

BT Response to ERG NGN Consultation

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General

BT believes that it is still premature to be seeking detailed answers at a European level to the questions posed in this consultation. NGN deployment is at an early or planning stage in most countries and the emphasis across the EU should be on national consultations with stakeholders to ensure that all parties can make appropriate investment plans.

The ERG consultation document appears not only to be shaped by current network practices and realities but also tends to assume that widespread regulation will be required. Core NGN capability may well be a competitive market in many countries and thus the need for regulation may be limited. It is still too early to know.

The ERG analysis, as presented in the consultation document, could usefully be expanded in a number of areas including:

- The nature of the linkage between wholesale and retail prices and the conditions favouring flat or usage-based retail tariffs.
- The impact on usage and the number of connected users if a bill and keep regime increased the costs to be recovered from customers.
- The nature of a termination monopoly if users have multiple different network connections, and callers can select the most appropriate one. Deployment of technologies such as ENUM may accelerate the impact of this.
- Availability of alternative measures to minimise unwanted calls in a bill and keep environment which would otherwise tend to increase unwanted calls significantly.

Our comments in this response focus on the issues of Next Generation Networks (i.e. "core" networks), and exclude our comments on Next Generation Access.

Consultation questions

1) A.4.1 Separation of transport and service

BT finds the details of this discussion somewhat confusing as the definitions for 'service' and 'transport' are not entirely consistent or satisfactory. Notably, 'service' is referred to as dealing with sessions while 'transport' only deals with the transport of the IP packets. However, it is also acknowledged that NGN 'transport' requires some additions to basic IP transport in order to support carrier voice service, and the additions required effectively include a level of session control¹, thus complicating the original definition. When other services, not based on E.164 numbers, are added in the picture becomes even more complex.

¹ The ETSI TISPAN resource allocation control function (RACF) is effectively a form of session control.

2) A.6 Structure of the document

Apart from the matters mentioned above in our introduction we do not see other issues regarding regulatory principles of IP-interconnection/ NGN core that should be dealt with at this time.

3) B.3.3.1 Number of network nodes and points of interconnection (Pol))

We do not have anything to add to the ideas shared widely with UK industry and Ofcom via NGNuk and Consult21.

4) B.3.3.2 Definition of local interconnection

As above, we have already discussed these issues in detail and depth within Consult21 and NGNuk.

5) C.1 Existing and proposed Framework

The EU Framework strives to be technologically neutral and thus it should be able to deal with any issues that arise from NGN deployment. The Recommendation on relevant markets is a key component of the Framework and the fact that network "core" markets have been removed (i.e. transit calls and trunk leased circuits) suggests that the Commission agrees that core network capability may be competitive.

Much of the justification for NGN deployment arises from cost savings from combining parallel network infrastructures. The EU Framework is silent on transitional issues and NRAs will need to adopt a suitably investment friendly approach to issues of parallel running and withdrawal of legacy equipment/services.

There are other regulatory issues relevant to NGA which BT will address in its response to the Commission's draft Recommendation on the topic later this year.

6) C.3.1 Interoperability issues

BT generally believes that regulation should identify and focus on enduring bottlenecks, progressively deregulating the markets downstream of these bottlenecks as effective competition develops. Bottleneck services generally need to be provided to all Communications Providers (CPs) on equivalent terms.

The ways in which CPs connect to the bottleneck services should be open and not subject to undue control by the firm that controls the bottleneck (or its downstream business units). BT seeks, wherever appropriate and economic to do so, to use existing international standards, and where these do not exist to work with standards bodies, equipment vendors and CPs to develop new standards or extend existing standards.

BT recognises that CPs may wish to use "off the shelf" vendor offerings, both because of the economic benefits of using equipment that is produced for many markets and many customers, and the fact that bespoke solutions are usually relatively costly, lack operational flexibility to respond to new requirements, and lead to interoperability problems. BT itself operates in many parts of the World and wishes to take advantage of proven standards-based equipment wherever possible. A key consequence is that access to enduring bottleneck services should be designed using international standards - in the case of NGNs right from the start.

The extent to which NRAs should intervene will depend on the willingness of the dominant network operators to work with industry and standards bodies. In the UK BT committed, in the Undertakings it agreed with Ofcom, to participate fully with industry on the number and location of points of service interconnection, and with independent national bodies set up to ensure consistent standards were developed and applied. It would be appropriate for NRAs to obtain similar commitment from dominant network operators to organise the design of their network such that access mechanisms are proprietary and to prevent them giving undue preference to their own downstream business units.

BT is committed to using standards-based approaches, even in its downstream (unregulated) business units. BT has developed open interfaces using published APIs that enable third parties to programmatically access BT's communications services, using SDKs made available to developers. This development is still in a trial phase but we believe it should enable new types of communications products and services to be developed. We must emphasise, however, that this approach in downstream businesses is a response to commercial opportunities, in unregulated markets, and using access and backhaul inputs obtained from upstream parts of BT on equivalent terms. However, a similar approach may well be applicable to core NGN bottleneck services. In such cases the requirement should be limited to the basic level of existing standards (e.g. those features in existing SIP standards that are applicable to a particular access service) - anything over and above the standards may be developed by regulated firms in response to commercial opportunities, but this should not be mandated or regulated.

BT doesn't disagree with the need to offer QoS across network boundaries, but the standards for QoS interoperability should be left to market forces.

7) C.3.2 Impact of charging mechanism on transport bottlenecks

There has been substantial discussion of alternative wholesale charging mechanisms in NGNuk and a detailed paper was prepared by Richard Cadman of SPC Network (see also below). This paper concludes that given the range of different services carried by an NGN, the uncertainties over the distribution of benefits between calling and called parties for different types of communication, and the scope for massive disruption to existing services and business models, there is no case for regulators to steer the market towards a bill and keep approach. BT agrees with this conclusion. Bill and Keep may be a solution for some elements of interconnection but the market should be allowed to decide.

The introduction of NGNs does not in itself drive a change in relation to which party pays for which element of transport (of PSTN-style voice calls). The ERG appears to believe that there is something about the way NGNs work that makes such a change necessary or desirable. In practice, however, the choice between CPNP or Bill and Keep is largely independent of the underlying technology, whether circuit-switched or IP-based NGN.

The move towards IP-based voice over NGNs does give the opportunity to propose radically different ways of charging for interconnection (e.g. using capacity based charging rather than per-minute charging) and care will be needed to avoid unwanted side-effects. Whether NRAs need to be involved in the detail of such developments will depend on the maturity of the commercial relationships in the country concerned and the extent to which existing industry forums already exist and operate effectively.

As described elsewhere in our response, while moving to Bill and Keep may give some advantages from a regulatory perspective, great care must be taken to avoid disruption to CPs' business models, especially if the existing call termination regulatory approach is working reasonably well. Furthermore, any new wholesale commercial relationships that are at variance with retail commercial models are likely to produce unstable business models.

8) C.3 Bottlenecks and SMP positions

Not at this stage – NRAs will need to consider issues of replicability and end-to-end connectivity on an ongoing basis.

9) C.4.2 Measures based on USO directive

BT is not convinced that there is any case to regulate minimum quality levels. As already mentioned, it is likely that there will be competing core NGN networks and little justification for regulatory intervention. The introduction of NGNs will be an expensive proposition and companies should have the maximum possible freedom to experiment with different business models within the context of the EU regulatory framework and the Access Directive in particular.

10) 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?

Whilst NGNs are expected to lower total costs, it is not a foregone conclusion that the per unit cost of all services delivered over NGN networks will be lower. Falling volumes of some services may prevent the decline in total costs flowing through into per unit costs for those services.

During the transition to NGN, additional costs will be incurred from the parallel running of two networks to ensure an orderly migration, so costs may become higher before they decline. To preserve incentives to invest it is important not to penalise operators making the investment in NGN by disallowing transition costs or by insisting on an instantaneous move to a lower cost level. If this were implemented, none of the benefits of moving to the lower cost level would accrue to the investing operator.

The cost structure of an NGN will typically have a higher proportion of costs which are fixed common and joint, with a lower marginal cost. Care must be taken when allocating these common costs so that incremental services are not priced out of the market. An economically efficient pricing structure may require services to be priced by reference to the price elasticities rather than assuming that the same per unit price should apply to each "bit". This may mean some services, for example, voice services, have a higher per bit price than, say TV services delivered over broadband.

What is important is that each service be priced above the incremental cost price. The recovery of fixed common and joint costs requires further consideration.

Although in NGNs more assets are shared, voice is a QoS assured product and requires dedicated transmission capacity/network partitions, and therefore the benefits of sharing in a best endeavours world are lost, especially in the backhaul where it has proved uneconomic to deploy both MPLS and the capability to prioritise packets. It is important to recognise the fundamental difference between broadband and QoS assured voice service. In the case of broadband peaks of usage are accommodated by degrading the service received by all users i.e. users can only get what is available. For the QoS assured voice service, the operator aims to have sufficient capacity to meet peak demand.

A significant amount of equipment is dedicated to voice - e.g. Call Server, Routing Database, Border Gateway, Signalling Firewall, Session Border Controller, Access Gateway Control Function. NGN call control is estimated to comprise a similar proportion of costs to the legacy network – some say more, such that a call set up charge might be justified

Although distance is less relevant in NGNs, it is not irrelevant.

The assumption that basing interconnect prices on efficient technology provides an incentive for speeding up the migration to this technology is true but ignores the start up costs, the cost of any transitional overlap of networks, and the politics of accommodating the interests of all the stakeholders in the industry during migration between technologies.

The apportionment between services of costs for the use of common components requires further consideration. As the paper states, the calculation must reflect the per bit cost or capacity required by the service measured. However, this simple calculation will not necessarily result in an appropriate distribution of the costs of sharing common components because a service requiring only a small amount of capacity will pay very little compared to the cost of using discreet components.

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

As a guiding principle, all services using the network should make some contribution to cost. This is difficult to achieve with CBC as "off-peak" usage is priced at zero whilst all costs are recovered from peak utilisation. The complexities of a shifting peak and the free-rider problem can be avoided using EBC. By combining EBC with time of day pricing, the charging mechanism can be responsive to capacity utilisation and ensures prices are lower at times of day when capacity utilisation is low.

The apparent simplicity of capacity charging is undermined by the need to keep records of peak usage to calculate the rates that will apply. Furthermore, all the time some sections of the global telecommunications industry charges pence per minute all the PPM measuring systems will be required e.g. international, mobile, premium rate calls, and any calls beyond the boundary of the capacity charge.

11) 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?

BT believes that at the present time there would be no worthwhile benefits to industry or consumers from moving to a Bill & Keep charging structure at the wholesale level. This issue has been considered in depth in the NGNuk forum, and the predominant view was that continuing Calling Network Party Pays into the NGN world was the best option for the time being. A paper by Richard Cadman of SPC Network for NGNuk concluded:

"We find that efficient investment, an objective of both EU and UK law, is most likely to be supported by continuing with a system whereby the network of the party most likely to benefit from the transfer of a call or message continues to pay for the call. In this way networks are most likely to recover investments from calling or called parties who gain most. This basic economic principle is equally applicable to NGNs as it is to the current generation of networks".

Pence per minute based on Element Based Charging by time of day at the wholesale level encourages efficient network utilisation. In the UK, we think that utilisation is as good as it is likely to be under any other system of charging. Capacity Based Charging and Bill and Keep at the wholesale level might also incentivize efficient use of the network, but need to be supplemented by measures at the retail level. Other issues such as free-riding and the shifting peak problem also need to be considered. CP's costs are driven by the peak rate of simultaneous calls/traffic, and it may need to encourage usage patterns which flatten the peaks and encourage usage outside peak times.

Under Bill and Keep, hot potato routing would apply. Clearly, if a local operator only had a point of interconnect in their locality, other operators would be incurring all the costs of getting to and from that location. A charging mechanism would be required to compensate the other operators for the utility they provided. This could be pence per minute or capacity based.

Finally, from a consumer viewpoint, B&K seems likely to result in a dramatic increase in unwanted calls.

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.

In both cases, the answer is evolution rather than revolution. CPNP can be adapted to fit NGNs, possibly with the introduction of Capacity Based Charging. It should be possible progressively to simplify the charging mechanism as the need for micro measurement and differentiation declines. Ultimately much will depend on the success of mobile calls, derived voice and any new voice products over broadband as substitutes for the QoS assured service in determining the appropriate charging mechanism. Were QoS assured voice to evolve into a premium rate session based service, then it would be charged as a premium rate service.

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?

Clearly arbitrage is a potential problem. Design and development work to address this issue could be expensive, and policing difficult.

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

No. There are several issues the paper does not consider:

Separation of service provider from network operator gives rise to different incentives. Under Bill and Keep, a service provider without a network benefits from no longer having to pay for termination. This has implications on the incentives to invest in network infrastructure.

The analysis of cost drivers of call conveyance is incomplete. The assertion that the called prty drives costs overlooks the fact that the call set-up is entirely driven by the calling party, and the originating party is also responsible for the costs for the time it takes for the called party to decide whether to continue the call. In other words, calling party is responsible for "causing" the majority of costs.

The recovery / allocation of fixed common and joint costs needs further consideration. BT will address this issue in its response to the Commission consultation on termination rates.

Reciprocity (after an appropriate period of adjustment for new entrants) is a useful mechanism for mitigating against the incentive to charge excessively for call termination. The paper gives no consideration to this.

The impact on other business models needs to be considered, for example LLU, Premium Rate Services, and Number Translation Services would all be affected by a change to the billing mechanism. The impact on these business models should be evaluated in any comprehensive analysis.