Next Generation Networks

Responding to recent developments to protect consumers, promote competition and secure efficient investment

(✂ Redacted for publication)

Statement

Publication date: 28 January 2010

Contents

Section 1

Summary

Introduction

1.1   This Statement concludes the consultation we initiated with the publication on 31 July 2009 of the document *Next Generation Networks: Responding to recent developments to protect consumers, promote effective competition and secure efficient investment*[1] ("the Consultation").

1.2   A next-generation network ("NGN") exploits technologies developed for the Internet to deliver a broad range of telecommunication services from a single platform common to all services. In contrast, legacy networks use separate platforms for each service they provide.

1.3   NGNs could offer significant benefits to the consumer. They could be less costly to build and operate than legacy networks and hence ultimately deliver better value for money. They are also potentially more flexible than legacy networks, and this could allow communications providers ("CPs") to respond more readily to consumers' needs as these change over time.

1.4   Some UK operators, most notably TalkTalk Group, have already invested in NGNs which provide fixed-line telecommunication services to millions of UK consumers. BT has been developing an NGN design, 21CN, but has recently stepped back from its original plan which foresaw nationwide deployment in a configuration that would deliver both voice and data services from a single platform. BT has meanwhile shifted the focus of its investment to next-generation access ("NGA") infrastructure, with a view to making super-fast broadband services available in areas covering 40% of the UK's population by the end of 2012.

1.5   Our principal policy objectives in relation to NGNs are:

- to provide incentives for efficient investment in NGNs;

- to promote effective competition based on NGN infrastructure; and

- to protect consumers from disruption during the transition to NGNs.

1.6   In the Consultation we presented our response to the recent NGN developments in the UK and to some related concerns from stakeholders. We also set out our updated thinking about how consumers should be protected during migration to NGNs. Finally, we discussed what, if anything, we should be doing now to prepare for the longer-term, in which there could be widespread adoption of NGNs.

1.7   This Statement sets out our current thinking on the issues raised in the Consultation, and signposts where in our work programme they are being, or will be, taken forward. It does not make regulatory decisions.

---

[1] See http://www.ofcom.org.uk/consult/condocs/ngndevelopments/

Evolution of models of competition

1.8   The Consultation discussed the potential impacts of BT's changed 21CN plans and its announced investments in NGA on the model of competition set up by our Telecommunications Strategic Review[2] and by the undertakings which BT offered under the Enterprise Act 2002 ("the Undertakings"), which we accepted in September 2005.

1.9   TalkTalk Group was concerned that our Consultation did not present a clear strategy, not setting out, for example, what products BT's NGN should consume once BT deploys it in a converged configuration, and where equivalence of inputs will apply. Sky and C&W were concerned at the impact on BT's incentives in relation to Openreach's provision of the Metallic Path Facilities ("MPF") product in light of BT's decision to step back from deploying its NGN for converged provision of voice and broadband services. Sky was also concerned about the extent to which Openreach's NGA product proposals would support effective competition in voice and super-fast broadband services in the retail market.

1.10   We decided our strategic approach in the Telecommunications Strategic Review and embodied the ensuing principles in the Undertakings, which include commitments specific to NGNs. We recognise that the practical application of the principles to NGNs depends on BT's and other operators' commercial deployment plans, which have become less certain over time. We are considering in our current reviews of the wholesale local access and wholesale broadband access markets how regulations should evolve to support effective competition. This work is also considering whether any amendments would be appropriate to BT's obligations in relation to local-loop unbundling, including MPF. We plan to consult formally on our findings in the first quarter of 2010. We are also currently considering BT's proposal to vary the Undertakings in relation to its deployment of fibre-to-the-premises ("FTTP"), and we plan to publish a Statement on this proposal also in the first quarter of 2010.

1.11   BT has told us[3] that it intends to discuss with us the unbundled copper local loop products that its 21CN MSANs should consume in configurations where a common MSAN will provide both voice and data services. We will consult publicly should we receive a request from BT that we vary the Undertakings in this respect, and should we be inclined to agree to it.

Requirement for an unbundled local-loop input to voice-only services ("xMPF")

1.12   Openreach does not currently provide an unbundled copper local loop product specific to voice services, although the merits of such a product have been discussed. The industry refers to this possible type of product as "xMPF".

1.13   Using such a product, any network operator would be able to compete with BT using its own network infrastructure to provide voice services to customers who take voice and broadband services from separate providers. The same or a similar product could also be used to deliver voice services to customers who do not take any broadband service.

---

[2] See http://www.ofcom.org.uk/consult/condocs/statement_tsr/

[3] See BT's response to the Consultation at
http://www.ofcom.org.uk/consult/condocs/ngndevelopments/responses/BT.pdf

1.14   Views of respondents to the Consultation were divided about whether or not we should intervene to require Openreach to provide an xMPF product. Having reviewed those responses, we consider that one option for a CP seeking to serve customers who only take voice services is to use Openreach's existing Metallic Path Facilities ("MPF") product, provided the CP protects those customers' possible future interest in broadband services. It is therefore not clear to us that a new product is required to enable CPs to serve customers who only take voice services.

1.15   Where a CP chooses this option we would expect the process of selling the voice service to include explaining fully and prominently to prospective customers, before they commit to the service, the options they are likely to have and charges, including any for early termination, they are likely to face in the event that they decide in future to take broadband services, both during any minimum contract term and thereafter. We would also expect the CP, unless this is unduly onerous, to make a migration process from MPF to WLR available, so that such customers can obtain broadband services from other providers if they wish to do so in future.

1.16   With regard to consumers who choose to take voice and broadband services from different providers, we are not persuaded that our potential intervention to require Openreach to develop xMPF would be justified. In reaching this view, we have taken account of the fact that there is no evidence that there would be significant demand for the product at the price levels that are likely to be applicable. As we discussed in the Consultation, the economics of using xMPF are likely to turn on its price relative to that of Wholesale Line Rental ("WLR"). It appears reasonable to assume that, if xMPF was offered by Openreach, its price would be similar to that of MPF. On 22 May 2009 we issued a statement which introduced a new price control regime for MPF[4]. That statement is currently subject to an appeal before the Competition Appeal Tribunal[5].

1.17   We therefore confirm that we do not intend at present to intervene to require Openreach to provide xMPF, although we remain open to considering any new evidence if and when it should become available. We also note that, under the general access obligation which applies to BT in the Wholesale Local Access market, BT is required to meet reasonable requests for services which fall within that market, including potentially xMPF. There is therefore an avenue open to CPs who want xMPF, if there is reasonable demand for the product.

Interconnection between NGNs and legacy networks

1.18   Interconnection of voice services between NGNs and legacy networks is likely to be an important feature of competition between fixed networks for some considerable time while the timetable of a full deployment of BT's NGN remains uncertain. We discussed in the Consultation the issues posed by such interconnection and came to an initial view that reciprocal charging between NGNs and legacy networks remains appropriate.

1.19   Respondents' views on the policy positions that we should take on the interconnection of NGN and legacy networks varied widely. BT would prefer that we do not intervene and leave operators to reach agreement by commercial negotiations. TalkTalk Group, on the other hand, argued that such negotiations are

---

[4] See http://www.ofcom.org.uk/consult/condocs/openreachframework/statement/statement.pdf
[5] Competition Appeal Tribunal, *The Carphone Warehouse Group plc v Office of Communications (Local Loop Unbundling)*, case number 1111/3/3/09, see http://www.catribunal.org.uk/237-4154/1111-3-3-09-The-Carphone-Warehouse-Group-plc.html

not likely to reach agreement without our intervention, and that the problems concerning interconnection of NGNs and legacy networks are intractable without clear regulatory guidance.

1.20   The voice call termination charges payable in the interconnection between BT and each fixed-network operator have until recently been determined by the terms of a reciprocity agreement which formed part of BT's standard interconnection agreement. The reciprocity agreement expired recently, and industry negotiations on the terms of a renewed agreement are ongoing.

1.21   We recognise that fixed network operators may find it difficult to reach satisfactory agreement on all aspects of a new reciprocity agreement by commercial negotiation alone. The more fundamental issues concern interconnection between NGNs and legacy networks, but we are aware that issues may also arise in interconnection between legacy networks. In order to help operators in their negotiations, we propose to start in the first quarter of 2010 a programme of work with the aim of clarifying how the principle of reciprocity should apply where appropriate between fixed networks. In this work we will have regard to the issues raised by the need for an interworking function between an NGN and a legacy network where they interconnect. These issues include which of the interconnecting operators should bear the costs of interworking, and whether, and if so when, BT should be required to offer IP interconnection with its network.

Investment uncertainty

1.22   Some of BT's competitors are concerned that investments they have made in anticipation of BT's 21CN roll-out plans may now prove ineffective. They are also concerned that they may be unable to plan some future investments effectively in view of the comparatively short time horizon of BT's current 21CN plans.

1.23   We consider that BT's current commitment in its Undertakings to publish its plan of record remains appropriate in order to make CPs aware of its 21CN investment plans. However, we also consider that consequences of any deviation by BT from its published plans should in the first instance be governed by reference to any contractual arrangements rather than be determined by regulatory intervention.

1.24   We therefore do not plan at present to consider formally concerns in this regard in our planned policy development work. It remains open to operators to bring disputes to us where appropriate if legitimate concerns cannot be resolved by commercial negotiations.

Consumer switching involving next-generation technologies

1.25   Respondents generally agree that consumer switching should be made as easy as possible to support a well-functioning market. They acknowledge that next-generation technologies challenge this objective by introducing complexity through additional switching options and migration paths. Some respondents identified an important role for Ofcom's forthcoming consultation on consumer switching processes to guide the industry in confronting this challenge.

1.26   We intend to consult more generally in the first half of 2010 on our considerations of the processes consumers follow when switching between communications services. We will consider the issues arising from next-generation technologies in relation to such processes as part of that consultation.

Consumer protection principles

1.27 In our 2006 statement on NGN[6] we adopted the following principles to underpin our approach to consumer protection during migration to NGN:

a) services offered to consumers on NGNs should at least be equivalent to their existing services;

b) consumers should not suffer any detriment during transition to NGNs, for example due to loss of access to emergency services or degraded call quality; and

c) any changes to services should be explained fully to end-users.

1.28 Respondents to the Consultation generally agreed that these principles remain valid now and that our approach to ensuring consumers are protected has worked well in most cases.

1.29 We acknowledge comments from some respondents that a balance needs to be struck between the degree of protection of consumers' interests and undue cost in interpreting the principles we adopted. We recognise that it may not be practicable or desirable for every feature of a legacy service to be replicated exactly in NGN services, but expect that the services offered to consumers should not be inferior to legacy services in any key respect such as service quality or access to emergency services. Consumers should be informed about any such differences in a clear and timely manner. We also expect CPs to perform migration of consumers' services in a manner that minimises disruption without making migration arrangements excessively burdensome or costly.

Addressing incompatibility issues with alarms, telecare and other terminals

1.30 Tests for BT's 21CN have shown that a significant proportion of security, fire and telecare alarms currently connected to legacy networks may not operate reliably when connected to NGNs. The problem arises because voice calls in NGNs have greater end-to-end delay than in legacy networks. Some alarm equipment can be reconfigured to deal with the increased delay, but in other cases it will be necessary to replace terminal equipment before connection to an NGN.

1.31 There is therefore clearly a risk to consumers if the appropriate steps are not taken prior to migration to NGN. The risk to telecare services is of particular concern to us because they are used by more vulnerable members of society. We have been monitoring developments in this area closely.

1.32 In our view, organisations involved in the provision and maintenance of alarm and telecare services should take the lead in identifying equipment that should be adjusted or replaced and in advising their customers. We welcome the activities of the British Security Industry Association ("BSIA") and the Telecare Services Association ("TSA") in co-ordinating testing and helping their members to assess risks and to plan to adjust or replace equipment.

1.33 While most respondents supported our assessment of how the incompatibility issues should be addressed, some flagged a need for greater co-ordination between CPs

---

[6] See *Next Generation Networks: Developing the Regulatory Framework,* at
http://www.ofcom.org.uk/consult/condocs/nxgnfc/statement/ngnstatement.pdf

and the alarms industry. We agree, and consider an improved flow of information between the two sectors could provide greater opportunity for design changes to minimise the risk that incompatibility will occur. It could also help ensure that consumers are informed where there is a risk and enable both sectors to provide appropriate support where issues occur.

1.34   We consider that the most effective way to improve this flow of information is to bring about effective engagement on the issue of incompatibility between CPs and the alarm industry on a more consistent basis than has occurred hitherto. We have therefore asked NGNuk, an industry forum of network operators, to lead engagement between its own members and the BSIA and TSA to agree a common approach that would:

- Make information on NGN migration plans and relevant changes to network characteristics more visible, where possible, to the alarm and telecare industries to help them take effective mitigating actions; and

- Ensure that consumers receive appropriate support and assistance with incompatibility problems that may affect alarm and telecare systems.

1.35   We recognise the importance of alarm services to consumer welfare and safety. Whilst we have asked NGNUK to lead engagement of the industries involved, we will keep the effectiveness of this approach under review and intervene where necessary.

1.36   We are also concerned about the potential financial impact on vulnerable consumers from the cost that is likely to be incurred in adjusting or replacing some alarm equipment. We understand that, in most cases, telecare services are provided by local authorities and housing associations. We will approach these stakeholders and the Department of Health to raise awareness of the potential financial impact.

Longer term evolution of next-generation networks

1.37   Respondents offered a wide range of comments on the longer-term evolution of NGNs, whilst acknowledging that this was very uncertain.

1.38   We have not identified a specific issue for us to address in relation to the longer-term evolution of NGNs following the Consultation. While we will take the comments made by respondents into account generally in our future work, we do not plan to take them forward explicitly for the time being.

Section 2

Introduction

Background

2.1   This Statement concludes the consultation we initiated with the publication on 31 July 2009 of the document *Next Generation Networks: Responding to recent developments to protect consumers, promote effective competition and secure efficient investment*[7] ("the Consultation").

2.2   A next-generation network ("NGN") exploits technologies developed for the Internet to deliver a broad range of telecommunication services from a single platform common to all services. In contrast, legacy networks use separate platforms for each service they provide.

2.3   NGNs could offer significant benefits to consumers. They could be less costly to build and operate than legacy networks and hence ultimately deliver better value for money. They are also potentially more flexible than legacy networks, and this could allow communications providers ("CPs") to respond more readily to consumers' needs as these change over time.

2.4   Some UK operators, most notably TalkTalk Group, have already invested in NGNs which provide fixed-line telecommunication services to millions of UK consumers.

2.5   In 2004 BT announced its intention to replace its entire national public switched telephone network with an NGN which it named 21CN. However, following a review of its 21CN strategy last year, it decided to reduce the pace of this deployment substantially. In addition, it is now planning its deployment on a shorter term basis, looking forward 12-18 months at any time, compared with 3-5 years previously.

2.6   In the meantime, the focus of BT's new investment in its network then shifted to next-generation access ("NGA") technologies to support super-fast broadband services. In March 2009 BT announced plans to make super-fast broadband available in exchange areas covering 40% of the UK's population by the end of 2012, using both fibre-to-the-cabinet ("FTTC") and fibre-to-the-premises ("FTTP") technologies. The investment in NGA is also likely to require some deployment of NGN infrastructure in the core of BT's network.

2.7   Our principal policy objectives in relation to NGNs are:

- to provide incentives for efficient investment in NGNs;

- to promote effective competition based on NGN infrastructure; and

- to protect consumers from disruption during the transition to NGNs.

2.8   The purpose of the Consultation was twofold:

---

[7] See http://www.ofcom.org.uk/consult/condocs/ngndevelopments/

2.8.1   First, to present our response to recent NGN developments, including the major revision by BT of its plans for 21CN, and to the related concerns raised by stakeholders.

2.8.2   Second, to provide an update in the light of recent developments on our thinking about how consumers should be protected during migration to NGNs.

2.9   The Consultation also discussed some longer-term implications for regulation of a widespread adoption of NGN technology. In particular we considered whether there is anything we should be doing now to cater for this future world.

2.10   The purpose of this Statement is to identify how we intend to take forward the issues raised in the Consultation. It does not seek to make regulatory decisions.

2.11   The remainder of this section of the Statement introduces the issues, which are discussed more extensively in the Consultation. The following section summarises the responses we received, and discusses our considerations in relation to them.

Evolution of models of competition

2.12   The Consultation discussed the potential impacts of BT's changed 21CN plans and its announced investments NGA on the model of competition in fixed telecommunications set up by the Telecommunications Strategic Review[8] and by the undertakings which BT offered under the Enterprise Act 2002 ("the Undertakings"), which we accepted on 22 September 2005.

2.13   This model seeks to promote competition at the deepest level of the infrastructure at which it is likely to be effective and sustainable. It focuses regulation on the assets in BT's network, including the copper access network, which have been enduring competition bottlenecks over time and are not likely to be contestable. Functional separation of BT in 2005 created Openreach, a separate division which provides regulated products, both to BT's competitors and to downstream divisions of BT itself, on a strictly defined non-discriminatory basis known as Equivalence of Inputs ("EoI").

2.14   The Undertakings require Openreach to provide three key local-exchange-based regulated products on the basis of EoI:

- Wholesale Line Rental ("WLR") for voice services;

- Shared Metallic Path Facilities ("SMPF") for broadband services; and

- Metallic Path Facilities ("MPF") for both voice and broadband services.

2.15   BT consumes WLR and SMPF in large quantities in its legacy network, and their provision by Openreach on the basis of EoI helps assure BT's competitors that they can use these products to compete fairly with BT in the mass market. Those competitors of BT who have built NGNs consume MPF. Although BT also consumes MPF, it neither does so in substantial volumes in its legacy network nor has any current plans to do so in future in its 21CN.

---

[8] See http://www.ofcom.org.uk/consult/condocs/statement_tsr/

2.16   Product plans for BT's NGA platform are still evolving, against a background of continuing uncertainty in the level of future consumer demand for super-fast broadband services. It is not clear at present whether effective and sustainable competition in NGA infrastructure will develop, either with FTTC or FTTP technologies, and Openreach has no specific product plans to support such competition[9]. Currently Openreach is planning and piloting Generic Ethernet Access ("GEA"), a product which will use BT's electronic equipment to provide wholesale super-fast broadband access on the basis of EoI, both to downstream divisions of BT and to its competitors. Competition based on GEA would not require competitors to build their own NGA infrastructure.

2.17   BT's current plans for NGA will make extensive use of fibre, deployed either to the street cabinet or all the way to the end-user's premises, and will therefore make more limited use of exchange-based copper[10].

2.18   We asked in the Consultation how respondents envisage the model of competition changing over the next 3-5 years, and what sort of input products will be needed to support this competition.

Requirement for an unbundled local-loop voice-only input ("xMPF")

2.19   Openreach does not currently provide an unbundled copper local loop product specific to voice services. The merits of such a product have been discussed by the industry, which refers to this possible type of product as "xMPF".

2.20   In the absence of xMPF at present, a CP has two options to provide access to voice services to its customers:

i)   use Openreach's WLR product, or

ii)   use Openreach's MPF product.

2.21   WLR uses BT's electronic voice access equipment in the local exchange, which means that CPs using option (i) are essentially reselling BT's wholesale voice access service. A customer served using WLR can at the same time be served with broadband services, either by the same CP that is delivering the voice service or by a different one, using Openreach's SMPF product.

2.22   Option (ii) allows the CP to use its own network infrastructure to provide voice access, but use of MPF means that any broadband service the customer requires on the same line can only be provided by the same CP.

2.23   If Openreach were to provide an xMPF product, a CP would have an additional option to provide a customer with access to voice services using the provider's own network infrastructure. Unlike option (ii), however, this option would allow a different provider, using SMPF, to provide the customer with access to a broadband service.

2.24   We considered in the Consultation whether we should require Openreach to provide xMPF and reached the provisional view that we should not intervene to do so at present.

---

[9] Openreach offers a sub-loop unbundling product that allows BT's competitors to construct their own fibre-to-the-cabinet solutions, but this has had limited take-up so far.

[10] Openreach currently plans to continue to use exchange-based copper to provide voice services where it uses FTTC to provide super-fast broadband.

Interconnection between NGNs and legacy networks

2.25   Interconnection of voice services between NGNs and legacy networks is likely to be an important feature of competition between fixed networks for some considerable time while the timetable of a full deployment of BT's NGN remains uncertain.

2.26   All fixed network operators have been found to have significant market power ("SMP") in the wholesale termination of voice calls to customers of their own networks. The prices they can charge for call termination are therefore subject to regulations limiting the operators' abilities to exploit this market power, which could otherwise result in excessive call charges to consumers.

2.27   BT's charges for call termination are subject to a cost-orientation obligation[11] and to a charge control. Operators of other fixed networks are subject to an obligation to set fair and reasonable rates, which is generally considered to be met if their termination charges are set in accordance with reciprocity arrangements. These arrangements set termination charges payable to an operator to match those which the same operator pays to terminate calls on BT's legacy network. Reciprocity, together with the charge controls applied to BT's termination charges, ensures that the consumers are protected from excessive termination charges of any fixed network they call.

2.28   While the principle of using reciprocity to set fair and reasonable termination rates is well established, its application particularly to the interconnection of legacy networks with NGNs gives rise to potential complications which arise from the very different topologies of the two types of network. The routing of calls in BT's legacy networks uses hundreds of switches located throughout the country and is organised in tiered hierarchies, while the routing of voice calls in NGNs is typically concentrated in a few locations housing high-capacity routers.

2.29   Furthermore, legacy networks and NGNs use different technologies to carry voice services. The former use time-division multiplexing ("TDM") while the latter use the Internet Protocol ("IP"). Interconnection between the two types of network requires the implementation of an interworking function between the two technologies. Currently all interconnection between fixed-line voice networks uses TDM, so NGN operators bear the full costs of this function when interconnecting with legacy networks.

2.30   We discussed in the Consultation whether the principle of reciprocity continued to be appropriate in a mixed environment of legacy and TDM networks. Our initial assessment was that the transition to IP technology should not change the incentive properties of the principle of reciprocity, and that this principle should therefore continue to be applicable, thereby helping to ensure that CPs face appropriate incentives to invest in the most efficient technology.

2.31   One of the key principles underpinning the regime which regulates termination charges is that the costs that operators are entitled to recover are those of an efficient operator, reflecting the outcome in a competitive market. The current network charge control is based on BT's TDM network costs. We noted in the Consultation that, at some future time, IP technology could become established as the most efficient proven technology and that, after that time, it could be appropriate for a future charge control to use the costs of an NGN as the basis for a future charge control.

---

[11] KCOM's termination rate is also subject to a cost orientation obligation.

10

2.32 We also noted that, if and when IP has become established as the most efficient proven technology, it would also be likely to be appropriate to require a network operator with SMP in the relevant market(s) to offer IP interconnection.

2.33 We discussed in addition whether there could be a case for requiring BT to offer IP interconnection as a substitute for the current regulated TDM interconnection products, possibly in advance of the time at which IP becomes established as the most efficient proven technology. In this case BT would have to implement the interworking function between IP and TDM within its own network. We suggested that the effect of such a requirement might be to bring forward investments that BT may make in future to implement a full transition of its legacy network to NGN. In the alternative case, where, as at present, no such requirement applies to BT, NGN operators have to invest in the equipment required for the interworking function, and we suggested that this investment would eventually become redundant.

2.34 We asked respondents for their views on the policy positions that we should adopt in relation to interconnection between IP and TDM networks.

Investment uncertainty

2.35 Following BT's review of its 21CN strategy last year it moved away from its original long-term vision of the speed and scale of migration of its voice services from its legacy network to 21CN. In addition, it is now planning its deployment to a shorter planning horizon of 12-18 months compared with the 3-5 years' horizon it was using previously.

2.36 These changes have meant that competing network operators and other CPs may have planned their investments based on assumptions that were invalidated by BT's 21CN strategy review.

2.37 Furthermore, the shorter planning horizon is likely to make it more difficult for CPs to plan their future investments.

2.38 The combined effect of these impacts is a climate of uncertainty, which risks deterring investment by BT's fixed-network competitors.

2.39 We recognised in the Consultation that any way forward would need to balance the need to provide certainty to BT's competitors on the one hand with BT's legitimate need for flexibility to change in plans in the face of developments beyond its control on the other. We suggested that the best starting point for solutions of the problem of uncertainty where CPs are making interdependent investments is commercial negotiation.

Effective migration processes

2.40 Competition is most effective where customers are able to obtain service easily from the provider that best meets their needs. Effective processes that allow customers to switch easily between providers are therefore a vital component of an effective competitive environment.

2.41 The last several years have seen a trend towards increased bundling of retail telecommunications services. This trend is likely to continue especially as more operators build NGNs, which, by their design, can provide multiple services from a shared platform cost-effectively.

2.42   During the transition to NGNs and investments in NGA a variety of access and core network technologies will co-exist, with a corresponding wide array of wholesale access products.   This in turn will increase the number of permutations of access products which need to be supported to allow consumers to switch between providers, and this is likely to result in increased complexity of the migration processes which underlie consumer switching.

2.43   We are currently conducting a separate project as part of our work on migrations which is examining a broad set of issues across all transferrable telecommunications services concerning the processes that consumers follow when switching providers.

NGN consumer protection issues

2.44   In our 2006 statement on NGN[12] we adopted the following principles to underpin our approach to consumer protection during migration to NGN:

   a) services offered to consumers on NGNs should at least be equivalent to their existing services;

   b) consumers should not suffer any detriment during transition to NGNs, for example due to loss of access to emergency services or degraded call quality; and

   c) any changes to services should be explained fully to end-users.

2.45   With the notable exception of the impact on alarm systems, which is discussed further below, migration to NGNs has not so far raised any major consumer protection issues.

2.46   Tests for BT's 21CN have shown that a significant proportion of security, fire and telecare alarms currently connected to legacy networks may not operate reliably when connected to NGNs. The problem arises because voice calls in NGNs have greater end-to-end delay than in legacy networks. Some alarm equipment can be reconfigured to deal with the increased delay, but in other cases it will be necessary to replace terminal equipment before connection to an NGN.

2.47   There is clearly a risk to consumers if the appropriate steps are not taken prior to migration to NGN. The risk to telecare services is of particular concern to us because they are used by more vulnerable members of society. We have therefore been monitoring developments in this area closely.

2.48   We set out in the Consultation our view that it is necessary for the organisations involved in the provision and maintenance of alarm and telecare services to take the lead in identifying equipment that needs to be replaced or adjusted and advising their customers. We also set out specific steps that we thought CPs could take to inform the alarm industry about major changes to their networks that may affect terminal equipment.

Energy industry

2.49   We discussed in the Consultation the concerns of the energy industry to ensure continued supply of traditional interface leased line products which it uses for

---

[12] See *Next Generation Networks: Developing the Regulatory Framework,* at
http://www.ofcom.org.uk/consult/condocs/nxgnfc/statement/ngnstatement.pdf

telemetry purposes. While our view was that the issue is best progressed by commercial negotiations between the energy industry, BT and other CPs, we proposed to continue to monitor this process closely in light of the importance of telemetry circuits to electricity supply.

Section 3

Discussion of issues raised in the Consultation

Introduction

3.1   In the Consultation we asked respondents to consider a number of questions, which are listed at Annex 1. We received twenty five responses, two of which were confidential. Respondents included twelve CPs, seven industry groups, two equipment manufacturers, individual consumers and consultants.

3.2   In this section we summarise the views of respondents and set out our considerations of the issues raised in the Consultation.

Evolution of models of competition

Respondents' views

3.3   TalkTalk Group was concerned that the Consultation did not present a clear strategy, not setting out, for example, what products BT's NGN should consume once BT deploys it in a converged configuration, and where equivalence of inputs will apply. It was also concerned that we may be focusing excessively on BT's NGA deployment, which TalkTalk Group considered would have little impact in the next few years.

3.4   Sky expressed concerns about the wholesale products which BT proposed to provide with its NGA platform. It argued that Openreach's plans for the active NGA product, Generic Ethernet Access ("GEA"), would not provide sufficient opportunity for competitive differentiation of super-fast broadband services, and that its product proposals for voice over NGA ("VoNGA") would restrict unduly the parts of the value chain that could be exposed to effective competition.

3.5   Sky and C&W were concerned at the impact on BT's incentives in relation to Openreach's provision of the Metallic Path Facilities ("MPF") product in light of BT's decision to step back from deploying its NGN for converged provision of voice and broadband services. They feared that there are incentives on BT to discriminate against operators who consume MPF through price and non-price characteristics of the product, including improvement and maintenance of service levels.

3.6   Other respondents focused on voice services competition based on resale of wholesale access to BT's network which is currently enabled by Openreach's Wholesale Line Rental ("WLR") product. They argued that Openreach should continue to support this approach as BT develops 21CN and invests in NGA.

3.7   BT has also flagged that it intends to discuss with us the arrangements that will apply to its consumption of upstream products in situations where it will use a common 21CN multi-service access node ("MSAN") to deploy both voice and broadband services. In such a configuration BT will no longer be able to consume Shared Metallic Path Facility ("SMPF"), the local-loop product which it currently consumes in producing broadband services.

<u>Ofcom's considerations</u>

3.8   We decided our strategic approach in the Telecommunications Strategic Review and embodied the ensuing principles in the Undertakings, which include commitments specific to NGNs. We recognise that the practical application of the principles to NGNs depends on BT's and other operators' commercial deployment plans, which have become less certain over time. We are considering in our current reviews of the wholesale local access and wholesale broadband access markets how regulations should evolve to support effective competition. This work is also considering whether any amendments would be appropriate to BT's obligations in relation to local-loop unbundling, including MPF. We plan to consult formally on our findings in the first of quarter of 2010. We are also currently considering BT's proposal to vary the Undertakings in relation to its deployment of fibre-to-the-premises ("FTTP"), and plan to publish a Statement on this proposal also in the first quarter of 2010.

3.9   We intend to consult publicly should BT request that we vary the Undertakings in relation to the consumption arrangements for its 21CN MSANs and should we be inclined to agree to any such variation.

Requirement for an unbundled local-loop voice-only input ("xMPF")

<u>Respondents' views</u>

3.10   TalkTalk Group is critical of our approach to xMPF. It argues that we should require Openreach to develop xMPF in order to promote competition in voice services. It foresees that the consequences of our not requiring Openreach to do so would be to deny the benefits of network-based competition to some 9 million homes which do not currently take broadband services, and to a further 5 million which take voice and broadband services from separate providers.

3.11   Sky argues that it is too early to reach any firm conclusion on the case for xMPF, and that the issue should be kept under review.

3.12   [✂   ]'s view is that Ofcom should require BT to offer xMPF as a way of supporting the development of "naked DSL".

3.13   BT, C&W and [✂   ] agree that there is no need for Ofcom to require the development of this product.

<u>Ofcom's considerations</u>

3.14   We acknowledge that, absent an xMPF product, network operators other than BT will not be able to use their own network infrastructure to compete in the provision of access to voice services to consumers who take a broadband service from another provider.

3.15   However, we consider that one option for a network operator seeking to provide access to consumers who only take voice services is to use MPF where it sees a commercial case for doing so, provided that it takes steps to help protect such consumers' possible future interests in relation to broadband services. We would expect the process of selling the MPF-based voice service to include explaining fully and prominently to prospective customers, before they commit to the service, the options they are likely to have and charges, including any for early termination, they are likely to face in the event that they decide in future to take broadband services, both during any minimum contract term and thereafter. We would also expect the

network operator, unless this is unduly onerous, to make available a migration process from MPF to WLR, so that customers can obtain broadband services from other providers if they wish to do so in future.

3.16 In light of the potential to use MPF to serve consumers who only take voice services, we note that any benefits flowing from an xMPF product would be confined to consumers who choose to take voice and broadband services from different providers.

3.17 Having reviewed the submissions of respondents to the consultation on this matter we do not consider that they contain substantive new evidence that would support the need for our intervention in this matter. As we discussed in the Consultation, the economics of using xMPF are likely to turn on its price relative to that of WLR. It appears reasonable to assume that, if xMPF was offered by Openreach, its price would be similar to that of MPF. On 22 May 2009 we issued a statement which introduced a new price control regime for MPF[13]. That statement is currently subject to an appeal before the Competition Appeal Tribunal[14]. We are not persuaded that, while current prices for WLR and MPF prevail, sufficient consumer benefits would flow from the availability of an xMPF product to justify our intervention to require Openreach to develop it. In reaching this view, we have taken account of the fact that there is no evidence that there would be significant demand for the product at the price levels that are likely to be applicable. We would also note that, as a result of increased economies of scope in the provision of voice and broadband services, it may not be efficient for those services to be provided by different CPs in an NGN environment. This is likely to be one of the factors that could influence the level of demand for an xMPF product.

3.18 We therefore confirm that we do not intend at present to intervene to require Openreach to provide xMPF, although we remain open to consider any new evidence if and when it should become available. We also note that, under the general access obligation which applies to BT in the Wholesale Local Access market, BT is required to meet reasonable requests for services which fall within that market, including potentially xMPF. There is therefore an avenue open to CPs who want xMPF, if there is reasonable demand for the product.

Additional technical standards required to support NGN deployment

3.19 In the Consultation we reported that the NICC had indicated that there may be a need for additional work on technical standards to support NGN deployment. The NICC suggested that this should include a standard SIP User-Network Interface ("SIP-UNI") to maximise compatibility of terminal equipment with NGN services, a standard set of testing procedures to assess terminal equipment compatibility with NGNs, and a standard approach for handling traffic from uncontrolled sources where the integrity of parameters such as quality of service and calling-line identity cannot be guaranteed.

3.20 Question 3 in the Consultation asked what additional technical standards work is required to support NGN deployment. We also asked in question 13 whether standardisation of a SIP-UNI was warranted in order to reduce the risk of incompatibility between terminal equipment and NGNs.

---

[13] See http://www.ofcom.org.uk/consult/condocs/openreachframework/statement/statement.pdf
[14] Competition Appeal Tribunal, *The Carphone Warehouse Group plc v Office of Communications (Local Loop Unbundling)*, case number 1111/3/3/09, see http://www.catribunal.org.uk/237-4154/1111-3-3-09-The-Carphone-Warehouse-Group-plc.html

Respondents' views

3.21   BT saw no pressing need for additional work in voice interconnection standards in relation to PSTN or ISDN, and said that it would develop next-generation call conveyance capability using the SIP-I standard. It would consider supporting other signalling protocols, and remained committed to providing interoperability using its IP Exchange product. It considered that it was up to an operator seeking a change in NICC's work programme on standards to gain support in the NICC for doing so.

3.22   C&W saw merit in considering a number of areas of standardisation. They included SIP UNI, a SIP interface for basic call set-up and tear-down as used by smaller operators of voice-over-IP services, testing standards for customer-premises equipment, guidelines for usage of adaptive jitter buffers, an enhanced range of voice coders and decoders, a common numbering database for use with NGNs, and a suite of standards for a fit-for-purpose active line access ("ALA") for NGA.

3.23   TalkTalk Group, [✂   ], Scottish & Southern Energy, the Telecommunications Association of the UK Water Industry and David Hall Systems agreed with the NICC's list of items for standardisation outlined in our Consultation. TalkTalk Group saw a potential need for additional standards for IP telephony to replicate PSTN integrity in relation to security and national infrastructure.

3.24   Respondents had mixed views about the need for standardisation of terminal equipment interfaces for IP connections to NGN/NGA networks (the SIP UNI interface). Whilst some supported interface standardisation, others noted that services and interfaces are still evolving and were concerned that standardisation might limit or even stifle innovation. Several respondents thought that interface standardisation would ensure compatibility between networks of a baseline feature set without limiting providers' ability to add proprietary features. Others noted that the IP PBX market had not apparently been hindered by a variety of interface standards.

3.25   Amongst those that supported standardisation there was a general view that the standards should be based on ETSI standards with refinement by NICC for UK requirements.

3.26   BT noted that for mass-market FTTP services and Openreach's Voice over NGA (VoNGA) proposals, a conventional analogue telephony interface is used with the Network Terminating Equipment (NTE) containing the Analogue Terminal Adaptor (ATA) (i.e. the functionality that converts IP to analogue). BT argued that the inclusion of the ATA functionality in the NTE obviates the immediate need for standardisation of the SIP UNI for these services. However, BT acknowledged that other providers might wish to use their own call servers rather than a WLR type service in future and noted that Openreach would consider this if CPs request it.

3.27   Ericsson said there was a need for further standardisation of the inter-network interface (the SIP NNI interface) in order to ensure that services operate across multiple networks and to ensure that functionality is maintained when services are transferred between providers.

Ofcom's considerations

3.28   The list of further items for standardisation proposed by the NICC appears to have broad support in the industry. Additional items can be proposed for standardisation to the NICC by stakeholders, and progressed subject to NICC governance. We

therefore do not propose to take specific further action in this respect for the time being and will continue to observe the activities of the NICC.

3.29   Whilst we acknowledge the concern that a SIP-UNI standard could limit innovation, we note that standardisation has always been an important feature of terminal interfaces which facilitates terminal equipment compatibility and the mass market adoption of network based services. Now that communications providers are beginning to deploy SIP-based services we think it is the right time to consider standardisation of these interfaces and we therefore welcome NICC's decision to explore SIP-UNI and SIP-NNI standardisation.

3.30   We agree with respondents that it would be preferable to adopt ETSI standards for a SIP-UNI with profiling for UK requirements as necessary.

3.31   We note that Openreach is now working with CPs on an "Open ATA" product proposal. This proposed product would allow CPs to use their own call servers to control voice services of an end-user served by NGA using fibre-to-the-premises ("FTTP") technology. An agreed SIP-UNI standard could be an important feature of such a product that could maximise the opportunities for CPs to compete in provision of voice services using their own call servers. We will consider the characteristics of NGA voice products appropriate to support effective competition as part of our review of the wholesale local access market.

Policy regarding interconnection between IP and TDM networks

3.32   We asked in the Consultation what policy positions we ought to adopt in relation to interconnection between IP and TDM networks.

Respondents' views

3.33   BT argues that we should not intervene in relation to voice interconnection and that we should rely on the market to deliver the appropriate interconnection arrangements. If the new technology can deliver lower cost then the market will find the most efficient use of resources without our intervention. If NGNs cannot deliver lower costs then our intervention would be damaging because it would incentivise inefficient investment.

3.34   TalkTalk Group argued that it is almost impossible to apply the current prevailing reciprocity arrangements to NGNs because of three shortcomings. First, NGN operators are effectively forced to bear the full cost of interworking between TDM and IP; second, the smaller number of interconnection points in an efficient NGN than in an efficient legacy network means that the NGN operator will incur greater transmission costs; and third, that the industry's (now expired) reciprocity agreement is based on the switching hierarchy of TDM networks, which does not exist in an NGN.

3.35   TalkTalk Group recognised that there is no straightforward answer that would resolve these shortcomings, but argued that an answer needs to be found urgently nonetheless because the industry's reciprocity agreement had expired on 30 September 2009. In its view, expectation that commercial negotiation will resolve how termination rates for NGNs should be calculated would be unrealistic in view of the opposing commercial interests, and we should therefore lay down policy guidelines to allow industry negotiations to proceed effectively. It also thought that, since currently no termination rate proposed by a fixed network operator is effective unless BT accepts it, BT has little incentive to conclude negotiations of termination

rates quickly, and we should therefore consider an alternative model for negotiation of such rates.

3.36 C&W proposes that the trigger for expecting BT to offer IP interconnection should, subject to industry debate, be no earlier than the time at which 10% of BT's customers will be migrated to BT's 21CN, because at lower levels the traffic would not justify the costs of development and support. It also argues that, while IP technology is not prevalent, if BT were required to interconnect IP traffic it should only be required to do so in respect of traffic either destined to or originating from customers connected to its NGN.

3.37 BT stated that most of the cost of interworking between legacy networks and NGNs is capital expenditure in equipment such as media gateways. It argued that the extent of this expenditure will be determined by the maximum capacity of conversion required during the transition to NGNs, and not by the length of time of that transition. The timescale of BT's deployment of 21CN would therefore not have a significant impact on the investment costs of interworking.

3.38 BT argued that the costs of interworking are not prohibitive since they have not deterred some operators from investing in NGNs, and that the conjecture that such costs inhibit adoption of new technology is therefore flawed. It said that the cost of signal conversion via a media gateway is an insignificant proportion of call costs, and would not deter early movers from investing to reap the cost advantages of the new technology.

3.39 Sky argued that requiring an NGN operator to bear the costs of interworking sets the wrong investment incentives. In its view, this remains the case even if the combined costs of the NGN and conversion remain lower than the costs of a legacy network because any reduction in the difference in costs between the legacy network and the NGN reduces the incentives to invest.

3.40 In BT's view, where conversion between IP and TDM is required it should be regarded as a market opportunity, not a problem requiring regulatory intervention. Operators who had invested in infrastructure to interconnect with BT's Digital Local Exchanges ("DLEs") could add IP gateways to that infrastructure and offer IP interconnection with BT's legacy network. NGN operators could then decide whether to self-provide the conversion they required or purchase conversion services from other operators.

3.41 BT and C&W agree that NGN all-IP voice cannot be regarded at present as the most efficient proven technology for the purposes of setting interconnection charges. BT notes that the benefits of delivering the full range of voice services using an NGN have yet to be established in practice, while C&W points out that no operator offers IP interconnection based on the SIP-I standard.

3.42 Sky argues that, under our approach to the network charge control which bases assessment of efficiently-incurred costs on the replacement costs of BT's TDM network, BT has an incentive not to invest in NGN. This is because, in Sky's view, BT's cash operating costs will be substantially lower than our assessment of its costs because it plans little ongoing capital investment in its voice network. Sky also cites the EU Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates, from which it infers that the European Commission recommends that wholesale call termination rates should be based on the costs of an NGN.

3.43   Sky also argues that the costs of conversion stem from BT's failure to invest in the more efficient NGN technology now used by most of the large networks that interconnect with it, and should therefore be borne by BT.

3.44   The Federation of Communication Services ("FCS") calls for us to adopt a forward-looking policy and favours the provision of the interworking function by TDM network operators.

3.45   C&W and ITSPA highlight that BT's IP Exchange, while offering an IP interconnection with BT, is both unregulated and expensive.

3.46   Colt argues that BT should be required to offer IP interconnection before the end of 2010, and that BT's failure to do so will delay the UK's progress relative to other European countries in developing such interconnection.

3.47   Separately, C&W discusses the time at which IP technology might in future be considered the most efficient proven technology for the purposes of setting interconnection charges. It suggests that it is not sufficient to consider for this purpose whether or not the technology is proven, and proposes that a tipping point might be established once, for example, two thirds of interconnection relationships between CPs carry the majority of their interconnection traffic using IP.

3.48   The Internet Telephony Services Providers' Association ("ITSPA") argues that IP networks are now well established and should not be regarded as unproven. It notes that many of its members have operated IP networks since the start of the decade, and that some of them have direct IP-based interconnection with NGNs of other CPs

Ofcom's considerations

3.49   In our recent review of the wholesale narrowband market we concluded that each fixed network operator has SMP in termination of calls to end-users connected to its network. BT's termination rate is subject to a charge control, which we reviewed in September 2009[15]. Other fixed networks are required to set termination charges which are fair and reasonable[16]. We have provided guidance that termination rates that are not reciprocal with BT's are unlikely to meet this requirement and CPs have complied in practice by signing a standard reciprocity agreement with BT ("the Reciprocity Agreement").

3.50   The Reciprocity Agreement has now expired, and industry negotiations on the terms of a renewed agreement are ongoing. While each CP is required to set fair and reasonable termination rates irrespective of whether a reciprocity agreement is in place, our view continues to be that industry-wide agreement on a process for setting specific rates is beneficial.

3.51   We recognise that fixed network operators may find it difficult to reach satisfactory agreement on all aspects of a new reciprocity agreement by commercial negotiation alone. The more fundamental issues concern interconnection between a TDM network and an NGN, but we are also aware that issues may arise in interconnection between two TDM networks. In order to help operators in their negotiations, we propose to start in the first quarter of 2010 a programme of work with the aim of clarifying how the principle of reciprocity should apply where appropriate between fixed networks. In this work we will have regard, among other things, to the issues

---

[15] See http://www.ofcom.org.uk/consult/condocs/review_bt_ncc/statement/nccstatement.pdf
[16] KCOM's termination rate is subject to a cost orientation obligation.

raised by the need for an interworking function between an NGN and a legacy network where they interconnect. These issues include which of the interconnecting operators should bear the costs of interworking, and whether, and if so when, BT should be required to offer IP interconnection with its network.

Investment uncertainty

Respondents' views

3.52   Some network operators other than BT are concerned that investments they have made in anticipation of BT's 21CN roll-out plans may now prove ineffective. They are also concerned that they may be unable to plan some future investments effectively in view of the comparatively short time horizon of BT's current 21CN plans.

Ofcom's considerations

3.53   We consider that BT's current commitment in its Undertakings to publish its plan of record remains appropriate in order to make CPs aware of its 21CN investment plans. We recognise that BT's plans are subject to commercial and technical uncertainties similar to those affecting other operators, and that these uncertainties have led to some significant changes in BT's plan of record in the past. Since BT's investment plans can have a significant bearing on those of other operators, the history of changes to BT's plan of record are a source of potential concern, and it would be helpful if the plan of record in future could contain BT's assessment of the key risks to the investments it forecasts. However, we also consider that consequences of any deviation by BT from its published plans should in the first instance be governed by reference to any contractual arrangements rather than be determined by regulatory intervention.

3.54   We therefore do not plan at present to consider formally concerns in this regard in our planned policy development work. It remains open to operators to bring disputes to us where appropriate if legitimate concerns cannot be resolved by commercial negotiations.

Consumer switching involving next-generation technologies

Respondents' views

3.55   Respondents generally agree that consumer switching should be made as easy as possible to support a well-functioning market. They acknowledge that next-generation technologies challenge this objective by introducing complexity through additional switching options and migration paths.

3.56   A number of respondents identified an important role for Ofcom's forthcoming consultation on general migration issues to guide the industry in confronting this challenge.

3.57   Scottish & Southern Energy suggested that we should form an industry body to establish and govern service migration arrangements and require CPs to participate.

Ofcom's considerations

3.58   Issues arising from next-generation technologies in consumer switching will be included in the scope of a consultation that we intend to publish in the first half of 2010 which will cover consumer switching more generally.

3.59   We consider that existing industry engagements on migrations, such as, for example, those within the scope of work of the Office of the Telecommunications Adjudicator, are working well. We do not consider at present, therefore, that it would be appropriate to follow Scottish & Southern Energy's suggestion of a new industry body to govern migration arrangements.

Consumer protection principles

Respondents' views

3.60   Most respondents that commented on this topic agreed that the consumer protection principles set out in our 2006 NGN Statement and the approach we adopted to address consumer protection were broadly correct. However, one respondent thought that the principles were too prescriptive and two respondents thought that rather than rely on a co-regulatory approach Ofcom should take additional steps to ensure consumers are protected during migration.

3.61   BT, TalkTalk Group and [✂   ] commented that NGNs would require some changes to services and were concerned that the principle that services offered to consumers on NGNs should be at least equivalent to the services they currently receive should not be interpreted to mean that NGN services must be identical to legacy services. There was general agreement about the importance of providing consumers with information about any changes to services. BT noted in addition that NGA based services are likely to differ from legacy services in some respects.

3.62   Noting that the BT's 21CN Pathfinder programme had proved that NGNs can support a wide range of legacy terminal equipment provided CPs invest in quality network equipment, [✂   ], an equipment manufacturer, cautioned that Ofcom should be vigilant to ensure that CPs do not deploy equipment that would force unnecessary replacement of terminal equipment.

3.63   TalkTalk Group argued that Ofcom's consumer protection principles are too blunt and not technology neutral. TalkTalk Group had two main concerns:

- that the principle that NGN services should be at least equivalent to legacy services would effectively require NGNs to replicate all legacy service features; and

- that the principle that consumers should not suffer any detriment during the transition to NGNs (such as the loss of access to emergency services or degraded call quality) would require excessively expensive migration arrangements to minimise service interruptions.

3.64   TalkTalk Group preferred that Ofcom should focus on transparency for consumers leaving operators to make sensible choices about technology and services.

3.65   The Number thought that rather than rely on the principles, Ofcom should require CPs to ensure that services offered to consumers on NGNs will be at least equivalent to existing services.

3.66   Scottish & Southern Energy argued that a greater degree of coordination between CPs is required in order to protect consumers and to establish service migration processes. Scottish & Southern Energy suggested that Ofcom should form an industry body to establish and govern service migration arrangements and require CPs to participate.

3.67   The BSIA thought that the consumer protection principles were still valid but noted that some NGNs do not support existing security alarms, and therefore failed the principles.

3.68   BBBritain argued that we should review our consumer protection principles in light of BT's decision to move away from mass migration.

Ofcom's considerations

3.69   The principle that NGN services should be at least equivalent to legacy services is not intended to mean that NGN services should be functionally identical in every respect. We recognise that it may not be possible or desirable for every legacy service feature to be replicated in NGN services. Our key consideration is that services offered to consumers should not be inferior to legacy services in any key respect such as service quality, access to the emergency services and support for legacy terminal equipment. Where NGN services differ from legacy services, consumers should be informed about the differences in a clear and timely manner.

3.70   We do not agree with TalkTalk Group's view that our principles are not technology neutral and are too blunt. The principles do not require a specific technical approach, but rather are designed to set out basic expectations which should underpin the transition from legacy networks to NGNs. In our view, these principles are likely to reflect consumers' expectations of CPs and allow operators to make their own commercial decisions regarding technology and which services to offer. As we explained above, the principles do not imply that services must be functionally identical.

3.71   With regards to the migration arrangements, we remain of the view that it should be possible for CPs to undertake consumer migration in a manner that minimises disruption without making the migration arrangements excessively burdensome or costly.

3.72   Our current view on Scottish & Southern Energy's suggestion that migration arrangements require closer industry cooperation is that there is already a good level of cooperation between providers in the Consult21 process. We are therefore not currently persuaded that a new industry body is required. We have however asked NGNUK to co-ordinate certain activities relating to alarm systems, and we discuss this further below. We will also continue to monitor industry co-ordination of migration activities to see if further intervention is required.

3.73   We comment on alarm systems in the following section.

Terminal equipment compatibility with NGNs

Respondents' views

Alarm systems

3.74   Respondents acknowledged the importance of addressing the alarm systems issue to ensure service continuity and most supported our assessment in the Consultation of how the issue should be addressed. This assessment is summarised in paragraph 2.48 of this Statement. The BSIA suggested that a security industry group dedicated to customer premises equipment should be formed to liaise with NICC and Ofcom.

3.75   BT noted that NGA services exhibit similar characteristics to NGNs, underlining the requirement for the alarm systems community to address this issue.

3.76   Sky and [✂   ] thought there is a need for greater co-ordination between CPs and alarm equipment suppliers/operators to protect users of safety critical alarm systems. The latter commented that incompatibility problems were not restricted to issues potentially introduced by the networks of originating or terminating CPs but could also be caused by the introduction of NGNs in intermediate networks.

3.77   The TSA emphasised that this is a crucial issue for the telecare industry as telecare services are critical to safety. TSA explained that it has been proactive in communicating with its members and developing a new NGN compliant alarm signalling protocol. However, it noted that it has not received any financial support either from the government or from CPs and is therefore constrained in the level of support it can offer.

3.78   Ericsson thought the alarms systems problems had arisen because, unlike mobile networks, fixed networks do not have minimum specifications against which terminals can be designed and tested.

3.79   BBBritain argued that a more active campaign is required to inform terminal equipment manufacturers about the changes that NGNs will introduce.

3.80   Mr Mitchell thought that our approach to the alarms issue had been influenced by alarm providers who have a commercial interest in delaying NGN deployment. He argued that a significant proportion of telecare equipment is not fit for purpose and should be replaced and he was concerned that any delay would put consumers at risk. Mr Mitchell thought we should adopt a more independent stance, making clear that NGN specifications should dictate alarm system compatibility not the reverse.

Terminal equipment compatibility more generally

3.81   We also asked for comments about terminal equipment compatibility issues more generally and how they should be addressed. Several respondents thought that we could be more proactive by raising awareness amongst terminal equipment suppliers and co-ordinating the activities of CPs and terminal equipment suppliers.

3.82   BT emphasised the need for publication of network interface information to enable terminal equipment manufacturers to design equipment and suggested that we should exercise our powers under the Radio and Telecommunications Terminal Equipment Regulations 2000 ("the R&TTE regulations") and General Condition 2 to ensure that they are published in a timely manner.

3.83   Most respondents agreed with the NICC's proposal that a common set of terminal equipment compatibility testing standards would be useful and that NICC was best placed to specify the tests. BT thought it was not practicable to have a common set of tests but agreed that guidance for compatibility testing would be useful. [✂   ] suggested that BABT could be an appropriate body to develop the tests.

Ofcom's considerations

3.84   We welcome respondents' support for our assessment of how the issues of incompatibility of some alarm equipment with NGNs should be addressed. We also note Mr Mitchell's view that some existing telecare alarm equipment may not be fit for purpose. Our view remains that organisations involved in the provision and

maintenance of alarm and telecare services should take the lead in identifying equipment that should be adjusted or replaced prior to migration to NGNs and in advising their customers.

3.85   We agree nevertheless that there is a need for better co-ordination between CPs and the alarm industry. Specifically, an improved flow of information between the two sectors could provide greater opportunity for design changes to minimise the risk that incompatibility will occur. It could also help ensure that consumers are informed where there is a risk and enable both sectors to provide appropriate support where issues occur.

3.86   We consider that the most effective away to improve this flow of information is to bring about effective engagement on the issue of incompatibility between CPs and the alarm industries on a more consistent basis than has occurred hitherto. We have therefore asked NGNuk, an industry forum of network operators, to lead engagement between its own members and the BSIA and TSA to agree a common approach that would:

- Make information on NGN migration plans and relevant changes to network characteristics more visible to the alarm and telecare industries to help them take effective mitigating actions; and

- Ensure that consumers receive appropriate support and assistance with incompatibility problems that may affect alarm and telecare systems.

3.87   We agree that equipment testing guidelines would be useful and we have asked NGNUK members for assistance in securing the necessary technical resources for NICC to undertake this work.

3.88   We recognise the importance of alarm services to consumer welfare and safety. Whilst we have asked NGNUK to lead engagement of the industries involved, we will keep the effectiveness of this approach under review and intervene where necessary.

Financial impact of alarm systems replacement on vulnerable consumers

3.89   Both BSIA and TSA thought replacing or adjusting alarm systems for NGN operation would have a significant financial impact.

3.90   The TSA thought that around one-third of telecare terminal equipment installed in consumers' homes may need to be replaced at an average cost of £200 per installation, totalling £100 million for the UK. The TSA also noted there would be additional costs associated with coordination and communications.

3.91   BSIA also noted that there might be secondary financial impacts for consumers if insurers refused claims in cases where security alarm systems had failed.

3.92   Few respondents commented on the scale of the financial impact on vulnerable consumers, though some thought it would be limited since alarm equipment is often provided on a contract rental basis. One respondent, Mr Horsey, who lives in a sheltered housing scheme, had been informed that residents would be required to pay the full cost of upgrading their telecare alarm system.

Ofcom's considerations

3.93 We are particularly concerned about the potential financial impact on vulnerable consumers who use telecare alarms, as it is clear from the responses that alarm equipment adjustment or replacement will be costly.

3.94 We understand that, in most cases, telecare services are provided by local authorities and housing associations. We will approach these stakeholders and the Department of Health to raise awareness of the issue and of its potential financial impact on vulnerable consumers.

End to end call quality

3.95 In the consultation we noted that the pace of NGN deployment will be slower than originally anticipated with the result that there will be a prolonged period during which TDM and NGN networks coexist. This implies a need for multiple TDM/IP protocol conversions (particularly in complex call routing scenarios). Since previous work by NICC suggested this might degrade call quality materially we asked for stakeholder comments on the risk to call quality and how any risks should be addressed.

3.96 Most CPs agreed that a slower transition to NGNs would lengthen the period during which TDM/IP protocol conversion would be required. However there were differing views about whether this would lead to a material degradation of end-to-end call quality. At one extreme one respondent thought that the coexistence of TDM and IP networks might lead to unpredictable transmission delay and signal distortion to the extent that the conveyance of DTMF and modem tones could not be guaranteed. At the other extreme one respondent thought there was no reason for TDM/IP interconnection to be any worse than legacy TDM to TDM interconnection.

3.97 C&W noted that our proposal[17] not to proceed with plans for a direct routing solution for calls to ported numbers on fixed networks would result in a minority of calls exceeding the transmission delay limits envisaged by NICC in its end-to-end network performance rules for UK NGNs[18]. This is because the maximum number of networks through which calls may be routed would increase from six envisaged in the standard to ten. C&W argued that it would not be possible to revise the UK network transmission plan to accommodate more than six networks because it would require transmission delay performance that would be unachievable for individual NGNs and therefore a minority of calls would inevitably incur increased transmission delay.

3.98 C&W and several other respondents thought there was little that could be done other than to encourage the use of IP interconnection between NGNs wherever possible and to make it clear that direct routing should be designed-in and supported in the NGN era.

3.99 The BSIA and the TSA were both concerned about the potential effects of a reduction in end-to-end call quality on alarm services. The TSA advocated mandatory performance for end-to-end call quality.

---

[17] Calls to Ported Numbers, published 3 August 2009
http://www.ofcom.org.uk/consult/condocs/gc18_routing/
[18] ND 1701 Recommended Standard for the UK National Transmission Plan for Public Networks (March 2006) http://www.niccstandards.org.uk/files/current/nd1701_2006_03.pdf?type=pdf.
ND 1704 End-to-End Network Performance Rules & Objectives for the Interconnection of NGNs (March 2008) http://www.niccstandards.org.uk/files/current/nd1704_2008_03.pdf?type=pdf.

Ofcom's considerations

3.100   We acknowledge that if direct routing of calls to ported number is not implemented as part of the deployment of NGNs then some voice calls will experience greater delay.

3.101   We published on 3 August 2009 a consultation document entitled *Calls to Ported Numbers* which assesses the capital and operating cost that CPs would incur if they adopted direct routing of calls to ported numbers, and compares these with the cost that would be saved by avoiding the onward routing of such calls. In light of that assessment, the document considered a number of options concerning how mobile calls to ported mobile numbers could be routed, but made no proposals about the routing of calls to fixed ported numbers or calls from fixed networks to ported mobile numbers.

3.102   We will consider our next steps in relation to end-to-end delay of voice calls involving NGNs following conclusion of the consultation on calls to ported numbers.

Energy utility telemetry circuits

Respondents' views

3.103   The ENA welcomed our commitment to continue to monitor developments in relation to the traditional-interface leased line services used by energy utilities for telemetry applications. The ENA emphasised that these leased lines are critical to the UK's national infrastructure and argued that Ofcom should take a more active role in ensuring that BT supplies leased lines that meet the utilities requirements. ENA was concerned that BT's revised strategy for 21CN would put the delivery of these services at risk.

Ofcom's consideration

3.104   As discussed in the consultation we have already considered this issue in the Business Connectivity Market Review[19]. We required BT to provide short term service continuity and also secured additional commitments from BT about service continuity.

3.105   Following further studies and discussions with customers, BT has communicated revised plans for its traditional interface leased lines portfolio to the energy industry. Under the revised plans, BT has committed to retain these leased lines until 2018 subject to commercial viability, after which some types will be withdrawn. From discussions with the Energy Networks Association, we understand that this will give the energy utilities sufficient time to deploy replacement circuits.

3.106   We remain of the view that this issue is best progressed by commercial engagement between the energy utilities, BT and other CPs. However, given the importance of these circuits, we will continue to monitor developments.

---

[19] Business Connectivity Market Review, statement published 13 Feb 2009. http://www.ofcom.org.uk/consult/condocs/bcmr08/, paragraph 8.428.

Longer term evolution of next-generation networks

<u>Respondents' views</u>

3.107 Respondents offered a wide range of comments on the longer-term evolution of NGNs, whilst acknowledging that this was very uncertain.

<u>Ofcom's considerations</u>

3.108 We have not identified a specific issue for us to address in relation to the longer-term evolution of NGNs in the Consultation. While we will take the comments made by respondents into account generally in our future work, we do not propose to take them forward explicitly in our planned programme for the time being

Annex 1

List of questions asked in the Consultation document published on 31 July 2009

Question 1: How do you envisage the model of competition changing over the next 3-5 years, and what sort of input products will be needed to support this competition

Question 2: Do you agree with our analysis of the requirement for xMPF?

Question 3: What additional technical standardisation work is required to support NGN deployment?

Question 4: What policy positions do you believe Ofcom ought to adopt in relation to interconnection between IP and TDM networks?

Question 5: Do you have any comments on our analysis of investment uncertainty in relation to BT's 21CN plan?

Question 6: How do you think Ofcom should take forward considerations relating to switching involving next generation access and core networks, and which areas should we focus on?

Question 7: Do you agree that the consumer protection principles and our approach to addressing consumer protection issues are still valid?

Question 8: Do you agree with our assessment of how the alarm equipment incompatibility problem should be addressed?

Question 9: What will be the impact on vulnerable consumers of replacing telecare and other alarm equipment?

Question 10: Would it be appropriate to agree a common set of terminal equipment compatibility tests? What would be the most appropriate forum to develop these tests?

Question 11: What other steps could be taken to help manufacturers ensure terminal equipment is compatible with the QoS parameters of NGNs?

Question 12: Do you have any other comments about compatibility of terminal equipment with NGNs and how they should be addressed?

Question 13: Do you think there is risk of terminal equipment incompatibility that warrants further SIP UNI standardisation? How should this be progressed?

Question 14: Do you have any other comments about compatibility of terminal equipment with NGNs and how they should be addressed?

Question 15: Will a slower transition from TDM to NGN networks pose a risk to voice quality of service? How should such risks be addressed?

Question 16: Do you have any comments on the long-term trends in the evolution of networks to next-generation architectures?