



OFCOM

Next Generation Networks Consultation

TalkTalk Group Response

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INTRODUCTION

TalkTalk Group (TTG) is the largest provider of broadband services to UK homes. We serve over 4 million residential and business broadband customers under the TalkTalk, AOL, Tiscali, Opal and Pipex brands. We are the UK's biggest local loop unbundler and operate the UK's largest next generation network (NGN).

The deployment of our NGN has posed some significant and originally unforeseen challenges. It is notable that the vast majority of these challenges and all the persisting one have been regulatory / commercial challenges related to our relationship with BT. The technical challenges have broadly been overcome. Though some of the regulatory / commercial problems have been overcome (e.g. MPF migration, inflexible exchange use) many persist such as the inability to offer network based voice-only services and a manifestly unreasonable termination and APCC regime.

We are pleased that Ofcom are consulting on some of these issues – it goes without saying that regulation relating to NGNs has a profound impact on our business.

INTRODUCTION AND GENERAL COMMENTS

Whilst we are pleased that Ofcom is consulting on certain aspects of NGNs there are a number of general aspects of Ofcom's consultation that concern us.

The first is that Ofcom's approach seems to be almost solely based on how BT is (not) planning to deploy NGN. This is disappointing in a number of respects

- It is very short termist and Ofcom does not seem to be looking forward beyond a couple of years (for example, it seems to ignore BT's planned migration of voice services to the NGN in 3-5 years [§2.43])
- It almost totally ignores the fact that two of the largest four operators (TTG and Sky) who in 2-3 years will represent some 30% of the market already have NGNs and are migrating customers to these networks at a rapid rate

The following example highlights what we see as Ofcom's excessive focus on what BT is doing:

We do not yet know the extent to which NGN technology will be adopted or the detailed network architectures that will be used. It still seems likely that operators will deploy NGN equipment, and ultimately head towards a single converged network for all services, but the most immediate trends apparent in the industry are towards extending the life of current generation equipment, and maintaining a non-converged architecture. (§2.20)

That comment is simply not true. BT may be going backwards slowly but other major operators are deploying and migrating more customers to NGNs. If Ofcom bases regulation almost solely on the basis of what BT is doing (as it appears to have done) it is unlikely to be able to ensure a competitive market

Our second concern is a lack of clear strategy with too many 'wait and sees' in particular in relation to equivalence and consumption models (e.g. what products BT's NGN will consume, where EOI applies).

The following extract shows that Ofcom prefers to wait and see rather than set the agenda.

We would note that, if in future BT Wholesale were to launch a new 21CN based voice product, or a converged voice and broadband product, it would be necessary to consider what the upstream inputs to those products should be. We will address issues of this sort as and when they arise. (§1.21)

Ofcom knows enough today to set, at a minimum, some basic principles and rebuttable presumptions as to how equivalence and consumption models will operate in the future. For instance, Ofcom should be able to lay out today its thinking about the products that BT would consume in offering each of voice+broadband and voice on a converged MSAN (in the case they deployed them). If Ofcom doesn't do this, it leaves too many uncertainties for all players. Furthermore, if Ofcom merely reacts to changing circumstances it will allow BT to dictate the competitive environment.

What is even more disappointing about this lack of strategy for consumption models is that Ofcom does dedicate a whole section of its consultation (Section 5) to the question of how NGNs might alter the benefits of network-based competition. To focus on this much longer term and 'blue sky' question and omit to address in any way the far more pressing question of equivalence and consumption models is quite astonishing.

Our last niggling concern is what seems to be an excessive focus on BT's NGA deployment and how that may change things and therefore a need to wait and see how NGA plays out before making commitments. Even with a fair wind, this is unlikely to represent much more than 10% of lines in 3-4 years (40% coverage, ~20% penetration). Thus NGA should have a very limited impact on the proposals in this consultation.

Our response is broken down into three parts

- The first part comments on Ofcom suggested approach to xMPF
- The second looks at issues associated with NGN interconnection
- The last part picks up other questions raised in the consultation

We have intentionally not responded to Ofcom's question 15 about the longer-term evolution of competition in an NGN world. We do not think Ofcom should be spending any time on this question until it has resolved the far more pressing issues in front of it.

APPROACH TO xMPF

We are pleased that Ofcom is laying out its thinking on this critical issue. However, we are very disappointed with the conclusion that Ofcom has reached.

It is firstly worth articulating the implication of Ofcom's conclusion that

we suggest that, at present, the most appropriate method for resolving the issue of xMPF will be through the BT SoR process (§3.81)

The effect of this proposal (if finalised) will mean that xMPF will not be developed. BT/Openreach has shown that it is unwilling to develop the product and can and will use every tool in the book to block its development since it is not in its interests. Therefore, Ofcom's approach is effectively sounding the death knell for xMPF.

We think that Ofcom's conclusion that xMPF should not be developed means Ofcom is failing in its principle duty "*to further the interests of consumers in relevant markets, where appropriate by promoting competition*" since its decision is effectively depriving 14m customers of the benefits of network-based competition for their voice service.

Our reasoning is articulated below.

DEPRIVED CUSTOMERS

There are some 14m customers of voice services who can only use BT's WLR services - without xMPF these customers are today effectively denied the incremental benefits from network based competition versus resale based competition. The 14m comprise two groups:

- 9m homes / lines that do not take broadband today. At the moment an LLU operator cannot easily use MPF to provide to these customers since it prevents the customer from taking broadband from a different provider at a later point. If an LLU operator were to provide a service using MPF this would prevent the customer taking broadband from another provider at a later point. If the operator forced this term on the customers it would result in lower uptake, more churn and/or greater dissatisfaction ... and incidentally Ofcom's disdain
- 5m¹ homes which take broadband but have decided to take voice from a different provider to the broadband. At the moment an LLU operator cannot use MPF to provide to these customers since it would not allow the customer to take broadband from another provider

¹ Based on estimates derived from operator market shares and known product mixes. We will happily share this analysis with Ofcom

It is rather disappointing that Ofcom effectively made no assessment of the actual number of customers deprived noting only that the number was declining² (e.g. §3.79).

The benefits of network-based competition (versus resale competition) are significant³. Ofcom has recognised these benefits and promoting network based competition is inherent in its strategy - for example:

*"whilst downward pressure on pricing can be achieved by a combination of regulation and arbitrage-based services [resale] competition, we concluded that the choice, diversity, and innovation required by consumers in today's much more diverse and fast-moving market could not be achieved in this way. Innovation in particular cannot be imposed on a market as a regulatory requirement. Services-based [resale] competition does encourage innovation in relation to branding, billing, and packaging of services, but much of the innovation that consumers value in telecoms stems from the ability to combine both network and service capabilities."*⁴

In the case of voice services the specific benefits of network-based competition include:

- Innovation and differentiation: Through offering our own network-based voice service we can offer features that are simply not available in WLR such as certain queuing capabilities, call barring and SMS features and voicemail services. Network-based competition also allows us to offer different pricing models e.g. sharing revenue on incoming calls
- Ability to better monitor performance and provide better fault diagnostics and service for our customers. For instance, we will be able to more accurately diagnose problems without hand-off / escalation to BT, we will be able to fix faults more quickly and can reduce fault ping-pong.
- Greater cost pressure and cost minimisation incentives on those additional parts of the value chain exposed to competition

Obviously, given Ofcom's duty, to deprive millions of customers of the full benefits of competition needs good reason.

It is worth noting that it would not only be potential TTG retail customers that would enjoy the better service but also wholesale customers. We currently offer wholesale broadband products but are prevented from offering wholesale voice products (to compete with BT's WLR and CPS) due to the lack of xMPF.

xMPF would also result in another pro-competition benefit that would be felt more widely. Currently without xMPF competitors against BT are hampered in their ability to compete with BT on a level playing field since we are excluded from providing network-based services to 14m customers. This restriction does not apply to BT. Therefore, this clearly distorts competition.

² The advent of NGA (where Openreach are proposing only broadband is provided from the cabinet) may slow the reduction in the number of customers who would benefit from a xMPF product

³ though admittedly less in the case of voice than broadband

⁴ http://www.ofcom.org.uk/consult/condocs/statement_tsr/statement.pdf §3.11

XMPF BASED COMPETITION IS EFFICIENT

There is a legitimate question of whether network-based competition is efficient - in particular will the competition / innovation benefits outweigh the static costs (due to, for instance, cost duplication).

Network-based competition is clearly efficient competition for voice + broadband - it is both effective and sustainable (though not as effective as it could and should be).

We believe that there is no reason to presume (and Ofcom has presented no evidence to suggest otherwise) that network-based competition for voice-only services would not also be an efficient form of competition. The additional static costs associated with network-based competition (e.g. duplication) are small given that operators wishing to operate in the voice-only market are NGN operators who provide voice+broadband service already.

Ofcom's approach of not requiring BT to provide xMPF implies competition would not be efficient and that voice functionality is an economic bottleneck - it is not.

WLR-MPF PRICE DIFFERENCE

Ofcom's central argument for not supporting xMPF seems to be that at the current WLR-MPF price difference xMPF would not be financially viable since the cost saving from using MPF would not cover the additional cost.

This is true in that the current / proposed price difference⁵ does not cover the additional costs for the average customer. However, we believe that the difference has been artificially depressed⁶:

- Ofcom has effectively allowed the price difference to be set by BT - we are not aware of any adjustments made by Ofcom in the Openreach financial framework which effect the cost/price difference as between WLR and MPF. Given BT's incentive to limit competition with WLR allowing BT such freedom is poor
- There is a wealth of evidence that points to the current and proposed WLR-MPF price difference being significantly lower than the economically efficient level (which is the forward-looking LRIC / LRIC+EPMU cost differences⁷)
- The low price difference is driven in part by Ofcom's (incorrect) use of PSTN technology to determine the cost difference - in future as BT migrates to NGN the cost difference will rise and so will (should) the price difference

We think it almost certain that the cost difference will rise in the future (due to the appeal being successful and/or with introduction of NGN).

⁵ Based on WLR charge control consultation

⁶ This issue is the subject of CPW's appeal of the Ofcom LLU price decision

⁷ For example, see TTG WLR charge control response

<http://www.ofcom.org.uk/consult/condocs/wlrcc/responses/TTG.pdf> section 4

Therefore, although Ofcom's prognosis that the current price difference is insufficient to allow market entry for the average customer today, it does not hold true into the future.

ABSENCE OF XMPF CREATES CONSUMER HARM

In addition to the inability of voice-only customers to enjoy network-based competition, the lack of xMPF also creates consumer harm in migrations and switching. Currently, a customer on MPF who wishes to take broadband from another operator is forced into moving back to WLR. This creates confusion for customers whose natural instinct is that they should be able to separately choose voice and broadband if they wish - the need for more flexibility in switching is increased by the issue of contracts periods since customers can find that their voice and broadband contracts end at different times. This complexity also creates uncertainty and friction in the switching process making switching more difficult and competition less effective.

COST INVOLVED LIMITED

In deciding whether there is a benefit to introducing xMPF it is necessary to consider the cost required to develop the product. Ofcom has not provided any comment on this issue - it is unclear whether Ofcom consider the issue relevant or not.

We believe the additional costs would be no more than £10m to £20m⁸, or about 2p per customer per month⁹ who could benefit from the investment. When expressed in these terms it is clear that only a tiny benefit is required to outweigh the costs.

NEED FOR XMPF FOR BT ITSELF

We believe that if BT rolled out a converged MSAN they would have to themselves use xMPF and also provide xMPF externally (on an EOI basis). This is because, if BT were to use converged MSANs to offer a broadband+voice service they would also use this to provide a new voice-only service (such as WVC which was suggested in 2008 by BT). Since this voice service would effectively be a new voice product it would have to consume an upstream input on an EOI basis. The most obvious upstream input would have been xMPF.

This dynamic has a number of implications

- Assuming that BT will at some point roll-out converged MSANs (which is highly likely) an xMPF product will be needed
- by re-engineering their network to use unconverged MSANs, BT has effectively avoided the need to develop xMPF. This linkage obviously creates a perverse incentive for BT to game regulation by altering the design of its network in order to avoid competition.

⁸ We provided our cost estimates to Openreach and Ofcom earlier this year

⁹ £15m amortised over 5 years, spread across customer wanting a voice-only service (14m now but declining). 2p = £10m / 5 years / 12m average / 12 months

- this linkage effectively means that other operators ability to offer services (e.g. network-based voice only) depends on BT's network architecture decisions. This is wrong as a simple matter of principle. BT should not be able to dictate the models of competition or restrict services that competitors can provide

XMPF REDUCES RISK OF ANTI-COMPETITIVE LEVERAGE

We currently have a situation where BT have been found to have SMP in the wholesale narrowband market (in which WLR sits) but not in the wholesale broadband market (in ~60% of the UK). Furthermore, BT have been recently found to not have SMP in the retail narrowband market and so can bundle products.

Whilst each of the decisions that resulted in us reaching this point may have been justifiable the situation we are in today means that there is a risk that BT leverages from a market where they have SMP (e.g. wholesale narrowband) into one where they don't by, for instance, bundling a wholesale voice product with a wholesale broadband product.

One of the best / better protections against this would be to ensure greater competition in these SMP markets (ideally to the point where BT loses its SMP). Clearly, ensuring competition in the narrowband voice market by requiring BT to offer an xMPF product would be one very effective way of minimising the risk of leverage.

CONCLUSION

Even if Ofcom is not fully convinced of the benefits of introducing xMPF today, it is pretty clear that there will be a case for xMPF in the future due to one or more of the following factors:

- The use of converged MSANs by BT which would necessitate the introduction of xMPF
- The roll-out of NGA which will require a xMPF-like product¹⁰
- An increase in the WLR-MPF price difference as a result either of TTG's appeal and/or the use of NGN costs to determine the price difference

Therefore, the question about the provision of xMPF is not a question of *if* it should be provided but rather *when* it should be provided.

We believe that given the length of time that it takes for Openreach to develop new products and the relatively low amount of product development investment that needs accelerating, we think that the development of xMPF should start immediately. If not, we may find in two years time that though the price difference is sufficient, the product is not available and we will wait another two years before the product is available.

¹⁰ We believe that in the case that super-fast broadband is provided from the cabinet, the voice service provided by BT from the exchange would constitute a new voice product. This new voice product would therefore require an upstream input (such as xMPF)

Furthermore, by introducing xMPF quickly at today's (artificially low) WLR-MPF price difference there may well be some demand as, for instance:

- operators use spare capacity to offer service i.e. price at short-run costs
- build a voice-only customer base on xMPF with aim of migrating to MPF when they win the broadband service
- use xMPF for customers who generate large volumes of incoming traffic and are therefore more viable
- use xMPF to provide services to customers that particularly value the different features we offer

If Ofcom persists with not requiring BT to offer xMPF, it will in effect be propping up a model of competition based primarily on yesterday's technology – PSTN and broadband only networks. Ofcom should aim to be forward looking – it should proactively and in advance design models of competition that reflect and tomorrow's technology (not yesterday's). By not having this foresight Ofcom will effectively deprive millions of customers of the benefits of competition.

NGN INTERCONNECTION

In this section we discuss two particular issues regarding interconnection to our NGN (termination rates and APC) and also address the particular issue regarding the cost of interworking and IP-TDM conversion.

NGN TERMINATION RATES

A key challenge for NGN is the setting of a termination rate for an NGN operator that is fair and reasonable and adequately covers efficiently incurred cost of termination.

The current regulatory regime for setting termination rates for alternative network operators essentially dictates that the rate should be reciprocal (although what this term means is open to interpretation) and should be based on BT's TDM costs and cost structures because those are considered by Ofcom to be efficiently incurred. These principles are currently enshrined in the BT Reciprocity Agreement which itself has been subject to controversy and dispute over the years.

Whilst the reciprocity principle and agreement may be appropriate in a world with only legacy TDM operators, it is wholly inadequate in a world where some operators are using NGNs. The reciprocity principle as applied in a TDM world cannot simply be mapped into an NGN without some detailed consideration of the unique characteristics of an NGN – it is like trying to fit a square peg in a round hole.

More specifically, the current regime has three particular shortcomings that make it almost impossible to sensibly apply current regime to NGNs. The areas that need to be addressed are:

First, is that NGN operators are effectively forced to pay for the conversion of both ingress (incoming) traffic from TDM to IP as well as egress (outgoing) traffic from IP to TDM. NGN operators bear the full cost of conversion and TDM operators pay not a penny (since they deliver their traffic at in TDM form). This is clearly not reciprocal (in any sense of the word) or technologically neutral. This problem is compounded by BT lack of an IP interconnection capability and, rather worryingly, it is currently unclear when and how BT would plan to offer this. We comment on this issue further below.

Second, the efficient design of an NGN means that it will operate much fewer points of interconnection with other networks and so will incur greater transmission costs. For instance, in rolling out its 21CN network, BT would only offer 27 points of interconnection for call termination compared to the near 700 DLE points of interconnection in its TDM network. In other words, as a result of the way in which an NGN is designed, the NGN operator will carry the call much further in its network and, as a consequence, incur additional costs compared to a TDM operator who receives the call much closer to the point of termination. Furthermore, the originating operator can benefit from not having to extend their network to many points of interconnect¹¹. This difference between BT's TDM network and Opal's NGN is illustrated in Diagram 1.

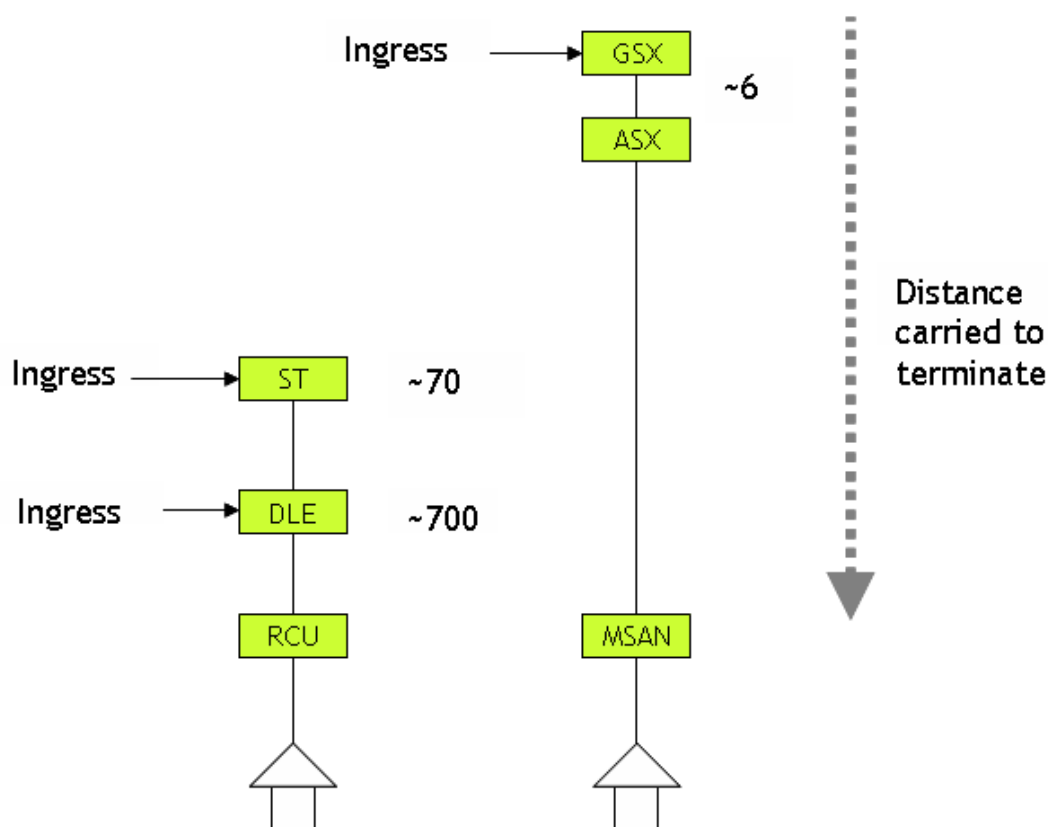
In considering the additional cost of this greater distance over which the traffic is carried, Ofcom might consider that this additional cost may be offset by the fact that NGNs use higher bandwidth transmission than TDM networks (e.g. 100Mbps rather than 2Mbps). However, we think such an approach would be wrong since it is inconsistent with the principle of determining termination costs on the basis of BT's TDM network (unit) costs¹².

Third, the efficient design of an NGN does not have multiple traditional switching layers as in a TDM network. Since the reciprocity agreement is based on these switching layers (DLE, ST, DT) it is obviously inappropriate for NGNs. This is also shown in diagram 1 below.

¹¹ TTG has had to extend its network (at substantial cost) to almost 700 DLEs in BT's network

¹² Thus the appropriate approach to determine the NGN termination rate adjustment to reflect the distance would be on the basis that the NGN network used 2Mbps circuits (bizarre as it may appear)

DIAGRAM 1 - COMPARISON BETWEEN POINTS OF INTERCONNECTION IN BT'S TDM NETWORK AND OPAL'S NGN



It is pretty self-evident that NGNs have a fundamentally different topology and characteristics to legacy TDM networks and any method to set NGN termination rates that relies on drawing comparisons from a TDM network cost and topology has significant limitations. Ofcom has confirmed this point in its draft determination in the Opal call termination dispute.

There is no straightforward answer to this dilemma of determining fair and reasonable interconnection rates. However, an answer needs nonetheless to be found urgently particularly given that the current (albeit inadequate) BT Reciprocity Agreement expired on 30 September 2009 with no current replacement agreement in place.

It is simply unrealistic to expect industry to come up with an agreement on how termination rates for NGNs should be calculated given the differing and opposing commercial interests. Therefore Ofcom must lay down some very clear policy guidelines as to how one should go about determining a fair and reasonable termination rate for an NGN operator. Such guidelines would allow industry negotiations to proceed on a more efficient and expeditious basis. It is hoped, of course, that the current complexities are temporary in nature and will disappear as BT moves to NGN the termination rates regime reflects NGN architectures and costs. However, this point is some way off.

In regard to the particular issue of the provision IP-TDM / TDM-IP conversion and who pays, we think that the current arrangement - where NGNs pay all the conversion costs on incoming traffic and on outgoing traffic i.e. 100% - is wholly inappropriate. Given that we will have TDM networks for probably another 5-10 years this inappropriate situation will persist for some time.

It is unclear what Ofcom is actually proposing as an alternative arrangement.

We believe that there is not a clear-cut right answer as to the appropriate cost sharing. Some may say that NGNs should be actively promoted and therefore TDM networks should pay for all the costs. Other may say that NGNs have 'caused' the additional cost and therefore they should pay 100%.

It is worth considering as a starting point Ofcom's six principles for cost recovery (e.g. distribution of benefits, cost causality). We think the two most important factors should be technology neutrality and the need to minimise the amount of conversion required (i.e. by encouraging a quick switch).

- Technology neutrality would suggest that, to ensure 'equal' treatment and so encourage efficient investment and migration, the conversion costs should be split 50:50¹³. Ofcom's argument that NGN operators should swallow the cost since it is likely to be offset by the lower cost we think is effectively discriminating against NGNs and will not encourage efficiency
- Cost minimisation will be achieved by a reduced transition period of a mixed world of IP and TDM. One way of minimising the transition time and so cost would be to create a positive incentive for TDM operators to migrate over to NGNs. This would suggest that up to 100% of the costs should be paid by the TDM operator

Some TDM operators may argue that they should not be penalised for the technology decisions of others (and so should pay no conversion cost). However, this is a rather short-sighted and narrow view since ultimately a move to NGNs is economically efficient - as Ofcom said "*It still seems likely that operators will deploy NGN equipment, and ultimately head towards a single converged network for all services*". (§2.20)

Thus compared to today's situation where 100% of the cost (on incoming and outgoing) is paid by the NGN operator, a better regime would be one where the NGN operator pays between 0% and 50% of the cost.

The question of who provides the conversion service is a different one and can be handled separately.

We also believe that Ofcom needs to recognise that that current model for negotiation of interconnect charges (and in particular call termination) is fundamentally ineffective. This is not only because BT's position of dominance but

¹³ This could mean that for instance that each network provided conversion themselves on their own incoming traffic

also because no new termination rate (as proposed in an OCCN) is effective unless BT accepts it. This means that BT has little (or no) incentive to quickly conclude negotiations and places non-BT operators at a huge disadvantage. We believe that Ofcom needs to consider an alternative model for the negotiation of rates else it is likely to result in more disputes since they are the only way to set rates.

PORTING ISSUES

TTG has faced a considerable challenge in negotiating a fair and reasonable average porting conveyance charge (APCC) with BT over the past two years. The APCC is a charge that the exporting operator levies on the recipient operator to cover the cost of transiting a call to the ported number across the exporting operator's network before handing over the call to the recipient operator's network.

It is worth emphasising that these issues have not arisen simply because TTG has rolled out an NGN but rather because TTG has had to port numbers away from BT to its own network which happens to be an NGN. This does not occur with WLR/CPS since incoming calls are terminated on BT's network.

The problem is that BT, as the largest fixed donor provider, is subject to a distorted incentive created by the current regime for routing calls to numbers that have been ported to a recipient (terminating) operator. BT wants to minimise the termination rate it pays to the recipient operator by building out its network as deep as possible into the NGN. This means that BT carries the call as far as possible in its own network. As a result, BT will incur greater costs for which the terminating operator has to pay through the APCC. BT, of course, has every incentive to route in this way since it can charge for the additional costs to the terminating operator (and make an incremental profit). This results in an excessive APCC based on (society-wide) economically inefficient routing in contravention of GC18.2 (though of course such routing might suit BT commercial interests).

This presents TTG with a huge problem because it has to accept the traffic (and incur the APCC) in order to allow its customers to receive calls. TTG believes that the solution to this problem ultimately involves two elements

- The 'transit' operator must be obliged to minimise costs of transit (and so reduce the APCC cost and charge)
- the originating operator must be effectively encouraged to route traffic to ported numbers directly to the recipient provider. There are a number of possible routes to address this
 - At the moment the originating operator has no such incentive because in most cases this would mean paying a higher termination rate to TTG than the termination rate they currently pay BT

- The originating operator must be able to know which numbers have been ported and therefore can be directly routed¹⁴
- Some of the APCC should be charged to the originating operator

OTHER ISSUES

Ofcom raised a number of other issues regarding NGNs. These are touched on below.

STANDARDISATION WORK (QUESTION 3)

We agree with NICC's articulation of where additional work is required (as outlined in §3.92). We also believe that additional standards may be needed relating to IP telephony to replicate the integrity of the PSTN in relation to security and national infrastructure.

COMMERCIAL IMPACT OF BT'S CHANGING PLANS (QUESTION 5)

BT's failure to roll out 21CN to the original planned timetable and its subsequent decision to significantly slow down any future rollout has resulted in other operators incurring costs that have proven unnecessary and wasted.

✂✂ REDACTED ✂✂

It would be useful for Ofcom to articulate how it might address these issues in the context of a dispute so a fair settlement can be reached (recognising the SMP position that BT holds in the relevant markets).

CONSUMER PROTECTION (QUESTIONS 7)

Ofcom previously adopted a number of principles for consumer protection in relation to NGNs (§4.5)

- A: the services offered to consumers on NGNs should at least be equivalent to their existing services;
- B: consumers should not suffer any detriment during the transition to NGNs, for example, due to loss of access to emergency services or degraded call quality; and
- C: any changes to services are fully explained to end-users.

These issues mostly affects operators transitioning existing customers from legacy networks to NGNs rather than new customers since in the later case customers obviously have a choice as to whether to move or not.

However, we think these principles are too blunt and almost certainly not technology neutral. Principle A effectively requires that NGNs should replicate

¹⁴ Note here that this does not require that the originating operator has perfect knowledge of which numbers have been ported.

everything legacy networks do. Principal B could require an excessively expensive transition/migration process to eliminate/minimise downtime. We would prefer to see something that focuses on providing transparency (i.e. principal C) and allowing easy switching between providers but allowing operators (including BT) to make sensible choices about technology and which services to offer or not. If not, we will effectively require NGNs to be inefficiently designed.

EQUIPMENT / SERVICE COMPATIBILITY (QUESTIONS 8 TO 14)

Ofcom has raised a number of questions regarding compatibility of NGNs with certain services / equipment such as alarms, Telecare and other terminal equipment. ✂✂ REDACTED ✂✂

VOICE QUALITY OF SERVICE (QUESTIONS 15)

✂✂ REDACTED ✂✂