

1 Payment: An issue of profitability for mobile operators

In the past, Telecom operators' revenues came from voice services that they provided and owned the (e.g. free phone, 800 numbers, etc.). The introduction of data capabilities into their network, such as connectivity, SMS, ADSL or MMS brought many opportunities for their subscribers to access appealing content. However, most of the time, these services were owned and provided by third parties, or partners, like content providers.

Today, thus, with data traffic increasing in their networks, Telecom operators can only state that most data revenues, if any, are shared with other 3rd party content providers. However, most of the time, revenues earned by content providers escape from Telecom operators' view and responsibility as they lack the means to control, charge and rate the delivery of content data.

It is also interesting to underline that numerous analyst firms such as AD.Little or BCG estimate that a large chunk of the content delivery revenues for fixed and mobile users will go either to the content providers or to a content aggregator. This would mean a risk of the mobile operator becoming a mere bit-pipe carrying small revenues, thus representing **a clear issue of profitability**.

2 Mobile operators' new position in the value chain

In order to avoid this risk, Telecom operators need to position themselves as a value-added service provider in the value chain.

From an operator perspective, this means changing its business model from a Telco-type model to a service company-like model. This also means generating several potential complementary business models, such as pay-per-usage or subscription models, with limited access to information.

To reach this position, mobile operators need to be equipped with payment solutions enabling seamless and effective content charging, rating and payment. **This type of solution implies a fully voice-data-convergent solution for both pre and post-paid models.** This solution highlights benefits such as a single account for all those services and the possibility of sub-accounts for promotional purposes on specific value services (SMS, MMS,...). All this is leading to a reduced OPEX, one of the current key requirements for those mobile operators.

From an end user perspective, the enhanced capability of these content-rating and charging solutions and the ease of use brought about by having a unique account to charge every fixed and mobile content application (MMS, entertainment, good purchasing...) on any type of bearer (SMS, WAP, GPRS or ADSL). This represents **a wider choice of new, attractive mobile services and applications.**

3 What is content charging?

Content rating is defined as the use of rating capabilities within telecommunications networks to subscribers for all kinds of applications. This also means enabling independent content providers to end users securely (whether pre or postpaid) for the content delivered.

Today, it is unclear which information is going to be rated, and how. Therefore the content rating should be **flexible enough** to cope with future requirements. From a user perspective, content should be accessed regardless of the bearer used (WAP, SMS, MMS, GPRS/UMTS). Flexibility of charging should include different methods of charging according to the type of access (Wap, Web, SMS, MMS...), according to the type of content (URL, MMS, ...) and the user profile. Security of payment should be guaranteed to the user to encourage usage and market takeoff.

Moreover, content charging should apply for both pre and post-paid users. In order to increase market penetration, mobile operators should apply the same principles to post-paid users as for prepaid users. Prepaid users are made aware of their remaining credit when they finish a transaction, post-paid users could end up with a huge bill at the end of the month and decide as a result either to no longer use the service, or to switch to another mobile operator. In order to avoid this the content rating should be **real-time** and flexible enough to notify a **post-paid mobile subscriber** if a given threshold of expenses has been reached.

Last but not least, content charging must once again be flexible enough to cope with various applications: messaging applications (MMS, SMS), location based services (find the nearest restaurant...), games

4 Alcatel's payment suite for content charging

Alcatel's payment suite for content charging consists of payment solutions at three different levels: the mobile level, the Kiosk level and the e-Commerce level.

Access

Alcatel's prepaid data service is handling the prepaid users and charging for GPRS/UMTS through the standardized real-time network interface (CAP3).

In addition to the CAP 3 solution, Alcatel is also offering an alternative when CAP 3 is not available on the network or when the operator wants to apply an advanced pricing model (based on URLs or data services: WAP surfing, Videostreaming, MMS, gaming, ...).

In this alternative scenario, Alcatel is providing additional charging modules to control in real-time the usage and to be able to charge the GPRS session according to time/or volume.

As a key success factor of the “always on” concept, Alcatel’s payment system may allow the end user several sessions in parallel (voice/data or content) and charge for them, insuring an increase of revenue for the operator.

Kiosk

Some data services can not be charged with a “pay-per-byte” charging model as their value perceived is related to the volume uploaded or downloaded (e.g MMS, Video-clip, ringing tone download, ...).

To help the operator to charge for this content service, Alcatel has developed a micro-payment service on the kiosk model. By making the charging operation so easy for the end user, Alcatel’s payment system stimulates impulsive spending.

Alcatel’s Internal Rating Engine calculates the applicable rate for a particular event (flat rate, type of content, bearer used, size of the content). This solution is ready for **prepaid / post-paid convergence** requirements. Rated content post-paid CDRs (Call Details Records) are generated so that post-paid billing can be performed with the right invoicing post-paid analysis system.

The rating policy is defined by the service provider who will choose, according to the content application, what rating policy to apply, while the operator is insuring the charging, billing and settlement process. To allow this flexibility to charge, the proxy module enables filtering of the application content access and the payment chain, while the rating engine charges the access on a large range of business models.

e-Commerce

Alcatel’s Real Time Event Control service is ensuring the e-commerce service logic for **both prepaid and post-paid users**.

The service user opens an e-Content account (dedicated for e-Commerce or using its traditional voice or prepaid account) and connects to a Content Provider web site, that gives him links to downloadable content or information on line (MP3 files, cinema tickets...). At connection, the authentication, authorization and request can be made to the account to check if the e-Commerce transaction is possible.

For prepaid accounts, the service user can make transactions until the prepaid credit limit is reached. In the case of post-paid account, a threshold limit is defined for the service user and a rated CDR is sent to the system.

The interface with the outside world uses the https protocol. The solution is account-based which means each mobile user has a content account that can be integrated with the prepaid account either as a content account or as a stand-alone account in the case of a post-paid model.

5 Why choose Alcatel?

Using Alcatel’s rating engine, service providers can create new rating schemes very easily and flexibly, or modify existing ones, in order to be able to launch a new application instantly. A rating scheme

determined from a variety of available predefined rating parameters, or new ones. Rating schemes standard or customised according to service provider market needs (subscription fee, per hit, URL, duration...).

The rating engine includes a tool evaluating the impact of a new pricing strategy on operators' revenue order to enable marketing teams to define and implement innovative pricing schemes. This tool enables service provider to simulate rating strategies using real business cases.

The event collector database registers all the log's history concerning a service user. The service user or service provider may retrieve information concerning a transaction through web management applications.

It is important to remember that all those services are running on a scalable IN platform (i.e. Alcatel Service Platform) that supports a wide range of services such as Televoting, Premium rate services... The investment can later be used for additional services at a minimal cost.

The main added values of Alcatel's payment solution are threefold:

- > To have one unique rating engine which later on will allow a fully voice-data-content convergent solution
- > To integrate smoothly with existing billing and customer care solutions and implement a content rating solution **for both pre and post-paid** models/accounts at a reasonable cost in order to maximize operator ROI
- > To allow flexibility in the charging of content so that it can be charged based on profile of user, time and content type...

6 Conclusion

Alcatel's content rating solution is answering the current market requirements of mobile operators who tap the opportunity of content delivery to increase ARPU for both prepaid and post-paid models/accounts. The solution is relying on proven components like the Alcatel IN platform and on the flexibility of its rating engine.

Moreover, Alcatel's solution already has in mind a broader view of the charging market where one voice-data-content convergent solution will be delivered to mobile operators. Alcatel solution is already prepared for this requirement with accounts located in one database, a unique provisioning leading to a reduced OPEX and flexibility in the rating thanks to the rating engine service running on the Alcatel IN platform.

With the market evolving from a billing solution on one side and a real time charging solution on the other into a complete solution which is less costly to exploit, Alcatel is pushing ahead to meet this new challenge with a solution for today's and tomorrow's needs.

Appendix: Definitions

As a number of terms are sometimes used as synonyms for each other, when in fact they mean different things, we shall define them. Let us use the analogy of the **events that happen when someone stays at a hotel.**

Upon arriving at your hotel you check in; you create an account with the hotel. When you go to the bar to have a drink, the bartender asks you for your room number and might even ask you to show him your ID (authentication process, drinks are implicitly authorized when you provide validation). The bartender then determines the price of the drinks (rating process), while during happy hour you receive two drinks for the price of one, and they are charged on your account (charging process, possibly preceded by approval from the hotel).

Similar processes occur when you go to the hotel restaurant, the gym, ... When you check out, all items are retrieved and used to compile the bill (billing process). You check and pay the bill, take your luggage and leave the hotel. If you paid by credit card, the hotel manager will collect the credit card from all customers and then take them to the bank to be processed (settlement process).

If the restaurant - or the bar or the gym - were operated by separate companies, they would bill the hotel for the items that were consumed by the hotel guests. In order to do this, each company would compile all transactions made by hotel guests and send it to the hotel. The hotel would then check that the transactions were approved (reconciliation process).

This leads to the following definitions:

Authentication	Verification of one's identity
Authorisation	Granting of the permission to perform the transaction for which authorisation was requested
Rating process	Determination of the value of a service or good, depending on a number of parameters (time, location, customer profile, ...)
Charging process	Registration that the customer's account must be credited by the value of the service that was delivered
Billing process	Collecting of all the "charging" records that weren't billed yet and presentation of this to the customer
Payment	The transfer of money from one party to another, either directly in cash, or deferred through intermediate parties (banks, credit card companies, ...)
Settlement or clearing	The actual transfer of money from the account of the customer to the account of the service provider in the case of deferred payment
Reconciliation	Verification between the service provider and the "payment provider" of the list of transactions that occurred; each should have kept track of all transactions and each should compile a list; both lists should match