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Oracle Communications Convergent Charging and Policy: An Executive Overview
Executive Overview

The rise in smartphone and tablet usage, coupled with increasing data speeds, both mobile and fixed, is contributing to a geometric increase in the consumption of data services, enabling the so-called customer “Digital Lifestyle”. However, a corresponding decrease in traditional voice and text services has left communications service providers in a real bind. Even with the increase in data usage consumption, service provider revenues from data service usage has not kept pace. Faced with enormous costs resulting from IP network build outs, and the potential “threat” of over-the-top (OTT) providers getting a free ride on those networks, service providers must deploy customer-centric strategies to increase revenues and boost the bottom line.

Customer-centric strategies to boost revenues involve attainment of customers, retention of customers, and most importantly influencing customer spend – or gaining a larger share of the customer wallet. Convergent charging and policy systems that bridge network and IT functions are key for a communications service provider (CSP) to accomplish those customer-centric strategies. Specifically CSPs must accomplish excellence in three main areas: product differentiation, customer engagement and operational efficiency, which are areas of focus that are addressed by the Oracle Convergent Charging and Policy solution.

The Oracle Communications Convergent Charging and Policy solution is the only solution that enables CSPs to combine business and network policies to rapidly launch innovative offers and empower customers to personalize and control their usage experience, accelerating service monetization at a predictable cost of ownership. Specifically, the solution delivers:

- Fast and simplified offer design
- Personalized service usage experience
- Predictable and low operations cost
Introduction

The revolution in technology is radically changing the telecommunications industry. Communication Service Providers (CSPs) no longer deal in minutes, but in data. The growth in sales of smart phones and tablets has led to a massive explosion in data usage: the so-called ‘data storm’, contributing to consumers showing an insatiable appetite for data. Data usage has consistently doubled for the past six years. Smart devices greatly contribute to the rise in data usage. Tablet subscriptions are predicted to grow at a rate of 755 percent pace over the next few years and they’re generating 3x the data usage as smart phones. Data usage generated by tablets is expected to be 21 exabytes by 2017, a 300 percent increase from 2012 usage. Overall, mobile data generates 95 percent of all wireless traffic.

In addition to overall data volume, mobile smart devices and the applications that run on them are also driving a change in consumer behavior. The way consumers interact with each other through work, home, and play has changed dramatically within the last decade, prompting a new term to describe consumer behavior— the digital lifestyle. The digital lifestyle also introduces a multitude of new players within the communications landscape, the so called over-the-top (OTT) providers, which consumers rely upon within their daily lives, and often trust and admire.

The digital lifestyle in turn has characteristics that reflect the attitudes of consumers immersed in this new economy. Consumers expect to be “always on”, that is, they expect to be constantly connected, no matter what their location or device they happen to be using (even if that device happens to be an automobile!). Along with the instant gratification expected from this real-time communications environment, consumers also require a certain amount of personalization and control. They want service plans and tariffs that correspond and are tailored to their particular lifestyle, and they want the control to be able to adjust their plans whenever they wish. And, they expect that their experience with their service provider to be simple, easy, and predictable, with no surprises.

The digital world in which we live, work, play and socialize has created immense opportunities for communications service providers, however serious pressures and challenges must be overcome. Those CSPs that understand, embrace and tackle those challenges head-on will be the ones that thrive, as revenue opportunities are abundant for CSPs in this new digital economy.
Pressures and Opportunities in a Rapidly Changing World

The explosion of data usage, increasing use of smart mobile devices, and the emergence of new OTT players have all contributed to the so-called digital lifestyle. However, the radical changes in consumer behavior brought on by this digital storm have created pressures that face many CSPs as they move their focus away from traditional services, such as voice and SMS, to digital services supported by IP networks.

The focus on the monetization of digital services is supported by the fact that globally, CSPs are experiencing a decline in revenues from traditional voice and SMS services. In the US, for example, for every 48¢ in new data revenues, CSPs lost 64¢ in traditional voice revenues. For most CSPs this is an unsettling trend that must be reversed.

An unwavering focus on the customer and providing the best possible experience for the consumer of digital lifestyle services is a high priority business strategy for CSPs. High levels of innovation and agility are required to rapidly introduce relevant offers and promotions to consumers. Bland, “one-size-fits-all” offers are not sustainable in today’s digital economy. And, an understanding of customer behavior coupled with the ability to recognize customer segments, down to the individual consumer, are required to deliver relevant offers to the right consumer at the right moment.

This customer understanding is increasingly complex as we move further and further into the era of the “hybrid consumer” – one with multiple personas, for example, worker, father, gamer and social blogger, exploring the digital lifestyle through multiple devices, such as smartphone, tablet, smart TV or automobile.

The hybrid consumer is empowered by the growing community of OTT providers, which presents controversy and opportunity. While on the one hand, OTTs are creating the applications that are driving the enormous growth of data usage, and CSPs are benefitting from that increased usage, on the other hand, the OTTs are viewed as a threat by many CSPs. The view that OTTs are “getting a free ride” on the CSPs’ networks and are relegating the CSP to the role of the “dumb pipe” is a concern for many CSPs. However, the opportunity to partner provides benefits to both parties.

The intense focus toward improving the customer experience is coupled by increasing internal pressures pertaining to the CSPs’ technical infrastructure. The immense cost of network build outs as the industry moves toward all-IP and 4G technologies puts even more pressure on the CSP to realize more effective monetization strategies for their services. Convergence between the network and IT functions within a CSP also presents internal challenges, yet at the same time presents opportunities for silo reduction, operational efficiency and overall savings in the total cost of ownership of network and IT infrastructure.

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1 Source: Chetan Sharma Consulting, 2013
Attract, Retain, Influence

As stated earlier, disruptive technologies, customer expectations and internal IT and network pressures create challenges for CSPs, yet they also present enormous opportunities for CSPs to maximize revenues and increase margins. Generating revenue requires an ever increasing focus on the customer, leading to strategies designed to attract additional customers, retain those customers, and most importantly, influence those customers to gain a larger share of their spend.

Strategies to attract, retain and influence are in turn accomplished through three categories of business focus, and CSPs that effectively approach these categories are almost certain to succeed and increase margins. Those categories are:

- **Product Innovation** – the ability to rapidly design and launch relevant services that resonate with customers and set the CSP apart from the competition
- **Customer Engagement** – the ability to meaningfully interact with customers, in real-time, and provide proper levels of personalization and control to customers to maximize spend and loyalty
- **Operational Efficiency** – the ability to operate IT and network functions meeting performance and scalability requirements in an effective, efficient, low cost manner.

Core to accomplishing all three categories are the network and IT functions inherent in a unified, well engineered convergent charging and policy solution – one that goes beyond simple integration between charging and policy. While other components of traditional BSS/OSS systems are essential in the overall framework of a telecommunications IT and network environment, no other systems or functionality is as crucial to maximum revenue generation as the charging and policy systems. The Oracle Communications Convergent Charging and Policy solution is the only integrated charging and policy solution that maximizes product innovation, and allows the most granular yet simple forms of customer engagement to maximize loyalty and spend, all accomplished with the absolute lowest total cost of ownership.

Let’s investigate further how the Oracle Communications Convergent Charging and Policy solution enables Product Innovation, Customer Engagement and Operational Efficiency.

*Figure 1. The three success pillars: Product Innovation, Customer Engagement, Operational Efficiency*
Product Innovation

The ability to rapidly launch relevant, differentiated services that resonate with customers is paramount to the success of a CSP enabling a customer's digital lifestyle and maximizing revenues. Product Innovation, in the context of the Oracle Communications Convergent Charging and Policy solution can be thought of as “design-time” capabilities. The capabilities give the CSP the ability to abstract network and IT complexity, allowing the business user the ability to rapidly design and create innovative, relevant offers with any pricing or policy attribute. Easy-to-use design time tools provide the marketing department or business unit the ultimate in flexibility and re-usability of pricing and policy attributes across product lines for the quickest time to market of services, offers and promotions.

Despite best efforts, many CSPs encounter common issues in the area of Product Innovation. Let’s investigate them further.

Inhibitor to Product Innovation: Slow and Complex Offer Design

Over time, many CSPs face the common problem of system silos, which includes multiple billing and charging systems, and separate policy management systems (PCRFs). Lack of a unified solution across charging and policy leads to a fundamental design time problem: slow and complex offer design, which leads to the following issues:

Figure 2. Example of silo’ed and fragmented design-time architecture resulting in slow time to market.
• **Fragmented design tools and methodologies across business, IT and network departments**

Fragmentation amongst charging and policy systems results in long development times for offers and promotions, as it is difficult, if not impossible to incorporate or correlate pricing attributes with policy (QoS) attributes. Due to a unified charging and policy design environment, requests from marketing for offers that incorporate relevant attributes of pricing and QoS cannot be easily translated to the IT and/or network departments, resulting in offers taking months to design and launch, or worse yet, not at all.

• **Long development and testing cycles**

Lack of a common design tools and methodologies across charging and policy also results in long development and testing cycles. Difficult-to-use design interfaces across numerous systems, that are rigid, inflexible and dependent upon proprietary scripting languages, result in long lead times to develop pricing and policy rules. Multiple inputs amongst various design interfaces is error-prone results in long test cycles, as identifying the source of rule errors is difficult and time consuming. In this era of instant gratification, marketing and revenue opportunities are lost when offers take too long to launch.

• **Limited re-usability of policy and charging rules for different markets and business models**

The digital economy fuelling our digital lifestyles is changing rapidly. CSPs are constantly evaluating business models and looking for opportunities to expand into new markets to capture new customers and revenues. Common examples are expansion from fixed services to fixed/mobile and quad-play services, offering cloud-based services, and introduction of machine-to-machine (M2M) services. Each of these business models requires potential new pricing strategies, rules and attributes, and often the underlying charging and policy systems are not flexible enough to create the required convergent pricing and policy rules, resulting in the introduction of new charging silos, and/or inadequate price plans.

**Enabler of Product Innovation: Fast and Simple Offer Design**

The Oracle Communications Convergent Charging and Policy Solution is an enabler of product innovation, providing fast and simple offer design. The common design tools and methodology across charging and policy is designed for business and marketing users, so that rapid launch of offers and promotions becomes simple, intuitive and profitable. Following is a description of how the Oracle Communications Convergent Charging Solution enables fast and simple offer design:
Unified design approach across network and IT for the business user

The Oracle Communications Convergent Charging Solution employs a unified design approach for offer pricing that unifies business rules and policies with network rules and policies. The common offer design tool, designed for the business user, allows pricing structures to be easily defined for any offer or promotion. Anything that can be measured can be used as a pricing attribute that can be incorporated into the pricing rules, including application, location, customer, network, QoS, and device aware attributes. The business user of the CSP virtually has an unlimited palette of attributes to use, all of which are easily integrated to the underlying charging and policy system.

Decoupled commercial offer design from network and IT speeds development and testing cycles

A unified charging and policy design tool, designed to be used by a business user, abstracts pricing and policy attributes from complex IT and network systems. The business tool creates commercial offers which may be then made visible to other customer-facing interfaces, such as the web, CRM, or mobile applications. The design methodology of the Oracle Communications Convergent Charging Solution decouples the commercial offers from the underlying network and IT infrastructures, so that changes made to the network or IT systems will have no impact, or will impart no errors, to the available commercial offers.

Network, service, and event agnostic capabilities provide the flexibility to reuse network and business policies for different markets and business models
The rapid rate of change in the digital economy requires CSPs to innovate, adapt and respond to varying market conditions. CSPs need to rapidly monetize the deployment of new networks, for example 4G, and new business models, such as M2M. The underlying charging and policy solution infrastructure must be nimble, flexible and efficient enough to process the requirements of any network type, device type, or charging event, whether subscription, usage or event, and payment (prepaid and/or postpaid). The design tools and methodology of The Oracle Communications Convergent Charging and Policy solution allows re-use of existing charging and policy attributes, so that they can be easily used or adapted to a variety of business and charging models.
Customer Engagement

A focus on improving the customer experience is a well understood strategy being adopted by many businesses; however few industries have the potential to meaningfully interact with a customer as much as a telecommunications service provider. The digital lifestyle, and the devices we as consumers carry and rely upon are part of the fabric of our very lives, and all enabled by the CSP. The opportunity to effectively engage with the customer brings the benefits of increased service adoption and maximizing revenues. The Oracle Communications Convergent Charging and Policy solution provides the crucial functionality and is the impetus behind and effective customer engagement strategy. Effective customer engagement is real-time and can be thought of as the “use-time” aspect of the solution.

Inhibitors to Effective Customer Engagement: Impersonal Service Usage Experience

Despite CSPs goals to strengthen the relationship with their customers, several inhibitors to providing an engaging customer experience exist.

- **Limited customer ability to personalize products and services, resulting in poor offer adoption**

The first interaction with a consumer typically happens as part of the ordering experience. Too often that experience is restricted, and the consumer has limited choices of service plans that aren’t suitable for their service usage habits and lifestyle. This restriction and “one-size-fits-all” mentality limits a CSP’s ability to differentiate from competitive offers. In addition, service plans that are too generic, or not completely understood by the subscriber, may impede their willingness to actually consume services.

Figure 4. Fragmented systems provide impersonal service and lack of consumer control resulting in low offer adoption and reduced revenues
• Inability to provide customers control over their service usage, resulting in poor user experience and low monetization for the CSP

Customers also desire control over service usage parameters. For example, the ability for a user to set individual thresholds so that they are aware of their usage and spend, or to set parental controls to oversee their children’s usage and service behavior, is important for consumers. The inability to provide individual subscriber control leads to customer dissatisfaction, poor usage adoption and decreased spend.

• Unable to significantly influence customer behavior and exploit their social networks

Arguably the most important aspect of customer engagement is the ability to influence user behavior in ways that will increase consumer spend. Generic offers and promotions that do not appeal to a consumer segment, or individual consumer, fail to entice customers to spend. Further revenue is lost because of the inability to reach new potential customers through a subscriber’s social network, including friends, family, co-workers or followers on popular social networking sites.

Enabler to Effective Customer Engagement: Personalized Service Usage Experience

The Oracle Communications Convergent Charging and Policy solution is the enabler to an effective customer engagement strategy. The solution enables just the right levels of personalization and control to consumers, and provides the platform for interactive engagement.

![Figure 5](image.png)

Figure 5. A personalized service usage experience provided individual subscriber personalization and control, and engages the subscriber in ways that influence behavior to increase spend.

• Dynamic offer configuration allows customers to personalize their plans (e.g., offer-for-one)
When choosing a service plan, customers want simplicity, but also choice. They want plans that fit their particular usage requirements, or their families’, and don’t want to pay for services they don’t use. And they want the ordering experience to be simple as well, regardless of the channel, such as the retail store, web site, and now more frequently, an application on the mobile device. The Oracle Communications Convergent Charging solution provides the ability for individual customers to pick the plan parameters they want, what we call “order-for-one”. Under this paradigm, customers can choose exactly how many voice minutes they want in their plan, as well as their text message limit and their data limit – priced specifically for them.

- **Real-time visibility and granular control over business and network policies allows customers to personalize their services**

Whether a plan is an individual or family plan, allowing customers to control policies within their plan increases customer satisfaction and loyalty, and leads to increased spend. The policies within a customer’s control span a variety of business and network policies. A customer could control business policies such as spend and usage on data services by setting notification thresholds for themselves or family members within the plan. For example, if a customer subscribes to a 10GB family data plan, he or she could set business policy controls, through the convenience of a mobile app, which place individual data usage limits for the children on the plan. A school-aged son could be allotted a 2GB data limit, while their daughter is allotted a 3GB data limit. And, overall, a usage notification control can be specified by the account holder, so that a notification is sent when, say, 90 percent of the 10GB data limit is used.

In a similar fashion, network policies can also be controlled by the subscriber. With granular control over the data limits of his children, the father (account holder) could specify what action that is to be taken when his children reach the data limit he allotted, i.e., whether to cut data usage off completely or allow lower bandwidth data throttling. Also, the father also could have the ability to set parental controls, such as limiting text messaging of his children during school hours. The Oracle Communications Convergent Charging solution provides the capability for individual subscriber business and network policy control and visibility, so that a customer, through the convenience of a mobile app, may view usage information, and set notification thresholds, quality of service (QoS) limits, and parental controls (amongst other things), which provides for an interactive and satisfying customer experience.

- **Sharing and trading of resources to influence customer spend and extend reach into customers’ business and personal social networks**

The ability to leverage a customer’s business and personal social networks is a powerful tool to attract new customers. The Oracle Communications Convergent Charging solution manages monetary and non-monetary resources (balances) and allows customers to share those resources to people within their social networks, even those people outside of the CSP’s network (off-net). Allowing customers to “gift” resources to off-net people exposes those people to the CSP’s services, creating powerful attraction scenarios to reach more potential customers.

- **Gamification and contextual real-time notifications allows CSPs to drive customer buying and usage decisions**
Knowing the context of customer usage, that is, the application they’re using, which device they’re using, and the location they’re using it is very useful information. Even more powerful is the ability to take action on that information through a meaningful, real-time interaction with a customer. The Oracle Communications Convergent Charging solution allows a CSP to use contextual real-time information to engage with a customer in real-time for revenue generating opportunities. For example, imagine the ability to prompt a customer to take advantage of a special HD video promotion while at a football game – one that would let the customer view HD replays, or highlights of other games throughout the league. Or, consider a simpler scenario in which the CSP notifies a customer whose prepaid balance is running low, to take advantage of a special top-up offer that is valid for a specific period of time. Relevant and meaningful interactions with a customer, in real-time, provide revenue generating opportunities “while the iron is hot” so to speak.

The Oracle Communications Convergent Charging solution also includes capabilities that allow a CSP to introduce gamification techniques to their service offerings. Gamification, the concept of applying game-design thinking to non-game applications to make them more fun and engaging, is an innovative technique that can be used by CSPs to influence customer behavior to increase spend. By “gamifying” a CSP’s service plans, a CSP can reward certain behaviors, such as using a particular service, or paying an invoice on time. The rewards could take the form of badges, points or other status titles that customers can share and promote on social media sites, or even use as special forms of currency.
Operational Efficiency

While it is important that charging and policy systems provide the features and functionality necessary to provide design-time flexibility and real-time contextual customer engagement, the effectiveness of the system is moot if it is complex, expensive and cost prohibitive to operate.

Inhibitors to Operational Efficiency: High, Unpredictable Operations Cost

![Diagram of operational efficiency inhibitors]

Figure 6. Multiple layers and silo'd systems create integration, upgrade, performance and scalability issues that inflate costs.

- **Closed and proprietary integration between network and IT**
  
  A common issue amongst CSPs globally is either lack of integration between charging and policy systems, or close and proprietary integrations that are difficult and expensive to maintain and upgrade. These inflexible integrations do not allow for timely and rapid rollout of offers and promotions that contain business and network policy attributes, leading to the inability to create differentiated offers, lost business opportunities and expensive maintenance costs.

- **Costly to scale and meet network to charging performance requirements**
  
  Customer usage habits, especially the increased use of data applications, puts increased performance requirements on networks and the supporting charging and policy systems. Networks and supporting IT systems are typically sized for peak usage, an expensive strategy that leaves unused network and IT capacity wasted for the majority of the time. Furthermore, anticipating and responding to short periods of high usage demand is time consuming and difficult, leading to periods of severe network
and IT congestion. The inability of CSPs to rapidly and efficiently scale their charging and policy systems causes a poor usage experience for customers, leading to dissatisfaction, decreased service usage and loss of revenue.

- **Costly to deploy, maintain and extend while leveraging existing network and IT investment**

Common application lifecycle costs are extremely high for the typical CSP with multiple integrations between network and IT systems, averaging 70 percent of an annual IT budget. Maintaining multiple product versions amongst various vendors, each with different product release schedules and multiple operational management applications and consoles compounds the problem. Costs of maintaining these systems erode the bottom line and takes focus away from service differentiation and innovation.

Enabler to Operational Efficiency: Predictable, Lower Cost of Operations

The Oracle Communications Convergent Charging and Policy solution has been designed with operational efficiency in mind. The solution lowers risk and cost while providing extreme performance and scalability.

![Diagram](image)

Figure 7. The Oracle Communications Convergent Charging and Policy solution is an open, standards-based solution engineered for extreme performance and elastic scalability for a low total cost of ownership

- **Open and standards-based solution architecture accelerates adoption of industry standards for CSPs**

The Oracle Communications Convergent Charging and Policy solution is designed and engineered with a standards-based open architecture. For example, integrations between charging and policy are compliant with interfaces defined by the 3GPP. Also, Components of the solution are officially
certified and compliant to the Telemanagement Forum (TMF) Business Process Framework (eTOM) and Information Framework (SID) models. The importance and benefit of this approach is to simplify and speed solution deployment, reduce risk, adhere to well-understood industry design and process principles and reduce cost.

- **Grid-based scaling architecture delivers extreme performance and predictable scalability for real-time transaction processing**

  The increased demand on networks and IT systems due to skyrocketing data consumption creates extreme processing and scalability demands on those systems. The Oracle Communications Convergent Charging and Policy solution has been engineered with modern and proven technologies for extreme performance and elastic scalability. For example, the charging system is designed with an in-memory data cache grid technology, where processing and data are co-located and automatically replicated throughout the grid, providing inherent high availability, low latency, extreme transaction processing speed and the ability to run on commodity hardware for low cost. Elastic scalability of the system allows grid nodes to be rapidly and easily added or subtracted from the grid to quickly and efficiently respond to periods of peak traffic demand.

- **Engineered solution with a cross-functional roadmap lowers solution lifecycle management costs and expertise**

  The operational management of the Oracle Communications Convergent Charging and Policy solution is easy, consolidated and efficient. Many common application lifecycle management tasks, such as upgrades, patches and maintenance activities are accomplished through a single operational management tool. Plus the end-to-end solution, engineered and architected solely by Oracle, has an integrated cross-functional roadmap, ensuring all applications within the solution are compatible and maintainable across all application management lifecycle activities. This well-designed approach ensures low cost and less required specialized expertise.
Industry Leadership

During these times of exciting change in the communications industry, CSPs must make diligent, intelligent and cost-effective decisions, which often mean replacing or augmenting existing charging and policy systems. In this age of declining revenues and margins, market indicators point to the possibility of communications revenues contracting in 2018 for the first time in the history of the industry\(^2\). The perceived threat from OTT providers is real with OTT services growing at an annual rate of over 50\(^%\)\(^3\). The time for savvy CSPs to act is now. They know that in order to maximize revenues and margins and empower customers as they embrace the digital lifestyle, they require modern, convergent network and IT solutions that enable the rapid launch of innovative offers and leverage partnerships with OTT providers.

The Oracle Communications Convergent Charging and Policy solution is the only solution that enables CSPs to combine business and network policies to rapidly launch innovative offers and empower customers to personalize and control their usage experience, accelerating service monetization at a predictable cost of ownership.

Figure 8. The Oracle Communications Convergent Charging and Policy solution unifies business and network policy design to enable a personalized digital lifestyle experience.

Innovative service providers around the world are using Oracle Communications Convergent Charging and Policy applications to reduce time to market of innovative services, engage with customers and lower operational costs. Over 200 service providers around the world benefit from Oracle Communications Convergent Charging and Policy solutions including leading providers such as Vodafone, Orange, SFR, Telefonica and Korea Telecom.

\(^2\) Ovum (Telecom Research) 2013
\(^3\) ABI Research 2013
Summary

In the digital age, Communications Service Providers are seeking to attract, retain and influence customers in order to maximize revenue potential as customers embrace the digital lifestyle. CSPs require a convergent charging and policy solution that bridges network and IT; enables rapid time to market of attractive, relevant and profitable services; provides personalization and control to customers while maximizing the effectiveness of customer interactions; and provides operational efficiencies to lower costs.

The Oracle Communications Convergent Charging and Policy solution is the only solution that enables CSPs to combine business and network policies to rapidly launch innovative offers and empower customers to personalize and control their usage experience, accelerating service monetization at a predictable cost of ownership. Specifically, the solution delivers:

• **Fast and simplified offer design**
• **Personalized service usage experience**
• **Predictable and low operations cost**

The Oracle Communications Convergent Charging and Policy solution delivers the following benefits:

• **Rapid introduction of relevant offers**
• **Increased revenue growth**
• **Low total cost of ownership**