



Next Generation Networks:

Further consultation

Consultation

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Section 1

Summary

Introduction

- 1.1 In November 2004 Ofcom published a consultation (“Next Generation Networks: Future arrangements for access and interconnection”) which explored the potential regulatory issues raised by the move to Next Generation Networks (NGNs). In this consultation we aim to establish a regulatory framework to address those issues and to support the development of NGNs. To do this we propose a number of policy principles and processes to support them.

Background

- 1.2 The introduction of NGNs is the most significant change to telecoms networks since competition was introduced two decades ago. These new networks have the potential to deliver significant benefits to consumers, competitive communication providers and BT. The plans announced by various communication providers will put the UK at the forefront of these developments. Ofcom is therefore committed to creating the conditions for all providers, including BT, to invest in NGNs. There will however be important effects on competition with many of the existing wholesale products and even some competitive models needing to change as the new networks develop. Ofcom has a clear role to ensure that consumers and competition get the full benefit from this transition.
- 1.3 We do not think it would be appropriate for Ofcom to become involved in increasingly detailed management of the transition to NGNs and specification of new products. We believe the most effective role we can take, and the purpose of this consultation, is to establish a clear policy framework and ensure that robust industry-led processes are in place to take forward the issues. This is in addition to our ongoing ‘business as usual’ role of informal dialogue and formal market reviews, and our backstop dispute resolution role.
- 1.4 The issues raised by the migration to next generation access networks, ie the migration from copper to fibre based access, are distinct from the issues raised by the migration to NGNs. This consultation does not aim to address these issues. Ofcom is considering them in a separate workstream.

Policies to enable NGN-based competition

- 1.5 In our first consultation we explored a range of issues that could be raised by the move to NGNs and received a wide feedback on these from stakeholders. Many of the specific issues raised are naturally at an early stage and this document does not seek to make premature conclusions on them. Instead, we have developed a set of governing policies, summarised below, to support the resolution of these issues and enable the development of NGN based competition. The implementation of some of these policies would be through our existing powers. The others are addressed through the undertakings which BT has proposed to offer in lieu of a reference by Ofcom under the Enterprise Act (see “Consultation on undertakings offered by British Telecommunications plc in lieu of a reference under Part 4 of the Enterprise Act 2002” published on 30 June 2005).

Investment climate for NGNs

- 1.6 The investment climate for NGNs will be affected by regulatory risks, including uncertainty about the level and nature of future regulation. Three areas where we are seeking to reduce this risk are set out below. These are summarised below.

Holistic approach to next generation voice interconnect

- 1.7 Clarity and predictability about the regulation of narrowband voice interconnection charges is particularly important for all communication providers making NGN investments. Our proposed approach for next generation narrowband voice interconnect is that where Significant Market Power (SMP) is found, reasonable charges should take account of the need to avoid creating artificial arbitrage opportunities by taking a holistic approach to cost recovery that avoids distorting incentives, and the need to allow an appropriate return on BT's investment in NGNs.
- 1.8 This policy would be implemented using our existing powers, and therefore there is no need for an undertaking from BT to address this issue.

Cost of capital

- 1.9 Ofcom acknowledges that there may be specific demand and technology risks associated with BT's 21CN investment. Ofcom's consultations on risk and the cost of capital consider how Ofcom could take into account such risks in setting an appropriate investment return (see www.ofcom.org.uk/consult/condocs/cost_capital2/). We are not consulting on this issue in this document.

Reducing uncertainty for alternative providers

- 1.10 A key purpose of the policies proposed in this document is to help reduce uncertainty for alternative providers about the impact that NGN migration, specifically 21CN, will have on the current SMP access and interconnect arrangements.

Policies for existing SMP products

Continuity of existing SMP products for an interim period

- 1.11 To enable business planning for alternative providers there initially needs to be continuity of existing SMP products (those products that BT is obliged to offer in markets where they have Significant Market Power), but we believe that this should only be for an interim period during which both legacy and next generation products are available. To ensure a timely move to next generation interconnect we propose that legacy products should be withdrawn once there is no longer reasonable demand or when next generation products provide an adequate replacement that providers are able to migrate to.
- 1.12 This policy would be implemented using our existing powers under the Communications Act to impose and withdraw network access conditions in SMP markets.

Compensation arrangements for SMP product migration

- 1.13 BT's migration to 21CN is expected to impact alternative communication providers in many ways, for example due to geographic migration of points of interconnect,

technical changes to SMP products and system modifications. In summary, Ofcom considers that the key factors relevant to compensation arrangements for BT's 21CN migration are:

- the extent to which these changes are unilaterally decided by BT without industry agreement;
- the distribution of benefits that accrue from these changes;
- the remaining life of any legacy interconnect equipment employed at the time of the change;
- the extent to which new interconnect investments are made by communication providers after they have been made aware of forthcoming changes that would impact that investment; and
- the additional cost necessarily and directly incurred as a result of having to bring forward investment in new interconnect equipment.

1.14 This issue is addressed by the undertakings which BT has proposed to offer in lieu of a reference by Ofcom under the Enterprise Act ("BT's Undertakings").

Policies for next generation SMP products

No foreclosure of unbundled network access

1.15 BT has an incentive to optimise its network for end-to-end services, whereas other providers will need unbundled access to bottleneck elements that allow them to compete downstream with BT. There is a risk that BT's decisions regarding the design, procurement and deployment of 21CN could unnecessarily foreclose the option of making these unbundled products available. Foreclosure of this nature would clearly raise serious competition concerns.

1.16 To avoid this foreclosure, we propose that BT should ensure that other providers can purchase SMP products for accessing BT's 21CN that allow other providers to effectively compete with BT's end-to-end services. In addition, BT should not make any design decisions, the effect of which would be to prevent the provision of future SMP products, without first consulting other communications providers and Ofcom.

1.17 This issue is addressed by BT's Undertakings.

Charges for SMP products to be based on efficient design

1.18 To support the above policy, BT needs an incentive to design 21CN so that required SMP products can be provided in an efficient way. Therefore we propose that BT's charges for regulated products delivered over 21CN should be set on the basis of efficiently incurred costs. These are the costs it would have incurred if it had designed and built 21CN in the most efficient manner reasonable to provide that access. This means, for example, that if BT ignored providers' requirements and made it more costly to provide SMP products, it would end up bearing these additional costs itself.

1.19 However, we recognise that any design process cannot allow for the efficient provision of all possible products for an indefinite period of time. Therefore we propose certain exclusions to this policy including cases where BT has consulted, but found no evidence of demand.

1.20 This issue is addressed by BT's Undertakings.

Equivalence of input for next generation SMP products

1.21 'Equivalence of inputs' (Eol) was set out in our strategic review as a requirement for BT to make available the same SMP products and services to others as it makes available to itself, at the same price, and using the same systems and processes. In addition we set out the principle that Eol should be enforced when the cost is proportionate, and in particular that it should apply for all new wholesale SMP products, processes and systems, and therefore to all new SMP products delivered over 21CN.

1.22 To ensure that Eol can be achieved for new wholesale SMP products and systems, 21CN and its associated systems will need to be built to support Eol from the outset. However, we recognise there may be products where it is not reasonable practical to apply Eol (even on a new network).

1.23 This issue is addressed by BT's Undertakings.

No retail services to be launched without associated wholesale inputs

1.24 If BT introduced new retail¹ services or features without corresponding wholesale SMP products, or if these did not allow alternative providers to launch a competing services at the same time, this would clearly have an impact on the development of competition in the downstream market. Similarly if BT were able to offer cheaper retail services because of its ability to provide the service end-to-end over its NGN, other communication providers are likely to be disadvantaged if they are unable to do the same due to the unavailability of an appropriate NGN interconnect product.

1.25 To address these issues, Ofcom's proposed policy is that where BT's ability to deliver a downstream service is dependent on the availability of an upstream input, and where BT has SMP in the relevant upstream market or can reasonably be expected to have SMP in the future, BT must not launch the new downstream service until it has also provided access to the upstream input. These upstream inputs must be available to other providers sufficiently in advance of the downstream services in order for other providers to launch downstream services simultaneously.

1.26 This issue is addressed by BT's Undertakings.

LLU-based competition & broadband dial-tone

1.27 As a result of deploying its NGN, BT expects to be able to migrate customers between different products and services purely through software control, ie no physical re-configuration of the network would be required. The ability to enable broadband service in this way is known as 'broadband dialtone'. Our previous consultation identified that this capability could create a major challenge for LLU-based competition.

1.28 Whilst the solution to this issue is unclear at the moment, we believe it is important to establish the principle that BT should ensure that LLU operators do not suffer a material competitive disadvantage as a result of this capability.

1.29 This issue is addressed by BT's Undertakings.

¹ 'Wholesale' service in this context means any upstream input where BT has SMP, and 'retail' service means any service downstream of that wholesale input (ie not only those down services sold directly to end users)

Wider NGN issues

- 1.30 In addition to competition issues related to access to BT's network, there are also a number of NGN regulatory issues relevant to a wider set of communication providers. These include:
- number portability;
 - end-to-end call quality;
 - emergency call prioritisation; and
 - emergency call location.
- 1.31 The move to NGNs creates a chance to address any limitations of existing implementations and to revisit the overall approach taken. Ofcom's view is that the move to NGNs is a timely opportunity to consider all issues of this nature, and it is important that they are considered by the industry now, whilst NGNs are still being planned. These issues relate to our existing powers and therefore are not covered by BT's Undertakings. We will continue to work with the industry to ensure that they are addressed.

Consumer protection

- 1.32 Whilst the move to NGNs has huge potential to bring benefits to consumers, given the scale and complexity of the transition, adequate protection for consumers will be essential during and after the transition process. Ofcom's proposed policy principles in relation to NGN consumer protection are that:
- The services offered to consumers on NGNs should at least be equivalent to their existing services. Ofcom believes that this is anyway a fundamental premise of operators move to NGNs and that NGNs will also allow providers to offer many improved and innovative services.
 - Consumers should suffer no detriment during the transition to NGNs, for example due to loss of access to emergency services, or degraded call quality.
 - Any changes to end user services are fully explained to consumers.
- 1.33 We will work with industry to ensure that these issues are addressed. In addition, BT's Undertakings include a commitment to participate in a new body (discussed below) which could address these issues on an industry wide basis.

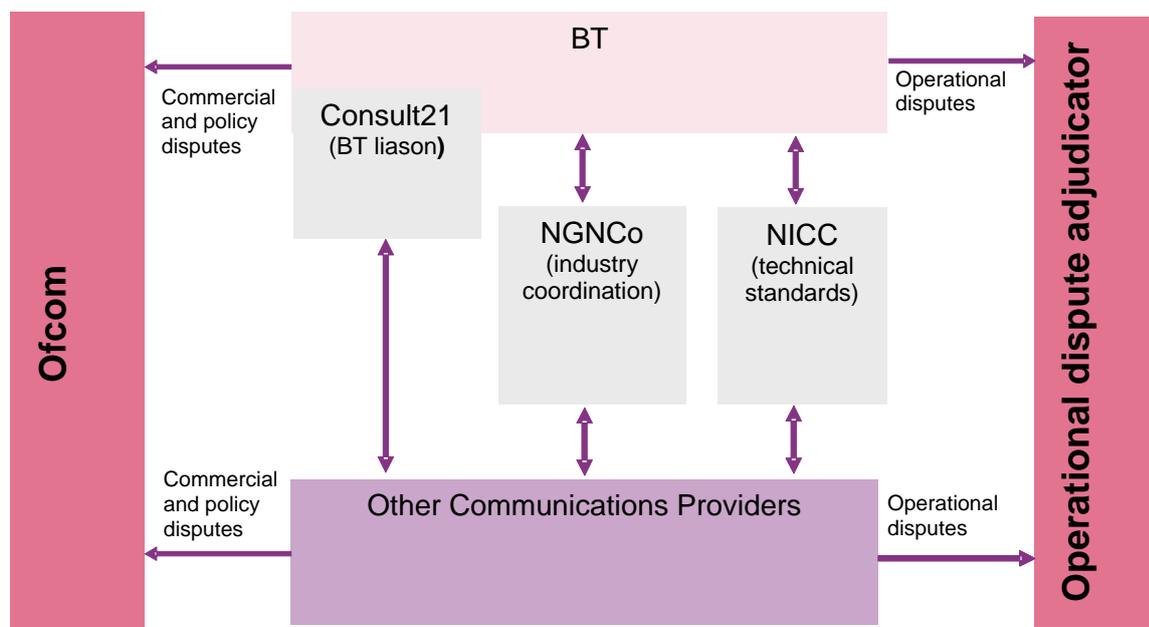
Effective industry led processes

- 1.34 There needs to be effective industry led processes to ensure that the transition to NGNs is successful. Ofcom's proposals for these processes and the bodies with ownership of them are:
- SMP product migration and development of new SMP product requirements to continue to be the responsibility of Consult 21 (the industry liaison programme established and run by BT).
 - BT and other providers to engage in commercial negotiation on a multi-lateral basis through Consult 21 and on a bi-lateral basis.

- UK NGN technical standardisation to continue to be the responsibility of the Network Interoperability Consultative Committee (NICC), but with NICC re-constituted as an independent industry owned body.
- A new multi-lateral industry group (provisionally known as 'NGNCo') to take ownership of the transition from existing to NGN networks, including operational planning and oversight, end user communication, and development of new models for interconnection.
- Disputes that arise from the planning or implementation of any communication providers (including BT's) NGN transition to be referred to an operational dispute adjudicator for time-limited binding arbitration.
- All policy and commercial disputes to be dealt with by Ofcom (business as usual)

1.35 The 'NGNCo' and operational dispute adjudicator will need BT's commitment to participate in order to be credible and effective. This issue is addressed by the undertakings, where BT has proposed to commit to participating in such bodies when they are set up.

Figure 1. Overview of NGN process proposals



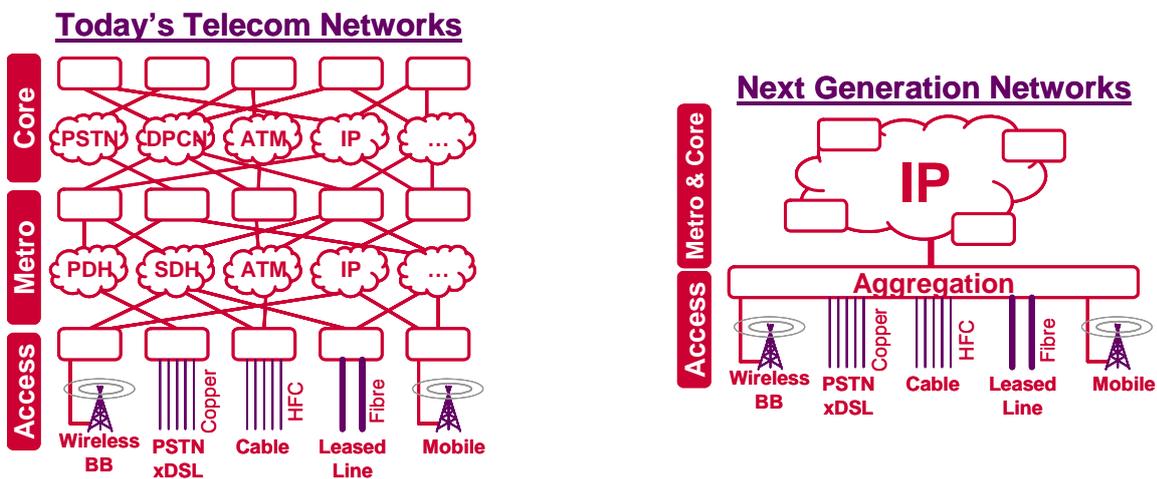
Section 2

Introduction

Introduction

- 2.1 The introduction of Next Generation Networks (NGNs) is the most significant change to telecoms networks since competition was introduced two decades ago. These new networks have the potential to deliver significant benefits to consumers, competitive communication providers and BT. The plans announced by various communication providers will put the UK at the forefront of these developments. Ofcom is therefore committed to creating the conditions for all providers, including BT, to invest in NGNs. There will however be important effects on competition with many of the existing wholesale products and even some competitive models needing to change as the new networks develop. Ofcom has a clear role to ensure that consumers and competition get the full benefit from this transition.

Figure 2. Comparison of today's networks and NGNs



- 2.2 Today, most telecoms companies operate a number of different networks, each tailored to the needs of delivering a particular set of end user services. The process of moving to NGNs involves consolidating all of a communications provider's networks into one. This network, the NGN, will be based on IP technology and will be capable of delivering replacements for all the existing services. IP, the Internet Protocol, is already at the heart of many modern data networks and ongoing developments are making it increasingly capable of delivering the full range of current telecoms services.
- 2.3 The most obvious benefits of a move to an NGN are for the network owner in operational cost savings. However there are many other benefits which have the potential to positively impact both competition and consumers. One example is the development of new services which should happen much more quickly and efficiently than today, with lower barriers to the development of new services and ultimately result in higher quality, richer, end products.
- 2.4 Access networks, the "last mile" connections between the customer and the communication provider, are not directly affected by NGNs. Initially at least the technology in the access network will therefore be unaffected, with most access lines

remaining analogue. A move to NGNs does not imply a move to fibre to the home or any other next generation access technology, and this consultation does not aim to address the issues relating to next generation access. However, the new services enabled by the IP-based core networks may increase demand for existing and higher performance variants of broadband.

- 2.5 In the Telecoms Strategic Review (TSR), Ofcom outlined the principle of promoting competition at the deepest level of infrastructure that will be effective and sustainable. We believe that alternative infrastructures, where viable, are essential for a healthy competitive market – this applies as much to NGNs as it does to today’s networks. However, the principle also acknowledges that in many cases there will not be competition in all parts of the network. Therefore the ability to interconnect with BT’s NGN, 21st Century Network’ (21CN), at the right places, using the right technology and on the right commercial terms will remain key to successful competition. NGNs will change all these aspects of interconnection considerably.
- 2.6 The existing products, processes and standards for interconnecting current networks have been developed over the years following market liberalisation. In contrast, the technical and commercial arrangements for interconnection between NGNs are not well established. Along with the need for new IP-based interconnection technology, BT’s 21CN will also bring changes in network hierarchy and a rationalisation of BT’s property. Together these will require a considerable rearrangement of interconnection at both a logical and physical level. For many communication providers these changes could make some of their existing assets redundant.
- 2.7 If the industry’s planned timescales for NGNs are to be achieved, these issues have to be resolved quickly. Equally important, and even more pressing, is the requirement for transitional arrangements which will facilitate a successful move from today’s world to tomorrow’s.

Ofcom’s role

- 2.8 Ofcom has a role in the move to NGNs for three reasons.
- 2.9 First, the implementation of BT’s NGN, 21CN, represents a unique opportunity to ensure that equality of access, a key principle in our TSR, is implemented from the start. Successfully achieving this would enable the development of sustainable competition and allow regulation to be rolled back. However, this can only be achieved if Ofcom pro-actively engages now and takes a strategic view of NGN based competition. If we do not, we are likely to be faced with a repetition of the problems that have characterised the last 20 years, where regulated products have needed to be ‘bolted on’ to existing networks, creating uncertainty for providers and the likely need for future detailed regulation.
- 2.10 Second, investment in NGNs will be affected by regulatory risks, including uncertainty about the extent of future regulatory intervention and the expected returns from NGN investments. Therefore Ofcom has an important role in reducing these regulatory risks to promote a favourable climate for efficient and timely investment in NGNs.
- 2.11 Third, whilst the move to NGNs has huge potential to bring benefits to consumers, given the scale and complexity of the transition there is a danger that services to consumers will be disrupted. Ofcom does therefore have a role to ensure that industry takes appropriate measures to protect consumers during that process.

- 2.12 Whilst there needs to be a role for Ofcom, we do not think that increasingly detailed management of the transition to NGNs (advocated by some respondents to our first consultation) and the development of new products is the right one. This is because BT and alternative providers are in the best position to understand the requirements and possibilities of NGNs and therefore likely to develop better solutions than Ofcom could. It would also be inconsistent with our general regulatory principle, which is to seek the least intrusive regulatory mechanism to achieve policy objectives.
- 2.13 We believe the most effective role for Ofcom is to establish a clear governing policy framework and to ensure that robust industry-led processes are in place. A necessary part of establishing this framework are the undertakings that have been offered by BT in lieu of a reference to the Competition Commission (under Part 4 of the Enterprise Act 2002). In addition, some of the issues can and will be dealt with through our ongoing 'business as usual' role of informal dialogue, market reviews and dispute resolution. Figure 3 summarises our role and how we intend to carry it out.

Figure 3. Ofcom's role in the move to Next Generation Networks

What	How
Help to identifying and clarify potential regulatory issues early on	November 04 consultation, this consultation and ongoing dialogue with stakeholders.
Establish clear governing policy rules to support NGN based competition	This consultation and subsequent statement in conjunction with our Enterprise Act consultation / statement on undertakings
Establish policy framework for consumer protection and information	This consultation and subsequent work on communication plan
Ensure appropriate industry led processes are established	This consultation and ongoing discussions with stakeholders
Ensure industry led processes stay on track	Ongoing informal monitoring and dialogue with BT and other providers
Resolution of competition issues when industry processes fail	Formal market reviews and ex post competition powers as required
Updating ex ante regulatory framework to take account of NGNs	Ongoing programme of market reviews (eg updating market definitions, remedies and de-regulating as appropriate)

This consultation

- 2.14 The purpose of this consultation is to:
- Establish a clear set of governing policy rules for the move to NGNs covering competition issues and consumer protection. Chapter 3 sets out our proposals.

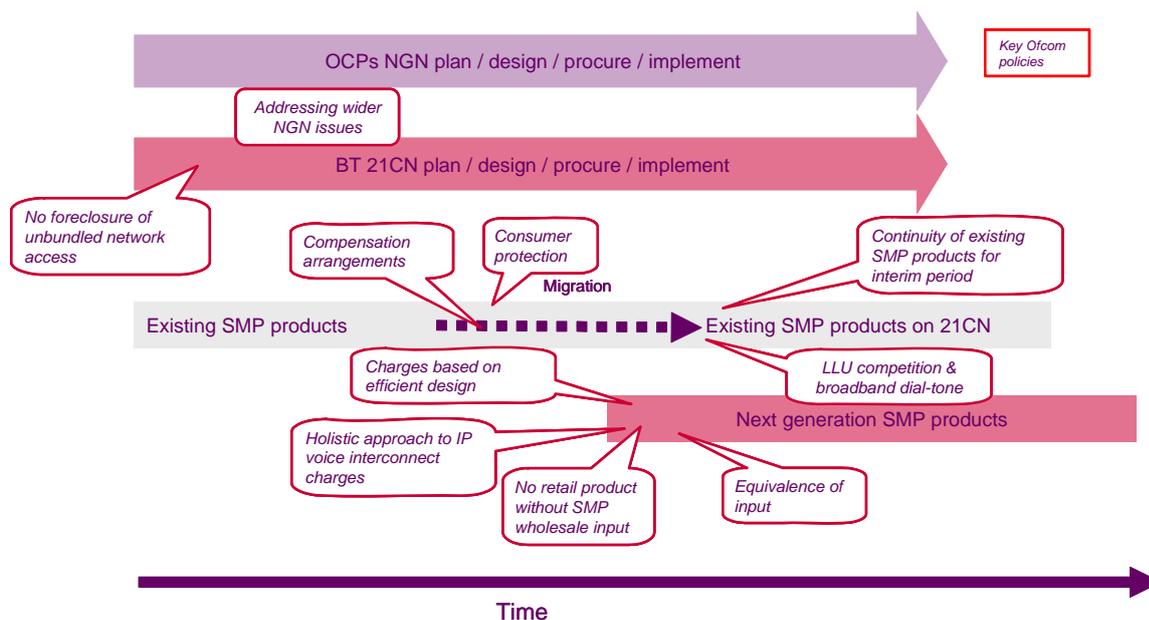
- Ensure the establishment of industry led processes to successfully implement the move to NGNs in line with these policies. Chapter 4 sets out our views on the requirements for NGN processes and makes specific proposals for industry bodies to own them.

Section 3

Policies to enable NGN competition

Introduction

- 3.1 To obtain the full benefit of the move to NGNs for consumers, we have developed a set of policy proposals to support the development of NGN based competition covering:
- Investment climate for NGNs
 - Migration and impact on existing SMP products
 - Development of next generation SMP products
 - Issues relevant to a wider range of providers implementing NGNs
 - Consumer protection relevant to NGN migration
- 3.2 Figure 4 summarises the key policy proposals and the overall process of moving to NGNs.
- 3.3 The implementation and enforcement of many of these policies would be through BT's Undertakings detailed in our separate consultation ("Consultation on undertakings offered by British Telecommunications plc in lieu of a reference under Part 4 of the Enterprise Act 2002" published on 30 June 2005). All stakeholders wishing to comment on the issues related to those undertakings should respond to that document.
- 3.4 There are other policy issues raised which Ofcom would be able to address through its existing regulatory powers and for which there is no corresponding undertaking from BT. In line with our duties, we are seeking stakeholders' comments on these policies, including views on their impact, in response to this consultation.
- 3.5 For each proposed policy below we set out whether or not it is addressed by the undertakings.
- 3.6 The published statement following this consultation will set out Ofcom's policy approach going forward. However, as Ofcom cannot fetter its discretion, we will consider each any specific issue on its own merits, taking into account the overall policy framework.

Figure 4. Moving to NGNs and key Ofcom policies

Investment climate for NGNs

3.7 In chapter 2, we acknowledged that the investment climate for NGNs will be affected by regulatory risks. For all parties, part of this risk arises from uncertainty about the level and nature of future access and interconnection regulation. Three specific areas relevant to the investment climate for NGNs are considered below.

Narrowband interconnect charges

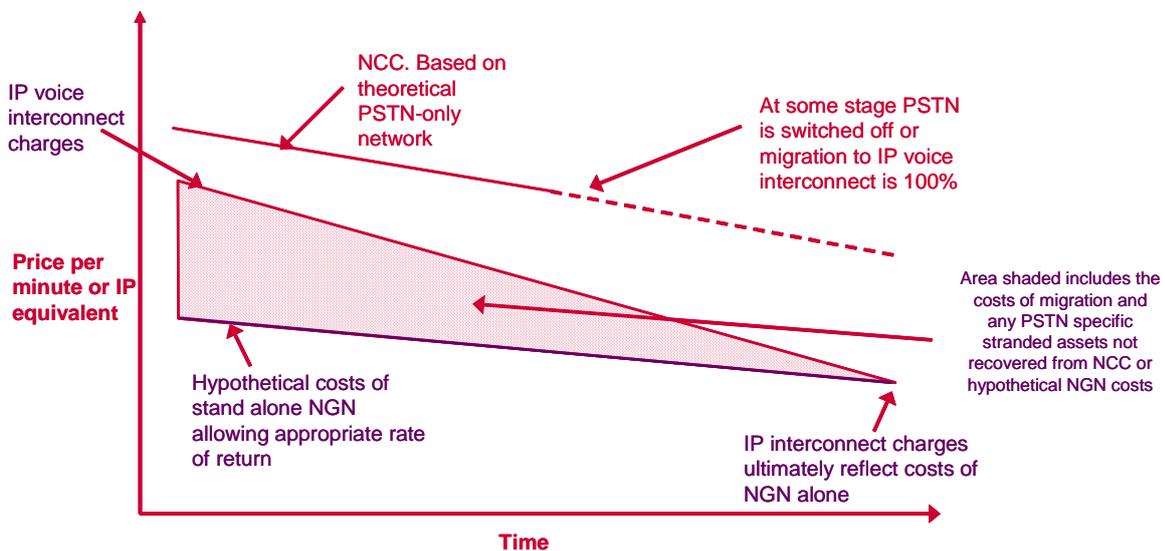
3.8 Clarity and predictability about regulation is particularly important for narrowband interconnection charges as these represent very significant revenues (for BT) and costs (for other providers). For existing interconnect products this has to date been achieved through the use of network charge controls (NCCs). In our recent NCC consultation (<http://www.ofcom.org.uk/consult/condocs/charge/>) we proposed a set of controls that would apply to products delivered over the existing narrowband PSTN (ie C7) interconnects at existing PSTN locations.

3.9 In respect of narrowband voice products provided over 'next generation' interconnects, for example provision of IP interconnect at Metro nodes or MSANs (IP voice interconnect), the regulatory requirements on these can only be fully considered once they are more clearly specified. However, we recognise the desirability of the overall approach providing as much commercial certainty to BT and other communications providers as possible. In general, our proposed approach for such products (where SMP is found) is that reasonable interconnect charges should take account of:

- The need to avoid creating artificial arbitrage opportunities between existing NCC products and next generation voice products by taking a holistic approach to cost recovery that avoids artificially distorting the incentives for providers to use next generation interconnect products and potentially undermining the NCCs.
- The need to allow an appropriate return on BT's investment in NGNs, taking into account the costs of migration and any PSTN specific stranded assets.

- 3.10 Ofcom’s proposed view of a ‘holistic’ approach to narrowband voice interconnect is illustrated in Figure 5 below. This illustrates that IP voice interconnect charges would need to start above the costs of a hypothetical stand alone NGN, because to do otherwise would create an arbitrage opportunity where (for example) migration costs would not get recovered. However, these IP voice products could still be priced below C7/TDM narrowband interconnect products to the extent they cost less to provide than C7/TDM interconnect products. Finally, at a point in the future, when all traffic is via IP voice interconnect, and all migration / PSTN costs had been recovered, IP interconnect pricing would end up reflecting the costs of the NGN allowing an appropriate rate of return (see cost of capital below).
- 3.11 This policy would be implemented using our existing powers, and therefore there is no corresponding undertaking from BT.

Figure 5. ‘Holistic’ approach to narrowband voice interconnect cost recovery (illustrative only)



Question 1: Do you agree with Ofcom’s proposed approach for the charges of narrowband voice SMP products provided over next generation interconnects?

Cost of capital

- 3.12 Ofcom acknowledges that there may be specific demand and technology risks associated with BT’s 21CN investment. Ofcom’s consultations on risk and the cost of capital (see http://www.ofcom.org.uk/consult/condocs/cost_capital/ and http://www.ofcom.org.uk/consult/condocs/cost_capital2/) consider how Ofcom could take into account such risks in setting an appropriate investment return. In those documents we discuss the high level principles which we would take into account in determining an appropriate rate of return, including consideration of next generation core networks such as 21CN. We are not consulting on this issue in this document.

Reducing uncertainty

- 3.13 A key purpose of the policies proposed in this document is to help reduce uncertainty for alternative providers about the impact that NGN migration, specifically 21CN, will have on the current SMP access and interconnect arrangements. To do this we set out specific policies below relating to the continuity and compensation arrangements

for existing SMP products, and principles for future SMP products, including their availability, pricing and support for equivalence.

Policies for existing SMP products

3.14 Our key policy proposals in relation to existing SMP products cover:

- Continuity of existing SMP products for an interim period
- Compensation arrangements for SMP product migration

3.15 The term ‘existing SMP products’ is used here and through the rest of the document to refer to those products that BT is currently obliged to offer as a result of Network Access conditions in markets where it has been designated as having Significant Market Power.

Continuity of existing SMP products for interim period

3.16 In our previous consultation we said that although it may be possible for 21CN to continue to provide many or most existing regulated products, we thought it unlikely that the product set would remain static for a number of reasons.

3.17 However, given industry concerns about the risk of disruption to their existing business models and products it is also important to clarify the requirements of continuity for existing SMP products. For the avoidance of doubt, BT continues to remain bound by its existing SMP obligations, including the provision of SMP access products, until Ofcom removes those obligations either as a stand alone exercise or following a market review. In addition, BT’s obligations also generally relate to provision of those products at particular locations, for example local exchanges, tandem exchanges, tier-1 nodes etc. In general BT cannot unilaterally decide to stop providing existing SMP products. For this reason, this policy is not, and does not need to be, reflected in the proposed undertakings as it relates to the provision of products under Ofcom’s existing Communication Act powers.

3.18 Although continuity of legacy products is important for stability in the short to medium term, it is unlikely to be efficient for all legacy forms of interconnect to continue indefinitely. We believe migration to next generation forms of interconnect is in the long-term beneficial to consumers, and that an extended period of parallel running will not be. However, we do expect there to be an interim period during which legacy and next generation products are both available. This interim period is likely of course to vary for different products with some products migrating rapidly with others potentially never being superseded by a next generation version.

Criteria for product withdrawal following interim period

3.19 Ofcom does not believe it is appropriate or possible at this stage to specify a particular duration for an interim period. The actual process for changing or withdrawing BT’s obligations would be through individual market reviews and by applying the tests set out in the Communications Act. Ofcom has a duty to review markets and remedies on a regular basis, and we have made specific commitments to review certain markets with a view to assessing whether regulation can be withdrawn.

- 3.20 However, in order to provide greater regulatory clarity to stakeholders there is also value in setting out our approach at a more strategic level. There are three scenarios where we believe it would be appropriate to consider SMP products for withdrawal.
- 3.21 Firstly, if there was evidence that BT no longer had SMP in the relevant market. This might be due to a variety of factors, for example:
- Convergence might lead to a broadening of certain market definitions, with the result that several narrowly-defined markets are replaced by a single more broadly-defined market. It is possible that BT may not have SMP in this broader market. One possible example is the creation of a single market for voice calls as a result of fixed-mobile convergence.
 - The success of an upstream remedy may lead to BT no longer having SMP in downstream markets. For example, a successful LLU product might lead to erosion of BT's SMP in certain downstream markets
- 3.22 Secondly, if there were no longer reasonable demand for the existing SMP product. This might be due to market evolution or technical changes that meant that product demand had fallen to the extent where its continued provision becomes uneconomic or disproportionate. A particular example raised in the initial consultation was FRIACO. Respondents generally agreed that market demand should ultimately dictate the lifetime of FRIACO products.
- 3.23 Third, where it is reasonable to move to alternative next generation SMP products. We propose that all the following criteria would need to be met:
- Next generation products are available and (where practical) support equivalence of input.
 - Next generation products are adequate replacements for legacy products. One piece of evidence to support this would be the wide (but not necessarily exclusive) use of the next generation product by alternative providers.
 - Those providers still using the legacy SMP products have been fully consulted on the options following withdrawal.
 - Adequate time has been allowed for individual end-users to be migrated from legacy SMP products to next generation SMP products.
- 3.24 Ofcom's proposed approach is that if these criteria were met we would seek to remove any legal obligation that existed for BT to continue providing the legacy product, subject to satisfying the relevant Communication Act tests.
- 3.25 One important implication of this approach is that it should create an incentive for BT to develop and implement fit for purpose next generation SMP products on attractive terms as soon as practical, in order to minimise the period of parallel running with legacy SMP products. At the same time Ofcom would expect that other providers would be planning their own move to NGN products.
- 3.26 In practice, applying these criteria would suggest that legacy SMP products are likely to continue until at least the majority of BT's 21CN is implemented, ie until after 2009 (based on BT's timescales announced in June 2004). Taking the example of narrowband interconnect products, Ofcom has recently published its proposal for the network charge controls to apply to existing narrowband products until Oct 2009. If that proposal is confirmed, then the question of whether legacy narrowband

interconnect products could be withdrawn after that would need to be considered before those controls expired.

Question 2: *Do you agree with the overall approach that there needs to be continuity for existing SMP products, but that it would not appropriate to continue them indefinitely?*

Question 3: *Do you agree with the general criteria Ofcom has proposed for the withdrawal of legacy SMP products after an interim period?*

Compensation arrangements for SMP product migration

- 3.27 A range of potential impacts have been identified as a result of BT's migration to 21CN which are likely to have cost implications for alternative providers. These include:
- Geographic migration of points of interconnect
 - SMP product technical changes
 - System changes and enhancements (eg to billing systems)
 - Communication to end users, eg advising them of planned changes to their service and dealing with associated queries
- 3.28 Ofcom proposes that the key factors relevant to compensation arrangements for BT's 21CN migration ought to be:
- the extent to which these changes are unilaterally decided by BT without industry agreement;
 - the distribution of benefits that accrue from these changes;
 - the remaining life of any legacy interconnect equipment employed at the time of the change;
 - the extent to which new interconnect investments are made by communication providers after they have been made aware of forthcoming changes that would impact that investment; and
 - the additional cost necessarily and directly incurred as a result of having to bring forward investment in new interconnect equipment.
- 3.29 The issue of compensation arrangements for SMP product migration is addressed by paragraph 11.18 of the undertakings, because in those undertakings BT proposes to comply with the policy described above.
- 3.30 The specific example of geographic migrations is discussed in more detail below.

Geographic migrations

- 3.31 The geographic rearrangement by BT of points of interconnect has the potential to deliver benefits to BT (due to rationalisation of its property portfolio for example), but is unlikely to deliver similar benefits to interconnecting providers. It does however require those providers to incur costs. In such circumstances BT will therefore need to bear the cost of this impact, by continuing to provide interconnect at existing locations, or offering an adequate substitute, or offering compensation.

- 3.32 A particularly important case is where alternative providers have built out fibre infrastructure to points of interconnection. Even if this infrastructure was originally provided to support a specific product or service, it will be capable of supporting a wide range of products, and so has a significantly longer asset life than the lifetime of any one product. For example, fibre that was originally provided in order to carry traffic associated with DLE FRIACO does not become obsolete at the point in time when FRIACO is withdrawn. This must be reflected in the compensation arrangements.
- 3.33 Two specific aspects of geographic migration have been proposed:
- Withdrawal of DLE interconnect. Some progress has been made on this issue, through BT offering virtual substitutes, including re-parenting Interconnect Extension Circuits to new points of interconnect. Also, it is possible that if some form of MSAN interconnect was made available, this would be at existing DLE sites.
 - Rearrangement of core network nodes. BT has suggested that many of the metro nodes in 21CN will be in different locations to existing trunk network nodes. However, little progress has so far been made in clarifying where interconnection will occur, or what compensation arrangements would be associated with any rearrangement.
- 3.34 We would prefer to see these issues resolved via commercial negotiation taking account of the factors set out above. However, if these negotiations fail Ofcom will be prepared to resolve any disputes that might arise.

Policies for next generation SMP products

- 3.35 Whilst it is important to ensure that existing SMP products are migrated smoothly, due to a combination of technological change and market evolution, these products are unlikely to be the most effective means of supporting NGN based competition.
- 3.36 As there are still many questions about what next generation SMP products will look like, our approach is not to propose specific product requirements in this document, but to propose a number of governing policies to guide the development of those products. These are:
- No foreclosure of unbundled network access
 - Charges for SMP products to be based on efficient design
 - Equivalence of input for next generation SMP products
 - No retail services to be launched without associated wholesale inputs
- 3.37 We first consider what we mean by 'next generation SMP products' in the context of this policy discussion.

Scope of next generation SMP products

- 3.38 In the absence of further information about the nature of future products and markets it is not yet possible to identify all future SMP markets and the products falling within them. The references to 'next generation SMP products' here and through the rest of the document are therefore based on working assumptions about the scope of future SMP products based on the extent of BT's existing SMP. This is because replacement of BT's existing networks with an NGN will not affect the scale and

ubiquity of its networks from which its SMP largely derives. So where BT currently has SMP in a market, there is a reasonable expectation that there will be SMP in the immediate successor to that market. For example:

- Where there is currently SMP in local access (unbundled loops) there is a reasonable expectation that this would not be affected by the move to NGNs.
- Where there is currently SMP in wholesale narrowband exchange lines (wholesale line rental), there is a reasonable expectation that there will be SMP in a form of MSAN voice access which is a successor to wholesale line rental.
- Where there is currently SMP in broadband origination to ATM nodes today there is a reasonable expectation that there will be SMP in broadband conveyance to MSAN (MSANs are expected to replace DSLAMs in 21CN) and broadband conveyance to metro nodes.
- Where there is currently SMP in call origination and local-tandem conveyance there is a reasonable expectation that there will be SMP in conveyance of narrowband traffic from MSANs to metro nodes.

3.39 Figure 6 summarises the relationship between current SMP products and possible future SMP products.

Figure 6. Existing and possible next generation SMP products

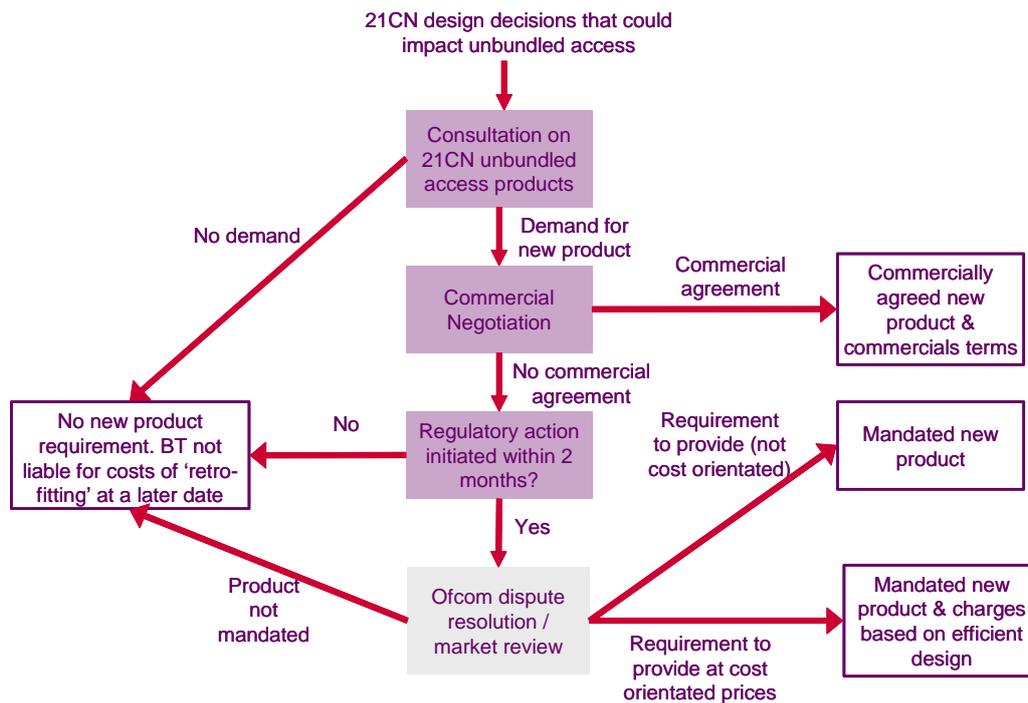
Current SMP Products	Possible next generation SMP products
LLU	LLU (no impact)
Datastream	Bitstream interconnect at MSANs & Metro nodes
Wholesale Line Rental / Carrier Pre-selection	MSAN Voice access
Call origination, Local tandem conveyance	Voice interconnect at MSANs & metro nodes
Partial Private Circuits (PPCs) and Wholesale Ethernet Services (WES)	PPCs at MSANs & Metro nodes; increasing focus on Ethernet products; QoS enabled bitstream interconnect at MSANs & Metro nodes

3.40 In addition to the conveyance related products discussed above, there may be network intelligence capabilities associated with markets where BT has SMP. These are likely to include those network intelligence capabilities which cannot be provided by alternative providers independently of the underlying network where BT has SMP. However, as it is not even clear at this stage what network intelligence will be provided by NGNs, it is difficult to make assumptions about the scope of the products which might need to be regulated. To help advance this debate, Annex G provides some more detailed discussion of network intelligence and where this might be linked to BT's SMP.

Question 4: Which network intelligence capabilities are likely to be associated with the underlying network where BT has SMP and cannot be independently provided by alternative providers, and why?

No foreclosure of unbundled network access

- 3.41 BT has an incentive to optimise its network for end-to-end services, whereas other providers will need unbundled access to SMP elements. This creates the danger that BT's decisions regarding the design, procurement and deployment of 21CN could unnecessarily raise the cost of next generation SMP products, or even foreclose the option of making them available. Even if unbundled products are available, there is a risk that their design or commercial terms will not allow other providers to build downstream services (by combining unbundled products from BT with their own networks and systems) that are commercially competitive with the same service delivered end-to-end over BT's network. Foreclosure of this nature would clearly raise serious competition concerns. The policies we consider necessary to address these competition concerns are described below.
- 3.42 We propose that BT should ensure that other communications providers will be able to purchase unbundled access to its NGN, ie access that is not conditional on the provision of other services, in markets where it is designated as having SMP. This unbundled access should allow other communications providers to effectively compete with the end-to-end services which BT provides over 21CN.
- 3.43 We also propose that BT should not make any design decisions without first consulting other communications providers, so that it does not prevent others from obtaining unbundled access to 21CN if they choose to do so. The onus on BT to undertake this consultation is important because in many cases (absent consultation) only BT may fully understand the implications of the design decisions being made and therefore could otherwise foreclose a product option.
- 3.44 If these consultations show that there is no demand for the unbundled product, then it would not be reasonable for BT to continue to ensure that that product can be made available and it should be able to proceed with its design decisions. But if they suggest that there may be demand for a specific form of unbundled access, BT will need to enter into commercial negotiations with other providers about the provision of this access. During those negotiations BT will need to avoid making any design decisions which would prejudice their outcome. If no commercial agreement is reached as a result of those negotiations, then a dispute may be brought to Ofcom or Ofcom may initiate regulatory action (for example, an own initiate investigation or market review) to resolve.
- 3.45 We believe it is also important that this process is time limited in order to minimise uncertainty for all players, and ensure proportionality in the impact on BT's design process. Therefore we propose the following time limits:
- BT should continue commercial negotiations for up to 3 months in order to try to reach commercial agreement
 - If after 2 months of commercial negotiations ending, a dispute is not raised, or Ofcom regulatory action initiated, then BT should no longer be bound to keep the option of providing that unbundled access option open.
- 3.46 In addition, we propose that this process need not apply where the design decision has already been subject to consultation in line with the above policy. The overall decision tree for this policy (and the policy below on charges) is illustrated in Figure 7.

Figure 7: Decision tree for unbundled access requirements and charges

3.47 The issue of avoiding foreclosure of unbundled network access is addressed by paragraphs 11.1 to 11.4 of the undertakings, because in those undertakings BT proposes to comply with the policies described above.

Charges for SMP products to be based on efficient design

3.48 For the above policy to be effective, there also needs to be an incentive for BT to take account of providers requirements for SMP products in the design of 21CN, so that that access is provided in an efficient way.

3.49 Therefore we propose that where BT is required by Ofcom to provide access to 21CN on a cost-orientated basis, BT should set its charges on the basis of what would have been the efficiently incurred costs. Those are the costs it would have incurred if it had designed and built 21CN in the most efficient manner that could have reasonably been used to provide that access. This means, for example, that if BT ignored providers' requirements and made it more costly to provide SMP products, it would effectively end up bearing the costs of any 'retro-fitting' necessary to efficiently provide those products.

3.50 However, we recognise that any design process cannot allow for the efficient provision of all possible products for an indefinite period of time and to require this would be disproportionate. Therefore we believe it is important to constrain this requirement so that it would not apply where:

- BT has complied with the consultation process set out above under 'no foreclosure of network access'; or
- BT consulted with other communication providers and Ofcom, but these consultations did not suggest demand for a particular form of network access; or
- BT did find evidence of demand, but there was no commercial agreement, and a subsequent Ofcom regulatory decision did not require the unbundled access; or

- There was no commercial agreement, but a dispute or other regulatory action was not initiated within 2 months of commercial negotiations ending; or
- Ofcom sets a charge or charge control for the relevant products using its ex ante powers under the Communications Act. In this case we would similarly take account of what would have been the efficiently incurred costs, as described above.

3.51 Figure 7 above illustrates the overall decision tree for this policy.

3.52 This issue is addressed by paragraph 11.5 of the undertakings, because in those undertakings BT proposes to comply with the policy on charges described above.

3.53 A specific example relates to MSAN access and interconnection. BT has already engaged with other providers to identify their requirements. If BT offered, or was required by Ofcom, to provide such a product, then the charges for this product would need to be set on the basis of the costs BT would have incurred if it had designed and built 21CN in the most efficient manner that could have reasonably been employed to provide this product. The implications of this is that if BT took design or implementation decisions which unreasonably increased the cost of meeting those requirements, then it would end up bearing these additional costs itself rather than passing them on to the customers of MSAN access and interconnection.

Equivalence of input for next generation SMP products

3.54 The requirement for BT to support 'equality of access' is perhaps the most important aspect of Ofcom's Telecoms Strategic Review. This will provide alternative communication providers with unbundled access to those elements of BT's network that represent enduring economic bottlenecks. This is an essential pre-requisite for consumers to enjoy the full benefits of NGNs, for without this access, the opportunities for competing NGNs will be limited.

3.55 One particularly important aspect of equivalence is the move towards 'equivalence of inputs' (Eol) for SMP products and services. This requires BT to make available the same SMP products and services to others as it makes available to itself, at the same price, and using the same systems and processes. The principle set out in Ofcom's strategic review is that Eol should be enforced when the cost is proportionate, and in particular that it should apply for all new wholesale SMP products, processes and systems.

3.56 Therefore, where BT provides SMP products on its 21CN, it should do so on an Eol basis. In addition, to ensure that Eol can be achieved for these products, 21CN and its associated systems will need to be built in order to support Eol from the outset.

3.57 However, one practical problem that arises is that at the point when BT designs its network it will not be possible to anticipate all the markets within which BT might have SMP at some point in the future. At the same time it would clearly be disproportionate to require BT to design its network so as to support Eol for all possible future products. The obligation on BT to design its network so as to support Eol should therefore be restricted to those products where BT either has SMP now, or where it might reasonably expect to have SMP in the future. We suggest that BT might reasonably expect to have SMP in markets where:

- the market is the immediate successor to a market or markets in which BT has previously been determined as having SMP; and

- the SMP is of an enduring nature.
- 3.58 Under ‘Scope of next generation SMP Products’ above, we discussed specific examples of where a reasonable expectation is likely to exist.
- 3.59 We also recognise there may be products where it is not reasonably practical to apply EoI (even on a new network) and to apply it in these cases would be disproportionate. This is because there are a variety of ways in which it is possible to ‘cut’ any network in order to unbundle specific network elements to which EoI is applied. Some of these cuts are more practical than others, and so are more likely to deliver true equivalence. Annex F discusses in more detail how the principle of equivalence of input might apply in practice to NGN access and interconnection and NGN service management capabilities. It includes discussion of MSAN interconnection, interconnection for end-to-end quality of service, and the ‘depth’ access to network intelligence (‘network hooks’).
- 3.60 The issue of equivalence of input for next generation SMP products is addressed by paragraphs 11.6 to 11.9 of the undertakings, because in those undertakings BT proposes to comply with the policy on EoI described above.

Question 5: *What are your views of the practical implications of applying Equivalence of Input to NGNs (eg in relation to MSAN interconnection, end-to-end quality of service, and depth of network hooks)?*

No retail services to be launched without associated wholesale inputs

- 3.61 There are two situations where the non-availability of next generation SMP products could have a competitive impact:
- If BT launched new retail services or functionality, without the corresponding upstream SMP products being available to other providers, so that alternative providers could not launch a competing service (or not until after BT), then this could clearly have an impact of the development of competition in the downstream market.
 - If BT changed the pricing of existing retail services, based on its use of lower cost wholesale inputs which are not available to other operators, then this could prevent other providers competing in the downstream market. For example, BT might want to offer discounted retail narrowband calls because of the lower costs of carrying calls end-to-end across its NGN. However, if other providers were dependent on higher cost existing TDM interconnect products then they may not be able to compete at the retail level.
- 3.62 Note that in this context ‘wholesale’ service means any upstream input where BT has SMP, and ‘retail’ service means any service downstream of that wholesale input (ie not only those down services sold directly to end users).
- 3.63 To address these issues, Ofcom’s proposed policy is that where BT launches a new retail product which is based on the provision of access in an SMP market, it will need to ensure that the SMP access product is made available to other communications providers. The product will also need to be available sufficiently in advance so that other providers are able to launch competing retail products at the same time as BT. To be effective, this policy needs to apply not only to markets in

which BT currently has SMP, but also to markets in which it might reasonably expect to have SMP in the future (as discussed above).

- 3.64 This requirement implies an incentive on BT to progress the development of next generation SMP products where it wishes to provide downstream services based on an SMP upstream input.
- 3.65 This issue is addressed by paragraphs 11.10 and 11.11 of the undertakings, because in those undertakings BT proposes to comply with the policy on not launching retail products without associated wholesale SMP inputs.

LLU-based competition & broadband dial-tone

- 3.66 At first sight, the Local Loop Unbundling (LLU) product might appear to be unaffected by the migration to NGNs, since LLU provides access to the underlying civil infrastructure of BT's network, not to the electronics. However, the downstream market within which LLU operators are competing will be affected by the migration to NGNs. This means that LLU itself will also have to evolve if it is to continue to support EoL in relation to those services that are downstream of it.
- 3.67 As a result of deploying its NGN, BT expects to be able to migrate customers between different products and services purely through software control, ie no physical re-configuration of the network would be required. A particularly important example is the deployment by BT of 'broadband dialtone'. Consumers will be able to plug a broadband device into their phone line, and immediately be able to subscribe to BT's broadband service just as they can turn on 'select services' today. However, whilst seamless migration from narrowband to broadband is clearly beneficial for consumers, it creates a major challenge for LLU-based operators who are dependent on a manual migration process. If the principle of EoL is to continue to apply to LLU, then any improved migration capability that BT makes available to its downstream businesses must also be made available to LLU operators.
- 3.68 A range of views were expressed on this issue in the response to the initial consultation and are summarised in Annex E. In summary, it is not yet clear what the most practical and effective mechanism would be to address this issue. For example, the 'active MDF' technology mentioned by BT is unproven, particularly on the very large scale that would be required and Ofcom is therefore sceptical that this is a real option.
- 3.69 Whilst the solution is unclear at the moment, we believe it is still important to establish the principle that BT should ensure that LLU operators do not suffer a material competitive disadvantage as a result of its software-controlled migration between products or services.
- 3.70 The issue of broadband dial-tone is addressed by paragraph 11.19 of the undertakings, because in those undertakings BT proposes to comply with the policy described above to avoid competitive disadvantage for LLU operators.

Wider NGN issues

- 3.71 In addition to competition issues related to access to BT's network, there are also a number of network capabilities that are relevant to a wider set of communication providers. These include requirements in the general conditions of entitlement and those related to SMP held by communication providers in geographic call termination. Although communications providers have already implemented these in

relation to existing networks, the move to NGNs creates an opportunity to address any limitations of existing implementations and to revisit the overall approach taken. In addition, there are a number of forward looking NGN issues which will need to be considered by all providers implementing NGNs. Some specific examples are considered below.

- 3.72 **Number Portability.** The issues associated with the current number portability 'onward routing' implementation in the case of communication provider failures have already been discussed extensively. Our recent statement on number portability (An assessment of alternative solutions for UK number portability www.ofcom.org.uk/consult/condocs/uk_numb_port/statement/) has concluded that although it is not appropriate to require a new implementation of number portability on current networks, the move to NGNs creates an opportunity to implement a system to address these issues (as part of the more general problem of resolving PSTN numbers to IP addresses). In addition, onward routing has also been identified as contributing to the potential problem of excessive end-to-end latency (see below). We intend to work with industry to ensure that these improvements to number portability are achieved in practice.
- 3.73 **End-to-end call quality.** The NICC end-to-end QoS task group has previously identified a risk that calls routed over multiple NGNs could face degraded call quality as a result of excessive end-to-end latency. The extent of this risk is related to a number of factors including the timing of operator NGN deployments, implementation of number portability, and the availability and use of IP voice interconnect. Therefore, to adequately address this issue there is likely to need to be co-ordination at a strategic level as well as technical co-operation.
- 3.74 **Emergency call prioritisation (Call preference).** Existing voice networks allow certain calls to be prioritised. This currently takes two forms: preference for 999/112 emergency calls and a Government Telephony Preference Scheme (GTPS) operated by BT, Cable & Wireless and Kingston Communications. The purpose of GTPS is to provide communications priority for key responders in the event of an emergency. However, the current implementation severely restricts access to the network by other users during an emergency. There is therefore a need to upgrade and extend this capability (known as Enhanced GTPS²).
- 3.75 **Emergency call location.** Caller location information is a critical matter for emergency organisations as, amongst other things, it helps emergency organisations to reach the caller as soon as possible. Today, fixed services generally rely on the address associated with the caller's telephone number. However, as we move to NGNs with nomadic and fixed-mobile services, this implementation is likely to need to evolve, as there may no longer be a fixed address associated with the caller (see "New voice services" consultation http://www.ofcom.org.uk/consult/condocs/new_voice/aneu_voice/).
- 3.76 **Text relay services.** The text relay service, which provides live translation of voice into text and vice versa, enables deaf, hard of hearing and speech-impaired users to communicate. In other documents we have noted that not all VoIP services will necessarily be able to support existing text phones and relay services (see "New voice services" consultation) and have considered a number of ways of updating the existing relay service (see Universal Service Obligation statement), for example to encompass video relay and web-based access.

² A statement of requirements document has been drawn up supported by NICC and a copy can be obtained on request from the Cabinet Office (e-mail dave.mowbray@cabinet-office.x.gsi.gov.uk)

- 3.77 **Call termination.** At present voice call termination is generally based on reciprocal arrangements where providers handover interconnect traffic as near as possible to the end user. However, this might not necessarily be the best approach as we move to next generation networks. For example, the exchange of all interconnect traffic at a central location (exchange point) might be a more efficient option on NGNs. Note that any new arrangements would still need to be consistent with existing call termination SMP obligations.
- 3.78 **Reciprocal arrangements for next generation services.** The deployment of NGNs will enable a range of new network capabilities and services based on those. For example, these are likely to include services relying on presence, directory and profile information. To enable these services to reach their full potential and offer any-to-any capabilities to consumers, providers may need to reach agreement about what information to exchange on a reciprocal basis and how.
- 3.79 Ofcom's view is that the move to NGNs is a timely opportunity to consider these issues (and others of a similar nature) and that it is important to consider them now, whilst there is still a chance to develop truly new solutions. Otherwise providers may find themselves locked into the existing way of doing things even after NGNs have been implemented.
- 3.80 Ofcom recognises it will have a role in providing a more detailed policy steer for many of these issues, particularly those relating to consumer protection needs. However, as these issues are relevant to a wide range of communications providers, we expect that industry should be able to co-operate to develop new technical solutions to them.
- 3.81 These issues relate to our existing powers (for example as implemented through the general conditions of entitlement) and therefore there is no need for them to be addressed by BT's proposed undertakings.

Question 6: *Do you agree with the issues Ofcom has identified that need to be addressed by all communication providers as they move to NGNs and what others are there?*

Consumer protection

- 3.82 The move to NGNs has huge potential to bring benefits to consumers. In theory NGNs allow existing end user services to continue unchanged as well as enabling a wide range of new services. However, given the scale and complexity of the transition to NGNs, adequate protection for consumers will be essential during and after the transition process.
- 3.83 Although individual communication providers should have an incentive to minimise the disruption to their own customers during this process, there might be consumer protection issues that need to be addressed on a wider basis. One reason for this is that consumers typically use a number of different communication services (for example fixed voice, mobile and internet access) from a range of different communications providers. Another reason is the interconnectedness of the UK's telecoms market, ie any particular end-to-end service or call may rely on multiple communication providers.
- 3.84 One example of a potential concern that will need to be address is an effective means of communicating with consumers about the migration process. Another example is that end-to-end call quality might degrade as communication providers

migrate their own internal networks to NGN technology, but interconnection continues to be provided via gateways that use existing technology and interfaces.

3.85 However, there may be other consumer-facing issues, and it is important that these are identified early in the process. Significant co-operation between providers is likely to be needed to identify and deal with these issues.

3.86 Ofcom's proposed policy principles in relation to NGN consumer protection are that:

- The services offered to consumers on NGNs should at least be equivalent with their existing services. Ofcom believes that this is anyway a fundamental premise of operators move to NGNs and that NGNs will also allow providers to offer many improved and innovative services.
- Consumers should suffer no detriment during the transition to NGNs, for example due to loss of access to emergency services, or degraded call quality.
- Any changes to end user services are fully explained to consumers.

3.87 In practice, Ofcom appreciates that on a change of this scale, despite the utmost efforts by all providers, it might be challenging to guarantee zero impact on all services for all users. Given this, it will be particularly important to establish appropriate communication plans and contingency arrangements. In the next chapter we set out our proposal that NGN consumer protection issues be addressed by a newly formed multi-lateral industry working group. BT's participation in such a group is addressed by paragraphs 11.12 to 11.14 of the undertakings.

Question 7: *Do you agree with the policy principles Ofcom has identified for consumer protection during the move to NGNs?*

Section 4

Effective industry led processes

Introduction

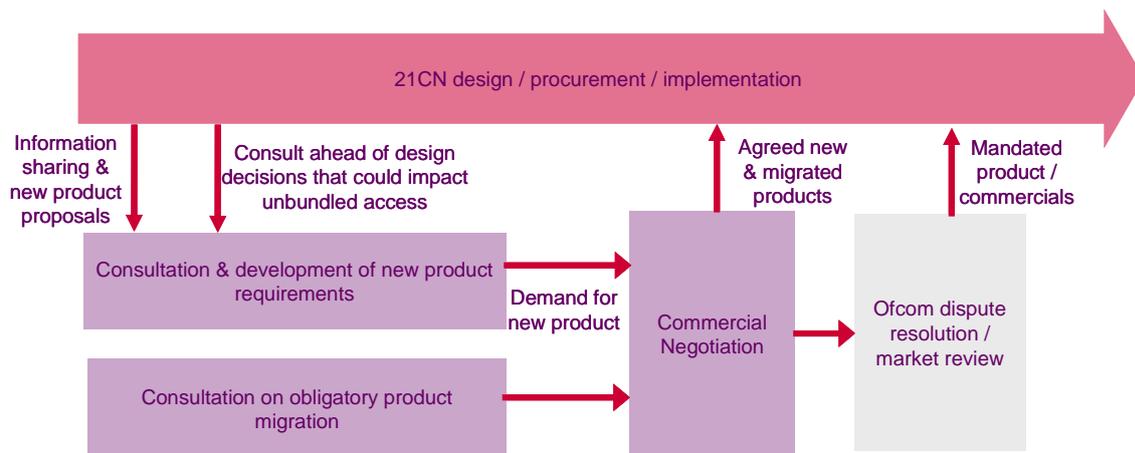
- 4.1 In chapter 2 we explained our view that it would be inappropriate for Ofcom to become involved in increasingly detailed management of the move to NGNs. Instead we are seeking to ensure that suitable industry led processes are established and empowered to successfully implement this change in line with the policy principles we have proposed in chapter 3.
- 4.2 The establishment of the Consult 21 programme is a demonstration that BT and the rest of industry are able to rise to the challenge of establishing and running an effective industry led process. This is a promising start but not one that, on its own, addresses the full scope of the issues involved in the move to NGNs. Ofcom's view is that there are six areas where there needs to be effective industry structures and processes to ensure that the transition to NGNs is successful:
- Development of the obligatory products to be offered on 21CN, both migrated existing products and new SMP access and interconnect products
 - Development of the commercial terms for the migration and new SMP products
 - Technical standardisation to support next generation access and interconnect products
 - Planning and management of the migration to NGNs
 - Addressing consumer protection issues
 - Addressing other cross industry NGN issues
- 4.3 In this chapter we first set out our views on what is needed from industry processes to support the move to NGNs. We then outline Ofcom's proposals on how these needs can be met through empowering existing and new industry bodies.

The need for effective NGN processes

- 4.4 In the sections below we explain the different processes we believe are needed to support the move to NGNs and the policies proposed in chapter 3.

Development of 21CN obligatory products

- 4.5 The proposed overall process for development of 21CN obligatory access and interconnect products is set out in Figure 8 and the key constituents discussed below.

Figure 8. Outline process for new and migrated obligatory products on 21CN

Consultation on changes to BT's existing obligatory product set

4.6 As discussed in chapter 3, BT in general will continue to be obliged to provide existing obligatory (SMP and universal service obligation) products. Whilst complying with these obligations some changes to existing products, for example technical changes to interfaces, may be reasonable and inevitable as part of the network migration. However, it is essential that BT consults with its customers on the potential changes, and where necessary, agrees the commercial terms for migration.

Development of next generation SMP products

4.7 As discussed in earlier chapters, the development of appropriate next generation products is of primary importance if the move to NGNs is to support competition. The processes to develop these products should be driven by:

- BT consulting with industry in advance of any design decisions that could preclude other providers from obtaining unbundled SMP access.
- Alternative communication providers developing their requirements for new SMP products, based on an understanding of BT's proposed network design, and in dialogue with BT about the capabilities of the network.
- BT making pro-active proposals of new products it could offer on the new network and consulting with industry on those proposals. This might be on a voluntary basis or as a result of needing to ensure that it launches wholesale SMP products to support new downstream offerings.

4.8 In addition, we believe it is important that the development of next generation SMP products takes place in the context of an industry wide dialogue on the manner in which NGNs are expected to interconnect with each other and consensus on a reference interconnect architecture for NGNs. This is because traditional models of interconnect may no longer be appropriate or the best approach for the interconnection of NGNs.

4.9 Where industry demand for a new access or interconnect product is identified then there will need to be negotiations over the terms of its provision.

Question 8: Do you agree with the overall processes for developing 21CN obligatory products?

Commercial negotiations

- 4.10 The process of agreeing migration arrangements and new products will be heavily dependent on the commercial terms. In a few cases where there is existing prescriptive ex ante regulation (eg a price control), this may limit or eliminate the need for negotiation over commercial terms. However, in most cases, there will need to be negotiations between BT and other communication providers. So far there appears to have been relatively little detailed commercial negotiation on the terms of new products and Ofcom's view is that appropriate mechanisms to enable such negotiation need to be established as a matter of urgency.
- 4.11 Where commercial negotiations fail to make substantive progress, a dispute may be raised and Ofcom will be required to resolve this using its formal powers.

Development of technical standards

- 4.12 The ability of providers to interconnect with BT's network will be dependent on the availability of the appropriate NGN technical interface standards. Therefore, Ofcom believes it is essential that the necessary standards are agreed in a timely manner, if there is not to be an adverse impact on the development of NGN based competition. Note that in many cases this should be a matter of determining which international standard to adopt, not a matter of developing a new UK-specific standard.

Addressing other cross industry NGN issues

- 4.13 In chapter 3, we highlighted that there are likely to be a number of issues and opportunities that are relevant to all providers as they move towards NGNs, for example future models for call termination, ensuring end-to-end call quality, future number portability, and reciprocal arrangements for new NGN capabilities such as presence.
- 4.14 At the moment, the detail of some, but not all of these subjects is dealt with in individual bodies (such as the NICC). However, given the scale of the change, the interdependency between issues and the likelihood that there are issues not owned by any existing body, Ofcom believes there would be value in a process to ensure co-ordination and steering of cross industry NGN issues.

Question 9: *Do you believe that there is a need to co-ordinate and steer cross industry NGN issues which is not met by existing bodies and process?*

Management of the migration process

- 4.15 The migration of existing networks to NGNs will be a huge and extremely complex process, of comparable complexity to the digital switch-over that is underway in the broadcast industry. That process is expected to take 7 years, and is being managed by a not-for-profit organisation ('SwitchCo') whose sole function is the development, coordination and implementation of the switchover programme.
- 4.16 There are a number of aspects of NGN migration that will need to be addressed not just for BT's 21CN migration but for each alternative provider that is deploying an NGN. These are:
- Project management of the network deployment
 - Planning the transition, in particular to the extent that it affects other communication providers and end users

- Operational co-ordination during the transition, between the operator deploying the NGN and those operators affected
- 4.17 Whilst the first is clearly the responsibility of the individual operator deploying the NGN, we believe there is a need for the latter two to be linked into an industry wide planning and co-ordination process. This is because simply managing the migration of individual networks may not lead to the optimal migration for industry as a whole to NGNs. For example, by co-ordinating the move from TDM to IP based interconnect, providers may be able to avoid inefficient intermediate forms of interconnect based on TDM gateways.
- 4.18 BT's 21CN migration is undoubtedly the largest migration planned in the UK and as such will require extremely thorough planning and project management. BT clearly has a strong self interest to manage this transition on its own behalf, so as to minimise cost and disruption to its own business, and avoid negative impact on its retail customers. However, the migration process is a significant area of concern for alternative providers because of its size and complexity and the risk of it impacting of their business and customers. Therefore, other providers will need to be very closely involved in the planning and management of the migration.

Question 10: *Do you agree that there is a need to co-ordinate the planning and implementation of NGNs on an industry wide basis?*

Consumer protection

- 4.19 The wider consumer protection issues associated with NGN migration were discussed in chapter 3. One particular aspect that has already been identified by industry is the need to ensure co-ordinated communication to end users during the NGN transition. This will involve developing a communications plan and the establishing the appropriate processes and resources to ensure the delivery of that communication plan.
- 4.20 However, the consumer protection issues may be wider than simply having an adequate communication plan. These may not be fully understood until more detailed work is done to understand if and how end user services might be affected. Therefore, Ofcom believes there will need to be an industry wide process to deal with NGN consumer protection issues more generally.

Question 11: *Is there a need for a process to address the wider consumer protection issues arising from the move to NGNs?*

Question 12: *Has Ofcom identified all the correct industry processes that will be needed to deal with move to NGNs?*

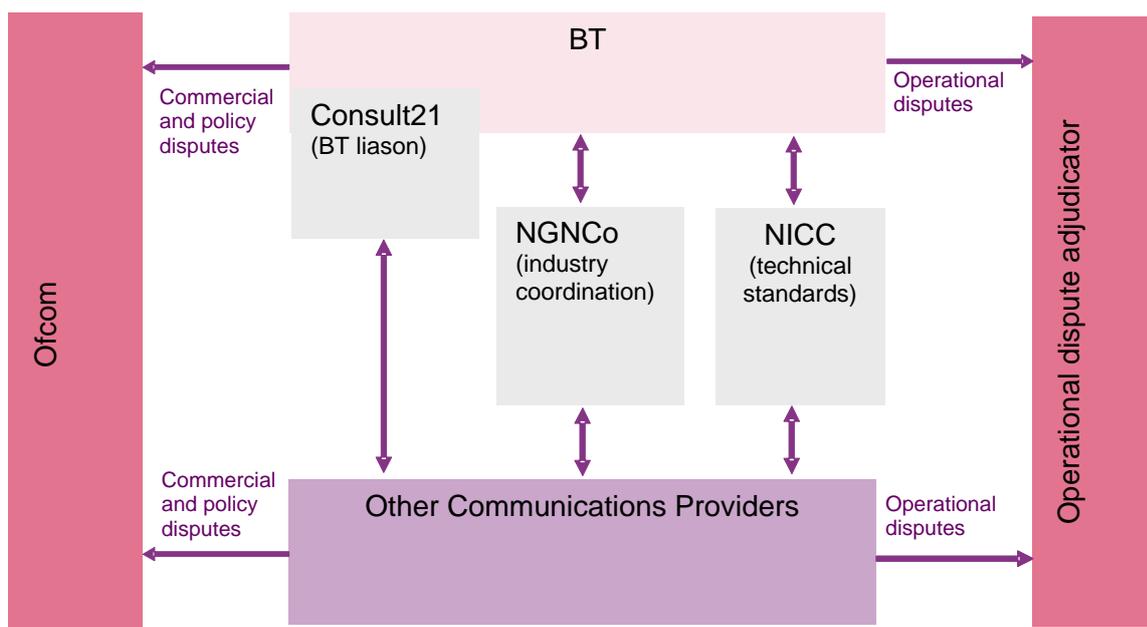
Ofcom's proposals for NGN processes

- 4.21 Ofcom's proposals to address the needs set out above are:
- For SMP product migration and development of new SMP product requirements to continue to be the responsibility of the Consult 21 process.
 - For BT and other providers to engage in commercial negotiation on a multi-lateral basis through Consult 21 and on a bi-lateral basis.

- For UK NGN technical standardisation to continue to be the responsibility of the Network Interoperability Consultative Committee (NICC), but with NICC re-constituted as an independent industry owned body.
- For a new independent industry owned group, provisionally referred to as ‘NGNCo’, to take ownership of the transition from existing to NGN networks, including operational planning and oversight, consumer protection, and development of new models for interconnection.
- For disputes that arise from the planning or implementation of any communication providers (including BT’s) NGN transition to be referred to an operational dispute adjudicator for time-limited binding arbitration.
- For all policy and commercial disputes to be dealt with by Ofcom (business as usual)

4.22 Figure 9 sets out the relationship between these elements and each one is discussed in more detail below. In addition, whilst each industry body clearly has a relationship with BT and other providers, they will also need to establish links between themselves, so for example the direction for NICC technical work can be steered by commercial drivers.

Figure 9. Overview of NGN process proposals



Consult 21

4.23 Consult 21 is the programme that BT has established to consult with its wholesale customers on the implications of 21CN. Although ultimately part of BT, it has attempted to ensure that industry takes on joint responsibility for its work and direction through the establishment of an industry steering board and co-chairs for working groups.

4.24 This programme has focussed on developing the details of the migration changes to BT’s existing SMP products and appears to have made reasonable progress on this. It has also begun addressing the development of next generation SMP products, although to date the progress on this seems to have been more limited than that on

product migration. However, on balance the nature of this programme seems suited to addressing these specific needs.

Question 13: *Do you agree that it appropriate for Consult 21 to continue to take responsibility for developing detail of SMP product migration and development of new products?*

Commercial negotiation

- 4.25 For commercial issues, whilst industry wide consultation based on the Consult 21 model should be able to resolve some issues, Ofcom's view is that this is unlikely to be sufficient in general. The wide range of business models adopted by different providers, as well as issues of commercial confidentiality, means that broad industry consultation is no substitute for detailed bi-lateral commercial discussions.
- 4.26 Our preference is for BT to take forward negotiations with other providers on a commercial basis as soon as possible, with the policies set out in this document providing a regulatory backdrop to these negotiations. Ofcom should not be directly involved in such negotiations. However, we recognise that should these negotiations fail to make substantive progress, Ofcom will be required to resolve disputes using its formal powers. In order to ensure that Ofcom can do so in a timely manner, Ofcom will continue to monitor the issues under discussion.

Question 14: *Do you agree that Consult 21 combined with bi-lateral commercial negotiation and backed-up by Ofcom dispute resolution is the best approach to the agreeing the commercial aspects of new and migrated products?*

Network Interoperability Consultative Committee

- 4.27 The body currently responsible for technical standardisation of interconnect interfaces within the UK is the Network Interoperability Consultative Committee (NICC), which in turn is dependent on standards work at the European (ETSI) and global (ITU, IETF) levels. NICC currently has an ambitious programme of work to contribute to the European standardisation process and to specify UK specific options within the framework set out by ETSI.
- 4.28 At a meeting in March with the Chief Technical Officers of NICC stakeholders, Ofcom asked about the ability of NICC, in its current form, to deliver the necessary technical input to support the transition to NGNs. One of the concerns raised by stakeholders was the absence of a commercial framework to drive the technical work, a concern that Ofcom agrees with and believes needs to be addressed. The developed of an adequate process for commercial negotiations is clearly an essential pre-requisite for this (see above).
- 4.29 However, even within a proper commercial framework, it is necessary for there to be adequate resources contributed from all communications providers (not just BT), to drive forward the standardisation work. Given the importance of next generation interconnect for future competition; communications providers should have an incentive to do this, both at the national level in NICC and at the international level (ETSI, ITU).
- 4.30 Ofcom remains concerned about the governance arrangements for this work, in that NICC is constituted to provide advice to Ofcom, rather than being an independent body owned by industry. This lack of independence may limit the ability of NICC to

call on additional resource, since it creates a perception that NICC is a regulatory committee rather than an organisation that is truly concerned with technical standards. It may also create a culture of dependence, with industry assuming (inappropriately) that Ofcom will be able to resolve any issues that cannot be resolved by NICC. Therefore Ofcom remains of the view that NICC should be re-constituted as an independent industry owned body.

- 4.31 It should be emphasised that Ofcom's desire to see NICC as an independent industry-owned body should not be interpreted as a desire on Ofcom's part to withdraw from engagement with NICC. Ofcom expects to continue to participate in NICC, but wishes to do so in partnership with industry, rather than in a role where Ofcom takes formal responsibility for issues of technical standardisation.
- 4.32 Ofcom proposes to explore possible options in more detail, in discussion with NICC and with industry stakeholders, during the consultation period for this document.

Question 15: *Do agree that NICC should continue to be responsible for standardisation of NGN interconnect, but needs to be re-constituted as an independent industry owned body?*

NGNCo

- 4.33 Ofcom proposes that a multilateral industry group, referred to here as NGNCo, is established to agree key aspects of the transition from existing to NGN networks. We believe that to be effective this group should have authority to do the following:
- Produce a reference interconnection architecture, setting out the manner in which NGNs are expected to interconnect with each other. It is envisaged this model would be at a higher level than the individual product requirements developed through the Consult 21 process, and would provide an industry wide framework for the interconnection of all NGNs.
 - Produce a transition plan setting out the detailed process for managing the transition from existing to NGN networks (including BT and other providers' NGNs), including the process for migrating PSTN interconnection to NGN interconnection.
 - Produce a communications plan setting out how this transition will be communicated to consumers.
 - Oversee the actual transition, taking any such action as may be necessary in order to ensure that the above plans are achieved
- 4.34 Whilst responsible for the industry wide transition plan to NGNs, the group would not be responsible for managing the deployment by BT or any other communication provider of their NGNs. In particular, the actions of the group should not have the effect of materially delaying such deployment, except with the agreement of the affected operators. If operators fail to agree, then the matter may be referred to an operational dispute adjudicator (described below) to resolve, or in the case of disputes which have significant commercial or policy implications, to Ofcom.
- 4.35 This group could also act as a co-ordinating and steering body to:
- identify and address the consumer protection issues arising from the move to NGNs (see chapter 3 for discussion); and
 - identify and address the other cross industry NGN issues that are relevant to a wider set of providers moving to NGNs (see chapter 3 for discussion).

- 4.36 The participation in such a body is clearly for individual industry participants to consider themselves. However, such a body would need BT, as the incumbent and operator with the most significant NGN plans, to be a member in order to be viable. The undertakings offered by BT include a commitment to participate in such a group if one were established (paragraphs 11.12 to 11.14).
- 4.37 Ofcom would also expect to participate in such a group, in partnership with industry. Ofcom would not however wish this body to become another regulatory body, and would therefore expect it to be industry-led, with an independent chairman.
- 4.38 Ofcom proposes to enter into more detailed discussion with industry as to the establishment, terms of reference, and governance arrangements for NGNCo during the consultation period for this document.

Question 16: *What are your views on the establishment of a new multi-lateral industry group to address NGN issues, its terms of reference and governance arrangements?*

Operational dispute adjudicator

- 4.39 Planning and overseeing the operational transition from existing networks to NGNs will be complex and require a high level of co-ordination between many providers. Inevitably, there may be circumstances in both the planning and implementation of this change where the parties involved cannot agree. Ofcom's view is that a fast track adjudication scheme for alternative dispute resolution, would be preferable to Ofcom's formal dispute resolution powers for resolving operational disputes. This is because the migration to NGNs is likely to be time critical and because formal dispute resolution under Ofcom's legal powers is likely to be longer and more resource demanding than adjudication.
- 4.40 To ensure that such an operational dispute adjudicator is effective, Ofcom believes that
- Communications providers should agree to refer operational disputes arising from any communication provider's (including BT) NGN transition plan, or its implementation, to this adjudicator rather than Ofcom.
 - All parties should agree to abide by adjudicator's decision
 - Only the bi-lateral directly affected parties may file a dispute
 - Adjudication should be time limited such that all disputes must be resolved within 4 weeks
- 4.41 For avoidance of doubt, Ofcom believes that the operational dispute adjudicator should not be empowered to resolve commercial or policy disputes and that these should continue to be dealt with by Ofcom. By commercial or policy disputes we mean:
- any disputes which materially affect the initiating operator's business case; or
 - which materially affect the policy framework established by Ofcom; or
 - whose outcome is likely to result in significant operational disruption or financial expenditure.

- 4.42 Such a body would clearly need BT to participate in order to be of value and BT has agreed to do so as part of the undertakings it has offered (see paragraphs 11.15 to 11.17).
- 4.43 Ofcom proposes to enter into more detailed discussion with industry as to the establishment, terms of reference, and governance arrangements for the operational dispute adjudicator during the consultation period for this document

Question 17: *What are your views on the establishment of a NGN operational dispute adjudicator, its terms of reference and governance arrangements?*

Question 18: *Would your organisation be prepared to sign-up to such an adjudication scheme and abide by the adjudicator's decisions?*

Ofcom's role

- 4.44 Ofcom's role as part of the move to NGNs was described in chapter 2. As well as establishing the governing policies policy principles discussed in chapter 3, we will have an ongoing role to update the ex ante framework to take account of NGN developments (through market reviews) and to deal with any commercial or policy disputes.
- 4.45 Ofcom would also continue to engage with industry in a less formal role, through participation in industry-owned bodies such as NICC and NGNCo.

Section 5

Responding to this consultation

How to respond

- 5.1 Ofcom invites written views and comments on the issues raised in this document, to be made by **5pm on 12 August 2005**.
- 5.2 The implementation and enforcement of many of the policies in this document would be through BT's Undertakings detailed in our separate consultation ("Consultation on undertakings offered by British Telecommunications plc in lieu of a reference under Part 4 of the Enterprise Act 2002" published on 30 June 2005). All stakeholders wishing to comment on the issues related to those undertakings should respond to that document.
- 5.3 Ofcom strongly prefers to receive responses as e-mail attachments, in Microsoft Word format, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex B), among other things to indicate whether or not there are confidentiality issues. The cover sheet can be downloaded from the 'Consultations' section of our website.
- 5.4 Please can you send your response to first justin.moore@ofcom.org.uk
- 5.5 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- Justin Moore
 Competition and Markets
 4th floor
 Ofcom
 Riverside House
 2A Southwark Bridge Road
 London SE1 9HA
- Fax: 020 7981 3333
- 5.6 Note that we do not need a hard copy in addition to an electronic version. Also note that Ofcom will not routinely acknowledge receipt of responses.
- 5.7 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex C. It would also help if you can explain why you hold your views, and how Ofcom's proposals would impact on you.

Further information

- 5.8 If you have any want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Justin Moore on 020 7783 4167.

Confidentiality

- 5.9 Ofcom thinks it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk. We will do this on receipt of responses, unless respondents request otherwise on their response cover sheet.
- 5.10 All comments will be treated as non-confidential unless respondents specify that part or all of the response is confidential and should not be disclosed. Please place any confidential parts of a response in a separate annex, so that non-confidential parts may be published along with the respondent's identity.
- 5.11 Ofcom reserves its power to disclose any information it receives where this is required to carry out its functions. Ofcom will exercise due regard to the confidentiality of information supplied.
- 5.12 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use, to meet its legal requirements. Ofcom's approach on intellectual property rights is explained further on its website, at www.ofcom.org.uk/about_ofcom/gov_accountability/disclaimer.

Next steps

- 5.13 Following the end of the consultation period, Ofcom intends to publish a statement finalising its policies.

Ofcom's consultation processes

- 5.14 Ofcom is keen to make responding to consultations easy, and has published some consultation principles (see Annex A) which it seeks to follow, including on the length of consultations.
- 5.15 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk. We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, whose views are less likely to be obtained in a formal consultation.
- 5.16 If you would like to discuss these issues, or Ofcom's consultation processes more generally, please contact Tony Stoller, Director of External Relations, who is Ofcom's consultation champion:

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