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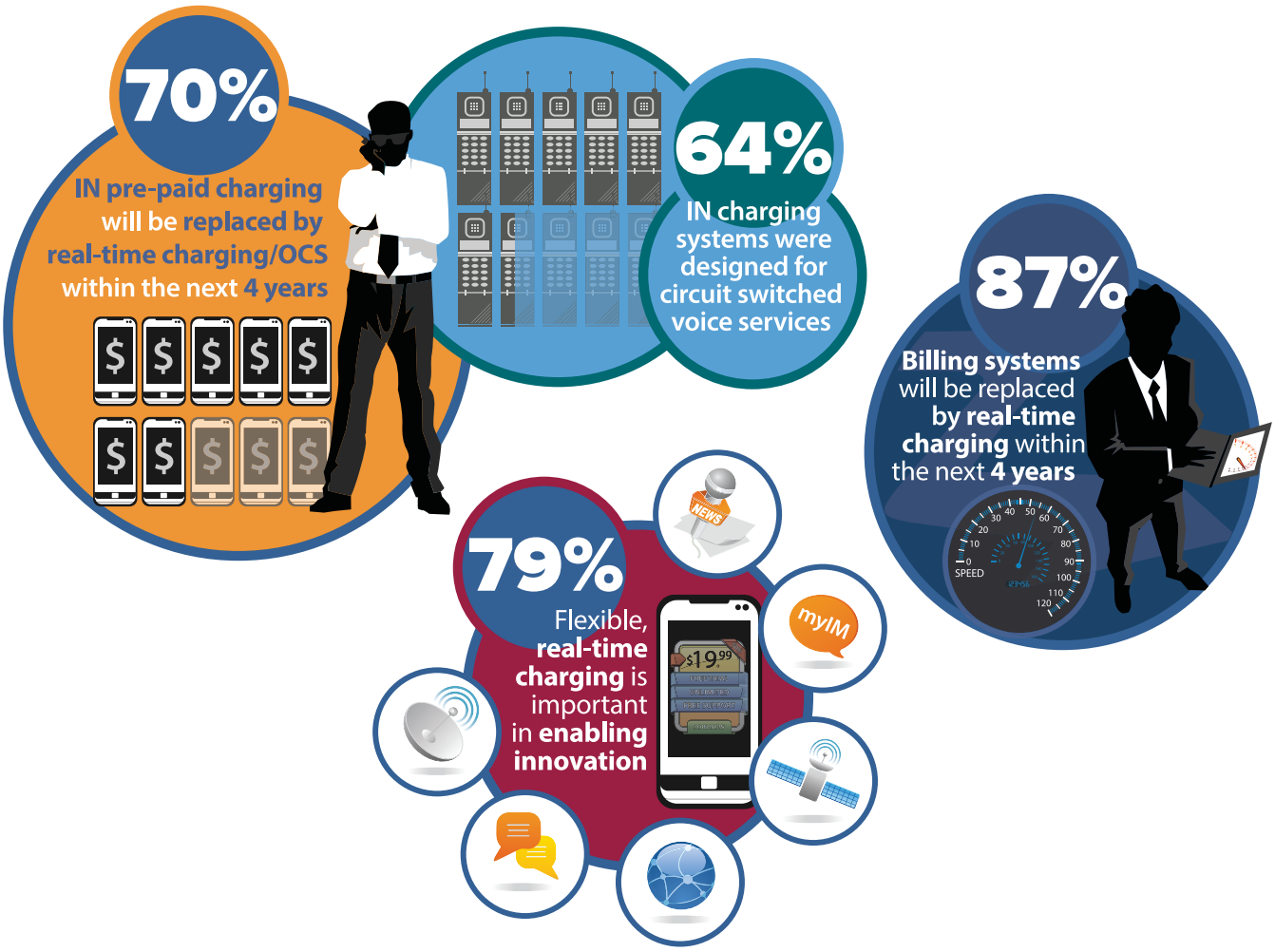

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vice president of sales and marketing at Infonova

Helene Graham,
CTO at eircom Group

Andreas Gabriel,
vice president of product management at infonova

Consolidate system stacks and accelerate time to market with multi-tenant BSS

The starburst of services CSPs' BSS now have to support has meant CSPs are moving away from the one system per service approach that has seen an architecture of stovepiped stacks created. Those stovepipes now have to be broken down and CSPs are looking to re-use BSS to support multiple services simultaneously. Here, Andreas Opelt, the vice president of sales and marketing at Infonova, tells VanillaPlus how CSP attitudes and requirements are changing. Infonova customer, Helene Graham, the CTO at Ireland's largest telecoms provider eircom Group, which has recently deployed Infonova's R6 concept-to-cash platform, and Andreas Gabriel, the vice president of product management at Infonova, join the discussion. ▶

VanillaPlus: Are CSPs looking to BSS with multi-tenant capabilities to consolidate several businesses onto a single platform? Is this approach recognised as the means to avoid further fragmentation of scattered CSP IT landscapes?

Andreas Opelt: CSPs have not looked as intensely at this consolidation as you would expect. In the past, just a small percentage of CSPs requested a BSS that was able to consolidate all of their traditional businesses into a single platform. The majority looked for separate stacks for their consumer or enterprise businesses, as well as other businesses like M2M.

When we created the first multi-tenant BSS solution – Infonova´s R6 – we investigated why this recognition and demand on the CSP side was so low and found two main reasons. One is that each BSS stack has an owner and, in times where revenues are being generated adequately, it is easier to leave responsibilities as they are. The other reason is that few were aware that platforms providing this choice were available.

This was not surprising as very few vendors – almost none – offer real multi-tenant capabilities and that meant few CSPs saw a reason to risk consolidation issues when there were no proven solutions out there. Recently things started to change with the availability of platforms like R6 enabling this consolidation and revenues declining massively and necessitating transformation.

Helene Graham: There are several factors that influence the platform that a CSP chooses for BSS but two of the most important ones are cost of implementation and time to market during and after the implementation. The part of a BSS implementation that takes time, and requires substantial internal technical resources and that is never out-of-the-box, is the integration into the fulfillment parts of the network and the parts that control inventory.

By choosing a multi-tenant platform this integration only has to be done once for every service, which helps enormously with the implementation. It means that new services can be introduced as required or to all businesses at the same time, which reduces total cost of ownership significantly.

It is very important that the solution for multi-tenancy offers the different business units the opportunity to work completely independently of each other in terms of how they make the service into a product and proposition for their specific customers. That involves having different product catalogues, eligibility rules and process flows. It is also important for companies like us that commercial and customer information from one tenant are completely protected and cannot be seen or accessed by other tenants.

VP: Do CSPs see the benefits of accelerated time to market from using a pre-integrated end-to-end, concept-to-cash system instead of best of breed siloed systems? How important is time to market to CSPs?

Andreas Gabriel: Time to market has multiple aspects and is definitely a very important factor for CSPs. Almost 80% of the changes to the product portfolio of a CSP deal with refurbishing the existing product portfolio with new charges, promotions and allowances in order to provide new flavours of already available services. Another 15% of the changes deal with more complex updates of the existing product portfolio such as changing usage rate plans or introducing new bundles. An integrated platform like R6 with a central product catalogue allows this flexibility as it enables these types of changes through configuration in the product catalogue.

Only 5% of the changes in the typical product portfolio of a CSP deal with the introduction of new services. Again an integrated concept-to-cash platform like R6 provides a lot of benefits as the system integration work for new services is typically limited to updating the order capture and feasibility rules, integrating the service activation systems and integrating the usage feeds of the service.

HG: Time to market is everything to CSPs both in terms of cost of implementation but also in terms of commercial opportunity. However, time to market is difficult to define and benchmark across operators because it is so individual. In eircom we accept that integration of new services is time consuming and that we should not cut corners when doing this but in reality we don't introduce new services every day so we can accept longer time to market for this.

However, we introduce new products regularly and it is in this area that we have to be fast and effective. One system for concept-to-cash is the holy grail for a CSP. Having to persist with changes through a multitude of systems is time-consuming and often it means that you have to go for the lowest common denominator across your stack.

VP: What challenges do CSPs face in enabling multiple digital services without the costs spiralling out of control? Is the current strategy of creating a new BSS stack or adjunct system for each new digital service a good decision or are CSPs doing that simply out of necessity?

AO: From what we see in our work with analysts, directly with CSPs but also within innovation catalysts around digital services in TM Forum,

By choosing a multi-tenant platform this integration only has to be done once for every service, which helps enormously with the implementation

I think it is fair to say that it is only in the last couple of years that CSPs have started looking at non-native digital services

CSPs are facing different challenges by entering the so called digital economy. Let's just mention three of them. First, CSPs are used to selling products based on their traditional services like fixed or mobile voice and data and their organisational structures are designed to support these traditional business models. This suddenly becomes a challenge, when CSPs have to come up with business models or even business cases for a new service portfolio.

Second, there might be stakeholders who come up with these new revenue streams and a well-structured new business model based on new services – mostly combined with traditional telecoms services. However, they might rather bet a smaller amount of revenue on such an unknown terrain and suddenly face the challenge that the business case is hard to argue. Both options, either building this required new functionality into various different IT legacy systems or buying a new BSS stack for this one new business model, are costly.

Finally, the pressure CSPs' decision makers face via KPIs and goal setting from shareholders that a certain new business has to be in place by a certain date leads to the unreasonable but understandable decision that a new BSS stack is bought to fulfill promises. This approach is taken even though several further business models are waiting around the corner for their turn to get their BSS requirements fulfilled which would require an overall CSPs strategy for the BSS side of such business models.

HG: I think it is fair to say that it is only in the last couple of years that CSPs have started looking at non-native digital services and where we are all starting to have views about how we would like to address this opportunity only a few of us have embraced it fully. I think this is because CSPs in general were late to realise that this was an opportunity to make a richer offering to our customers and therefore largely let the OTTs take charge in the consumer space.

For eircom one of the key criteria when choosing our platform was that it had to facilitate an easy integration of digital services into the customer interaction lifecycle and that it would make the reconciliation against the third party delivery as easy as possible. We believe that to achieve this, it is crucial to have an architecture that has multi-tenancy and a sophisticated concept-to-cash framework on the service provider side as well as on the service operator side.

VP: What are the billing and charging features that are really needed to keep up with current and future demands?

AG: Billing and charging is already quite commoditised and most of the platforms out there provide an equal set of complex features with slight variations for the definition of usage and non-usage charges. As there was a trend to very complex products with pricing models depending on multiple factors for telecoms services in the consumer mass market segment over the last decade, the BSS vendors developed a sophisticated toolkit of different charging functions and policies that allow a lot of flexibility in the definition of charging strategies especially for network oriented services.

Nowadays we see an opposite trend towards bundling of multiple different services with simple charging models that are easy to understand and allow the customer to take control of the services and its charges. Pricing is no longer the only differentiator but quality of service gets more and more important. This makes a lot of the complex billing and charging functions obsolete but require flexible bundling and convergent charging functions as well as efficient processes that provide immediate feedback to the customer.

AO: The focus in the future will be on features which allow flexibility in the charging models towards CSPs but also in the billing or settlement required. Other more complex models where one CSP's service can be sold cheaper in conjunction with, for example, an advertisement service are the sort of demands we are talking about which open new revenue streams and business models for CSPs.

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Introduction

Historically, communications service providers (CSPs) bill and charge systems have performed the essential role of assuring revenues. CSPs implement bill and charge systems as the core revenue management function of business support systems (BSS) in tight integration with the other BSS core functions such as product management, customer management and order management. Bill and charge technology has evolved from the traditional BSS focus on billing, charging and settlement to also handle the OSS-enabled product catalogue of services, products and offers. CSPs have put a premium on developing their revenue and billing management systems to address the pricing, inventory, marketing and channel elements required to adapt billing and charging to their evolving service offerings and customer demands

As a result, the service bill and charge market segment plays a key role in the evolution of the digital services ecosystem forming an integral complement to the service creation, service fulfillment and service assurance elements of back-office environments. The robust expansion of digital content coupled with the proliferation of devices, such as tablets and smartphones, has driven CSPs to adopt new service billing approaches. This rapid evolution has resulted in the taxing of network management resources, but also fueled the expansion of disparate network management platforms needed to cope with the vast array of device adoption. In addition, the expansion of multi-vendor and multi-service implementations has contributed to the increase in overall network management complexity.

Even with these tectonic shifts in the CSP universe, the CSPs continue to adapt their OSS/BSS environments to bill and charge customer not just for traditional telco services, such as voice and bandwidth, but for the expanding array of new digital services, such as HD video and online music. Innovation in charging and billing will play a pivotal role in the ability of CSPs to differentiate their native services from OTT content alternatives using proprietary app stores or unwieldy credit-card charging mechanisms.

This report analyses the following aspects of the service bill and charge market:

- Service bill and charge market realities
- Key service and bill market drivers
- Top CSP bill and charge pain points
- Emerging bill and charge vertical market segments
- Bill and charge supplier market opportunities
- CSP bill and charge solution evaluation actions
- Service bill and charge competitive landscape

The author, **Ron Westfall,** is research director for service provider infrastructure at Current Anaylsis

Service bill and charge market realities

Current service billing market realities compel CSPs to transform their billing and charging management platforms to compensate for the decline of traditional voice revenues while also improving average revenue per user (ARPU) metrics. In addition, CSPs continue to wrestle with their OSS/BSS environments causing delays in the deployment and scaling of new services and applications. Many CSPs still confront time-to-market barriers in aligning their billing and revenue management systems to support new services. This challenge has not alleviated CSP customer churn challenges as OTT alternatives have at least influence some consumer behaviour patterns that can dilute even the more sophisticated billing packages for advanced offerings such as multi-screen video (MSV) services.

Furthermore, CSP OSS/BSS silo legacies continue to stymie billing and revenue management platform innovation. Many CSPs still lack end-to-end network and subscriber-centric revenue, cost, and margin visibility and the real-time network analytic tools needed to study the outcomes of operational changes on monetisation initiatives, customer behaviour, network upgrades and billing changes to name a few. The gap in real-time views links to many BSS functions, particularly billing and revenue management, that operate within hidebound legacy silos leading to untapped knowledge of vast amounts of network and subscriber data.

Service billing and revenue management suppliers seek to address these CSP legacy BSS limitations via the creation of platforms that incorporate a greater degree of open standard-based and real-time capabilities. The new billing and revenue management solutions often leverage industry-wide initiatives in the CEM, network virtualisation and SDN realms to advance service billing technology. Further suppliers have invested heavily in developing single platform convergent bill and charge systems designed to ease operator support of traditional service models, such as voice, with new integrated services, such as multi-service video. Typically they support integrated revenue management, policy management and billing functions to ease operator transitions toward adopting open programmable billing and revenue management systems and scaling new services.

Service bill and charge market direction

Service bill and charge management solutions now support a wider array of real-time contextual features that enable operators to realize emerging strategic priorities. These priorities include self-service billing, personalised and customised billing, intelligent billing, charging and policy integration in overall OSS/BSS environments, fraud detection, and smarter marketing campaigns. Billing and revenue management suppliers rely more on network analytics to better apply network and subscriber data to boost monetisation potential. The monetisation capabilities address a wide range of CSP goals that include improving customer retention, delivering personalised ads and extending customised and tiered billing options to customers. In addition, adoption of service layer orchestration has improved the synergies between billing, charging and policy systems with formally disparate assurance, audit and governance platforms. CSPs now have more choices in realizing control over the revenue chain and identifying risks to customer loyalty and satisfaction as well as billing veracity. Service billing platform suppliers have also put increased development and marketing emphasis on using open standards to ease integration with proprietary BSS/OSS platforms as well as complying with ongoing standards efforts to render BSS/OSS platforms more standards oriented, such as TM Forum's Frameworx Solution Certification.

Service billing and revenue management suppliers have developed and positioned their platforms to support CSP investment focus in the following areas:

- Revenue Management
- Convergent Billing and Charging
- Business Intelligence
- Business Optimisation
- Charging and Policy
- Operator CRM
- Mediation
- Revenue Assurance
- Fraud Management

These expanding service bill and charge applications are linked to operator imperatives to use billing and revenue management platforms to deliver billing attuned to real-time transactional models and tiered services.

Key service bill and charge market drivers

A key element in CSP adaption strategies to shifting market realities centres on capitalising upon major near-term industry drivers. Such an approach remains instrumental to the CSP strategy of using billing and charging assets to better manage and control their customer relationships. Likewise billing and charging suppliers must prove they are identifying and paying close attention to the industry drivers moving CSP billing strategies. CSPs have put more strategic emphasis on evolving the bill and charge system component of their overall OSS/BSS back-office environment. The limitations of traditional (less flexible) billing models have become evident with the advent of more complex devices and networks and increased sophistication on the part of consumers and the need for more customisation on the part of enterprises. Billing and revenue management systems have become ever more essential to CSPs as they make the strategic shift toward monetising more of their infrastructure and back-office investments to creating intelligent marketing campaigns, services, and applications.

The transformation of billing and revenue management systems also links to the operator imperative of winning the customer experience battles against OTT players and other operators. Winning the customer experience battle rests heavily on meeting evolving customer demands for more proactivity and personalisation in their billing packages. CSPs have used billing and revenue management system transformation to shape innovation of new service offerings in areas such as M2M, cloud-based services, and x-aaS offerings such as SaaS, IaaS and PaaS. The following service billing industry drivers will likely exercise heavy influence over CSP and billing supplier decision making over the next six to twelve months:

- **Proliferation of Non-PC Digital Traffic:** The Cisco Visual Network Index projects that by 2017, non-PC devices will account for 49% of total IP traffic, demonstrating the effect of web-enabled TVs, tablets, and smartphones on the way consumers access and use the internet. This is a prime example of the challenge CSPs face in both scaling the traffic and meeting more sophisticated customer billing expectations in areas such as BYOD, M2M and MSV environments. This puts a premium on adopting service billing and revenue management technologies that meet more diverse and complex customer billing demands.

- **Customer Control Demands Mounting:** Accelerated adoption of smart devices has given users increased knowledge about their services, devices and applications resulting in increased demand for more control and personalisation. The demand for more control has obliged CSPs to offer real-time flexible charging and billing options as customers become less satisfied with one size fits all postpaid plans and seek billing plans optimised for their needs.

- **Open Network and Billing Expansion:** The rapid increase in smart device adoption as well as the ascending popularity of social networking has obliged CSPs to become more willing to open their networks to drive service billing innovation. The move to openness includes expanded integration of third-party revenue management applications and links to adoption of emerging OSS/BSS standards including SDN-based orchestration capabilities.

- **Intelligent Infrastructure Build-out:** CSP investment in big data platforms and network analytic tools entail adoption of revenue management systems that support enhanced billing efforts. The emergence of OTT players that challenge traditional operator revenue sources, such as voice and SMS, has accentuated the need for CSPs to mine new revenue sources and assessing the potential to sell data about the network quality and customer experience properties to third parties. This extends to flexible billing schemes, such as tiered services and customer-driven billing plans, and using network intelligence to derive revenues from OTT content sources.

- **Cloud Model Ascent:** More CSPs look to transition from in-house development of applications and complex back-office management by adopting cloud-based managed services. This process gives CSPs increased flexibility to focus on core business areas such as billing and revenue management and increased flexibility in developing new business models.

- **Reducing Service Billing Tool Fragmentation:** Many CSP networks continue to struggle with disparate network management platforms and tools designed to support different tasks and interfaces. This network management system legacy has proven a chief culprit in advancing operator efforts to innovate new pricing models and service options in order to buoy their long-term competitive prospects. CSP investment in unifying service billing and revenue management, such as integration of charging, billing and policy platforms, will elevate service billing prioritisation in overall real-time OSS/BSS transformation efforts.

Top CSP bill and charge pain points

Complimentary to staying on top of major market trends, billing and charging solution suppliers need to accurately identify and target CSP pain points. Up to date knowledge of CSP challenges in meeting customer billing and charging demands – both consumer and enterprise – requires vigilance. The somewhat indeterminate threat posed by OTT content alternatives hammers home the point. At the least billing and charging suppliers must address the following CSP pain points to remain competitive in the space:

- **Improving Time-to-Market Intervals:** The era of requiring at least a twelve month time span to complete the creation to billable-ready process of new features, such as a basic voice app, is rapidly receding. Bill and charge suppliers must address the crucial pain point of removing the time to market barriers that run virtually across the entire CSP back-office universe. Now new apps, especially IP-based ones, must be ready in time frames of weeks, days, even hours. Requiring multi-month ramps to produce a new service or app ready for billing has proven a significant barrier to advancing overall innovation and stifled CSP progress in maintaining a vital link in the overall digital value chain.

- **Future-Proofing the Back-Office:** The CSP desire for future-proofing its overall network, let alone the back-office, has percolated for decades as a pain point. However it has taken on a new tenor and priority as the historical build-out of separate silos for supporting additional iterations of OSS/BSS functions has taken its toll. Without progress in de-siloizing their back-office, CSPs will continue to struggle in their quest to remove the potential billing and charging bottleneck in their network upgrade and expansion efforts.

- **Reducing Order Complexity:** CSPs grapple with in-house order management complexity including internal customer relation management (CRM) tools. The customer service representatives for many CSPs can struggle with order process entanglements, such as confusing interfaces, relying on outdated and irrelevant data for customer orders, and non-cooperative network activation elements. Likewise CSPs must invest in customer-facing interfaces that simplify the overall customer service support experience in order to contain and reduce customer churn rates stemming from dissatisfaction and aggravation.

Emerging bill and charge vertical market segments

Progress in resolving pain points will aid CSP efforts to better target industry and enterprise verticals as they continue to seek the diversification of their revenues streams. The vertical expansion process will oblige CSPs to invest in upgrading and modifying their bill and charge systems to address the specialised needs of key emerging verticals. Although CSPs have offered managed services to enterprises for many years, meeting the new demands of meta-verticals, such as M2M and enterprise management verticals, as well as specific verticals, such as utilities/energy, automotive/transport, and health/medical will require adaptation of revenue management and billing systems.

- **Enterprise Management Integration:** CSPs plan to build-out their enterprise management assets as an integral part of their managed cloud service strategies as well as improving already established enterprise managed services. To meet this uptick in demand for enterprise management resources, OSS/BSS suppliers have invested more or acquired enterprise management assets to improve the bill and charge elements of their E2E back-office propositions. This includes supporting the billing of emerging cloud-based enterprise applications, such as dynamic bandwidth capacity and per network segment SLAs, and business VoIP services targeted specifically at SMB needs.

- **M2M Managed Services:** More mobile operators seek to go up the M2M value chain beyond connectivity services, adding E2E solution bundles for particular applications that can include connectivity, hardware software, and back-office capabilities that include billing, provisioning, activation, SIM management, alerting, and device management capabilities. Many operators will look to cater M2M managed services toward SMBs that command fewer resources to scale M2M networks.

- **Utilities/Energy:** CSPs continue to invest resources in building up their credentials and expertise in managing smart utility networks. Bill and charge suppliers have ramped up solutions that can manage data from smart meters, support dynamic tariffs/rate plans and prepaid energy consumption. With the build-out of smart grids, utility networks will take on the characteristics of a M2M architecture giving CSPs additional marketing ammunition to persuade utilities to entrust managed M2M services with them.

- **eHealth/Medical:** CSPs have stepped up their targeting of the eHealth/Telemedicine vertical including solutions that offer a single SIM card for supporting multiple applications across multiple regions under a single billing scheme as well as flexibility in pricing models, billing formulas and service enablement. The solutions also use partner mediation tools to enable third-party application integration and compliance with stringent medical privacy laws such as HIPAA in the US.

- **Automotive/Transport:** With the rapid adoption of GPS-enabled navigation and other location-based solution (LBS) technologies, CSPs have ramped up their transportation telematics solutions, including the use of sensors to manage, charge, and bill logistic services. CSPs have taken steps to align their billing platforms to support M2M-based applications that improve automotive economics in areas such as fuel efficiency monitoring, insurance metering and auto-payments for auto financing.

Bill and charge supplier market opportunities

In addition to addressing CSP pain points and capitalsing on industry trends, bill and charge suppliers must pinpoint the market penetration and growth opportunities that the recent market turbulence has produced. These new opportunities have proven manifold and include (alphabetically):

- **API Management Diversification:** Many service billing and charging suppliers have accelerated their development of API management technology to ease CSP adoption of third party applications, especially for service creation ends. Many top-tier suppliers will look to bundle API management along with billing solutions in comprehensive OSS/BSS packages. With robust API management capabilities, CSPs can boost their value within multi-party digital ecosystems by providing a secure and scalable environment for API development and integration.

- **Cloud Billing and Charging:** The rapid growth in cloud services has spurred billing and charge supplier portfolio development innovation. This includes preparing billing systems to handle public, private and hybrid cloud models as well as handling billing and charging for wholesale and retail cloud services. The end-to-end (E2E) multi-tenant cloud model, whereby the CSP's wholesale cloud network is virtually partitioned and configured to serve individual customers, has proven an impetus for revenue management portfolio investment and differentiation.

- **Cloud Broker Platforms:** Closely linked to cloud billing opportunities is cloud brokering platform potential. These platforms enable CSPs to grant third parties the right to negotiate deals with enterprise customers. The cloud broker can exercise the authority to distribute services across multiple CSP cloud networks in order to save costs for the customer. This process can include extending APIs and modified UIs to streamline the underlying complexity of the overall adoption process and present a single view to the customer.

- **Data Roaming Transparency:** Sticker shock from unanticipated data roaming charges, especially international roaming, has sullied the reputation of CSPs taxing their customer support and bill resolution resources. As a result, many consumers have shut down their data roaming to avoid potentially steep charges. Bill and charge suppliers will now look to put increased product development emphasis on providing data roaming tools and alerts that increase transparency as well as increasing consumer and business knowledge of data roaming charging parameters. This includes sending out alerts to users as they approach their roaming thresholds and linking bandwidth upsell opportunities to users when they reach their data roaming package limits.

- **Convergent Billing and Charging System Advancements:** CSPs have deployed convergent billing and charging systems for over a decade now. Even with the extensive experience with converged systems, suppliers will need to address escalating CSP demands for improvement in areas such as the simplification of mapping processes for bill production and avoiding overlay complexity in the integration of disparate revenue management and billing elements.

- **Fraud Management:** The rapid spread of smart devices has also increased the range of fraud opportunities perpetrated against CSPs. As a result, suppliers have devoted more development resources toward fraud management systems designed to detect and trace fraud activity across CSP networks and services. Fraud management solutions will use more network analytical tools to identify and respond to new and emerging fraud scenarios in order to prevent fraud and bill losses in real-time.

- **Mobile Billing Flexibility:** Bill and charge suppliers will increasingly target the burgeoning mobile billing market

segment, particularly as single platform flexibility for handling all customer types, such as postpaid, prepaid, hybrid and enterprise, expands. The expansion of prepaid mobile services in developed regions, alongside refinements in the billing of bundled services presents new opportunities for differentiation. Wi-Fi policy billing appears poised for accelerated adoption as CSPs explore network intelligence methods to improve and optimise the offloading of cellular traffic onto Wi-Fi networks.

- **Policy/Billing Bundling:** CSPs have increasingly requested and adopted tight bundling between bill and charge systems with policy control platforms. Policy control platforms use multi-dimensional subscriber and network analysis, also including simulation tools to provide insights into the impact of network policies on subscriber behaviour including purchasing and order patterns. As a result CSPs can extend more flexible billing options to customers including self-care portals that meet the personalisation preferences of consumers and the custom billing needs of enterprises.

CSP bill and charge solution evaluation actions

CSPs face the constant challenge of selecting charge and bill solutions that optimally meet their requirements. As a result, CSPs are compelled to determine what evaluation factors to consider and weigh before buying and adopting a new charge and bill solution or upgrading an already installed solution. The following action items merit consideration in the CSP buying decision:

- CSPs should take the opportunity to work closely with their service bill and charge suppliers to improve the integration of billing/revenue management systems with service catalogues. Tighter integration can improve cross-sell and upsell opportunities to consumers in areas such as bandwidth upgrades, music services and HD video.

- CSPs need to evaluate service billing platforms in their ability to deliver real-time, location-based contextual views. This will prove essential in executing on escalating customer real-time billing demands in evolving environments such as consumer multi-screen video packages and mobile transactions.

- CSPs need to explore how to cultivate network analytics to improve their marketing campaigns including the refinement of precision targeting of groups of customers, context-awareness and rendering data usage transparent to customers. This can improve on the limitations of basic opt-n programs while potentially monetising knowledge of customer usage patterns without annoying the customer.

- CSPs need to investigate how they can make use of social network media data such as Twitter, Facebook and message boards, while respecting privacy bounds to enhance overall service billing management. This can prove a valuable source for identifying and prioritising customer concerns and initiating proactive fixes that offload call center and customer service support resources.

- CSPs should assess ways to improve their in-house CRM assets to improve and enhance the ability of customer service and call centre representatives to execute and modify bill and charge orders. Improving both the internal and customer-facing purchase and billing experience, via intuitive guard-railed ordering processes, can elevate the customer experience in using CSP services, boosting the buying experience up to par with feel-good purchase brands such as Amazon and Apple.

- CSPs need to discern how to extend their bill and charge capabilities to include smart device point-of-purchase situations. By enabling consumers and enterprise to use their smart devices as virtual wallets, carriers can substantially widen their monetisation opportunities as well as the stickiness of their customer relations.

Service bill and charge competitive landscape

With dozens of players asserting some form of CSP service bill and charge solution, solution vendors, now more than ever, must craft effective sales and marketing campaigns and portfolio development initiatives to capitalise on the new revenue management business opportunities in the CSP market. This includes crafting marketing messages that speak to addressing CSP pain points in adjusting their bill and charge management approaches to meet new customer billing demands. As a result standing out in the crowded service bill and charge segment has become yet more challenging but also more critical to winning overall OSS/BSS integration and transformation battles.

Most recently five players have raised their profiles in the service bill and charge space through a combination of new marketing

initiatives, acquisitions and platform development investments. These include bill and charge solution suppliers operating as subsidiaries of parent companies such as Cycle 30 and Infonova; Orga Systems, a German-headquartered real-time charging and billing specialist with over 20 years deployment experience; Redknee, a pure-play BSS player that recently increased its headcount fourfold with the acquisition of the NSN BSS portfolio; and Openet and a real-time network transaction management software specialist.

All these players have advanced similar sales and marketing and product development themes in areas such as improving in-house and external CRM tools, boosting visibility of the network, scalability and cost improvement. However, these players emphasise distinct areas of focus and strength to help differentiate their service bill and charge solutions. These include tight integration between policy control systems and bill and charge systems (Openet, Redknee), applying scaling and latency metrics for evaluating real-time charging and billing solutions (Orga Systems), strategic focus on E2E multi-tenant cloud models for Tier 2/3 CSPs (Infonova) and approaching the market from a robust operator heritage (Cycle30).

The last word

CSPs have increasingly acknowledged the necessity of moving beyond the lip service of reducing OSS/BSS silos within their back-office but also throughout their entire organisation. More than ever CSP use cases hinge on linking new services to upgraded service bill and charge capabilities and options. To execute a successful transition to open next-generation OSS/BSS architectures, operators need to capitalise on market drivers such as adoption of predictive performance management tools, intelligent infrastructure build-outs, real-time OSS migration, streamlining service billing systems and using smart devices and social networking sources to improve their overall service bill and charge proposition.

Today CSPs continue to command the billing and charging expertise and assets to engender customer trust in their services. CPSs will modify and evolve their billing capabilities to support third party apps that customers demand to render their networks indispensable. Essentially billing embodies the crown jewels that empower CSPs to play an essential role in the overall digital value chain.

COMPANY PROFILES

Company summary

Founded in 2001 Cycle30 became a separately operated of subsidiary of GCI, Alaska's largest communications and cable provider, in 2010 in order to compete for other CSP business. The company's headquarters are in Seattle, Washington, USA and it has three research and development (R&D) facilities in India. Cycle30's primary data centre is located in Aurora, Colorado, USA with recovery and on-demand data centres in Scottsdale, Arizona, USA and Philadelphia, Pennsylvania, USA. It has international sites located in Toronto, Canada and London, UK. Cycle30 positions itself as a provider of hosted order-to-cash billing services for telecoms, cable and utility operators. The company employs 200+ staff although GCI does not break out Cycle30 revenues. Cycle30's announced bill and charge customers include parent company GCI, Arrow Electronics and Device Cloud Networks.

Bill and Charge credentials

Cycle30 provides order-to-cash billing services, hosted in the cloud for CSPs, utility operators and machine-to-machine (M2M) services. Cycle30 positions itself not as a software company, nor as a systems integrator. Rather it operates an integrated platform of commercial software and systems as a hosted service, designed to enable CSPs to focus on their core business missions. The Cycle30 platform includes:

- Customer Management: The Cycle30 Customer Management suite is designed to support account management functions for the CSP's call centre user interface. It integrates the customer functions of the Cycle30 platform and can be customised to meet operator presentation and screen workflow needs.
- Service Fulfillment: The Cycle30 service fulfillment solution provides pre-built workflows and integration to fulfill the order upon completion.
- Billing and Revenue Management: The Cycle30 billing and management solution uses the Cycle30 product catalogue to provide the billing and rating engine required to define CSP offers.
- Service Assurance: The Cycle30 service assurance solution addresses the maintaining of CSP services, diagnostics and driving revenue assurance.
- Integrations: Cycle30 provides a set of pre-set workflows and integrations to fulfill CSP service and product orders upon completion.
- Business Intelligence: Targets unlocking the business intelligence in CSP billing data and better understanding customer habits, trends, purchasing behaviour and focusing monetisation efforts.

Key differentiation

Cycle30 emphasises the company's robust CSP heritage as part of the GCI organisation giving the company direct insight into CSP needs. Operating as an independent entity since 2010, Cycle30 believes the company entered the bill and charge market at a self-beneficial inflection point by offering a fresh platform approach that avoids legacy limitations. It believes that approach drives sales and marketing goals based not on the supplier's internal software development schedule but the CSP's specific transformation needs. Cycle30 devotes resources towards developing a guard-railed user interface (UI) technology that simplifies the order management process for CSP customer service reps and customers alike. Cycle30 touts avoiding CSP data hostage scenarios with its flexible analytics app and avoiding extra charges for use of its APIs. Finally Cycle30 looks to apply its M2M deployment track record to sell into the utilities segment.

Competitive pressures

Cycle30 lacks in-house software assets which could limit its ability to drive some legacy bill and charge transformation projects. The company relies on non-exclusive supplier relations, such as with ETI Software, to complete its solutions, curtailing its control over managing end-to-end deployment scenarios. Despite operating as an independent concern, the GCI ownership arrangement may cause sales barriers with other CSPs. Cycle30's lack of a legacy customer base may also curtail its ability to influence some CSP BSS transformation environments. Moreover, beyond the three notable announced customers, Cycle30's current and near-term customer base diversification prospects remain unclear from a public domain perspective.

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infonova

Company summary

Infonova is a private company that was founded in 1989 and currently a wholly owned subsidiary of BearingPoint, a technology and business consultant firm. The company's headquarters are in Graz, Austria. The company specialises in providing technology and business-oriented solutions and services to CSPs, media, utility and convergent industries. Infonova employs 350 employees while parent company BearingPoint employs 3,800 employees. The company claims over twenty customers, including the EMEA and Oceania regions. High-profile customers include eircom, iinet, A1 Telekom Austria, ALBtelecom, HD Plus, MDCC and SAG.

Bill and Charge credentials

The Infonova portfolio encompasses products, solutions and services in the area of BSS, managed hosting, support and operations, technology consulting, systems integration and professional services. Infonova´s flagship product R6 is designed as a multi-tenant BSS platform that targets concept-to-cash lifecycles. This includes billing, CRM, product and order management as well as finance. Infonova asserts the R6 simultaneously supports both the traditional telco business as well as complex cross-industry business models. Due to R6´s integration and ecosystem orchestration capabilities, it

participates in CSP bids for integration into existing back-office environments. The R6 E2E Concept-to-Cash portfolio includes:

- R6 Product Management: The R6 Product & Service Catalogue Management (PCSM) supports the bundling and pricing of legacy and next generation services in consolidated catalogs that are integrated into the billing process.
- R6 Customer Management: The R6 Customer Management platform supports customer information management, customer case management and product and service inventory management functions.
- R6 Order Management: The R6 catalogue-driven Order Management product manages the lifecycle of customer service request and delivers order capture, order management and service and resource fulfillment capabilities.
- R6 Billing: The R6 Billing product extends mediation, rating, invoicing and bill formatting capabilities to suppler cloud, legacy and transformation environments.
- R6 Finance: The R6 product delivers accounts receivable and collection management functions needed to meet operator revenue and cash flow goals.
- R6 Platform and Business Management: The platform enables customers to price and sell all or a subset of services and capabilities connected to the platform, including differentiated and similar services on a per tenant basis.

Key differentiation

Operating as a fully owned subsidiary of BearingPoint Infonova can tap into its parent company's global channels, especially in the European theatre. BearingPoint is just one channel partner and Infonova has other partners including Tech Mahindra, Cognizant and Pactera. The portfolio development and marketing emphasis on the pre-integration of the billing and CRM portfolio components enable Infonova to compete effectively on E2E bill and charge proposal requests. The company's corporate focus on Tier 2/Tier 3 CSPs enables Infonova to lessen direct competition with top-tier OSS/BSS suppliers and avoid the extended sales cycles associated with Tier 1 environments. The R6 platform's multi-tenant BSS model enables adopters to offer consumer, wholesale and enterprise services from a single platform. Infonova's customer base includes diversification into the media, utilities and finance segment to complement its core CSP customer base. Infonova believes its broker platform approach will ease customer transitions in adapting to multi-party ecosystem settings.

Competitive pressures

Infonova's customer base is heavily concentrated in the EMEA and Oceania regions leaving the company more vulnerable to downturns in those theatres. While most of Infonova's consolidation projects involve mainly Tier 2 or 3 CSPs, the company has customers and is focusing on Tier 1 CSPs for new models including cloud service broker and ICT. The nature of its portfolio will likely entail the company clashing more with top-tier OSS/BSS suppliers. In addition, Infonova's multi-tenant BSS model approach is non-unique as other rivals have already developed and advocated similar solutions.

Company summary

Openet is a private company that was started in 1998. The company's headquarters are in Dublin, Ireland. Openet with its software portfolio has built a reputation as a supplier of real-time network interaction solutions, including online charging, as well as policy and charging control (PCRF). Openet employs 850+ staff. The company's solutions have been deployed by 80 customers in 29 countries. Openet's high-profile CSP customers include Orange Group, Vodafone Netherlands, T-Mobile Netherlands, AT&T, Bell Mobility, Omnitel, Telus, Mobinil and Verizon Wireless.

Bill and Charge credentials

Openet CSP customers use its software technology to deliver services that vary according to network speed, consumption allowances, service access, and/or dynamic pricing. Openet asserts market share and presence leadership in the PCRF market segment. Today Openet positions its portfolio as meeting CSP bill and charge requirements from the network core to the mobile devices. Openet products can deliver an integrated suite of charging, policy, data management and interaction capabilities. The Openet portfolio includes:

- Convergent Mediation: Designed as a single platform for mediation system consolidation and unlocking network data to deliver business insight.
- Evolved Charging: The Openet Evolved Charging product is a convergent charging solution designed to meet the requirements for CSPs migrating to Evolved Packet Core (EPC), LTE and IMS charging architectures.
- Policy Manager: Real-time control of network resource consumption based on open-ended variables.
- Interaction Gateway: Secures real-time interaction between network systems and network users.

Key differentiation

Openet already commands an extensive footprint that includes the world's largest CSPs among its 80 customers. Openet's advocacy of deploying common rules-based engines that avoid the need to invest in vast software engineering resources has gained currency with many top-tier CSPs. Openet asserts a time-to-market lead over rivals in driving the integration of billing and policy systems in CSP networks. Likewise Openet asserts differentiation as one of the first vendors to extend policy control to mobile devices. The company continues to accumulate valuable deployment experience from its presence in multiple top-tier CSP networks that some key rivals are unable to emulate. Openet's portfolio mix and flexibility continues to drive CSP use case validation for differing scenarios.

Competitive pressures

Openet's ability to drive overall mobile operator E2E OSS/BSS transformation projects can prove limited due to its lack of radio access network (RAN) assets. Top-tier supplier rivals can use RAN integration expertise to influence CSP decision making related to policy and billing integration direction. Thus far Openet has demonstrated limited OCS/OFCS interoperability range for its Policy Manager product. Openet still can benefit from offering productised policy analytics in its portfolio.

Orga Systems.

Company summary

Orga Systems is a private company that was started in 1994. The company's headquarters are in Paderborn, Germany. The company has gained its reputation as a supplier of real-time charging and billing solutions with an international customer base that includes CSPs, utilities and the automotive segment. The company employs 800+ staff and claims its products support next-generation services for 400 million+ subscribers throughout the EMEA, Southeast Asia and Latin American regions, including North Africa and the CIS sphere. Orga Systems possesses 40+ CSP customers including A1 Telekom Austria, Turk Telekom, Telecom Italia, TIM Brazil, Entel Chile, Sunrise Switzerland, Personal Argentina, América Móvil, Telia Sonera, Meralco Philippines, and Deutsche Bahn NETZE.

Bill and Charge credentials

Orga Systems targets CSP initiatives in transitioning from service-centric and product-centric models to a customer-centric one. This entails offering a more comprehensive view of customers and services applying network analytics to improve customer experience and retention. The company also targets CSP efforts to upgrade the traditional policy control approach with promotions, bundles and campaign management. Moreover, Orga Systems focuses on improving the diversification and enablement of CSP revenue streams. The company offers a single platform that integrates M2M services and products into client IT processes and value chains while providing features for running M2M architectures. The Orga Systems portfolio includes:

- SmartRevenue Suite: Delivers convergent real-time charging, billing and financial management. Real-time capabilities include support for prepaid, postpaid, hybrid and corporate subscribers.
- SmartUtility Suite: Designed to enable real-time control and dynamic pricing based on a centralised rating engine – driving energy efficiency through dynamic energy billing.
- SmartMobility Suite: Targets monetisation of services in the connected world, including M2M, automotive, transportation and transit industry applications.

Key differentiation

Orga Systems wields a diverse footprint of 40+ customers including CSPs, energy suppliers, railway companies and auto manufacturers. The company puts portfolio development and marketing emphasis on its scalable architecture which has been tested to support more than 100 million subscribers on a single platform. Orga Systems already has a well-established presence in the utility/energy segment yielding a time-to-market advantages over rivals who have only recently targeted the segment. The company asserts the claim of lowest billing system latency – its GOLD system rating numbers registered below 3.9 milliseconds for 99.964% of all events.

Competitive pressures

As a mid-sized company Orga Systems lacks the end-to-end portfolio assets of its top-tier OSS/BSS rivals. One result is the company needs to rely more on subject to change alliances to address complementary bill and charge-related functions such as service assurance and service fulfillment. Orga Systems' penetration in verticals such as M2M, energy/utilities and transportation/automobile will become more challenging as top-tier rivals invest more resources in targeting these verticals.

Company summary

REDKNEE

Redknee is a public-traded company on the Toronto Stock Exchange that was founded in 1999 by CEO Lucas Skoczkowski with four other co-founders. The company's headquarters are in Toronto, Ontario, Canada with R&D offices in Germany, India, Poland and Spain. The company positions itself a pure-play BSS company offering an extensive portfolio aimed at real-time converged billing and charging applications as well as a pioneer with more than 50 patents issued or pending. The company has a 1600+ headcount. In December 2012, Redknee acquired Nokia Siemens Networks (NSN) BSS unit for US$52.2 million. The acquisition boosted Redknee's market presence to include more than 200 customers supporting over two billion subscribers across 90 countries. Redknee's high-profile customers include AT&T, Bakrie Telecom, Bintel Group, Digicel Group, Inmarsat, KPN Group, MTS, Orange Group, Safaricom, T-Mobile, Telefónica-O2 Group, TSTT, Vodafone Group and Zain Group.

Bill and Charge credentials

The Redknee portfolio addresses cloud-based billing, convergent billing, mobile virtual network support, online charging and policy, services, settlement and smart utility applications. Redknee portfolio focus areas include boosting traction in data charging/policy integration expanding CSP capabilities to bill and charge for OTT, third party apps, and new LTE-enabled services. Likewise the company looks to improve CSP methods for billing cloud services, including wholesale and retail cloud environments, as well as to expand in verticals with burgeoning real-time bill and charge requirements such as utilities. The Redknee bill and charge portfolio includes:

- charge@once unified: Designed to meet the specific needs of CSPs to deliver real-time, unified charging, rating and billing.
- InBill: Support CSP initiatives to improve the value of the network with interconnect, content and partner billing functions integrated with settlement and dispute management capabilities.
- PCS-5000 Policy Server: Targets enabling CSP control of network resource usage, assuring quality of experience, offering personalised services and service-specific charging.
- Price Simulator: Targets CSP efforts to automate product and service pricing through advanced analytics.
- Turnkey Converged Billing (TCB): Designed to deliver centralised business intelligence, personalised subscriber experience and billing capabilities in an end-to-end solution package.

Key differentiation

The NSN BSS unit acquisition yielded Redknee a virtual fourfold increase in headcount (from 400+ to 1600+) as well as a global presence of 200+ customers in 90 countries. With the acquisition, Redknee also harnessed policy control assets that enable the company it is the only BSS supplier with standalone NSN policy server assets for online charging apps. Redknee has put marketing emphasis on meeting the BSS-specific needs of CSPs avoiding radio tower and hardware asset tie-ins that can extend sales cycles of some top-tier rivals. Redknee continues to invest portfolio development and marketing resources in transforming the CSP retail experience and addressable market. This includes empowering the CSP to use mobile devices to bill and charge consumer items on the CSP bill and creating an Apple-like experience for consumers to purchase CSP services and products.

Competitive pressures

Despite its pure-play BSS positioning, Redknee still must compete against rivals that look to drive BSS transformation projects with portfolios that offer a wider range of OSS/BSS products as well as telecom infrastructure assets. Competitors will look to challenge the longevity of the coattail benefits of the NSN channels to distract from Redknee assertions that the integration of the NSN BSS unit has remained on target and has avoided the pitfalls that can hamstring major acquisition endeavors. Some rivals will look to position Redknee as a 'me-too' player in the utility segment as the company seeks to make further inroads beyond a low single digit customer count.
The competitive landscape profiles of these service billing competitors reflect not only the development and marketing priorities of these key bill and charge suppliers but also the challenges that operators face in meeting the evolving service billing demands of customers.

Why marketers need better billing

Traditional billing systems don't have the flexibility to support marketers and that's costing CSPs revenue and losing them opportunities to differentiate, writes Jim Dunlap

The author, **Jim Dunlap**, is president of Cycle30

What's the number one concern for every cable operator? Soaring programming costs? Competition? Keeping up in the broadband arms race? No – It's actually inflexible billing systems, according to a recent speech by Phil McKinney, CableLabs president and CEO, at an industry conference.

That shouldn't come as a surprise to anyone who's wrestled with a billing system. It's as straightforward and rewarding as doing taxes. Traditional billing systems are so complex that CSRs almost need a Ph.D. in IT just for everyday tasks such as processing orders and activating services. And when it comes to self-service, even the best portal can't shield customers from the siloed, antiquated systems clunking away behind the scenes.

Marketers are particularly hamstrung. Traditional billing systems don't provide the flexibility necessary to:

- Test new services, bundles and promotions to assess demand.
- Develop and launch services in days rather than weeks or even months to respond quickly to a rival's new offering or to get ahead of the competition.
- Bundle wildly disparate products – such as a smartphone, TV service and a pair of branded jeans – to see if there's a quirky combination that resonates with consumers.
- Expand into new, unrelated markets, such as a utility company that wants to bundle electrical, security, energy-management and broadband services for residential customers.
- Create plans and services where advertisers and other business partners pick up some of the cost based on customer loyalty or actions, such as watching commercials.
- Get accurate, timely and immediately actionable information about how a new campaign or product is faring, instead of a cryptic data dump that takes weeks to understand.
- Meet the unique and constantly changing needs of enterprise customers, such as the bring-your-own-device (BYOD) trend, which blurs the line between employee spending and employer spending.
- Quickly analyse customer spending by product, bundle or demographic.
- Target emerging markets that don't fit traditional billing models, such as machine-to-machine (M2M) applications whose data usage is too low or too unpredictable to be force-fitted into a phone plan.

The common denominator for those examples is that they're all lost revenue and differentiation opportunities. These limitations also span every type of telecoms service provider, from cable operators to telcos to wireless carriers. No wonder that marketers view billing as the barrier standing in the way of delivering innovative services and tariffs ▶

to customers, and delivering revenue to their companies.

That's why savvy billing vendors are breaking with tradition by focusing on the needs of CSPs' marketing teams. The marketers are the ones who have the ability to amp up revenue and put their companies ahead of the pack.

From revenue counters to revenue generators

Traditional billing systems basically have one role: to count revenue. What marketers need is billing systems that can generate revenue, too. That additional role requires a fundamentally different design.

For starters, the ideal next-gen billing system is flexible from a coding perspective so it can be constantly modified to meet the service provider's changing needs. Just as important, the ideal next-gen billing system enables the service provider to make those modifications on its own. That design eliminates the expense and lead time that comes with traditional billing systems, which forces the CSP to hire the vendor or third-party specialists to rewrite the underlying code every time there's a new business need. As a result, a next-gen billing system can enable the launch of new services, rate plans and promotions in a matter of days rather than the weeks or months that are typical with traditional platforms.

The ability to modify the billing system in house is particularly valuable for Tier 2 and smaller service providers because the fewer subscribers a company has, the less of a priority it is for traditional OSS/BSS vendors. Those service providers' ability to pursue new market and revenue opportunities is at the mercy of their vendors. Next-gen billing systems break that dependency.

Next-gen billing systems also give service providers the option of choosing a hosted solution, which has several benefits. First, hosting eliminates the multi-million-dollar upfront cost of buying and implementing an on-premise platform, as well as the ongoing operational expenses. Second, a hosted solution gracefully and cost-effectively scales up as the service provider grows. By comparison, an on-premise solution penalises growth by requiring major additional hardware and software investments as the customer base approaches the current platform's capacity.

The future is now

The good news is that next-gen hosted billing solutions aren't years from commercial reality. They're available now and are already shaking up cable, mobile and other telecoms markets.

For example, in Switzerland, Device Cloud Networks (DCN) is launching an M2M platform that companies can use to connect their telemetry and telematics solutions to Orange's global network. DCN's platform uses Cycle30's next-gen hosted billing solution to enable companies to provision and manage M2M devices more quickly and efficiently than if the platform used a traditional billing system. A consumer electronics vendor, for example, can use DCN's platform to design connectivity into a product or service and embedded at the point of manufacture to create a single product SKU (stock keeping unit) along with the required value-added services and web-based management for global deployment.

Meanwhile, in Dubai, a waste management company put wireless sensors in trash receptacles so it can route trucks more efficiently based on demand. The M2M deployment also enables the company to charge customers based on the amount of trash they generate. All of this benefits the company through lower operational costs and higher revenue.

Those are just a couple of examples of how next-gen billing systems are turning billing from a complex, necessary evil into a competitive asset and a revenue generator. There are literally thousands of different use cases for next-gen billing in M2M communications across virtually any industry, from agriculture to zoology and everything in between. In the process, next-gen billing systems are enabling telecoms and enterprise executives to focus on other challenges and opportunities.

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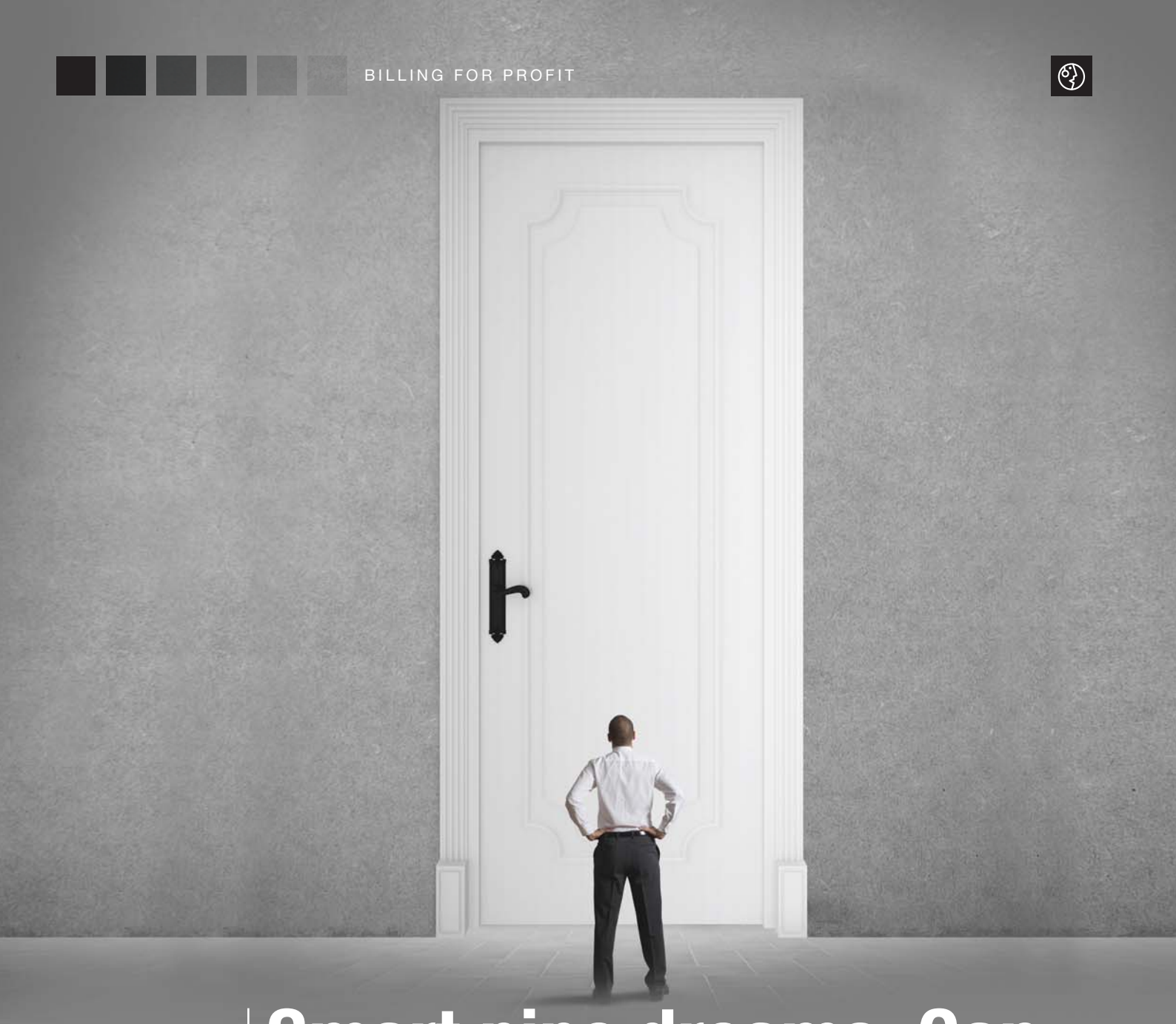


Smart pipe dreams: Can billing be big business?

The ability to track and act quickly upon real-time micropayments and the infrastructure to support them are the backbone of existing CSP billing systems; but can these systems create new revenue opportunities, asks Jonny Evans?

CSPs' ability to bill and charge customers not just for the bandwidth they consume but for a multitude of other digital services and content sets them apart from over-the-top providers confined to proprietary app stores or forced to use costly credit-card based charging. It's something CSPs do well and their customers trust them for. The billing relationship is at the heart of CSPs' ability to maintain their relevance in the digital value chain because, by making their capability available to third parties they can make their systems as well as their networks indispensable.

"Years of experience in dealing with complex post-paid and pre-paid offerings put CSPs in good stead for billing," says Rob Smith, director of market development at **MDS**.

However, there's pressure for CSPs to make better use of billing and OSS: "There's no reason CSPs can't white-label their billing capabilities in their entirety," says **weavesys** CEO, Scott Goodwin, ▶

"Doing so can provide additional insight to the volume and value that a partner is handling, which helps financial planning. Changes to legislation in Denmark for mobile contracts is forcing CSPs to look at implementing consumer financing options to their clients, for example."

Martin Morgan, director of marketing, **Openet**, sees the opportunity to turn billing into a profit centre: "Working with CSPs to provide direct charging for some goods and services can open up potentially huge new markets," he says.

It's obvious why CSPs would want to generate greater value from their billing capability, but partners might be reluctant to share revenue. "Today operator networks are seen as something of a commodity and consumers don't see the value in the network but in the applications," explains **Ericsson**'s product marketing, BSS specialist, Peter Engblom. "This is not a sustainable business model for CSPs … customers are becoming more loyal to content providers than to their operator," he says.

CSPs do bring trust to the exchange, though. Customers already pay bills and top up pre-paid accounts via their CSP. This suggests some opportunity for new partners to use existing CSP assets to provide new services – the challenge? "No one wants to share their revenue," adds Engblom. "There needs to be an incentive to set up a revenue sharing deal. Imagine a video streaming service on a poor network – it won't work. If the CSP's assets and capabilities help ensure content will be delivered at the agreed quality, it all of a sudden makes it possible to sell video services. The operator is an important part of the value chain and should be paid based on that."

It's reasonable to imagine young people without credit deals may consider using their mobile device to purchase apps and music for them, paying for their purchase via their CSP. "With the growth of partners and third parties CSPs … can offer billing services for a fee, offsetting the cost of modern and efficient billing capabilities. The challenge is whether their billing capabilities have the agility to do so. What is often missed is the link between billing and provisioning, and the change to a service," says Goodwin.

There's also an opportunity to offer payment systems to developing markets, where credit and debit card adoption is low. Making credit available via a mobile could drive new business. Users then settle their accounts on a post-paid or pre-paid basis.

Offline service provision – utility payments, healthcare, financial services – also seem ripe for payment systems based on existing CSP billing infrastructure says Smith: "Such systems could be of interest wherever there is likely to be a degree of service complexity."

How might partnerships between third parties and CSPs manifest themselves? "For example buying an app, music or watching a movie at up to nominated value, say €5, per transaction could be ok, this figure will differ from market to market and customer to customer," says Morgan. "What is important is that there is real-time clear communication and authorisation for any purchases, especially in the post-paid market where the potential for bill shock could be high if not properly communicated, managed and controlled in real-time."

There's some risk. CSPs offering these new breed services must remain watchful customers using them don't also reduce their existing use of CSP services. "For prepaid customers the trick is to ensure they don't cut back on spending on mobile usage to buy more third party content," says Morgan. Post-pay customers may be required to deliver an alternative payment mechanism to ensure against default.

Protection against default means users will have to accept credit limits, while some believe limited credit exposure – as with existing €20 limits on NFC payments – may be the road forward, others note the potential of CSPs' systems to handle this. "When we're talking about charging and billing today we are always talking about real-time, bi-directional communication. Using real-time you can always impose credit limits and offer the user the required control of her expenditures," says Ericsson's Engblom.

CSPs must also ensure transactions and authorisations take place in real-time, ensuring customers can afford purchases and in order prevent large wholesale bills from content providers arriving when no equivalent retail revenue has been raised.

Customer care is also part of the discussion. Smith believes the third party should control this for OTT services via CSP payment models; while Engblom believes customer care must be enabled to answer questions from both consumers and partners.

Rob Smith: Years of experience has put CSPs in good stead

Martin Morgan: Important there is real-time authorisation for purchases

It's reasonable to imagine young people without credit deals may consider using their mobile device to purchase apps and music

BYOD brings its own billing challenges for CSPs and enterprises

Bring Your Own Device (BYOD) has changed how employees communicate and work. The challenge for CSPs and companies alike is how to apportion costs fairly and do so in a way that is flexible, accurate and non-intrusive for users, writes Mathias Liebe

The author, **Mathias Liebe**, is director of product marketing, global at Orga Systems

Today's workforce is mobile and society and working culture has changed because of that. Users can be always-on regardless of where they're working from and that has been one of the promises of the communications revolution. It has opened doors to flexible working hours, working from home and hot desking enabling employees to find a productive and happy work-life balance and delivering enterprises with greater productivity and employee satisfaction.

The enabler at the heart of this is the mobile device. Ten to twenty years ago, enterprises started to provide employees with company phones – much as they provided company cars. The plan was those phones would be used for business calls, with employees using a small amount of private calling as an employer-provided benefit, much as company cars came bundled with a few private kilometers.

Quickly, though, companies became less happy with subsidising private usage of mobiles just as they did with company cars. In addition, the benefit in many jurisdictions became taxable. This saw some users turn away from company cars. If they were going to pay, surely they should have the right to choose their own car?

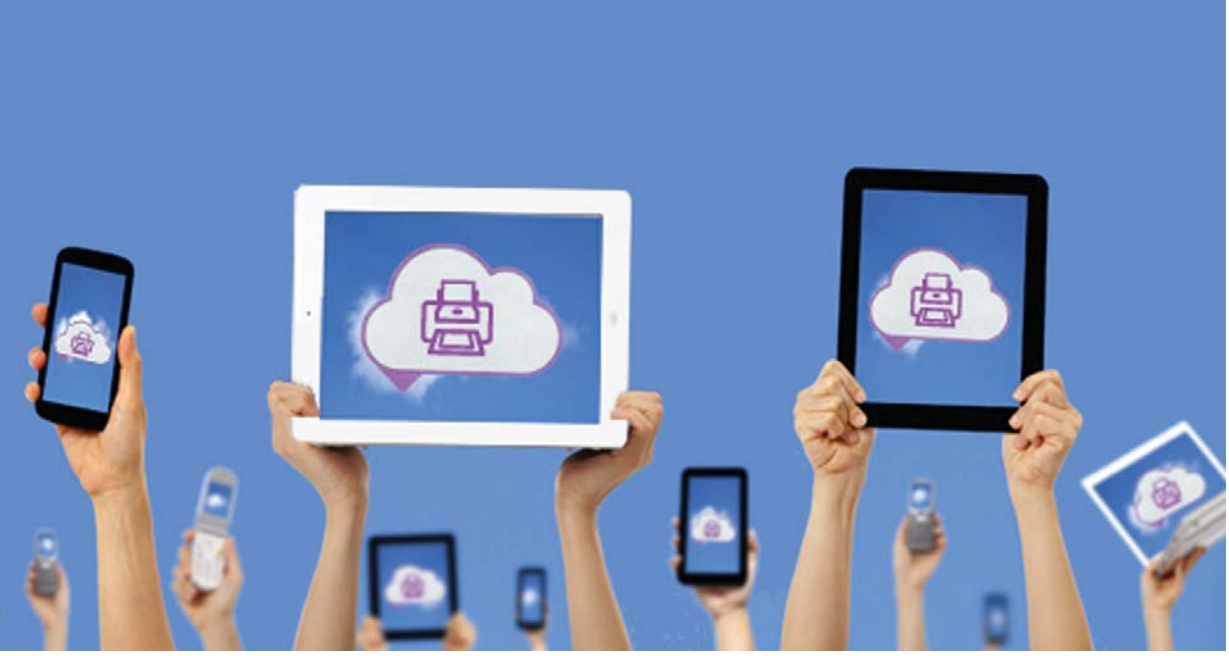
Personal problems

The same is happening now in mobile. The mobile device is so personal that users want to make their own choice. There will be obvious criteria that a work device has to meet such as whether it can run corporate apps, whether the data plan supports the corporate needs and, critically whether it can be secured. The idea of enabling employees to choose for themselves is tagged BYOD – bring your own device and companies are working to make it a reality. Before the BYOD concept emerged, split billing in which a user could switch between corporate and private usage on their device was used in some enterprises but it proved difficult to enforce and very easy for users to forget to toggle between each status every time they made a call. Now, with some large companies making BYOD participation mandatory, the same issues are being faced.

However, this time it is more sensitive because enterprises are leaving themselves open to employee lawsuits surrounding privacy and over-time. In the always-on communications environment, there's a need and requirement for employees to be off sometimes. Enterprises need to write and enforce policies regarding this.

In 2012 a Cisco Systems survey – 'BYOD – A Global Perspective' –found that while 60% of employees used a mobile device for work only 13% were designated as mobile workers. The gap between the two numbers is filled by employee initiative – those using personal devices for business communications. The question of who pays for what is therefore as divisive as ever.

Two traditional models remain: One in which the employees pay and are re-imbursed by the enterprise for corporate expenses. The problem with that is ▶



employees are required to buy a device with specific capability that they have to pay for, even if they don't use that capability outside work. There's great potential for employees to become disenchanted just as they would if told they had to buy a four door sedan with a diesel engine – with their own money – in the company car scenario.

The other model is for the company to pay, with the employee re-imbursing them for personal use. That approach results in high administration burdens and the feeling that the employee is getting away with something. In addition, this is viewed by a taxable benefit in kind by some taxation jurisdictions and therefore employee still feel they're being made to pay for something they wouldn't choose. It's the same as being supplied with a new premium vehicle and having to pay tax on the benefit in kind if you're a user that would prefer a budget vehicle and a lower tax burden.

For CSPs, this isn't an easy shift to navigate either. In the past they would agree large corporate deals and manage the device fleet of the enterprise along with the billing. Now with their previously easy to manage high volume customers fragmenting into hundreds or thousands of users buying devices, they need to claw back the lost revenue from corporate accounts.

There is an opportunity for them here in managing the billing and quality of service provide to all these individual and now also corporate users. However, CSPs will need to work to put processes, systems and structures in place that can handle the likely needs. They'll need to pay particular attention to the usage of mobile data, users of tablets and the increased usage of advanced smartphones. Those stimulate the need to offer differentiated data charging and policy.

The concept of split billing, now called 'personal usage tagging' is returning but, again, it is controlled by manual toggling and faces the same issues as its fore-runner in terms of employees using it properly. An alternative is automated guiding which can identify likely work calls for instance via time bands or who the user is calling.

Automated guiding can be used to make all company numbers business calls, it can make usage of particular application free or it can set policies according seniority. A senior manager might get all their calls free while a junior employee may get only calls to company numbers free, for example.

Whatever happens, both parties will want to make sure assigned costs are 100% accurate so CSPs need to provide a means to make that happen and legacy billing systems cannot cope with the granularity involved.

Self-service usage monitoring and auditing is key for both sides and what is needed is real-time usage visibility, transparency and control. Critically that has to be done automatedly because the expense of auditing and cost reporting manually would be unacceptable. As a baseline, solutions for voice and data are needed along with real-time charging capability that is integrated with policy management.

If CSPs can role out accurate systems that support their corporate customers' BYOD needs, they will be able to demonstrate the value they can add and offset revenue erosion from traditional corporate communications deals. Billing and charging ability will be at the heart of that.

Vital BYOD billing and charging capabilities:

- Hierarchical corporate account / billing system capability
- Smart, flexible guiding rules and real-time rating with identified target accounts – either personal or enterprise
- Shared bundles for hierarchical company usage
- Flexible payment options – both pre and post-paid
- Real-time notifications or warnings with several levels of spending limits – soft notification limits such as partial barring and hard limits such as total barring, either on specific numbers or on all usage
- Real-time bill-shock prevention for both employee and employer
- Automated BYOD management including personal usage tagging to reduce efforts, cost and human error
- Self service and control for both employee and employer

TalkTalk Business looks to wholesale billing for a 360 degree view of customers and products

Without a wholesale billing system to consolidate its existing wholesale rating and billing solutions, TalkTalk Business suffered from inefficiencies and inconsistencies. Here, VanillaPlus explores its deployment of a revenue and customer management platform from MDS

TalkTalk Business is a UK provider of network, telecoms and broadband solutions in the business-to-business market. The CSP previously billed its customers on different, disparate platforms which were adding complexity to support processes such as monetary collection. In order to achieve a consolidated billing experience for its customers and to gain a unified, analytic reporting function for its own operations, TalkTalk Business selected a wholesale billing solution from MDS.

MDS' Revenue and Customer Management Platform, based in its CMP 6.0 technology, addresses those goals and also provides a consolidated view of all revenue and product data, enhancing the ability to deliver an improved customer experience and creating a single view of partner value to help drive improved decision making and insight.

"The consolidation of our legacy platforms into a single unified rating and billing engine not only drives significant efficiency and consistency for TalkTalk Business internally, but will also ensure we offer customers and partners an improved flexibility in product offering, and a consolidated billing experience," says Phil Haslam, operations director at TalkTalk Business.

Through implementation of the MDS solution and its ability to deliver intelligent billing, TalkTalk Business now has an enhanced capability to automate and combine existing processes, to reduce the operating time for billing and the associated resource costs.

"The MDS CMP solution forms a significant part of our systems strategy as we seek to collaborate with our partners and customers in an online environment, providing insight and core business data via intuitive and integrated media," explains Haslam.

Matt Hooper, chief marketing officer of MDS, adds: "Our proven track record in delivering customer management and revenue management solutions to CSPs means that we can enable a sophisticated end-to-end, fully managed revenue and customer management platform, that can bill any service and support rapid change, utilising our intelligent billing capabilities. This agreement reflects a strong partnership between MDS and TalkTalk Business, one based on mutual collaboration and delivering services that are evolving rapidly as the market for communications services changes and grows."

TalkTalk Business

It's about (real) time – charging and billing have evolved in the data centric world

Data is changing billing and charging systems. It's changing their design, their architecture and, most importantly, what CSPs are using these once-back-office-systems for. No longer are they just platforms to collect money, they also provide CSPs the tools to make money, writes Martin Morgan

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

A look at the websites of many of the leading CSPs makes one thing apparent – data and data enabled services are where the action is. Voice and text are becoming commoditised and data is the differentiator. Most CSPs are not getting involved in a race to the bottom and going down the line of 'my gigabit is cheaper than your gigabit'. They are differentiating their services on network quality and speed, content offers, value-added services and the ability to personalise offers through bundles with a wide variety of add-on options ranging from shared data plans and cloud storage to prioritisation. CSPs often start with a simple enough base package such as unlimited national voice and SMS, a certain volume of data at a given speed per month. Then the options start, and the customer has the facility to personalise their mobile service, and thus filter out a lot of the unnecessary offer complexity and potential for confusion.

In order to make the most of the revenue opportunities that this new data centric market presents, CSPs need to look at their charging and billing systems. How customers use mobile data, how they interact with their CSP and how they buy and pay for services is constantly evolving. It's a very different picture from the traditional circuit switched voice centric market of five years ago, where we were encouraged to eat all the data we could for a fixed fee per month and the first we knew of any charges was when we got our bill through the letter box at the end of the month.

Data collection

One of the main sources of business intelligence for mobile CSPs is customer usage records. Collecting information on what customers are doing goes a long way beyond collating usage data records for billing and charging. The richness of data collected in mediation can also provide contextual detail into customers' behaviour, as well as where, when and what they're using their mobile devices for. This can drive an increasing range of real-time offers, from simple data upsells when someone has reached their tiered allocation to personalised geo specific offers – such as free video uploads to a social media site for customers in the football stadium at the time of a match.

Fast time to market

How CSPs can price data services is becoming increasingly complex. We're seeing toll free and sponsored data where a third party can pay the data transmission charge, customers can buy specific content, there are options to pay less if exposed to adverts, options based on data volume in a bundle, or speed, or both, as well as in or out of bundle rates and variables, plus different rates for different network accessed, application being used and time of day. Rating has come a long way from simple A and B number table look ups.

As well as containing many different pricing variables CSPs need to be able to change pricing variables quickly and easily to compete. The last thing a CSP needs is an army of vendor software engineers setting up camp in their offices and taking an age to change and develop price plans. Those days should be long gone and CSPs should be able to set up, configure, administer and test new price plans themselves with minimal input from the vendor. And they should be able to do this quickly. Last year Openet ran a survey with over 200 mobile CSPs and 81% said that ▶

inflexible billing systems were delaying product launches.

Real-time contextual upsells and marketing

As well as flexible rate tables, CSPs want to provide offers in real-time based on a customer's behaviour and context. These offers can include, for example, a roaming service pass, when the CSP sees that they customer is roaming but has not activated data roaming. This can then trigger an offer from an offer catalogue integrated to the charging system. This notification is sent direct to the handset and the customer can buy and provision the service passes in real-time and use them straight away. Offer catalogues are becoming part of charging and billing as they enable the real-time contextual upsell of offers and value-added services that CSPs need to supplement revenues from bundles.

Using real-time controls and alerts

Real-time is not only needed to provide upsells. One of the first requirements for real-time charging for pre-paid and post-paid customers was spend alerts and bill shock controls. Customers need to know how much they are spending, and avoid the bill shock disaster stories. However, there does seem to be a change in opinion based on some recent news stories. Most CSPs have very good spend alerts and controls in place and if a customer runs up a massive bill that they can't pay, because they've ignored the alerts and pro-actively requested to continue using the data service, then why should the CSPs be forced to take the hit for this bad debt? Thankfully most consumers do take notice of alerts and adjust their usage accordingly – in fact there is evidence that some customers use less when they're approaching their limit. So the opportunity here could be for the CSP to promote sponsored data services to these consumers.

Providing upsells and promotions that are timely and relevant can increase customer loyalty. Often a well-timed promotion at the end of the month, when a customer's usage is dropping off, can engender loyalty and advocacy.

There are many other product features and functions that real-time data centric charging and billing systems provide that legacy systems may struggle with. There is also the need to enable partnership models with OTTs and content partners. This includes sponsored data, re-rating transactions at wholesale level - partner settlement, direct operator charging or billing, content and OTT revenue assurance. Not forgetting enabling rapid deployment into new verticals, BSS integration to the device and new product development.

What about investment in legacy BSS?

Many legacy IN based charging and billing systems work well for circuit switched voice – it's what they were designed for, so the cost effective option is to use a real-time charging system for data – and IMS and VoLTE – to begin with. For post-paid customers real-time charging carries out all the functions that need real-time and then passes rated data records to billing system for inclusion in the monthly bill. This adjunct cap and grow approach is much more cost effective than a massive rip and replace of billing and IN charging. As we move toward all IP the traffic going through IN charging and legacy billing will decrease anyway. Better to let them depreciate to end of life and move traffic over when required.

Real-time is how the digital world works. It's how people use mobile data. It's how people use the internet. They expect to be able to buy offers and use them right away. And they want to decide how they're going to pay for them. Real-time is a fundamental for data charging and billing. But it is so much more than collecting money – that's a given. The real strength of any charging and billing system is how well they can enable CSPs to make money in ever changing market conditions.

As well as flexible rate tables, CSPs want to provide offers in real-time based on a customer's behaviour and context

How BSS should be more BYOD conscious

Fixed lines, mobile, TV and the internet converged so quickly it was impossible for any CSP to cater for. Now the bring-your-own-device trend is creating new challenges for them. Can BSS vendors move them through this, asks Nick Booth?

It has proved difficult to legislate for the speed of change brought about by digital technology. The vehicles built for the revenue streams of fixed line and mobile, broadband and TV struggled to cope with the buffeting from the convergence of these waves. But the internet has proved to be by far the most influential current and its influences on consumer behaviour are having massive repercussions in all areas. The bring your own device to work (BYOD) trend being a case in point.

Legislating for the wealth of different services is difficult enough in a world in which new variations service offerings - like premium quality video – seem to be mutating by the day. This being an internet dominated environment, the variety of service providers is far more eclectic than the ▶

relatively limited options that were traditionally available in traditional telecoms.

CSPs aren't used to moving at this speed of change, given the silos of information they still store in systems that were designed for a different age and a much simpler business model. They need help with legislating for the changes in corporate culture that are being created by the internet world, such as the BYOD trend, which has blurred the lines between the personal and the professional.

The traditional legislators for CSPs, the business system support (BSS) makers, are adapting to a world in which it's no longer enough to throw triple-play (fixed, mobile and broadband) or even quad-play (fixed, mobile, broadband and TV) communications services at the problem. They have to become more discriminating says Jaco Fourie, senior BSS expert in business unit support solutions at **Ericsson**.

"Private and business subscriptions must be handled for the same devices," says Fourie, who says administrators need to be able to be able to add and remove enterprise services – flexibly – to existing devices. Having added the services, will they be able to account for them?

If end users are given licence to consume at will, how and where and when they want, who is going to make sense of the bill? The old fashioned 'all you can eat' method of accounting was primitive, but at least it avoided the type of bill shocks and recriminations that we can expect to be created by BYOD.

Not everyone is convinced that old fashioned BSS providers can meet the challenge.

"BSS has actually struggled to accommodate this for several years," says Jeth Harbinson, head of global sales at **Cycle 30**. The complexity involved in changing the CSP's product catalogue and automating a flow between the various service interfaces – to external systems like provisioning, activation, workflow and ordering – is the major battle to be won. Many new BYOD initiatives call for unique system setups and activation. "Many of the legacy BSS systems require tons of rework to address these challenges," adds Harbinson. Cycle30, being a new player on the BYOD block, claims it is starting from a better place and can accommodate these changes quicker.

So it is just new BSS players that can cope with the complicated challenges that BYOD presents to a comms service provider?

Not everyone agrees. Jim DeMarco, **Redknee**'s CTO, says the experience of BSS veterans in making policy counts for a lot – possibly more than being a new player with a different position.

"Policy can help to ensure OTT applications and services get the quality of service they need for high-bandwidth applications," says DeMarco. You need the experience of linking policy to legacy systems like billing, he argues. "If it's integrated with billing systems, policy allows operators to offer tiered pricing to their subscribers and charging and settlement and services to OTT partners."

The problem with that is that the role of BSS is becoming less about billing and more about being an a complete customer and offer management system, which means devising new ways to cater for product catalogues and policy control systems, says Timo Ahomäki, CTO of **Tecnotree**. The value is now in creating new capabilities through open APIs, which is a world away from the traditional, tightly controlled approach taken by BSS specialists.

Businesses are now asking their service providers for unique features to support BYOD, according to **Amdocs**. They want to split bills between personal and business use and to disable business functions like email and IM when users switch to personal mode. The two primary challenges are always around building new interfaces and business processes.

This is why BYOD will in turn catalyse a new reactionary movement: bring in a new BSS system, accosting to Harbinson. "The BSS business process and framework needs to change and this process is very difficult to change. Legacy systems installed seven years ago can't make this change quickly," says Harbinson. "They take months and this space should be thinking in weeks and days."

Jaco Fourie: Private and business subscriptions must be handled for the same devices

Jim DeMarco: The experience of BSS veterans counts for a lot

Businesses are now asking their service providers for unique features to support BYOD, according to Amdocs

What's keeping CEOs awake at night? Monetising 4G

Recent discussions about 4G have shifted from focusing on technology to how to monetise that technology. CSPs now need to recover the billions of capex they have sunk into 4G, writes Jim DeMarco

The author, **Jim DeMarco** is CTO of Redknee

If you build it, they will come – the whisper in Kevin Costner's ear in Field of Dreams led his character to take a leap of faith, literally betting the farm on a baseball field for which no rational business case existed. Through the miracle of Hollywood magic, the investment paid off and the hero's leap landed him in the soft grass.

As we discuss long-term business strategy with many of our customers, we are seeing a climbing sense of alarm about how they will make money on their massive 4G investments. Indeed, if you peel back the cover page of many operators' 4G business cases today, you may yet see Costner's Iowa cornfield pictured in the executive summary.

We are seeing that the emerging business models range from bit pipe models to high value-add offerings, with wholesale and M2M thrown in for good measure. No one business model is emerging as dominant, so there is no single roadmap to 4G success.

Thus the mobility CEO's late night hall pacer is: after spending billions on a new network, how do we recover all that capex for our investors?

Carriers are taking a host of different approaches to 4G monetistion. A survey by Leverage Media conducted at the launch of the earliest 4G networks asked operators what services they planned to offer across their 4G networks. Some anticipated offerings cut across most respondents included video streaming (83%), audio streaming (61%), smart devices (63%) and family data sharing plans (65%). Some less common planned offerings that were key revenue drivers in the 2G/3G era, included loyalty/bonus plans (26%) and VAS offerings (22%). No one silver bullet service defines the 4G business model, which indicates that services themselves are not the differentiator; CSPs simply cannot rely solely on new services for 4G success.

4G services must be offered in a context that customers understand and will agree to pay for. There are known business models CSPs can utilise, including subscription video, audio download, real goods commerce, branded resale and wholesale. A mix of these business models combined with acceptable service quality and user experience, will determine success or failure in 4G.

Looking across these sample models, there are some common themes and some clear best practices that separate the successful players from the failures. Adapting operations to these best practices is likely to be as important to 4G success as is the mix of offerings itself. The following are the most important best practice principles:

1. **Simplicity:** making the purchase of initial service easy, including try-and-buy, but then continuing the buying pattern by making renewal purchases easy to execute and understand. Extensive contracts tied up in minutia, while common in traditional postpaid telephony, are the antithesis of this simplicity. An easily understood price for a defined value is all that's required. Once service is established, it must be easy for the customer to know where they stand, in real time, without substantial human intervention.

2. **Fairness:** pricing must be fair from the customer's perspective. Fair usage is also welcome, however experience in the broadband market shows that customers are willing to pay a premium for higher bandwidth, so long as they are given a good reason. Likewise, customers are forgiving of real-time network demands, and willing to manage their services according to constraint, so long as they know why the constraint exists and feel they are getting a fair deal from the operator. Privacy rules must also be fair.

Together, simplicity and fairness have serious implications on the 4G operations model. Flat rate offerings are simple, but they aren't profitable or fair to both the CSP and the customer unless tiered and coupled with varying levels of service. Yet, according to Leverage Media, nearly half of all CSPs will launch 4G using flat rate, unthrottled service offerings, largely

because they have no way to execute a multi-tiered service. At the same time, 74% of CSPs intend to offer flat-rates with throttling as soon as is feasible – meaning that more than half the CSPs who cannot get their pricing and policy engines working together intend to do so soon. Pricing and policy are now converged elements of the marketing mix.

1. **Agility:** since no one knows which services will dominate, the ability to offer any data service (including over-the-top) has to be considered vital to success. As soon as a service goes viral, the CSP must be ready to launch something that fits their own customers' demands for this service. Rapidly rolling out services, rapidly migrating off old services and rapidly responding to market demands are sine qua non for 4G success. Not forgetting the first two principles noted above, being fast without adding to customer complexity is the real differentiator.

2. **Partnerships:** it is already clear the services that will drive 4G usage will not be network specific, and that content defines value far more than delivery. Partnerships with OTT providers will allow for differentiated pricing/services such as unlimited free Facebook and sponsored usage such as free ooVoo viewing on Tuesday nights, sponsored by Sony Pictures. These partner relationships need to be simple, free-flowing and content-specific, and must find their way easily into the customer offer set.

3. **Self-service:** the buying experience must be clean and understandable, nearly touch free and mostly self-service. On the other hand, when things go wrong, customers want a customer experience that is based more on advocacy than sales. CRM and customer business operations must shift from sales to advocacy.

How does the CEO get some sleep at night after all that 4G capex spend? The services mix will certainly have some impact, but it is also clear that the mix of customer buying and using experiences are just as important. In some cases, operators are simply not equipped to handle the speed, clarity, fairness and simplicity that their customers will demand in 4G. Historical business complexity, coupled with heavy duty operations models that are focused on the call centre and on the bill, put some of the wealthiest CSPs at the biggest disadvantage. In those cases, launching new brands or focused 4G-only operations might be a way to sever the complexity/legacy cord. Those who can drive a 4G experience that tracks to the key principles noted above will have a leg up on the market, regardless of what mix of services ends up dominating.

If you build it, will they come? Not necessarily. But if you make it worth coming, they will. To my CEO friends who just bet their farms on 4G, I suggest they focus on delivering a crisp, clean, understandable user experience, not too complicated but totally fair; and then get some sleep.

While the mix of services will have an impact on 4G success, it is also clear that the mix of customer buying and using experiences are just as important

www.redknee.com

Photo: Habib M'henni/Wikimedia Commons

Fierce competition creates climate of service innovation at Tunisiana

As a relatively new market entrant, Tunisiana has done well to become the leading mobile operator in Tunisia but, in the face of renewed competition, it has continuously innovated with new offers and services. Here, the company tells VanillaPlus about its' deployments of policy and charging systems from Redknee

Tunisiana, the Tunisian mobile operator launched in 2002, as the first private CSP in the country, and consequently became the second mobile operator in the country. Just over a decade later, it is the market leader with a 55% market share and seven million subscribers in the mobile sector. It is now part of the Ooredoo Group, formerly known as the Q-Tel Group, and was granted a 3G and fixed licence in 2012 and subsequently launched 3G service in July last year.

"We have been able to maintain our market share, even with the entry of Orange into our market four years ago, by maintaining our reputation for innovation and creativity," says Jalel Kamoun, director of BSS and VAS at Tunisiana. "Competition is quite fierce in Tunisia and we are constantly looking at new ways to keep our competitive edge."

Those challenges have resulted in the CSP focusing on rapid service introduction and creation. "We started with an agile organisation, streamlining IT, technical and marketing teams to all work together," adds Kamoun. "We were trying to push for innovation and creativity and were first to launch new products in the market, two or three years ahead of our competitors. These new, innovative products enabled us to grab a lot of consumer share from the very beginning.'

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BSS convergence – There's a time and a place and it's now

For the best part of a decade, BSS convergence has been on the telecoms industry's agenda. Frequently described as a cure-all solution which all CSPs should strive for, BSS vendors were often its most vociferous advocates, writes Chris Yeadon

The author, **Chris Yeadon**, is product marketing director of BSS at Ericsson

In reality, convergence is simply an IT methodology whereby multiple data streams are handled by a single system; the means to achieving a specific business objective, but not the objective itself. Perhaps that's why many CSPs have not fully embraced it. Although many have made convergence a requirement of BSS investments, the business case couldn't justify the perceived risk and cost of the IT transformation required to create a single charging, billing and customer care platform.

That is, until now.

Investment in network transformation together with consumer behaviour based on multiple devices is driving change in the needs for and expectations of service packages delivered by CSPs. Increasingly operators are rediscovering the imperative for convergence. With ARPU declining in every region in the world and subscriber growth slowing, not surprisingly, 48% of CSPs cite the need to increase revenue as the number one driver for convergence according to Analysys Mason.

Fighting commoditisation

Also not surprisingly, most CSPs are looking for ways to differentiate their offerings other than on price. Previously, connectivity and mobility were the mainstays of a CSP's value proposition. Unfortunately, with markets becoming saturated and competition intensifying – partly due to the ubiquitous connectivity that CSPs themselves create – their services are increasingly becoming perceived as a commodity.

Ironically, in some markets, fighting commoditisation and ensuring sustainable data profitability is made more difficult because the original mobile broadband offerings were introduced as flat-rate tariffs with unlimited services, modeled on fixed-line broadband. Despite contributing enormously to adoption rates, these tariffs, in effect, suspend the laws of supply and demand for these finite network resources, and because they lack pricing granularity, also fail to maximise the potential of what individual customers are willing to pay.

Customer experience is the new key differentiator

As differentiation through their service offerings diminishes, the quality of experience that CSPs can provide to their customers becomes critical to the success of their overall value proposition. In a recent Ericsson Consumer Lab survey, the most important area for customer experience improvement, at 60%, was, "for my operator to get me the best deal out there." A close second, at 58%, was, "I would like to customise my service so it fits my personal needs and what I will actually use." Put simply, when it comes to data services, not all customers need the same speed and volume at the same time. By paying attention to these individual requirements, CSPs can tailor a range of offers, impulse buys and promotions to their customers' specific, current needs and future desires.

Traditionally, control has been cited as one of the primary benefits of convergent charging and billing – giving customers the convenience of post-paid billing and the real-time control of pre-paid charging. However, with the proliferation of mobile broadband and data services, control means much more than spending limits and preventing bill shock. It also means delivering a service with the right quality (QoS) at the right time; for example HD video from a certain content partner being delivered with a faster speed than a regular browsing session. In many cases, it's about providing consumers with what they really want, when they want it and reflecting what they are willing or able to pay.

For historical reasons, current OSS/BSS implementations often treat charging and policy control as separate silos. Today's networks need convergent charging systems to collaborate in real-time with policy control to satisfy new business needs. Together, they need to create innovative new offerings, charge them correctly, enforce their usage and QoS rules and secure optimal use of the CSP's network resources.

The other key architectural requirement is the concept of personalisation-driven common product configuration, although this requires using capabilities that are not yet standardised to more easily support charging and policy related features. ▶

Together these capabilities enable operators to create innovative lifestyle-tailored offerings, such as:

- **Monthly bundle:** web access and five HD movies + 1,000 MMSs + 1,000 minutes of voice
- **Cross-service bonus:** send 400 MMSs/month to get three HD movies or one weekend free Spotify Premium
- **Refill promotion:** top up $50 to try our new movie service free this weekend.

In reality, many CSPs' current OSS/BSS capabilities leave them exposed to competitors with newer nimbler systems, enabling agility in a fast-developing market.

Device-centric offerings

CSPs also need to ensure that their tariffs and plans take into account the device-centric nature of customer behaviour. Business users often carry three devices, including smartphone, tablet and lap-top, each requiring its own connectivity. Similarly, most households have multiple devices.

Multi-device based consumption doesn't just require a common bill, but also shared data plans, including free units and bonuses. Moreover parents or enterprise administrators need to stipulate usage thresholds and entitlements to free units for users on the same data plan, such as individual children or company departments.

Customer service doesn't have to be a negative differentiator

According to Ovum, creating a single view of the customer is currently the CIO's single most important objective regarding customer experience. For several years, CSPs have blamed antiquated siloed systems as a major obstacle to optimising customer experience. The issues usually cited are:

- Lack of a common view of the customer
- Data fragmentation across multiple systems
- Lack of business process consistency
- Complexity and cost of integrating systems

So far, relatively few CSPs have undertaken the necessary IT transformation projects to solve these issues, such as creating an integrated charging, billing and CRM environment.

Previously the business case was not compelling enough, but now CSPs are discovering that mobile broadband support can cost 200% more than traditional services, and that smartphone enquiries can take ten times longer to resolve – posing a real threat to their service profitability, according to a recent Genysis report produced in collaboration with Ovum/Datamonitor. Given that 73% of churning consumers do so because of poor customer service, CSPs can't afford the risk of negative differentiation due to inadequate CRM.

Fully convergent charging and billing systems, integrated with a common CRM system and a unified common enterprise product catalogue are now critical to ensure customer management efficiencies and their knock-on improvements in customer experience. Importantly, CSPs need to seriously consider further convergence, by ensuring CRM systems contain relevant information about the customer's network-related experience – and that all customer interaction is performed in this context.

Until now many CSPs have only invested in convergence to a limited degree, often in the area of billing, to support multi-play offerings after mergers or acquisitions. Others have taken some necessary steps to prevent bill shock. However, few have really addressed the fundamental challenges posed by the emergence of mobile broadband, ubiquitous connectivity and device-driven customer behaviour changes.

But if CSPs are to take full advantage of their significant network investments, compete effectively and secure their future, they need to systematically address their priority market segments in a phased approach, whilst fully embracing the principles of IT processes and systems convergence.

Traditionally, control has been cited as one of the primary benefits of convergent charging and billing

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Tunisiana

"We started with an agile organisation, streamlining IT, technical and marketing teams to all work together"

Kamoun says that there have been a series of offers introduced and one of the CSP's most successful products is its Amigos offer. Users can subscribe to the service if they are a student, aged under 25 they can then use the offer to call all other subscribers in the community for a cheap rate. "With that offer, we were able to lock the student community into the network," he says.

Tunisiana has also addressed other demographics with targeted offers. "We introduced the innovative family offer a few years ago with reverse billing and reverse charging options," says Kamoun. "The charging and billing systems we had at that time were unable to do what we wanted so we had to create some additional systems to support these services. This is when we turned to Redknee for support in migrating to our charging system, which has helped enable our success."

Tunisiana has deployed Redknee's charge@once unified charging system and the vendor's PCS-5000 policy solution to enable its' operations. "We were among the first operators to deploy the unified charge@once product and it's quite rich in terms of features," explains Kamoun. "It enables us to move all of the 'on the side' products into one convergent product. It provided us with a great deal of flexibility to enable us to launch converged data services, some of the shared accounts, family accounts and community accounts."

"The PCS-5000 is the policy control function we acquired with the 3G launch that helped us give quality of service per subscriber, depending on what they were buying as a package," he adds. "It enabled us to ensure we gave the best quality of service to the premium subscribers."

Redknee provided some of these systems to Tunisiana and is seeing a need for accelerated time to market, especially for new services. "It's all about agility, helping Jalel and his team deliver services faster," says Redknee chief executive Lucas Skoczkowski. "We looked at how we could simplify services and how they could consume our innovation and convert it into market deployment. I think the key thing for us is how we drive the speed and velocity of adoption so customers can use it in the market very quickly."

Skoczkowski adds that, in addition to speed, vendors need to be flexible. "I think it is all about more market segmentation and competition. There is continuous innovation where operators have to adjust the offerings in the market. We're also a big believer it has to be from configuration as opposed to traditional customisation. To keep it cost-effective we have to support a business case for our customers and make sure they innovate on an on-going basis. Companies can no longer look at the product cycle every six or twelve months – it has to be much more frequent. There are a lot more third-party capabilities and over-the-top services we have to incorporate to really create synergy with the offerings Tunisiana provides."

Skoczkowski sees the experience Tunisiana has gained in rolling out innovative services and bundles, especially those targeted at specific user types, as something that other providers will emulate. "I think Tunisiana is a great example of being an innovator," he says. "They lead by example and continue to create a very quick tempo in the market so everyone has to catch up with them. They adopt and embrace new approaches and new technologies and push their partners, like us, to really make sure we can deliver in service of their success. I'm really pleased and honoured to be their partner and supporter in that."

BSS centralisation – needless headache or remedy?

CSPs' Business Support System (BSS) installations are notoriously fragmented, the consequence of years of ad-hoc modifications and growth. Is centralisation just another task to add to the list or can it address the pain CSPs face, asks Andy Tiller

The author, **Andy Tiller**, is vice president of product marketing at AsiaInfo-Linkage

Compounding this issue is the fact that many CSPs work across multiple regions or countries, or as part of a large group. This evolution of BSS installations is proving somewhat of an expensive nuisance as systems deployment and maintenance is a convoluted, resource-heavy process.

Standardising BSS systems across international operations or subsidiaries has been viewed as desirable by many CSPs as a method of achieving cost efficiencies, brand consistency and improving time-to-market. However, several challenges are inhibiting CSPs from adopting this solution, namely: a lack of proven technologies, or a fear of restricting the ability of local operating companies (Opcos) to respond to their own market requirements.

In a survey conducted by Telecoms.com of 400 CSP staff, it was revealed that 63% agreed that international CSPs should look to standardise their BSS across their footprint. However, 35% agreed that CSPs should go to the extent of centralising their BSS, a radical step that has the potential to deliver greater benefits but also remove the ability of individual Opcos to operate their own systems locally.

The business case for centralisation was clearly illustrated in the survey. Reduced opex was voted the leading benefit, which isn't a surprise given that a centralised BSS will enable CSPs to implement changes just once in a single system, eradicating the need to devote large amounts of time repeating the same action across multiple systems/locations. The ability to implement changes quickly is now even more valuable given the necessity to swiftly adapt to the threats and opportunities posed by the modern digital landscape. A reduction in costs of system changes and faster delivery times aren't the only benefits of centralisation: this approach enables international CSPs to offer consistent products and tariffs across multiple Opcos and to build a single, global brand.

So, the benefits are clear, and – arguably – undeniable, but why then does the mere thought of standardisation or centralisation provoke negative reactions? 29% of CSP respondents felt that standardisation would be "difficult" or even "impossible" to achieve, with 44% feeling similarly towards centralisation. The reason is clear, and it's not at all concerned with technology, 54% of respondents stated the most severe challenge is politics. The belief that standardisation or centralisation intrinsically inhibits local Opcos from responding to the demands of their local market has generated conflicting business cultures across international operations, and these politics have prevented progress. It appears that when CSP staff envisage the implementation of centralisation, either Group HQ, or local Opcos are in control.

Operational risk was cited as the second most severe challenge. It is understandable that the intrinsic risks involved in migrating from a legacy installation to a modern system would cause concern in IT departments, but is it inevitable? Many existing solutions are based on outmoded technology that is expensive to maintain. Furthermore, it severely limits the CSP's ability to adapt to the challenges and opportunities of the capricious modern market. If CSPs are serious about reducing capex and opex whilst embracing the needs of the new digital economy, they need to enforce these radical changes to their architecture, irrespective of the questions of centralisation.

Regulatory restrictions were another key point of concern, especially in Europe. Legislation implying that personal data must be hosted within the country of origin poses a significant challenge to the installation of standardised or centralised systems, but modern technology is a wonderful thing, and there is a way of circumventing this issue. Innovation in the BSS market is now able to allow Opcos to retain local data and business processes even while using centralised systems.

This way is to run BSS on private cloud-based technology platforms with multi-tenancy. A single instance of the BSS, centrally hosted and maintained, can achieve enormous operational improvements while simultaneously supporting local Opco requirements through multi-tenancy. A multi-tenancy approach allows each local Opco to have its own products, tariffs, currencies, languages, taxes and even its own customised business processes. A local Opco can stay in control of its own operation through

BaaS (BSS-as-a-Service) type-access via the private cloud.

The decision between Group HQ or local Opcos being in control is now no longer required – and with this issue now eradicated, opinions concerning the feasibility of adopting centralisation are far more positive: almost 65% of the Telecoms.com survey respondents stated that the task of standardising BSS functions would be more achievable in a centralised BaaS environment, where the CSP hosts a private cloud BSS to be accessed remotely by the individual Opcos.

Private cloud BSS with multi-tenancy can also be utilised to circumvent regulatory issues as the database layer of the BSS can be distributed while other functions can be centrally located. The system still offers benefits of centralisation, including reduced OPEX and the ability to unify customer services globally.

AsiaInfo-Linkage has already achieved success with centralised private cloud deployments of its Veris BSS system for some of the world's largest operators in China. This system is deployed on inexpensive, scalable blade servers, rather than the traditional UNIX platforms, thus saving substantial capex – approximately 80% on hardware costs for one province's CRM system.

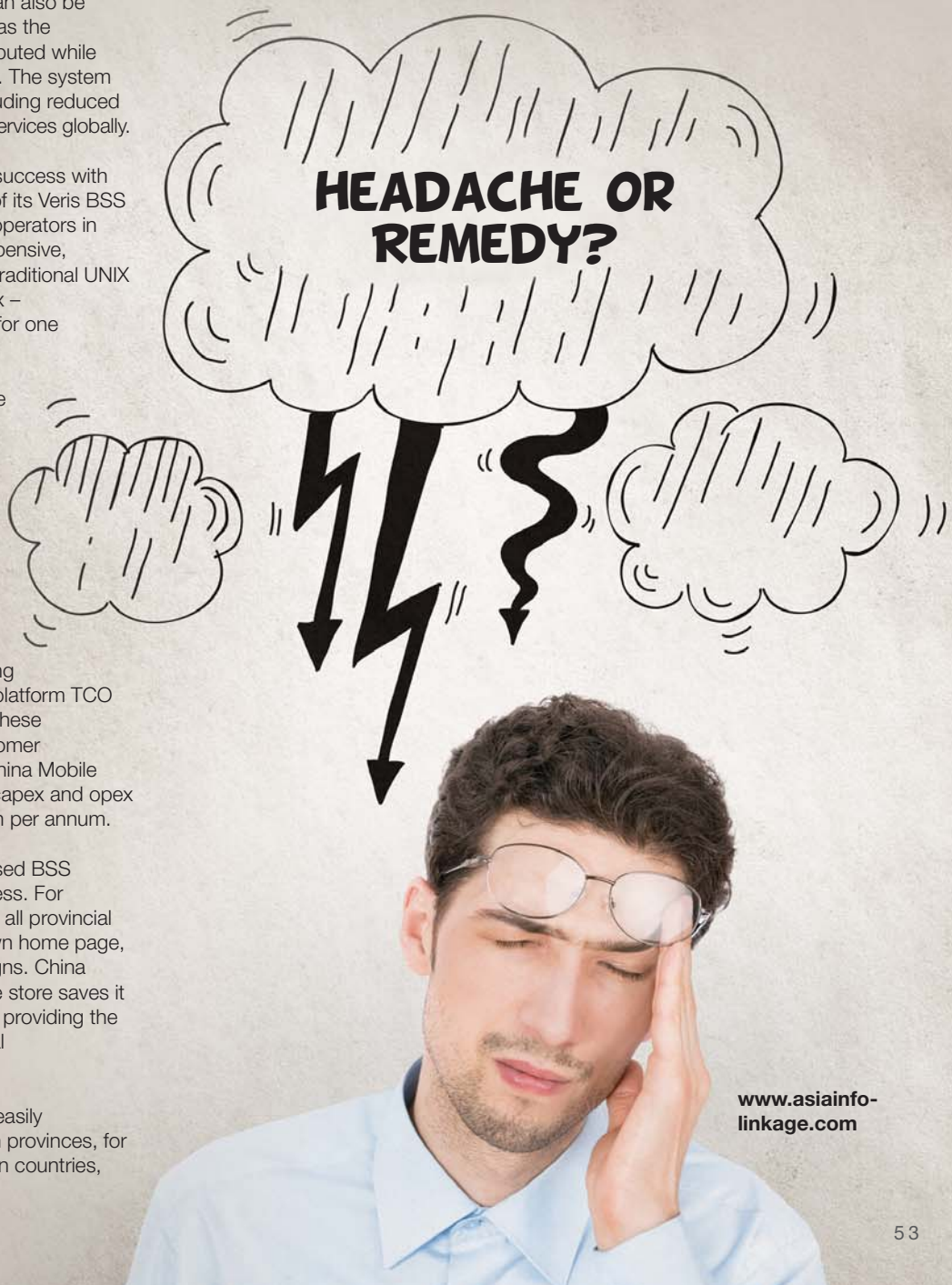
The experiences of these CSPs illustrate how multi-tenancy can generate dramatic improvements across the entire business: Zhejiang Mobile (a provincial subsidiary of China Mobile) installed a private cloud multi-tenancy solution for BSS centralisation. The system is deployed on 112 blades, serving 60 million subscribers and computing 1 billion database queries per day. In the first 12 months of its installation, Zhejiang Mobile witnessed an 80% reduction in platform TCO and a 45% shorter transactional time. These improvements led to a 20% rise in customer satisfaction. AsiaInfo estimates that if China Mobile scaled-up centralisation nationally, the capex and opex savings would equate to US$140 million per annum.

China Unicom has successfully centralised BSS operations in different parts of its business. For example, it has a unified online store for all provincial Opcos. However, each Opco has its own home page, products, tariffs and marketing campaigns. China Unicom estimates that the unified online store saves it US$4m annually on maintenance whilst providing the capability to maximise its appeal to local demographics.

The accomplishments in China can be easily replicated throughout the world. Certain provinces, for example, are larger than some European countries, and the demands of responding to cultural diversity in local markets are just as applicable – as are concerns regarding regulatory constraints.

The flexibility offered by a cloud-based multi-tenancy solutions means BSS centralisation can now be seen as a remedy to the challenges caused by convoluted legacy systems – as opposed to the headache more commonly associated with such a radical implementation. It offers the best of both worlds: the cost efficiencies of streamlined operations as well as the ability for local Opcos to respond quickly to local market opportunities.

Traditionally, control has been cited as one of the primary benefits of convergent charging and billing



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Cloud telephony – is it doomed to remain the technology of the future?

This cloud telephony is great isn't it? I said cloud telephony… can you hear me? Oh never mind, I'll call you on a landline. Nick Booth questions the need for alternative voice technologies

The author, **Nick Booth,** is a contributor to VanillaPlus and a technology journalist

"Cloud – it's a phrase that is synonymous with nebulousness and vapour"

The other day I tried calling a contact from a CSP who, it turned out, was also working from home. We still don't know whose equipment was playing up, but we abandoned our mobiles, swapped home numbers and were amazed at the step up in class you get from good old fashioned copper.

This is what phone calls must have been like before progress got in the way: clear, crisp voice, no background noise, perfect reception.

It's odd that in an age when only the highest definition screens and the highest fidelity speakers will suffice, that our expectations for business quality conversations have been driven down.

Surely it's as important to pick up all the nuances of communication on a business call, as it is to pixelate your goggle box or digitize the kitchen radio. Isn't this a message that the telecoms industry's marketing creatives should be putting across? Is there an argument to be made that the quality of a conversation is in direct proportion to the attention to detail being made by all parties? It's hard to focus on the details when there are so many distractions.

Perhaps if mobiles and tablets had been invented first and landlines were the new inventions on the block, we'd all be raving about these magnificent systems that help concentrate our minds on the business at hand.

Instead, we are gradually drifting into a world in which companies adopt VoIP (voice over IP) systems in order to make economies. Not that there's anything wrong with that, in itself, as you're still sending voice waves over copper wires (albeit after being digitized). But as networks become increasingly congested, more and more compression is being used. That's why, when you phone some big corporations, the music on hold sounds like it's being played through a 1913 gramophone in a fish tank at the end of a tunnel.

Guaranteeing the integrity of voice over IP could end up being an infrastructure conversation and board members don't want to have conversations about big capital expenditure. Investments can take seven years before you see any benefits. Coincidentally, that's about the length of time ago that many CSPs and integrators started to investigate cloud telephony. While phrases like servers, networking, power and air-conditioning are guaranteed to send the board to sleep, it's much easier to run an idea past them if it promises to knock 30 seconds off every call and save them around £250,000 a year. Service providers that promise to take care of the servers, networking, power and air-conditioning and free their clients to concentrate on what they do best can easily win approval.

The only problem being that word: cloud. It's a phrase that is synonymous with nebulousness and vapour. It could be difficult to convince companies to start having conversations in the cloud when they won't even countenance talking about the cloud.

All that is about to change, predict the market analysts. Cloud telephony is growing by 80% a year according to Frost & Sullivan. Cloud IT applications (of which voice is just one now) will create the integrated communications infrastructure that will make all conferencing instantly gratifying, they say. All the right presentations and documents will instantly pop up on screen in response to every one of your contacts unique call line identities. Business will be transacted in a fraction of the time it used to take to navigate all the complicated set up options for a web conference.

In turn, this will make it a lot easier for the IT or comms manager to handle the integration of all those tricky multiple sites. Remote and mobile workers, who've all been encouraged to bring their own gadgets to the network, will be a lot easier to manage, so the theory goes.

"Start with a proper network, add quality of service and SLAs and it'll be as good or better than PSTN," one contact told me recently, when I queried whether cloud telephony was worth the sacrifice of voice quality.

Then there's all the pluses - location and number independence, scalability, flexibility, fast provisioning, low mean times to restore service (MTTR). Its time to say goodbye to conferencing pain, I was told. Cloud makes conferencing what it should have been all along – quick to set up, interactive and time saving – by sharing applications, documents and real time video as well as voice. You'll never need to beg some uppity office manager to book conferences in advance – and the sky high charges will be over. But again, quality of the underlying network is paramount.

The cloud telephony message came over loud and clear. Mind you, that's probably because we were speaking on a landline.