GSM Europe response to the ERG consultation document on IP Interconnection

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1 Summary

The GSME welcomes the opportunity to comment on the ERG consultation on IP interworking and anticipates that there will be further opportunities to develop dialogue with regulators on this issue. In particular we expect to be able to present some more detailed analysis of the issues over the next few months. IP interworking is clearly an important subject that is drawing the attention of regulators but it is not clear that any action is needed outside of the current regulatory framework. The design, development and implementation of NGNs, 3G core networks and IP transport infrastructure is taking place at various rates across the EU. This is driven by the commercial, technical and market environment in each member state.

Moves to all IP networks may reflect a "generational change" in technology used by communications providers but should not be viewed as a special opportunity to change existing business and charging models through regulatory intervention. With a variety of retail charging approaches likely to prevail, it is essential that networks are not constrained to apply a particular interconnection model that is economically efficient only in conjunction with a specific retail model.

Indeed given the adoption of a technologically neutral regulatory framework EU regulators first response to a new technology should be an assumption of consistency and that the current regulatory approach: definition of relevant markets based on the three criteria test, market analysis, the determination of Significant Market Power and application of proportionate remedies where it exists will remain valid. Certainly there is no need for European regulators to be rushed into the development of some form of hybrid interconnection model not applied anywhere else in the world.

Regulators should continue to monitor the development of these changes in technology but should at this stage avoid the temptation to pick winners both in terms of technology or business models. The technology changes are indeed facilitating new business models but these will only mature if they deliver what customers want and are prepared to pay for.

2 General comments on the move to IP networking

The consultation document outlines both in the Executive Summary and Introduction that it is focussed on the fixed networks' migration to NGNs, and on developments in voice service provision in particular. This is further reflected in the remainder of the document, which describes technological and regulatory implications mainly starting from a fixed network perspective. As a consequence, the document for the most part does not refer to or suggests

applicability of its analysis to mobile/3G networks, or to the development of new IP-based services (whether fixed or mobile).

There appears to be a view underlying the NGN interconnection debate that NGNs will merge the public internet with circuit switched networks, and therefore both the public internet and NGNs should have the same interconnection regimes. There is no real basis for this assumption as the public internet and NGNs have grown from different start points and may well retain their distinctive attributes in the future.

The fact that both the public internet and NGNs use the same IP protocol on one particular layer of the network stack does not imply that the two are the same or may deliver the same types of services. Technological similarity need not imply an identical business model. On the contrary, NGNs will operate on a model, which based on new investments in infrastructure and systems, might seem more akin to current circuit switched networks, with tighter control on routing and quality of service than the public internet.

NGNs and the public internet will run in parallel and will continue to do so for the foreseeable future, both being the base for the development of innovative but probably differentiated business models, even with different roles attributed to several agents across the value chain. In this sense, it is understood that NGN context development constitutes itself an opportunity to broaden and enhance competition among a wide variety of services and infrastructure communications providers. Therefore idea that the two options for NGN interconnection are that (i) either NGN interconnection needs to follow the *perceived* interconnection regime of the public internet; or (ii) the public internet needs to move to an interconnection regime that resembles current circuit switched networks, is misconceived.

In contrast, we expect there to be competition between NGNs and the public internet in the sense that the public internet will exert a constraint on quality of service premiums that NGN operators will be able to charge. As long as NGN network interconnection does not foreclose such competition, there would not appear to be a compelling reason why NGNs and the public internet should not have separate interconnection regimes which in each case reflect the types of services on these different network types as well as the difference in network control (which, in the case of NGN is the basis for enabling quality of service). Different interconnection regimes may even enhance competition between the two communications platforms for the benefit of consumers.

3 General Issues

3.1 Charging models

Assessment of charging models should be conducted on the basis of economic efficiency - productive, allocative and dynamic efficiency - as this reflects immediate and future consumer welfare considerations, investment stimuli and adequate cost recovery. Preliminary analysis conducted for the GSMA on this basis, to be released in a report in early 2007, indicates that not one charging model best suites all circumstances. In particular, the efficiency characteristics of

different IC charging approaches will depend in part on the efficiency properties of the retail charging models they induce, with in turn the efficiency of different retail charging models varying depending on the characteristics of retail demand for communication services (e.g. how the benefit from a message is shared between initiating party and receiving party). In addition, the economic performance of any particular IC charging model that might be imposed on a network would also be affected by the ability of the network operator to strategically (re-)design its networks and/or to (re-)focus its business in response to the imposed charging model

This applies in particular (but not exclusively) to the Bill-and-Keep (BAK) model whereby no payments are made between the originating and terminating networks.

A common assumption is that BAK is the dominant IC model in the current internet world, and there has been a tendency by some commentators to imply from this perception that BAK would be a suitable IP interconnection charging model. This crude logic is, however, critically flawed in a number of areas.

First, a range of charging models is used in the internet world and while BAK has received considerable attention, it is not apparent that it is the predominant IC charging model. In particular, in situations where alternative commercial options exist for interconnection, BAK tends to be applied by networks which regard each other as “peers”.

Second, where BAK has been used, this model has often been adopted on the basis of technical necessity rather than economic merit - namely the limitations of the current internet to identify the origin of packets and bill back up the chain to the originating operator or down to the receiving operator). These technical constraints will no longer apply in NGN.

Third, as indicated above, there is no direct parallel between internet interconnection and network IP interconnection, and no reason why a charging regime that is used in some circumstances in the internet world would necessarily have economic merit for network interconnection in NGN.

Finally, even if BAK turns out to be a commercially attractive and a voluntarily agreed charging model in some circumstances for IP network interconnection, this does not mean it would necessarily be a sound (i.e. efficient) choice as the mandated regulatory fallback arrangement in all circumstances.

3.2 Peering and traffic balance

Where commercial alternatives have been technically possible, BAK has in general only been applied between network operators which regard themselves as “peers”. To be considered a peer, both networks must have approximately balanced traffic, and see themselves as peers in other aspects, e.g. geographic coverage.

Determining the traffic balance is complex in itself as “balance” is not simply the balance (or approximate balance) of simple traffic volumes– it needs to have a time dimension (to distinguish between high and low utilisation), a network component (to make sure that the costs of providing

the service on the other network are similar to the costs to provide the service in return – different network depths would need to be taken into account), as well as quality dimensions (in order to account for priority and other quality of service parameters). As QoS gains commercial importance, it can be expected that "balance" will be more difficult to determine going forward.

If BAK were used as an interconnection model when traffic is unbalanced, or may become unbalanced (because of actions taken by one or more of the operators involved), then the economic efficiency of the BAK model hinges critically on each network being able to generate returns from incremental originating/terminating traffic. With regard to termination, by definition, under BAK these profits can only be generated from the terminating network's retail customers. Thus, it needs to be considered how the BAK model interacts with alternative retail models.

3.3 Freedom to choose retail charging models

The question here is not whether in principle BAK could be combined with one retail model or another, but how well such a combination would perform from the perspective of economic efficiency. Moreover, it needs to be considered that a retail model which works well in conjunction with BAK, might not be the economically efficient retail model in all situations (i.e. for all services). For example, while the terminating network could recover its termination costs from the receiving party, charging the receiving party for termination is likely to be less efficient than charging the originating party (and the originating party's network) in circumstances where RPP would induce a significant amount of messaging traffic from which receivers do not benefit.

Consequently, without a thorough efficiency analysis in the context of the market conditions, it would be unwise for NRAs to lock down on any particular charging model, particularly at this early stage of IP network evolution.

3.4 Freedom to choose the basis of interconnection charges

Consideration of interconnection charging models should not be biased or limited by prior perspectives. For example, the ERG paper appears to consider only two regulated (cost-based) versions of CPNP in section 4.2.2.

For example, in the form in which both these versions tend to be applied by regulators, they include a specific mark-up for common costs. However, depending on the circumstances, it may be efficient to recover a greater or smaller share of common costs through interconnection fees, because common and fixed costs are most efficiently recovered where they distort consumption decisions the least.

The ERG paper also appears to be based on the assumption that interconnection charges should either all be based on capacity or all apply element based charging. However, both forms of charging models have advantages and disadvantages:

On one hand capacity based charging can improve efficiency because the holder of the capacity has an incentive to use it – while the benefit from additional usage does not need to cover the total average costs (only the opportunity costs of not using it).

On the other hand capacity based charging can lead to inefficient network utilisation (unless an efficient spot market for unused capacity would exist) because capacity constraints may apply to individual lessees of a network while there is spare capacity on the network overall.

Consequently, whether, from an efficiency point of view, charges should be based on capacity or actual traffic depends on the specific circumstances. As long as regulators do not impose either model on the market, network operators will be able to choose a charging model that best suits the situation. Given that network operators have no incentive to leave large parts of their network capacity idle, the charging approach that is selected for commercial reasons is therefore likely to perform well in the sense of economic efficiency.

3.5 Making changes to existing charging models

There will be multiple retail charging models on the NGN. This reflects convergence of services from the switched world which in most countries are mainly CPP and services from the internet world which are mainly a download or RPP charging model. This may create problems for service providers by impacting their business models in ways that could affect the viability of their businesses. There is likely to be market disruption because It is highly unlikely that consumers will accept a fundamental reversal of the retail charging model simply because the technology changes.

With a variety of retail charging approaches likely to prevail, it is essential that networks are not constrained to apply a particular interconnection model that is economically efficient only in conjunction with a specific retail model.

4 Mobile networks

Proponents of bill and keep understand the criticism that bill and keep cannot be seen in isolation of the wider internet structure and its commercial nature. In order to address this point, 'hybrid' bill and keep models have been developed for fixed networks. One of the possible 'hybrid' models that is discussed in the consultation is the COBAK system, whose main author is DeGraba.1 At this stage COBAK remains a theoretical construct but is useful to illustrate some of the issues.

With COBAK, NGN networks would be split into two layers, a central office2 layer and a transit layer. An originating carrier would pay an element- or capacity based interconnection fee to transit carriers for traffic to the local exchange of the terminating carrier, and there would be a bill and keep relationship between the originating and terminating carriers.

[1] For a policy paper, see P. DeGraba, Bill and Keep at the Central Office as the Efficient Interconnection Regime, FCC 2000

[2] Central office is the US term for a local exchange

This system attempts to replicate the charging system in the public internet by strictly imposing who is allowed to peer and who is in a provider-customer relationship. Carriers that originate and terminate traffic use 'bill and keep'. Transit carriers enter into a provider-customer relationship with the originating carrier.

More generally speaking, the idea that symmetry can be defined on a geographic network level is too restrictive. Symmetry can arise out of the values that customers bring, or it can be that some small areas are more traffic intense than other larger areas. Conversely, it is not clear that geographic symmetry would imply value symmetry between different carriers. Therefore COBAK would not be able to replicate the interconnection relationships in the public internet.

The geographic rigidity needed by a COBAK system does also not correspond to the reality of the current industry structure of circuit switched networks, let alone mobile. Carriers with different degrees of vertical integration compete. Through the existence of carrier pre-selection and call-by-call, transit carriers can compete with integrated carriers. Those carriers may not be connected to all interconnection points that would be externally determined by a COBAK system. It is unclear how a COBAK system would deal with such an industry structure that has evolved around regulation based on a calling-party-network-pays principle.

Furthermore, the mobile network structure differs from fixed network. The discussion surrounding COBAK is very much fixed network specific as in the mobile world it is unclear what would constitute a 'central office'. Mobile networks are more costly than fixed networks in the access party which under COBAK would be part of the 'central office'. Hence, although high cost differences between networks at the local level do exist, payment flows between these networks would cease.

5 Conclusions on a European regulatory approach

Moves to all IP networks may reflect a "generational change" in technology used by communications providers but should not be viewed as a special opportunity to change existing business and charging models through regulatory intervention. With a variety of retail charging approaches likely to prevail, it is essential that networks are not constrained to apply a particular interconnection model that is economically efficient only in conjunction with a specific retail model.

Indeed given the adoption of a technologically neutral regulatory framework EU regulators first response to a new technology should be an assumption of consistency and that the current regulatory approach: market reviews, the determination of Significant Market Power and application of proportionate remedies where it exists will remain valid. Certainly there is no need for European regulators to be rushed into the development of some form of hybrid interconnection model not applied anywhere else in the world.

Regulators should continue to monitor the development of these changes in technology but should at this stage avoid the temptation to pick winners both in terms of technology or business

models. The technology changes are facilitating new business models but these will only mature if they deliver what customers want and are prepared to pay for.