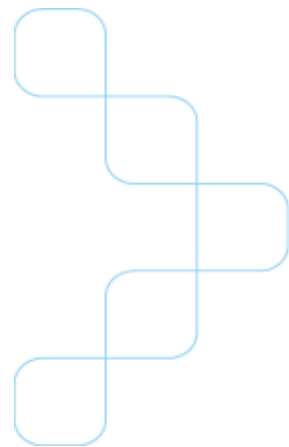


# Business Paper Freedom to Choose

Real-time charging for the “now generation”



OCTOBER 2009



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# Introduction

## A moment in time...

As the growing tide of enthusiasm washes over the industry, it's tempting to assume Real-time Charging (RTC) is a new concept. This couldn't be further from the truth. Fact is, over half a century ago the UK's Post Office became the very first RTC vendor.

Way back before personalization, profiling and audience interaction became 'must use' jargon, businesses up and down the land were interrogating their bills in real-time from the rather rudimentary electromechanical box in the corner of the room. In the intervening years we've been to the moon, broken the sound barrier and invented the internet, yet a postpaid mobile phone subscriber still cannot find out how many free minutes he has left, in some cases, not until half a day later – let alone in real-time.

Underpinning this flippancy is an important point. The 1950s metering system was developed to ensure users of this new 'premium' telephony service could manage their usage. Quite rightly, the telephone companies of the day were worried about the impact of high bills on mass adoption. Consider today's rich content...sound familiar?

This, the third business paper in the OpenCloud 'Stranded Operator' series continues the discussions in the previous two papers – The Stranded Operator and Bridge over Troubled Waters. This paper completes the 'journey' by tackling the crucial element of charging. It looks outwards, away from the Communication Service Providers (CSPs) infrastructure, to discuss the importance of 'real-time' in the charging environment, and asks 'what can real-time really do for us?'

Despite half a century of experience, billing - and increasingly converged billing - remains a significant challenge. And this is having a detrimental impact on new service deployment. You can't sell what you can't bill. But more than this, billing has an enabling role to play in the new world of telecommunications. Effective charging sits at the very core of delivering new business models and CSP content delivery strategies.

We've been at this for half a century – perhaps this time we'll get it right?

## Analyst Foreword – Teresa Cottam

### Director, Research and Publications, Telesperience – optimising the customer and commercial experience

“As basic telecoms services commoditise, service providers are looking for new ways to maintain their margins and their market share, as well as differentiate themselves from their competitors. Telecoms is transforming from a purely technological business into one that’s focused on customers and the customer experience.

Delivering a positive and differentiated customer experience is now fundamental to commercial success, and this is driving change in both telecoms business models and the business and operational support systems infrastructure.

One area that offers great potential for service providers to add value to the customer experience is billing and charging. Billing and charging represent a unique customer touchpoint, but one that’s frequently far from satisfactory. All too often the billing and charging experience is determined by technological and operational limitations, rather than by what the customer actually needs or wants, or what is good for the business. The result is an artificial divide between prepaid and postpaid customers, the inability to present billing information in a timescale, format or manner that’s convenient for the customer, the negative experience that is ‘bill shock’, or difficulty in personalising offers or launching innovative services to prepaid customers.

The good news is that there are solutions to these challenges. Solutions that can turn a disabling infrastructure delivering a suboptimal customer experience into an enabling infrastructure that supports growth, commercial efficiency, innovation and a better customer experience. Modern technology offers a lower cost footprint, agility, scalability and flexibility, and supports both service innovation and service personalisation. Transforming today’s telecoms service providers into tomorrow’s commercially successful retailers of telecoms services requires fundamental change in the business and operational support infrastructure. In revenue management this means combining the benefits of prepaid and postpaid charging with powerful control technology – delivering not just a good customer experience but an optimal customer experience for each customer.

In this vision of the future the infrastructure enables the service provider to deliver against its customers’ expectations and needs as well as its own commercial goals. To do this requires investment to solve the challenges of our legacy infrastructure. This shouldn’t be seen as ‘yet more investment in IT’, but rather as investment in the business, the customer and the services – in other words, investment in the telesperience.”

## Part One: Changing Business Models

The emergence of the 'now generation' borne out of the real-time, online experience enabled by the internet has changed the way customers consume and pay for their services forever.

Pressured by time and with an ever increasing focus on managing expenditure, today's consumers look to the online providers to offer maximum choice, at the most competitive price. Instant gratification is most often the name of game. Buy online and they will receive immediate notification (through email or text message) of payment acceptance, product dispatch and delivery date.

They are content in the knowledge that their preferences are saved and accessible every time they get online. They are also similarly comfortable - if not enthusiastic - that their buying behavior and profile is stored to allow the delivery of products and services personalized to their own needs and wants. Indeed, there can be few greater examples of this interconnected consumer-vendor relationship than Tesco.com and the retailer's Club Card. With the merest of financial incentives, Tesco is fearfully effective when capturing behavioral data to improve its knowledge of its customer and subsequently to deliver effective 'marketing-to-one' strategies.

Of course, should these same consumers feel unfulfilled by the experience, they simply move on to the next provider. It's that easy. Today, there's little doubt that customer loyalty comes at a price – and that price is the ever-shifting bar of service and quality of experience. The question then is whether Communication Service Providers (CSP) are willing and able to pay it?

### Paying the Prepaid Price

There is little doubt that CSPs are indeed paying a price. But it is one that has more to do with falling voice revenues than a real investment in a no-holds-barred fight to win the loyalty of subscribers.

Consider prepaid, the tariff choice of the vast majority of the worlds' mobile population. There is little, if anything the CSPs can offer these users other than tried and trusted voice, messaging and internet access. That is, of course, unless the prepaid user chooses to register a credit card against their IMSI to cover roaming charges and automatic top-ups. This gives the CSP at least some opportunity to get profile data and build a more fulfilling relationship with them. But such data does not go far enough to accurately profile lifestyle or buying behavior and true cross and up-sell opportunities are rare. Even where prepaid users have registered for automatic top-ups, only the data needed to authenticate payment is exposed.

*“There is little, if anything the CSPs can offer these (prepaid) users other than tried and trusted voice, messaging and internet access”*

In some cases, CSPs are now developing strategies to convert prepaid customers to postpaid so they can do more profiling – where else does vendor convenience come ahead of customer convenience? The EU directive to allow customers to set their own spend control limits to avoid post –roaming bill shock is another catalyst for change, but why wait for regulation to drive innovation? With RTC, CSPs can implement this today for all calls and all payment choices.

If the CSPs are finding this all a bit too hard, it's not an ideal situation for the consumer either. Most CSPs appear to assume subscribers are quite happy to simply make calls, send SMS' and browse the internet up to whatever credit they have on their account. In doing so, of course, they fail to offer the user any real choice - and certainly very little control outside the 'top-up'.

But that was OK because there wasn't too much around to buy on the mobile other than the odd ringtone. But the world has moved on - and so has the market. Handset manufacturers are evolving into content providers and threatening the very value that the network delivers. Consider Apple's AppStore and Nokia's Ovi. Suddenly, there's so much more to do, and can be done, on the mobile - if only the prepaid user was able to do so.

### **Postpaid (but not delivered)**

But life the postpaid user isn't an awful lot better, and sometimes a lot worse. If prepaid users were simply flirting with their CSPs, postpaid are often trapped in a marriage of inconvenience. In exchange for a "free" handset, they get locked into a tariff for 12 – 18 months. Whilst, postpaid users have the benefit of an online service where they can view bills and usage, access to real-time information remains limited. Indeed, the closest many get is an out of date account balance.

Of course, that doesn't matter too much until they are near the end of their bundles - and staring blindly into the chasm of unknown call charges. The CSP, of course, knows this – and in a perfect world will tell them. But they don't, because quite understandably, there's every commercial reason not to. So, while CSPs know more about their postpaid users than their prepaid counterparts, rarely do they reward the loyalty shown other than what was stipulated at contract agreement stage.

*“So while CSPs know more about their postpaid users than their prepaid counterparts, rarely do they reward the loyalty shown...”*

## Reality Bites

Up to now, this has all been relatively OK. But eroding ARPU, diminishing loyalties and an increase in VAS consumption - an area where the CSP has little influence other than providing capacity - are driving a need for change. In the developing world where the majority of users choose prepaid, CSPs also need to offer new services and payment models to differentiate themselves from other commodities and to sustain revenue growth.

New business models are emerging here. Advertising sponsored calls and the much anticipated 'two-sided business model' are just two examples (with the former likely to be used to fund the provision of services in the developing world). In the case of advertising sponsored calls, whilst the settlement with the sponsor won't be handled in real time, the delivery of the service after listening to the advert will be. This is a crucial contradiction that may very well result in users receiving the offered services for free. Not an ideal scenario for CSP balance sheets moving forward.

But to enable these new business models, CSPs will require more effective handling of settlement between multiple parties in the service delivery chain - something not within the capability of today's prepaid implementations - and a complex procedure in the postpaid world. Now enter real-time charging (RTC) as a potential solution - to encourage greater personalisation and niche service delivery to targeted users.

## Part Two: Real-Time Uncovered

If the telecoms industry is shifting gears to speed the drive to RTC, it is helpful at this point to clearly define what we actually mean.

Real-time charging is the term adopted by the IT industry for describing the 'on-line charging system' (OCS) as defined in 3GPP TS 32.240 standards. In a nut-shell RTC solutions enable CSPs to implement rating (or pricing) in real-time, whether or not users choose to pay in advance or arrears for services consumed.

To enable new VAS to be made available to prepaid as well as postpaid users, CSPs have selected adjunct platforms to handle the real-time rating for these services. However, charging and balance management for prepaid users continues to be handled by their Service Control Points (SCPs).

Because prepaid SCPs were originally designed to tightly manage balances associated with prepaid accounts they are, by their very nature 'real-time'. SCP-based prepaid systems enable users to access their balance in real-time, giving immediacy of information not available to the higher value postpaid community.

### The Online Experience

With RTC, the customer relationship becomes a more online experience, much like in the retail financial sector, where account information and balance updates became available in real-time. Applying RTC to both prepaid and postpaid customers (whether continuing with separate systems or taking the opportunity to merge them) will fulfil user's expectations of immediacy already created by the Internet

*"Applying RTC to both prepaid and postpaid customers...will fulfil user's expectations of immediacy already created by the Internet"*

### Charging and Choice

Not only do customers expect immediate updates on their spending patterns, they will also want to choose their payment method on a 'per service' or 'per use of service' basis. They already have these payment choices in all other areas of life, so why shouldn't the same apply to their mobile services? It's certainly true that all subscribers should have visibility of their spend position in real-time (whether prepaid or postpaid). But complicating the issue is the fact that all services or all uses of each service will not be paid on the same basis. Some users may choose to pay some post-pay, some prepay – just as they can with other commercial transactions. The need for flexibility is clear and makes complete sense as subscribers buy more sophisticated and potentially expensive services online via the mobile phone.

This implies a need to break away from the current segmentation between prepaid and postpaid customers and the one-size-fits-all model that prevails today.

## Difference in Real-Time

The primary function of the RTC platform is therefore to apply a charge for the use of a service and provide this, in real-time, to the platforms in the network that handle payments; meaning balance management for prepaid and usage billing for postpaid.

Through co-operation with other elements in the network, RTC will enable users to set rules to, for example, limit their monthly spend on calls, downloads or roaming and to avoid what is commonly referred to as 'bill shock'. This separation of charging from payment is key to supporting a new set of payment choices for both traditional person to person (P2P) communications, as well as new value added services (VAS). These new RTC implementations will enable the CSPs to remove the distinction between today's pre and postpaid customers in terms of the services offered and the way their customers interact with them.

*“Separation of charging from payment is key to supporting a new set of payment choices for both P2P communications as well as new VAS”*

## Five Nines Flexibility

In reality, many of the IT platforms that CSPs have implemented to handle VAS over GPRS (web browsing, ring-tone downloads, MMS, etc.) are evolving into the real-time charging platforms of the future. So unlike voice and messaging, where the gold standard of 'five nines' availability is applied, data and content services are often delivered to rather less exacting availability and latency standards.

These IT grade platforms on their own however aren't the complete answer - and are certainly not adequate for handling very high volumes of traffic where human interaction requires telephony grade latencies.

Indeed, it is important to remember that the reason why CSPs originally chose IN (Intelligent Networks) SCPs to handle prepaid charging was lack of trust - even for known (as opposed to anonymous) customers. The answer was to put the metering and call-control 'in call' to make it 100% guaranteed that the balance would not go over-drawn.

Without an 'in call' solution metering usage against their prepaid balance users could run up an enormous expenditure on their prepaid balances. This would leave the CSP with no guarantee of recovering the debt and potentially expose them to paying debt of their own related unrecoverable interconnect charges. As a result, an 'in call' solution with platforms capable of handling thousands of real-time sessions per second, and engineered for 5 x 9's availability - entered the IN SCP as the obvious solution.

## Charging On-line and Off-line

As is often the case in telecoms, terms are used interchangeably and are misinterpreted to mean the same thing. The same applies with real-time charging and on-line charging (OCS). They are in fact one and the same. When we talk about real-time charging, what we really mean is to price in real-time – or more particularly the ability to apply a tariff to any call, session or message in real-time independently of how the same is charged to the end user or how the user chooses to pay for the service.

OCS refers to the rating and pricing in real-time; for example, where CSPs have chosen to implement RTC platforms, balance queries initiated by both pre and postpaid users will reflect their most recent activity – not the case today for most postpaid users. Off-line charging meets a different need and is perhaps more relevant for corporate/enterprise users where accounting functions are handled on periodic cycles rather than ‘up to the minute’. Off-line charging is sometimes thought of as the replacing proprietary postpaid billing platforms with more modern IT offerings as an alternative to an on-line implementation - but this need not be the case.

Off-line charging can work in conjunction with on-line charging to provide functions provided by today’s postpaid platforms but in a more open and flexible way. There are functions that are more appropriately executed in real-time and others performed off-line (in batch). A solution will typically use both techniques where appropriate to offer enhanced capabilities in the areas of user profiling, settlement (in particular the need to accommodate new revenue share and sponsored calling models) and a more “web like” experience for end users available today with postpaid systems.

The combination RTC and Off-line charging functions will enable CSPs to bring a new portfolio of VAS to market supported by flexible payment models. RTC also meets the need for consumers to be in control of how much they have spent and have either paid or will have to pay. In some cases, end users may wish to ‘pay up front’ for some services and to be billed after the event for others (similar payment models have already proven to be successful in other markets such as ‘pay per view’ TV).

*“The combination of real-time and off-line charging functions will enable CSPs to bring a new portfolio of VAS to market supported by flexible payment models ”*

## Real-Time Control

The majority of next generation of RTC platforms (as opposed to full service on-line charging systems) implemented to-date provide rating for VAS only and use existing pre and post paid platforms to provide rating (or charging) for calls and messaging, balance management and billing. Through acquisitions of a number of smaller, specialist RTC vendors, the traditional billing vendors have been able to inject new capabilities into their postpaid charging platforms. So far they have only been able to provide charging for prepaid VAS. Other prepaid services still remain the preserve of the SCP.

In any replacement strategy, CSPs will require the same carrier-grade performance provided by today's prepaid SCPs. IT grade systems are unlikely to meet the throughput and latency targets that are necessary to handle the thousands of call and message requests generated by user's preferring to prepaid for their service access. It remains to be seen who will win the fight to replace the ageing SCP platforms that support over 95% of prepaid core services and revenues today.

One answer lies in the 3GPP specifications for on-line charging; addressing the need for a real-time call and session control platform referred to as the 'charging trigger function' (or 'active mediation' by the IT community). This platform interfaces between the network elements and the OCS using Diameter (or a vendor specific charging protocol) and toward the network using the required service protocol.

With this capability in the network, CSPs can implement carrier grade real-time charging for all users - whether pre or postpaid and to meet the expectations of the "now generation" that have been set by the internet providers.

## Part Three: Opportunities in Real-Time

So, if real-time charging provides an environment where charging information is always current and correct, how precisely does it satisfy the needs of the now generation?

The answer is in a variety of ways – for example, when enquiring of their debit balance, postpaid users will have access to the information on the last call, message download or session. Both prepaid and postpaid users will be able to specify thresholds for maximum spend on any call or data session and be able to manage both their credit and debit balances in real-time with the assurance that they will not spend beyond their own limits.

Critically, RTC ensures the historic distinction between prepaid and postpaid can now disappear. CSPs will have the option to treat the user's choice of payment as exactly that, rather than as a way of segmenting users. With this segmentation removed, prepaid users can be offered the same set of services as the postpaid community. RTC makes this possible by separating out the rating and pricing functions from the platforms that are handling the billing - those legacy prepaid SCPs and monolithic billing platforms of our disparate past.

*“CSPs will be able to treat the user's choice of payment as exactly that, rather than a way of segmenting users”*

### Platform for Growth

CSPs benefit too - from having one platform for rating and pricing of all services, whatever the service type and whatever the payment choice requested by the user. Removing the need for specialist skills to re-configure complex and inflexible SCP based rules and pricing tables through implementing the new generation of open programmable IT based RTC platforms means that new pricing for additional services or a mix of services can be implemented in minutes rather than months.

With this new flexibility and speed comes the opportunity for CSPs to launch new dynamic campaigns and promotions to both communities of users. Promotions such as “try before you buy”, “happy hour pricing” and “pay to play” will encourage mobile users, whatever their payment choice, to try out many new services.

### Driving Innovation

RTC enhances today's rating rules such as time of day and day of week with loyalty programs including real-time bonus, cross-product promotions and discounts, offering a significant opportunity for up-selling. Call screening, parental controls, asynchronous alerting and group accounts are now all possible.

This is good news. Subscribers are increasingly seeing their CSPs behaving much more like the online service providers in the web world. And with this comes an opportunity to encourage and build brand loyalty – with the resulting increase in revenues and decrease in churn.

## Policy Perspective

Policy based pricing may also encourage greater adoption through offering free or possibly cheaper calls with the acceptance that service quality may not always be carrier grade – perhaps with such calls off-loaded to the internet telephony providers who will preserve capacity for high value customers. Alternatively, advertising sponsored calls for emerging markets could be introduced in countries where there are massive numbers of basic telephony users who would happily use a service sponsored in this way. Neither of these services are available using today's prepaid systems.

## Two-Sided Businesses

Finally, we get back to the emergence of the 'two sided business model' (e.g. advertising sponsored calling). Driven by CSPs seeking to create an eco-system of 3<sup>rd</sup> party providers, complex settlement models will need to be supported to ensure fulfillment of all parties in the value chain.

While generally available for postpaid users, current prepaid systems will make it very hard for the CSPs to offer services to the prepaid community - particularly where voice and messaging are part of the service mix. Migrating rating and pricing for prepaid from legacy SCPs to RTC platforms will enable P2P communications to become a key element of the new generation of VAS created by the CSPs and their partners.

*“Migrating rating and pricing for prepaid legacy SCPs to RTC platforms will enable P2P communications to become a key element of the new generation VAS...”*

And this is good news as P2P services will continue to dominate revenues for some time to come.

## Connected Conclusion

So, real-time charging is no longer a “nice to have” option. It is becoming a business imperative to allow the rapid creation, delivery and host of a whole series of applications. It delivers the settlement infrastructure to enable the rapid creation of highly personalized new services.

But for such services to be delivered CSPs need a ‘c’-change in their thinking. They must move to a position where they are able to deliver, analyse and eliminate unsuccessful services - while retaining popular applications to use as templates for refining services and targeting further.

There is little doubt such a change will happen overnight, and here is where CSPs need to take a leap of faith – the question is are they ready?

## Part Four: Real-Time Conversations (Vox Pops)



**Comment from Jeremy Cowan, Editor & Founder, Vanilla Plus,**  
<http://www.vanillaplus.com>

“Real-time charging is one the most critical aspects of 4G. As mobile network operators prepare the ground for 4th Generation (4G) services, many in the industry are wondering what impact technologies such as LTE (Long Term Evolution to 4th Generation) will have on their ability to offer faster web browsing and music downloads, plus superior backhaul speeds. But just as important to that future is the role of real-time charging. LTE will affect the entire telecoms service delivery chain, far beyond mobile, reducing the performance gap between fixed and wireless networks. But as long as IP data traffic is growing at a CAGR of over 100% while revenues rise at just 4%, LTE investments will be held back. So, operators need a way of monetising mobile broadband, and many believe that real-time charging is it. Although some observers argue that operators and service providers have yet to see a proper return on the investments made in their 3rd generation networks -- not least on 3G licences -- the pressure for faster download and backhaul speeds is driving them to accelerate their 4th generation network strategy right now. But without real-time charging it remains hard to see how operators will achieve that return on 4G.”

## BillingViews

News, views & comment

**Comment from Alex Leslie, Publisher, BillingViews (and former CEO of the Global Billing Association) <http://www.billingviews.com>**

“The word ‘network’ is disappearing from the communications vocabulary. Networks are transforming into platforms and platforms are about transactions. To manage transactions it is necessary to do many things at the speed of light – take an order, confirm the price, authenticate the transaction, process the payment or manage the billing – and look after the customer. In order to even be part of this make or break game, communications service providers must be able to manage the customer relationship in real time. This requires innovation and investment and a radical change of thinking – all of which takes courage.”

## mobile business

**Comment from Heather Mclean, Editor, Mobile Business, <http://www.mbmagazine.co.uk>**

“Despite the mass of investment and the availability of solutions from the likes of Highdeal and Amdocs, effective billing remains a challenge – particularly in the pre-pay world. So, if money is not being effectively recouped from current generation services, the billing challenge in tomorrow’s increasingly complex and interconnected world is a significant one.”

## OpenCloud

**Comment from Graham Francis, Marketing Manager, OpenCloud, <http://www.opencloud.com/>**

“Operators are experts at billing and revenue collection. The ability to prescribe a service tariff, meter usage (or consumption), create a bill and collect revenue is certainly a core competence shared by both the fixed and mobile carriers. Managing real-time communication too, has been at the core of their service offerings for a long time. The ability to successfully handle millions of call attempts during peak periods is today also taken as a given. What has only happened on a limited scale so far is convergence of “charging” & “real-time” to give users immediate fulfilment. Now, with 3GPP having defined an architecture for on-line charging that brings together IT flexibility with carrier grade performance, CSPs can at last bring these two worlds together to offer an increasingly tailored suite of services and payment options.”

## Part Five: The OpenCloud Guide to RTC

### History in Focus

Operators are experts in the metering and charging for usage of their services and they have been for a long time. Think back to 1958 with the introduction of subscriber private metering (SPM) by the then UK Post Office which allowed subscribers to monitor the cost of telephone calls as they progressed. Subscribers could see total 'chargeable units' to date and 'units chargeable for individual calls'. All this, more than half a century ago! Fair enough, it was a fairly rudimentary service based on electromechanical technology - but it worked and it gave users what they needed and gave what the majority of postpaid mobile users don't have today - and that's a real time view of their spending patterns.

*“Think back to 1958 with the introduction of subscriber private metering by the then UK Post Office which allowed users to monitor the cost of telephone calls as they progressed”*

Surely half a century on, with quantum leaps having been made in technology we could expect real-time charging for everyone - fixed or mobile pre or post paid, but we know this is not the case. Charging still comes as a service for many and not as a payment choice. Perhaps now with web technologies, IP networks, next generation application servers and open developer environments the problem can be solved. But it's not that simple. Much legacy equipment still persists and operators are naturally nervous about changing anything that may impact on their ability to collect revenue - particularly in these challenging times.

### Back to the Future

Let's now consider 2009. For many consumers, life isn't so much different to what it was 50 years ago when it comes to managing spend on communication services. Despite increasingly inclusive service bundles, spend on mobiles is still an area that can quickly get out of control – particularly when roaming, browsing or accessing VAS. Despite prepaid users being able to obtain an immediate balance update right after the call or session, it's not possible to do this “in call” or “in session”. Again, referring back to subscriber private metering for the fixed line subscribers of the 1950's, users were able to see exactly where they were in real-time with any call either in whilst it was in progress or after either party “hung up”.

Surprisingly, it's the IT rather than the telecom vendors that have started to get to grips with this problem, this despite this market being dominated by traditional vendors who have served the needs of the telcos for many years – having delivered almost all the platforms that manage the supply and charging for services. A large number of new IT vendors are coming to market with RTC solutions. Many promise what they call “convergent real-time charging” for mobile services, but few understand the

complexities of telecom networks and the need for carrier grade performance to manage the millions of charging related events taking place in real-time that need to be recorded and analysed. In addition, while many of these IT vendors focus on new multi-media, “over the top” services and subscriber profiling, few talk about how to implement real-time charging for core services such as voice and messaging

### **Value Added Futures**

Many CSP VAS service offerings today are rated by the new generation of IT based real-time charging platforms, these having been more or less successfully integrated with existing prepaid charging and post paid billing to enable service access from both user communities. The nature of VAS traffic sits comfortably with these IT systems – generally traffic is less real-time sensitive, there are fewer events to deal with, metering of throughput is less critical and generally CSPs probably don’t care too much if the odd megabyte or two escapes without being charged for.

In many cases today, the operator sits outside the value chain for VAS services and so is therefore less concerned about the need for absolute accuracy in charging for the underlying session. As they begin to move more towards “smart pipes” and assume a greater role in collecting and distributing revenue across the supply chain, there will be much greater focus on the need for systems that meet similar performance offered by today’s real-time charging platforms for voice and messaging services – these being prepaid SCPs.

### **Consolidating Real-Time**

What’s needed then is a solution that combines the flexibility of today’s IT grade VAS real-time charging platforms with the robustness of the proprietary but powerful legacy prepaid charging platforms. As discussed elsewhere in this Paper, 3GPP standards have already recognized this requirement and propose an architecture that enables IT grade on-line charging systems to be deployed into operator networks without fear or loss of revenue occurring through overload or failure to meet carrier grade performance. This architecture prescribes the role of a “Charging Trigger Function” to manage the load between the charging events generated by user activity in the network and the real-time charging platform itself. RTC platforms previously implemented for VAS services alone can now scale infinitely for any service type and to provide the subscriber private metering for the new digital economy.

Whether users have chosen pre or postpaid as their preferred payment method, CSPs will need to deepen their relationships with all of their customers to provide more tailored services and pricing packages. As consumers become increasingly credit challenged, there will be a shift towards payment mechanisms that will make it easier to budget. What is important is that operators continue to provide the same levels of service to their customers whether choosing a pre or postpaid payment choice.

Costs can be kept down by specifying open; standards based architectures for new charging deployments. This will also avoid the vendor lock-in and high cost problems of

the past where both pre and postpaid platforms were created around vertically integrated hardware and software platforms.



 OpenCloud

OpenCloud's Rhino is a real-time application server for agile development, deployment and efficient management of person-to-person communication services across current and next generation technology. Rhino is a high performance, genuinely carrier-grade service execution environment for realizing a Next Generation Service Delivery Platform (NG-SDP). It uses commercial-off-the-shelf (COTS) hardware and software to deliver service layer agility to TDM and IP-based networks at a radically lower price-point than traditional solutions from network equipment providers.

OpenCloud headquarters are in Cambridge, United Kingdom. R&D, Engineering and Support are located in New Zealand, Spain and there are OpenCloud branch offices in the United States, Singapore and Japan.

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