# Annex 5

# Continuing regulation for BT services with stable market conditions

A5.1 This Annex covers the basis for imposing new charge controls, and where relevant for maintaining other obligations, on the following BT products and services:

- Call origination;
- Call termination;
- Single transit;
- Interconnection circuits (ISB services);
- Product management, policy and planning (PPP);
- DLE FRIACO; and
- Single tandem FRIACO.

# Wholesale narrowband call origination

- A5.2 Ofcom does not consider that there has been a material change in the market for wholesale narrowband call origination in the UK (excluding the Hull Area) since BT was determined to have SMP in that market in November 2003. Ofcom therefore considers that the 'material change test' under section 86 of the Act, which empowers Ofcom to modify or set new SMP services conditions without carrying out a substantial market analysis (see Annex 2), has been met for this market. Ofcom's reasons for setting a new charge control condition for call origination on this basis are outlined below.
- A5.3 Call origination is the service that conveys calls originating on a customer's exchange line from the remote concentrator to and over the local exchange. The market in the Hull area differs from that in the rest of the UK, in that in the Hull area, Kingston is the only provider of call origination services. Call origination differs from that provided in the rest of the UK because there are no separate local and tandem exchanges and all originated calls use a single, averaged origination service that may or may not include conveyance between the local/tandem exchanges.



Figure A5.1 Call origination

# **Retail markets**

A5.4 As discussed in Annex 2, market definitions are first carried out at the retail level because the demand for wholesale services is derived from the demand for retail services. In summary, Ofcom is satisfied that that there has been no material change in these markets since they were defined in the Narrowband Market Reviews, and that there is unlikely to be such change for the duration of the next NCCs that might lead to different market definitions.

# Separate markets for fixed and mobile voice calls

- A5.5 The Narrowband Market Reviews discussed that, on the demand side, mobile access is not a substitute, but more of an adjunct to fixed access. The Narrowband Market Reviews also discussed the results of an Oftel survey which showed that 78% of UK households had a fixed access phone in addition to a mobile phone, and suggested that if mobile access was to be regarded as a substitute to fixed access, this figure would have been lower. The Narrowband Market Reviews concluded that, given the price differential between mobile voice calls and fixed voice calls, it was unlikely that there would be effective demand side substitution in response to a SSNIP by a hypothetical monopolist.
- A5.6 Ofcom is satisfied that the same reasoning in the Narrowband Market Reviews still applies to this part of the market definition. This is also supported by Ofcom's Communications Market Update<sup>1</sup>. This update showed that in the third guarter of 2004, mobile calls accounted for more than 31% of all UK originated calls, while fixed call origination showed a decrease, but total voice volume (origination) per fixed line was stable at 71 minutes per week even while the volume of mobile calls increased. This happened despite an increase in BT's line rental prices (although the increase might have been offset by a decrease in call charges). Also, Ofcom's January 2005 TSR consultation<sup>2</sup> described how mobile voice traffic has grown dramatically over the years, while fixed voice traffic is now declining. Consumer research<sup>3</sup> carried out for that document found that 42 percent of consumers said that they sometimes used their mobile phone to make a call instead of their fixed phone. However, the research suggests that this trend is the result of a behavioural change by a proportion of consumers who particularly value the mobility of the service and/or functionality of the handset. Hence, although there has been a move to using mobile services, it is not clear that consumer sensitivity to a small increase in relative prices is sufficient for fixed and mobile calls to be placed in the same market on the basis of a SSNIP test.
- A5.7 On the supply side, Ofcom believes that there continues to be limited scope for substitution between mobile and fixed narrowband access services, largely due to the high sunk costs associated with building a fixed narrowband access network, and

<sup>&</sup>lt;sup>1</sup>http://www.ofcom.org.uk/research/industry\_market\_research/m\_i\_index/cm/jan2005\_update/upd ate.pdf

<sup>&</sup>lt;sup>2</sup> <u>http://www.ofcom.org.uk/consult/condocs/telecoms\_p2/tsrphase2/maincondoc.pdf</u>

<sup>&</sup>lt;sup>3</sup> <u>http://www.ofcom.org.uk/consult/condocs/telecoms\_p2/tsrphase2/AnnexM.pdf</u>

the economies of scale and density that characterise communications access networks.

A5.8 Hence, Ofcom remains of the view that mobile voice services are in a separate market to fixed voice services.

Separate markets for fixed narrowband access and broadband internet access

- A5.9 The Narrowband Market Reviews discussed that the main characteristics that distinguish broadband internet access from narrowband internet access are:
  - the service is always-on;
  - the possibility of using voice and data simultaneously; and
  - it has a faster downstream speed.
- A5.10 On the demand side, substitution is limited due to the distinct functionalities and the underlying cost differences between broadband and narrowband internet access. The Narrowband Market Reviews discussed whether there is a chain of substitution between the two services particularly in view of the fact that the price differential between broadband and narrowband internet access was small.
- A5.11 Since the publication of that document, broadband prices have fallen further and a significantly higher speed always-on connection is now available at prices closer to dial-up unmetered narrowband (see Ofcom's quarterly update on the Communications Market<sup>4</sup>). The quarterly update discusses that, as well as increasing the use of traditional internet services such as emailing and general surfing, the rise of broadband has also seen an increase in the use of content such as gaming, gambling, music, movies and videos. There has also been an increase in the number of consumers using the internet to purchase goods or services.
- A5.12 Ofcom has considered whether there is a chain of substitution between narrowband and broadband such that narrowband is constrained by broadband. However, there are narrowband users for whom the increased content and higher speed capability is not valued sufficiently enough in relation to the price they have to pay. Such users could be either metered narrowband internet users or unmetered narrowband internet users.
- A5.13 Metered narrowband internet users are likely to be those whose main usage is restricted to emails and surfing the internet rather than downloading music, games and videos. The prices they pay are based on the time of the day they use the internet and their monthly costs are likely to be significantly lower than broadband internet access. For these users, a limited price rise may not incentivise them to switch to a high speed service, particularly given switching costs such as the connection fee and modem.

<sup>&</sup>lt;sup>4</sup><u>http://www.ofcom.org.uk/research/industry\_market\_research/m\_i\_index/cm/qu\_10\_2004/cm\_qu\_10\_2004.pdf</u>

- A5.14 Unmetered narrowband users on the other hand are likely to be those who would like the flexibility to use the internet at any time during the month and pay one fixed monthly fee. Although prices for unmetered internet access are generally lower than for broadband, the highest adoption of broadband has come from the users of unmetered narrowband. However, migration does not of itself imply that a SSNIP in the price of narrowband or broadband services would be unprofitable. It is not clear that switching between narrowband and broadband is sensitive to small changes in relative prices. It could be argued that those who have upgraded to broadband were those marginal users who valued the high speed and extra functionality of broadband enough to be willing to pay a higher price for broadband. Whereas, current narrowband users may have a lower willingness to pay for their requirement and may be unlikely to switch due to the higher switching costs. Given the closeness in the monthly prices of unmetered internet access and some broadband internet access products, it is reasonable to suggest that those continuing on unmetered narrowband do not have a preference for the always-on or the extra content available at current prices. Differing consumer requirements for narrowband and broadband internet access supports a view that they are separate markets.
- A5.15 In order for supply side substitution to constrain the price of narrowband internet access, there must be rapid and low-cost entry from broadband suppliers not currently supplying narrowband services. However, the UK's largest broadband internet access providers are already present in narrowband and hence cannot exert any additional constraint on a hypothetical monopolist in narrowband internet access if prices were raised by 10% above the competitive level.
- A5.16 Therefore, Ofcom believes that there are separate markets for narrowband and broadband internet access at the retail level.

#### Separate markets for metered and unmetered narrowband internet services

- A5.17 Consumer research, undertaken for the November 2003 Review, demonstrated that there was limited substitution between metered and unmetered internet access and that any switching that occurred was mainly from metered to unmetered. Those switching to unmetered access were likely to do so due to considerations other than price; such as the flexibility and freedom of anytime access. Ofcom believes that this is still the case those continuing on metered access continue to do so not only because they may prefer to pay only when the service is used, but also because they are likely to be lighter users of the internet and may be unwilling to pay the premium required for unmetered access.
- A5.18 On the supply side, a potential entrant would need to incur significant costs to build a fixed narrowband network that could provide both metered and unmetered internet calls, because unmetered provision requires build-out to DLE. This is because DLE FRIACO is the wholesale product that has been considered as suitable in most business models for providers who provide unmetered internet access at the retail level. In order to purchase DLE FRIACO, providers have to build out to DLEs or purchase Interconnection Extension Circuits (IECs) from BT, both of which entail a significant barrier to entry.
- A5.19 Ofcom therefore believes that there are separate markets for metered and unmetered narrowband internet access at the retail level.

#### Separate markets for geographic and non-geographic voice calls

- A5.20 Geographic calls are calls to a specific geographic location. Non-geographic calls are made of a number of types of calls that offer the consumer an information service or a value added service, such as directory enquiries ("DQ") service, personal numbering services ("PNS") or number translation services ("NTS"). Calls to NTS make up the majority of non-geographic calls and include calls to freephone charitable helplines and premium rate information services as well as dial-up internet access.
- A5.21 Ofcom does not consider that dial-up internet access is a substitute for voice telephony. Voice non-geographic calls also have characteristics that differentiate them from geographic calls. In particular, non-geographic calls are based on a single number and a tariff charge that does not depend on the location of the caller and called party. In consumer's perception, as geographic and non-geographic calls provide different types of services, it is unlikely that consumers will find one an effective substitute for the other.
- A5.22 On the supply side, the only retailers of non-geographic calls are those retailing geographic calls already; hence supply side substitution cannot provide any additional constraint to that already identified on the demand side.
- A5.23 Ofcom therefore believes that there are separate retail markets for geographic and non-geographic calls.

#### Disaggregation of non-geographic call types

- A5.24 The following discussion relates to whether different types of non-geographic calls belong to different markets because such a distinction will inform the need to impose different remedies at the wholesale level. Such an analysis is not necessary at the level of geographic calls because the difference between types of geographic calls is only distance, and the remedies are not affected by the distance.
- A5.25 There are broadly three types of non-geographic calls: DQ services; PNS; and NTS. Each call type serves a particular purpose, such as DQ services provide directory information, PNS allows the called party to be reached anywhere regardless of location, and NTS provide emergency, freephone and value added services (such as customer support, call centres) and dial-up internet access. It could be argued for example, that if a price of a DQ call was raised above the competitive level, customers might switch to a DQ service provided behind an NTS number. But the fact that these numbers belong to specific number ranges means that customers would have to remember a longer number range and a different number range each time they decided to switch. From a customer's viewpoint this may be a barrier to switching. Any demand side substitutability that might occur would therefore not likely to be sufficient to constrain the hypothetical monopolist.
- A5.26 On the supply side, since each non-geographic call type has its own specific number range, in order for a retailer of one type of non-geographic call to substitute to another type of non-geographic call, a retailer would have to persuade consumers to use a different number range and that would involve significant marketing costs

and pricing below the monopolist's price for particular non-geographic numbers. This would limit supply side substitutability. On the other hand, it could be argued that the wholesale input into all types of non-geographic calls is the same across all services and a retailer would only need to request an allocation of new number ranges in order to supply-side substitute. However, there are different levels of expertise and different business models associated with each type of non-geographic call and supply side substitution may not be easy.

A5.27 Ofcom therefore believes that there are separate retail markets for nongeographic call types.

#### Separate markets for residential and business calls

- A5.28 Demand side substitution is unlikely given that suppliers are able to identify residential and business customers and charge different tariffs. As residential and business customers tend to be in different geographic locations, a potential competitor would need to incur significant sunk costs to switch supply between residential and business markets. This limits the potential for supply side substitution as well.
- A5.29 In recent times, new types of voice services, using VoIP has been made available to retail consumers. This voice service presently is offered as voice over broadband ("VoB"). Therefore it is also necessary to consider if such voice services are part of the same market as traditional PSTN voice services.

#### Retail markets for fixed narrowband voice and voice services originating on broadband

- A5.30 Voice over Broadband services allow the end-user to make and receive calls using a broadband connection by, for example, using digital subscriber line ("DSL") or cable broadband links. They typically use Voice over internet protocol ("VoIP") technology for the conveyance of calls rather than traditional telephone networks. Access to VoB services can be provided through an analogue telephone adapter, which allows the use of an ordinary telephone handset with the existing broadband internet connection. VoB services therefore have the potential to offer consumers access to alternative service providers, cheaper lines and calls, and advanced features, such as call messaging.
- A5.31 VoB services that originate on broadband technology are as yet a small proportion of the market, and it is unclear if current VoB tariffs are at the competitive level, or are above it, making the SSNIP test difficult to use. A more important consideration in comparing the two types of services is that the tariffs reflect different uses of the respective network. Fixed (PSTN) voice tariffs are composed of the cost of origination and conveyance and termination on the PSTN network. On the other hand, VoB users do not have to pay for broadband access and origination. The cost of broadband access is included in the cost the user pays to obtain broadband internet access. The VoB service therefore currently carries only an incremental cost to the broadband access and origination product already purchased by the consumer. At this stage, it is unclear if VoB would be part of the market as PSTN services on the basis of a SSNIP test.

- A5.32 In addition, since VoB is only provided to those customers who have chosen to take broadband internet access, it clearly cannot be a substitute to others who have no broadband internet access. Currently only about 5 million customers have chosen broadband internet access, whereas PSTN voice is available to 48 million customers.
- A5.33 Broadband internet access services are likely to grow further and it is reasonable to assume that VoB services will also grow. For the foreseeable future, there are likely to continue to be significant number of consumers on narrowband voice services and therefore the current market definitions are likely to hold. Ofcom believes that fixed narrowband voice services are in a separate market to voice services that originate on broadband.

# Retail geographic market

- A5.34 The Narrowband Market Reviews discussed that, although there could be different competitive pressures in different geographic areas (such as where cable providers compete with BT), the definition of markets using the hypothetical monopolist test would lead to a proliferation of markets. This, when considered along with the dynamic nature of communications markets, would be likely to mean that the boundary between areas where there are different competitive pressures would be unstable and change over time, rendering the market definition obsolete. It is not clear that determining ex-ante where the boundary would be is an exercise that can be carried out with any degree of accuracy. Therefore an alternative approach would be to define a single geographical market but recognising that this single market has local geographical characteristics. This policy seemed justified, by BT's policy (required for basic retail telephony services covered by the USO) of setting uniform national prices.
- A5.35 BT's uniform pricing means that any response by BT to competition in a given area in the form of lower prices would apply throughout the UK (excluding the Hull area). This suggests that the geographical extent of the relevant markets should be regarded as the whole of the UK (excluding the Hull area), and the Hull area. Therefore the extent of the geographical market is the whole of the UK, excluding the Hull area where a uniform constraint holds.

# Wholesale Market definitions

#### Fixed narrowband call types

#### Demand side substitution

A5.36 The analysis of the retail markets leads to the view that at the retail level different call types are not substitutes on the demand side. This is because each call type has a different functionality (e.g. metered and unmetered, geographic and non-geographic) that is not perceived to be substitutable by consumers. Where different call types require different wholesale inputs (eg. metered call origination and unmetered call origination), those inputs are unlikely to be viewed as effective demand side substitutes. There may be some call types where the wholesale input is the same such as for geographic and non-geographic calls. However, non-

geographic calls require an additional wholesale origination input that provides suppliers of such calls with billing access to the customer. Where this is the case, such types of wholesale call origination would also not be viewed as demand side substitutes.

# Supply side substitution

A5.37 A characteristic of fixed communications networks is the existence of significant economies of scale and scope. As any provider of call origination will seek to exploit the economies of scale and scope, it will tend to provide call origination services for a number of different call types. Therefore, supply side substitution into any particular call type is unlikely to provide any additional competitive constraint because all providers would provide call origination for all call types.

#### Cluster market

- A5.38 This suggests that competing providers of call origination services compete for customers rather a particular service to different customers. This distinction is important because it reinforces the view that providers of call origination compete to provide a range of services across a customer's access line rather than limited services across many access lines. Such competition means that customers choose the provider who can provide the range of services at the lowest price. The fact that all call origination services are purchased in a cluster from the same provider suggests that all call origination services should be treated as part of the same market.
- A5.39 However, consumers choose to purchase either narrowband PSTN or narrowband ISDN calls from a provider. This suggests that PSTN and ISDN call origination cannot both be part of the same market on the basis of the cluster market argument. However, in practice, only BT provides both types of call origination and BT's costs and prices do not differ. Customers purchasing call origination services would still face a common pricing constraint. Hence both PSTN and ISDN may be treated as part of the same wholesale market for call origination.

# Residential and business calls

A5.40 Unlike in the retail sector, where customers have different demand characteristics, wholesale call origination charges to competing providers are the same, irrespective of whether they provide residential or business services. Although, on the supply side, the scope for substitution is limited, given the high costs facing a business call origination provider seeking to build out its network to residential customers, this suggests that for practical purposes there is a common pricing constraint.

#### Conclusion

A5.41 Ofcom's conclusion is that there is a single wholesale market for residential and business call origination.

# Wholesale geographic market

- A5.42 Ofcom's approach to defining geographic markets is set out in Annex 2.
- A5.43 A strict definition of markets using the hypothetical monopolist test could lead to a proliferation of markets unless call origination, call termination or single transit at different exchanges could be regarded as substitutes. This, when considered along with the dynamic nature of communications markets, would be likely to mean that the boundary between areas where there are different competitive pressures would be unstable and change over time, rendering the market definition obsolete. It is not clear that determining ex-ante where the boundary would be is an exercise that can be carried out with any degree of accuracy. For instance, there may be areas that have uniform competitive conditions (such as cable companies providing a retail constraint on BT), but it may not be possible to find a suitable aggregator for such areas. For all these reasons, Ofcom believes that it is reasonable to consider there to be a national market, albeit with differing local conditions.

# Assessment of SMP in wholesale narrowband call origination the UK excluding the Hull Area

- A5.44 The Narrowband Market Reviews discussed that BT had SMP in the market for wholesale call origination. This conclusion was arrived at on the basis of analysing market shares, the ease of market entry, economies of scale, countervailing buyer power and switching costs.
- A5.45 Ofcom has considered the market with respect to the same criteria and finds no material change in each of the above criteria used to determine SMP. BT's share of call origination minutes remained at 79% at the second quarter of 2003/04 (see table A5.1 below). There has been no new entry in the market. Economies of scale combined with sunk costs continue to be a serious obstacle to entry (even if cable company consolidation occurs, those companies would together hold only 12% of the market).
- Table A5.1BT's market share in call origination (%)

	BT	Cable	Others
All calls			
2000	75.2	12.1	12.7
2001	73.1	14.6	12.3
2002	77.2	13.0	9.8
2003	80.0	11.7	8.3
2000 Q1	78.8	8.6	12.7
2000 Q2	74.6	10.2	15.2
2000 Q3	73.8	14.7	11.4
2000 Q4	73.8	14.8	11.4
2001 Q1	73.5	14.8	11.6
2001 Q2	72.3	14.7	13.1
2001 Q3	73.4	14.4	12.2
2001 Q4	73.4	14.4	12.2
2002 Q1	75.0	14.1	10.9
2002 Q2	76.1	13.3	10.6
2002 Q3	77.6	12.4	10.0
2002 Q4	80.0	12.1	7.9
2003 Q1	79.7	11.6	8.7
2003 Q2	80.1	11.6	8.3
2003 Q3	79.8	11.6	8.6
2003 Q4	80.4	11.8	7.7
2004 Q1	79.2	11.8	9.0
2004 Q2	79.4	12.1	8.5

Source: Ofcom

#### Conclusions and forward look on SMP in wholesale call origination

A5.46 Ofcom's view is that the definition of the market for wholesale call origination on narrowband networks will remain unchanged through the duration of this review as providers will continue to purchase the same service at their existing PSTN interfaces irrespective of how the service is provided by BT. Consequently, BT's current SMP in the market is unlikely to be eroded until such time that other direct access networks expand their customer base and are able to compete in a significant manner with BT. New entry into this market is constrained by the high entry barriers in the form of sunk costs. Therefore Ofcom believes that BT is likely to have SMP in wholesale call origination for the duration of the next NCCs.

# Market for single transit

# Service definition

A5.47 Single transit is the service an operator provides when a call originates and terminates on networks other than its own, and the originating and terminating operators are directly connected at the same transit operator's tandem exchange. The call is therefore transited through a single tandem exchange.

#### Market definition

#### Demand side substitution between single transit and inter-tandem transit

- A5.48 If a hypothetical monopolist were to increase the price of single transit, providers may in principle be able to substitute to purchasing ITT. However this would involve a transmission element, involving higher costs, which may not be required if the operator purchased single transit.
- A5.49 If a monopolist supplier increased the price of ITC/ITT, an operator purchasing these services could switch to purchasing single transit if the originating and terminating operator were connected to the same tandem exchange of the transit operator. Single transit therefore requires a much higher level of connectivity than ITC/ITT. The costs of establishing this level of connectivity are significant, especially for small providers with limited traffic. Given current rates of build out, it is unlikely that providers will create a level of interconnection that will allow buyers of ITC/ITT to substitute to purchasing single transit.

#### Supply side substitution between single transit and ITC/ITT

- A5.50 Providers supplying single transit services are already likely to be supplying ITC/ITT services and therefore no additional competitive constraints are introduced by supply side substitution.
- A5.51 An operator currently offering ITC/ITT services would need a much higher level of connectivity with other providers to supply substitute to offer single transit services. This would require significant investment and build to a large number of other providers' tandem exchanges. Therefore, it is unlikely that a provider of ITC/ITT would be able to supply substitute in a way that constrained the prices of a hypothetical monopolist.
- A5.52 In conclusion, Ofcom is of the view that single transit is in a separate market to ITC/ITT.

#### Mobile substitution

- A5.53 The Narrowband Market Reviews discussed that, although mobile providers are now increasingly building direct interconnections instead of purchasing traffic from BT, there was no evidence that this would constrain the prices of fixed transit by a hypothetical monopolist on fixed networks. During the preparation of this consultation document, BT has reiterated that it believes mobile-to-mobile traffic should be considered as part of the market since mobile providers were switching from fixed transit to direct interconnections.
- A5.54 Although the bigger mobile providers may have switched to direct interconnections, these interconnections are only justified where providers have the required scale of traffic that will make such direct interconnection cost effective. Providers with smaller scale depend on the transit services offered by fixed network providers. On the demand side the possibility of direct connection could in principle constrain prices. However, if this is only economic for larger providers and these

have already switched to direct connections, then their inclusion in the market would not be appropriate for the purposes of assessing competitive conditions for continuing purchasers of transit. On the supply side, a mobile communications provider can only enter the market for fixed single transit at a significant cost, which includes the cost of additional direct connections to third parties, systems for dealing with wholesale customers, including billing and management. Ofcom is not aware of any mobile network operator offering fixed transit.

A5.55 Ofcom retains the view held in the Narrowband Market Reviews that there is not sufficient demand or supply side substitution from mobile to fixed conveyance and transit to constrain the price of a hypothetical monopolist in ITC/ITT or single transit.

# **Geographic market**

- A5.56 Since BT is the only provider of single transit, the terms of competition are homogenous across different geographical areas. Therefore it is reasonable to conclude that the scope of the geographical market for single transit is the whole of the UK.
- A5.57 In its consultation response, BT expressed the view that there may be subnational markets for single transit. However, given that BT is the only provider of single transit, Ofcom does not believe that there is any reason for examining at which tandem exchanges operators purchase single transit and whether at any tandem exchange, single transit may be a substitute for other forms of transit. Ofcom maintains its conclusion that there is a single national market for single transit.

# Assessment of SMP in the market for Single Transit

#### Market shares

A5.58 BT is the only provider that provides single transit to any notable extent. Ofcom acknowledges that as more providers have built out connections to various tandem exchanges of BT, they are able to replace ITT with ITC. However, although providers connect to BT's tandem switches, there is lack of scale that justifies them building direct interconnections with each other. However, the connectivity and presence of many providers at different tandem switches means that providers can now interconnect with each other by purchasing single transit. This is reflected in the increasing volumes of single transit purchased by providers as seen in Figure A5.2. However, at present BT is the only provider that can provide connectivity between different providers at the same switch. BT has nearly a 100% market share of the single transit market.

Figure A5.2 Single transit sold by BT

#### million minutes



#### Ease of market entry

- A5.59 In order to provide a single transit service, an operator needs a high level of connectivity. As already discussed above, establishing direct connections with providers other than BT is only justified where there is sufficient flow of traffic between two providers. Achieving sufficiently high volumes is in practice inhibited by the fact that BT originates and terminates the largest volume of calls. Therefore, most traffic will flow to and from BT's network and not between other providers' networks. The low volume of calls over which investment costs can be recovered is a substantial barrier to entering the single transit market.
- A5.60 In the Narrowband Market Reviews, Oftel stated that over time, it was possible that with the growth in CPS and mobile traffic, providers might find that there are sufficient volumes to justify the cost of direct connections and Oftel stated that developments would continue to be monitored. Ofcom is of the view that providers have not been able to achieve sufficient volumes to impose a competitive constraint.

#### Economies of scale

A5.61 There are significant economies of scale that characterise fixed communications networks, where total costs can be minimised at large levels of volume. In particular, for operators to exploit economies of scale, they must be able to achieve a high utilisation of their interconnect links which is only possible with large volumes of traffic. Economies of scale are therefore very important to commercially justify offering a single transit service.

#### Overall size of the undertaking

A5.62 BT is the operator with the largest network. It has the majority of access lines to retail consumers in the UK and most calls originate and terminate on its network. As a result, most operators have to connect to its network and it therefore has a high

level of connectivity with all operators. It is this level of connectivity that enables BT to provide single transit services.

A5.63 BT's size and ubiquity is a key factor in BT's continuing level of market power in the single transit.

#### Easy or privileged access to capital markets/financial resources

A5.64 BT is a large and well-established company with a long track record and a relatively diversified business and is perceived to have stable cash flows. It has a strong credit rating and investors are likely to view it a less risky proposition than relatively newer entrants. It is therefore likely that BT would face lower borrowing premiums than its competitors.

#### Consultation responses

- A5.65 In its consultation response, BT makes the points that the reason its market share is 100% is because of the regulatory construction of the market, and that direct interconnection should be seen as a substitute. BT states that Ofcom should deregulate single transit because it has the same competitive conditions as other transit services, and that by regulating single transit, Ofcom is disincentivising network build.
- A5.66 Single transit is used when operators have no direct interconnection with each other. Establishing direct connection is unlikely to be economic for most operators and so is unlikely to constrain single transit prices to the competitive level and indeed has not done so. As noted above, competitive conditions differ from those of ITT because of the need for a much higher level of connectivity to provide single transit. There is no reason to suppose that single transit services would not be provided in a competitive market.
- A5.67 As BT is the only provider of single transit, the competitive conditions are not the same as those in ITC/ITT. Ofcom also notes that build by operators to BT's tandem exchanges has taken place despite the regulation of single transit, so there is no evidence that single transit regulation disincentivises build. Operators should continue to build if the volume of traffic justifies such build.

# **Conclusions and forward look on SMP in Single Transit**

A5.68 Ofcom is of the view that, for the foreseeable future, will continue to depend on BT for single transit where direct interconnection is not economically viable. Therefore, Ofcom believes that BT is likely to have SMP in single transit for the duration of the next NCCs.

Note on bad debt in PSTN transit

A5.69 In the consultation document, Ofcom noted that it was, at BT's request, investigating the issue of bad debt in relation to BT's PSTN transit services. Originating operators use BT to transit PSTN traffic to networks for which the originating operator does not have a direct interconnect agreement. BT transits the traffic, levies a charge for transit services and remits payment to the terminating operator in accordance with the appropriate tariff for the call. In the event of payment default by the originator, BT may have to make a significant bad debt provision for payments already made to the terminator.

A5.70 Ofcom's work in this area, in terms of investigating ways in which the bad debt risk can be reduced, is still in the early stages. However, further to BT's comments expressed in its consultation response and subsequently, Ofcom has reviewed the case for reflecting some of the bad debt in single transit when setting the relevant charge control. This issue is covered in Section 6 of this document.

# Market for fixed geographic call termination

# **Retail level definitions**

A5.71 At the retail level a customer does not in practice purchase geographic call termination as a separate service. The customer buys the retail end-to-end calls from his or her provider and the provider will need to buy call termination if the call is destined for another network. In terms of end-to-end calls, on the demand side at the retail level, there are no effective substitutes for a caller who wishes to call a given party's fixed geographic number to making that call.

# Substitution between calls to PSTN numbers and VoB numbers

- A5.72 As 21CN technology is being deployed in tandem with switched technology, a voice call could be delivered either through the circuit switched network (PSTN) or the IP network. However, to the end-user the call is received in the same manner as the calls is terminated on the fixed line held by the end-user, who is likely to pay the same charges for a call that is PSTN presented.
- A5.73 However, end-users might receive calls differently, i.e., through a broadband telephone adaptor which allows the use of a traditional telephone handset with an existing broadband internet access connection. These calls are also delivered using VoIP technology as the above type of voice call.
- A5.74 Is there a substitution between calls to PSTN numbers and calls to VoB numbers? That is, if an end-user had the choice of calling a party on their PSTN number or the VoB/VoIP number, would there be effective substitution between the two in the event of a price rise? It must be noted that although both types of calls might be conveyed over an IP network, a PSTN number is associated with a geographic location and terminates essentially at a geographic location on the PSTN whereas a VoB number would essentially be terminated on an internet address on an IP network.
- A5.75 For end-users to react to an increase in the price of calls to PSTN numbers by switching to a VoB number, absent regulation, it is likely that three conditions need to be satisfied:

- end-users must be sufficiently aware that they are calling a particular terminating network number;
- end-users must be sufficiently aware of the price of calling that particular number on that network;
- end-users must be sensitive to changes in the prices of calling the PSTN number they want to reach, i.e. an increase in the termination charge above the competitive level must cause consumers to adapt their behaviour to find an alternative satisfactory way of contacting the person they want to call (e.g. through VoB).
- A5.76 At this stage of development in the VoB market, it is not possible to be definitive on the above issues. Since VoB providers or retailers are now able to use geographic numbers, it is quite likely that end-users will not be sufficiently aware that they are calling a VoB number unless it is a very regularly called number where the called party is well known to the caller. If specific number ranges are used for VoB numbers, then callers may be more aware that they are calling a VoB number. It is unlikely, however, that callers are aware of the prices of calling a particular VoB retailer or operator's network.
- A5.77 There would be constraints on termination charges if the called party had a VoB service where the subscriber chose their network on the basis of the prices of incoming calls and, thus, was able to choose a provider who offered the lowest termination charges for incoming calls. However, the UK has a Calling Party Pays principle (see below), which implies that the calling party, and not the called party, pays the total price of a retail call. Therefore, the called party, who makes the choice of the terminating network/provider, is not affected by the level of the prices of calls to her/him (and thus by the level of mobile termination charge of her/his network).
- A5.78 Given this, it is as yet unclear if calls to VoB numbers would be in the same market as calls to PSTN numbers.
- Supply side substitution at the retail level
- A5.79 Ofcom considers that although competition exists between providers in the retail market for end to end calls on the basis of the availability of wholesale products, this does not have an effect on the competitive conditions in the wholesale provision of fixed geographic voice termination, as providers do not compete on call termination charges. This is explained further below.

# Wholesale level definitions

#### Relevance of the Calling Party Pays principle

A5.80 For fixed geographic telephone calls, the UK telecommunications industry has a system whereby the calling party (and not the called party) pays the total price of the retail call (unless the called party accepts the responsibility for payment, e.g., reverse charge calls). This means that the call termination charge will be included in the originating network provider's cost base and is likely to be reflected in the retail price

it sets for calls. Increases in call termination prices are of less consequence to the called party, as the called party does not bear them, and it is therefore unlikely that a customer would decide to connect to a network on the basis of that network's call termination charge.

#### Demand side substitution at the wholesale level

- A5.81 As the calling party pays, customers of terminating providers do not choose their suppliers on the basis of inbound calls. Terminating providers thus face little competitive pressure and have an incentive to raise the charge for termination to maximise their call termination profitability. In providing terminating services to competitors in the retail market, a terminating provider has a further incentive to increase its call termination price. This not only increases call termination revenues but also increases the costs that a terminating provider's rivals will have to pay.
- A5.82 As at the retail level, when purchasing wholesale fixed geographic call termination, the originating network provider will not find termination on any other network than the one its customer is trying to reach, as a possible substitute. Therefore a hypothetical monopolist of termination would be able to profitably sustain an increase in charges above the competitive level.
- A5.83 The lack of demand side substitutes for terminating on a specific network suggests that termination on an individual network constitutes a separate economic market under a calling party pays principle.

#### Supply side substitution at the wholesale level

A5.84 On the supply side, competitors cannot offer an equivalent wholesale fixed geographic call termination service because technically they cannot terminate call over each other's networks. The terminating fixed network provider supplies the service between its local exchange and the retail customer and the originating network provider has to hand over the call to the terminating network provider for the call to take place. Supply-side substitution would require the entrant to win the customer from the hypothetical monopolist at the retail level. However as already explained, retail customers are not sensitive to termination charges due to the calling party pays principle. Thus supply-side substitution is not relevant in this context.

# The relevant geographic market

A5.85 As call termination on each fixed network is in a separate market, the geographic extent of each market matches the geographic scope of a fixed geographic terminating provider's network.

# Assessment of SMP in the geographic call termination market

A5.86 As call termination on each fixed network is in a separate market, each fixed network terminating provider has SMP in that market. As call termination on each fixed network is in a separate market, each fixed network terminating provider has SMP in that market. Since BT has approximately 80% of the origination market, it has the highest share of customers connected to its network. As a result, it is crucial

for BT's competitors to purchase call termination from BT if they wished to compete on offering end to end calls. On the other hand, it is not imperative for BT to purchase call termination from other networks in order to have a profitable business, since most termination is likely to be on its own network.

- A5.87 In this situation, other providers would have no countervailing buyer power with BT and BT can profitably raise its termination prices above the competitive level. On the other hand, since BT has to terminate a majority of the calls originated by other networks, it would have countervailing buyer power in the absence of the any-to-any principle. It can use this countervailing power to force other network providers to charge below their costs of termination.
- A5.88 Ofcom is of the view therefore that BT continues to have SMP in fixed geographic call termination in the UK.

#### Conclusions and forward look on SMP in geographic call termination

A5.89 Ofcom's view is that the definition of the market for geographic call termination on narrowband networks will remain unchanged through the duration of the next NCCs as providers will continue to purchase the same service at their existing PSTN interfaces irrespective of how the service is provided by BT. Consequently, BT's current SMP is likely to continue as there is little countervailing buyer power that any interconnecting provider can impose on BT. Therefore Ofcom's view is that BT will continue to have SMP in the market for geographic call termination.

# **Basis for regulating interconnection circuits**

#### Introduction

- A5.90 An interconnection circuit links the exchanges of two interconnecting operators in order to enable traffic to pass between their networks.
- A5.91 BT provides the following types of interconnection circuits:
  - Customer-Sited Interconnect ("CSI"). BT provides a point of interconnection at the site of the interconnecting operator by extending its network using a 2Mbit/s circuit;
  - In-Span Interconnect ("ISI"). Two operators build out their networks to a handover point located between their switches. The handover point is normally close to the BT exchange and therefore most of the build is the responsibility of the interconnecting operator; and
  - Interconnection Extension Circuit (IEC). IECs allow an interconnecting operator with an existing ISI to extend this point of interconnection to a new building. In order to do this, BT provides a 2MBit/s circuit between the two buildings. An IEC is subject to the same per km charge as a CSI but has a reduced fixed charge.

#### Achieving an overall solution

- A5.92 All operators purchasing interconnection services from BT, such as call origination, local-tandem conveyance, inter-tandem conveyance/transit or single transit services, must interconnect with them and therefore also purchase interconnection circuits.
- A5.93 Oftel and Ofcom have between them assessed the markets for interconnection services in the following markets:
  - call origination on fixed public narrowband networks and single transit on fixed public narrowband networks in the UK (excluding the Hull Area) in which markets BT was determined by Oftel to have SMP in 2003; and
  - local-tandem conveyance and transit on fixed public narrowband networks in the UK (excluding the Hull Area) in which Ofcom is confirming its market power determination in 2003 as BT continues to have SMP (see Section 4 of this document).
- A5.94 In order to remedy SMP in these markets, Oftel imposed remedies on BT as to the first two above-mentioned markets in 2003 and is re-setting remedies in the LTC market (see Section 6 of this document) However, Ofcom considers that regulation of these markets is insufficient to achieve an overall solution to BT's market power in these markets.
- A5.95 To achieve an overall solution, Ofcom believes that it is also necessary to regulate BT's provision of interconnection circuits, in the absence of which, BT would have incentives to charge prices well above the cost of provision of such circuits. As operators must purchase these circuits to interconnect and purchase interconnection services, this would have the same effect as charging excessive prices for the regulated interconnection services in each SMP market and would undermine the remedies that are currently in place and those that are hereby being set or re-set by Ofcom.
- A5.96 The European Commission has not identified a market for interconnection circuits in its Recommendation on relevant product and service markets. However, the third paragraph of section 3.3 of the Explanatory Memorandum to the Recommendation states that:

"...In dealing with lack of effective competition in an identified market, it may be necessary to impose several obligations to achieve an overall solution. For instance, it may often be the case that adjacent or related remedies are applied to technical areas as part of the overall obligation that addresses SMP on the analysed market. If specific remedies are thought to be necessary in a specific narrow technical area, it is not necessary or appropriate to identify each technical area as a relevant market in order to place obligations in that area..."

A5.97 Ofcom considers that interconnection circuits should properly be considered as a technical area as set out by the European Commission. Ofcom also notes that in 2003, when interconnection circuits were discussed in the Narrowband Market

Reviews, BT agreed that regulation of interconnection circuits was necessary and appropriate where those circuits enable access to regulated wholesale products.

### CSI, ISI and IECs

A5.98 Ofcom considers that it would be insufficient to regulate only one type of interconnection circuit product.

CSI

A5.99 CSI does not involve building out to BT exchanges and the significant costs of doing so. Therefore, it is the normal mode of interconnection for a new operator or where an interconnection route is expected to carry a limited volume of traffic. Regulation of CSIs is essential to ensure that barriers to entry for new interconnecting operators are low. If operators can only interconnect using ISI links that involve the significant costs of building to the BT exchange, this could deter market entry and therefore affect the development of competition.

#### ISI

- A5.100ISI is the preferred method of interconnection when operators have reasonably extensive network infrastructure. An interconnecting operator will aim to interconnect as close as possible to BT's exchanges in order to minimise the charges payable to BT.
- A5.101 Regulation of ISIs is necessary to ensure that operators have the option of building out their own networks and connecting closer to BT's exchanges. This therefore assists an operator's ability to extend their own infrastructure and reduces their reliance on BT.

#### IECs

A5.102IECs are used when an interconnecting operator has already connected to one exchange and is seeking to interconnect to other exchanges in the same area (for example, local exchanges close to a tandem exchange). It will, in general, be difficult for an interconnecting operator to justify constructing ISI links to exchanges where traffic volumes are low, such as at local exchanges. Therefore, regulation of IECs is necessary to ensure that operators are able to interconnect to these exchanges, particularly local exchanges, where it would otherwise be uneconomic to build their own links.

# Product management, policy and planning

A5.103BT makes a product management, policy and planning (PPP) surcharge to cover its administrative costs in dealing with interconnection relationships in narrowband markets. The charges cover BT's internal costs in managing such relationships over and above the charges that it incurs for actually conveying and switching calls across its network. At present, the PPP charge is currently levied on a once per call minute basis in the following markets:

- call origination on fixed public narrowband networks;
- local-tandem conveyance and transit on fixed public narrowband networks;
- inter-tandem conveyance and transit on fixed public narrowband networks;
- single transit on fixed public narrowband networks; and
- fixed geographic call termination.
- A5.104 Any competing provider purchasing any of the above services individually, or in any combination, is required to pay the PPP surcharge on a once per minute per call basis. In markets in which BT has SMP, the surcharge therefore covers one part of BT's costs (i.e. its administrative costs) in handling such calls, in the same way as the local exchange processor covers BT's costs in switching the call. Any competing provider wishing to offer retail services to BT's customers via carrier pre-selection or carrier selection, needing BT to terminate calls on its network, or needing to use BT's trunk network for the purpose of conveying a national call, is therefore required to pay PPP. Therefore, to the extent that BT maintains SMP in these markets, the competing providers have little alternative but to pay BT to either originate, terminate or deliver the call nationally, and pay BT PPP. In competitive markets, competing providers could choose to purchase conveyance services from alternative providers and they would a portion of the charge they would pay would directly or indrectly be attributable to a function of a similar nature to BT's PPP activity.

However, as explained in Section 5 above, Ofcom has concluded that BT does not retain SMP in the market for inter-tandem conveyance and inter-tandem transit. With the consequent lifting of all SMP conditions in that market, BT would not therefore have to publish its charges for either service, nor would it be required to set out in its regulatory financial statements the costs associated with either of these products, including the PPP costs attributed to them. Therefore, for inter-tandem conveyance and transit services, the PPP cost would not need to be separately published. Nonetheless, in the absence of SMP in that market, Ofcom would expect competition to constrain BT's ability to price in excess of costs - including any element of PPP-type costs incurred in selling ITT and ITC. Ofcom would continue to regard ITT and ITC charges as including an element to allow for PPP cost recovery for the purposes of setting the PPP charge control.