Arrangements for porting phone numbers when customers switch supplier

A review of General Condition 18

(✄ Redacted for publication)

Contents

Section 1

Summary

Ofcom's objectives for number portability

1.1 Number portability is the facility that makes it possible for consumers to retain their telephone number(s) when they change provider. This has been available in the UK for several years, but UK arrangements no longer match international best practice. Ofcom believes it is time to make important changes to promote competition and to protect consumers from deficiencies in the way calls are routed.

1.2 At present, consumers who port their number to a new network rely, indefinitely, on their original network to forward incoming calls to them. If the original network fails (commercially or technically), consumers will no longer be able to receive calls on their ported numbers. Ofcom considers that this situation is unacceptable, and believe calls to ported numbers must be routed directly to the consumer's new provider, as happens in most of Europe. This can be done if UK industry co-operates to develop a shared database which holds details of all ported numbers. Ofcom has concluded that migration to Next Generation Networks ("NGN") technology offers an opportunity to do this cost effectively.

1.3 Ofcom is also of the view that the present five day process for porting mobile numbers is too slow and complicated. It is inconvenient for consumers and may also deter providers of mobile services from recommending to new customers that they should bring their old number with them. The existing process may therefore discourage consumers from exercising choice and therefore from promoting competition.

1.4 Ofcom's objective is a consumer friendly process that allows consumers to port numbers quickly and simply. Ofcom is therefore proposing that industry moves to a near-instant recipient led process which allow consumers to go into a mobile phone shop and walk out with a new phone connected to a new provider with the number ported. Ofcom recognises that this new process will require changes to current systems and is consulting on whether this can be achieved in a cost effective way. In the meantime, following Ofcom's consultation in November 2006, we are requiring that the current process is completed in two working days.

1.5 We also believe that it is essential that processes for porting mobile numbers adequately protect consumers from mis-selling, and we believe that a new near-instant process for porting mobile numbers can be designed to provide necessary protection.

Background

1.6 Ofcom's consultation entitled *Review of General condition 18 – Number Portability*, published by Ofcom in November 2006 (the November 2006 Consultation), consulted on proposals to change the existing arrangements including the introduction of a central database ("CDB") for the routing of calls to ported numbers and a reduction in mobile porting lead times. Ofcom has concluded, in light of responses to the November 2006 Consultation, that a central database is required in order to allow robust direct routing for fixed and mobile calls to ported numbers, thereby resolving the problems caused by failed networks. In relation to mobile porting lead times,

Ofcom has concluded that they should be reduced to a maximum period of two working days.

1.7 Ofcom received a number of responses to the November 2006 Consultation. Some of those responses have indicated further issues that need to be considered in relation to both the establishment of a central database and the potential for a further reduction of mobile porting lead times. In light of those issues, Ofcom is publishing a further consultation on proposals for the implementation of a common database and the introduction of near-instant recipient led porting of mobile numbers, which are set out at paragraph 1.25 and section 7 below.

1.8 Ofcom's preferred option involves the establishment of a common database capable of supporting Direct Routing of calls to ported numbers by 31 December 2008. Mobile operators would be required to implement Direct Routing and a recipient led process with a maximum port lead time of 2 hours with effect from 1 September 2009 and fixed operators would be required to implement Direct Routing by 31 December 2012. Ofcom considers that this option would deliver immediate benefits for consumers as well as providing industry with certainty in the implementation process. Ofcom's view is that the introduction of Direct Routing and near-instant recipient led mobile porting will ensure the greatest protection of consumers and that switching processes are fast and effective.

The November 2006 Consultation

1.9 In the November 2006 Consultation Ofcom considered the need for change to the UK system of number portability, including ways to improve the present arrangements for porting numbers by (i) making the technical arrangements for delivering all calls to ported numbers more robust and (ii) accelerating the porting process for mobile customers.

Robustness of arrangements for delivering calls to ported numbers

1.10 Under the current arrangements, continued delivery of calls to ported numbers is reliant on the provider, known as the Donor Provider, to which the consumer originally subscribed. If that Donor Provider ceases to be able to onward route calls (whether due to insolvency or technical failure) former subscribers who had ported their numbers to other suppliers will no longer be able to receive calls (and existing subscribers will be unable to port their number to a new provider). This happened when Atlantic Telecom failed in 2001.

1.11 The November 2006 Consultation reviewed possible improvements to the present system in the context of the development of NGNs, in particular the use of a common database which holds information about ported numbers and the network to which they are presently connected. The database allows direct routing of calls to ported numbers. The system is widely known as All Calls Query/ Common Database ("ACQ/CDB").

1.12 Ofcom consulted on five options which might apply, variously, to mobile and/or fixed numbers.

Time taken to port mobile numbers

1.13 The November 2006 Consultation also set out Ofcom's view that the shorter the length of time taken to effect porting the better it is for competition and consumers. Ofcom noted that excessively long porting lead times may discourage consumers

from switching or delay them from commencing service on better terms with a new provider. Currently it takes 5 working days to port a mobile number between providers. The November 2006 Consultation proposed that mobile porting lead times should be reduced to a period of less than one working day (unless there was evidence that the costs outweighed the benefits). Two other options were set out in the November 2006 Consultation.

Responses to the November 2006 Consultation and Ofcom's further analysis of the issues of number portability

Robustness of arrangements for delivering calls to ported numbers

1.14   Ofcom received 23 responses to the November 2006 Consultation. Most respondents agreed in principle that a common database solution has merit, and most of those agreed with Ofcom's view that a solution common to both fixed and mobile providers would be the best approach. Three respondents disagreed that consideration should be given to a database solution now, and questioned whether there was need for Ofcom to intervene.

1.15   Views on the form and timing that Ofcom's intervention should take were, however, more varied. Many respondents indicated that intervention at this stage could be premature and some were sceptical that the transition milestones proposed by Ofcom could be met. Two respondents favoured intervention by Ofcom now to set deadlines for rapid implementation of a database solution.

Time taken to port mobile numbers

1.16   Around half of those who responded to the November 2006 Consultation also made substantive comments on this proposal. Most agreed that a reduction to less than one day could be achieved, but commented that such a change, if implemented in isolation, would require substantial process re-engineering, and be time-consuming and expensive to implement. Most noted that, in practice, a porting lead time of less than one working day would be dependent on access to a common database.

1.17   By contrast, many respondents accepted that a reduction in mobile porting lead times to two or three working days could be achieved swiftly and with minimal change to existing processes.

Ofcom's further analysis

1.18   In addition to the views presented by respondents, Ofcom has also undertaken detailed further analysis of number portability both with respect to the UK system and its international comparators.

Ofcom's conclusions on the November 2006 Consultation

1.19   For the reasons set out in section 7 below, Ofcom has concluded that providers of fixed and/or mobile services should be required to implement and populate a common central database which will hold details of each ported number and the provider which currently provides services on that number. This database will enable calls to be routed directly to ported numbers without reliance on the network to which the number was originally allocated.

1.20   Ofcom has also concluded that mobile porting lead times should be reduced to two working days by 31 March 2008. The Notification making the consequent changes to

General Condition 18 to require a shortening of porting lead times is attached at Annex 7.

The purpose of this document

1.21   In response to the November 2006 Consultation, concerns were raised from operators that, in setting up a common database and requiring its use for direct routing of calls to ported numbers, Ofcom must be careful not to be prescriptive in relation to the setting of deadlines. Respondents considered that overly prescriptive or staggered deadlines could lead to undesired consequences both in the establishment of the database itself and in investment decisions related to the establishment of Next Generation Networks ("NGNs").

1.22   A respondent has also indicated that, in the course of the adoption of a common database, mobile porting processes will be required to undergo substantial change and, as a result, it would be possible to introduce near-instant mobile porting at relatively low incremental cost. That respondent indicated that it considered that, in order to achieve this solution, the process would also need to ensure that it was recipient led meaning that consumers would only need to contact a new provider when switching and would no longer need to obtain a porting authorisation code ("PAC") from their former provider.

1.23   In light of the concerns expressed by respondents to the November 2006 Consultation, Ofcom has decided to issue a further consultation on these issues.

Issues for further consultation

1.24   Ofcom recognises that many providers (fixed and mobile) have recommended that Ofcom should not impose deadlines for achieving Direct Routing until progress in implementing a common database has been assessed, and the nature of the database and the means of interacting with it are more clearly understood. Ofcom recognises that a two stage process of intervention would delay delivery of benefits for consumers but would welcome comments from stakeholders on its approach.

1.25   Ofcom has also considered the possibility that in the course of implementation of ACQ/CDB, near-instant porting of mobile numbers could be implemented much more efficiently than otherwise, with Providers interacting with the database to process the port without requiring the subscriber also to contact his former provider (except to the extent necessary to terminate any contract). Ofcom has estimated the additional cost of enabling same day porting of mobile numbers through the use of a common database to be in the region of £5million for the industry as a whole if the database is designed from the outset to offer such functionality and, to a large extent, porting processes can be automated.

1.26   Ofcom's provisional view is that the incremental costs of moving to near-instant porting are outweighed by the following benefits.

- Some consumers who may not otherwise switch, will now switch,

- It is likely that more consumers will port their number if a swift, simple process is available for the porting of numbers, and this in itself is a consumer benefit.

- Post-pay consumers who port will not need to pay the costs of two contracts while their number is ported.

- Industry wide savings due to process automation are likely to be of the order of £3 million per year.

1.27   Ofcom further considers that a recipient led process will remove the disincentive to promote porting (which arises from the threat which a donor led process may be considered to pose to recipient networks whose prospective new customers may be persuaded not to switch). Ofcom has therefore reached a preliminary view that industry should be required to implement the common database in a way which accommodates near-instant, recipient led porting of mobile numbers.

1.28   Ofcom is therefore providing stakeholders with a further opportunity to comment on proposed deadlines together with new interim milestones for deploying full ACQ/CDB to deliver Direct Routing and to further reduce mobile porting lead times. Ofcom has set out three options as follows;

- **Option A**. Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers. This database to be implemented and populated by 31 December 2008. Require mobile providers to implement ACQ/CDB to achieve Direct Routing of mobile to mobile calls by 1 September 2009. Require mobile providers also to offer near-instant recipient led porting by 1 September 2009. Require ACQ/CDB to be used to Direct-Route all other calls to ported numbers (including to and from fixed providers) by 31 December 2012.

- **Option B**. Require fixed and mobile operators to implement and populate a common database as per Option A. However deadlines for implementing Direct Routing of all calls to ported numbers and near-instant, recipient led porting of mobile numbers to be set following a further consultation in 2008 taking account of further developments resulting from the detailed definition of the common database.

- **Option C**. Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers without requiring mobile providers to offer near-instant recipient-led porting. Implementation deadlines for ACQ/CDB to achieve Direct Routing to be set either as proposed in Option A or in Option B.

1.29   Ofcom's preferred option is Option A, on the basis of its provisional view that this would deliver the most immediate benefits for consumers as well as delivering certainty about what Ofcom expects the industry to do in the next year. Ofcom recognises, however, that there may be certain risks associated with this approach. On balance, Ofcom currently considers that the setting of deadlines is appropriate in order to ensure that industry moves forward in making the necessary investment and changes to internal systems and processes to achieve maximum consumer benefits from the porting system at the earliest opportunity. Ofcom will welcome stakeholders' further views and comments on the balance of risks and benefits presented by the options set out in this consultation document.

1.30   In elaborating these proposals, Ofcom has taken full account of consumer protection issues. Ofcom recognises concerns that a move to recipient led porting could lead to concerns over mis-selling and slamming which have not, to date, been widely apparent in the mobile sector. Ofcom is aware that one reason for the relatively low level of mis-selling and slamming (compared with fixed services) is that switching mobile providers requires a positive act on the part of the consumer (who will therefore be aware that something about their service is changing) by either having

to switch SIM cards or starting to use a new mobile handset. In the event that recipient led porting were adopted therefore, Ofcom would expect industry to take all reasonable steps to ensure that accelerated processes for porting mobile numbers continue to protect consumers from the risk of mis-selling and slamming.

1.31   Draft Notifications which would implement one or other of the options set out at paragraph 1.24 above are attached at Annex 8.

Next steps

1.32   As set out in Ofcom's guide to its consultation process[1], Ofcom will generally allow 10 weeks for consultations on complicated policy issues. In the present case, Ofcom does not consider it appropriate to allow a full 10 weeks for consultation. Ofcom considers that a number of the key issues have already been subject to consultation in the November 2006 Consultation and that certain of the additional matters on which Ofcom is consulting in this document are technical issues of implementation only. Ofcom is therefore shortening the consultation period and invites comments on these proposals by 10 September 2007.

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[1] http://www.ofcom.org.uk/consult/consult_method/consult_guide.pdf

Section 2

Introduction and background

Number portability – where we are now and why

2.1   Number portability is the facility that makes it possible for subscribers to retain their telephone number(s) when they change provider. It is recognised as a key facilitator of consumer choice and effective competition[2] and, within the European Union, national regulatory authorities are required to ensure that subscribers of publicly available telephone services who so request it can obtain portability[3].

2.2   The United Kingdom was one of the first countries to introduce rights to number portability. Portability was introduced for fixed line operators from 1997 and mobile operators from 1999. Many countries, both in Europe and elsewhere, have only recently introduced portability requirements. This has allowed UK consumers to have the advantage of being able to port years before consumers elsewhere. It also means, however, that the process that was agreed uses systems and technology that are now around 10 years old. For example, best practice around the world now provides for calls to ported numbers to be directly routed (without reliance on the Donor Network) and for mobile numbers to be switched between networks within a few hours:

Country	Germany	France	UK	USA	Australia	Ireland
Time to switch to new operator	25 days	10days	5 days	2.5 hours	3 hours	2 hours

Table 1 Source International benchmarking conducted for Ofcom by Intercai in September 2006

2.3   Porting solutions and systems used in the UK are now less robust and less efficient than processes and systems used in countries which introduced porting later. Firstly, as a result of the indirect routing of calls to ported numbers, subscribers who port their number in the UK remain vulnerable to possible failure of their former provider (the Donor Provider), which is relied on to route calls to the provider which now provides service (the Recipient Provider). Furthermore, this double handling of such calls generates additional network traffic and transmission costs which, ultimately, are passed on to consumers.

2.4   Countries implementing portability in the last few years from a 'greenfield' start have had an advantage. In requiring the industry, particularly the mobile sector, to implement portability they have been able to put in place 'state of the art' systems that use a CDB, direct routing and modern technology. Many such countries have implemented a near-instant mobile porting process, greatly simplifying arrangements for consumers and enhancing competition.

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[2] see recital 40 of Directive 2002/22/EC of the European Parliament and Council on universal service and users' rights relating to electronic communications networks and services ("the Universal Service Directive").

[3] Article 30 Universal Service Directive.

2.5   Ofcom's International Benchmarking (published at Annex 7 to the November 2006 Consultation) confirmed that best practice, achieved in many countries around the world, ensures efficient routing of calls to ported numbers without continuing reliance on the Donor Provider to onward route such calls. Best practice also enables near-instantaneous one-stop porting of mobile numbers, where consumers can change their supplier and port their number in a single visit to a mobile phone shop, leaving the premises with a new phone and/or SIM secure in the knowledge that calls to the ported number will be received on the new device within the day. Switching provider of fixed telephony services usually requires more extensive engineering involvement, and the speed with which the number can be ported is usually less of a constraint on the time it takes to switch providers.

The changing nature of mobile porting in the UK

2.6   The UK system for mobile number portability has not entirely stood still. It has evolved over the years. Originally, the process used a recipient led paper based porting system that involved faxing porting requests. Porting initially took up to twenty-five days. The industry subsequently agreed that this process had to be shortened, and decided therefore to change from a recipient led system to the current 'donor' led system as this, alongside other changes, allowed the process to be reduced from 25 to 5 days.

2.7   Ofcom and Oftel before it have both considered the issue of requiring further changes to the fixed and mobile porting processes and, in particular, whether direct routing should be mandated. Until the advent of NGNs, the costs of change have looked prohibitive and decisions were made not to intervene

2.8   In its Statement[4] entitled *Next Generation Networks: Developing the Regulatory Framework* of March 2006 Ofcom set out its view that, as NGNs are rolled out, there should be an opportunity to support an improved approach to number portability, both in order to improve efficient use of networks and to protect consumers from the effects of failing providers. Ofcom went on to state that it would like to take a co-regulatory approach to an improved solution, but that it would consider later that year whether this approach was sufficient, or whether regulatory intervention might be required, for example by modifying the General Conditions to require resilience against failure of a Donor Provider.

2.9   In March 2006 Ofcom also published a Statement[5] entitled *Number Portability and Technology Neutrality,* concluding a consultation which started formally in November 2005. In this Statement Ofcom decided to remove from General Condition 18 reference to the functional specification which required, amongst other things, that Onward Routing is used for calls to ported numbers. This was done for reasons of technology neutrality.

2.10   In November 2006 Ofcom published the November 2006 Consultation. The present document reviews responses to this consultation, draws conclusions from this review and proposes options for further consultation.

Consumer objectives

2.11   As set out in paragraphs 2.6 and 3.2 of the November 2006 Consultation, Ofcom's key objective in relation to the method of routing of calls to ported numbers is to

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[4] http://www.ofcom.org.uk/consult/condocs/nxgnfc/statement/ngnstatement.pdf
[5] http://www.ofcom.org.uk/consult/condocs/numport/mod/mod_statement.pdf

protect consumers as far as possible from the effects of network failure and to ensure the efficient use of networks. As noted above, subscribers who port their number in the UK remain vulnerable to possible failure of their former provider (the Donor Provider), who is relied on to forward calls to the provider which now provides service (the Recipient Provider). Further this double handling of such calls generates additional switching costs which, ultimately, are passed on to consumers.

2.12 In relation to arrangements for porting mobile numbers, Ofcom's objective is to make the process as convenient, swift and simple as possible for consumers, such that consumers can select a new supplier of mobile phone service, purchase a new SIM card and receive calls using a ported number within the shortest possible period. Ofcom also wishes to ensure that there are no impediments or disincentives to suppliers from offering number portability to consumers. This document (and the previous consultation document) is not considering processes for bulk porting of more than 25 mobile numbers by business users, as these are subject to different processes which reflect the particular needs of business customers with multiple phones.

Legal basis

2.13 Currently, the UK is required to ensure the provision of number portability to subscribers of publicly available telephone services, including mobile services, by Article 30 of the Universal Service Directive.

2.14 Sections 45 and 58 of the Communications Act 2003 ("the Act") provide Ofcom with the power to set general conditions requiring UK communications providers to provide number portability.

2.15 Obligations imposed on communications providers to provide number portability to their subscribers and to provide portability to other communications providers are set out in General Condition 18[6].

2.16 Section 3 of the Act sets out that one of Ofcom's principle duties in carrying out its functions is to further the interests of consumers in relevant markets, where appropriate by promoting competition.

Routing of calls to ported numbers

2.17 Fixed geographic number portability was first introduced in the UK in 1997, and has used Onward Routing as the method for routing calls to ported numbers since that time. Mobile number portability, introduced in 1999, uses the same method. Under Onward Routing, calls are first routed to the provider to which the number was originally allocated. This provider, known as the Donor Provider, is responsible, indefinitely, for Onward Routing the call to the provider to which the consumer now subscribes, known as the Recipient Provider.

2.18 The continuing reliance on the Donor Provider caused by the Onward Routing process gives rise to a number of concerns which are described below. Ofcom is

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[6] General Condition 18, which came into force on 25 July 2003, was set by the Director by way of a publication of a Notification pursuant to section 48(1) of the Act dated 22 July 2003 and was contained in the Schedule to that Notification. The Notification can be found at www.ofcom.org.uk/licensing_numbering/numbers/num_port_info/section48.pdf. General Condition 18 has been amended on a number of occasions since the July 2003 Notification and a consolidated version of the General Conditions as at 26 April 2007 can be found at http://www.ofcom.org.uk/telecoms/ioi/g_a_regime/gce/cvogc260407.pdf

therefore seeking a method of routing calls to ported numbers which is independent of the Donor Provider.

2.19   As set out at paragraph 3.14 of the November 2006 Consultation, Ofcom's primary concern with Onward Routing relates to its potential to cause harm to consumers in the event of a provider's network failing. If a provider were to fail, its former customers who had ported their numbers to another provider would lose all their incoming calls. At the same time, existing customers of the failed provider would not be able to keep their numbers when they move to a new provider. This would result in significant inconvenience and cost to consumers who might, for example, have to invest in promoting their new number (for example advertising and stationery) and who might face loss of business as a result of having to change the number. This situation occurred in 2001, following the failure of Atlantic Telecom when 14,000 customers lost service.

2.20   The use of Onward Routing for ported numbers also gives rise to network costs which could be avoided if calls to ported numbers were routed directly from the originating or transit network to the Recipient Provider. Under Onward Routing, the Donor Provider incurs costs in providing additional conveyance capacity for routing each call to numbers that have been ported away from it. These costs, which ultimately are passed on to consumers, could be avoided if calls to ported numbers followed the same direct route between originating and terminating networks as calls to numbers that have not been ported, without being routed via the Donor Provider. Direct Routing would also free-up some network capacity.

2.21   Onward Routing can also affect the quality of service experienced by customers who have ported their number and those calling them. Donor Providers need to ensure that sufficient additional conveyance capacity is available on their networks to convey calls to numbers ported away from them. If a Donor Provider's investment in capacity fails to keep pace with traffic demand, there may be congestion on the Donor Provider which can affect the service quality experienced by its former customers and by those calling them.

2.22   A further problem can arise when new services are introduced by a Recipient Provider. Where such services require new technical features which are not supported by the Donor Provider, and any transit provider which is involved in the Onward Routing of the call, they may fail to work on ported numbers if the Donor Provider cannot support the signal in the manner required, and is unable to Onward Route calls. This can delay effective introduction of innovative services and hence the opportunity for consumers to use them. This occurred, for example, when some mobile operators introduced video calling services and were unable to offer this service to customers who had ported their numbers if the call was forwarded from the Donor to the Recipient Provider via a transit operator that did not support the required signalling.

Porting of mobile numbers

2.23   Ofcom attaches considerable importance to ensuring that the process for switching between providers is convenient, swift and easy and does not act as a disincentive to consumers in their switching decision. In particular, Ofcom considers that long porting lead times may discourage consumers from switching provider, which would be detrimental to competition. It is clear that best practice in relation to porting lead times has moved on considerably since UK processes were introduced, and the UK has fallen behind many of its international comparators. The benchmark for portability is now near-instant mobile porting processes.

2.24 The current process for porting mobile numbers was agreed by industry in October 2001, replacing the original process which had been established in January 1999. As set out above, the new process was simplified and automated in 2001, enabling the porting lead time to be reduced from 25 working days to 5 working days. Unlike the earlier process, the new arrangements relied on the subscriber initiating the request to port with the Donor Provider, as this was considered more expedient than the alternative of the subscriber first contacting the Recipient Provider who then contacts the Donor Provider. The Donor Provider, which has no commercial incentive to facilitate the port, was consequently put in the position of leading the process.

2.25 The mobile industry operates two distinct processes; one for consumer porting and one for bulk porting. Consumer ports involve the porting of less than 25 numbers and typically concern the porting of individual numbers. Bulk ports are aimed at businesses where a bulk subscriber decides to port all or part of his mobile numbers and consumer ports generally concern individual subscribers wishing to port their number. This document is considering processes for consumer porting. These processes were set out in some detail in the November 2006 Consultation.

2.26 Currently, where subscribers wish to port their mobile numbers to a new provider they must inform their existing providers that they wish to port their numbers. This requirement to call the former provider may act as a deterrent for some consumers to port. It may also deter providers from informing potential customers that they have the option of porting, for fear that the existing provider will then have the chance to offer deals to retain the customer.

2.27 The existing provider will then provide the subscriber with a PAC which the subscriber may then give to his intended new provider. Upon receipt of the PAC, the new provider can then request the existing provider to make arrangements for the number to be ported. To facilitate the process, data exchange between providers is achieved by a web-based system operated by Syniverse Technologies.

2.28 At present, the process, from the point at which the new provider uses the PAC to make a porting request to the moment when the port is completed, take five working days. This period is known as the porting lead-time, and during this time the subscriber continues to receive calls via his existing provider.

2.29 The length of time that it takes to port a mobile number in other jurisdictions varies but, in general, timescales have fallen markedly since the UK processes were established. Annex 7 of the November 2006 Consultation set out the results of an International Benchmarking exercise carried out for Ofcom. Those countries which implemented mobile number portability relatively late (such as the US, Ireland, South Africa and Australia) have tended to deploy systems which support lead times significantly shorter than the five working days experienced in the UK. Furthermore, many of those countries which have offered mobile portability for a number of years have already upgraded, or are in the process of upgrading, their systems to support near-instant mobile porting. Singapore for example is in the process of moving to near-instant recipient led porting.

2.30 The international benchmarking indicates that the UK is now lagging behind other nations in respect of mobile porting lead times. Ofcom attaches considerable importance to ensuring that the process for switching between providers is swift and easy and helps consumers in their switching decision. Ofcom also considers that long porting lead times may discourage consumers from switching provider, which would be detrimental to competition.

2.31   The benefits of change to the mobile portability process are likely to be increased consumer convenience and enhanced competition, and since these would not benefit all providers directly, industry is unlikely to change the current processes. Ofcom therefore considers that regulatory intervention is necessary to reduce mobile porting lead times and thus ensure the optimal outcome for consumers.

Consumer research

Initial Consumer research

2.32   Ofcom's consumer research conducted during September 2006 (the "September 2006 research") and published with the November 2006 Consultation, indicated the following:

- Switchers tend to recall, and non-switchers predict, that the number porting process is quicker than the five working days allowed for in current processes. Expectations are that the process typically takes a day or two.

- Eight in ten of those who have ported their number were satisfied with the time the process took – but they often think it was completed in a day or two rather than the five days it usually takes.

- Of the two-thirds of mobile phone customers who have not switched provider in recent years, most have stayed as they see no reason to change and are satisfied with their current service. There is however a group, of about 5% of those who answered the question about why they had not switched provider, who when prompted cited the time taken to transfer their number to a new provider as a reason for not switching supplier.

Further Consumer Research

2.33   Ofcom considered that the September 2006 research should be supplemented by further research to better understand consumers' views. This research examined the views of those who have switched mobile providers in the previous 12 months, and responses therefore relied on more recent memory than the September 2006 research which was based on customers who had switched in the previous 4 years. This new research took place during February 2007 and the conclusions of that research are set out in Annex 6 to this consultation.

2.34   Ofcom's February 2007 research indicates the following :

- Nearly three in ten of those who have switched provider in the past year, and changed number, were not aware that they were entitled to keep their old number as part of the switching process.

- Three in ten of those with a new number would have preferred to keep their old number. Nearly half (48%) say they would have ported their existing number if they had been told they could do so and that it would take one day. Slightly fewer (41%) said they would have ported had they been told that it would take three days.

- Of those that have ported their number, about half think the process could be improved – most commonly suggesting a faster and/or immediate transfer.

2.35 The research supports the proposition that consumers value a swift porting process. As with the September 2006 research, the February 2007 research tends to indicate that low awareness of porting rights is the main cause of consumers not porting their number. In light of this research Ofcom is of the view that there may be latent demand for porting that is not currently satisfied.

2.36 In the following sections, after considering responses to the November 2006 Consultation, Ofcom sets out its decisions and further proposals.

The November 2006 Consultation

3.1   The November 2006 Consultation considered both the method of routing of calls to ported numbers and the lead-time in the process for porting mobile numbers.

Method of routing calls to ported numbers

Ofcom's objectives

3.2   In relation to the routing of calls to ported numbers, the November 2006 Consultation set out its major objectives as the protection of consumers against the effects of network failure and ensuring the efficient use of networks. The key identified risk to consumers in the current use of Onward Routing by the Donor Provider is the loss of incoming calls where the Donor Provider ceases to be able to onward route calls to the Recipient Provider (whether due to financial or technical failure). This and other related risks which are inherent in Onward Routing are described in paragraphs 2.17 to 2.22 above.

Solution proposed

3.3   Achievement of Ofcom's consumer objective of protecting consumers from failure of Donor Providers requires a method for routing calls to ported numbers which does not involve the Donor Provider. This in turn requires, as a minimum, that each originating provider is able to determine whether a given called number has been ported and, if so, the identity of the Recipient Provider of that number.

3.4   A solution to this is a common database accessible by all originating and transit networks which provides a complete and up-to-date repository of records of each ported number and its corresponding Recipient Provider. The records must be updated frequently enough to ensure that the correct routing takes place and customers do not lose service. Every provider that holds number ranges would therefore need to update the database in a timely manner as numbers are ported, to ensure that the data is complete and up to date at all times.

3.5   Originating or transit networks need to interrogate the data on every call, in case the called number has been ported, and route calls to ported numbers directly to the Recipient Provider. This type of solution is described as Direct Routing using ACQ/CDB.

3.6   The database part of the solution is common to all operators. Since routing of all calls to ported numbers would depend on the CDB, its design, construction, operation and access arrangements need to be suitably secure, reliable and resilient against failure.

3.7   A working ACQ/CDB solution must be based on an agreed overall design, which needs to be developed, including standards for data exchanges between operators and the CDB, inter-operator billing arrangements, and agreed routing methods and operating processes. Resources must also be established for managing and operating the database.

3.8   All of these activities need to be funded, and require suitable governance to be defined and put in place.

3.9   ACQ/CDB solutions have been deployed successfully in many countries, including the United States, Hong Kong, Italy, Denmark and Ireland. Singapore is in the process of implementing such a solution.

Benefits of ACQ/CDB set out in the November 2006 Consultation

3.10   Once a CDB is in place, and populated with porting data from all providers, each provider can start using this to support Direct Routing. For each call originating on the network, the ACQ function will search the CDB to determine whether the called number has been ported, and, if so, to establish the identity of the Recipient Provider. The results of this search can then be used by the originating or transit network to determine the best way to route the call. If the called number is found to have been ported, the call can be routed directly to the Recipient Provider. Provided that all providers co-operate from the start in populating the CDB, all consumers will benefit, to some extent, even where some providers have not yet implemented ACQ. Networks which have not yet implemented ACQ will, however, be unable to route calls to numbers ported away from failed providers as they will not recognise that the number has been ported (unless they rely on transit via a third party which has implemented ACQ). However should those providers themselves fail, customers using number ranges originally allocated to them will be protected, to the extent that other networks use the CDB to determine how calls to numbers ported from those failed networks should be routed.

3.11   Once all providers rely on the CDB by implementing ACQ, consumers will be protected to the greatest extent possible from the effects of failing providers described in relation to Onward Routing. If a provider should fail, its former customers would not be affected, since records of their numbers and of their respective Recipient Providers will have previously been stored in the CDB, and calls to them would therefore be routed successfully. Also, present customers of the failed provider would be able to port their numbers when they move to new providers, who would be able to ensure that such customers' numbers are recorded in the CDB as corresponding with the new Recipient Provider.

3.12   With ACQ/CDB, calls to ported numbers would also be routed efficiently, avoiding conveyance through the Donor Provider, therefore releasing capacity reserved for such conveyance, and avoiding the need for further investment in donor conveyance capacity as more customers port their numbers.

3.13   The ACQ/CDB solution would also ensure that problems in a Donor Provider, such as capacity constraints, do not affect the service of its former customers, since calls to those customers would no longer be routed through the Donor Provider.

3.14   When innovative services are introduced which use certain new network features, only the originating and terminating provider (and any transit provider used) would need to support them under ACQ/CDB, whereas under Onward Routing potentially all providers would need to be capable of supporting them.

Impact of proposals

3.15   The November 2006 Consultation included a report commissioned by Ofcom from independent consultants Sagentia, which was intended to update the findings of previous analyses by examining the impact of the introduction of an ACQ/CDB solution in light of recent fixed network developments, particularly of NGN architectures, and to consider more closely the impact on mobile networks.

3.16   A cost-benefit analysis was presented as part of the consultation document. This used estimated figures for the costs of ACQ/CDB implementation and compared these against estimated economic benefits gained by avoiding the costs associated with Onward Routing. The analysis used a discounted cash flow of the difference between the benefits and the costs over ten years. Ofcom also considered, but did not attempt to quantify, the benefits accruing to consumers in relation to protection in the event of network failure and increased competition.

Implementation options proposed

3.17   The November 2006 Consultation set out five main options (not all of which were mutually exclusive). These are summarised below.

Option 1

3.18   No change – maintain Onward Routing. This was put forward as a counterfactual against other options which proposed intervention, avoiding the costs that operators would need to incur in changing the existing solution to ACQ/CDB.

Option 2

3.19   Implementation of ACQ/CDB for fixed TDM networks (ie current generation networks). This option was considered in order to update previous assessments by Oftel which found that the costs of this option heavily outweighed its benefits. This option also provided a basis for meaningful assessment of the impact of NGN architecture, whose costs and benefits were assessed under Option 3 below.

Option 3

3.20   Implementation of ACQ/CDB for fixed NGN networks. The purpose of evaluating this option was to examine the costs and benefits that would arise from mandating a transition to ACQ/CDB in fixed networks to occur in the course of their migration to NGN architectures. Such migrations are at various stages of planning or implementation by fixed network operators in the UK.

Option 4

3.21   Implementation of ACQ/CDB for mobile providers only. Ofcom considered that the equipment and systems already in use by mobile networks could allow them to implement ACQ/CDB more rapidly than fixed network operators. To evaluate this possibility Ofcom put forward two sub-options within Option 4.

3.22   In sub-option 4a implementation of ACQ/CDB for mobile providers only would occur by 2009. Consultation on this option sought respondents' views on whether it could be justified to mandate full adoption of ACQ/CDB by the mobile industry by September 2009.

3.23   In sub-option 4b, Direct Routing would be implemented more quickly, again by mobile providers only, within one year using the existing NICC Service Description 8[7], or another standard agreed by the industry. However it was noted that although NICC Service Description 8 would deliver the efficiency savings associated with Direct Routing, and would avoid the risks of congestion in the Donor Provider and incompatibility of Donor and Recipient Providers, it would not remove reliance on

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[7] http://www.nicc.org.uk/nicc-public/Public/interconnectstandards/ser/nd1208_2005_08_2.pdf

Donor Providers to provide signalling information to originating operators. As such, it would not address Ofcom's primary concern that subscribers with ported numbers are vulnerable to failure of Donor Providers. The consultation document noted that this option might have value as an interim measure, designed to deliver some benefits within a short period of time.

Option 5

3.24   The final option proposed for consultation was implementation of ACQ/CDB for both fixed and mobile providers. This option sought to combine the benefits of fixed networks' transition to ACQ/CDB in the course of their migration to NGN architectures, the likely capability of mobile networks to effect this transition earlier, and additional economic benefits that would flow from efficiency savings arising in every type of call, irrespective of whether they originated or terminated on fixed or mobile networks. The transition timetable proposed was for mobile networks to complete their adoption of the solution proposed under this option by September 2009, and for fixed networks to complete such adoption by the end of 2012. An earlier implementation date was proposed for the mobile networks because these networks are already capable of querying a database on every call.

Preferred option for call routing

3.25   The cost-benefit analysis was repeated for each of the options presented for consultation. The results of this analysis supported the view that implementation of ACQ/CDB for fixed networks would be considerably less costly if transition to its use occurred in the course of migration to NGN architectures than if such transition occurred while fixed networks still employed TDM technology. The analysis also favoured Option 5 over all others, offering the largest positive NPV of all options.

Lead-time in the process for porting mobile numbers

Ofcom's objectives

3.26   Ofcom set out in the November 2006 Consultation its view that consumers in the UK should be aware of their right to port and be able to port in the most simple, convenient and fastest manner possible. Ofcom considers that convenience, ease and speed in porting mobile numbers will not only deliver a real consumer benefit but will also facilitate switching and could therefore enhance competition in the retail mobile market. In the November 2006 Consultation, Ofcom noted that excessively long porting lead times may discourage consumers from switching or delay them from commencing service on better terms with a new provider. Ofcom set out the view that the shorter the process the better it is for competition and consumers.

3.27   The November 2006 Consultation proposed that mobile porting lead times should be reduced to a period of less than one working day (unless there was evidence that the costs outweighed the benefits). Such timescales would enable subscribers to make arrangements with a new supplier secure in the knowledge that the transfer would be completed by the end of the day. The November 2006 Consultation did not consider porting lead times for fixed providers as number portability is typically one of two or more components involved in switching providers of fixed-line products, and processes for effecting such switching are being considered by Ofcom's project looking at migrations, switching and mis-selling[8]. Neither did the document consider

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

bulk ports involving more than 25 mobile numbers, as these are subject to different processes designed to meet the needs of larger business customers.

3.28   To achieve these objectives, the consultation set out Ofcom's preferred view that mobile porting lead times should be reduced to a period of less than one working day. However the consultation sought respondents' views on a wider range of options.

Options proposed for consultation

3.29   In the November 2006 Consultation, Ofcom consulted on three options for reducing mobile porting lead-times, as follows:

- Option 1: No immediate change;

- Option 2: Require a reduction of porting lead times to three working days; and

- Option 3: Require a reduction of porting lead times to less than one working day.

Option 1: No immediate change

3.30   This option would mean no immediate change to the current mobile number portability process, although a further opportunity to improve porting lead times might arise with the possible deployment of ACQ/CDB in the future.

3.31   Ofcom indicated that this option would not achieve Ofcom's objective of ensuring that consumer switching between providers is as easy and as quick as possible,

Option 2: Require a reduction of porting lead times to three working days

3.32   On the basis of discussions with the mobile operators, Ofcom understood that the current porting process could be shortened to three days without any significant changes to the overall process or significant additional costs being incurred.

3.33   Given the limited process and systems changes required, Ofcom considered that mobile operators could shorten the current mobile number portability process to a period of three working days. The November 2006 Consultation sought to obtain views from stakeholders as to the precise timeframe for implementation and the costs associated with such implementation. However, the consultation document also noted that any move to ACQ/CDB would necessitate a new porting process, and that Ofcom would expect that new process to enable mobile porting within less than one day.

Option 3: Require a reduction of porting lead times to less than one working day

3.34   The consultation document set out that best practice worldwide allows for porting of mobile numbers within a matter of hours. A process shorter than one day would have benefits in terms of ensuring that consumers could take advantage of number portability as quickly and easily as possible.

3.35   At the time of the November 2006 Consultation, Ofcom indicated that it had little information about the costs involved in implementing a new process but recognised that it would involve changes to the processes and procedures for mobile number portability and modifications to the computer system currently run by Syniverse. To enable Ofcom to compare the benefits against relevant costs, Ofcom sought further

evidence and welcomed views from stakeholders as to what such a process would look like and whether the costs of implementing such a process for mobile number portability would be likely to be significant.

3.36   Ofcom considered that, if and when the mobile sector of the industry migrated to an ACQ/CDB solution for the Direct Routing of calls to ported numbers, this would be likely, in any event, to require changes to the porting process. Ofcom invited views on the likely additional cost of changes required to enable mobile porting in less than one working day.

Preferred option for mobile porting lead times

3.37   Ofcom set out it its view that the shorter the process, the better it is for consumers and competition. Therefore, Ofcom proposed to reduce mobile porting lead times to a period of less than one working day. However, Ofcom indicated that if it received evidence that showed that the costs involved in moving to a lead time shorter than one working day outweigh the benefits then Ofcom would need to consider whether a three working day period would be more appropriate in light of the evidence received. It was Ofcom's view, however, that the current mobile porting process could be reduced to three working days without the mobile operators incurring significant costs.

Section 4

Responses to the November 2006 Consultation - routing of calls to ported numbers

General views of stakeholders

4.1   Ofcom received 23 responses to the November 2006 Consultation. Respondents included fixed network operators, mobile network operators, industry groups, an equipment vendor, consumers and industry consultants.

4.2   Ofcom's review of the arrangements for routing calls to ported numbers was welcomed by most respondents, who agreed in principle that a common database solution has merit.

4.3   Three respondents disagreed that consideration should be given to such a solution now, argued that present arrangements work well and questioned whether there was need for Ofcom to intervene.

4.4   While many industry players were willing to offer support in principle to the adoption of an ACQ/CDB solution, many questioned whether Ofcom had presented a convincing cost benefit analysis that would justify regulatory intervention.

4.5   Of those stakeholders which agreed in principle that an ACQ process would have merit, most were of the view that a single solution should be adopted which would hold both fixed and mobile numbers. Many stakeholders also saw merit in the database holding non-ported as well as ported numbers so that the system could be used to support a broader array of functions. Those who favoured a single database holding both fixed and mobile numbers also noted that any move to require mobile providers to adopt the new process before fixed providers could present problems, in relation to process development and consumer education.

4.6   There was little support for a possible requirement on mobile providers to implement an interim solution using NICC Service Description 8. Many stakeholders noted that such an approach would be likely to generate additional costs and could jeopardise early implementation of a permanent solution if resources and expert personnel were spread too thinly across two parallel projects.

4.7   Views varied on the form and timing that Ofcom's intervention should take. Most respondents who favoured the principle of an ACQ/CDB solution suggested that intervention at this stage could be premature and some were sceptical that the transition milestones proposed by Ofcom could be met. They argued that industry needs to define a solution more specifically before intervention could be justified, and some suggested that Ofcom should steer the industry in identifying the solution. Two respondents favoured intervention by Ofcom now to set deadlines for a rapid implementation of a database solution.

Rationale for Intervention

Likelihood of failure of a Donor Provider

Respondents' views

4.8   [✂]

4.9   [✂]

Ofcom's response

4.10   Ofcom notes that Atlantic Telecom failed in 2001, during a period of sharp falls in equity values, accompanied by a severe deterioration in levels of investor confidence in the telecommunications industry. A similar downturn in the investment climate has not been repeated in the six years since, but investment markets always have a risk of downturn. At the same time, the number of separate operators holding telephone number ranges has increased substantially since 2001, from 49 to 229. Whilst it is possible that some consolidation could occur in future, the industry is likely to continue to include a significant number of operators, particularly taking into account the opportunities for competitive entry afforded by new technologies and Ofcom's duty to promote competition where appropriate. Therefore, Ofcom considers that there remains a risk of failure by some operators, which may be exacerbated during a market downturn.

4.11   On the issue of whether disruption to customers' services would occur as a result of a network failure, Ofcom notes respondents' views that competitors may take over a failing network in order to ensure continued service for the customers of that network. However, this did not happen in the case of Atlantic Telecom, whose strategy was based on the use of a fixed radio access technology, in which competitors decided they did not wish to invest. Consequently, when Atlantic Telecom failed in 2001, competitors had no incentive to take over its network, which was eventually switched off. Innovative strategies are important motors of competitive entry, and some examples of investments either in progress currently or under consideration are based on local-loop unbundling, voice over broadband, Wi Fi, WiMax, fibre to the premises and fibre to the street cabinet. Should any such investments fail commercially, the choices of strategy, technology and particular equipment made by the failing operator could again render take-over of the network unattractive for competitors, as they did in the case of Atlantic Telecom.

4.12   These considerations lead Ofcom to conclude that there is a real risk of future commercial failures of providers which would not be taken over by competitors, with consequent risk of harm to consumers arising from Onward Routing.

Costs of a failure of a Donor Provider

Respondents' views

4.13   In the November 2006 Consultation, Ofcom provided an assessment of the financial impact on consumers of the loss of service arising from a network failure and set this at £296 per person in 2005 prices. In its response, BT commented that a lower figure could be more appropriate because the approach on which the assessment was based was developed in 1994, and since then other methods of communication, such

as internet, mobile phones and SMS would make the cost of notifying a number change lower.

Ofcom's response

4.14   While Ofcom acknowledges that the financial impact figure derives from a 1994 model, this figure not only includes the cost of notifying others of a change in number but also the cost of temporary loss of service, cost of changing their number, and the cost of contracting with a new supplier. Ofcom therefore believes that this figure still represents a reasonable estimate of the average financial impact per customer affected. Applying this figure to the example of the failure of Atlantic Telecom, in which 14,000 customers were affected, results in an estimated impact of £4.2M in today's prices.

4.15   Ofcom also considers that the non-financial impact of a network failure should be considered. Former customers of the failed provider who lose incoming calls may be distressed by the loss of service, for example some elderly people who rely wholly or principally on one telephone service for their communications.

Other means of addressing provider failure

Respondents' views

4.16   Vodafone recommended that any concerns about failing providers could be addressed more proportionately and cost effectively by other means. Vodafone itself did not elaborate on what form those other means might take, but noted that Ofcom had acknowledged that these could include arrangements for an alternative operator to take over either the assets of the failed operator or the number range.

4.17   [✂] advised that other, unspecified, arrangements could be made to safeguard customers in the event of a provider failing and being unable to forward calls to ported numbers.

4.18   [✂]

4.19   BT argued that, at least in the short term, there are other, perhaps more proportionate, ways to deal with failure of a provider such as, for example, collaboration to share and build the blocks of a failed provider. BT noted that such arrangements have already been agreed in the fixed industry forum.

4.20   The Fixed Number Portability Commercial Group also argued that it could be possible to protect consumers from the effects of failing providers by suitable industry collaboration in the event of such a failure while Onward Routing remains in place. The Fixed Number Portability Industry Group in particular has taken action following a previous Ofcom consultation on this subject and has written up a procedure that industry could follow in the event of such a failure.

Ofcom's response

4.21   Ofcom welcomes the efforts of industry to address the issue and believes that the arrangements considered by the Fixed Number Portability Commercial Group could be helpful in the event that a failure occurs before an improved solution is fully in place. However, Ofcom does not believe that these arrangements by themselves are a sufficiently reliable long-term alternative to ACQ/CDB in providing protection for consumers from the impacts of failures, for reasons set out below.

4.22   Firstly, the procedure requires several months work to put remedial measures into effect, including for example making data management amendments to all routing equipment throughout all UK networks. This implies that timely warning of impending failure must be provided, and this may not be possible in practice.

4.23   Secondly, the procedure requires a certain reliance upon the failing provider to implement such a solution and this may not be possible to obtain in all circumstances. The management of the company at risk of failure may not share others' assessment of the risk of it failing. Furthermore, if the company is being controlled by an insolvency practitioner, the latter's priority of action relates to protection of the interests of creditors, not those of consumers. Furthermore, qualified staff, able to assist effectively in any remedial action, could disperse once the company is in financial distress, and do so before their part in the remedial work is completed.

4.24   For these reasons Ofcom concludes that, whilst industry collaboration to limit consumer harm in the event of provider failure is to be encouraged, it is necessary to pursue additional more robust measures to limit such harm insofar as it arises from Onward Routing. Ofcom has therefore concluded that ACQ/CDB would be the most robust long-term solution to address the issue of consumer harm resulting from failing providers.

Other comments on rationale for intervention

Respondents' views

4.25   [✂] characterised the volume of people porting their number as low and unlikely to increase if Direct Routing is introduced. On this basis, [✂] argued that any efficiency benefits consequent on Direct Routing would be minimal.

4.26   Vodafone, [✂] disagreed that consideration should be given to such a database at this time, and commented that the present porting arrangements work well. In [✂]'s view Ofcom should limit itself to ensuring compliance with existing regulatory obligations with respect to porting, and should not seek to impose a particular technological solution to delivering number portability.

4.27   Vodafone questioned Ofcom's underlying objectives in exploring these issues, and in particular the possibilities of either requiring the mobile providers to implement Direct Routing before the fixed providers or requiring only mobile providers to implement Direct Routing. In Vodafone's view, these proposals indicated that Ofcom also places weight on facilitating change in the current commercial relations between MNOs. Vodafone called on Ofcom to make its objectives clearer so that these can be considered on their own merits.

4.28   H3G considered that a radical overhaul of porting arrangements is needed, leading to directly routed, recipient led, same-day porting. In H3G's view this is needed to address what H3G perceives a significant unmet demand for porting and costly network inefficiencies (including unnecessary costs from tromboning of calls to ported numbers, distortions in mobile termination rates, the need to establish dedicated data links to each of the other providers to enable transfer of porting information and to maintain donor conveyance charge ("DCC") billing arrangements). H3G argued that these shortcomings of the current arrangements for routing calls to ported numbers put its business at a competitive disadvantage.

Ofcom's response

4.29   Ofcom's key objective, in respect of the method of routing calls to ported numbers, is to ensure as far as possible that consumers are protected from the effects of failing providers. In achieving this by deploying ACQ/CDB consumers will also benefit from improvements in the efficiency of use of network resources in routing calls to ported numbers. Both of these outcomes inform Ofcom's analysis of costs and benefits of an improved solution for routing calls to ported numbers.

4.30   Ofcom's recent research reported that 31% of consumers who switched providers in the last 12 months would have preferred to keep their number. However, the evidence from the research shows that lack of customer awareness of the right to port is the most significant reason for this potentially unmet demand. As such, Ofcom does not agree with H3G that present arrangements for routing calls to ported numbers necessarily result in significant unmet demand for porting. The research does, however, support the proposition that consumers value a swift porting process, and Ofcom is of the view that there may be latent demand for porting that is not currently satisfied. Furthermore, Ofcom recognises that lengthy donor led porting may discourage providers of mobile services from promoting portability to customers migrating to their services.

4.31   Nevertheless, as set out in section 6 below, Ofcom has concluded that consumers would be advantaged by shorter porting lead times, and Ofcom is requiring that these should be reduced immediately to 2 working days. Ofcom has also set out in this document its preferred proposal that porting lead times should be further reduced to a recipient led near-instant (not longer than two hours) process. Ofcom notes that an ACQ/CDB solution would facilitate a further reduction in porting lead times and simplification of the process from the consumer's perspective.

4.32   Ofcom agrees that Onward Routing gives rise to inefficiencies in routing of calls to ported numbers, and has sought to take these into account in its analysis of costs and benefits of a change of the method of such routing to ACQ/CDB. This analysis is assessed in later sections of this document, and is informed both by the efficiency gains due to Direct Routing under ACQ/CDB and by the protection of consumers from some of the impacts of a provider failure. In Ofcom's view, both these benefits taken together justify intervention in relation to the method used for routing calls to ported numbers.

4.33   Ofcom is aware that the operation of the current system that supports mobile number portability requires bilateral communication between mobile operators. As the number of participating operators grows, the number of bilateral communications links grows disproportionately. For example, while 5 operators require a total of 10 bi-lateral links, 30 operators would require a total of 435 such links. This issue could be dealt with more simply if the need for bilateral communication was eliminated, and each operator communicated solely with a central system. In Ofcom's view, while the implementation of an ACQ/CDB system could present an opportunity to address this issue, it could also be addressed by modifying the existing system. Ofcom therefore does not consider this issue on its own is sufficient to justify intervention in relation to the method used for routing calls to ported numbers although Ofcom notes respondents' comments.

4.34   Ofcom has insufficient information about the costs incurred by operators in maintaining existing wholesale billing processes resulting from the current number portability arrangements. Consequently, Ofcom cannot conclude that such costs justify intervention in relation to the method used for routing calls to ported numbers.

24

Principle of ACQ/CDB

Respondents' views

4.35   The Fixed Number Portability Industry Group, [✂], Syniverse, O2, Orange, H3G, BT, C&W, Thus, Viatel, SSE, PGS, DRD, and [✂] all agreed in principle that a common database has merit, variously in delivering a more efficient system for routing calls and in minimising reliance on Donor Providers. Many, however, expressed reservations about the proposed speed and manner of implementation, and the cost.

4.36   [✂] and Vodafone warned that it would not be possible to deliver SMS to ported numbers without placing some reliance on the Donor Provider to respond to signalling. NICC also noted that it lacks the requirements needed to frame standards that encompass both SMS and voice.

4.37   [✂]

Ofcom's response

4.38   Ofcom welcomes the agreement of the majority of respondents that ACQ/CDB is the right principle on which the industry should base its future solution for number portability. Ofcom also acknowledges the reservations expressed on timetable, manner of implementation and costs. These are discussed later in this document.

4.39   Ofcom can confirm that, in order to address its objectives in respect of the method used to route calls to ported numbers, an improved solution should apply to SMS as well as to voice calls, since SMS has become an important method of communication for many consumers and businesses. Following detailed discussions with stakeholders during the consultation period, Ofcom understands that a difficulty in applying ACQ/CDB to SMS could occur where an SMS message is originated abroad, and its route does not pass through an international transit node in the UK. This could occur for example where a mobile operator is directly interconnected with a network abroad. This represents a very small minority of SMS messages terminating on UK mobiles. Ofcom's current view is that under such circumstances the solution should be designed to minimise dependence on the Donor Provider in routing the message, in order to achieve Ofcom's objectives to the greatest degree practicable. However Ofcom recognises that it may not be cost effective to ensure that all inbound international SMS is direct routed. Ofcom would ensure that such routing is not in contravention of General Condition 18.

4.40   Ofcom acknowledges the concern expressed by [✂], and recognises that this concern might be shared by smaller fixed operators. Ofcom notes that its intention is to ensure that, where operators make use of transit services for interconnection, compliance with Ofcom's proposed modification to General Condition 18 could be achieved by ensuring that the ACQ/CDB function is carried out by the transit provider.

Implementation

Common database for fixed and mobile providers

Respondents' views

4.41   BT, C&W, [✂] the NICC, O2, Orange, Syniverse, Thus and Viatel agreed in principle that an ACQ/CDB solution common to both fixed and mobile providers should be the

preferred option. No stakeholders, other than H3G, disagreed that, if Ofcom was to mandate implementation of an ACQ/CDB, a common solution should be adopted for implementation by both fixed and mobile providers. This view was strongly supported by NICC. Views were more varied on the timing of implementation by fixed and mobile providers (see below). H3G, in contrast, saw few advantages to be gained from a common solution if mobile numbers are only ported between operators holding mobile number ranges and fixed numbers are only ported between operators holding fixed number ranges.

4.42   H3G, whilst agreeing that an ACQ/CDB solution was required, argued that it was necessary to put one in place more rapidly than Ofcom had proposed. H3G described a solution common to both fixed and mobile providers as impractical in achieving a short timescale. H3G favoured implementation of a solution that would address the routing of calls to ported mobile numbers only, while stating that it is both possible and necessary to implement this solution more swiftly than Ofcom proposed.

4.43   H3G presented its own proposals for an ACQ/CDB, and argued that these could be implemented with BT's existing transit provider, in advance of NGN deployment. In H3G's view, BT's trunk switches are capable of supporting ACQ and this could be established at the handover point between fixed and mobile providers. H3G observed that this approach would require a contractual change to BT's Standard Interconnect Agreement which presently mandates call routing on the basis of number blocks. H3G's proposal specified not only support for donor-independent routing for mobile ported numbers, but also support for a new proposed mobile number portability process which would be led by the gaining provider and have a porting lead time of less than one day. H3G believed that its proposed solution would only be implemented by the industry if Ofcom were to intervene to ensure it is implemented.

Ofcom's response

4.44   Ofcom agrees with the views of most respondents that a common fixed and mobile solution would be the most appropriate approach. Ofcom's view of the advantages of the common solution differs from those of H3G. A common solution, in addition to being more consistent with the foreseen trend by many respondents towards fixed-mobile convergence, would also help improve routing efficiency by avoiding donor conveyance for calls to ported numbers between fixed and mobile providers. Ofcom's analysis of costs and benefits of the options presented in the November 2006 Consultation highlighted the magnitude of these additional efficiencies, and this was an important reason for Ofcom's proposal that the common solution should be taken forward to implementation. Ofcom has therefore concluded that the best way forward is transition by both fixed and mobile providers to a common ACQ/CDB solution.

4.45   Ofcom notes that in the proposal put forward by H3G, the costs presented were confined to those of implementation of the central database itself and were consistent with the corresponding assumptions made in Ofcom's analysis. However, H3G did not include the costs of implementation of ACQ by providers which, in Ofcom's analysis, were substantially larger than the costs of the database.

4.46   Furthermore, H3G's proposal would not address concerns about the routing of calls terminating on ported fixed numbers, which would continue to use Onward Routing. Consequently, implementation of H3G's proposal would not meet Ofcom's objectives of protecting consumers as far as possible from the effects of failing providers, and of ensuring the efficient use of networks.

Interim solution for mobile providers

Respondents' views

4.47 O2 argued that the additional costs of an interim solution would tend to weaken the overall cost benefit equation, as the costs of the interim solution would have to be recovered over a relatively short period. [✂] also noted that at least two mobile operators had already part-implemented the interim solution by applying Call Trap function to the routing of on-net traffic between ported and non ported numbers. This point was also made by [✂] and Vodafone. O2 raised concerns about how wholesale billing arrangements would work under an interim solution, pointing to issues that have been discussed by industry in relation to NICC Service Description 8, and which it says remain unresolved. Orange too was against undertaking significant investment in what may become a stop gap solution and argued that, in any event, it would not be possible to implement an interim solution within 12 months as proposed, particularly as NICC Service Description 8 was not mandated and, therefore, plans for its implementation are not currently in train by all mobile operators. In the view of Orange, its own implementation costs would exceed [✂] for those items it could estimate, there would be additional required items whose costs it could not establish, and it would not be feasible to implement the changes in less than 18 months.

4.48 C&W also questioned the ability of MNOs to implement an interim solution based on NICC Service Description 8 without further development work. Vodafone was not in favour of MNOs being required to implement two mobile-only solutions in quick succession, and warned that, in any event, any mobile-only solution would not address inefficiencies in the routing of fixed to mobile and mobile to fixed calls. As noted above, [✂] was against any intervention in this area, whether interim or permanent. As H3G believed that a permanent solution could be implemented swiftly, it saw little benefit to be gained from interim implementation of a solution based on NICC Service Description 8 (unless, for some reason, H3G's own solution proved impracticable). H3G also observed, as did Vodafone, that NICC Service Description 8 would not achieve the objective of full independence from the Donor Provider, and would have limited application.

4.49 NICC noted the convergence of fixed and mobile networks, and questioned whether it would be appropriate to require fixed providers with a small mobile capability to implement an interim mobile-only solution based on NICC Service Standard or some other standard. O2 and BT both feared that implementation of an interim solution would be likely to put at risk the timely implementation of a permanent solution, as resources would be stretched too thinly across the two projects.

Ofcom's view

4.50 The proposal under option 4b of the November 2006 Consultation, consisting of an interim solution for the mobile industry, using NICC Service Description 8 or another standard, would not meet Ofcom's objective of providing independence of routing from the Donor Provider in mobile networks, and would also not provide any improvement to the current solution for calls originating or terminating on fixed networks. Ofcom's concerns about the impact of H3G's proposal that a permanent mobile-only solution should be adopted are set out in paragraphs 4.44 to 4.46 above. Such solutions would not achieve Ofcom's principal objective of protecting consumers from the failure of a Donor Provider. Ofcom further recognises that an interim solution may be unlikely to operate for long enough to recover its costs under

Ofcom's proposal. In light of the above, Ofcom has decided not to pursue such an option.

Timing of implementation

Earlier implementation for mobile providers

Respondents' views

4.51   O2 disagreed with the view that mobile providers should be required to implement ACQ/CDB before providers of fixed services (commenting that Ofcom's cost benefit analysis is not sufficiently robust). Orange argued more specifically that a staggered approach to implementation would increase costs and complexity, and create major problems for apportioning costs between fixed and mobile providers. Orange and [✂] both noted that it is likely that both fixed and mobile operators would wish to be closely involved with the planning at all stages, and [✂] noted that fixed providers should not be presented with a design fait accompli. Orange and C&W also noted that, as converged providers of fixed and mobile services, a staggered application of ACQ within their operations would not be practical or cost effective. BT too noted that it would be important to ensure that a coherent approach is taken to both fixed and mobile numbers, even though BT argued that mobile providers can and should be required to implement a CDB before fixed providers, by September 2009.

4.52   As noted below, Vodafone was not attracted by the idea of a new ACQ/CDB process being tested by mobile providers acting as "guinea pigs", nor did Vodafone favour mobiles being obliged to implement two alternative routing systems in quick succession. [✂] was against any regulatory intervention in this area. on the basis that the present arrangements are fit for purpose

4.53   Orange, BT, Thus, [✂] and C&W agreed that it would make sense to move to an ACQ/CDB solution in the course of migration of fixed networks to NGN. However Orange and C&W warned that the pace of change should not be set by any one (or small group of) NGNs.

4.54   NICC noted that while existing mobile networks are capable of ACQ, this would not be achieved using IP technology unless further development work is carried out.

4.55   No respondents disagreed that, were a transition to ACQ/CDB to occur in fixed networks, it should be put into effect using NGN architectures.

Ofcom's response

4.56   In the November 2006 Consultation, Ofcom noted that mobile networks were capable of deploying ACQ/CDB to route calls more rapidly than fixed networks, and therefore proposed that mobile providers should complete their transition to ACQ/CDB in September 2009, while fixed providers should complete this transition no later than 2012.

4.57   In light of the responses received from stakeholders, Ofcom agrees that if fixed and mobile providers do not jointly collaborate to establish and populate a database, there would be a risk that earlier implementation by mobile providers might be achieved without meeting the requirements of fixed providers, and that this could generate delay and additional costs in subsequent re-engineering of the solution to meet the needs of fixed providers. Ofcom is aware that some fixed providers claim to have already put NGN architectures in place, while BT is at the early stages of its

21CN programme to migrate to NGN. It should therefore be possible for fixed providers to determine their requirements and contribute to the development of an ACQ/CDB solution now. Ofcom therefore considers it important that any intervention should result, among other things, in early collaboration by both fixed and mobile providers in defining a common solution.

4.58 It may be appropriate, nevertheless, for mobile providers to be required to deploy the database to enable Direct Routing of calls to ported mobile numbers more quickly than fixed providers are required to deploy Direct Routing. Mobile networks are already capable of querying a central database on every call, and transition to ACQ/CDB can be achieved by mobiles networks more swiftly and at lower cost than by operators of fixed TDM networks. As BT noted in its response to the November 2006 Consultation, all mobile networks currently support number database lookup, against the Home Location Register, when terminating calls. The Call Trapping function (see paragraph 4.47 above) used by some mobile networks also requires access to a centralised database when originating calls.

Milestones

Respondents' views

4.59 O2, Orange, BT, C&W, and the Fixed Number Portability Commercial Group proposed that, rather than regulating now to impose a deadline to implement an ACQ process, Ofcom should work with industry to drive forward standards development and implementation plans. [✕] proposed that, before any regulatory obligation is imposed, further work should be carried out to understand the technical and process implications of the various options being considered. NICC restricted its comments to consideration of the technical standards which would need to be developed and agreed, and observed that some of the deadlines proposed by Ofcom would be very stretching. H3G and [✕] were, however, in favour of Ofcom acting now to impose an early deadline for implementing an ACQ/CDB process. In H3G's view, it is both feasible and desirable to mandate implementation of an ACQ/CDB by January 2009 and to ensure that standards are agreed to a timetable which will enable voluntary use of the CDB by December 2007 (and that Ofcom should create incentives to encourage early adoption).

4.60 Few stakeholders believed that the transition milestones set out in the November 2006 Consultation could be achieved. In particular, given the large number of interested parties, most (including Vodafone, Orange, O2, BT, Thus, C&W, and NICC) doubted that it would be possible to reach agreement on standards and specifications within a matter of months. H3G was alone in taking a more optimistic view of the feasibility of rapid progress.

4.61 Many stakeholders argued that there should be further consideration of governance, commercial and process issues before any decision is taken to mandate implementation of an ACQ/CDB solution to a particular timeframe. O2 proposed that General Condition 18 should not be amended to require implementation of an ACQ process until most of the development milestones have been achieved. At that point a uniform implementation date, perhaps 2012, would be applied to both fixed and mobile networks, taking into consideration the migration of fixed networks to NGN. Orange expressed a similar view and recommended that Ofcom should bring together relevant industry groups and facilitate a solution.

4.62 C&W warned that an industry-wide solution should not lead to forced migrations of customers to NGN networks, noting that different operators may wish to take different

approaches to migrating customers. C&W noted the potential for ACQ/CDB obligations to distort decisions on NGN deployment if deadlines are too rigidly defined. This concern was reiterated by NICC. [✂] also noted that those networks which already have NGNs and wish to implement ACQ/CDB as soon as possible should be permitted to do so, and the Fixed Number Portability Working Group warned that continuing provision would need to be made for those networks which fail to implement ACQ/CDB by the agreed date.

4.63   Orange argued that, given the complexity and the large number of parties involved, it is crucial that Ofcom gives a firm steer and offers guidance on how the end goal will be achieved. In Orange's view, absent a clear understanding of how ACQ would be implemented, it is not possible to construct a robust cost benefit analysis or even make a qualified assessment of the viability of the proposal. Vodafone too argued that it is not necessary to legislate at this stage for proposals that would come to fruition several years hence and argued that Ofcom should endeavour to broker consensus on the appropriate way forward, to the extent that a cost benefit analysis supports change. Vodafone also recognised that the co-ordination problem associated with any ACQ/CDB solution would be non trivial given the large number of stakeholders and the diversity of their outlooks.

4.64   BT, C&W and [✂] favoured a co-regulatory approach, under which standards development work would be progressed before any final decisions on implementation are taken. BT proposed that Ofcom should agree with industry more realistic short term and intermediate commercial and technical milestones (including standards and governance issues) linked to NGN roll out rather than setting today a deadline for full implementation of an ACQ/CDB solution. In BT's view, Ofcom should set a date for further review, following which it may be appropriate to amend the General Condition to define a date for full implementation.

4.65   NICC, the Fixed Portability Commercial Group and [✂] all drew attention to a number of operational and customer process related issues, which would need to be considered and resolved before any ACQ/CDB could be implemented. It was [✂]'s view that these should be given more consideration before a proper assessment of costs and timescales could be completed.

4.66   H3G took a contrary view, arguing that Ofcom must mandate implementation of ACQ/CDB by January 2009 (rather than September 2009 as outlined) and should ensure that standards are agreed and regulatory incentives created to facilitate and encourage voluntary adoption of ACQ by December 2007. To provide incentives to adopt the new processes in advance of the date for mandated implementation, H3G proposed that the DCC payable by Recipient Providers should be set at zero and the originating operator required to pay a DCC type charge if they continued to rely on Onward Routing. Thus, too, considered that, once a CDB has been satisfactorily established, originating operators which fail to implement ACQ/CDB should be required to pay for Onward Routing of calls.

Ofcom's views

4.67   Ofcom notes the agreement of many respondents that Ofcom needs to give firm guidance on the direction industry should take. Ofcom also notes the widely held view that Ofcom should not intervene at this point to set deadlines for final implementation of ADC/CDB as, in the view of some, it is not possible to estimate costs and timescales before the full solution itself is defined on an industry-wide basis. Ofcom recognises the risk that deadlines for implementing Direct Routing could prove to be either too aggressive or too relaxed.

4.68   However, setting deadlines now does offer the important advantage that it places an unambiguous obligation on the industry from the outset to adopt the solution fully by the deadlines stated, leaving little scope for any operator to misunderstand what it needs to achieve and by when. The industry can start the process of making the necessary internal investment decisions and changes to internal systems that will be required to deliver the benefits of Direct Routing and near-instant recipient led mobile porting in 2009.

4.69   In the light of these concerns and in order to obtain views on the proposal that the mobile porting process should be near instant and recipient led, Ofcom has decided that it needs to consult further on a new set of options, including one under which Ofcom would intervene now to set final deadlines for both fixed and mobile operators to implement Direct Routing (and same day mobile porting) and another under which Ofcom would mandate fixed and mobile operators to collaborate to establish and populate a common database by a specified date, but would not set deadlines for implementing Direct Routing (and same day mobile porting) until the design of the database is better understood. These options, and the counterfactual option to do nothing, are set out in Section 7 below.

4.70   Ofcom recognises that it may be argued that it should impose a requirement now to implement and populate a CDB by 31 December 2008, before a decision is taken on when deadlines should be imposed in respect of ACQ/CDB deployment. However, as set out in section 7 below, Ofcom's provisional view is that the CDB should be designed for and be used to enable near-instant (not longer than two hours) recipient led porting of mobile numbers, simultaneously with deployment of ACQ/CDB to deliver Direct Routing of mobile originated calls to ported mobile numbers. As this represents a material change to the proposals set out in the November 2006 Consultation, Ofcom considers it appropriate to reconsult on this proposal (and on the options with respect to setting deadlines for deploying ACQ/CDB to deliver direct routing).

Governance issues

Respondents' views

4.71   All stakeholders agreed that governance issues were of critical importance. Orange and Vodafone noted that industry co-operation should be limited, as far as possible, to technical and operational matters. However, Orange noted that in practice this may be difficult to achieve and, therefore, Ofcom would have to play an active role as facilitator, giving clear guidance on governance as well as technical matters. Thus and [✂], also considered that co-operation between users of the CDB would inevitably have to extend to commercial as well as technical matters. Both envisaged that NICC would address technical questions and NGNuk would take a commercial and strategic role. Thus considered that NGNuk would need to be suitably extended to include all relevant parties, and also proposed, as an alternative, that UKEC could address commercial and governance matters. [✂] argued that all number range holders should be involved in these discussions. In the view of Thus, however, membership would need to be strictly controlled to ensure that the arrangements remained manageable. NICC too noted that the question of who should have access to the CDB might be contentious and proposed, therefore, that Ofcom should have a role in resolving any differences.

4.72   Orange saw merit in the creation of a company limited by guarantee but warned that many important details remain to be addressed, including membership criteria and how costs should be apportioned. Orange was strongly against any database being

owned or controlled by any one stakeholder and advised that the administrator's contract must be reviewed periodically and subject to open tendering. Vodafone warned that before considering governance issues it would be necessary to understand which decisions would remain to be made by industry and which would be prescribed by Ofcom. BT recommended that there would need to be clear governance rules concerning the establishment, monitoring and enforcements of SLAs, and on funding and continuing management. In BT's view, these might be agreed via the standing industry commercial fora or via NGNuk. In H3G's view, the present mobile OSG steering group should be disbanded and a new entity formed to manage the purchase, administration and access to the CDB.

4.73 NICC noted that it had been in discussion with NGNuk to discuss how tasks might be shared between the two organisations and more widely. In NICC's view, many governance issues could not be addressed until certain technical issues have been resolved. Therefore early agreement of governance principles might not be feasible.

Ofcom's view

4.74 Ofcom considers that the commercial arrangements for procuring, operating and using the common database solution, as well as its technical specification, should primarily be matters for industry to agree. Nevertheless, as set out in paragraph 7.10 below, to ensure that progress is maintained, Ofcom considers that it may be appropriate to define to define an indicative timetable which Ofcom will monitor with care. In the event that progress is not maintained Ofcom may intervene requiring that specific action is taken to ensure that those deadlines which are prescribed in General Condition 18 are achieved.

4.75 Industry agreement on commercial governance arrangements could be best achieved by facilitation. NGN(uk), in which Ofcom participates as an observer, could be the appropriate forum to lead industry engagement on the commercial principles and agreement of the governance structure for the implementation and operation of the new solution, while NICC is a suitably established forum for industry to discuss and agree the technical standards.

4.76 Ofcom recognizes that NGN(uk) does not include representation by every operator, and proposes to arrange a meeting of interested parties, including the fixed number portability industry group and the mobile operators' steering group, with a view to brokering agreement on a common way forward in the event that the establishment of a central database were to be mandated.

4.77 In order to ensure that collaboration efforts are successful, Ofcom considers it crucial for the industry to establish an implementation plan as soon as commercial governance is agreed and to manage the co-ordinated execution of that plan effectively and in a timely manner. In Ofcom's view, planning and execution should be managed by a suitably qualified programme manager, supported as necessary by other staff, to be selected and paid for by the industry. The programme manger should be completely focussed on planning and execution of the programme, and escalation paths should be agreed in advance for issues or risks that may arise relating to policy, commercial governance, or technical standards.

4.78 In light of Ofcom's conclusion that a CDB should be introduced, Ofcom considers that there may be some benefit in industry commencing this process of collaboration and planning now in the form of a shadow implementation group or body in advance of Ofcom's conclusions on the use of deadlines (or otherwise) following its further consultation. Ofcom intends to invite all interested parties to a meeting following

publication of this document to discuss the way forward in establishing a CDB. Issues for early agreement will include governance and the body best suited to run the tendering process for a new database.

Cost-benefit analysis

Cost of implementation

Respondents' views

4.79   [✂], Vodafone, O2 and BT said that they believe the costs of ACQ/CDB may be higher than expected. [✂], too, questioned the cost estimations used in the CBA. BT noted that significant additional costs will arise because not all costs previously identified by Mason's[9] will be specially attributable to NGNs. BT also said that the Sagentia report published with the November 2006 Consultation assumes that costs of Onward Routing will not be incurred under NGNs, but this is questionable if Onward Routing and Direct Routing were to run in parallel for some time. Lastly, BT noted that the investment appraisal assumes that industry agrees a set of detailed requirements, standards and timescales while in practice no such standard exists, and hence the level of costs may be quite different to that assumed.

4.80   [✂] questioned the use of incomplete cost data and said that not all mobile operators were interviewed and had submitted cost information. In common with other MNOs, [✂] reported that the net costs of implementing Direct Routing for mobile networks (including the cost of possible disruption) had been under-estimated in the November 2006 Consultation document. [✂]'s view was that the net cost is underestimated and will differ for different options considered because of the information systems and network development costs involved in building a central database. Mobile operators are already implementing call-trap and, in [✂]'s view, once all networks implement this, there will be no need for regulatory intervention.

4.81   Vodafone also modelled a wider range of cost scenarios and reported that many of these further erode the NPV of a change to ACQ/CDB, in some cases turning it negative. Vodafone acknowledged, however, that there is still considerable uncertainty in relation to the underlying cost elements, and that this will remain until further work has been undertaken.

4.82   O2 commented that while Ofcom had considered the financial costs that operators would incur, it believes the opportunity cost of such investment should be considered as all operators would invest only in those projects that are most important to them. Vodafone also said it is unclear how Sagentia generated its cost estimates without a clear idea of what the technical solution might be, and that these may not be correct.

Ofcom's response

4.83   Ofcom acknowledged, as did Sagentia, in the November 2006 Consultation that the costs figures are based on estimates rather than a detailed cost modelling exercise. Ofcom recognises that estimates cannot be precise in the absence of a specified technical solution, but would have welcomed further data, albeit indicative, from industry.

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[9] "Costs and Implementation Issues of a Central Database Solution for Number portability in the UK", Mason Communications Limited, April 2004

4.84   Ofcom sought to obtain more detailed cost information from operators in the course of the November 2006 Consultation, but was unable to obtain any more detailed cost estimates than those used by Sagentia. Ofcom has therefore undertaken a sensitivity analysis with respect to the capital costs in order to test the robustness of the capital expenditure figures. These sensitivities are discussed in Annex 5.

4.85   Ofcom acknowledges that some parallel running of Onward Routing and ACQ/CDB is likely to be necessary in fixed networks, and that the costs of implementing Onward Routing in NGN may not be avoided. These possible additional costs have not been specifically modelled in the cost-benefit analysis. However, Ofcom notes that in the cost-benefit analysis, while costs of implementation of ACQ/CDB in fixed networks are modelled as incurred progressively over a number of years from 2009 to 2012, the benefits are only modelled to occur in 2012. If the additional costs of parallel implementation were to be incurred then the benefits of ACQ/CDB should also be brought forward, and would to some extent reduce the effect of these additional costs.

Discount factor

Respondents' views

4.86   Both O2 and Vodafone commented that the discount factor used by Sagentia appears to be low and there is little explanation of why this figure has been used. O2 and Vodafone argued that the discount factor of 7% used in the cost benefit analysis associated with the November 2006 Consultation was inconsistent with Ofcom's assumptions in related markets.

4.87   [✂]

4.88   O2 commented that the discount factor should take into account the option value.

Ofcom's response

4.89   Sagentia updated the model constructed for Ofcom by Masons in August 2004[10] and hence used the discount factor that was previously used. Ofcom has taken note of the comments by the mobile operators and has revised the discount rate used in its latest assessment. Since the ACQ/CDB model considers both fixed and mobile operators, a blended discount rate has been used. The nominal pre-tax weighted average cost of capital (WACC) for mobile operators, as per the Mobile Call Termination Statement published in March 2007[11] is 14.6%, and the nominal WACC for BT (non-copper network) as published in the statement of the cost of capital for BT[12] is 11.4%. Given that the capital expenditure assumed for fixed operators is five times that for mobile operators, and forecasts of ported traffic are for roughly even proportions, the average WACC to be used as the discount rate has been assumed to be 12%. Ofcom notes that Vodafone assumes a discount rate of 11% in its response to the consultation. Updated calculations are provided in Annex 5.

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[10] This report can be found at
http://www.ofcom.org.uk/consult/condocs/uk_numb_port/uk_numb_port_cons/mason/mason_report.pdf
[11] Statement *Mobile Call Termination* published by Ofcom on 27 March 2007
http://www.ofcom.org.uk/consult/condocs/mobile_call_term/statement/statement.pdf
[12] http://www.ofcom.org.uk/consult/condocs/cost_capital2/statement/

4.90   Regarding the discount period, a 10 year period would seem reasonable in view of the lifetime of the Onward Routing solution for fixed networks, which has been in place since 1997, and of the expected lifetime of the mobile solution, which, having been introduced in 1999 would extend to 10 years if transition to ACQ/CDB were to occur in 2009, as proposed in the November 2006 Consultation.

4.91   With respect to the option value, the Mobile Call Termination Statement noted that three conditions needed to prevail for real options to be relevant: (a) there must be an option to wait and see; (b) net returns must be uncertain, and (c) investments must be irreversible. Ofcom does not consider that all three apply in the case of ACQ/CDB. Ofcom has modelled the costs and benefits of a transition to ACQ/CDB and has concluded that, taking into account the level of uncertainty, the advantages of ACQ/CDB more than offset the costs. Thus, while the precise level of return may be uncertain, Ofcom does not accept that there is doubt as to whether any positive return will be achieved. Furthermore, while, in theory absent regulatory intervention, there may be an option to wait and see, use of a database common to all originators of calls requires, by definition, a common decision by all participants. Lastly, it is by no means clear that the investment in ACQ/CDB will be completely irreversible.

4.92   Ofcom therefore believes that in this case the discount rate need not consider the option value.

Donor conveyance charges

Respondents' views

4.93   Both O2 and Vodafone commented on the benefits of the solution being highly dependent on the value of the donor conveyance charge (DCC) and very sensitive to it. Both operators argued that with an assumed charge of 0.1ppm, this being one of the valuations modelled by Sagentia, a positive NPV becomes questionable and negative when considering the mobile only scenario.

4.94   Vodafone also commented that much of the CBA was based on using the present level of the DCC as a proxy for the inefficient costs of Onward Routing. In Vodafone's view, however, the donor conveyance charge overstates those costs and fails to consider the likelihood that such costs will continue to fall in future.

Ofcom's response

4.95   Sagentia had modelled a donor conveyance charge of 0.1ppm as a sensitivity test to compare with the base case of 0.8ppm, but this particular sensitivity test was not applied to all of the options presented. Ofcom recognises that the sensitivity should have been tested against Ofcom's preferred option. To understand the impact of a lower donor conveyance charge, Ofcom has applied this and a range of other sensitivities to its currently preferred option and the results are reported in Annex 5. The results of that sensitivity analysis show that where the base assumptions of capital costs are retained, a positive NPV will result even where a lower donor conveyance charge assumption of 0.1ppm is applied.

4.96   However Ofcom notes that the level of the DCC was set on the basis that this was 50% of the cost of Donor Conveyance. Therefore, Direct Routing would not only avoid the donor conveyance charge but also the other 50% of the costs, leading to higher benefits to the industry and, ultimately, consumers. Were the costs to be 0.2ppm, there would a positive NPV even if the capital costs were to increase by a factor of 2.25. This is explained further in Annex 5. Given this finding, Ofcom is

satisfied that there are benefits from a move to Direct Routing even if the capital costs are uncertain at this stage.

Additional views on costs and benefits

Respondents' views

4.97   C&W indicated that benefits beyond those associated with the removal of reliance on the Donor Provider may be obtained, and cited, in particular, a beneficial impact on numbering resources which would reduce the need for further number changes. In C&W's view these benefits alone would warrant adoption of a CDB, and C&W recommended that this should be adopted as the key driver. NICC also noted that use of a CDB might separate routing from numbering administration, and commented that this could have profound implications across wider range of issues.

4.98   BT noted that there are many ways of implementing a CDB, depending on the objectives being pursued. These include databases holding, variously, only ported numbers, a further sub set of numbers, or all numbers. BT noted that a CDB which contains all numbers might obviate the need for forced number changes if the finer granularity of routing enables more efficient allocation of numbers. BT acknowledged, however, that the increased capacity would tend to increase cost, which might mean that the solution is no longer cost effective. BT also expressed concern about the additional security concerns in relation to a centralised database holding all numbers.

4.99   In the views of BT and NICC, Ofcom had not made clear whether it envisaged that the CDB would hold only ported numbers, noting that the draft condition implied a CDB with wider application. NICC observed that it was conceivable that Ofcom might mandate the use of a CDB to hold all ported numbers, and leave industry to decide whether also to record non ported number. In NICC's view, however, it is desirable that all providers adopt the same solution and, therefore, Ofcom should establish the preferred approach.

4.100   Vodafone considered in its response that Ofcom should have considered the effects of investment in call trapping and use of direct interconnect rather than transit for routing calls to ported numbers.

4.101   O2 also questioned whether Ofcom could adequately quantify the impacts of network congestion, delayed introduction of new services and inefficient operator behaviour consequent on indirect routing.

Ofcom's response

4.102   Ofcom notes respondents' comment on the benefits to number administration that could flow from the use of a CDB. Ofcom is also aware that, in order to maximise these benefits, the CDB would potentially need to contain records of every telephone number, not just the minimum requirement to achieve independence of the Donor Provider, which only requires records of every ported number to be stored. Ofcom is not seeking to improve number administration as part of this review and, therefore, has not assessed the associated benefits to number administration or the costs of enabling wider benefits to be utilised.

4.103   The investment that some mobile operators have already made in call trapping and direct interconnection has allowed them to reap some, but not all, of the benefits of

Direct Routing. Call trapping ensures that calls that originate on the operator's network and terminate on a number ported into that network are routed without being tromboned to the Donor Provider and back again, and thus avoids inefficient conveyance of such calls. The cost-benefit analysis in the November 2006 Consultation did not take account of the fact that such investment allows the operator to reap some of the benefit that would accrue from an ACQ/CDB solution. As part of its reassessment of sensitivities, Ofcom has, therefore, assessed the impact of the fact that such benefits cannot be recovered again from investment in ACQ/CDB, and this is reflected in Annex 5. Ofcom has not attempted to model the effect of use of direct interconnection rather than transit on the costs assumed by using the DCC of 0.8ppm as a proxy for costs.

4.104 Ofcom has not sought to quantify the beneficial impacts on network congestion, delayed introduction of new services or inefficient operator behaviour resulting from indirect routing, and these are not factored into its cost-benefit analysis. However, Ofcom acknowledges that such benefits may exist and would therefore be additional to those which Ofcom has already identified.

Implementation details

Respondents' views

4.105 Orange reported that it is still unclear how a solution would operate, but noted that international experience and security concerns suggest a form of common referencing architecture might be appropriate. Orange noted, however, that it would be essential to ensure that all operators have the same version of the database at all times, and that adequate fall back options are in place. H3G too envisaged a process based on periodic downloading of common data.

4.106 Orange proposed that the download mechanism could be de-coupled from the query mechanism, enabling flexibility in the timing of implementation by different providers. Vodafone warned, however, that much NGN design and deployment had already been committed based on current Onward Routing principles, and it should not be assumed that mandating future use of a CDB now would avoid the cost of building Onward Routing into early NGNs. [✂] too warned that care would need to be taken to ensure that porting issues are given the necessary level of attention during NGN development. In [✂]'s view, some attention is now being given to these issues but further work is needed.

4.107 BT and C&W also shared the view of O2 and H3G cited above that real-time interrogation would present a serious risk that security and resilience could be compromised, and proposed that processes should be based on periodic downloads from the CDB. [✂] also expressed a preference in principle for periodic local updating rather than real-time access to the CDB. NICC noted that real-time interrogation offers the advantage of ensuring that port requests are promptly reflected in networks, but also noted the security risks; it reported that it was examining a variety of hybrid solutions. The Fixed Network Number Portability Working Group also observed that several options are available for consideration.

4.108 NICC and the Fixed Portability Working Group both also warned that there are many significant matters of technical detail which remain to be addressed, including the scope of the information to be held on any CDB, treatment of variable length numbers and interfaces with other systems.

Ofcom's view

4.109   Ofcom recognises that there are many ways in which the technical ACQ/CDB solution could be implemented, including options which might enable a wider range of benefits beyond improvements to number portability. In Ofcom's view, these are issues best decided by industry. Ofcom also acknowledges that the task of designing and implementing a CDB is not insubstantial, and many technical, commercial and operational details have still to be addressed. As set out in Section 7 below, Ofcom is seeking views on the merits of an option under which Ofcom would not set a date for full implementation of ACQ/CDB until after further consultation next year. However, as set out in Section 7 below, Ofcom has concerns about the possible impact of this option on timescales.

Section 5

Responses to the November 2006 Consultation - porting lead times for mobile numbers

General views of stakeholders

5.1   Around half of the responses also made comments on the proposal to reduce mobile number porting lead times.

5.2   Most respondents agreed that a reduction to less than one day could be achieved, but commented that such a change would require substantial process re-engineering, be time-consuming and expensive to implement.

5.3   By contrast, many respondents accepted that a reduction in porting lead times to two or three business days could be achieved swiftly and with minimal change to existing processes.

5.4   Although respondents in general accepted that reduced porting lead times were achievable, a number of respondents were sceptical that regulatory intervention was needed to require a reduction and questioned whether it was either necessary or justified by consumer research which, many respondents argued, indicated broad consumer satisfaction with existing porting arrangements. Many respondents also warned that care should be taken to protect against increased fraud and mis-selling when considering a reduction in porting lead times

The need for regulatory intervention

Stakeholder views

5.5   While most stakeholders agreed that a reduction in porting lead times was feasible and that a reduction to 2 or 3 days could be achieved with little change to existing process and within a relatively short timeframe, many stakeholders questioned the need for regulatory intervention in this area.

5.6   H3G, however, was strongly in favour of regulatory action to effect fundamental change to present porting arrangements, and outlined the results of its own consumer research which, in H3G's view, supported such intervention.

5.7   Orange, O2 and Vodafone noted that Ofcom's consumer research had found that very few consumers report, unprompted, that porting lead times are a reason why they would not switch mobile supplier. Few of those who have decided against porting cite lead times as a reason and few of those who have ported their number were dissatisfied with the time taken.

5.8   Vodafone also questioned whether there is any correlation between porting lead times and propensity to switch; referring to international data which indicates that countries with similar porting lead times may see very different levels of switching.

5.9   All MNOs, except H3G (which presented its own consumer research) and [✂], expressed concern that, in their view, Ofcom was proposing to rely on instinct, rather than objective evidence, to support the proposal to reduce porting lead times. Orange characterised churn levels within the UK as already high and argued that regulatory action to further promote competition is not required. O2 further noted that Ofcom's wider programme of market research indicates that levels of switching in the mobile sector are higher than in fixed telephony and internet service provision, and that mobile switchers report high levels of satisfaction with the process. O2 also argued that levels of porting are increasing and compare favourably with levels in other European countries.

Ofcom's view

5.10   Ofcom considers that consumers in the UK should be aware of their right to port and be able to port in the most simple, convenient and speedy manner possible. Ofcom considers that convenience, ease and speed in porting mobile numbers will not only deliver a real consumer benefit but may also facilitate further switching and competition in the retail mobile market. Ofcom's view is therefore that a reduction of porting lead times to the shortest achievable time would be of benefit to consumers in the UK.

5.11   Ofcom considers that, in this case, regulatory intervention is justified in order to ensure that portability does not act as a barrier to switching. As set out above, Ofcom's objective is to ensure that porting lead times are as short as possible as Ofcom considers that longer port lead times may discourage consumers from switching provider. The current five working day porting lead time is, in Ofcom's view, no longer justified and can be reduced at limited cost and would deliver tangible benefits to consumers. Ofcom therefore considers that regulatory intervention is justified at this time. This position is supported by Ofcom's consumer research and international benchmarking.

5.12   The September 2006 research presented in the November 2006 Consultation indicated that a quarter of those switching during the last four years had ported their mobile number to their new provider, and that a quarter of these were satisfied with the time taken to port their number. The February 2007 Research, set out at annex 6 to the present consultation document, reported that around a third who had switched in this last year had ported their number and, when asked, a sizeable minority (42%) of those reported that the process should have been achieved more quickly.

5.13   Further, the February 2007 research questioned those who switched without porting whether they would have ported their number if they had been told they could do so and that the process would take one or three days. Around 41% of those questioned said that it was likely that they would have ported if they had known this was possible and had been told the process could take three days (and 48% were likely to have ported if they had known that this was possible and had been told the process could take 1 day). Ofcom therefore considers that longer porting lead times, as well as low customer awareness of porting rights, have been a barrier to porting for some consumers who have switched supplier, and that, were porting lead times to be reduced, in a context of growing consumer awareness, this would be likely to increase the number of ports among consumers who switch suppliers.

5.14   Ofcom notes from September 2006 research that annual rates of switching in the mobile industry were around 15%. While only a third of these subscribers ported their number, one third of the remainder indicated that they would have preferred to have

kept their number had they known this was possible. Ofcom therefore considers that there is potential for porting rates to increase.

5.15   Further, the February research also indicates that a small percentage (2%) of those who switched provider and did not port said this was because it would take too long to keep the original number.

5.16   Ofcom notes from its international benchmarking (published at Annex 7 to the November 2006 Consultation) that the best-practice lead time in Europe for porting numbers is less than 1 day, and there are many European countries which report far larger volumes of mobile ports (proportionate to the volume of mobile subscribers) than the UK. Ofcom has not seen compelling evidence to suggest that the porting process should take longer in the UK and sees little reason why this should be so.

5.17   Consumer research commissioned by H3G and submitted with H3G's response to the November 2006 Consultation appears to indicate a much higher level of dissatisfaction with the speed of porting than is indicated by Ofcom's long running programme of consumer research. More specifically, H3G's research appears to indicate that a substantial minority of customers (20%) are deterred from switching because of the time which it would take to port their number and most (72%) of those who had switched without porting their number would be likely to port it if this was possible in 1 or 2 days. While Ofcom notes this research with interest, Ofcom does have some concerns about the questions relied on and the context in which they were posed which, in some instances, may have conditioned responses.

Feasibility of a reduction in porting lead times to less than one working day

Stakeholder views

5.18   With the exception of H3G, all of the MNOs plus BT, C&W, Thus and Syniverse (the supplier of the present mobile number portability system) were in agreement that a reduction in porting lead times to less than one day would necessitate substantial process re-engineering probably necessitating a recipient-led process, and most were of the view that this would be dependent on access to a common database.

5.19   H3G agreed that a reduction to less than one day would require process re-engineering and require implementation of a common database. In contrast to other stakeholders, however, H3G presented a view that such changes could be implemented swiftly and at moderate cost.

Ofcom's view

5.20   Ofcom considers that porting lead times should be as short as possible in order to ensure that porting does not act as a barrier to switching. Ofcom therefore considers that same day porting lead times are desirable and, as explained further below, its preferred option is for near-instant porting. Ofcom considers that reducing mobile porting lead times to less than one day would be most effectively achieved by a recipient-led process using an ACQ/CDB.

5.21   Having considered responses from stakeholders and having obtained further information from the five mobile network operators, Ofcom has concluded that, if achieved in isolation from development of ACQ/CDB for the purposes of enabling Direct Routing, a change to a mobile porting lead time of less than one day would necessitate substantial process re-engineering that will cost several million pounds. Ofcom has therefore concluded that porting lead times of less than one day would

not be cost justified at the present time. However, Ofcom recognises that deployment of a common database to enable Direct Routing will, necessarily, also require the development of a new process for mobile number portability. As set out below, Ofcom considers therefore that such a new process may be designed to deliver a near instant (less than two hour) porting lead time and has indicated this to be its preferred option in the further consultation.

Feasibility of a reduction in porting lead times to three (or two) working days

Stakeholder views

5.22   The November 2006 Consultation also asked whether, alternatively, Ofcom should require porting lead times to be reduced to three working days. Most stakeholders that commented on this question agreed that such a change could be implemented swiftly and at relatively low cost.

5.23   BT, C&W and Thus (all of whom described themselves as mobile service providers as well as FNOs) agreed that a reduction to three working days would be acceptable, and BT and Thus further noted that a reduction to 2 working days would be reasonable. BT and Thus agreed that such a reduction could be achieved within 6 months, although C&W stated that a reduction to 3 working days within 6 months is too aggressive and that 12 months is more realistic. Syniverse also confirmed that, in its opinion a reduction to 3 working days could be achieved in isolation from a broader transition to a common database and could be achieved within 6 months.

5.24   Of the MNOs, O2 stated that it was willing to reduce porting lead times to three days, on a voluntary and reciprocal basis, and that this could be achieved within 6 months provided that there was industry-wide acceptance. Subsequent correspondence with O2 after closure of the formal consultation period confirmed that, in O2's view, a reduction to 2 working days could be achieved at similar cost and within a similar time-frame.

5.25   Orange confirmed that it was open to the idea of implementing a three working day process, although it warned that consequent budget changes could not be achieved within 6 months. Orange also warned in subsequent correspondence that failure to allow sufficient time to plan for a reduced porting lead time and to train staff would put at risk the reliability of the process. In Orange's view a reduction to 2 working days might require up to 18 months to implement.

5.26   [✂] made few comments on the merits or otherwise of a reduction in porting lead times beyond stating that it did not support any change. [✂]. Orange and O2 have not provided any detail of the costs they consider would be incurred as a result of a reduction in porting lead times to 2 or 3 working days. However, each operator indicated that they did not believe such costs to be significant. H3G reported that the process of staff training can be achieved [✂].

5.27   Vodafone was against any change to porting lead times, warning that this would increase the risk of failure and reduce customers' ability to exercise choice. In Vodafone's view, a reduction in porting lead times to three working days could not be achieved responsibly within 6 months. In subsequent correspondence Vodafone cited in particular the situation of multi SIM and "community type" tariffs which, according to Vodafone, have to be transferred to a suitable tariff before they can be ported out.

5.28   In response to a request from Ofcom for further information about the costs of moving to a three day or two day porting lead time, Vodafone provided data which it characterised as providing a [✂].

5.29   According to Vodafone, the costs that would need to be incurred for a reduction of porting lead times to three working days [✂].

5.30   H3G's view differed from that of other stakeholders, in that H3G argued that a more fundamental change to porting processes, involving implementation of a common database and application of a recipient led approach, could be achieved swiftly and at low cost. H3G therefore did not comment on the merits of a reduction to three working days. Neither did H3G comment on whether such a change could be achieved within 6 months. Subsequent correspondence with H3G indicated that it did not consider that the costs of a move to a 2 day porting lead time would be greater than those associated with a 3 day porting lead time.

Ofcom's view

5.31   Ofcom notes that most respondents who commented on this issue agreed that a reduction of the porting lead time for non bulk transfers (i.e. contracts with fewer than 25 SIMs) to three working days could be achieved with minimal changes to existing processes and systems. Ofcom also notes that, when questioned further, several respondents reported that a reduction to 2 working days could be achieved with little or no additional expenditure or time.

5.32   Having considered the comments of all stakeholders which responded on this issue, Ofcom considers that a reduction in porting lead time to 2 working days can be achieved at minimal cost and minimal disruption to existing processes. The reduction to two working days represents a reduction of a further day from that set out in the consultation document.

5.33   Ofcom concurs with the view of BT and Thus that a reduction to two working days could be achieved with similar resources, and without changing existing processes. In light of the responses to the November 2006 Consultation, Ofcom invited the five MNOs to comment further on the feasibility and cost of implementing a two working day porting lead time. As noted above, with the exception of Vodafone which asserted that recurring costs would be a degree higher if a 2 day porting lead time was adopted, the other MNOs confirmed that the costs of implementing these two options would be similar.

5.34   Ofcom has given consideration to Vodafone's claim that a reduced porting lead time would provide insufficient time to deal with numbers associated with multi SIM contracts. Relatively few subscriber, however, have more than one SIM on a single billing package. Ofcom's accepts that it may be more difficult to process some complex arrangements within 2 days. However operators should be in a position either to automate these processes or use their customer service resources to ensure that these ports can be performed in a shorter timeframe.

5.35   In light of the responses received, Ofcom considers that, on balance, it is feasible to reduce the porting lead time to 2 working days within 9 months without causing Donor or Recipient Providers to incur costs materially in excess of those which would be incurred by a reduction to 3 working days. As set out in section 7 below, Ofcom is consulting further on a reduction of mobile porting lead times to a period of less than 2 hours in the context of the introduction of a CDB.

Application of a 5 day or 7 day working week

5.36   After closure of the formal consultation period, Ofcom asked the five MNOs to provide information on, amongst other things, the likely impact of defining porting lead times by reference to calendar days (i.e. a 7 day working week).

Stakeholder views

5.37   All of the MNOs indicated that the use of a seven day working week with porting lead times expressed in calendar days rather than working days would require significantly more time and resources to implement than a move to a reduced porting lead time based on a five day working week.

5.38   [✂].

5.39   [✂] too reported that a move to a 7 calendar day week would pose more significant operational resource challenges than a shortening of the porting lead time within a 5 day working week. Like [✂], [✂] reported that a 7 day week would require significant additional engineering support staff to support weekend porting as well as additional off-line customer service staff to process orders.

5.40   H3G too estimated that a 7 day porting week would incur additional staff costs (which H3G quantified for Ofcom) although these were modest.

5.41   Vodafone provided data intended to give a "rough order of magnitude", which indicated that the additional costs of 7 day working were substantially higher than the additional costs of reducing lead times to two or three days within a five day week. Vodafone provided further information with a breakdown of the costs incurred in moving to a three and two working day porting lead-time process. [✂].

Ofcom's view

5.42   Having considered the responses from stakeholders and having obtained further information from the five MNOs, Ofcom has concluded that a change to require porting lead times to be reduced to 2 calendar days, rather than 2 working days, would have a large impact on costs to the service providers and would be disproportionate to the benefits achieved by such a measure. Ofcom is therefore amending General Condition 18 to require mobile porting lead times to be reduced to a period of 2 working days.

"Save" activity and recipient/donor led processes

5.43   The November 2006 Consultation did not propose a change to a recipient led porting process. Porting lead times of less than one working day are however associated with a recipient led approach, and the subject of a recipient or donor led process was raised by a number of stakeholders.

Stakeholder views

5.44   C&W argued that "save" opportunities arising from the present donor led porting system actually require more pressing regulatory action than porting lead times. This was also a concern of H3G which set out in correspondence with Ofcom after closure of the formal consultation period that a shortening of porting lead times without a parallel change to a recipient-led process would only exacerbate the impacts of the present porting system. In contrast, Vodafone argued that a much-reduced porting

lead time might reduce consumer choice by limiting the opportunity to respond to better offers before the porting transaction is locked down. O2 warned that a move to recipient-led process would be extremely detrimental to the interests of consumers because it would increase the ability to engage in mis-selling. This view was reiterated by Vodafone and Orange.

Ofcom's view

5.45   Ofcom's aim is the quickest and simplest possible porting process for consumers which minimises scope for mis-selling and is consistent with efficient costs. Furthermore, as set out below, Ofcom's preliminary view is that porting lead times should be reduced to a period of less than 2 hours and that, in order for this to be achieved in Ofcom's view, the process needs to be recipient led to minimise the number of steps which the consumer must take before his number can be ported and to ensure that recipient networks do not face disincentives to promote portability

5.46   In contrast to switching between suppliers of fixed line services, switching mobile providers requires a positive act on the part of the consumer (who will therefore be aware that something about their service is changing) by either having to switch SIM cards or starting to use a new mobile handset. This reduces scope for mis-selling. Ofcom wishes this state of affairs to continue.

5.47   Reliance on a PAC generated by the Donor Provider at the point when a consumer decides to port his number, is by no means the only effective means to protect consumers. As noted in Ofcom's consultation *Migrations switching and mis-selling[13]*, there are many different options available to service providers. New technology, including for example automated SMS services, further increase the range of possible solutions. In the event that Ofcom were to require operators to introduce near instant recipient led porting, Ofcom's view is that industry is best placed to identify the necessary safeguards although Ofcom would liaise with industry to ensure it is satisfied by the measures to be put in place.

5.48   Ofcom is not considering the merits or otherwise of "Save" activity in the context of this consultation exercise, and has not taken a view as to whether such activity is desirable. Ofcom does note the possibility, however, that concern that the Donor Provider may "Save" the subscriber, during the course of initiating Donor led porting, may deter mobile providers from promoting porting to migrating customers, and this may go some way to explain the low proportion of switching consumers which are aware that they can port their number. To the extent that a new porting process gives Recipient Providers more confidence to offer porting, consumers who currently do not port their number, simply because they are unaware that they may do so, will benefit. Increased awareness of the right to port may also increase propensity to switch, which would be good for competition.

Bulk ports and complex subscriptions

Stakeholder views

5.49   C&W, Orange and Vodafone questioned whether Ofcom was proposing to require a reduction in porting lead times for bulk ports (25 or more SIMs) as well as for single ports and ports of up to 24 SIMs. In addition, C&W expressed the view that business customers have different priorities to residential customers, as business users of mobile phone services are typically more concerned with certainty and reliability in a

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[13] See note 10 above

managed porting process than with a short porting lead time. In C&W's view, the risks of delay and service failure and the complexity of the process including use of temporary numbers are more pressing issues for business users.

5.50   Vodafone also expressed some concern in relation to ports of mobile numbers which are part of a larger contractual package (but involving fewer than 25 SIMs). Here Vodafone argued that they may have issues with meeting shortened porting lead-times where they have complex subscriptions where a customer has multiple handsets or where there are multiple numbers being ported.

Ofcom's view

5.51   This statement makes no specific proposals in relation to bulk ports of 25 numbers or more. Ofcom has noted comments received in this regard. Ofcom also notes the comments of respondents with regards to complex ports for business customers involving porting of less than 25 numbers. Ofcom appreciates that certain subscribers may consider broader issues to be of more importance than porting lead times when changing provider. However, the requirement to port numbers within a specified time does not bind the Recipient Provider. Therefore, in the event that a Recipient Provider requires additional time in which to establish the contractual package or to deliver handsets, it may agree a longer porting lead time with the subscriber. The Recipient Provider is able to determine when to make a request to the Donor Provider at which time the obligation under General Condition 18 to port will be applicable.

Provision of PAC codes

Stakeholder views

5.52   Syniverse and Vodafone questioned whether Ofcom intended that the time to provide a PAC (currently up to two days) should be reduced, and whether this action should be completed within the timeframe specified for porting.

Ofcom's view

5.53   Ofcom notes that the Mobile Number Portability Process Manual envisages that, where a subscriber requests a PAC by phone, this may be issued immediately, but the manual specifies a maximum of 2 working days to provide written confirmation or to respond to postal and faxed requests for a PAC. Ofcom does not intend to require changes to these processes at the present time although Ofcom recognises that, in the event that recipient led porting were introduced, the existing process for the issue of PACs could not be maintained. In the meantime, however, Ofcom would be concerned if valid phone based requests for PACs were not granted immediately, and would welcome information about service providers who were unreasonably delaying provision of PACs. In any event, unreasonable delay is likely to place the provider in breach of the obligation in General Condition 18 to provide portability as soon as reasonably practicable.

Section 6

Ofcom's conclusions on the options set out in the November 2006 Consultation

Summary of conclusions

Routing of calls to ported numbers

6.1   Following consideration of responses to the November 2006 Consultation and further analysis, Ofcom has concluded that fixed and mobile providers should implement and populate a common database to enable Direct Routing of calls to ported numbers. In Ofcom's view this is the most proportionate solution to achieve its objective of protecting customers with ported numbers from the impact of failed Donor Providers.

6.2   Subject to consideration of responses to this consultation exercise, Ofcom is of the view that fixed and mobile providers should be required to implement and populate a common database by 31 December 2008.

6.3   Having noted industry concern about the setting of deadlines for subsequent deployment of the database to enable Direct Routing, as well as the issue of the requirement for a recipient led near instant mobile porting process, Ofcom has decided to reconsult on two distinct options. Both options would require fixed and mobile providers to implement and populate a common database by 31 December 2008. Under one of these Ofcom would set firm deadlines for migration to Direct Routing, whereas under the other Ofcom would forbear from mandating final deadlines for migrating to Direct Routing until the design of the common database is better understood and voluntary progress towards Direct Routing has been assessed.

Mobile porting lead times

6.4   Ofcom believes consumers in the UK should be made aware of their right to port and be able to port in the most simple, convenient and speedy manner possible. Ofcom considers that convenience, ease and speed in porting mobile numbers will not only deliver a real consumer benefit but will also facilitate further switching and competition in the retail mobile market. In the light of these objectives, Ofcom has concluded that mobile porting lead times should be reduced to 2 working days by 31 March 2008. The Notification making the relevant changes to General Condition 18 is attached at annex 7.

6.5   If ACQ were used to implement direct routing, the only change necessary to ensure correct routing when a number is ported from one provider to another is a single change to the relevant record in the common database. By contrast, under Onward Routing, porting a number requires changes to routing tables to be co-ordinated by at least two networks (Donor and Recipient) and sometimes three networks (Donor, Recipient and original range holder). The simplicity of the routing change with ACQ could make a near-instant delay more readily achievable in engineering a new mobile number portability process.

6.6   In light of Ofcom's view that porting lead times should be reduced to the greatest extent possible in order to ensure that they do not act as a barrier to switching, Ofcom considers that, in the course of the introduction of a CDB, it may be possible to further reduce porting lead times. Ofcom is therefore further consulting on a proposal to require that, by in the course of implementation of ACQ by the mobile industry, porting of mobile numbers is achieved by a near-instant (not longer than two hours) process, in line with international best practice.

6.7   The current mobile number portability process for porting a number relies mostly on bilateral exchanges of data and messages between operators. A database, by contrast, could support common business rules for porting numbers such that operators need only transact with the database to implement mobile number portability. This means that only one set of systems interfaces need to be agreed, programmed and tested by each operator to implement a new process, thereby reducing the overall work required and consequently reducing the cost of change.

6.8   Even if the industry were to move to ACQ/CDB without changing the current mobile number portability process (with a shortened lead-time of 2 working days), changes to the automation of the mobile number portability process within each operator's systems would nevertheless need to be made, to allow the mobile number portability process to change the routing of calls using ACQ/CDB rather than using Onward Routing. The difference in cost between this change to MNOs' mobile number portability systems and the one that would implement a new mobile number portability process can be expected to be modest. Ofcom estimates this difference in one-off cost to be of the order of £5M, on the basis of approximately £0.5M of additional systems changes cost per MNO, and an additional similar amount for changes to operating procedures. Ofcom's provisional view is that it is also possible that simplification of the process and avoidance of manual handling, for example avoiding consumer calls to Donors to obtain PAC codes, could provide ongoing savings due to process automation. Ofcom estimates that such savings could approach £3M per year, on the basis of saving 1.9M PAC requests per year, saving approximately £1.50 per PAC request in costs of customer service representatives' time and postage of confirmation letters.

6.9   Ofcom's provisional view is that, if a near instant process were to be adopted, that process should be recipient led. This is because a process which requires the consumer to speak with the donor network before the process of porting can start is not consistent with the process being completed in a near-instant timeframe. The process may also appear complex and potentially onerous to consumers, who have to liaise between two separate organisations. Ofcom also considers that the requirement in the current process that the customer contact the losing provider in order to start the porting process may act as a disincentive on gaining providers to promote porting, because of the possibility that such contact could trigger a "Save" offer from the losing provider. This disincentive effect may explain, in part, the low levels of consumer awareness of the right to port. Ofcom's provisional view is that a fast and convenient porting process, combined with increased promotion of the option to port, may increase the propensity to port and propensity to switch. Whilst it may be difficult to quantify the benefits arising from increased competition and consumer convenience, Ofcom believes these are important and would welcome views from stakeholders on these issues.

6.10   Ofcom is inviting industry to provide information about the additional costs of offering near instant (no more than 2 hours) porting of mobile numbers simultaneously with mobile providers' deployment of ACQ/CDB on the basis of the timescales set out in the options at paragraph 6.51 below.

Conclusions on the options for addressing routing of calls to ported numbers

6.11 The November 2006 Consultation proposed five main options for intervention in relation to the routing of calls to ported numbers. Responses to the November 2006 Consultation did not present substantive new information on costs or benefits of deployment of the various options for addressing concern about reliance on Donor Providers to onward route calls to ported numbers.

6.12 Ofcom has addressed comments made by respondents on the cost-benefit analysis. in respect of the proposals to deploy ACQ/CDB. Under all but one of the scenarios which Ofcom has analysed the overall economic benefits, taking into account the economic impact of provider failures affecting 25,000 customers or more over the lifetime of the solution, outweigh the costs. The exception is a scenario which, in Ofcom's view, is not realistic, in which the mobile porting rate would drop to less than half its current level. In its assessment of costs and benefits Ofcom also considers the non-financial benefits of ACQ/CDB to be relevant in the event of provider failure, which include the avoidance of inconvenience and of possible distress to customers.

6.13 Following review of responses to the consultation, Ofcom is setting out its views on each option below.

Option 1: No change

6.14 As noted in Section 4 above, Ofcom does not agree with the views expressed by some respondents that current arrangements work well and that consideration of an ACQ/CDB solution is not required at this time. Ofcom is principally concerned that, without such a solution, consumers remain exposed to the risk of certain potentially avoidable impacts of failing providers. If consideration of ACQ/CDB solutions is deferred, it appears possible that the opportunity offered by the migration of fixed networks to NGN architectures to address this risk inherent in the current solution will be missed.

6.15 At the same time, Ofcom has seen no evidence to suggest that industry will collaborate to define, develop, build and adopt a common ACQ/CDB solution without intervention. None of the respondents argued that such spontaneous collaboration by industry is likely to occur. Some responses argued to the contrary, that Ofcom should set a clear direction or steer to ensure its objectives are met.

6.16 Ofcom therefore does not favour this option because it is concerned that, without intervention, its objectives of protecting consumers and ensuring efficient use of networks are not likely to be met.

Option 2: Implementation of ACQ/CDB for fixed TDM networks

6.17 Ofcom's analysis confirmed the results of previous studies and showed that the costs of this option are large while the expected lifetime of the solution is short as fixed networks upgrade their infrastructure to use NGN architectures. No respondents supported this option.

6.18 Ofcom therefore does not propose to take this option further.

Option 3: Implementation of ACQ/CDB for fixed NGN networks

6.19 This option would not meet Ofcom's objectives in the mobile industry. It was not favoured by any of the respondents to the consultation. Most of those who agreed in

principle that fixed networks should move to an ACQ/CDB solution, whilst agreeing that such a move should occur in the course of migration of fixed networks to NGN, favoured a solution common to both fixed and mobile providers.

6.20   Ofcom therefore does not propose to take this option further.

Option 4a: Implementation of ACQ/CDB for mobile providers only by 2009

6.21   H3G alone favoured this option, and stated that it is both possible and necessary to implement this solution more swiftly than Ofcom had proposed. H3G saw a solution common to both fixed and mobile providers as impractical in achieving a short timescale.

6.22   H3G's proposal would not address the issues arising from Onward Routing in calls terminating on fixed networks, which would continue to use Onward Routing. Consequently, implementation of H3G's proposal would not meet Ofcom's objectives of protecting consumers as far as possible from the effects of failing providers, and of ensuring the efficient use of networks.

6.23   Ofcom therefore does not propose to take this option further.

Option 4b: Implementation of Direct Routing for mobile providers within one year.

6.24   Following consideration of responses received, Ofcom confirms that this option would not meet its objective of providing independence of routing from the Donor Provider in mobile networks (as the available standard, NICC Service Description 8, remains reliant on the Donor Provider), and would also not provide any improvement to the current solution for calls originating or terminating on fixed networks. As a result, such a solution would not achieve Ofcom's principal objective of protecting consumers from the failure of a Donor Provider. Ofcom further recognises that an interim solution may be unlikely to operate for long enough to recover its costs under Ofcom's proposal.

6.25   In light of the above, Ofcom has decided not to pursue such an option.

Option 5: Implementation of ACQ/CDB for both fixed and mobile providers

6.26   In its November 2006 Consultation Ofcom favoured Option 5. This would require an ACQ/CDB solution common to both fixed and mobile providers to be put in place, and populated with numbers by 31 December 2008, and require its use in routing of (a) all mobile originated calls to ported mobile numbers by 1 September 2009 and (b) all other calls to ported numbers by 2012. Ofcom notes that many respondents favoured the principle of this solution, but were concerned about the deadlines for its adoption

6.27   Ofcom has concluded that a CDB should be introduced for both fixed and mobile operators. Ofcom acknowledges the concern raised by respondents regarding the relative timing of adoption of the new solution by mobile and fixed providers under Ofcom's proposal of Option 5. The general risk posed by a staggering of deadlines is that the solution could be engineered to address the requirements of the mobile industry only without taking sufficient account of those of fixed providers, or vice versa, and that the benefits of a solution common to both sectors of the industry could therefore either be delayed or fail to materialise. In Ofcom's view this risk would be minimised if fixed and mobile providers collaborate on the development of the

solution from its early definition and are required to populate the database with numbering information to a common deadline. Subsequent deployment of the database by fixed and mobile providers to enable Direct Routing could be achieved within varied timeframes, reflecting the relative ease with which mobile providers could implement ACQ and the constraints experienced by fixed networks in the course of migrating to NGNs.

6.28   Ofcom has also considered the concern expressed by many respondents who thought that standards would take longer to agree than Ofcom had proposed, and has assessed the progress towards such standards at the NICC. Ofcom agrees that these standards were not agreed by June 2007 as suggested in the November 2006 Consultation, although progress has been good and there is now a clear understanding of the nature of the technical standard (which is expected to be ratified by January 2008). Ofcom therefore is proposing to extend by three months the deadline proposed for establishing a database, and populating this with comprehensive data on ported fixed and mobile numbers, to 31 December 2008. However, Ofcom will welcome views as to whether this date could reasonably be brought forward.

6.29   Ofcom has reviewed its cost-benefit analysis in light of views expressed by respondents to the November 2006 Consultation, and concluded that, given the current understanding of the costs, deployment of ACQ/CDB by fixed and mobile providers would generate a positive net benefit under a range of scenarios. Under base-case assumptions, there is a positive NPV of £272M. Under conservative assumptions of efficiency benefits, which consist of reduced conveyance costs in fixed NGN's and a 0.1ppm donor conveyance charge in mobile networks, the NPV is -£27M. However Ofcom is of the view that this is an unduly pessimistic because, it assumes that porting rates per annum for mobile subscribers are 2%, while the evidence from Ofcom's latest consumer survey shows that this rate is currently 5% per annum. Once allowance is made for a 5% mobile porting rate while still retaining the other conservative assumptions, the NPV is a positive £11M. Further, Ofcom notes that the level of the DCC was set on the basis that this was 50% of the cost of Donor Conveyance and if the model had reflected costs rather than charges, the extent of benefits from Direct Routing would be greater to industry and ultimately to consumers. Ofcom has undertaken two further sensitivity analyses and these are set out in Annex 5.

6.30   Ofcom has also taken into account the fact that, with the exception of H3G, stakeholders were broadly of the view that it is too early for Ofcom to set deadlines now for the full adoption of ACQ/CDB. While Ofcom is satisfied about the net benefits of an ACQ/CDB solution from the cost-benefit analysis in Annex 5, it has taken the views of industry into account regarding the uncertainty of costs and timing of investments, and acknowledges that under extreme assumptions on capital expenditure figures and mobile porting rate, the NPV might be negative. In light of this Ofcom is aware of the risk that it could set deadlines prematurely.

6.31   As noted in paragraph 4.68 above, Ofcom is concerned, however, that if it was to impose deadlines for implementing and populating a common database, without simultaneously setting deadlines for implementation of Direct Routing, then the consumer benefits associated with Direct Routing may be unnecessarily delayed in relation to security of service for users of ported numbers and convenience of same day one stop porting of mobile numbers.

6.32   Ofcom is proposing in its further consultation that fixed and mobile providers should be required to implement and populate a CDB by 31 December 2008. While noting

the risks inherent in setting deadlines now for subsequent deployment of ACQ/CDB to deliver Direct Routing, it is currently Ofcom's view that when requiring providers to implement and populate a CDB, Ofcom should simultaneously set deadlines for deploying ACQ/CDB to deliver Direct Routing (the approach proposed under option 5), for the reasons set out in the preceding paragraphs.

6.33   As noted in paragraph 4.70 above, Ofcom recognises that it may be argued that it should impose a requirement now to implement and populate a CDB by 31 December 2008, before a decision is taken on when deadlines should be imposed in respect of ACQ/CDB deployment. However, as set out in paragraph 6.49 below, Ofcom is also putting forward proposals that the CDB should be used to enable near-instant (not longer than two hours) recipient led porting of mobile numbers, simultaneously with deployment of ACQ/CDB to deliver Direct Routing of mobile originated calls to ported mobile numbers. As this represents a material change to the proposals set out in the November 2006 Consultation, Ofcom considers it appropriate to reconsult on this proposal (and on the options with respect to setting deadlines for deploying ACQ/CDB to deliver direct routing).

6.34   Before modifying General Condition 18 to require fixed and mobile providers to implement and populate a CDB, Ofcom is, therefore, consulting further on its implementation strategy. Under a new option, fixed and mobile operators would still face a common mandatory deadline to implement and populate a CDB, but Ofcom would forebear from imposing a mandatory deadline(s) for deploying ACQ/CDB until the design of the database is understood better. This option is set out below, and Ofcom would, in particular, welcome views on how, under this alternative option, inertia and delay could be minimised, and how the risks and benefits compare with option 5 as set out in the November 2006 Consultation.

Additional option for further consultation

6.35   As with option 5 as set out in the November 2006 Consultation, this further option (described as Option B in the sections which follow below) would require fixed and mobile providers to co-operate to implement and populate a common database although the deadline for this would be set at 31 December 2008. However Ofcom would not set mandatory deadlines for deploying the database to enable Direct Routing of calls to ported numbers until a later date when the technical considerations and costs are better understood.

6.36   Ofcom would expect that mobile operators would complete adoption of the ACQ function, by using the common database for routing all calls to ported numbers, no later than September 2009, that adoption by fixed providers will be well underway by then, and that fixed providers would complete their adoption of the ACQ function no later than the end of 2012, subject to the progress of deployment of fixed NGNs. Early deployment of the populated CDB for call routing would enable efficiency savings to be harvested to the advantage of the operators concerned, and might, of itself, create sufficient incentives for voluntary adoption of ACQ.

6.37   Ofcom would review progress with design and implementation of the database, and with voluntary use of the database to enable Direct Routing, and would expect to consult again next year on deadlines for full deployment of ACQ/CDB.

Conclusions on options for reducing mobile porting lead times

6.38   Ofcom's key objectives in relation to mobile number portability are to ensure that consumers can port their number between providers of mobile services in the

quickest possible time and that the process of porting facilitates switching between providers.

6.39 Responses to the November 2006 Consultation in respect of mobile porting lead times reflected a wide range of views. None however disagree with Ofcom's basic contention that consumers benefit when the porting process is quick and easy. Furthermore, in Ofcom's view there are also externality benefits, in terms of consumer convenience and enhanced competition, which it is unlikely that the market will deliver on its own. Ofcom has therefore concluded that regulatory intervention is required to secure that objective.

6.40 The November 2006 Consultation document set out three options. Having considered these, as set out in section 5 above, Ofcom's conclusions on these options are set out below:

Option 1 – no change

6.41 Under Option 1 the current process would remain and the porting process would continue to take five working days. This option fails to secure Ofcom's objective of a quicker, easier process for consumers which ensures that porting lead times do not act as a disincentive for consumers to switch provider. To this extent, Ofcom considers that its consumer research indicates that the existing five working day period may act as such a disincentive. Under the no change option UK mobile porting would remain sub standard compared with best practice across the industrialised world and, as other countries continue to modernise their processes, would continue to fall relative to average standards. As shorter porting lead times can be achieved with minimal cost and alterations to current processes, as accepted by almost all respondents, Ofcom considers that if it does not act it would be failing to achieve its statutory duty of furthering consumers' interests. This option cannot therefore be supported.

Option 2 – reduction of porting lead times to three (or two) working days

6.42 Option 2 was to require a reduction of porting lead times to three working days. This option goes some way towards achieving Ofcom's objective in the short term.

6.43 Ofcom has considered the responses in relation to this option, as set out in section 5 above. There was widespread agreement (albeit with some disagreement) that such a reduction was desirable and could be implemented without industry having to incur substantive costs or having to make substantial process changes.

6.44 Industry estimates of the likely costs of such change were in the region of £50,000 to £150,000 per operator ([✂]. As such, the costs to an MNO per porting subscriber would be less than £1. Ofcom considers that it would not be disproportionate to require providers to implement a reduction of mobile porting lead times in such a manner when considered in relation to the clear benefits that would flow to porting customers from this change. Indeed, in the course of the consultation and following further exchange of correspondence with mobile providers, it has become clear that a reduction to two working days is possible without significant process changes and little, if any, additional cost than a three working day process.

6.45 Having considered responses Ofcom has concluded that a reduction in mobile porting lead times to two working days can be achieved with minimal cost and minimal disruption to the mobile sector. Ofcom has further concluded that such a

reduction should be achieved by 31 March 2008. The regulatory impact assessment in Annex 4 sets out further details of the cost benefit analysis.

Option 3 – reduction of porting lead times to less than one working day

6.46   Option 3 would require a reduction of porting lead times to less than one working day. Ofcom considers that this option would achieve the optimal outcome in terms of consumer benefits by ensuring that mobile porting lead times would not act as a disincentive to a decision to switch providers.

6.47   Although stakeholders' evidence on costs was mixed all, with the exception of H3G, considered that this option could not be achieved without substantial process re-engineering at a significant cost to mobile providers. Ofcom accepts that, deployed in isolation from the introduction of ACQ/CDB, the costs of implementation may be incurred unjustifiably and is therefore not cost justified at the present time. However, Ofcom considers that deployment of a common database to enable Direct Routing will, of necessity, require the development of a new process for mobile number portability. Ofcom believes that the new process can be designed to deliver a porting lead time of less than one day at an incremental cost which is proportionate to the benefits.

Next steps

6.48   Ofcom has concluded that it should require mobile providers to reduce porting lead times to two working days by 31 March 2008 (ie modified option 2). The Notification is set out at Annex 7.

6.49   In light of Ofcom's view that porting lead times should be reduced to the greatest extent possible in order to ensure that they do not act as a barrier to switching, Ofcom considers that, in the course of the introduction of a CDB, it may be possible to further reduce porting lead times. Ofcom is therefore further consulting on a proposal to require that, in the course of implementation of ACQ by the mobile industry, porting of mobile numbers is achieved by a near-instant (not longer than two hours). As noted in paragraph 6.9 above, Ofcom considers that, in order for such a proposal to be effective, this process would need to be recipient led, to minimise the time which the process takes and the inconvenience to consumers and to remove disincentives on gaining providers to promote porting. Increased speed, convenience and awareness is likely to increase propensity to port, which can be expected to strengthen competition.

6.50   Ofcom is therefore inviting stakeholders to comment on whether the incremental cost of enabling a recipient led near-instant process, in the context of deploying a common database to achieve Direct Routing, would be proportionate to the consequent benefits to consumers.

6.51   As set out in section 7 below, Ofcom is reconsulting, on three options.

- **Option A**. Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers. This database to be implemented and populated by 31 December 2008. Require mobile providers to implement ACQ/CDB to achieve Direct Routing of mobile to mobile calls by 1 September 2009. Require ACQ/CDB to be used to Direct Route all other calls to ported numbers (including to and from fixed providers) by 31 December 2012. Require mobile providers also to offer

near-instant (not longer than two hours) recipient led porting by 1 September 2009

- **Option B**. Require fixed and mobile operators to implement and populate a common database as per Option A. However deadlines for implementing Direct Routing and for mobile providers to offer near-instant (not longer than two hours) recipient led porting to be set in a further consultation next year in light of further developments.

- **Option C**. Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers without requiring mobile providers to offer near-instant recipient-led porting. Implementation deadlines for ACQ/CDB to achieve Direct Routing to be set either as proposed in Option A or in Option B

6.52   The options, and associated questions, are set out more fully in section 7 below.

Section 7

Decisions and issues for further consultation

Broad summary of decisions and issues for further consultation

7.1 Ofcom notes that most stakeholders agreed that it would be possible to reduce mobile porting lead times from five working days to two working days with few if any changes to existing processes and systems, and at minimal cost. It is Ofcom's objective to ensure that mobile porting lead times should be as short as possible so as not to act as a disincentive for consumers when deciding whether to switch provider. Ofcom has therefore concluded that porting lead times should be reduced to two working days by 31 March 2008.

7.2 Ofcom is therefore amending General Condition 18 to require mobile number portability to be provided within two working days. This change shall take place by 31 March 2008. The Notification making the necessary change to General Condition 18 is attached at Annex 7.

7.3 Ofcom has also concluded that providers of fixed and/or mobile services should be required to implement and populate a common database which will hold details of each ported number and the provider which currently terminates services on that number. This database will enable calls to be routed directly to ported numbers without reliance on the network to which the number was originally allocated.

7.4 Ofcom is proposing to require that the initial implementing and populating of this database (though not necessarily its subsequent use to achieve Direct Routing of calls to ported numbers) must be achieved by 31 December 2008. Ofcom will, however, welcome views as to whether this date could reasonably be brought forward.

7.5 Before publishing a formal Notification making changes to General Condition 18 in respect of the requirement to establish a common database, Ofcom is inviting stakeholders to comment on a new proposal that, simultaneously with deploying the new database to achieve Direct Routing of calls to ported numbers, providers of mobile services must offer a near-instant (not longer than two hours) recipient led process for porting mobile numbers.

7.6 Where an appropriate common database is in place, Ofcom considers that near-instant porting of mobile numbers could be implemented much more efficiently than otherwise, providers interacting with the database to process the port without requiring the subscriber also to contact his former provider (except to the extent necessary to terminate any contract). Ofcom's provisional view is that the additional cost of enabling same day porting of mobile numbers through the use of a common database, will be much reduced if the database is designed from the outset to enable porting processes to be automated. Subject to respondent's views on the likely level of costs incurred, Ofcom is proposing that mobile providers should be required to implement ACQ/CDB in a way which accommodates near-instant recipient led porting of mobile numbers.

7.7 In light of the above, Ofcom's favoured option is that, having implemented and populated the database, providers of mobile services should be required to deliver

Direct Routing of calls to ported mobile numbers and near-instant (not longer than two hours) recipient led porting of mobile numbers by 1 September 2009, and that providers of fixed services should be required to deliver Direct Routing of calls to ported numbers in the course of deploying NGNs. Ofcom is proposing an end date of 31 December 2012 to apply to providers of fixed services. Here again, Ofcom will also welcome views as to whether these dates could reasonably be brought forward.

7.8   Ofcom is concerned, however, that if it were to impose deadlines for implementing and populating a common database, without simultaneously setting deadlines for implementation of Direct Routing, then its objectives may not be achieved within a reasonable timeframe. Furthermore, if additional consultation on arrangements for deploying the database for ACQ was required, failure to set deadlines at the outset may unnecessarily delay benefits flowing to consumers in relation to security of service for users of ported numbers and convenience of a recipient led, near-instant one stop porting of mobile numbers. Ofcom will consider carefully any proposals for minimising the risk of delay and inertia before deciding when it should set deadlines for delivery of Direct Routing of all calls to ported numbers and near-instant recipient led porting of mobile numbers.

7.9   Ofcom intends to set out an indicative timetable for the implementation of Direct Routing. In the event that this timetable were not to be adhered to by Communications Providers, and Ofcom considers that there is a risk that the binding deadlines set out in General Condition 18 may not be met, Ofcom would consider further amending General Condition 18 to impose mandatory deadlines in respect of each of the milestones in the indicative timetable. The indicative timetable which Ofcom considers appropriate is as follows;

- Agree technical standards – 31 January 2008

- Agree governance arrangements; appoint programme manager – 1 February 2008

- Agree new routing solution; agree new mobile number portability process; agree requirements specification of CDB; issue RFP – 1 April 2008

- Award contract for implementation of CDB – 1 June 2008

- CDB ready for voluntary use – 31 December 2008

- Commence end-to-end testing of full solution: ACQ/CDB routing and new mobile number portability process - 1 June 2009

- Completion of adoption of ACQ/CDB routing + new mobile number portability by MNOs - 1 September 2009

- Completion of adoption of ACQ/CDB routing by FNOs – 31 December 2012

Further consultation

7.10   Ofcom is therefore consulting again to enable stakeholders to comment on three alternative options as follows;

- **Option A**. Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and

mobile ported numbers. This to be achieved by 31 December 2008. Require mobile providers to implement ACQ/CDB to achieve Direct Routing of mobile to mobile calls by 1 September 2009. Require ACQ/CDB to be used to route all other calls to ported numbers (including to and from fixed providers) by 31 December 2012. Require mobile providers also to offer near-instant (not longer than two hours) recipient led porting by 1 September 2009.

- **Option B**. Require industry to collaborate on design and construction of a common database as per Option A. However deadlines for implementing Direct Routing of all calls to ported numbers and near-instant, recipient led porting of mobile numbers to be set following a further consultation in 2008 taking account of further developments resulting from the detailed definition of the common database.

- **Option C**. Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers without requiring mobile providers to offer near-instant recipient-led porting. Implementation deadlines for ACQ/CDB to achieve Direct Routing to be set either as proposed in Option A or in Option B

Option A Implementation of ACQ/CDB by fixed and mobile providers to enable Direct Routing of calls to ported numbers and near-instant recipient led mobile number portability

7.11   This option is as per Option 5 set in the November 2006 Consultation, with the additional obligation on mobile providers to implement near-instant (not longer than two hours) recipient led porting by 1 September 2009. The advantages, and potential risks, of this option are set out in paragraphs 6.26 to 6.34 above.

Option B: Implementation of CDB for both fixed and mobile providers without deadlines for adoption of ACQ to achieve Direct Routing and near-instant recipient led mobile number portability

7.12   This new option is designed to deliver the same solution as Option A, which is ACQ/CDB common to both fixed and mobile providers, but would achieve its adoption through two stages of intervention; the first, immediate, to ensure the industry collaborates on design, planning and construction of the platform for the solution, and the second conditional on the evidence of adoption of that solution.

7.13   Under this option Ofcom's intervention would be limited in the first instance to modify General Condition18 to require each provider to ensure that a CDB is built and populated with up-to-date records of ported numbers by 31 December 2008.

7.14   This intervention would have the effect of requiring operators to collaborate to define, develop, build and operate the CDB solution, but to leave the date of adoption of the solution for routing to each operator to determine in the first instance.

7.15   Providers' contributions to this collaboration will enable each of them to develop considered plans for adoption of ACQ for routing calls to ported numbers, and for adoption of near-instant recipient led mobile portability using the common solution. Ofcom would consider the need for intervention to ensure industry-wide adoption of ACQ once the design and implementation of CDB have progressed further. Ofcom would undertake this consideration no later than two years following conclusion of the proposed further consultation.

7.16   Where industry is committed to implementing Direct Routing, one might expect that as operators develop a detailed understanding of the costs and benefits they will start to use the database for routing calls as soon as possible, both for the benefit of consumers and to reap the benefits of efficiency for themselves. Ofcom considers that reasonable deadlines for adoption of Direct Routing are September 2009 for the mobile networks, and 31December 2012 by fixed networks.

7.17   In setting a requirement for industry to build an operational common database solution within a defined timescale Ofcom would set a clear direction and require industry to create a common platform that will provide opportunity in the first instance for each operator to respond to their own commercial incentives in deciding when to adopt use of the common database for routing. Transit operators could, for example, provide Direct Routing of calls to ported numbers, sharing the saved donor conveyance charges with the terminating operator. In addition or alternatively, operators investing in increased conveyance capacity may agree to route calls to ported numbers directly on a bi-lateral basis and share the saved charges of donor conveyance.

7.18   Ofcom would review the situation next year and consult again before setting deadlines for fixed and mobile providers to implement ACQ/CDB to deliver direct routing, and for mobile providers to implement near-instant, recipient led porting.

7.19   The advantages and risks of this option were set out in paragraphs 6.35 and 6.37 above.

Option C: Direct Routing without near-instant mobile number portability

7.20   Under this option, Ofcom would require industry to collaborate on design and construction of a common database capable of supporting Direct Routing of calls to fixed and mobile ported numbers, but would not require mobile providers to offer near-instant recipient-led porting. Implementation deadlines for ACQ/CDB to achieve Direct Routing would be set either as proposed in Option A or in Option B.

7.21   Ofcom does not favour Option C because it believes, subject to consultation responses, that the additional costs of implementing near-instant recipient led mobile porting are outweighed by the benefits. The benefits of a near-instant recipient led process for porting mobile numbers were set out in paragraph 1.24, and further explored in Section 5 above.

Counterfactual – no change

7.22   For the reasons set out in paragraphs 6.14 to 6.16, Ofcom does not consider that current arrangements would protect consumers from the risk associated with failing providers. Furthermore, if consideration of ACQ/CDB solutions is deferred, it appears possible that the opportunity offered by the migration of fixed providers to NGN architectures of addressing this risk inherent in the current solution will be missed.

7.23   Ofcom has seen no evidence to suggest that industry will collaborate to define, develop, build and adopt a common ACQ/CDB solution without intervention. None of the respondents argued that such spontaneous collaboration by industry is likely to occur. Some responses argued to the contrary, that Ofcom should set a clear direction or steer to ensure its objectives are met.

7.24   As set out in section 6 above, Ofcom has therefore concluded that it is appropriate to require industry to adopt a common ACQ/CDB solution. In light of this conclusion, no

change is not an option which is being presented but is nevertheless put forward for the purposes of the counterfactual.

Ofcom's preferred approach

7.25 Ofcom's preferred way forward is Option A. Ofcom considers that this option would achieve its objectives in protecting consumers from the effects of failing networks and would also provide industry with more certainly about what it now needs to do thereby allowing providers to make the essential investment decisions as well as start to alter internal company processes.

7.26 Ofcom recognises, however, that there may be considered to be a risk that efficiencies and enhancements, which might be achieved if decisions on the full implementation timetable are delayed until standards have been determined, may not be achieved if firm deadlines are set at the outset. For this reason Ofcom has set out the alternative Option B. On balance, however, Ofcom's provisional view is that mandating final deadlines for the implementation of an ACQ/CDB solution will ensure that consumers obtain the benefits of ACQ/CDB as well as near-instant mobile porting at the earliest opportunity. Ofcom welcomes stakeholders' comments on the balance of risks and benefits presented by the options set out in this consultation document.

7.27 Ofcom has set out Option C as, logically, a CDB could be used to achieve Direct Routing without being deployed to achieve near-instant, recipient led mobile number portability. However, as noted in paragraph 7.22 above, Ofcom does not favour this option as the opportunity to achieve the benefits of near-instant recipient led porting in a cost effective manner would be lost. Whilst Option C is not Ofcom's preferred option, Ofcom recognises that, in the event that the costs of Option A or Option C were disproportionate to the benefits, Option C would nevertheless deliver Ofcom's conclusion that a CDB is required.

7.28 Draft modifications to General Condition 18 reflecting Options A, B and C are set out in Annex 8

7.29 To assist Ofcom in assessing the risks and benefits of the different options presented in this document, Ofcom is inviting stakeholders to respond to the following questions;

> *Question 1.*
> *Ofcom has decided to require fixed and mobile providers to implement and populate a common database to enable direct routing of calls to ported numbers. Do you agree that providers should be required to achieve this by 31 December 2008?*

> *Question 2*
> *When setting the deadline for implementing and populating the database, should Ofcom simultaneously set deadlines for using the database to deliver Direct Routing of calls to ported numbers? If so, would it be appropriate to require mobile operators to achieve Direct Routing of calls to ported mobile numbers by 1 September 2009 and require mobile and fixed operators to ensure Direct Routing of all other calls by 31 December 2012? Could this be done any earlier?*

> *Question 3*

If you believe Ofcom should not set a deadline for deploying the database to deliver Direct Routing at this stage but should, instead, consult again during 2008, how could Ofcom and industry ensure that appropriate momentum is maintained such that Direct Routing is achieved at the earliest practicable date?

Question 4
Do you agree that, where a common database is in place and supporting Direct Routing of calls to ported numbers, changes could be implemented enabling (i) recipient led and (ii) near-instant (not longer than two hours) porting of mobile numbers at modest incremental cost proportionate to the benefits? Ofcom would welcome detailed views on the additional costs involved, including whether any additional costs would be incurred in ensuring that the database itself can support near-instant (not longer than two hours) recipient led mobile porting.

Question 5
Do you support Ofcom's approach to achieve industry agreement on effective governance of the new proposed number portability solution, as set out in paragraphs 4.74 to 4.78?"

Responding to this consultation

How to respond

A1.1　Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 10 September 2007**.

A1.2　Ofcom strongly prefers to receive responses using the online web form at http://www.ofcom.org.uk/consult/condocs/gc18review/howtorespond/form, 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 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3　For larger consultation responses - particularly those with supporting charts, tables or other data - please email michael.richardson@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

A1.4　Responses may alternatively be posted to the address below, marked with the title of the consultation.

Michael Richardson
4.42
Ofcom
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Tel: 020 7783 4157

A1.5　Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6　It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together in Section 7. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

A1.7　If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Michael Richardson on 020 7783 4157.

Confidentiality

A1.8　We believe 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, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether

all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/

Next steps

A1.11 Following the end of the consultation period, Ofcom intends to publish a statement towards the end of 2007.

A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.

A1.14 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, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 2

Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about who we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened version for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will normally allow ten weeks for responses to consultations on issues of general interest.

A2.6 There will be a person within Ofcom who will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organizations interested in the outcome of our decisions. This individual (who we call the consultation champion) will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why. This may be because a particular issue is urgent. If we need to reduce the amount of time we have set aside for a consultation, we will let those concerned know beforehand that this is a 'red flag consultation' which needs their urgent attention.

After the consultation

A2.8 We will look at each response carefully and with an open mind. We will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

Consultation response cover sheet

A3.1   In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A3.2   We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.

A3.3   The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A3.4   We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A3.5   Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing ☐   Name/contact details/job title ☐

Whole response ☐   Organisation ☐

Part of the response ☐   If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name   Signed (if hard copy)

Impact Assessment

Introduction

The analysis presented in this annex represents an impact assessment, as defined in section 7 of the Communications Act 2003 (the Act).

A4.1 This section contains an impact assessment of the following decisions and proposals for consultation made in this document

(a) the decision to require a reduction in mobile port lead times to 2 working days by 31 March 2008.

(b) the proposal to require fixed and mobile networks to implement and populate a CDB to enable direct routing of calls to ported numbers and near-instant (not longer than two hours) recipient led porting of mobile numbers. Two alternative options are considered;

(i) to set all deadlines at the outset - Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers. This is to be achieved by 31 December, 2008. Require mobile providers to implement ACQ/CDB to achieve Direct Routing of mobile to mobile calls 1 September 2009. Require ACQ/CDB to be used to route all other calls to ported numbers (including to and from fixed providers) by 31 December 2012. Require mobile providers also to offer near-instant (not longer than two hours) recipient led porting by 1 September 2009.

(ii) to set a deadline for implementing and populating the CDB at the outset but to forebear from setting deadlines for deploying the database to deliver Direct Routing and near-instant (not longer than two hours) recipient led porting until after a further consultation next year.

(iii) to proceed according to options (i) or (ii) above without requiring mobile providers to offer near-instant recipient led porting.

A4.2 You should send any comments on this impact assessment to us by the closing date for this consultation. Ofcom will consider all comments before deciding whether to implement our proposals.

A4.3 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that generally Ofcom has to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, Better policy-making: Ofcom's approach to impact assessment, which are on our website: http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf

The citizen and/or consumer interest

Routing of calls to ported numbers

A4.4   Under the current system for routing calls to ported numbers (Onward Routing), all calls to ported numbers are conveyed via the Donor Network (ie the network that the consumer has ported from). The Donor Network incurs a conveyance cost for which it is compensated by a donor conveyance charge paid by the terminating operator, which is intended to cover 50% of the estimated cost. This system is not only inefficient but, additionally, if the Donor Network were to fail, consumers who had ported their numbers to another provider would lose all their incoming calls. At the same time, existing customers of the failed network would not be able to keep their numbers when they move to a new provider. Such a case occurred in 2001 with the failure of Atlantic Telecom when about 14,000 customers who had ported out of this network were left with no means of receiving calls.

A4.5   Onward Routing can also allow problems in the Donor Network to have an impact on service quality experienced by customers who no longer have a relationship with that network. For example, if a network's investment in capacity fails to keep pace with traffic demand, the resulting congestion can affect the service quality experienced by its former customers and by those calling them.

A4.6   A further problem can arise when new services are introduced. Where such services require new technical features to be supported by interconnecting networks they may fail to work as intended for calls to ported numbers if the Donor Network does not support the new features.

A4.7   Although some providers have introduced 'Call Trap' (where the originating network and Recipient network of a call to a ported number are the same, it is possible for that network to detect this and route the call directly without Onward Routing), such that the impacts of the weaknesses of Onward Routing can be reduced for certain types of calls, they cannot be eliminated for all calls, including off-net calls.

Mobile porting processes

A4.8   Ofcom has also been concerned with the impact upon consumers of excessively long port lead times. This denies consumers the benefits of an easy, simple and swift porting process enjoyed by customers of mobile providers in many countries. In addition, it may discourage consumers from switching provider. Shorter port lead times should lead to the greater propensity of consumers to port their number, which should in turn induce switching, thus enhancing competition.

A4.9   Current porting lead times in the UK are 5 working days. This is considerably higher than in many European and other countries where one working day or less is common. Ofcom's latest research (attached at Annex 6) shows that around 42% of those who have switched provider and have ported their telephone number, when asked how they would like their porting service to improve, have spontaneously answered that they would have liked shorter porting lead times. Among those who have switched in the last twelve months and have changed their telephone number, around 41% said it was likely that they would have ported their number if they had been aware that this was possible and the time which this would take was shorter.

A4.10 The above results suggest that consumers that have switched and ported would have welcomed shorter porting lead times. Shorter porting lead times may also enhance competition by making it easier for consumers to switch providers.

A4.11 The current porting process also requires the consumer to request a PAC from the Donor Network and supply this to the Recipient Network, which can be inconvenient and perhaps dissuade customers from porting. In addition, the fact that this process can lead to "Save" activity by the existing supplier can deter suppliers from informing customers of their right to port. Ofcom believes that this helps explain the high number of consumers who remain unaware of the option of porting. Ofcom is therefore of the view that when new porting processes have to be adapted to the deployment of a common database, to enable a direct routing method, the new process should be recipient led.

A4.12 The proposals made in this respect directly affect consumers as they are aimed at furthering the interests of consumers by making the mobile porting process faster and simpler. They also enhance and reinforce competition in the UK mobile market by making it easier for consumers to switch between providers while retaining their telephone number.

Ofcom's policy objective

Mobile porting lead times

A4.13 Ofcom's objective is to provide an improved porting service to consumers through a reduction in porting lead times. Ofcom considers that a reduced porting lead time may enhance competition by reducing the potential for lead times to act as a disincentive to switch provider.

A4.14 In Ofcom's view, consumers changing from one provider to another benefit if the processes are as swift and easy as possible. Ofcom notes from its international benchmarking exercise that best practice mobile porting lead time is near-instant. Ofcom also notes that there are many countries with a higher numbers of ports, proportionate to the number of mobile subscribers, than the UK. While awareness of porting and switching costs may vary in those countries, Ofcom has not seen convincing justification of why the porting process should take longer in the UK and sees little reason why British consumers should be the subject of slower and less efficient processes. The UK MNOs operate worldwide and offer faster and easier switching to consumers in other countries; it is Ofcom's view that they should also do this for their UK customers.

A4.15 When considered against the evidence that consumers would benefit from shorter porting lead times, Ofcom is of the view that the costs of moving to a porting lead time of 2 working days would not be onerous for industry. Since no providers have undertaken to shorten porting lead times, and are unlikely to do so voluntarily, Ofcom is of the view that regulatory intervention is necessary to achieve this objective.

Routing of calls to ported numbers

A4.16 The main objective of the proposals being presented in this document is to protect consumers who have ported their numbers from the welfare loss they would incur if the Donor Network fails to continue to convey their calls. As discussed further in Annex 5, Ofcom is of the view that under all reasonable sets of assumptions, the benefits of direct routing using ACQ/CDB outweigh the costs.

A4.17 Given this, Ofcom's proposal is that industry should move to a system of Direct Routing which removes the dependence on Donor Networks. The Direct Routing solution proposed is ACQ/CDB. In order to achieve this, Ofcom is proposing to

require that industry set up a central database, and populate this with data about ported numbers, by 31 December 2008.

Ofcom is inviting comments on three options for full implementation. Under one option, Ofcom would mandate, at the outset, deadlines for deploying ACQ/CDB to deliver Direct Routing of calls to ported numbers, and for mobile operators a deadline for achieving near instant recipient led porting Under the second option, Ofcom would at the outset, set a deadline for implementing and populating a CDB, but would forbear from setting final deadlines for deploying the database for implementing Direct Routing and near instant recipient led porting. Under the latter option Ofcom would monitor progress and would set deadlines after further consultation next year. . Under the final option Ofcom would proceed according to one or other of the previous options without requiring mobile operators to provide near instant recipient led porting.

A4.18 If and when an ACQ/CDB is deployed to achieve direct routing to ported numbers, Ofcom believes that mobile porting lead time should simultaneously be reduced to a near-instant recipient-led process.

Impact assessment of the decisions and proposals

Decision on mobile porting lead times

A4.19 In the absence of any direction from Ofcom, providers are unlikely to reduce port lead times as they do not necessarily perceive benefits from doing so. Indeed most of the benefits are more properly characterised as externalities. Under current arrangements, recipient providers may prefer customers to switch to a new number rather than port since the current donor led process allows the donor operator to make counter offers to the porting customer. Additionally, to the extent that longer porting lead times reduce porting rates and consequently reduce the consumer and competition benefits of porting, Ofcom is of the view that continuing with a five day donor-led porting lead time is not appropriate.

A4.20 Ofcom is of the view that shorter port lead times need to be mandated as the industry is unlikely to provide this facility on its own. Shortening port lead times will benefit consumers and may provide greater incentives for switching and promote competition. Therefore an intervention to support shorter lead times would be justified if the costs of doing so were not significant. Providers have informed Ofcom that moving to a 3 day or a 2 day lead time can be done quickly and without significant change to processes. Ofcom has received a wide range of cost estimates from providers[14] and has made its own assumptions on the costs based on the estimates provided by the stakeholders. The costs of moving to a three day or two day process are assumed to be one-off costs of about £0.5m and about £1m of recurring annual costs for the industry as a whole. The incremental costs of moving to a two day port lead time are not assumed to be significantly different from moving to a three day port lead time.

A4.21 According to the February consumer survey, 86% of mobile customers had not switched suppliers in the past one year. Of these, a small group of respondents said they actually took steps to switch but did not. Among these, a small percentage of consumers (0.23% of those who did not switch in the last year) cited

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[14] Ofcom has received indicative estimates from some of the providers but this information is insufficient to form a robust estimate of industry wide costs.

(unprompted) the inconvenience of changing codes and numbers etc as a reason for not switching. Ofcom acknowledges that the above percentage is not statistically significant[15], and further that the reported inconvenience may be due to factors other than the porting lead time and porting processes. However, the analysis in the following paragraphs does illustrate how only a small percentage of the population needs to have been deterred from switching for the benefit of shorter lead times to offset the costs.

A4.22 If for illustrative purposes one assumes that most of reported inconvenience is driven by the length of lead times and the need to obtain a PAC, and that the 0.23% of those in the sample who did not switch supplier in the last year were deterred from switching due to these factors, then one can assess the proportion of the total mobile population that might potentially lose the benefit of lower annual bills due to the inconvenience of the process of porting.

A4.23 Using a period of 2 years (on the assumption that a near instant porting process would be in place by 2009) and assuming that a reduction from the present five days porting lead time to two days porting lead time would provide three-fifths of the benefits of a reduction to near instant porting lead time, the savings in annual consumer bills needs to be only as large as around £7 (less than 5% of an average annual bill) per customer to offset the costs of moving to a 2 day lead time as set out above. If the annual savings were larger than this, then only a fraction of the potentially deterred consumers need to switch to make the costs incurred worthwhile.

A4.24 The above has only considered those consumers in the survey who had taken steps to switch. If the analysis were based on those consumers who had considered switching (11% of non-switchers) and not only those who had taken steps towards switching (2.8% of non-switchers), the benefits would be much larger and require even smaller annual savings per consumer from switching to offset the costs. Additionally, with a two day porting lead time and with greater awareness it is possible that a greater number of consumers may be prepared to switch suppliers, adding to the benefits above.

A4.25 Based on the above analysis, and taking into consideration the responses of stakeholders, Ofcom has concluded that mobile porting lead times should be reduced. A reduction to three working days, as consulted on in the November 2006 consultation, does not involve significant costs or require re-engineering of processes, and most providers have indicated to Ofcom that this process can be undertaken easily with minimal changes. Further, given that most providers have indicated that the additional costs of reducing lead times to 2 working days are not significant, Ofcom has concluded that mobile providers should reduce the porting lead time to 2 working days by 31 March 2008.

Proposals on mobile porting processes and recipient led porting.

A4.26 Ofcom has also considered the potential benefits of further reductions in mobile porting lead times – specifically to less than one day. It is clear that this type of reduction would require more substantial process re-engineering and potentially higher costs. In particular, if a reduction were implemented ahead of an ACQ/CDB enabled direct routing process, it is likely to impose significant costs on providers,

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[15] although this number may have been higher if responses were prompted.

not least because some of these costs would need to be incurred again following eventual transition to direct routing. Ofcom does not believe that such costs would be proportionate to the benefits they might generate.

A4.27 Ofcom notes, however, that if providers are required (or choose) to implement a common database to support Direct Routing of calls to ported numbers this, in itself, will require changes to porting processes. In other words, a central database would mean that existing porting processes have to be modified to operate with that database. This change would also most likely entail a switch to a recipient led process. Irrespective of how the change occurs however, the adaptation to the database will enable near instantaneous porting. Ofcom's view is that the incremental cost of modifying processes and systems to enable near instant porting is outweighed by the potential benefits to consumers if this is undertaken along with a change to porting processes at the same time as ACQ/CDB routing. This cost is discussed further in A4.35 below.

Benefits of near instant, recipient-led process

A4.28 Such a transition would generate two types of consumer benefit:

    i)   first, a switch to a recipient-led process would increase incentives on operators to inform consumers of the ability to port. This is because a recipient led process removes the need for a consumer to request a PAC from the donor and inform the recipient of the code. Instead the two providers agree and validate the port. As the consumer no longer needs to communicate with the donor for a PAC, the recipient operator may be incentivised to actively advertise porting because the risk of the consumer receiving a counteroffer from the donor and deciding not to switch is now reduced, particularly with a speedier porting process. This will not only increase consumer awareness of porting but may also lead to increased porting, with additional benefits to consumers; and

    ii)   second, the further reduction in porting lead times (from 2 days to less than 1 day) will increase consumer convenience, and may increase porting and switching.

The February 2007 research showed that around 13% of those who switched provider without porting were not aware they could port their number. Extrapolating this to the mobile population results in 700k consumers who switched without being aware of the possibility to port their number. If the recipient network is now incentivised to promote porting, then potentially a significant proportion of these 700k subscribers could switch suppliers without incurring the cost of having to inform friends, family and business interests of the change to the number. If 500k subscribers now ported, and the cost of doing so could be quantified at say, £5.00 per customer, then potentially the benefits of the awareness of porting could be around £2.5m p.a. Clearly over time, as subscriber awareness of porting grows and porting volumes increase, the benefits might grow as well. It is unclear if the benefits would grow at the same rate and Ofcom has not attempted to quantify this.

A4.29 In addition, greater awareness of porting might encourage further switching. Ofcom's consumer research suggests that in total 11% of consumers that did not switch were unaware of the ability to port. If awareness of porting induced just 5% of these consumers to switch, and those new switchers saved £7 per year, there would be additional benefits to consumers of around £3.4m per annum.

A4.30 Finally those who have been deterred from switching due to long lead times may be incentivised to switch and realise the benefits of competition and lower annual bills. Using the illustration from A4.24 above, this means that the additional benefits of moving from a two day port lead time to a one day or less (near instant) porting process would be two fifths of the total benefits of moving from a five day port lead time to a one day port lead time. Under the earlier assumption of £7 annual savings in customer bills as illustrated in A4.24 above, the additional benefits of moving to a one day port lead time (ie additional to a 2 day port lead time) would be £1m per annum.

Comparing the costs and benefits of mobile porting processes and recipient led porting

A4.31 The incremental costs of moving to a recipient led porting process do not appear to be significant, compared with that of a donor led process. The main costs would appear to be automation of systems to allow quick and easy communication between the providers. Furthermore, continuing the donor led process would also need some enhancement to systems to be able to adapt to the central database and training of the relevant staff to use the system enhancement. In addition a donor led process would require changes to the number allocations of the donor operator, recipient operator and any number range holder if relevant. These costs would not be part of the recipient led process. While it is difficult to provide estimates of these costs as these are necessarily forward looking, Ofcom sees no compelling argument to suggest that the incremental costs of a recipient led process are significantly higher than those for a donor led process. Ofcom has estimated that the total industry costs of moving to a recipient led process *along with* near instant porting is a one-off cost of about £3-£5m.

A4.32 Given this level of costs, and given a one-off benefit £2.5m from not having to inform friends and family etc, and £3.4m per annum from consumer awareness (paras A4.31 and A4.32) and £0.3m per annum from subscribers being incentivised to switch due to shorter lead times (para A4.33), Ofcom is of the view (subject to consideration of further views from stakeholders) that the additional cost of modifying processes and systems to enable near-instant recipient led mobile porting in a ACQ/CDB scenario is likely to be proportionate to the benefits to consumers.

A4.33 Subject to responses to the present consultation exercise, on balance, Ofcom is minded to require mobile providers to deliver near-instant (not longer than two hours) mobile porting under a recipient led process simultaneously with Direct Routing of calls to ported numbers.

Routing of calls to ported numbers

A4.34 The November 2006 Consultation set out a number of options for the implementation of ACQ/CDB, including Ofcom's preferred option at the time (option 5) that such a database should be established no later than September 2008, with mobile providers implementing Direct Routing by 1 September 2009 and fixed providers by 31 December 2012.

A4.35 As technical standards have not been agreed within the timeframe assumed in the November 2006 Consultation, Ofcom has decided to extend by three months the deadline proposed for establishing a database to 31 December 2008.

A4.36 Furthermore, after consideration of the responses to that consultation, Ofcom has identified a further option under which providers would be required to establish and populate a CDB by 31 December 2008, but would not be required formally to implement ACQ until further assessment of voluntary progress towards ACQ implementation had been conducted by Ofcom. Ofcom is presenting this new option for consultation, alongside a variant of Option 5.

A4.37 The options considered in this consultation are:

- **Option A**. Require industry to collaborate on design and implementation of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers. This to be achieved by 31 December 2008. Require mobile networks to implement ACQ/CDB to achieve Direct Routing of mobile to mobile calls, and same-day, recipient led porting by 1 September 2009. Require ACQ/CDB to be used to route all other calls to ported numbers (including to and from fixed networks) by 31 December 2012. Require mobile networks to implement near-instant (not longer than two hours) recipient led porting by 1 September 2009

- **Option B**. As per Option A, with the exception that deadlines for implementing Direct Routing and near-instant (not longer than two hours) recipient led porting to be set at a later date in light of further information and technical developments, and following further consultation next year.

- **Option C**. Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers without requiring mobile providers to offer near-instant recipient-led porting. Implementation deadlines for ACQ/CDB to achieve Direct Routing to be set either as proposed in Option A or in Option B.

A4.38 Ofcom has also considered the counterfactual of doing nothing in respect of the development of CDB/ACQ and nothing in respect porting lead times beyond the reduction to two days. The impact of each of the above options, and the counterfactual, is summarised and discussed below.

Analysis of the different options

A4.39 The table below analyses each of the options considered in this consultation with respect to the benefits, costs and risks.

Option	Benefits	Risks	Costs
Option A Implementation of CDB for both fixed and mobile networks by 31 December 2008. Deployment of ACQ/CDB to deliver Direct Routing of mobile originated calls to ported	Places an unambiguous obligation on the industry to adopt the solution fully by the deadlines stated. Consumers will benefit from a faster, smoother porting process and be protected in the event of a possible failure of their donor	There is a degree of uncertainty with respect to costs and timing of investments, and given this, there is a risk that Ofcom could set deadlines prematurely. If porting lead times are pushed to the limit, process reliability may suffer. Porting	An ACQ/CDB solution would include costs; however under reasonable assumptions, there are no net costs for providers. Under very conservative assumptions and a lower annual porting rate than current rates the net cost is

mobile numbers by 1 September 2009 and for all other calls to ported numbers by 31 December 2012. Near instant recipient led porting of mobile numbers to be implemented from 1 September 2009.	network. Near instant recipient led mobile porting means that switching is easier and competition is likely to be strengthened as recipient providers have an incentive to promote porting and consumers benefit as their awareness grows. Consumers may have a higher propensity to switch and benefit from shorter lead times, increased choice and competition. Providers, and ultimately consumers benefit from more efficient routing.	times of less than one day would require substantial process re-engineering which, inevitably, presents a degree of uncertainty. A recipient led porting process may increase the risk of slamming and mis-selling; Ofcom is making clear in this document that it expects industry to take all reasonable steps to ensure that accelerated processes for porting mobile numbers protect consumers from the risk of mis-selling and slamming.	around -£11M. If a change to mobile porting processes was implemented as a standalone project, a change to recipient led near-instant porting is likely to impose significant costs on providers. However, if implemented in conjunction with deployment of ACQ/CDB, the additional costs can be expected to be in the region of £5 million one-off.
Option B Implementation of CDB for both fixed and mobile networks by 31 December 2008, without deadlines for the adoption of ACQ or a change to near-instant recipient led porting. Further consultation next year to inform these deadlines.	This option allows the flexibility to decide the date of adoption of ACQ/CDB, in the light of further information and technical progress in defining the solution, and timescales for deploying NGNs. The CDB will facilitate such adoption. As providers will retain discretion on timing of subsequent deployment of Direct Routing, this phase may be achieved more efficiently. If the CDB is populated by all providers, all consumers will benefit to some extent, as providers using the database to route calls will have access to information on all ported consumers. In the event of a failure of a donor provider, this information may enable other providers to prevent loss of service to customers who have ported away from the failed donor provider. Consumers will ultimately benefit from shorter lead times and competition, although the benefits may	Providers may only engage with the project to a limited extent until Ofcom intervenes again, thereby risking a delayed outcome relative to Option A. Industry may face insufficient incentives to develop a fit for purpose database and to devise technical means to interact with this to deliver Direct Routing. If further consultation was required, failure to set deadlines at the outset may unnecessarily delay benefits flowing to consumers. A recipient led porting process may increase the risk of slamming and mis-selling; Ofcom is making clear in this document that it expects industry to take all reasonable steps to ensure that accelerated processes for porting mobile numbers protect consumers from the risk of mis-selling and slamming.	Providers will incur costs, as per Option A, in implementing a CDB, although it is possible that further information before finalising deadlines will allow these costs to be reduced.

	be later than in Option A if the deadlines were to be set later than in Option A. Providers and, ultimately, consumers benefit from more efficient routing.		
Option C Require industry to collaborate on design and construction of a common database, capable of supporting Direct Routing of calls to fixed and mobile ported numbers without requiring mobile providers to offer near-instant recipient-led porting. Implementation deadlines for ACQ/CDB to achieve Direct Routing to be set either as proposed in Option A or in Option B.	As in Option A and Option B, there would be protection to consumers against a failure of donor networks. Providers and ultimately consumers benefit from more efficient routing.	The risks associated with the timing of the implementation of direct routing are as discussed in Option A and Option B. Without a reduction in porting lead times, risk that consumers have a lower propensity to switch and benefit from competition. Lack of a recipient led porting process means that recipient networks do not have an incentive to promote porting and as a result consumer awareness of porting continues to be low.	There would be costs associated with an ACQ/CDB solution as in Option A above.
Counterfactual No change except the reduction of port lead times to 2 days - maintain Onward Routing	There will be no benefit to consumers, or to industry in the long run as industry continues to deploy inefficient routing. Consumers will benefit from 2 day lead times, but not as much as from a near instantaneous process.	Consumers would remain unprotected in the event of a network failure and will lose incoming calls; service quality may be reduced if the Donor Network does not support same quality of service as Recipient Network. Consumers would have to endure a porting process that is longer and less easy than is necessary and switching or porting might be deterred. This would not enhance competition and would not benefit consumers.	Providers would continue to incur donor conveyance costs from inefficient routing of calls.

The preferred option

A4.40 Ofcom considers that, on balance, Option A is the preferred option as it achieves Ofcom's objectives with respect to protecting consumers, and ensures that industry is clear as to its obligations in this regard, ensuring that benefits to consumers are delivered without undue delay. While Option B may have some attractions, in allowing the timetable to be determined after knowledge of a solution and the costs of implementation, Ofcom considers that the option presents considerable risk of

unnecessary delay. It is not clear that, having established and populated a common database, providers would face sufficient commercial pressures to implement Direct Routing. Ofcom does not favour Option C because it believes, subject to consultation responses, that the additional costs of implementing near-instant recipient led mobile porting are outweighed by the benefits. The counterfactual of doing nothing would not achieve Ofcom's objectives, as there is no evidence that providers would co-operate to devise a working solution.

Annex 5

Cost-benefit sensitivity analysis

A5.1 As noted in section 4 above, this annex discusses in more detail the sensitivity analyses carried out on the cost benefit model prepared by Sagentia, to address the comments made by the respondents.

A5.2 The table below illustrates the sensitivity analyses undertaken by Ofcom for the Option 5 combined solution proposed in the November 2006 Consultation under which the entire industry is required to implement ACQ/CDB. Since the proposal was for mobile operators to implement this solution in 2009 and fixed operators in 2012, the modelling of cash flows should reflect this timeline. To allow fixed operators sufficient time to recover their costs, the duration of the model has been extended by 2 years.

A5.3 Furthermore Ofcom observes that although Sagentia used the DCC as a proxy for the avoidable costs of onward routing, in fact the DCC payable by the Recipient Network was set on the basis that this was 50% of the underlying costs of conveyance. Therefore it is Ofcom's view that the 'benefits' (avoidable costs) would be twice those stated in Sagentia's analysis. Ofcom has therefore undertaken additional sensitivities with the costs of onward routing set at twice the level of the relevant DCC assumed in the scenarios.

Summary of sensitivities

Ofcom's proposal - mobile networks implement solution by 2009 and fixed networks by 2012									
Model extended for 2 years to allow payback to fixed operators									
NPV at 2018 (£m) at different sensitivities									
Sensitivity	Discount rate (pre-tax nominal)	APCC charge (ppm) - BT geographic no.s	APCC charge - non-BT geographic no.s	APCC charge - BT non-geographic no.s	APCC charge - non-BT non-geographic no.s	DCC (ppm)	% annual mobile porting		NPV (£m)
1	12%	0.016	0.068	0.047	0.198	0.8	2%		**274**
2	12%	0.013	0.013	0.013	0.013	0.8	2%		**235**
3	12%	0.013	0.013	0.013	0.013	0.1	2%		**-14**
4	12%	0.013	0.013	0.013	0.013	0.1	5%	Adjust efficiency savings for those mobile operators with Call Trap**	**8**
5	12%	0.013	0.013	0.013	0.013	0.2	5%	As above	**66**
6	12%	0.013	0.013	0.013	0.013	0.2	5%	As above plus increase capex by factor of 2.15	**3**

** Around 20% of mobile calls to ported numbers are likely to be on-net, and therefore could avoid donor conveyance through Call Trap

2 Operators have implemented Call Trap and the total savings adjustment (reduction), assumed for the purposes of this sensitivity analysis is 8%

<u>Explanation of results</u>

<u>Sensitivity 1 – changing the discount rate:</u>
This is based on the same Average Porting Conveyance Charge ("APPC") and DCC that Sagentia had assumed in the assessment published with the November 2006 Consultation, with the only change being to a 12% discount rate. The NPV value in year 2018 is £274m. Sagentia had calculated that using a 7% discount rate for a model running up to 2016 only would result in an NPV of £296m. The reason why a significant change in the discount rate has not significantly reduced the NPV is that, as the model has been extended for 2 more years, it is able to capture more savings because ported

volumes increase each year, whereas capital costs do not change. Further, as some of the costs are incurred later, the discounted value is lower.

Sensitivity 2: (lower costs on the NGN for all fixed operators for all ported calls)
In its response to the November 2006 Consultation, Vodafone presented a sensitivity analysis based on an APCC of 0.013ppm on NGNs. As Ofcom has little information about the costs of the NGN at this time, Ofcom has used, for the purposes of the sensitivity analysis, Vodafone's figure for the APCC. Retaining all the other variables at the same level, the NPV reduces to £235m. The size of the reduction is influenced by the composition of savings in the porting of fixed numbers, which is a very small proportion of the total savings (5%), the bulk of which comes from savings from avoiding the DCC on mobile porting (due to the difference in the levels of the APCC and the DCC).

Sensitivity 3: (lower costs on the NGN for all fixed operators and a lower DCC of 0.1ppm)
Sagentia chose to undertake a sensitivity analysis based on an assumed DCC of 0.1 ppm, which Sagentia considered a more realistic reflection of costs than the present DCC charge of 0.8ppm. None of the stakeholders that responded to the November 2006 Consultation argued that the figure of 0.1ppm was unrealistically high, indeed Orange reported that a DCC of 0.1ppm would not cover the costs of Onward Routing[16]. Ofcom has, therefore, maintained the sensitivity figure of 0.1ppm. Based on that level of DCC, the savings are eroded by the costs, leading to a negative NPV of -£14m. Clearly the model is most sensitive to the level of the DCC.

Although as explained in A5.3 above, the DCC is currently set at only 50% of the true costs of donor conveyance. If the DCC is assumed to be 0.1ppm, then the costs of donor conveyance would be around 0.2ppm and using this as a basis for the avoided costs of onward routing will result in a positive NPV of £22m.

Sensitivity 4: (same as Sensitivity 3, but with increased mobile ported volumes)
Sagentia had assumed an annual porting rate of 2% (ie 2% of all mobile connections). Ofcom is of the view, and Sagentia had noted, that this was an extremely conservative porting rate assumed for the next 10 years. Ofcom's latest consumer survey, carried out for this consultation, shows that over the past 12 months the porting rate has been 5%. It is not unreasonable to assume that in a mature market porting volumes would continue at, at least, the same annual rate[17]. Further, given the decisions on reduction of mobile porting lead times and the proposals in this document, porting volumes may increase as consumer awareness grows and porting becomes quicker and easier. Conversely, Vodafone noted that since two operators have implemented call trap and have already experienced efficiency benefits for a certain percentage of calls, the actual benefits of ACQ/CDB should be lower. The sensitivity analysis has adjusted for this factor on the assumption that around 20% of ported mobile calls would benefit from Call Trapping and, as Sagentia reported that only two 2 operators have implemented Call Trap, the percentage of calls would already benefiting from efficiency savings would be 8%. The overall adjusted NPV figure is then £8m.

Sensitivity 5: (same as Sensitivity 4, but with full costs of mobile onward routing rather than the DCC payable)

Since true costs rather than charges should be evaluated, it is appropriate that the DCC is evaluated at the true cost and as noted above the DCC represents only 50% of those

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[16] If however the true cost of conveyance, (DCC) was 0.15 instead of 0.1, a positive NPV of £4m would result.
[17] Even if the annual porting rate over time was not maintained at 5% but was above 2%, the cost savings would be substantial and lead to overall net savings for the industry.

costs. Building upon Sensitivities 3 and 4, the true cost is set at 0.2ppm for mobile onward routing. The overall NPV figure is £66m. Clearly, the model is most sensitive to the level of avoided costs of mobile onward routing.

Sensitivity 6: (same as Sensitivity 5 but with increased capital costs)

A number of operators commented that the level of capital expenditure assumed was likely to be low, although no operator has been able to provide alternative figures. This sensitivity analysis therefore considered a scenario where capital expenditure is increased for both fixed and mobile operators to the point where the NPV of sensitivity 5 becomes neutral. The NPV is close to neutral up to the point where the assumed capital expenditure is increased by a factor of 2.15.

However, it must be noted that the CBA as set out captures only efficiency benefits and does not capture the benefits to consumers from the effect of failing providers. As set out in para 4.12 above, the benefit per ported customer is of the order of £296 in 2005 prices. Given the increased number of operators in the market since 2001 when Atlantic Telecom failed and the higher number of fixed and mobile subscribers, Ofcom considers there continues to be a risk of failing networks affecting ported subscribers and given rising volumes of ported numbers, the benefit of protecting such consumers is material.

Annex 6

Further consumer research

Background & Objectives

A6.1 Ofcom considers that a key element of its consideration of number portability issues is an understanding of consumer expectations and experiences of number portability. Following the Consultation in late 2006, additional research has been commissioned to further investigate consumer opinions.

A6.2 The principal areas covered by Ofcom's consumer research include:

- Expectations and experiences of number porting

- General switching behaviour

- Impact of number porting on switching

A6.3 Quantitative questions were placed on the TNS face-to-face Omnibus in February 2007, with interviews conducted with 1,931 adults aged 16+. Data has been weighted to ensure the sample is nationally representative, and Unweighted base sizes are used in the text.

Key findings

A6.4 Three in ten of those who have switched provider in the past year, and changed number, think they could not have kept their old number had they wanted to.

A6.5 Reasons for changing number are varied. Almost two in ten were 'automatically given a new number', and more than one in ten didn't know they could keep their old number.

A6.6 Three in ten of those with a new number would have preferred to keep their old number. Nearly half say they would have ported their existing number if they had been told they could do so and that it would take one day.

A6.7 Of those that have ported number, more than half think the process could be improved – most commonly suggesting a faster and/or immediate transfer.

A6.8 There is little concern about portability amongst non-switchers. Only one in ten of those who haven't switched in the past year have considered doing so, of which a minority have taken steps towards changing.

Switching behaviour

A6.9   Around three in ten mobile users have switched provider in the past four years, half of whom have changed in the past 12 months.

**Figure 1: Mobile network switching behaviour**

■ Last 12 months   ■ 1 - 4 years ago   ■ More than 4 years ago   ■ Never

| Mobile network switching | 15% | 16% | 7% | 62% |
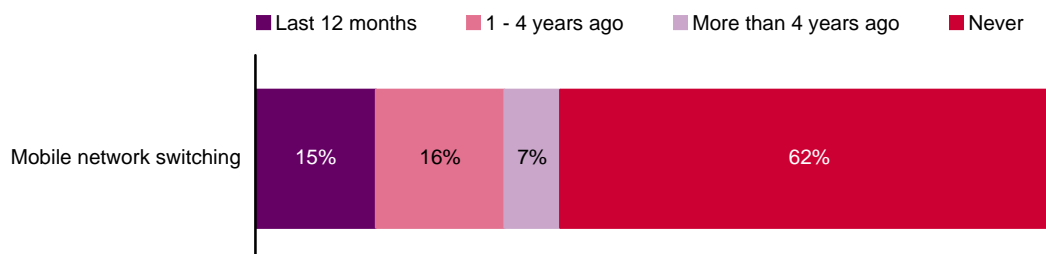
Base: All adults with a mobile phone (1,545)

Knowledge and experience of number porting

Of those who have switched in the past 12 months, two-thirds changed their mobile phone number.

Figure 2: Number porting behaviour

| Changed mobile number | 66% |
| Kept mobile number | 34% |
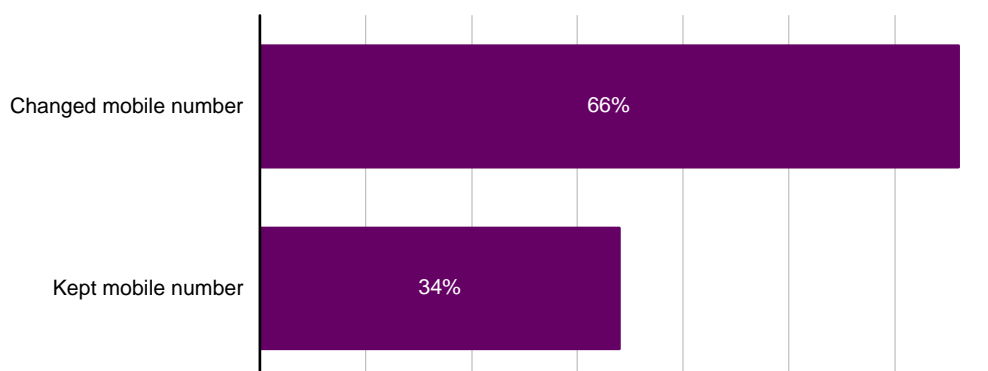
Base: All adults who changed mobile network supplier in the past 12 months (224)

A6.10 Three in ten of those who did change their number didn't think they would have been able to keep their original number if they had wanted to.

Figure 3: Expected ability to port number
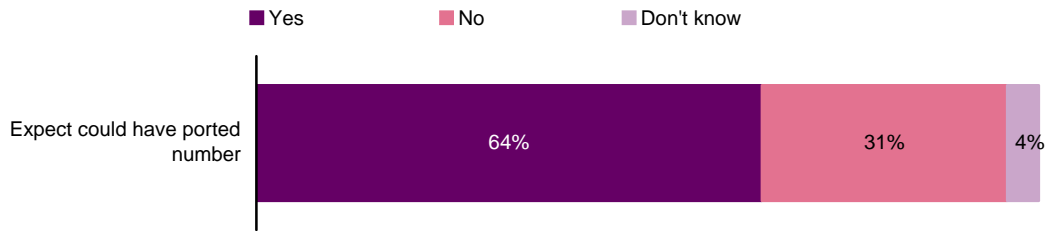
Base: All adults who changed mobile number in past year (151)

A6.11 Amongst those who kept their number, or were aware of the option but didn't keep it, no one source of information about porting stands out.

A6.12 Mobile users are as likely to be unable to remember where they heard about the option, or been told by a friend or family member, as they are to have learnt about it from a new or existing network provider.

Figure 4: Sources of information about number porting
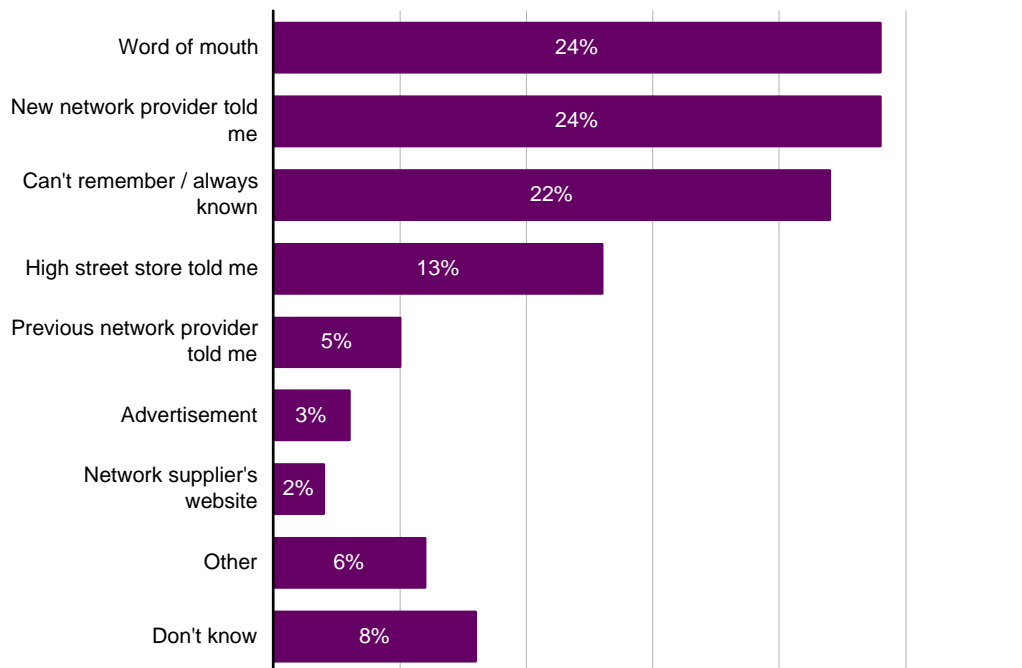
Base: All adults who have switched provider in the last 12 months and are aware that they can keep their number (164)

A6.13 Of the 64 respondents who were told about number portability by a network provider or high street store, two in three were told without asking.

Improving the number porting process

A6.14 Those who had ported their number were asked how, if at all, the process could be improved. The most common suggestion was to reduce the time taken, 42% overall saying it should be faster and/or instant.

**Figure 5: Could the porting process could be improved?**
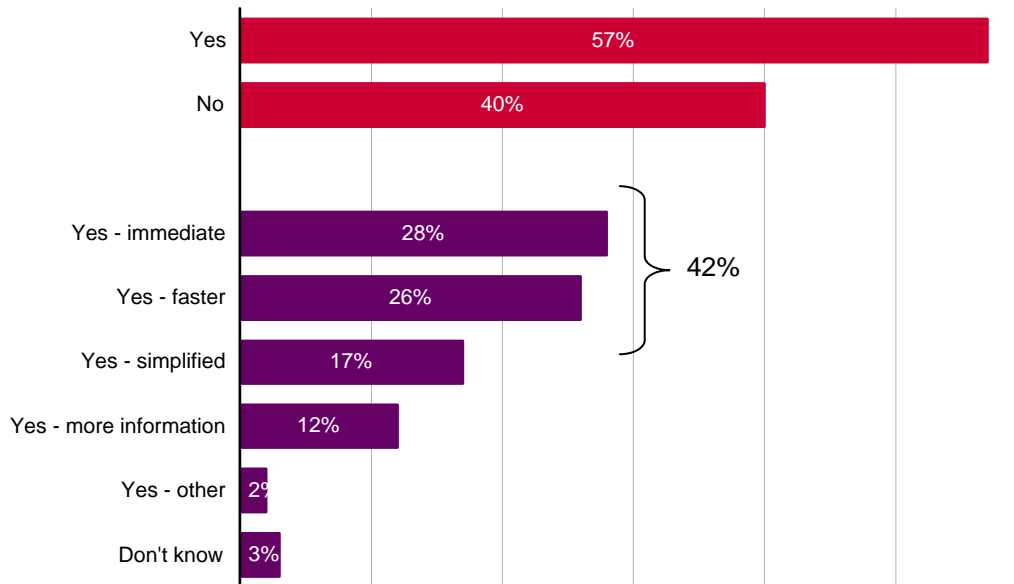
Caution: small base size, multi-coded answers
Base: All adults who have switched provider in the last 12 months and kept their original mobile number (71)

Changing mobile phone number

A6.15 A significant minority of those who changed their mobile phone number when switching network provider would have preferred to keep their previous number.

Figure 6: Preference for keeping previous number when switching provider
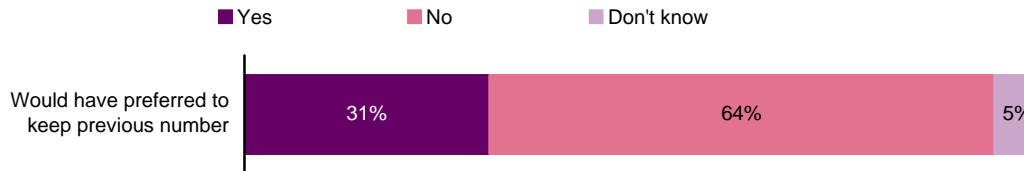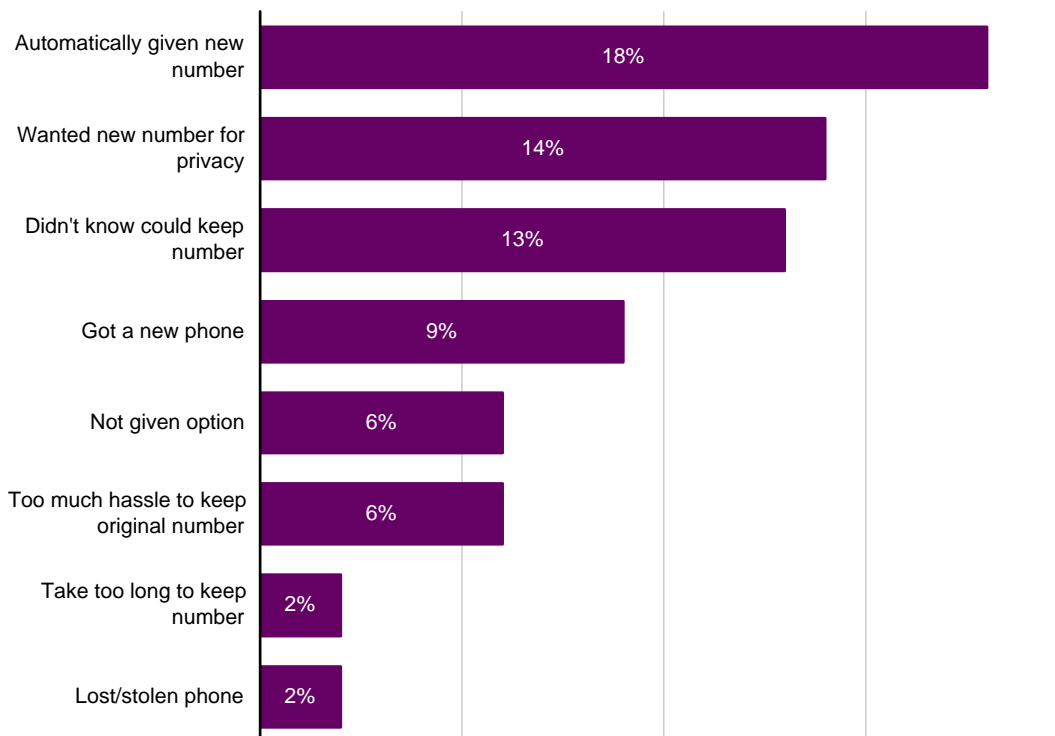

Base: All adults who have switched provider in the last 12 months and changed to a new mobile number (151)

A6.16 Reasons for changing number are mixed. Almost two in ten were 'automatically given a new number' and one in eight did not know they could keep their number, whilst one in seven wanted a new number for privacy.

A6.17 Only 2% spontaneously said it would have taken too long to port their original number.

Figure 7: Reasons for changing to a new mobile phone number – top mentions
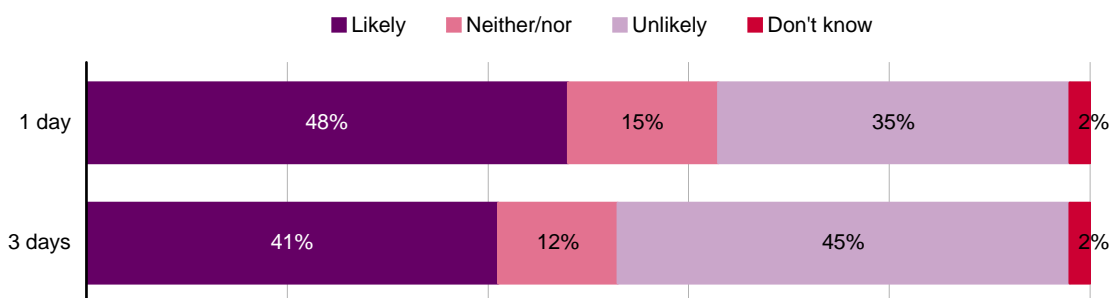

Base: All adults who have switched provider in the last 12 months and changed to a new mobile number (151)

A6.18 Those who did get a new number when switching were asked whether they would have ported their number if they had been told they could do so and that the process would take one or three days.

A6.19 Although survey responses to hypothetical responses should be treated with caution given that respondents tend to overstate their likely behaviour, it is clear that there would have been significant interest in porting.

A6.20 Given that there is a limited difference in likelihood if the process was reduced from three to one day, the data implies that lack of awareness is a more important factor than the time taken.

**Figure 8: Likelihood of porting if aware and time taken was shorter**

Base: All adults who have switched provider in the last 12 months and changed to a new mobile number (151)

Non-switcher behaviour

A6.21 The large majority of mobile phone users who have not switched in the past year have no interest in doing so: just 11% have considered it. Of those that did consider it, three in ten say they took steps towards changing mobile network provider.

**Figure 9: Interesting in switching amongst non-switchers**
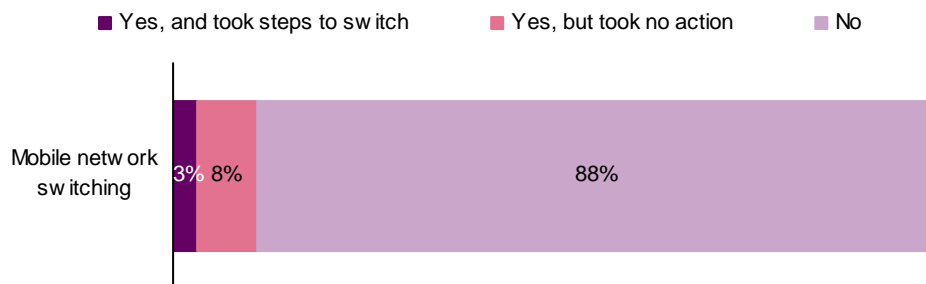
Base: All adults who have not switched provider in the last 12 months (1,321)

A6.22 Of all those who have considered switching mobile network provider in the past year, a third report that their current provider offered them a better deal to dissuade them from switching.

A6.23 The most common offers included an upgraded handset, extra call minutes or text messages, and reduced line rental or call costs.

Figure 10: 'Save' activity from existing supplier
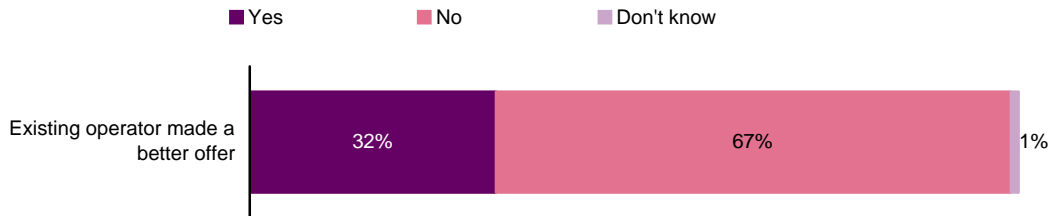
Base: All adults who have not switched in the past year but have considered doing so (134)

A6.24 Amongst the small group of 37 respondents who actually took steps to switch but still remain with the same provider, the most common reasons for not switching were linked to not being able to find a cheaper deal elsewhere; only three mentioned the inconvenience of switching, such as changing numbers or codes.

Figure 11: Why taken steps to switch but remain with same provider
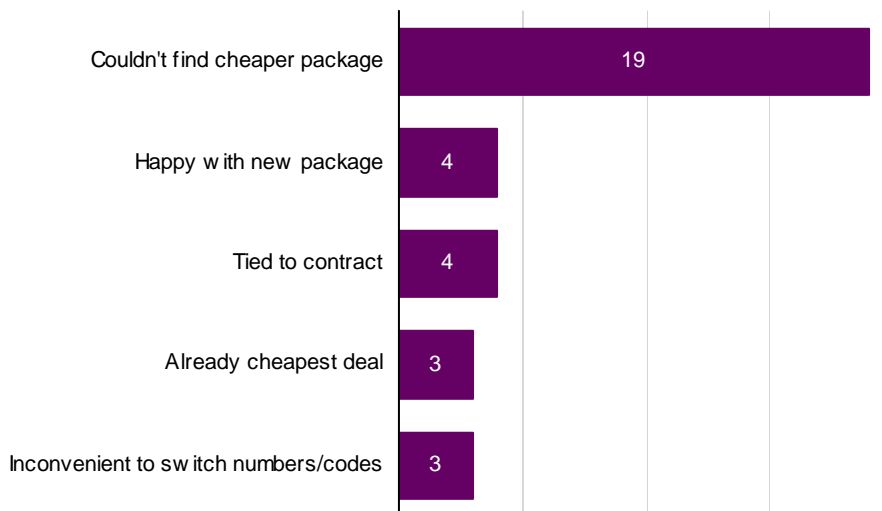
Caution: small base size, numbers of respondents shown, data indicative only
Base: All adults who have taken steps to switch provider in past year but remain with same provider in (37)

A6.25 Around a third of this small group had requested a PAC code from their existing network provider.

Annex 7

Notification of modification to General Condition 18

Notification of a modification under section 48(2) of the Communications Act 2003 of Part 1 and General Condition 18 of Part 2 of the General Conditions regarding number portability, which is set out in the Schedule to the Notification under Section 48(1) of the Communications Act 2003 published by the Director General on 22 July 2003 as amended by the notification made by Ofcom on 30 March 2006.

1. OFCOM in accordance with section 48(2) of the Act hereby make the following modification of General Condition 18 of Part 2 of the General Conditions regarding number portability.

2. The modification is set out in the Schedule to this Notification.

3. The effect of, and OFCOM's reasons for making, the modification referred to in paragraph 1 above is set out at sections 5 to 7 and Annexes 4 to 6 of the accompanying explanatory statement.

4. OFCOM consider that the modification referred to in paragraph 1 above complies with the requirements of sections 45 to 50 of the Act, as appropriate and relevant to each of the proposals.

5. In making the modification set out in this Notification, OFCOM has considered and acted in accordance with their general duties in section 3 of the Act and the six Community requirements in section 4 of the Act.

7. Copies of this Notification and the accompanying statement have been sent to the Secretary of State in accordance with section 50(1)(a) of the Act and to the European Commission in accordance with section 50(6) of the Act.

8. In this Notification:

(i) "the Act" means the Communications Act 2003;

(ii) "General Conditions" means as set out in the Schedule to the Notification under Section 48(1) of the Communications Act 2003 published by the Director General on 22 July 2003 as amended from time to time; and

(ii) "OFCOM" means the Office of Communications.

9. Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them in this Notification and otherwise any word or expression shall have the same meaning as it has in the Act.

10. For the purpose of interpreting this Notification:

(i) headings and titles shall be disregarded; and

(ii) the Interpretation Act 1978 shall apply as if this Notification were an Act of Parliament.

11. This Notification shall come into effect on 31 March 2008.

12. The Schedule to this Notification shall form part of this Notification.

Signed by Neil Buckley

Competition Policy Director

A person authorised by Ofcom under paragraph 18 of the Schedule to the Office of Communications Act 2003

17 July 2007

Schedule

Modification to General Condition 18 of Part 2 of the General Conditions regarding number portability, which is set out in the Schedule to the Notification under Section 48(1) of the Communications Act 2003 published by the Director General on 22 July 2003 as amended by the notification made by Ofcom on 30 March 2006

General Condition 18 on Number Portability shall be modified as set out below:

The following wording is inserted into Condition 18.2 after the words "reasonable terms":

> "In the case of Mobile Portability, where the request is for porting a total of less than 25 Telephone Numbers, the total period for providing Portability in respect of those Telephone Numbers shall not exceed two business days."

Notification of proposed modifications to General Condition 18

Proposal for modification of Part 1 and General Condition 18 of Part 2 of the General Conditions regarding number portability, which is set out in the Schedule to the Notification under Section 48(1) of the Communications Act 2003 published by the Director General on 22 July 2003 as amended by the notification made by Ofcom on 30 March 2006 and further amended by the notification made by Ofcom on 17 July 2007.

1. OFCOM in accordance with section 48(2) of the Act hereby makes the following proposal for the modification of General Condition 18 of Part 2 of the General Conditions regarding number portability.

2. The draft modification is set out in the Schedule to this Notification.

3. The effect of, and OFCOM's reasons for making, the proposal referred to in paragraph 1 above is set out at sections [XX] and [XX] of the accompanying explanatory statement.

4. OFCOM consider that the proposed modification referred to in paragraph 1 above complies with the requirements of sections 45 to 50 of the Act, as appropriate and relevant to each of the proposals.

5. In making the proposal set out in this Notification, OFCOM has considered and acted in accordance with their general duties in section 3 of the Act and the six Community requirements in section 4 of the Act.

6. Representations may be made to OFCOM about the proposal set out in this Notification and the accompanying statement by 10 September 2007.

7. Copies of this Notification and the accompanying statement have been sent to the Secretary of State in accordance with section 50(1)(a) of the Act and to the European Commission in accordance with section 50(6) of the Act.

8. In this Notification:

> (i) "the Act" means the Communications Act 2003;

> (ii) "General Conditions" means as set out in the Schedule to the Notification under Section 48(1) of the Communications Act 2003 published by the Director General on 22 July 2003 as amended from time to time; and

> (ii) "OFCOM" means the Office of Communications.

9. Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them in this Notification and otherwise any word or expression shall have the same meaning as it has in the Act.

10. For the purpose of interpreting this Notification:

(i) headings and titles shall be disregarded; and

(ii) the Interpretation Act 1978 shall apply as if this Notification were an Act of Parliament.

11. The Schedule to this Notification shall form part of this Notification

Signed by Neil Buckley

Competition Policy Director

A person authorised by Ofcom under paragraph 18 of the Schedule to the Office of Communications Act 2003

17 July 2007

Schedule

Proposed Modification to General Condition 18 of Part 2 of the General Conditions regarding number portability, which is set out in the Schedule to the Notification under Section 48(1) of the Communications Act 2003 published by the Director General on 22 July 2003 as amended by the notification made by Ofcom on 30 March 2006 and further amended by the notification made by Ofcom on 17 July 2007.

General Condition 18 on Number Portability shall be modified as set out below:

Option A

1   As from 1 September 2009, the words "two business days" in Condition 18.2 shall be deleted and replaced with the words "two hours".

2   The following wording is inserted as a new Condition 18.4:

"18.4   The Communications Provider shall use all reasonable endeavours to establish and populate a Common Database by 31 December 2008 and to maintain it thereafter. In establishing a Common Database, Communications Providers shall take full account of the obligations contained in Conditions 18.2 and 18.6 insofar as those obligations relate to Mobile Portability."

2   The following wording is inserted as a new Condition 18.5:

"18.5   As from the Relevant Date, all Originating Communications Providers shall ensure, to the greatest extent possible, that all Electronic Communications originated by them are routed to the Terminating Communications Provider in a manner independent of the Donor Provider."

3   The following wording is inserted as a new Condition 18.6:

"18.6   As from 1 September 2009, where a Communications Provider receives a request for Mobile Portability from another Communications Provider in accordance with Condition 18.2, it shall not require the Subscriber to make contact with the Donor Provider before providing Mobile Portability."

4   Conditions 18.4 and 18.5 shall be renumbered as Conditions 18.7 and 18.8 respectively.

5   The following definitions shall be added to Condition 18.8:

"(q)   "Common Database" means information storage system(s) that can be interrogated electronically by each Communications Provider and containing, in relation to each Telephone Number in active use in the UK, up to date and complete information required to route any Electronic Communication originating from a Communications Provider in the United Kingdom to such Telephone Number in a manner not dependent on the intervention in real-time of the Donor Provider, and capable of allowing the Provision of Mobile Portability within a period of two hours in such a manner that a Subscriber is not required to make contact with the Donor Provider before Mobile Portability is provided;

93

(r)   "Originating Communications Provider" means a Communications Provider on whose network an Electronic Communication originates;

(s)   "Relevant Date" means:

(i)   in the case of Electronic Communications originated by a Mobile Communications Service and terminated by a Mobile Communications Service, 1 September 2009; and

(ii)   in the case of all other Electronic Communications, 31 December 2012.

(t)   "Terminating Communications Provider" means a Communications Provider on whose network an Electronic Communication terminates."

Option B

1   The following wording is inserted as a new Condition 18.4:

"18.4   The Communications Provider shall use all reasonable endeavours to establish and populate a Common Database by 31 December 2008 and to maintain it thereafter."

2   Conditions 18.4 and 18.5 shall be renumbered as Conditions 18.5 and 18.6 respectively.

3   The following definitions shall be added to Condition 18.6:

"(q)   "Common Database" means information storage system(s) that can be interrogated electronically by each Communications Provider and containing, in relation to each Telephone Number in active use in the UK, up to date and complete information required to route any Electronic Communication originating from a Communications Provider in the United Kingdom to such Telephone Number in a manner not dependent on the intervention in real-time of the Donor Provider and capable of allowing the Provision of Mobile Portability within a period of two hours in such a manner that a Subscriber is not required to make contact with the Donor Provider before Mobile Portability is provided;"

Option C

1   The following wording is inserted as a new Condition 18.4:

"18.4   The Communications Provider shall use all reasonable endeavours to establish and populate a Common Database [by 31 December 2008] and to maintain it thereafter."

2   Conditions 18.4 and 18.5 shall be renumbered as Conditions 18.5 and 18.6 respectively.

3   The following definitions shall be added to Condition 18.6:

"(q)   "Common Database" means information storage system(s) that can be interrogated electronically by each Communications Provider and containing, in relation to each

Telephone Number in active use in the UK, up to date and complete information required to route any Electronic Communication originating from a Communications Provider in the United Kingdom to such Telephone Number in a manner not dependent on the intervention in real-time of the Donor Provider;"