



Customer Application Note

Next Generation Payment Solutions: The Business Enabler

Converged payment becomes the cash machine of user-centric broadband services. As new services, such as music and video streaming, become an ever more important part of the mobile operator's revenue stream, it is worth examining the key role of payment systems – how billing, charging and rating services will enable mobile operators to make the money they need and expect from these services. Seen from the user's point of view, payment is not really the primary interest. However, taking a closer look, the user has a real interest in a user-centric payment system. Pricing must be fair and easy-to-understand, and the invoice must be clear at all times. The Alcatel payment system value proposition facilitates payment for the end user, as well as for the operator. KPN Group has chosen the Alcatel payment system and deployed it by swapping out their old prepaid system.

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NEXT GENERATION PAYMENT SOLUTION: THE BUSINESS ENABLER

Easy-to-understand tariffs are a precondition for fast service adoption by users. KPN Mobile has successfully implemented a new payment solution for all their communication, entertainment and multimedia services.

For many years the fixed network operators have relied on a post-paid payment model based on sending regular bills to subscribers for the cost of their calls. However, the introduction of new players in the mobile market heralded a new business model – the prepaid system – which is now the main revenue generator for many operators in the emerging mobile markets in Africa, Latin America and Eastern Europe. Now operators have an opportunity to converge their prepaid and postpaid billing systems and augment their voice service revenue with a wide array of profitable new 2.5G and 3G services. They are ideally positioned to tap this revenue as a result of the introduction of exciting new data capabilities, such as Internet Protocol (IP) connectivity, video streaming and the Multimedia Messaging Service (MMS). Nevertheless, operators still face a major challenge. Many data services are currently owned and provided by third-party application and content providers with whom revenue must be shared. Consequently, an efficient payment solution is a key asset, enabling operators to control, charge for and rate the delivery of data over their networks.

Alcatel's New Generation Payment Solution provide mobile and fixed operators and enterprises with a complete range of charging, rating and payment solutions.

■ User Payment Requirements

Users of mobile communications want to "pay per value" and not "pay for volume". Kilobytes aren't a measure that a user can easily understand. Also, there is no clear connection between the number of kilobytes consumed, the value of the service to users, and the cost to users.

Let's look at a couple of examples. It costs a user nothing to preview a new ringtone, but 10 kilobytes of data have been trans-

Payment covers all systems dealing with the processing of tariffing, rating, charging, settlement and invoicing.

"Users want a single bill that includes all their spending."

ferred (see *Table 1*). If, however, the user chooses the ringtone, he or she pays 2 euros and downloads 32 kilobytes. Thus, depending on the time and the promotion, there is a disconnection between the charge and the number of kilobytes transferred.

As a second example, a user might pay a flat fee per month to stream video over a mobile network. In this case, an undefined volume of data is transferred, but the user can enjoy the service for as long as he or she likes up to a predefined limit.

Users want convergent billing, that is, they want a single bill that includes all their spending. They also want to control their spending – to know beforehand what they are going to pay. This is so important that any good payment system must include some sort of warning function. Pricing has an immediate effect on the adoption of a service; it must be intuitive and contextual. If the pricing isn't clear to the user, he or she will not know what the cost is and will therefore be reluctant to use the service. Clearly, payment needs to be considered prior to launching a new service.

"Users of mobile communications want to 'pay per value' and not 'pay for volume'."

■ What Mobile Services and Trends are we Talking About?

Today we are dealing with richer communication – not just the exchange of voice information. Video and picture messaging enrich information exchange, enabling users to share emotions and passions. *Figure 1* illustrates just some of the many services.

Many new services are also about expressing personality. Ringtones and ringback tones are excellent ways of expressing one's individuality, and as a result have proved very successful. In this respect, the mobile phone is not just a device – it has become a personal gadget.

Finally, the mobile phone is also an enabler for mobile commerce services, such as paying a taxi bill.

■ Service Providers Business Challenges

Two principal business models are available to service providers. The provider can either take a share of what the user pays for content (e.g. a commission), or it can opt simply to provide connectivity.

Tab. 1 Customer value vs data transfer

	Data Transfer	Customer Value
 Ringtone Preview	10 KB	€ 0
Ringtone Download	32 KB	€ 2.00
Streaming Audio	undefined	€ 10/month

Fig. 1 Examples of user-centric services requiring convergent payment



Fig. 2 Market demand for KPN-Mobile

kpn

Market demands for KPN-Mobile

- **Trend to individualized customer demands**
- **Prepay is just another way of paying**
 - Cost control
 - Pay as you go
- **Very short time to market, hence quick (service) developments/changed market proposition**
- **High service availability**
- **Low total cost of ownership**
- **(Future) possibility for convergent pre and postpaid billing**

Source: kpn

Alcatel recommends the first option for several good reasons. The most important reason is that spending is proportional to the value of the service, whereas connectivity fees are proportional to the number of transferred kilobytes, which may not represent a lot in the end. Consequently, most of the main service providers are already moving in this direction.

The priority for a service provider is to launch new services for its entire base of prepaid and postpaid subscribers. Leveraging the existing customer base is the key to a profitable service launch.

It is also important to note that many new services are emerging. In the past operators were essentially making money from a single service – voice. Now hundreds of new services have emerged, including content delivery. However, no one

in the industry knows which the most profitable services are, and there is no *killer* application. Thus trial-and-error is naturally a part of marketing value-added services, but it must be executed quickly. Flexible charging and rating mechanisms also have a role to play in meeting rapidly changing demands for new services and tariff structures.

Finally, there is always the risk of fraud. It is essential for the service provider to have a reliable warning system. Real-time cost control is the key to achieving this.

Alcatel's Value Proposition

Alcatel's view is that service providers can benefit significantly from a fully converged payment chain. This involves two types of convergence:

- voice / data convergence,
- prepaid / postpaid convergence.

The heart of such a convergent system is a flexible rating engine, and the key feature is real-time cost control.

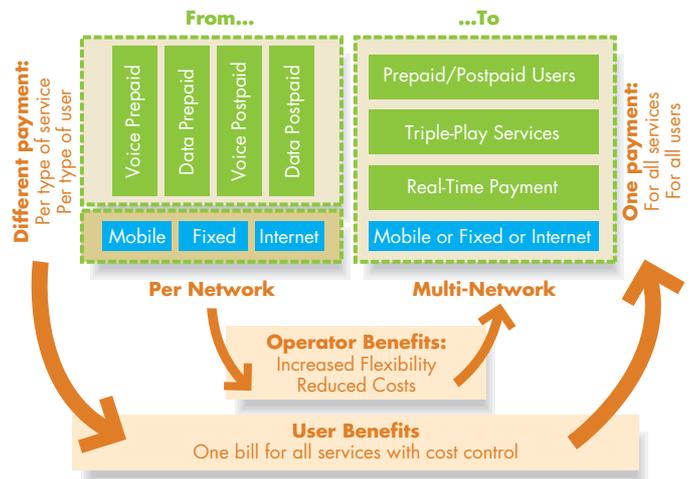
So, what do service providers think about Alcatel's real-time charging and rating system – a system that originally started with prepaid, but which service providers now also want to use for postpaid. *Figure 2* shows how KPN-Mobile describes the market demand which has influenced their procurement decisions.

There is a noticeable trend to personalized user demands. Prepaid is seen as just one way of paying, like postpaid. An advantage to the user is that it provides a convenient way of limiting spending. KPN's decision criteria include the total cost of ownership,

system flexibility to ensure a fast time-to-market, and quick service development. The key to a successful launch is to offer it to the mass-market from the outset, so the service must be made available to a large subscriber base. KPN already has a large customer base of prepaid and postpaid subscribers, so a smooth migration from the old legacy system to the new convergent system is key. Alcatel's offer fits perfectly with KPN's requirements.

Prepaid-postpaid convergence are payment systems that have prepaid and postpaid functionality included in one system.

Fig. 3 Migration from a silo approach to full convergence of the payment chain



Alcatel's Convergent Payment Chain

In the past, the silo approach dominated. Today, however, there is a trend towards a layered approach: real-time payment for voice and all data services (triple play), all of which must be available both to prepaid and to postpaid users. Alcatel is realizing this approach for mobile and fixed networks, and for the Internet. Thus we are looking at a multi-network approach, as shown in *Figure 3*.

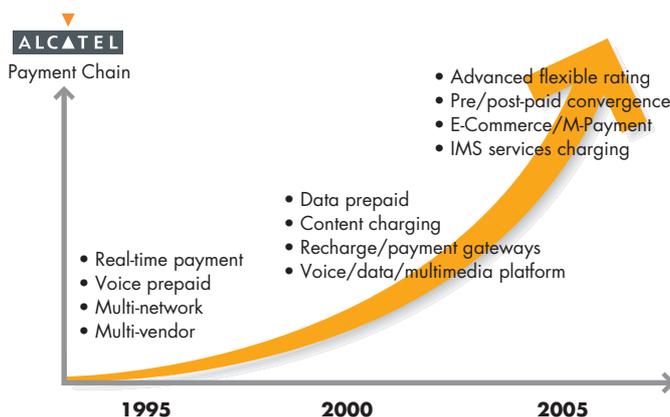
Alcatel has developed a layered approach which is built around what the operators can offer and what they can bill for (see *Figure 4*):

- *Access- or connectivity-based payment*. Handles subscription fees, time-based and volume-based charging.
- *Service-based payment*. Classic examples are MMS and the Short Message Service (SMS). The user pays per message, but there might also be a subscription fee. The service might also be bundled with special promotions. For example, the user may get the first 50 MMS free, after which he or she is charged. Or there might be an MMS

Fig. 4 "Cash machine" for all services and content being transported over the network

Operators can offer...	and can bill...
E-Commerce (on-line transactions, content purchase,...)	<ul style="list-style-type: none"> • Per "explicit act" • Reverse billing for content providers
Services (SMS, MMS, video streaming, download,...)	<ul style="list-style-type: none"> • With subscription fee • Per click • Per content • Depending on time & date • For special promotions • With service bundling
Access (Connection)	<ul style="list-style-type: none"> • Subscription fee • Per time • Per volume (packets)

Fig. 5 Roadmap of Alcatel's payment chain



promotion in which the user isn't charged as it is part of a service bundle.

- *E-commerce* in which data transfer is disconnected from what the user has to pay. Instead the user is paying a third-party for physical goods and services.

Alcatel is the provider of the "cash machine" for all these services, enabling operators to capture as much revenue as possible. Alcatel has been developing and deploying payment systems for the past ten years, and is fully committed to further development both in prepaid and postpaid. *Figure 5* illustrates the main achievements.

Alcatel started with real-time payment as a network-oriented service. As a world-class solutions integrator, Alcatel's expertise in telecom networks is undisputed. Experience with the quick and efficient integration of payment solutions is part of Alcatel's offer. All solutions are inherently multi-network and multi-vendor. The majority of installations have involved integration with non-Alcatel infrastructures, reinforcing our credibility as an excellent solutions and systems integrator.

Subsequently, Alcatel progressed to prepaid data, to content charging, to additional recharging methods and to payment gateways. These are used for reverse charging to content providers and also for payment methods using bank accounts (e.g. prepaid top up via credit card). Alcatel is using this experience to develop mobile commerce-enabling services.

Today Alcatel is continuing its developments to encompass advanced flexible rating, convergence of prepaid and postpaid, and e- and m-commerce. Alcatel is also working on billing and rating, and real-time charging for forthcoming Integrated Multimedia Subsystem (IMS) services.

Fig. 6 Major milestones of new prepay project at KPN Group

New PrePay project

- **RFI (March 2003)** 15 potential vendors
- **RFP (May 2003)** 5 potential vendors, 550 questions, 14 areas
- **Selection (Oct 2003)** Synergy, Finance, Functionality, Migration, Procurement

Why Alcatel: Openness system, price/quality, flexibility
Service creation, performance/availability, of the shelf, KPN Mobile Group contract, future option: convergence pre and postpaid

- **Implementation (Nov 2003)** 27 interfaces towards BSS and network
- **Migration (current)** "open heart surgery" phased approach voice/SMS/data of 3.5 million customers

Source: kpn

Case study: KPN Group

Alcatel has replaced KPN's prepaid system with a next generation payment system based on a convergent payment suite. This solution is delivering real-time payment for KPN's broad range of I-mode services. The project also involves full migration from the old system for around 3.5 million prepaid accounts.

Figure 6 illustrates why KPN decided to choose Alcatel's solution.

KPN sent its Request for Proposals (RFP) to 15 potential vendors in March 2003. Alcatel was selected on the basis of criteria like synergies within the system environment, finance, functionality, migration and procurement. The key reasons for choosing Alcatel were the openness of our system, price-quality ratio, service creation flexibility, and the performance and availability of the Open Services Platform (OSP).

The contract was signed for the entire KPN Group. KPN has the objective of deploying a fully converged payment system for all their prepaid and postpaid subscribers. The project was challenging, with KPN referring to it as “open-heart surgery”. KPN had 3.5 million subscribers, so the switchover to the new system had to be 100% secure. That is what Alcatel achieved.

■ Conclusion

Over the past decade, Alcatel has proved that it can deliver real-time billing systems for a variety of networks, for fixed and mobile, with different protocols, and in multi-vendor environments. The current payment system provides the high flexibility needed to launch new services, while the advanced rating engine ensures that the business logic can be easily defined, even for complex services. Real-time capability is essential for prepaid and is now also becoming a key requirement for the postpaid world because of the variety of new content services.

Alcatel's track record has been demonstrated in a wide variety of multi-network, multi-vendor environments. It is important for operators to reduce their risk by selecting a well-established and trusted partner that has been developing and integrating payment solutions into networks for many years.

KPN has appreciated working with a partner like Alcatel, which understands and can solve the challenges in rating, charging and billing for voice, data and all future multimedia services, and has proved itself capable of implementing a large scale system suitable for mass-market services. KPN can now and in the future take advantage of the scalable benefits of prepaid / postpaid convergence with all of these services on a single platform for prepaid and postpaid subscribers.

Alcatel is currently offering a convergent payment solution based on ten years experience. This advanced system uses a layered approach with real-time, voice-data and prepaid / postpaid convergence for all networks.



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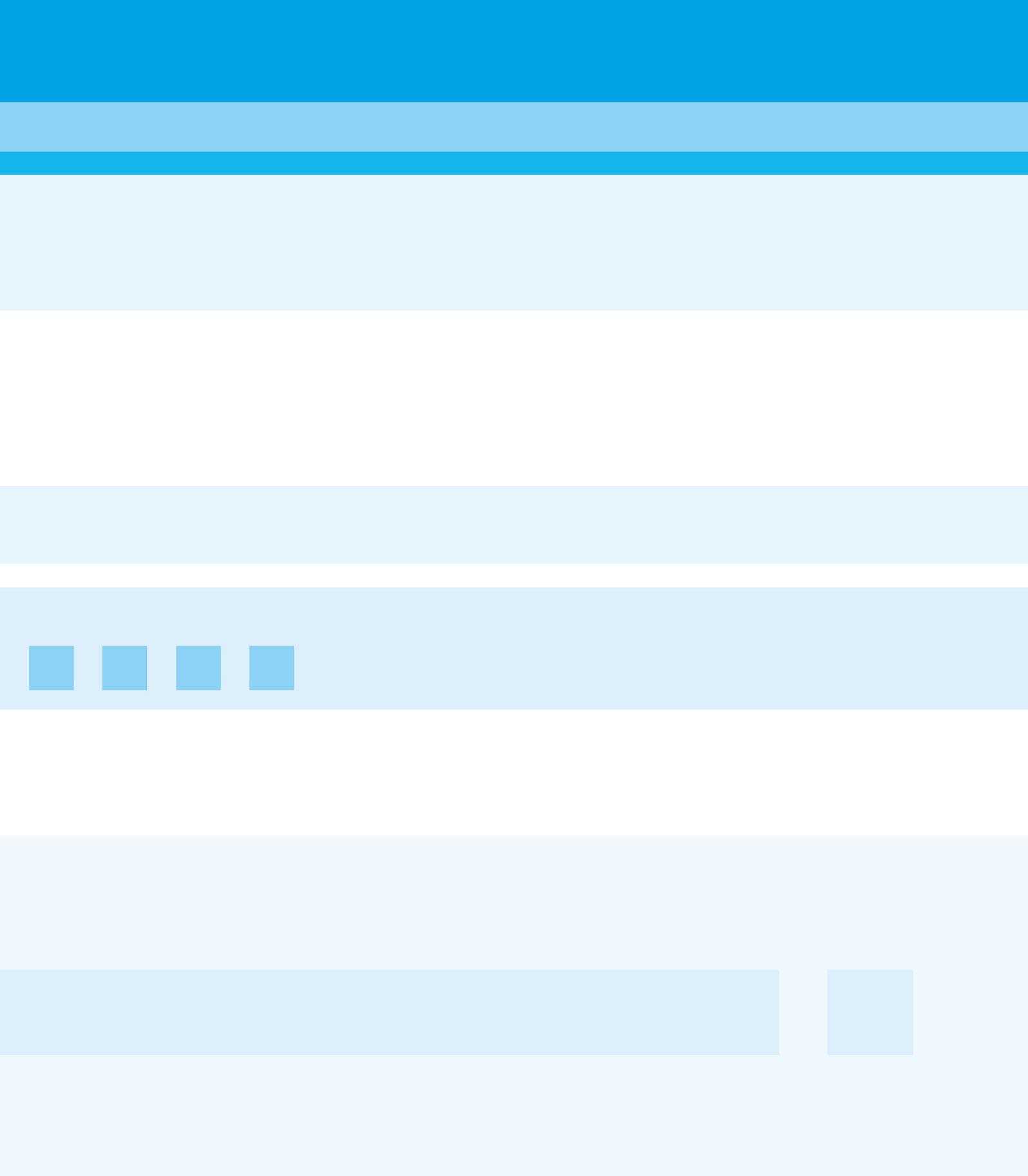


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■ Abbreviations

- 3G** 3rd Generation Mobile Communication
- ARPU** Average Revenue Per User
- CDMA** Code Division Multiple Access
- CP** Content Provider
- DRM** Digital Rights Management
- GPRS** General Packet Radio Service
- GSM** Global System for Mobile communications
- IM** Instant Messaging
- IMS** Integrated Multimedia Subsystem
- ISMP** Integration Service Management Platform
- LCS** Location Service
- MMS** Multimedia Messaging Service
- NGN** Next Generation Network
- SMS** Short Message Service
- SP** Service Provider
- VAS** Value-Added Service
- WAP** Wireless Application Protocol



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