improve rates. Three major North American insurance carriers currently use metered driving management, with at least one company collecting data at regular time intervals via a wireless connection. The goal of this service is to improve driver behavior, which ultimately reduces insurability risk for the insurance company.

Other examples of cross-industry partnerships are almost limitless, but include:

- **Healthcare** – In-home monitoring of implanted devices or chronic conditions relative to a variety of measurement parameters such as: heart rate, pulse, glucose levels, oxygen concentration in the blood, rate and depth of breathing, brain waves, activity levels, and many more.
- **Consumer and home** – Remote monitoring and control of lighting, heating and cooling, security systems, and connection and control of appliances.
- **Transport** – Monitoring of location and telemetry data for fleet vehicles

- **Personalisation-based service offerings** – The PCC architecture allows CSPs to obtain detailed information about how current services are consumed, at the aggregate customer base level down to the individual. Most personalised service offers today are due to this level of intelligence, but are reflections of a trend identified in the usage patterns in the current set of a CSP's customer base.

For example, the CSP may recognise that 25% of subscribers are moderate to heavy users of Facebook on their mobile devices, and design a service to appeal to that group – a package that zero rates all Facebook traffic, for instance. While designing a service that appeals to potentially millions of people

does not sound too personal, technological advances tied with cost reductions in the use of those advances continue to allow the targeting of smaller and smaller customer groups—heading toward true customer-level personalisation. This fact, combined with the ability to mix and match policy use cases, allow offerings to appear more personal.

Imagine a combination of use cases that target users of multiple applications who share other distinguishing characteristics, and the target audience of the service reduces to 10%, 5% or 1% of users who, when presented with such a service, may truly believe that the CSP knows them and is offering a service designed just for them. This degree of focus is enhanced further by tying in social media usage. While still not at the level of full implementation and adoption, such services are now in the realm of potential deployment in North America, Europe, and in some locations of Asia Pacific.

Personalised use cases, by their nature, are dependent on the wants and needs of a specific customer base. There is no one-size-fits-all. Specific examples include:

- **Targeted applications** – These include the social media example above
- **Device-specific** – Services aimed at specific capabilities of a particular end-user device, such as a Samsung Galaxy S IV or Apple iOS7 device
- **Parental control** – Control for parents to not only specify how much data is consumed by a member of their family share plan, but what data is allowed – restricting access to applications and/or content, and when it is allowed to be consumed – not during school hours or after bedtime.
- **Employee control** – Similar to parental control use cases, with a slightly different focus
- **Priority service** – Offer priority service – high QoS – focused on specific customer usage such as gaming, watching a live sporting event, or video calls.
- **Bring your own device (BYOD)** – A BYOD policy permits employees to use personal mobile devices in the workplace; but the practice raises security and billing questions that CSPs can help employers solve with BYOD policy management

Policy has far reaching benefits to both customers and service providers, with a build toward service personalisation. The use of Policy 2.0, described by each of the different use case categories just discussed, pushes business strategy closer to the level of very small groups or even individual customers. When this occurs, customer stickiness is almost guaranteed. This is a goal that many CSPs must reach for now, because obtaining a new customer in many regions of the world means

stealing one from a competitor. Stratecast believes that the customer-centric use of policy management becomes the ultimate opportunity window for CSPs to continue to play a key role in the land grab for customer attention.

What is the policy management evolution pathway?

Policy came about to solve a problem – keep mobile networks optimised in the face of dramatic increases in data traffic. It has evolved to enable capabilities that were never envisioned in the first designs of the 3GPP PCC architecture. The PCC architecture itself and related architectures of networks outside of mobile continues to evolve as new interfaces are designed to simplify communication between entities, or as new functionality comes to light that allows new service offers to be established. So, where is policy management going next?

One of the next steps in the evolution of policy management is the expansion of policy beyond the traditional boundaries of the CSP network – in particular, the growing trend of offering policy enforcement on subscriber devices. Stratecast identified a number of suppliers – CENTRI Technologies, GoS Networks and Openet – that currently offer this capability; and has talked with others that plan on offering similar solutions in the near future.

The idea of policy enforcement on subscriber devices came about initially to solve a problem: namely, the issues caused by chatty apps. When an application is opened on a smartphone or tablet, it communicates with the internet via the CSP network. When another application is opened, the first application can continue to run in the background, and may still use network bandwidth, even though the user may not know it is open. In fact, there may be many applications consuming bandwidth, and potentially degrading the overall customer experience. For example, social media and instant message apps, and even some popular ad-supported games are particularly chatty.

By providing policy enforcement on the subscriber device, the CSP realizes a number of important benefits, in addition to controlling wasted bandwidth generated by such apps. On-device policy enforcement identifies, shapes, and prioritises network traffic at its source. It also offers deeper visibility into user traffic. This visibility provides feedback to allow CSPs to more intelligently control user traffic and implement more effective policy, allowing direct measurement and control of QoS and QoE. The solution also helps to identify new revenue opportunities via specifically targeted services.

While the benefits to the CSP community seem clear, the customer benefits are not as obvious. For end users, policy



enforcement on their device ensures that available bandwidth is utilised efficiently and to the maximum capacity – increasing both their QoS and their QoE. In addition, suppliers of this type of policy enforcement technology report battery life increases of as much as 50% on subscriber devices, by more effectively managing these overly communicative apps.

By providing policy enforcement capabilities – essentially PCEF-on-device – in this manner, both CSP and subscriber benefit; but it does raise privacy concerns that must be addressed up front. For this new direction in policy to succeed and become prevalent in the marketplace, Stratecast believes that consumers must be informed of the benefits this technology can bring them; and shown how such a solution will actively guard their privacy in the process. Otherwise, visions of Big Brother will doom this technological breakthrough before it gets off the ground.

Personalisation and customer experience are key

The multitude of new industry use cases involving policy, which has come about in the Policy 2.0 era, has a common theme: personalisation. As technology advances, it becomes more important to track transactions, or the use of particular services, at a finer level. Initially, the goals of this finer level of tracking may have been revenue assurance or optimisation of networks; but it provides an important side benefit – intelligence about what the customer is doing on the network and intelligence about the QoS and QoE the customer is experiencing.

The first step in using this intelligence occurs at the group level. Through Policy 2.0 solutions, a CSP will realise that a portion of its subscribers like to engage in some activity—and that portion could be 20%, 10% or even 1% of the customer base within a given region of its total service area. The CSP could design a service or pricing plan that targets that subset of subscribers. This personalisation of service and price plan offerings is now happening with smaller and smaller customer subsets, as the cost of providing more narrowly focused service and price plan offerings continues to decrease.

The personalisation of communication services takes much from the playbook on personalisation of computing services. The smartphone revolution happened not because a phone could run programs designed to be everything for everybody, but because of apps – targeted applications that provide a particular function to a relatively small set of people who wanted that function. Sure, there are apps that appeal to a broader set of people, and may be used by millions, but there are also apps that appeal to only a few, but engender great loyalty amongst those few.

Stratecast believes that the personalisation of service offerings and price plans will continue, enabled by advances in computing power, the ability to track and operate on information at finer and finer levels, and the continued reduction in cost of these advances. The logical end point of more personalization is individualization – a service or price plan offering for a subset of one – enabled by the evolution of policy management.

Customer experience also involves an assurance requirement

Another aspect of customer experience involves the measure of how well each data connection, voice call or text message is delivered by the network. From a customer's perspective, the network connection for voice or broadband, delivered via fixed-line or mobile technologies, draws attention only when network access isn't available, network-based services don't work, or interactive content behaves differently than expected.

Customers just assume their services work the first time, every time and at any location, regardless of use. When services do not work as expected, due to any number of factors, but especially from repeated poor network quality or slow mobile data responsiveness, customers seek alternatives where they perceive service quality to be better.

Much of this article has been centred on the use of policy management to provide customers a better experience when it comes to service usage control and pricing plans. However, monitoring that experience for service quality purposes is just as important. While a deeper discussion of this concept, known as customer service assurance (CSA), is warranted, it is out of scope of this article, except to mention that policy plays a role in this environment as well. Companies such as Accanto Systems, Anritsu, JDSU, Polystar, Tektronix, Trendium, and others are as vital to assuring the customer experience, as major policy suppliers focused on network control and billing processes are to enabling customer-centric services.

The last word

Policy management has long been an effective tool for service providers to control traffic traversing their networks. Commonly known as Policy 1.0, network optimisation and management has been successfully carried out in the past, with a focus on preserving network integrity at any price. Unfortunately, this strategy has caused problems with heavy network users that were doing, then, what customers still do today: using network devices – mobile or fixed line – to conduct their everyday business. This could involve file downloads via e-mail in a work environment, exchanges with colleagues when viewing a user-

generated video, engaging with apps for both business productivity and entertainment, or downloading a studio-produced video.

Today, we are in the age of personalisation. As this report points out, personalised pricing plans and service options are what customers are quickly growing accustomed to through their experience with other industries. This is most evident with the online ordering processes, whether from a mobile device or fixed connection. With personalisation, customers now expect more, and are willing to pay more where they perceive high value. Policy management plays a major role in making personalised service offers work. It is why the focus around customers and customer usage behavior is attracting so much attention in the industry today.

Some CSPs are realising the power that a Policy 2.0 business strategy can bring. Many categories of real-life use cases have been discussed in this report. The most promising, for a greatly improved customer experience, comes from service offers where customers are given control to set limits, and provided with insight concerning usage consumption and data plan limits. This is why policy management is so inextricably linked with billing.

As technologies within the network, with customer devices, and with system processing capacity evolve, movement to terms of usage that customers can understand are a natural evolution. The day is quickly coming when, instead of a data gigabyte plan, customers will buy into service offers that provide a set number of video downloads, as long as they are done from a certain part of the network, at a particular time of day, and with a certain type of device. These would be offers to only certain customers that have proven loyalty in the same way other industries have measured loyalty such as financial services, retailing, and the airline sector.

Policy 2.0 is real, and customers are serious about the types of services enabled through a Policy 2.0 business strategy. The challenge is in how significantly CSPs will harness the necessary tools, and modify their business processes to accommodate this intensified focus on the customer experience, especially with regard to pricing plan transparency and customer-enabled controllability.

Stratecast

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Stratecast collaborates with our clients to reach smart business decisions in the rapidly evolving and hyper-competitive Information and Communications Technology markets. Leveraging a mix of action-oriented subscription research and customized consulting engagements, Stratecast delivers knowledge and perspective that is only attainable through years of real-world experience in an industry where customers are collaborators; today's partners are tomorrow's competitors; and agility and innovation are essential elements for success. www.frost.com



amdocs

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Company summary

Founded in 1982, Amdocs is a public software and services company, traded on the NYSE under the symbol DOX. It is based in Chesterfield, Missouri, with major research and development centres located in multiple locations globally. With fiscal 2012 revenues of \$3.2 billion – primarily from telecom – and approximately 20,000 employees worldwide, it is one of the largest software and services suppliers in the telecoms market sector.

The company offers customer management, revenue management, service fulfillment and network control products, which it collectively calls Customer Experience Systems (CES).

Policy credentials

For policy management, Amdocs offers a number of solutions related to real-time rating and charging and policy control. The company does not offer policy enforcement solutions, but interoperates with enforcement products offered by other suppliers.

The Amdocs Convergent Charging (Turbo Charging) module, part of Amdocs's CES 9.0 product portfolio, is the company's rating and charging offering. Amdocs explained to Stratecast that it makes use of a single real-time charging and balance management support system to handle all types of events, customers, services and lines of business across multiple network environments.

The Amdocs Policy Controller is the company's 3GPP compliant PCRF offering. Amdocs explained to Stratecast that the solution provides real-time network, application, and subscriber policy control that allows service providers to manage mobile data growth and deliver personalised services. The policy controller product determines how and under which circumstances customers have access to applications and network resources.

Amdocs offers a number of pre-integrated solutions that include real-time rating and charging and policy control. One is the Amdocs LTE Control System, a solution that provides subscriber and device data management, and policy control functions for the LTE Evolved Packet Core. Another is the Amdocs Data Experience Solution, which includes integrated charging and policy management. Each of these solutions support pre-configured Amdocs business building blocks, which are groupings of essential use cases necessary to build a CSP's data monetisation strategy.

COMVERSE

Company summary

Established in 1984, Comverse trades on NASDAQ under the symbol CNSI, and provides BSS, policy management (PCRF) and enforcement and digital and value added services to the telecoms industry. The company is based in Wakefield, Massachusetts, and has local offices in over 40 countries. Comverse solutions are used by approximately 450 CSPs, in more than 125 countries.

Policy credentials

The Comverse DMM Policy Manager is part of the Data Management and Monetisation (DMM) suite which also includes the DMM Policy Enforcer (DPI and Application Gateway), as well as the DMM Analytics. The Comverse 3GPP compliant policy manager enables CSPs to accelerate time to market for new monetisation policies using the DMM Policy Studio – a marketing-oriented policy creation environment. The DMM Policy Studio enables CSP marketing teams to define any data plan or promotion in near zero time to market utilising easy to use marketing interface and a broad range of ready to use policy plan templates – such as roaming plans, shared device and family plans and premium content.

Comverse DMM Policy Manager (PCRF) can be sold as a standalone product or tightly integrated with Comverse ONE Billing and its Active Customer Management solution and/or with Comverse DMM Policy Enforcer.

The optional tight integration with the Comverse ONE BSS solution enables CSPs to define hybrid network- and subscriber-aware policies using the synchronisation process between Comverse Policy and BSS entities. The integration with Comverse DMM Policy Enforcer allows end-to-end definition and enforcement of monetisation policies using the Comverse DMM Policy Enforcer capabilities: DPI based Traffic and Quota Manager, Layer 7/Application Gateway (for video optimisation, filtering, access control and session enrichment, for example) and charging enablement.

The company explained that its “unique PCRF-PCEF-BSS solution” allows CSPs to implement almost any monetisation use case – out-of-the-box.

The Comverse DMM Policy Manager was recently tested by the European Advanced Networking Test Center (EANTC) for performance and scalability. Tested over a variety of 3GPP interfaces and scenarios (including LTE), the test found Comverse to have highest independently proven TPS figures in the industry: 210,000 per single system with 31.5 million simultaneous users.

COMPANY PROFILES



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Company summary

Based in Englewood, Colorado, CSG International is a business support solutions and services provider serving the global CSP marketplace and other vertical industries including financial services, insurance, transportation and telematics. It is publicly traded on NASDAQ under the symbol CSGS. The company generated revenue of over \$750 million in 2012. CSG employs approximately 3,500 people worldwide.

Policy credentials

For policy management, CSG offers a real-time rating and charging and policy control solution. The company does not offer policy enforcement solutions, but interoperates with enforcement products offered by other suppliers.

The CSG Integrated Charging and Policy (ICP) solution is a pre-integrated 3GPP-compliant online charging system, subscriber profile repository and PCRF. The solution is based upon the CSG Singleview Commerce Engine, the company's real-time policy-enabled rating and charging offering, which CSG explained currently processes billions of real-time transactions each day for operators around the globe. The CSG Integrated Charging and Policy solution's PCRF capabilities are provided by a partner.

The CSG Integrated Charging and Policy solution delivers out-of-the-box capabilities for subscriber and network aware charging and policy. It provides a range of features that goes beyond time and volume based charging schemes. Integrated policy management enables CSPs to set access rules, and then to charge according to customer and provider preferences, thus maximising the revenue gained from data services, while giving customers a sense of control. This approach significantly reduces the potential for bill shock.

CSG Integrated Charging and Policy enables rapid deployment through its pre-built support for a range of use cases, including: prepaid data allowances; turbo boost; business and family bundles; parental controls; user defined spend limits and notifications; quality of service (QoS) shaping; location based QoS; hybrid accounts; fair usage management; multi-device plans; and tethering plans. Going forward, CSG Integrated Charging and Policy will allow CSPs to support the ongoing build-out of more value-added, pre-configured policy scenarios. These include the processes for support of LTE roaming across multiple networks – mobile, fixed line and Wi-Fi – with bundled pricing and customer controls.



Company summary

Ericsson is a provider of communications infrastructure, services and multimedia solutions, based in Stockholm, Sweden. It is traded publicly on the Stockholm Stock Exchange and on the NASDAQ under the symbol of ERIC. The company employs over 110,000 people worldwide. Ericsson reported 2012 revenue of approximately 227 billion SEK (U.S. \$33.8 billion.)

Policy credentials

The Ericsson solution suite for policy includes: multiple policy-enabled rating and charging offerings; a standalone PCRF node; a dedicated PCEF; multiple network equipment offerings that can perform policy enforcement and service detection; and multiple solutions that combine its various offers.

The company's real-time rating and charging solutions include Ericsson Charging and Billing in One (CBO), Ericsson Charging System (CS) and Ericsson Mobile Broadband Charging (MBC). CBO combines the CS functionality with Ericsson Billing, which provides convergent billing and customer care for all services and any type of CSP. The CS enables real-time rating and charging and balance management for all services, and all types of users addressed by any type of CSP. MBC is an online charging system that provides prepaid charging for data, content, messaging, voice, multimedia and VoIP.

The Ericsson Service-Aware Policy Controller (SAPC) combines the 3GPP PCRF and Access Network Discovery and Selection Function compliant functions with Fixed Broadband Policy Control functionality. These solutions then allow CSPs to optimise the utilisation of network resources, while increasing revenue generated by personalised services in multi-access networks. The company also offers the Ericsson Integrated Policy and Charging solution, which brings together the OCS (CS or MBC) with the PCRF (SAPC.)

Ericsson offers a wide range of policy enforcement and service detection solutions including; Service Aware Support Node (SASN); Evolved Packet Gateway (EPG); SmartEdge; Ericsson WiFi Gateway; and MultiService Proxy. Ericsson also offers the Service Aware Charging and Control solution which brings together the SAPC (PCRF), the EPG (PCEF), the SASN and OCS.



Company summary

Openet is a private telecoms software vendor based in Dublin, Ireland. It was founded in 1999, and employs approximately 850 people today. Openet offers mediation, rating and charging, balance management and policy management capabilities to over 80 customers in 28 countries.

Policy credentials

Openet's policy-related solutions include an online charging system, a PCRF offering and a recently introduced policy enforcement solution. Openet states that policy is its key product focus, which is represented by the company's large R&D investment relative to revenue.

Openet Evolved Charging provides policy-enabled real-time rating and charging, and is designed to be deployed as a standalone OCS or as an adjunct to existing billing systems. The company explained that the rules based solution enables faster time to market and provides significant operational savings. Rules are configured via a GUI and can be maintained and built by product marketing, as well as technical personnel, allowing CSPs to react quickly to customer and market advances.

Openet Policy Manager allows CSPs to offer personalised and enhanced services such as tiered service plans, fair use enforcement, revenue-sharing partnerships, parental and corporate controls, roaming controls, and other innovative service offerings across all types of networks. In a 3GPP architecture, it fulfills the role of the PCRF.

Openet Evolved Charging and Openet Policy Manager integrate to provide the company's policy and charging solution. Openet also offers a policy enforcement solution – the Openet Interaction Gateway – that provides enforcement capabilities via an agent on the end-user device, allowing CSPs to address signaling congestion caused by “chatty apps”. By enforcing policy on the devices causing the problem, CSPs can reduce congestion, gather real-time insights in subscriber behaviour, and offer an additional avenue for subscriber engagement. The end-user benefits by facing less congestion while using the data network, and by significantly increased device battery life. Chatty apps waste bandwidth, but also waste battery power. The solution also provides subscribers with real-time insight into their service usage and associated costs.

Company summary

Redknee is a public communications software company based in Toronto, Canada, and traded on the Toronto Stock Exchange under the symbol RKN. With its recently completed acquisition of select BSS assets from Nokia Siemens Networks (NSN), Redknee reports more than 200 customers across 90 countries for its billing, charging, policy, customer care and payments solutions.

Policy credentials

For policy management, Redknee offers a number of solutions related to real-time rating and charging and policy control – these assets primarily originate from the NSN acquisition. The company does not offer policy enforcement solutions, but interoperates with enforcement products offered by other suppliers, including those offered by NSN.

Redknee's charge@once unified solution acts as a policy-enabled online and off-line charging system, providing convergent charging, rating, and balance management functions for all network interfaces (online and off-line); all services (mobile, fixed, broadband); and all subscriber types (prepaid, postpaid, hybrid). The company reports that charge@once unified allows improved customer experience through personalised offers, differentiated cost control, real-time notifications, customer self-care, and instant activation of selected tariff options. The solution delivers with a variety of pre-packaged and pre-tested templates and tools to speed creation of new services and allow CSPs to generate revenue quickly.

The company's PCS-5000 Policy Control Server provides an open, flexible, and distributed policy control suite that functions as the PCRF in the 3GPP architecture and is pre-integrated with charge@once unified. According to Redknee, the PCS-5000 enables CSPs to control network resource usage, to assure the QoE for key users, to offer personalised services, and to provide differentiated, service-specific charging. Designed with scale in mind, the PCS-5000 supports up to 100 million concurrent users.

COMPANY PROFILES



Company summary

Founded in 1998, privately held Trendium provides real-time intelligence for customer experience assurance and asset monetisation of fixed and mobile networks. The company's headquarters are in Boulder, Colorado, and it has additional offices in the US and the UK.

Trendium's portfolio of solutions are built upon ServicePATH, a real-time collection, mediation, correlation, analysis, policy and alarm management platform. According to the company, the platform has been deployed for many years, and proven to scale, in the largest network in North America.

Policy credentials

Billing and policy, as described in this report, enable innovative and personalised services using the 3GPP PCC architecture, with the intent of providing and monetising an enhanced customer experience. Trendium and its ServicePATH solution approaches services from a different perspective – assuring the service operates as designed, thus assuring both the customer experience and the monetisation of that experience.

The assurance functionality that Trendium brings to bear enables intelligent billing, which is the use of analytical insight concerning how a customer experiences a network or service connection. This insight allows CSPs to know how to best position the right pricing plan options when customers want them the most. It also enriches the billing process by enabling, through policy, the way services are actually used. For example, billing for service usage only when quality of service is above a set threshold for customers subscribing to a certain pricing tier. Trendium explained to Stratecast that the ServicePATH platform features a real-time transaction and flow analytics engine, end-to-end correlation, in-memory analysis, advanced service policies, and business models that capture the complex relationships between customers, applications, services, and the underlying networks. The solution is capable of collecting data from network elements and element management systems, in addition to other data sources, such as probes or business and operations management systems.

By assuring service operation and customer experience, ServicePATH is designed to reduce potential churn by allowing CSPs to proactively address any discovered service issues, and to increase the efficiency of offered services. This allows a potential reduction in the cost of offering such services. According to Trendium, ServicePATH gives CSPs the ability to identify and maximise new sources of revenue, by allowing the definition of service policies and service level agreements that let CSPs tailor services to the specific needs of high value customers.



Company summary

Volubill is a private telecoms software solution provider, headquartered in London, with offices around the world. Founded in 2001, the company has more than 70 global customers. The company provides policy management, policy enforcement, and charging solutions to CSPs. According to Volubill, these solutions enable operators to manage the rapid growth in data services across communications networks by implementing subscriber and service centric usage policies and quotas; and offer real-time granular charging for any data.

Policy credentials

Volubill's policy offerings include policy-enabled real-time rating and charging, policy management and policy enforcement solutions.

The Volubill Business System (VBS) suite offers full 3GPP PCC compliance including PCRF, OCS, OFCS and Subscriber Profile Repository. The suite includes VBS Convergent Charging as well as the VBS Policy Manager. According to Volubill, VBS allows CSPs to create, test and launch service plans in as little as 15 minutes, and features a wide range of use cases and automated subscriber engagement. The company explained that VBS scales to over 100 million active subscribers, at the lowest cost, and deploys within three months.

Volubill Network System (VNS) provides DPI-based policy enforcement capabilities, acting as a 3GPP compliant PCEF. VNS is a high-availability network appliance located in the CSP network, adjacent to gateways, that linearly scales to support network capacities from 1 Gbps to over 100 Gbps. VNS performs according to subscriber level policy and charging provisioned by PCRF and OCS systems, including the company's VBS suite. The solution identifies and meters usage, enforces usage limits, and optimises policy driven quality of service. VNS allows CSPs to control usage, based on device and/or content, and provides intelligence to understand subscriber usage of applications, network resources, and protocols. CSPs use this intelligence to make available more relevant and higher margin service offerings. Volubill explained that VNS is unique, in that it offers zero-revenue leakage, high accuracy on granularisation, and industry-leading cost per Gbps performance.



Integrated policy, charging and analytics unlock CSP opportunities to survive and thrive

New revenue opportunities for CSPs have been talked about for years but the integration of policy, charging and analytics finally brings together all the disparate functions and enables communications service providers (CSPs) to market new products and services. The success of these will determine the success or failure of CSPs. Here, John Aalbers, the chief executive of policy and charging specialist Volubill, tells VanillaPlus the pace of development will be breathtaking

VanillaPlus: How have the roles of analytics and policy matured to do more than simply protect the network and now provide CSPs with the means to develop new revenue streams and business models?

John Aalbers: They have developed quite a long way in the last couple of years but there is still quite a long way to go in terms of tying policy and analytics together. The idea of taking policy and charging to set up the base packages you want to offer subscribers and then using real-time analytics to decide what additional special offers to make based on real time context, to whom and when is only just being introduced by the earliest movers in pilot projects. If we can use analytics to identify that at a specific moment in time a user is about to watch a movie, we can offer an increase in bandwidth for the length of that move. Obviously, that offer is only relevant while the movie is being watched and the user won't want an intrusive experience.

You can set that sort of service up with policy and charging, use the analytics and then feed that data back into policy and charging. You get this real-time marketing loop happening.

It is still early days in terms of the integrations between policy and charging and analytics but all the components now exist so it will happen. The barrier has been that these have all been disparate systems but what has changed is that policy and charging are quickly becoming one in the form of PCC (Policy Control and Charging) and in the last year or so the vendors have been getting together to pre-integrate the key systems.

You still have to integrate into the rest of the environment if you're an operator but the number of touchpoints has diminished. The problem is getting simpler which is not to say it's a simple problem.

VP: Charging - as distinct from billing - is now back on the agenda as operators seek to apply charges to a comprehensive menu of policy-originated services such as turbo-buttons. Why has it taken so long to come to fruition?

JA: It's a bit like tablet computing. In every decade since the 1950s a form of tablet computer has been launched but they've only captured a mass market successfully since 2010. Only this decade have the ingredients been right. All the technologies, the touch screens, applications and the network speeds are at the right stage to create a successful product. It's similar in the charging world. The industry has talked about it a lot and had a number of forays into the market. Now everything is there and the component technologies make sense.

Everyone has done their adjunct data projects in the first phase of mobile data. We know LTE is deploying and VoLTE will come later so we want to offer packages around voice and data so there are lots of initiatives around converged charging. We're seeing opportunities to replace old IN (intelligent networking) voice charging capabilities with converged data charging platforms that are ready to fit that change but also support circuit-switched voice for the interim period.

VP: To achieve the new CSP model of charging for one-time services and using policy to support premium propositions, CSPs need to be agile and launch and kill propositions quickly. That goes ►



John Aalbers:
All the necessary things are in place now



When you talk about service personalisation you must have a package that is tailored and offered to a sizeable group of similar users – in other words basic segmentation



against their historical experience of long-term implementations. How can CSPs accelerate agility and what timeframes do they really need to operate in?

JA: You're right when you say they haven't been good at this in the past but to have any chance of success in the future this is essential. Not just to enable them to compete with other operators but for all sorts of new opportunities. Today, it means going back to their vendor to have scripting done to create a new service, where they've got to get to is the ability to launch these services in a very flexible way through a GUI only approach.

For one of our customers in Madagascar, the benefits are obvious. In the first two months of this year they configured 32 new policy and charging use cases in 15 minutes each, tested them in a couple of hours and then rolled the services out. We're now talking about conception to launch in less than a day. To me that's a complete world away from anything that has been done before.

It does have to be completely GUI-driven, though. The transient nature of a lot of new services means they won't necessarily be valuable for a long period of time. For example an offer or use case around a concert or a sports event might only have a life of a few days or even less.

VP: There's an idea that third parties are losing revenue because they can't secure high quality network services in support of their offerings. A company like Netflix might find a user doesn't take out a premium subscription to an HD video bundle because they know their data consumption will be capped before they can consume all the content on offer. The concept of Netflix effectively paying the CSP to support such a bundle is an example of a two-sided business model in which the consumer and the supplier share the costs of the network. How do you see these two-sided models developing, do you think they represent the future success of the telecoms market?

JA: These partnerships are going to be tremendously important and it's not just the third parties driving at it, it's the operators as well. You're getting a content provider that is brilliant at doing content and network operator that is brilliant at providing access. If you put the two together in tandem, you get a much better experience, a better quality of delivery and there are direct and indirect revenue opportunities within that. Take the example of KPN's partnership with Spotify. Spotify gets zero-rated traffic towards its users' quotas, KPN gets associated with Spotify's hip, cool, youth brand. If you're Disney, you definitely want to make sure your customers get a great experience; you want to put together a great service. Two or three years ago, everyone was talking about that, now they're doing it.

VP: So where does policy fit in?

JA: It depends on how sophisticated you want to get. If you have policy and charging working closely together you can identify who the user is and use deep packet inspection to ensure certain types of

packets will be delivered at the right quality of service. It becomes even more sophisticated with real-time analytics on top of the base package.

When you talk about service personalisation you must have a package that is tailored and offered to a sizeable group of similar users – in other words basic segmentation, then a real-time analytical angle to identify what's going on as well as the context including location to make special offers, and finally give the user self-control where it makes sense – the ability for them to set their own parameters about what they would like.

If you can address these three areas, you've got a very targeted personalised service being offered to end users on your network.

VP: In the drive for growth, CSPs options consist of selling more to an existing, saturated base of users in developed markets or looking to address emerging markets? Which emerging markets do you see as most fertile. Is it a case of specific geographies or are there underserved emerging sectors to be taken into account such as M2M, the emigrant market or even groups such as sports fans?


JA: I still see the mature markets as fertile in terms of personalisation and doing a better job. There's still a lot of scope for operators to lift their game, put third party OTT partnerships in play and squeeze out more revenue.

Emerging markets are still very interesting because they have the ability to grow. Africa and Latin America will be particularly interesting for the next few years. A lot of people think data is about entertainment and there's not an appetite to pay for that in emerging markets but there is just as much interest in data for commercial, business and political purposes. There's a lot to be offered in developing markets and the success or failure of telecoms operators will depend on whether they can grab that in the next three or four years.

The game is now about marketing and market segmentation, using analytics to identify what the customer is actually doing so you can target them. Sport fans are a great market segment as are high video users and gamers. The market should segment much more granularly.

M2M is more on the side. It's quite different in terms of the market requirements. In M2M it's about efficiency and using technology to enable when the network is not so busy to deliver that efficiency. There are premium services too, M2M healthcare applications have the potential to be high value.

It's much easier to price according to value with a service like healthcare than if you don't know what's being sent. Clearly heart monitoring has a higher value than a basic data transfer service.

Things are going to speed up now. What's happened over the last five years has been fast but the next five years will take our breath away. All the necessary things are in place now – previous attempts were hampered by one or two links in the chain being missing. 

www.volubill.com



Network policy provides platform for partnerships and personalisation

As the possibilities of mobile technology expand, the aspirations of customers and suppliers can go off in different directions. This could have an effect on how policy is set to supply the network the customer wants, writes Nick Booth



Tony Jackson: CSPs are only just getting going with all the different kinds of partnerships they'll need

There's something of a mismatch between the priorities of subscribers and communications service providers (CSPs) if two recent surveys are accurate. According to an Infonetics study Policy Management Deployment Strategies... Nov 2012, the top priority for network operators is to deliver new service bundles, with 95% of operators naming this as their goal. The next most important objective was increasing revenue per user. Ensuring quality of service was a relatively poor third, recognised as a priority by 70% of the survey.

In contrast, the latest **Ericsson** Mobility report (Q1 2013) found that network performance is the main driver in subscriber loyalty to mobile operators. It suggested that addressing network performance has twice the impact on customer retention that customer support can have and four times the impact of introducing loyalty rewards.

Though policy management has the potential to be enormously complex, for the most part the objectives should be simple, says analyst Dean Bubley at Disruptive Analysis. Ignore the headline-grabbing but unrealistic use cases of policy management, argues Bubley. Focus on the policies that can actually be implemented by CSPs in the real world.

Controlling costs

It's critical to remember that in general, new business models are not created in the network, he says. "Policy in the network is mostly about controlling costs, while policy in the IT domain is about generating revenues – the two are less converged than many think, and it will stay that way," says Bubley.

Tekelec's vice president of product marketing Houck Reed argues that in a brave new world operators must transform themselves into digital lifestyle providers. "Customers can expand their personal control over policy and choose preferences that truly suit their lifestyles," says Reed.

Once service providers sold simple plans of voice, text messages and data bundles to millions of subscribers. Now subscribers are different, service plans are different, and the devices are different, he says.

Operators can evolve to selling high-value transactions if they have sophisticated enough policy to enrich applications and services, he argues. Mobile banking, streaming media and retailer partnerships could all provide new business, according to Tekelec.

Airlines, for example, could pay for a subscriber's bandwidth when booking flights or downloading boarding passes at airports, which would save on airport staff costs and all the subscriber to save on data charges.

These theoretical applications call for a massive improvement in the way signalling and IP flows are controlled so that they orchestrate every exchange between the service and the network elements. That is a massive expansion of duties from the current role of the operator, which is the relatively simple task of ruling over bandwidth, applications, time and speed.

The first step in creating a more sophisticated policy is to change the way CSPs work with OTT (over the top) content providers. They should be addressed as partners, not rivals, and policy should formalise this ►



arrangement, says Shannon Bell, director of revenue enablement for the data experience business unit at **Amdocs**.

“The value that service providers can provide to OTT players is a superior quality of network experience that can be personalised,” says Bell. Policy is critical if quality of experience (QoE) can be based on variables such as the customer profile, plans, device types and applications.

The main QoE improvement that can be achieved will be to save customers from bill shock. This is where policy can be used relatively simply for toll-free access to content services and prioritised QoS.

Netflix exemplifies how policy can change the relationship between CSPs and OTTs. In allowing Netflix to take capacity from an operator and impose its own charges on a subscriber, Netflix has been turned into a sort of bandwidth reseller. Policy tools have enabled these highly sophisticated transactions to be made. But all that the subscribers care about is that their service quality got better, the bills didn't go up and the transaction was uncomplicated.


“There is a big difference between having the systems capability and packaging it up in a way that customers can understand,” Tony Jackson, senior product manager, at **CSG International**.

A lot of work needs to be done to make it look simple, says Jackson, and the challenge for policy managers is to understand the data streams so they can charge correctly.

If you can crack that you can lay the foundations for video, VoIP and more complicated data services that will be possible when 4G comes to fruition.

“There are too many spectrum and network issues for video services at the moment but when 4G has the capacity we could see some much more sophisticated use cases,” says Akil Chomoko, head of product marketing at **Volubill**.

Policy is a long term aspiration, but one to get working on now, says Chomoko.

Jackson at CSG agrees: “In reality CSPs are only just getting going with all the different kinds of partnerships they'll need to maintain their revenue streams.” 



Akil Chomoko:

There are too many spectrum and network issues for video services at the moment



Houck Reed:

Customers can expand their personal control over policy





Policy is a gateway, not a gate!

Policy solutions have risen to the forefront in recent years, and have stimulated a wave of investment but the predominant policy solutions deployed by communications service providers (CSPs) to date provide a mere glimpse into the future. That's a future in which enhanced policy management can stimulate service provider innovation and enhance customer experiences, writes Michelle Nowak



The author,
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is vice president of
product
management at
CSG International

The first wave of policy solutions was all about the network, and more telling, about imposing user restrictions and limits. The emphasis of original network policy use cases was to manage a user's network connection. Perhaps one of the most well-known policy use cases was managing bill shock. Compelled by regulation and masquerading under the guise of protecting consumers, bill shock policy solutions performed a single function: monitoring the customer's usage and erecting barriers if he wished to proceed beyond a certain gate. The result: the customer experienced being managed, rather than managing his own services.

We're now in the midst of a rush of telecoms modernisation: upgrading the underlying network to provide greater capacity and speed, and evolving the infrastructure overlay that manages the network, the service provider operations and the customer experience. So now is the time for policy solutions to become strategic assets and enable, rather than prevent, customer access to myriad digital services and content these next generation networks provide.

Can't get enough content!

CSG recently published the results of a survey (<http://www.info.csgi.com/csg-us-pay-tv-survey>) that explored consumer attitudes towards spending habits on digital content, and the results illustrate the feared predominance of spending on content that has already arrived. Our survey found that 31% of US customers spend \$50-\$100 a month on digital content and consumers aged 18-24 are more likely than any other group to spend between \$30-\$50 on

digital content. This is in a market where the average monthly cable television bill is \$86 (<http://publicknowledge.org/blog/why-your-cable-bill-so-high>) and the average monthly mobile bill is close to \$50 (<http://business.time.com/2012/10/18/47-a-month-why-youre-probably-paying-double-the-average-cell-phone-bill>). Revenue has already shifted from traditional voice and – in the case of pay TV providers – television services to premium digital content, and this trend is not likely to reverse. Revenue streams of the future will be increasingly derived from content, and younger users are increasingly seeking new ways to manage, bundle and personalise their content, the sources of that content, and the devices on which they watch it. Multi-screen content consumption is the new norm, with 79% of surveyed users consuming content on PCs, 39% on tablets, and 36% on internet-connected televisions.

What's a CSP to do?

To successfully compete in the digital content market, across all broadband network types – fixed line, cable, mobile or convergent – the CSP must personalise, customise and, for the ongoing success of their own business, monetise these content services – to capture mind and wallet share. This is what the next wave of policy management is all about. And policy management alone is insufficient; it is policy partnered with real-time charging that propels the CSP to the forefront of the competition. Real-time policy and charging solutions create a CSP gateway for consumers to interact with digital content and services based upon a variety of parameters beyond the current session. Now it's about that, plus what is happening in the broader network environment; plus ►



Personalisation and control, enabled by policy and charging and in terms that relate to value, creates an inclusive environment for the consumer and a competitive advantage for the CSP

the consumer's historical trends and preferences and the CSP's prediction of what the user needs and values.

What does a competitive gateway enable?

A policy and charging centric competitive gateway drives CSP innovation, enhances customer experience and enables extreme competitiveness. Along with business insights, some of the differentiating use cases that policy and charging enable include:

- Real-time content promotions of CSP-owned or partner-owned content
- Turbo boost or upselling bandwidth for particular services
- Business bundles
- Family bundles and parental controls for content access
- Quality of service shaping
- Bill shock active management
- Location-based quality of service
- Fair access management
- Multi-device plans
- Tethering plans
- Access and quality of service management across multiple networks and applications
- Flexible payment options

With services like these, across disparate devices and networks, the consumer is in full control and actively manages his own experience, rather than being controlled and having his experience managed by the CSP. It elevates the fragmented consumer experiences to one that is connected. The connected experience perception creates customer intimacy and inclusiveness stimulating consumer and CSP brand loyalty.

Does policy drive CSP evolution?

There has been a recent evolution of pricing and bundling for data and content services: shared data plans across multiple users and devices, and the launch of tiered bandwidth caps for varying consumption levels. But we still see a CSP focus on monetising the network in traditional ways. It's still about the connection and measuring and charging for the bytes traversing it.


CSPs haven't yet attained the greater value that policy management and charging can deliver to enable personalisation, while they continue to struggle to

define their future role in the content value chain. CSPs desire these tools for enabling personalisation and enhancing customer experience in the future. After all, the competition will become fierce rather than relent.

And the responsibilities of personalisation do not lie entirely with the CSP. To fulfill policy-centric personalisation scenarios, and to convert the gate into a gateway, consumers must more actively understand their usage, quality and timing requirements, and make choices to align value and service levels with price. But they shouldn't be required to understand bandwidth, bytes, or latency, users only need to understand them in their terms. Audio and video services are understood in terms of definition; online gaming is understood in terms of performance; streaming live sporting events is understood in terms of delay.

Personalisation and control, enabled by policy and charging and in terms that relate to value, creates an inclusive environment for the consumer and a competitive advantage for the CSP. The inclusive, interactive environment stimulates loyalty.

Enhanced content experiences are not limited to a CSP's customers, but extend to third parties in the value chain as well. Content providers have dominated the consumers' minds and wallets in recent years, as CSG's consumer survey revealed, but the leading content providers – companies such as Netflix, Hulu, and LoveFlix – will reach market saturation and will look for ways to differentiate their service. It is the CSP's policy and charging platforms that will enable a content provider's differentiation: through partnerships, the CSP and the content provider can create offers based upon quality of service and not just upon volume – for example, of films – consumed. The CSP can extend control over the experience to the OTT provider's content and can capitalise on that partnership through enhanced QoS-based revenue sharing agreements.

Policy and charging are the gateway to the next content experience, enabling consumers to manage the terms of their personal content consumption, and enabling CSPs and their content partners to collaborate to create differentiated and customised experiences. 



Policy plus real-time charging adds up to a win-win situation

Policy, when integrated with communications service providers' (CSPs) real-time charging capability, creates a foundation from which customers can be offered far greater choice and flexibility, and partners, such as content providers, can use CSP capabilities to differentiate themselves and generate revenue. There must be value in that for all, Jaco Fourie tells VanillaPlus

In OSS/BSS implementations to date, charging and policy control are typically treated as different disciplines and are kept in separate silos. However, CSPs are missing out on opportunities because making use of charging data when setting customer policy is essential. A good and loyal customer who pays on time for services should also have a good service experience. A service, for example TV, which requires a certain quality or bandwidth from the network must be granted those resources if the CSP or the customer are willing to pay for the additional service level.

Policy on its own only goes so far in creating and enabling that new service delivery environment and the digital value chain. To fully achieve that market's potential, policy capability must be integrated with real-time charging so everyone involved in the value chain can monetise their opportunities effectively. "There are multiple dimensions that are improved by combining policy and real-time charging," says Jaco Fourie, BSS senior expert at Ericsson. "The CSP is able to provide customers with more variety and features when the two are combined. In addition, there's an operational gain that turns into a customer experience gain, saving cost and effort."

Fourie points out that customers want to interact with their services and adapt their packages as and when they require. "Customers expect to be able to find out exactly how much they have left in their package," he says. "If they want more speed or to extend their data quota, for example, the need for real-time charging integrated with policy is very high."

The current way in which data is sold isn't helping matters. "Customers want to be in control of their experience but data is sold in megabytes and that's impossible for people to understand," he says. "If you understand your consumption you will be much more willing to consume."

The end game is an environment in which a huge array of different organisations can come in and sell their content, applications and services, they can select a class of delivery – for instance HD for video content, subsidise that delivery through the operator, charge the customer's bill and engage in marketing such as special offers for multiple purposes.

It's a long way from selling flat rate voice minutes or data in megabytes. Fourie acknowledges that the transition is ongoing. "If CSPs are not yet ready to engage in this way it is still very important that the technology we provide should not be a show stopper," he says. "We've worked to create systems that enable these use cases from day one."

Ericsson works with more than 300 CSP customers around the world in the area of BSS. This gives the company enormous insight into successful use cases and the market dynamics. "We look at all the different tried and tested approaches around the world because we're very actively trying to help our customers avoid the pitfalls others have fallen into," says Fourie. "This is a new area, with a new approach and we can help customers not to learn the hard way."

CSPs themselves are keen to learn. "All CSPs have ►

The author, **Jaco Fourie** is BSS senior expert at Ericsson





realised that to have policy and charging in different siloes won't work in the future," he says. "Some have come far in integrating this, others have just started but definitely all have realised that this will need to be done in order to monetise the service in an optimised way."

The stage of development each CSP is at and the use cases differ from market to market and region to region. "Most CSPs want to sell differentiated services. There is more interest in achieving that in developing markets than in developed markets," he says. "CSPs need to demonstrate a reason for their customers to spend money."

"There are two sides to that: customers need to see the value of their money and CSPs need to extend to them the services that they can buy and want to buy," adds Fourie. "These are typically not all-you-can-eat propositions but some CSPs are offering instant messaging services from over-the-top providers or social media bundles. That way they can provide the customer with a lot of choice and provide access to the services they want at a rate they can afford."

CSPs in some markets face challenges in stimulating data services consumption but that's hard to do when customers can't see the value, says Fourie. "It's interesting to see Google launching their Free Zone with some CSPs where customers can access Google Mail and other apps free of charge," he says. "When customers use that, numbers increase, advertising increases and they can do revenue share with the CSP."


A new era of partnership between the players in the value chain is coming about with CSPs and over-the-top players starting to gain an understanding of each other's role. "In some parts of the world there is a bit of a barrier between CSPs and OTTs because of their past behaviour," says Fourie. "There's an OTT attitude that the network has to be there and be full speed and the CSPs felt that the user was their customer. That made them initially want to compete but they now

recognise it's best to co-operate and get to a revenue share situation."

Fourie cites examples such as TeliaSonera and Spotify. TeliaSonera resells Spotify as a TeliaSonera service, bundling the Spotify membership for a flat monthly fee of SEK 99 (€ 11.5). TeliaSonera benefited from providing a cool service to its users and Spotify benefited because of the sustained and increased usage by TeliaSonera users and the legitimacy of being a TeliaSonera service.

Other organisations don't immediately grasp the advantages. Fourie explains that in discussion with a broadcaster things didn't initially go to plan. "When I first presented to them what integrating policy and charging can do, they reacted badly and said: so this is the great revenge of the telecoms industry," he says. "When I explained that it meant they could provide services with a specific quality over a new distribution channel and share revenue, their attitude changed and they became interested."

"We are starting to see an understanding that there is a potential win-win situation here," he adds. "Packaging traditional services together with data services and doing effective promotions and bundling are all possible in the systems of the CSPs and that is what will make them survive and thrive."

The integration of charging and policy control is a key step in transforming the OSS/BSS domain into a truly convergent platform able to handle new verticals and business models in highly flexible ways. It should also help to overcome future challenges, such as network technology changes and the introduction of new services, such as machine-to-machine (M2M) and the cloud. Three main transformations in personalised charging and policy control are required to achieve these goals: integration of charging and policy systems, putting the customer in control, and enabling monetisation of OTT services. 

We are starting to see an understanding that there is a potential win-win situation here

Policy is the key to mobile product differentiation

Ask a marketing person in a CSP why their service is superior to the competition and you'll get many, many different answers ranging from better network, superior customer experience, better brand, more partnerships and an ability to better deliver services most suited to their customers' needs. Very few will mention policy management. But that is changing, writes Martin Morgan



The author, **Martin Morgan** is director of marketing at Openet

The reason for that change is that it is policy control that manages the different network and customer experience and shapes how mobile data is used. Providing this ability to differentiate how customers use and experience mobile services provides a foundation to the product function of a CSP's marketing mix.

Policy started life as a network management tool providing the ability to control usage and implement fair usage policies. This then moved on to identifying tethering usage and implementing bill shock controls. When CSPs moved to phase out unlimited data plans and started to provide tiered services policy started to get picked up by the marketing folks in CSPs. With tiered services it is policy that throttles a user's network speed when they use up their data allocation. Having the ability to not only control, but also package usage and speed, suddenly made the marketing teams look over to networks and start to see how they could use policy as a tool to build, package and market new mobile offers.

Data plans get smarter

With voice now effectively commoditised as a result of unlimited offers from many CSPs, most are keen to avoid a downward spiral of 'my GB is cheaper than your GB' marketing with a bargain bucket approach to providing commoditised data services. Judging by the actions of many CSPs they are eager to avoid data commoditisation and are rolling out value based data services that are differentiated and give customers choice. CSPs have been getting innovative with developing and packaging data services that use

policy as a major building block of product development and marketing.

Ten data marketing innovations – built on policy

Listed below are ten examples of product innovations, enabled by policy management, that CSPs are currently providing.

1. Tiered plans : It's all about data

Data is now the fundamental building block for mobile plans. A typical LTE base plan is built on unlimited voice calls and texts, data with volume and speed tiers. Policy controls the network access once the tiered threshold is reached.

2. Social media plans

Providing low cost – or even free – social media plans works to encourage data adoption and usage. Several CSPs have successfully offered free social media offers, and then provided low cost plans. One European CSP provides unlimited Twitter, Facebook and 20MB for data for approximately €3.20 / month, for example. Policy is needed to restrict access only to the URLs in the social media offer and manage the data usage.

3. Shared data plans

Several North American operators launched multi-device shared data plans in mid-2012. Within a year one CSP had changed its reporting metric from ARPU to ARPA (average revenue per account) and reported an average of 2.67 shared devices per account while another CSP reported that 25% of its customers on share plans go for data plans with 10GB or more. From the North American results it is fair to say that ►



multi-device shared data plans work and we're now seeing them being rolled out in Europe and certain APAC countries. Policy is needed to manage and control the overall data allocation and that of each device.

4. Speed based plans

Some CSPs are focusing on speed as the main differentiator in tiers – on the basis that customers may not understand the megabytes or gigabytes but they understand differences in speed. Here policy controls the network speed, depending on which tier the customer selects.

5. OTT partnerships in plans

We're seeing more OTT operator deals. Free Google services are being used by some CSPs to encourage data adoption, Viber is entering into revenue sharing deals, customers can even get direct operator billing for Skype credit and several CSPs are selling low cost WhatsApp deals. The ability to only enable access to certain sites is provided by policy and it can also manage the user network experience when using these services.

6. Delivering customer confidence and control

Most CSPs provide an app that lets customers see, monitor and control their data usage. Some CSPs are now rolling out apps that let customers more pro-actively manage and control services. This can include providing policy direct to the device, so that customers can self-configure their offers thus enabling personalisation.

7. Data roaming

Existing EU legislation can cap data roaming spend at €50 per trip. Policy needs to track this usage and apply the relevant controls when limits are approached or reached. In 2014 further EU legislation and the introduction of ARP (alternative roaming providers) and LBO (local break out) for data roaming will be introduced. This will see policy required to play a deeper role in roaming management and controls as the EU seeks to use increased competition to lower roaming rates. However, at present many mobile users switch off data roaming due to concerns and lack of knowledge about cost. Many CSPs are overcoming this problem by providing data roaming service passes as a one off upsell, which contain a fixed volume of

data, valid for a given time period – for example, 50MB for one day for €2. Policy provides the rules on which data passes are built.

8. Premium content

CSPs are partnering with content providers to provide premium content as a plan differentiator. Music streaming and video services are the most popular. Providing third party premium content has been attributed to increasing loyalty by several CSPs. Several CSPs are looking at varying speeds (QoS) for specific content partners.


9. VAS Upsells

High speed mobile broadband can provide the ideal base on which to upsell a wide range of VAS. This ranges from providing parental and usage controls to home automation and security services. Policy rules are often a fundamental control element in these services – for example, access restrictions in parental controls.

10. Adding in Wi-Fi

CSPs are building Wi-Fi into plans – whether it's a volume of data over Wi-Fi for domestic usage, or an amount while travelling – one leading CSP has a partnership with an international hotspot provider which lets the CSP's customers access Wi-Fi hotspots at airports as part of their monthly mobile plan. As new standards and Wi-Fi advances such as Hotspot2.0 and ANDSF (Access Network Discovery and Selection Function) enable greater integration between Wi-Fi and cellular networks the opportunity to extend policy to Wi-Fi networks will deliver an additional product differentiator to mobile CSPs.

Policy has come a long way in a relatively short timescale. Starting off as a network control system and then moving to as marketing product development tool, it is now firmly integrated with real-time charging platforms to provide PCC (Policy and Charging Control) platforms to enable CSPs to make money from the new product and service developments enabled by policy.

As the uses of data become increasingly varied and devices get smarter the opportunity to use policy and charging to enable innovative product development and pricing is only going to increase. 

This will see policy required to play a deeper role in roaming management and controls as the EU seeks to use increased competition to lower roaming rates



Policy can help CSPs and OTTs learn to get along

New business models require organisations formerly at war – CSPs and OTTs – to come together and agree fair revenue share for utilisation of the network. Policy can be the peace-maker, writes George Malim



Moshe Peterfreund:

Third parties may not embrace this new model but they'll eventually have no option

There's lots of excitement about how policy can underpin new business models that could see third parties subsidise the cost of the network. A typical example is a video provider such as Netflix ensuring that its customers receive premium network coverage by paying the CSP for that. The CSP then has to apply policy to that service and premium user. However, there are concerns that third parties will be reluctant to pay for something they've previously had for free.

"There is the potential for this to become a reality, so long as the OTT players can discern some clear value from paying for something that they previously did not pay for," says Chris Goswami, director of marketing at **Openwave Mobility**. "The example of Netflix paying for a premium service on cellular networks is one that has been floated for some time by operators and there is a hint of desperation in this. Right now, it is hard to imagine any OTT video player being willing to play ball on this. Why should they? The world is set up perfectly for them in terms of the delivery of their service and they have the rallying cry of net neutrality to protect them."

"Changing the model would open the floodgates for them – losing [them] margin and revenues in every country that they operate in," he adds. "Essentially the core problem is that operators are seeing the massive growth in video services on their networks, and they are not sharing in the spoils of the OTT business models that they are powering. The only way I can foresee OTT providers getting involved is if there is incremental revenue in it for them."

Just because CSPs need to find new ways to get paid

for their network capacity, doesn't mean OTTs have to play ball. However, if operators run out viable means to invest in their networks, the OTTs will have to pay or they will have no means of delivery for their content. "The issue is that the operators have come to realise that the existing model can't work for much longer," says Moshe Peterfreund, director of marketing at **FTS**. "As the pressure on the networks becomes greater, despite the introduction of 4G networks, so the user experience is more likely to be impacted. OTT providers and the operators are traditionally suspicious of each other; however, for their customers, quality of experience is paramount and both will need to solve this issue, and be ready to pay in order to ensure a better user experience. So whilst the third parties may not be embracing this new model as such, it is likely that we'll come to a point in which they have no option but to adopt it."

Martin Morgan, director of marketing at **Openet**, is slightly more positive. "Some third parties would endorse this model as the mobile operators have established relationships – both financially and at marketing and service levels – with their customers," he says. "Third parties can benefit from this relationship by working with the operators to package and promote their offers and making it easy for customers to buy and pay for these content services. As well as this, LTE enables different speed tiers to be applied to specific content. So, while a customer may have a standard speed offer, they could have specific content delivered at higher speed – such as hi-definition video. This gives a better deal for the customer, enables the operator to differentiate their offers by providing third party content and works for the content provider as it gives them an edge over ►



their competition in terms of delivery and marketing.” Such business models are at an early stage but a few examples exist. “There is one example which is **Google** paying some **Orange** properties in Africa,” says Goswami, “but it is unlikely to be a model that can work in developed countries, and it is the only example we know of.”


Morgan sees a little more activity happening but little in the way of OTTs paying hard cash to CSPs. “We’re already seeing content and OTT providers working with mobile operators,” he says. “Music services such as **Deezer** and **Spotify** are offered as either bolt-ons for mobile customers, or in some cases provided free by the operator to customers on high end plans. Several operators are also working with OTTs to deliver app-specific offers – for example, **Three** in Hong Kong and **Digi** in Malaysia offer WhatsApp deals, where customers can buy access only to **WhatsApp** for a low cost. **Viber** has already announced that it wants to enter revenue sharing deals with operators and in Canada, and Telus enables direct operator billing for customers buying **Skype** credit from their mobiles.”

Mark Ventimiglia, director of strategy in the Office of the CTO at **Tekelec**, also struggles to cite an example of an OTT paying a CSP to provide a premium service. “This specific example is still in the works, as operators are starting with innovations like tiered services, shared data plans and content partnerships where websites or applications, like **Facebook** or **Spotify**, do not count against a monthly quota. However the new plans look, it’s clear that operators are looking for ways that content providers or other partners can share the costs of accommodating high-

bandwidth services and giving subscribers more of the services and/or quality they value.” So, are operators and third parties – historically at war – ready to come together to create these models that will benefit everyone?

For Goswami there is potential even though “it has been a stand-off for so long that it would take a visionary to come forward and make it happen finally.” Morgan has noticed a thaw beginning between the two. “There seems to be a bit less them-and-us thinking these days as compared with even 18 months ago,” he says. “Back then some operators saw some of the OTTs as bogey men who would eat up their voice and text revenues from all you can eat data pools. Operators want to work with content and OTT providers that can help mobile users consume decent content and so bump up mobile data usage, and the content and OTT providers are now starting to see that working with operators provides an excellent route to market as well as the ability to get paid.”

Ultimately, it’s the getting paid that will bring the two parties together. “Both CSPs and content providers know that the best way to serve their customers and increase revenues is to combine their resources,” says Ventimiglia. “It is the only way to offer significantly more flexibility, personalisation and innovation to consumers, and to do what’s right for the evolution of their business models and profit margins.”

Policy has the potential to become the honest broker assuring the business arrangements of the participants. It can support provision of the premium service and integrate with the CSP systems that ensure payment, revenue management and service assurance. 



Chris Goswami:
The world today is set up perfectly for OTTs

Policy is in pole position for delivering return-on-investment

CSPs are under ever-growing pressure to generate profits from their substantial network investments. The problem is they have to achieve this while continuing to invest in more and more network capacity to support the needs of users. Here, Dr Christian Gayda explains why that makes it easy for policy to demonstrate the return on investment it can deliver



The author, **Dr Christian Gayda**, is director of product line management for policy control at Redknee

Winston Churchill once said: “However beautiful the strategy, you should occasionally look at the results.” In an industry that is managing change at a record pace, it makes sense for service providers to heed this wise advice when they consider their strategy for each new back office solution. But when it comes to measuring the results of an integrated policy management and billing solution, things can get a little complicated.

Take two aspirin and call me in the morning

Mobile data usage is growing at breakneck speed – 70% worldwide last year by some reports. While this growth is good news, according to Gartner, increased data use only resulted in a relatively modest increase in ARPU. This means that communication service providers (CSPs) will actually see a significant reduction in revenue per megabyte over the next few years. This makes it all the more important to have a dollars-and-cents understanding of how policy management and data services impact your organisation.

Today’s policy management tools work a lot like aspirin: whatever the problem, there is probably something that a good policy management solution can do to help fix, alleviate or ease the pain. From ensuring quality of service, enabling tiered pricing, monitoring the competition, troubleshooting network problems and reducing bill shock, to enforcing SLAs, managing network resources, and understanding customer behaviour, the list of benefits goes on and on. It’s the chicken soup of telecoms. But how do these benefits translate to bottom line results?

There have been several attempts to associate a number, or a ranking, against some of these policy-driven benefits, especially those related to the fuzzy and hard-to-define issue of customer experience. Gartner and some other analyst firms have done an admirable job at this difficult task, but these numbers are still very arbitrary. What does a ranking of a 5.0 or a 3.1 actually mean? CSPs want to know, what do

these benefits and rankings translate to when it comes to what matters most – the bottom line; specifically, reducing costs, increasing revenue and improving margins? What’s the ROI for policy? Can it be measured and defined in terms of actual dollars – or euros, yen or pounds? We think it can.

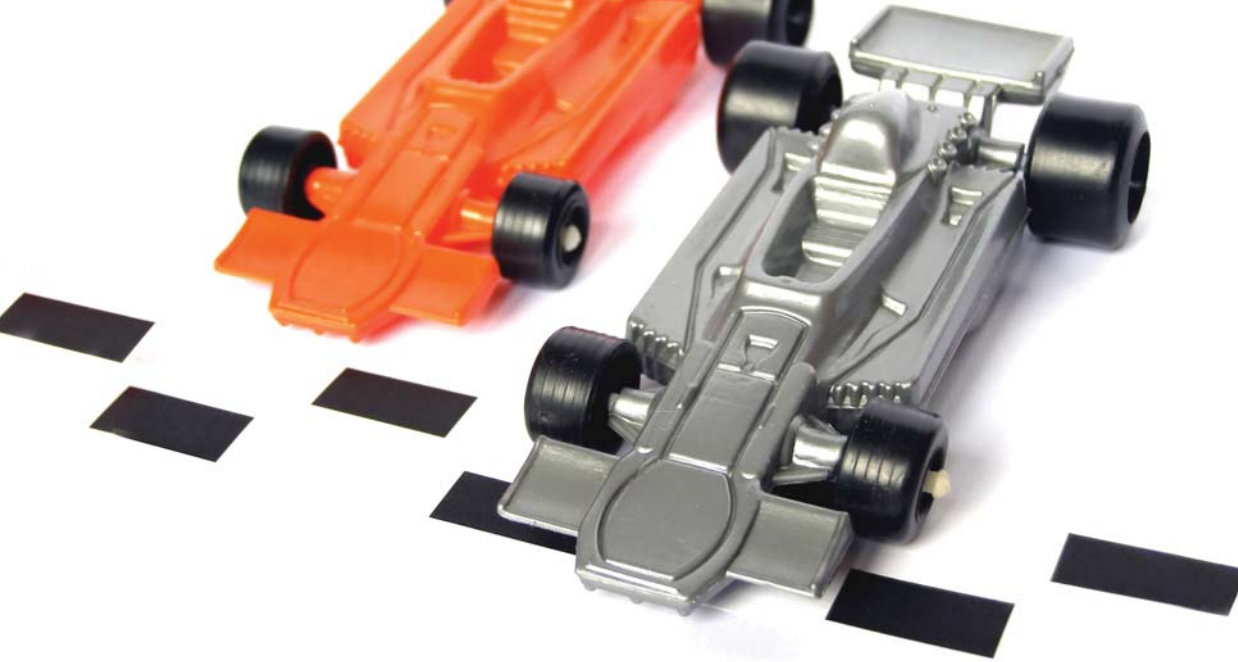
Why policy, why now?

The world of mobile communications is becoming much more complex: new data-intensive services, new technologies, new handsets and devices, new content, new partners, new pricing and promotion strategies, and even entirely new uses for mobile devices – from home security monitoring and e-health care, to car diagnostics, smart meter utilities and a quickly growing list of other M2M use cases are all contributing to the complexity.

Even the savviest subscribers are scratching their heads when it comes to how to manage and understand all these choices – and it’s no wonder. Mobile bills have become almost impossible to make sense of. The majority of service providers have dropped their all you can eat data plans, making the ability to understand data charges a complete mystery to practically every subscriber. And international data roaming sparks fear in the hearts of even the most seasoned world traveller. This confusion has led to a host of problems, and it’s why CSPs are turning to policy management as the solution.

A real-time policy control solution that is pre-integrated with a CSP’s billing and charging platform can go a long way in solving many of the issues highlighted above. But how does that translate into bottom line results? We believe this critical question has not been adequately addressed. Redknee has studied this issue in depth, looking at three key areas where policy management is making an impact:

1. Call centres
2. Marketing strategies
3. New Services ►



While there is no typical CSP, for illustrative purposes it was necessary to make some assumptions. We based our findings on a service provider with 20 million postpaid subscribers with a growth rate of 5% over three years. 40% of those subscribers are using data services, which equates to eight million subscribers on their data plan. This subset of subscribers – those using data services – was assigned an expected year-over-year growth rate of 10%. Redknee extrapolated data from TM Forum to create these underlying assumptions for our calculations, along with the following:

- Every subscriber contacts the call centre at least once per quarter.
- Call centre agents cost €20 per hour.
- Average fees charged for new plans are €6 per subscriber.

Now that we have our assumptions in place, let's take a look at three different scenarios where policy management can have an impact:

1. Reducing call centre costs

Customer care centres are the ground-zero of customer communication and the volumes of calls they receive are a good indicator of overall customer satisfaction. But the customer care centre is also a cost centre. While lower call volumes might mean higher customer satisfaction, it also means lower costs. Our research indicates service providers can reduce call centre volumes by 20% through effective policy management. This reduction comes directly from CSPs ability to deliver greater pricing transparency and to communicate more effectively with subscribers so they understand – in real time – what data services they are being charged for. Real-time notifications give subscribers more control over their mobile experience and a better understanding of charges, reducing instances of bill shock and overall data charging confusion.

Based on the typical CSP outlined above, the cost savings achieved from this reduced customer care center activity is estimated to be more than €10 million per year.

2. Increasing revenue through tiered pricing

Policy management is also critical for supporting tiered pricing packages for data. As mentioned, the days of unlimited data are over. Tiered pricing of mobile data packages allows more subscribers to try and enjoy data services at a price that fits their budgets. This has been proven to help grow service adoption over time and lead to increased ARPU. Redknee estimates that

for the service provider defined above, tiered pricing can generate an additional €79.6 million in revenue per year.

3. Using policy to support new services, new rate plans and new promotions

Offering creative service packages such as video or mobile internet gaming packages, and new try-and-buy promotional plans can significantly boost the bottom line. This is particularly true as high-value content, new services and the demand for data continues to grow. Redknee estimates that new data services help to retain subscribers, for a total value of nearly €10 million per year for the typical service provider. The value creation for policy management in relation to supporting new promotion plans, such as trial programmes that help to drive up service adoption rates, is estimated at €720,000 per year.


A note on churn reduction

In addition to the three major factors outlined, churn reduction has become a major priority for CSPs as mobile penetration goes above 100% in some regions, making competition for users more intense. Churn is frequently difficult to quantify; many CSPs do so by calculating the average cost to replace a customer with a new subscriber. Averaged across the subscriber base, the actual cost of retention can vary.

Effective policy management has been shown to increase retention levels by providing subscribers with more personalised tariff plans, transparent and fair pricing, better communication, and more control over their entire mobile experience. Redknee estimates policy management can reduce retention costs by as much as 10%, although the financial impact of this reduction will depend on the operator's marketing model.

Long term benefits

Policy management has become more than just a network tool. It has quickly become a requirement – providing value for practically every department within a service provider organisation.

Redknee estimates that for a small tier-1 CSP, the cumulative three-year value generated from implementing a pre-integrated policy management and billing solution can be more than €123 million – potentially higher with churn reduction factored in. While these figures are for illustrative purposes and the actual impact will vary for each service provider, policy management equates to real bottom-line benefits. 

Customer care centres are the ground-zero of customer communication and the volumes of calls they receive is a good indicator of overall customer satisfaction



Rob Smith:

Systems have been implemented in siloes and haven't generated the desired benefits for the CSP

Can policy be all things to all CSPs?

Vendors would have you believe that policy protects the CSP's investment in the network and helps it survive by doing so. Critically, vendors now claim policy can take care of those defensive elements and also enable CSPs to thrive by supporting premium business cases and allowing – net neutrality issues aside – high value customers to get a better experience. Here, Jonny Evans examines whether policy can really achieve these dual goals ▶





Policy work is changing. Policy 1.0 focused on defensively protecting the network, while Policy 2.0 offers new ways to enable fresh customer experiences in order to create additional monetisation opportunities for CSPs. The need to cash in on data exists, if only to help offset the continued decline in voice and SMS revenues within the industry.

Oracle Communications senior director of marketing, Gordon Rawling, sums up the challenge: "Policy control without the ability to connect it to services is the wrong answer to the wrong question. The reverse is also true – trying to provide services without the ability to control them is also the wrong answer to the wrong question. Only by connecting the two things do you get a model that works."

That's the theory, but can policy work effectively in both roles? Are CSPs beginning to listen to the policy 2.0 siren? "With LTE now in deployment in many markets, it's clear that providing more bandwidth alone won't solve the challenge," says Rob Smith, director of market development at **MDS**. "CSPs therefore have recognised the need for policy management to make sense of network investments and find a monetisation model for infrastructure."

For Houck Reed, the vice president of product marketing at **Tekelec**, CSPs are starting to re-engineer their business models. "No longer are they only providing access to voice, messaging or data services," he says. "Instead, they are connecting subscribers to content and businesses to customers. The result: many mobile operators are transforming to a new role as digital lifestyle providers."

Monetise new services

That digital lifestyle is composed of a range of new services, most of which will be data reliant. "Policy is fundamental to offering most new data services," explains Martin Morgan, the director of marketing at **Openet**. "This started with fair usage but now any service that uses speed or speed reduction when data quota is used needs policy. Policy is [also] now advancing to be used as a market enabler to build and manage products."

Tony Jackson senior product manager **CSG International**, agrees: "Policy has become integral. That's because the only revenue growth for CSPs is in data, so anything that helps them increase revenue from data will help them offset decreasing revenue for voice and SMS," he says. "Policy can help them monetise their data networks; everything goes hand in hand."

Failure to deploy policy effectively could threaten CSPs' ability to survive, adds Reed. "The danger is that without a robust policy management system in place, it won't just be the service that fails the consumer, but the very economy of the industry could

be at risk, where services are not launched to a high enough quality resulting in poor consumer adoption, and a downturn at the centre of new product and service innovation," he warns.

There's a challenge bridging the divide between policy's two implementations. "If you don't have charging and policy working together you can't get the new business benefits, policy on its own is really defensive. The only way to make it proactive is where policy is working together with billing systems," explains Jackson. This is slowly being recognised by the industry, he adds: "In the last year CSPs have shifted from talking about policy on its own to it being integrated with charging policy."


There's a need to break the traditional divide between CSPs marketing and technical departments: "Until recently policy management systems have often been implemented in a silo approach hence not generating the desired benefits for the CSP," says Smith.

Current Analysis analyst David Snow, has seen evidence that these internal silos are creating non-intuitive solutions: "There are sometimes turf wars within CSPs," he says. "I have heard instances of more than one policy controller being deployed within an organisation – one for network protection, another for the marketing side of the organisation. In the long term a more integrated approach will be needed."

Things are slowly changing as CSPs begin to recognise the technical and managerial advantage of bridging this divide, Rawling observes: "We love to do things in silos which don't really connect: policy in a silo just makes no sense. The two uses are so closely aligned in terms of business goals. I think there's growing recognition of this among CSPs."

The policy chase isn't over: "CSPs still have a way to go before they can fully benefit from the promise of policy," explains Jackson. "Most have connected their systems in some way, but our experience is that where two systems are combined they are only as efficient as the weakest link. If they don't have the ability to quickly apply add-ons they remain defensive, in which case policy can't enable new business opportunity."

Recognition that policy can be used in both a defensive and enabling fashion is growing among CSPs as they prepare for future all-data networks, Rawling reports: "From a business perspective interest in policy is very high among both CMOs and CFOs. We are at the initial stages of [more functional] policy deployment."

"We do need to start managing customer expectations in terms of the way services are delivered," he adds. "When we speak with CSPs we see growing focus on customer insight and new product offerings, as well as on network control." 



Martin Morgan:
Policy is fundamental to offering most new data services



Gordon Rawling:
Policy control without the ability to connect it to services is the wrong answer to the wrong question

EXPERT OPINION

In maximising return on the 4G/LTE investment, the race goes to the swift

Communication service providers (CSPs) making significant investments in 4G/LTE technologies expect – and deserve – a solid financial return on that investment. Effective policy management can help them achieve that, writes Alice Bartram



The author, **Alice Bartram** is associate vice president and head of portfolio marketing at Converse

We have entered an era where the amount of data we create and consume every day is measured in quintillion bytes and it is still growing rapidly. 4G/LTE delivers spectrum strong enough to satisfy the ravenous internet access needs of the increasingly sophisticated connected mobile devices capturing the market and to power a broad range of innovative offerings.

The benefits of 4G/LTE for the consumer are clear: a superior user experience and an always-expanding menu of increasingly imaginative applications serving every interest and taste: video, IP telephony, gaming, 3D TV and beyond.

But what's in it for the CSP?

The bottom line is... CSPs want to boost their bottom line

Competitive positioning is one key motivator driving adoption of 4G/LTE; certainly no CSP wants to be left behind. But the bottom line is that CSPs want to improve their bottom line – by as much as possible. The market challenges that CSPs face are steep, including fierce competition from traditional telecoms and potent OTT rivals, but the opportunities are also great. The multi-million-dollar question for CSPs is how to get the greatest value and return from the 4G/LTE investment.

A key part of the answer is agile monetisation. Because the race goes to the swift, time to market is of the essence.

Agile smart monetisation calls for effective policy

To enhance the customer experience and monetise data more effectively, CSPs are launching innovative data offerings. The key facilitator enabling the definition of such offerings is policy management. Policy management, which began its career as a tool for network management, has matured and evolved, and has now become elevated to centre stage as an essential tool for monetisation.

With policy management, CSPs can define attractive personalised data plans meeting customer preferences, supporting differentiated charging, quality of service and access control based on multiple static and dynamic parameters – such as time of day, application type, URL, network status, usage levels, user location and more.

Yet to be truly competitive, CSPs also need to be agile and flexible – adjusting existing data offerings and introducing new ones in a dynamic manner – responding to ever-changing market dynamics and growing customer expectations.

An effective policy management solution should support such agility and flexibility – eliminating time-to-▶

Communication service providers (CSPs) making significant investments in 4G/LTE technologies expect – and deserve – a solid financial return on that investment.





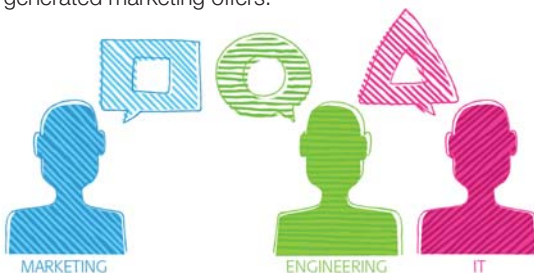
market-related barriers and challenges and enabling pricing innovation.

Going beyond the standards

There are industry standards for policy management solutions. The standards serve to ensure basic operability. However, a standards-compliant policy solution in itself does not meet all CSP needs. CSPs currently encounter significant difficulties while creating and launching new data offerings. The complaint most commonly heard from CSP marketers is about the drawn-out time to market associated with the introduction of monetisation offerings.

The main obstacle to agility and time-to-market is lack of automation and communications between the following CSP teams and departments:

- **Marketing vs. Engineering:** Today the marketing personnel who envision the data plans cannot really define them, as most existing policy creation tools are very technical and network-oriented – targeting and understood solely by the CSPs engineering personnel. This results in time-consuming – and not always fruitful – iterations between marketing and engineering departments, negatively impacting time-to-market and blunting the competitive edge.
- **Engineering vs. IT:** Policy plans defined within the policy solution need to be linked to end-to-end offerings created using IT/ BSS systems. So even if data policy creation is done effectively, there is usually a significant delay in time-to-market, as it takes a while to attach these policy plans to the actual BSS-generated marketing offers.



What can be done?

To automate and expedite the introduction of new data plans, CSPs must address these twin challenges of automation and communication on two separate levels:

- **Empowering marketers:** Because policy has become an essential tool for data monetisation, policy creation tools must undergo a transition as well. Addressing the needs of marketers in addition to the engineering department makes it possible to bridge the communication gaps between marketing and engineering. A policy solution with a marketing layer can enable easy and intuitive definition of policy plans and promotions by marketers themselves.

The right solution should automate the communication between the marketing and networking-oriented policy creation tools so that new data policies designed by marketers are automatically and efficiently translated into the relevant set of technical rules within the lower

level policy creation tool held by the engineers

- **Linking policy and BSS:** While policy plays a pivotal role in the definition of smart policy plans and promotions, it is the BSS solution that creates and monetises the end-to-end marketing offers. To automate and expedite the creation of new policy-based offers, policy and BSS must be aligned and interwork seamlessly. Policy creation tools need to be launched in context from the BSS product catalogue – and both should speak the same language, to ensure flawless communication between the two.

Powering Profitability

The Comverse Data Management and Monetisation (DMM) solution has an established record of success, helping CSPs worldwide to harness the exponential growth of data traffic.

Comverse's high-performance field-proven PCRF policy control solution helps maximise data revenues, reduce costs, accelerate market innovation and enhance the user experience.

Offered as an option to the Comverse ONE BSS solution and designed for standard integration with other billing systems, the solution scales to support the growing demand for data services in current and 4G/IP networks.

DMM Policy Studio

The DMM Policy Studio is the first-ever marketing-oriented policy creation environment designed to accelerate introduction of attractive new plans and offers. By using the Policy Studio, CSPs marketers can create new policy plans or adjust existing ones in a matter of minutes, significantly improving time-to-market.

The Policy Studio is now also extended with advanced analytics capabilities enabling CSPs to enhance their data offerings' relevancy and effectiveness – based of analysis of a broad range of subscriber and network intelligence.

BSS & Policy Integration

Comverse has unified policy and BSS with Comverse ONE in a unique way that promotes CSP success. An automatic synchronisation process aligns marketable offers with appropriate policy plans; enabling smooth and seamless communication between policy and BSS elements and therefore supports swift implementation of advanced monetisation scenarios.

4G/LTE: Get a solid return on your investment

With wireless connections already outnumbering people – there is more than 100% market penetration in many parts of the world, traffic is soaring. The raging appetite for data seems unquenchable. CSPs deploying 4G/LTE to serve this need must ensure that they are fairly rewarded for their investment.

Cutting costs is one pillar of profitability; another is developing effective monetization schemes. The right policy solution – automating the communication to bridge different CSP functions and entities - is crucial for expediting time-to-market and boosting data profitability.



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Third-party partnerships deliver service innovation for Vox Telecom



Vox Telecom, a South African communications service provider (CSP) with DSL operations, explains how it has used Sandvine's network policy control platform to support a promotion tailored to the quality of experience needs of gamers

Vox Telecom wanted to increase subscriber revenue and achieve competitive differentiation when faced with a number of issues. Its revenue and costs were divergent as subscription revenue was not growing at the same annual rate that delivered bytes were increasing. In addition, subscriber preferences were observed to be changing with their customers now looking at, and willing to pay for services tailored to their specific usage needs.

Based on data from its network analytics solution, Vox Telecom saw that subscribers who were gaming enthusiasts formed a market segment that could respond positively to a tailored service plan and promotion. Quality of experience (QoE) was a concept that appeared to be understood by and was important to the gaming population.

Based on the data, Vox Telecom devised a service promotion that was tailored to the needs of gamers which included the following features:

- Increased download and upload speeds over standard service plans
- Increased monthly quota over standard service plans
- Prioritisation of all gaming traffic to ensure that gaming traffic is completely unshaped and quality would not be interrupted during periods of congestion

Once these requirements were defined, Vox Telecom formed a relationship with Look & Listen, a retailer in South Africa, which specialises in selling movies, music, electronics and most importantly video games. As part of the new partnership, Look & Listen would provide anyone who purchased the recently released Call of Duty: Black Ops II video game with a voucher for a free 40GB trial of Vox Telecom's new Wildfire

gaming package. The promotion would benefit both parties as Look & Listen would be able to provide consumers an incentive to purchase the game at their stores and Vox would benefit by being able to directly target Wildfire to gaming enthusiast customers.

Vox Telecom already had Sandvine's network policy control platform in place, as part of an existing deployment for other service creation use cases. To enable the promotional gaming plan, Vox Telecom used the API capabilities that are part of Sandvine's products to allow it to seamlessly integrate with their BSS/OSS systems, so that when the Look & Listen voucher code was entered via a self-serve portal, the subscriber was automatically provisioned with the gaming-specific service plan. After the additional quota or 30-day trial was up, subscribers were notified and presented with the option to permanently upgrade to Wildfire or purchase additional blocks of quota.

The promotion was a success, converting a significant number of those who took advantage of the free trial, to monthly subscribers of the gaming plan. The Vox Telecom project could work in any network with online gaming enthusiasts – which is to say any network globally. It is an excellent example of how flexible, productised service innovation solutions can instantly grow ARPU for CSPs.

Based on data from its network analytics solution, Vox Telecom saw that subscribers who were gaming enthusiasts formed a market segment that could respond positively to a tailored service plan and promotion

How Vox Telecom marketed the proposition to gamers

What effective policy must have: **Real-time context awareness**



The author, **Edoardo Rizzi** is vice president of product management, marketing and business development at Trendium

Policy serves as the brain of next-generation communications networks and services. Like the brain, it needs real time input from a variety of sources, such as the senses, in order to formulate correct and often-required immediate responses. Here, Edoardo Rizzi explains why real-time context awareness is key for policy effectiveness and how real-time intelligence can meet that requirement

Policy, in its broad definition, has been a part of communications networks and systems since the very early days. However, it has evolved significantly since then, and it is that evolution and increased sophistication that has made it so powerful, essential, mission-critical, and also vulnerable. Policy can be defined as a way to configure resources and control the behaviour of entities and systems in the network in real-time, on the fly, depending on the current circumstances, and based on a set of predefined business objectives, criteria and preferences.

Traffic policy became known as such when broadband data traffic growth started to become a challenge for CSPs, first in fixed networks and successively in mobile networks. At that time, the need for traffic policy was mainly associated with limiting the bandwidth consumption of a subset of application and/or subscribers, and was referred to as traffic management. In addition to that, but to a lesser degree, service policy was also used to ensure a certain level of service performance or Quality of Service (QoS). Since then, policy has taken over a broader and more prominent role, especially in a mobile broadband environment.

Policy, now a key element of the network design and architecture, plays a strategic and essential role in service delivery and network asset optimisation, and performs a mission-critical function when it comes to network reliability and robustness. As a result, policy has pervaded every aspect and every part of the network and the service, and is now essential for delivering personalised services – both in terms of quality and content, implementing self-healing and self-optimising networks, managing congestion, and optimising the use of resources. It is not a surprise then to see that the key features of next-generation networks, such as SON, SDN and Wi-Fi offload to name a few, and LTE itself, are all based and all strongly rely on policy.

Why real-time context awareness is key

What makes policy so attractive is its ability to enable the dynamic, or context-driven, implementation of sophisticated decisions in real-time. It is to be expected that the evolution and the application of policy will be mainly characterised by increased dynamism, sophistication, and real-time capability. This is because CSPs will continue to refine their use of policy in order to be able to manage their assets and resources more granularly, ►

A fundamental requirement for policy: policy must know what is happening now, as precisely as possible, in order to be effective and produce the expected results



and in a way that more and more closely reflects the current circumstances in which those assets and resources operate, and more and more closely matches the time in which those circumstances occur.

The refinement in the use of policy, as described above, clearly results in greater asset monetisation, a more stable and robust network, and potentially an increased ability to assure customers' quality of experience, both agreed and expected. All this translates into a fundamental requirement for policy: it has to be context aware, in true real-time. In other words, policy must know what is happening now, as precisely as possible, in order to be effective and produce the expected results.

How policy becomes real-time context aware

Policy needs real-time context awareness for several reasons. First, because policy is about taking an action that depends on the circumstances, for instance the current load of a cell and the top N subscribers by bandwidth for that cell at any given time. So in order to take the right action, policy has to know what those circumstances are and has to be made aware of them as soon as they occur. Second, policy has to know what the impacts of its actions are, in order to know that it is producing the intended results. For instance, this is the case when policy is used to guarantee a certain level of service performance to individual subscribers or to an application. Last but not least, policy needs real-time context awareness because network conditions change faster and faster, especially in the radio access, and the network can quickly spin out of control or can start operating sub optimally if left unattended for a short amount of time.

In some applications, it is the policy entity itself that creates the real-time context awareness, typically through traffic analysis or by directly monitoring a predefined set of performance and traffic indicators. More often than not, however, it is other independent entities that provide policy with the real-time context awareness it needs. This is the case for instance in the following scenarios:

- The policy entity is not located relatively close to or at the same location as the problem it

addresses, think cell congestion management;

- The circumstances – the context, can't be inferred from the analysis of the traffic at a single location;
- The implementation of the policy has to take into account a broader set of conditions, which can only be derived by analysing and correlating multiple sets of data taken from several locations.

The role of real-time intelligence

When policy relies on other systems to provide the real-time context awareness it needs, it poses very stringent requirements on those systems, particularly in terms of their real-time capabilities, their ability to correlate different types of data and provide rich and accurate insights, and their stability and robustness. Such real-time intelligence systems or platforms, like those that Trendium can provide, therefore need to meet the following requirements in order to put policy in a position to be as effective as possible:

- Be as independent of the network as possible in order to ensure that failures or malfunctioning in a network element do not impact the ability of policy to be made aware of the situation;
- Be able to extract rich and timely insights through real-time traffic analysis at key points inside the context of interest, such as in the radio access network;
- Be able to collect data from multiple sources including traffic analysis, and correlate that data efficiently and based on a predefined set of rules so as to provide policy with deep visibility into the context within seconds from the occurrence of a key event;
- Provide the ability to easily define complex correlation rules, KPIs, event triggers and actions, so that it can keep up with the evolving policy needs;
- Capable of integrating with external systems via APIs in order to take in information that can be used to enrich the context as well as to provide the context intelligence to the policy entity;
- Be cost-effective, scalable, low-footprint, and high-availability, in order to make it possible to deploy network wide and as close as possible to the context of interest and the problem, or opportunity, to be addressed by the policy entity.

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