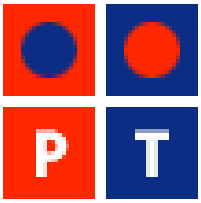


*ERG – Public Consultation*

*on*

# Regulatory Principles of IP-IC/NGN Core

*Submission by Portugal Telecom S.A.*

*ERG Consultation on Regulatory Principles of IP-IC/NGN Core*

*Submission by Portugal Telecom, S.A..*

## Introduction

The question of IP Interconnection is directly connected to the development of NGN/NGA. The mechanisms ruling the interconnection of these new platforms cannot be addressed without a stable and coherent regulatory environment, which is still far from being defined. That is why PT thinks that this consultation should be considered as a preliminary approach to the evolution interconnection matters.

It is not possible to establish, nor implement, new interconnection rules or criteria before the definition of the regulatory framework for NGN. One has to bear in mind that we are still discussing the main implications of applying the present regulatory regime to NGN. The right balance between regulation, investment, innovation and competition is not yet found. However, PT is strongly convinced that the promotion of investment in NGN calls for a regulatory framework limited to a minimum set of rules, ensuring that all operators have the same rights and obligations.

Any definition of a new interconnection model, like Bill & Keep, will be premature and will not contribute to create a stable NGN regulatory framework.

Future electronic communications networks will be multi-service networks, rather than service-specific networks. These networks will be packet-switched, mostly or completely IP-based.

Development towards all-IP networks has taken different forms. On one hand, traditional PSTN network operators, including incumbents, plan to migrate towards NGNs relying on the ITU and ETSI (TISPAN) as relevant standardization bodies, and, on the other hand, ISPs are developing their IP networks towards multi-service networks, relying more on the IETF as a standardization body.

For Operators like PT, the evolution of voice, data and video services (VoIP, IPTV, etc.) including aspects of technological and market convergence, is to be increasingly supported on NGN/IMS. Among the important features of a NGN/IMS network are the separation of transport and service, mechanisms for the assurance of QoS, and potential for innovative services and cost savings, although the actual implementation of NGNs has yet to prove to what extent and in what timeframe these bright prospects are technically and commercially verified.

Thus the need is there to foresee the interconnection aspects of the new network paradigm. In doing this, it must be borne in mind that wholesale charging mechanisms may have relevant impact on the retail charging mechanisms, because interconnection modes and prices affect both the structure and the level of the operator's costs, having also impact on the cost recovery and the retail prices of the different services provided to the end-users.

It appears to PT, from the repeated insistence on the alleged benefits of the "Bill & Keep" model, that the intention of this consultation is really not to collect and analyse (diverse and eventually conflicting) views on the subject of the future of interconnection but simply to promote this particular approach to it, and to apply everywhere in Europe (and, as was recently seen in the media, starting with the mobile networks). Let us say clearly that PT does not agree with this intention.

Indeed, interconnection is not the only issue here, as under the B&K model each carrier is responsible for carrying the call through its network and also for charging its respective customer (ultimately the A party or the B party), which implies appropriate retail charges, reflecting network usage costs and other commercial considerations.

The "Bill & Keep" model seems to be favoured for the regulation of Internet pricing and is one of the two main possible generic models that can govern the interconnection relationships between Internet operators and other network infrastructure providers, together with a termination access model whereby the Internet operator terminates a data call on a fixed or mobile network and "buys" a terminating service for this purpose.

But NGN services, although diverse and potentially integrating voice, data and video, are more than simple interconnection to ISPs, as they include several types of person-to-person communications, of which voice, although relatively light in terms of debit, is heavy in terms of social significance and acquired "look and feel" (also on the pricing aspects). Thus, an Internet model is not directly applicable to all services, even if they are to be supported on a common data backbone network.

PT is a full-fledged infrastructure based telecommunications services provider, not only an ISP. We do not consider that the "Bill & Keep" model is applicable to telephony type services (fixed or mobile, with or without video), as it goes against the proven and long-established practice, as well as the expectations of our customers (please bear in mind that Europe is not America). It would be exceedingly difficult to explain such a move, and we do not consider that the overall cost for the customers would really be lower.

Even in the USA, the B&K model does not apply today to voice termination rates (they are the same as fixed ones). What happens is that the mobile "B customer" pays a mobile termination service, under the Receiving Party Pays – RPP – system), because mobile numbers in the US are not distinguishable from fixed ones, in the North American Numbering Plan. This is indeed one of the reasons for the late take-up of mobile services in the USA, in comparison to Europe! So, why emulate in Europe a model that was proven as detrimental to the evolution and development of mobile telecommunications?

Also, remember the situation today concerning mobile roaming: when abroad, people refrain from answering the phone, due to the extra roaming fees, and close friends and family refrain to call them for that very same reason, preferring to use SMS, if the contact is necessary but trivial in nature. Also, if receiving an unidentified call or a call from an unfamiliar number, people tend not to answer. A comparable situation would arise here, from the application of B&K, and the consequent introduction of payment also for the called party, causing usage to go down appreciably.

It is alleged that in this B&K situation, no interconnection payment is made by either carrier, and that symmetry of traffic flows at the wholesale level is not a requisite for B&K

applicability, since the termination costs for the last segment are by definition recovered from the B end-user, and thus not accounted for at the interconnection level. But this apparent simplicity should not make us forget other issues:

- The customers could be attracted by (supposedly) lower costs, but will no doubt reject the obligation (completely new and difficultly acceptable, at least in Europe) to pay also for received calls (especially the unwanted ones, like advertising, surveys, wrong numbers, or others).
- There are (potentially huge) hidden costs in putting such a model in operation (OSS/BSS, reanalysis and redesign of business models, redefinition of commercial offers, intense advertising effort, (re)gaining customer acceptance, etc.).
- The time scale for such a change of paradigm would necessarily be prolonged, and the transition phases to be carefully evaluated and planned.
- In the proposed B&K model, if a transit network is involved, besides Network "A" and Network "B", what is the interconnection costing/pricing model proposed? Who pays for what?
- One of the arguments presented in the document is that B&K would obviate the need for regulation on the termination side, and thus termination prices would be lower, being left for the market and the intervening Operators to determine freely, if certain condition were met. But, even in this scenario, there is really no guarantee that the overall costs for customers would be lower.
- Telephone spamming (SPITting) will no doubt increase, much to the dissatisfaction of the customers, increasing the number of complaints to the Operators, and the need to devise countering mechanisms. E.g., is a customer willing to pay any amount whatsoever for an unwanted promotional video-telephony call?
- How are different quality requirements and capabilities to be accounted for? E.g. in the case where the networks involved do not match exactly in terms of capability (lets

suppose a given A customer would be paying a high QoS class call to no avail, since the B customer is in a network with a lower QoS)?

- In the B&K model approach for NGN networks, how are NGN/PSTN and PSTN/NGN calls to be treated and charged? Is the paradigm change supposed to affect these also? If yes, how?

- How are the necessary control elements and functions to be accounted and paid for? E.g. in TISPAN/IMS terms, the usage of x-CSCF, UPSF, ENUM, DNS, etc. It is said in the document that the cost component derived from common network elements will be higher (how higher and how will it be reflected in costing models?), but how about the costs incurred in consulting elements (e.g. databases) belonging to other networks or providers? How to define, calculate and model them? In global terms, adequate costing models are yet to be developed.

  As mentioned in the document, this is also true for the optimal determination of PoI eligibility for integrating a B&K domain. Even if this model were to exist and to determine those domains eligible for B&K, what would be the required criteria and parameters, assessment of impacts on the retail level and customer satisfaction, etc.?

Any eventual change of the paradigm for interconnection (never forgetting its reflections on final prices for the customer) should be aimed at in the medium to longer term and should include a comprehensive study of the transition phases to the new system as well as the different requisites stemming from different services.

There are drawbacks and risks in changing from the proven and well established regulatory regime of PSTN/ISDN and mobile services for person-to-person calls. We consider therefore that there is the need for further study on this matter and consider that no decision on universally adopting B&K (immediately or after some ad-hoc migration glide path) is recommendable or even viable.

Perhaps one should go back to basics:

- What is there to be paid for?

- How is it to be paid?
- Where and how is it to be accounted?
- Who should pay for it and why?

Even if one admits readily that IP technologies modify interconnection techno-economical parameters for voice and data services, it is not obvious that this should modify the very model as well.

With the network paradigm changing to NGN/IMS, models for IP interconnection are of course necessary, and indeed some countries and Operators have already taken the first steps in this direction (while others are more cautious), but, in any case, PT does not think that B&K is the optimal answer, considering the problems it entails.

**Answers to Consultation Questions**

**A.4.1 Separation of transport and service**

***Considering that according to the ITU definition of NGNs where service-related functions are independent from underlying transport-related technologies, how do you evaluate the concepts of transport interconnection and service interconnection as defined in the document?***

**Answer** – Such a question calls for further study and consideration. At this stage, we do not see any need to a regulatory intervention in this area, until the standardisation process becomes more stable.

**A.6 Structure of the document**

***Do you see other issues regarding regulatory principles of IP-interconnection/NGN core that should be dealt with?***

**Answer** – Yes, namely customer satisfaction, i.e. respect for the European customers' habits and expectations, concerning the services involving person-to-person communication, including a clear notion of who pays for what and the pre-emption of Telephony Spamming. In short, if some interconnection mechanism involves or opens the way to the introduction of CPP ("Called Party Pays"), it is unacceptable.

**B.3.3.1 Number of network nodes and points of interconnection (PoI))**

***Can you make more precise statements on the number of network nodes and/or points of interconnection in NGNs?***

**Answer** – No. This matter is to be studied, but it is foreseeable that the number of PoI will be smaller than the current one. Their location will be influenced by the location of

NGN/IMS network nodes and the foreseeable types of required interconnection (to other Operators or 3rd Party Service Providers).

**B.3.3.2 Definition of local interconnection**

***a) Is there an equivalent in NGNs to the concept of local interconnection as known from PSTNs?***

**Answer** – For security and network integrity reasons interconnection should be only at PoI level, and, in the NGN the number of PoIs would be reduced, in comparison to today, thus possibly not going down to what might be considered a "local" level.

Furthermore, in NGN the traffic routing may vary from communication to communication, and the interconnection between the same two customers may be supported, along time, in different network elements, which could greatly increase the complexity of traffic accounting based on the number of network nodes used in the communication.

However, such matters should be further considered.

**B.3.3.2 Definition of local interconnection**

***b) What do you consider to be the locations for the lowest level of interconnection (physical and/or service), e.g. the broadband remote access servers (BRAS)?***

**Answer** – Their location will be influenced by the location of NGN/IMS network nodes and the foreseeable types of required interconnection (to other Operators or 3rd Party Service Providers).

**B.3.3.2 Definition of local interconnection**

***c) Could the maximum number of PoI offered be considered equivalent to local interconnection?***

**Answer** – Following our answer to question a) above, we envisage some difficulty in considering different network interconnection levels. Furthermore, in case there will be just one level, there is no need to establish a maximum number of PoI to be offered.

**C.1 Existing and proposed Framework**

***How do you assess the proposed Framework in the light of the migration process towards NGNs, their technical characteristics and economic implications? Are the proposals suited to address the specific challenges that these present?***

**Answer** – The proposed Framework should not create any burden or restriction on the process of implementing NGN. The interconnection between NGN platforms should be a matter for agreement between operators and service providers. Quality of service aspects should not be submitted to minimum requirements.

**C.3.1 Interoperability issues**

***What type of interoperability requirement do you consider necessary?***

**Answer** – Obviously, the first concern for an Operator is to guarantee vendor interoperability between the various functional elements and equipments it uses and intends to use. This is a concern which has always existed and will continue to exist, but it is essentially a business matter, concerning the relationship between the Operators and their equipment providers, and we see here no room whatsoever for regulatory intervention.

On the other hand, the need for interconnection raises some concerns regarding eventual incompatibilities between the functional elements or equipments on inter-Operators borders that wish to establish interconnection agreements between themselves, as real interoperability exists only after successful interoperability tests between the specific elements involved. This is due to the fact that, although everybody allegedly follows the applicable standards, these still allow for various degrees of freedom that, in practice, cause effective and straightforward

interoperability to be considered *a priori* doubtful or even non-existent, until proven by suitable tests.

This is, however, a matter for multilateral discussion between the interested parties and we do not consider that this should be the object of regulatory intervention.

**C.3.2 Impact of charging mechanism on transport bottlenecks**

***How do you assess different wholesale charging mechanisms in the light of the transport-related bottlenecks?***

**Answer** – Although this is a matter that requires further study, we do not consider that the "Bill & Keep" model is applicable to telephony type services (fixed or mobile, with or without video), as it goes against the proven and long-established practice as well as the expectations of the customers, as referred to above.

In fact, in the current system the customer may choose the Operator that offers the lower prices, if he so wishes, so the prices are "regulated" by the market. In a Bill &Keep system, not only the Operators do not have an incentive to decrease prices, as there will be risks associated with the increase of spamming and a lower answer ratio (customers will not want to answer calls from unknown origins).

Furthermore, any eventual change of the charging mechanisms should be aimed at in the medium to longer term and should include a comprehensive study of the transition phases to the new system.

**C.3 Bottlenecks and SMP positions**

***Do you see other areas (potential bottlenecks) for regulatory intervention?***

**Answer** – No, we do not foresee room for regulatory intervention in these matters.

**C.4.2 Measures based on USO directive**

***a) Do you consider sufficient to potentially regulate minimum quality (Art. 22 USD new para 3)?***

**Answer** – Remembering Art.22 of the USD:

*Article 22 - Quality of service*

> *1. Member States shall ensure that national regulatory authorities are, after taking account of the views of interested parties, able to require undertakings that provide publicly available electronic communications services to publish comparable, adequate and up-to-date information for end-users on the quality of their services. The information shall, on request, also be supplied to the national regulatory authority in advance of its publication.*
>
> *2. National regulatory authorities may specify, inter alia, the quality of service parameters to be measured, and the content, form and manner of information to be published, in order to ensure that end-users have access to comprehensive, comparable and user-friendly information. Where appropriate, the parameters, definitions and measurement methods given in Annex III could be used.*

Yes. NRAs may specify QoS requirements, if judged necessary, after consultations, to be followed by all Operators.

**C.4.2 Measures based on USO directive**

**b) Does this require additional regulation at the wholesale level?**

**Answer** – QoS levels offered by each Operator, for the wholesale market, should be transparent, non-discriminatory and public. We do not foresee the need for further regulation.

**C.4.2 Measures based on USO directive**

***c) What is your opinion on ERG's consideration that the power to set minimum quality of service requirements (both, on end-user and network level) should be entrusted directly to NRAs?***

**Answer** – NRAs are best placed to know the concrete situation in each country and, by consultation with the industry, devise a plausible set of common SLAs. Indeed, this national approach seems also to be implied in the text of Art. 22 of the USD.

**C.5 Costing and Pricing**

***a) Do you agree with the description of the relevant change regarding the cost level, the cost drivers and the cost structure?***

**Answer –** There is a broad theoretical consensus about the long run cost efectiveness of NGN's with its streamlined high capacity architectures, fewer PoI (simplified cost structures), higher proportion of common costs. There is also general acceptance on the need to define appropriate cost drivers and allocation keys adapted to multi-service platforms. However, not only the migration to NGN's involves a significant investment risk but it is also likely that OPEX will increase in the short run (due to the existence in parallel of both legacy and NG networks) before it drops in the long run. These costs should be accounted for (for instance, the OFCOM considered the risk factor by adjusting BT's WACC), otherwise the investment / migration to IP interconnection may be delayed / postponed.

Given the emergent stage of NGN's, we believe it is too soon to speak so assertively about such issues as cost levels, drivers and structure. In fact, one of the possibilities is to have the coexistence of different regimes, one per network layer or per class of service and QoS. For instance, distance might still be a relevant factor for the cost structure of voice traffic in a NGN.

**C.5 Costing and Pricing**

***b) For a pricing regime under CPNP, which of the wholesale pricing regimes (EBC or CBC) do you consider more appropriate for IP interconnection?***

**Answer –** We have no sufficient empirical knowledge about NGN's to answer this question. Most likely EBC and CBC will coexist, as they already do today in legacy networks. Probably CBC will take on a greater role due to the growing importance of non-voice related traffic and EBC will remain the rational option for small scale operators.

The interconnection models should be defined by the market and no ex-ante restrictions should be imposed on this matter.

**C.6 Charging mechanisms**

***a) How do you assess the arguments with regard to the properties of the charging mechanisms CPNP and Bill & Keep raised in the sections C.6.2 – C.6.10?***

**Answer** – B&K is evidently favoured, but this favouritism does not meet with our approval. We see a number of drawbacks and negative consequences, among which the negative impact on user experience and expectations, whose major sign is the payment required from the called customer, and the door it opens to a number of undesirable practices, like telephone spamming.

**C.6 Charging mechanisms**

**b) How can the migration process towards all-IP infrastructures be alleviated for the following options: 1) long term goal CPNP, 2) long term goal Bill & Keep?**

**How do you evaluate the measures and options discussed here? Please also consider problems of practical implementation.**

**Answer** – The question is not clear. Evolution to NGN/IMS (and all-IP infrastructures) will happen, driven by many considerations and facts. As per the consultation text itself, it seems

clear that this subject needs further and deep analysis of the implications of each of the alternative methodologies, as they may have huge impacts on processes, systems and consumer behaviour."

**C.6 Charging mechanisms**

***c) Assuming that different charging mechanisms would apply in different Member States: would this imply specific problems (e.g. arbitrage)? If so, how could they be addressed?***

**Answer** – We consider that if different charging mechanisms would apply in different countries this would, for sure, raise accounting problems between different operators, which could even imply blocking certain traffic routes. In fact, some Operators would be expecting to be paid by their counterparts while these could be expecting that the communications would be paid by the customers. In the other end, this situation could raise huge problems in what concerns end user billing, with completely different charging rules and prices depending on the location of the customers (which location is not always known by the customers themselves, thus potentiating conflicting situations).

**C.6 Charging mechanisms**

***d) Do you consider that the issues mentioned here are comprehensive with regard to the application of Bill & Keep for IP-interconnection?***

**Answer** – No. The case for B&K is extensively presented and systematically promoted as the best one. However, this appreciation of such a change of paradigm does not meet with our approval, due to the numerous drawbacks (which were omitted or minimized in the document). We do not consider this mechanism to be appropriate for application in Europe, especially for those services that involve person-to-person calls, like voice services (fixed or mobile, with or without video). The issues mentioned prove that there is a need to further study this subject and all the implications it involves.