



Bouygues Telecom

**CONTRIBUTION OF BOUYGUES TELECOM TO THE
CONSULTATION ON THE ERG DRAFT CP ON NGN
CHARGING MECHANISMS/LONG TERM TERMINATION
ISSUES**

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1 SUMMARY

The charging scheme is very important to the telecommunications markets: it drives the structure and the tariffs of the retail offers, and represents a large part of the operator's income.

Any change in the charging mechanism is therefore to be examined very carefully as it can have dramatic impact on business. It must serve clearly stated long term strategic insight for the telecoms sector, and balance effectively consumer welfare distribution and investment incentives.

ERG is clearly advocating in favor of B&K.

Bouygues Telecom wishes to show that the analysis leading to this position contains three major flaws:

- Given that separate networks are going to converge into a single multi-service NGN network, the report wrongly states that a single charging mechanism is needed, in order to avoid arbitrage. This is because the technical ground on which the analysis is based is wrong, and because mandating B&K on voice would not help in tackling the most important challenge MNOs are going to face: the explosion of data traffic and the need to control and maintain quality of service. This raises the questions of net neutrality and how to renew the data charging mechanisms.
- The impact of consumer welfare must rely on the comparison between B&K market conditions and LRIC cost-based market conditions, because the EC recommendation clearly sets the relevant cost base to reach by 2014. In comparing fully distributed cost oriented and B&K market outcomes and figures, the ERG analysis shows a severe flaw.
- ERG does not take into account the specific aspects of the mobile radio access: the radio access is based on a scarce resource (radio spectrum, shared bandwidth) and produces a specific incremental cost. This incremental cost cannot be compared with the fixed incremental cost (copper or fiber).

Bouygues Telecom does not share the technical insight of ERG regarding NGN

ERG considers that convergence in NGN networks is an important driver for a change in the charging regime. The report describes an IP interconnection transporting different natures of traffic: « best-effort » data traffic, unmanaged packetized voice as well as managed VoIP, allowing for



arbitrage opportunities in the context of CPP. Then ERG states that a single charging mechanism should be applied, based on the peering model.

Firstly, we recall that regulation comply with the technological neutrality principle. There is no evidence of the alleged link between charging regime and technology. For instance, the French market has already performed a transition from B&K to CPNP without any associated change in the technology (neither radio nor core nor transmission). Inversely, deep technology migrations (2G -> 3G radio) happened without the need to change the charging mechanism.

Secondly, Bouygues Telecom believes that packetized voice will still be transported over dedicated NNI interfaces for obvious reasons of security, reliance, or quality of service. This IP interconnection will continue to be separated from the Internet peering:

- Managed VoIP will be SIP based and connect two SBC (Session Border Controller) over a dedicated IP link. It does not make sense from the economic point of view of the mobile operator to allow voice over Internet, because it takes to maintain permanent data sessions open.
- Internet traffic will go through a distinct POI, because Internet is built to bear « best-effort » streams and not real-time traffic (voice, video).

Besides, the risk of arbitrage is mostly theoretical and expected to be limited. Back to the French case: generous and unlimited retail plans make the arbitrage unnecessary for consumers. Mobile voice over Internet usage remains very low:

- 50% of fixed to national fixed traffic comes from VoIP flat fees offers including unlimited calls to fixed networks traffic 24h/24. Mobile operators as well propose partial flat rate offers including unlimited calls towards fixed or mobile destination.
- The existence of MTR (above fully distributed costs) did not prove to hamper the development of flat fee offers.

Finally, the major challenge mobile operators are facing is not the voice/data convergence but the ability to tackle the incoming tremendous increase in data usage. Net neutrality principles prevent the MNOs from discriminating the quality of service or filtering. But the spectral resource is limited and operators have to protect their investment, which asks the question of alternate ways of financing increasing data costs, be it data MTR or quality of service fee.

As a conclusion of this first point, we assert that the migration towards NGN does not imply a migration of the charging mechanism. The target must be defined by the outcome of the Net Neutrality debate, and will probably not be the peering model because it is unable to grab the problem of exponentially growing data traffic to pass on limited mobile resources.



The evaluation of the merits of B&K for the consumer is based on a comparison that is not relevant

The European Commission Recommendation gives clear guidelines for the MTR and FTR glide path at the European level. National regulators must set the termination rates based on the long run incremental cost incurred by an efficient operator by the end of 2012. Some regulators might have difficulties assessing the correct level: the EC allows them to postpone the application of the Recommendation to the 1st July 2014.

Between 2012 and 2014, the fixed termination rates will probably be under 0,25c€/min, and the mobile termination rates under 1,5c€/min.

B&K cannot be expected to happen before this milestone, clearly defined in the Recommendation. Would B&K appear before, it would harmfully destabilize the regulatory visibility and cause prejudice to end consumers. It comes that the relevant reference to compare with B&K is incremental cost-based CPNP regime. Unfortunately, the report compares market figures in 2007 between B&K countries and CPNP countries showing termination rates significantly above fully distributed costs : in October 2007 MTR were 9,67 c€/min, in October 2008 6,39c€/min, i.e. 34% drop in two years.

The relevant manner is to assess the benefit for the end consumer when going from LRIC MTR to B&K regime. In this perspective, this benefit looks extremely limited:

- In the French market, almost all calls from fixed to fixed national and international (100 destinations) are included in flat rate offers. Calls to mobile are progressively included as well, for an additional flat fee.
- 70% of mobile consumers use partial flat rate including unlimited calls. The first fully unlimited 24h/24 appeared in mid-2009.
- The trend downwards to the LRIC reference is expected to transfer most the benefit to the consumer. The LRIC to B&K transition will not significantly enhance consumer welfare.

Moreover, the termination cost of the incremental incoming off-net minute on the radio link is very different from the cost of terminating the incremental incoming off-net minute on the fixed network because radio resources are scarce:

- The interconnection capacity can easily be extended or reduced, but the radio spectrum is limited and constitutes some kind of *physical bottleneck*. One can perceive that setting up B&K, intended to address the *SMP bottleneck*, will stimulate free-riding opportunities and further increase the *physical bottleneck* congestion. It sends an economic signal to the world largest VoIP editors, which is mostly detrimental to MNOs.
- Radio spectrum is shared amongst users: an intensive broadband user in the radio cell will prevent other users in the cell to enjoy regular voice service if the MNO is not allowed to implement quality of service.
- The termination on fixed networks drives investment in the backhaul and core networks only. The mobile networks incur costs in backhaul and core networks but also in the radio access (new 3G bearer), the latter being mostly dominant in the overall cost structure.



- The incremental cost on mobile networks does not decline with increasing volumes.

ERG should have taken into consideration this fundamental rationale.

Furthermore, extended B&K to fixed, mobile, switchless (Skype, Google ...) networks would end up in major economic inequity between these players, given their respective cost structures.

As a conclusion, Bouygues Telecom urges the need to implement first the EC Recommendation and migrate to LRIC. Then, B&K could be assessed as an alternative mechanism.

The decrease to incremental level will enhance consumer benefit but it is important to maintain the cost based termination model in order to:

- Guarantee fair competition between different market players (operators bearing the cost of networks and regulatory burden vs. large VoIP editors)
- Avoid (or limit the amplitude of) SPAM / SPIT.



2 ANSWERS

2.1 Question 1 (Section 1)

Do you agree that in a multi-service NGN environment, in which different services use a shared transport layer, different interconnection regimes for different services could create arbitrage problems? If yes, could you describe the problems that you foresee or that have already occurred? If no, what prevents these arbitrage problems in your view?

The risk of VoIP arbitrage (i.e. to send the regulated voice traffic to the free Internet peering instead of the VoIP interconnection whose tariff is cost oriented) is mainly theoretic. The potential risk exists today, but there is no visible occurrence of this risk. Why?

Again, the French mobile retail market is increasingly structured around flat rate offers: unlimited periods are constantly extended, making the outgoing average minute to drop sharply for extensive users. In these conditions, consumers are not incited to arbitrage in favor of voice over Internet solutions. The decrease of MTR towards LRIC level will further develop this trend: burst of minute bundles and extension of unlimited periods, and consequently further reduction of the risk of arbitrage.

It is very likely that the multi-service NGN network will not change this observation.

2.2 Question 2 (Section 1 & 2.2)

What is the influence of the separation of transport and service for the interconnection regime and in particular the charging mechanism and in what way are NGNs and BaK related?

The separation of transport and service will not propagate into the interconnection interface. Bouygues Telecom belief is that every POI will host one or several SBC handling network functions (NAT, RTP encapsulation) or specific voice oriented services (security, quality of service). There will not be separate “transport POI” and “service POI”.

It must be noted that operators have not defined their evolution strategy towards IMS, which is the technical background of the report. It is very likely that all operators will not implement this framework in the same agenda, nor implement the same bricks/subsets of IMS.

That is why we consider the technological evolution is still unclear and do not see any need for a change in the charging mechanism related to this evolution.



2.3 Question 3 (Section 3.2)

How would you define the boundary for the application of BaK and where should it be located (i.e. points of interconnection where BaK is applicable)?

Bouygues Telecom would like to point out that the ERG view of interconnection architecture is solely focused on fixed networks. In mobile networks, the call is delivered as close as possible as the calling party because the geographic position of the called party is not known.

There are many drivers for a reduction of the number of points of interconnection in the NGN context:

- Transport costs are expected to decrease (IP is an efficient “transport” protocol),
- Non-traffic related costs (fixed costs of collocation) might increase to handle specific VoIP requirements,
- IP routing flexibility is well suited for mobility services and could foster the move to a more centralized architecture.

Nevertheless, in France at least, the target IP interconnection architecture in the NGN environment (cost structure, number of POIs) is still unclear. It is premature to draw conclusions in this area at the European level. Consequently, the assessment of the boundary merit further and thorough study.

2.4 Question 4 (Section 4.2)

What is your conclusion on the relationship between the charging mechanism and penetration, usage and price level?

We underline that ERG mistakenly compare fully distributed cost-oriented CPNP regime and B&K regime. To our view, the correct angle is to compare long run incremental cost-oriented CPNP regime and B&K given that the EC Recommendation must be applied.

Firstly, ERG states that the interconnection regime drive usage in such a way that B&K countries have on average twice the usage of CPNP countries. Bouygues Telecom disproves the analysis and the conclusion.

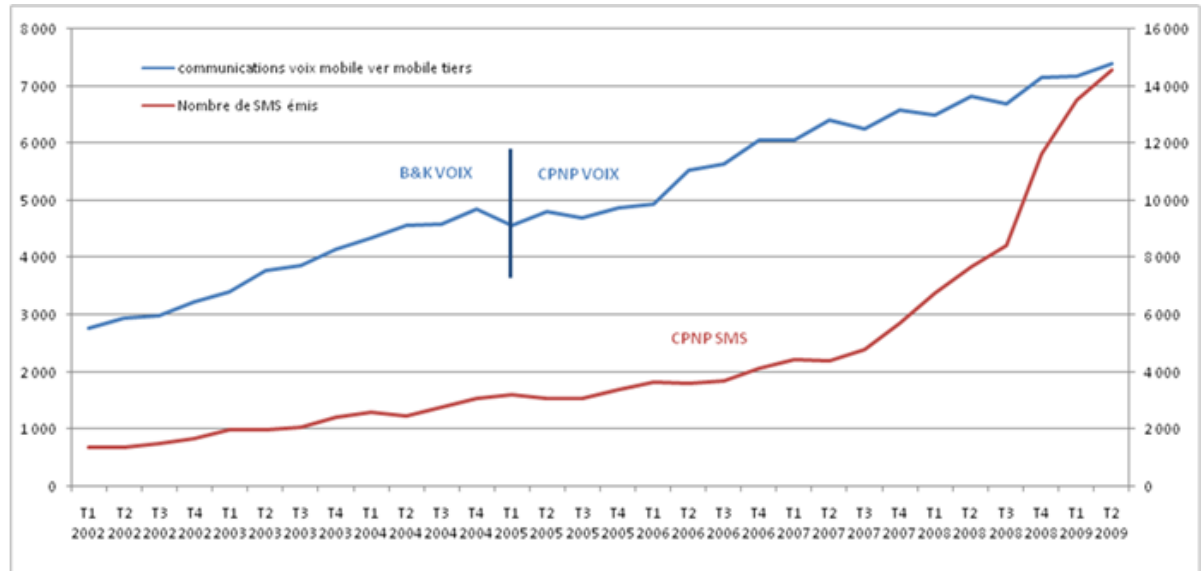
- Adjustments to Merrill Lynch empirical data are disputable (20% on-net ratio is largely underestimated, the correct value should be over 50%) and make the conclusion doubtful
- Handset subsidy or data inclusion in the flat offers in Europe make the minute cost artificially higher than in the US in this straight comparison

If we were to draw a conclusion from the French case concerning the relation between the usage and charging mechanism, it would contradict the ERG vision:

- Mobile voice traffic significantly increased after the transition in 2005 from the B&K to the CPNP regime as plotted below,



- SMS usage literally exploded when the unlimited 24h/24 offers emerged in 2007, when the MTR were still above fully distributed costs. The regime is still CPNP and the usage is constantly growing at a very fast pace.



(Source: ARCEP, Observatoire des services télécoms)

Secondly, even though we globally agree in the conclusion stating there is no clear correlation between market penetration and interconnection regime, we do think that the analysis is seriously biased.

The difference in penetration between countries in the same CPNP area can be very important as shown in the report (from 90% up to 160%). It points out the fact that penetration depends more on specific market characteristics (prepaid/postpaid mix, number of SIM cards per user, USB SIM cards) than the interconnection regime. The direct comparison between non adjusted penetration rates between CPNP and B&K contexts suffers even more from a lack of meaning.

Bouygues Telecom considers that, according to the theory, MTR decrease to zero would reduce penetration because it would foreclose low users:

- Subsidy from high users to low users would disappear,
- Low usage offers tariffs would go up, and high usage offers tariffs would go down

Consequently, B&K would turn out to benefit only to high usage consumers and lower the penetration rate. When the analysis is based on a sound comparison of adjusted data (equivalent development levels, equivalent handset subsidy models), it shows that penetration is lower in the B&K area.

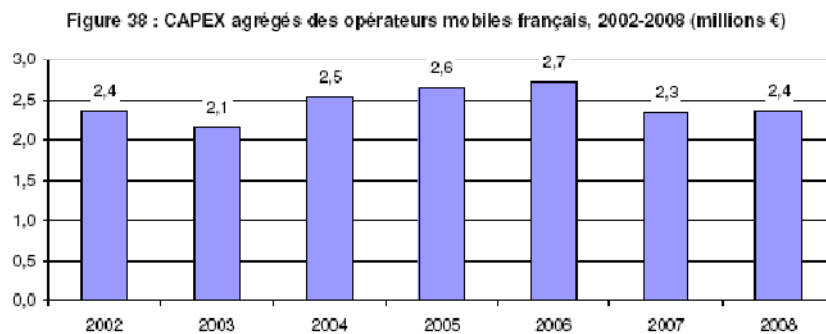
2.5 Question 5 (Section 5.1.3)

How does BaK affect regulatory certainty and the risk of legal disputes?



In the CPNP regime, MTR might not always be set for a long period ahead: this regulatory uncertainty would create risk for investment according to the ERG. B&K would reduce this uncertainty.

But it is hard to see the evidence of such an uncertainty, as the European mobile operators have massively invested in their networks during the last years. The French mobile operators for instance have invested about 20 billion EUR, only between 2002 and 2008. The investment effort during the CPNP period is at least as high as during the B&K period (the investment peak is recorded during the CPNP regime).



(Source: IDATE pour AFOM, Observatoire économique de la téléphonie mobile juin 2009)

Besides, ERG correctly puts that B&K would eliminate the need to set the correct price and the associated effort but wrongly concludes that B&K would reduce the “regulatory burden”. In fact it is likely to see the emergence of new ways or means of regulatory intervention in the B&K context:

- Diverging interests on the interconnection architecture will lead the regulator to arbitrate economic or technical disputes,
- From the legal point of view, disputes would surely rise since network operators are subject to legal obligations (number portability, emergency numbers, legal intercept), and their switchless competitors would not, creating unfair competition problems.

On the operator side, the burden is not expected to decline because of the increasing complexity of mediation/billing systems needed to fight new fraud opportunities (B&K <-> CPNP routing)

As a result, it is necessary to deeply assess the risks associated to B&K. B&K seems to produce more uncertainty than CPNP, whose termination rates are sufficiently precisely known.

2.6 Question 6 (Section 5.2.1.3)

How do different wholesale charging mechanisms impact on the number of unwanted calls? Do you expect (other) effects on consumers/consumer groups? Where possible, provide a quantitative assessment of the expected effects.

It is difficult to get quantitative data regarding unsolicited messages.



But we know that email communications are devastatingly hit by SPAM. As it is “free” to send an email, about 90% of the total amount of messages is probably representing unsolicited messages, according to recent enquiries. On the contrary, the SMS channel is expected to be clean: this demonstrates that MTR, even low, has the ability to obstruct the economic model of SPAM.

One can perceive that unsolicited messages (sales or fraud) are coming into the voice channel as the MTR decrease: alleged polls, hidden calls. The elimination of MTR would inevitably lead this phenomenon to soar and gain in sophistication.

The means are unfortunately limited to counter the voice over IP SPAM (or SPIT): they cannot be filtered for legal and technical reasons. The messages being private, the respect of privacy prevent the operators from undertaking a solution within the network. Of course, the calling party can hang up the SPIT call as proposed in the report, but the negative utility for this kind of call will be perceived as an unacceptable degradation of the telephony service. Ironically, he will even have to pay to receive this call, since B&K will lead to RPP in the retail side of the market.

It must be underlined that the gain the consumer gets from the null MTRs is low compared to the adverse effects of SPAM, for him and the operators. SPIT actors must not be allowed to prosper thanks to B&K.

As a matter of fact, Bouygues Telecom believes SPAM/SPIT is a major issue. The only way to efficiently counter the SPAM/SPIT is to block its economic rationale: it is the interest of the consumer to keep the MTR at the incremental level.

2.7 Question 7 (Section 5.2)

How do you assess the quantitative relevance of call and network externalities?

Obviously, externalities are economic quantities that cannot be measured.

The report shows (figure 3.) an interesting scheme illustrating the hypothetic efficiency of CPNP and B&K regimes, as a function of utility and call cost distributions. ERG concludes that B&K is likely to internalize better call externality than CPNP, given defined assumptions.

Bouygues Telecom does not debate the economic demonstration, but observes that the conclusion is principally based on the assessment of utility distribution. The slightest error in the evaluation of this quantity can reverse the conclusion: the result is therefore subject to caution, and the ERG recognizes it.

The network externality means that customers wish to pay a certain amount in order to join marginal (low users) consumers. A mark-up on MTR of this amount allow capturing this externality and maximizing penetration. A recent study shows that the termination rate which maximizes consumer welfare is above the marginal cost of termination. Of course, it is probably impossible to evaluate the amount of this externality. But it is certain that B&K is unable to internalize this externality as the MTR is the only way to capture it.



2.8 Question 8 (Section 5.3.5)

How would your business be affected by a move from CPNP to BaK? Please explain the expected impact on prices, volume of supplied services and profit.

The Common Position states that:

- CPNP and B&K ensure enough flexibility to create retail flat rate offers (or buckets of minutes or bits plans)
- The expected effect of the transition to B&K is a circular benefit for the consumer: increasing volumes -> decreasing costs -> decreasing tariffs -> increasing volumes.
- The attractiveness of the prepaid offers in France have not suffered from the decreasing MTR

As already said, the relevant comparison base is LRIC-based CPNP and B&K. Any other static comparison is flawed. In the perspective of a dynamic comparison, the outcome of the analysis is different:

- On-net / off-net discrimination, resulting from high MTR, has progressively disappeared. Today and irreversibly, the retail market is characterized by buckets and unlimited access to off-net,
- The off-net cost risk (or uncertainty) exist in CPNP, but will be very limited in the dynamic context (the incremental cost is about 6€/month for 10h mobile communications). It cannot be considered a threat to unlimited offers, which are already developed.

2.9 Question 9 (Section 6.1)

Do you agree with the conclusion that operators/users in the BaK domain will subsidise traffic coming from outside the domain (regardless of the legal aspect)? Are there any mechanisms to prevent this and how will they work in your view, in particular to avoid arbitrage?

It is very likely that financial transfer will occur from B&K to CPNP zones. This transfer is probably inevitable, and the only way to reduce its amplitude is a coordinated migration towards B&K in the largest area possible, that is to say Europe.

ERG submits the following idea: B&K domain could operate under CPNP regime for external traffic. We are afraid that this idea cannot be implemented in practice for several reasons:

- CLI information can be dishonestly changed in order to unduly benefit from the B&K regime,
- Mobile billing systems are not ready to apply source based charging.

2.10 Question 10 (Section 6.3)

Do you see any implementation problems for a migration period towards BaK? How could such problems be addressed?

See above.



2.11 Question 11 (Section 7)

Does the draft CP miss any other relevant issues?