Options for NTS Interconnection Charging

A consultation document issued by the Director General of Telecommunications

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Closing date for Comments: 23 January 2004

Contents

Summary

S1. This consultation discusses different options for the treatment of interconnection charging for Number Translation Services ("NTS"), including the option of withdrawing the existing Network Charge Differential ("NCD") method of calculating BT's NTS call origination and transit charges and replacing it with the use of the Element Based Charging ("EBC") matrix via BT's Inter-Network Call Accounting wholesale billing system using Calling Line Identification ("INCA/CLI"), already in use for most other call types.

S2. BT has been originating NTS calls that terminate on other Communications Providers' (CPs) networks since the late nineteen eighties. Following Oftel's *Review of the fixed narrowband wholesale exchange line, call origination, conveyance and transit markets*, published on 28 November 2003 ("the November Review"), BT as a Dominant Provider in those markets now has a formal obligation (amongst other things) to provide NTS call origination on fair and reasonable terms. The NCD methodology was introduced by Oftel in 1999 as a short term expedient to allow BT to estimate its call conveyance charges for originating NTS calls. The NCD methodology was intended to allow BT to de-average its then single tandem call origination charge for all NTS calls. This was in anticipation of the INCA/CLI billing system being able to calculate conveyance charges for NTS calls on a per-call basis. The INCA/CLI based solution for NTS calls was expected but in the event was not able to meet the industry's requirements to enable invoicing for these calls, although some members of the industry choose to use it on a voluntary basis.

S3. INCA/CLI as it currently stands, when used for NTS calls, has two key shortcomings. First is its inability to pass the identity of the Originating Communications Provider ("OCP") through to the Terminating Communications Provider ("TCP"), at the time of the call, when the calling number has been ported or where calls originate via Indirect Access ("IA") or Carrier Pre-Select ("CPS") providers. The second issue is the means by which INCA/CLI measures the routeing of NTS calls across BT's network. In its present form INCA/CLI tends to measure the actual route (rather than the theoretical least cost route) backwards from the point of exit from, to the point of origin within (or entry to) BT's network.

S4. BT has presented a number of proposals for how these issues may be overcome. Each of these requires BT to incur costs in upgrading INCA/CLI . They will also cause other NTS Providers (CPs) that purchase NTS call origination to incur costs for upgrading their own billing systems to work with INCA/CLI data. Oftel proposes (as a result of an analysis of Oftel's six principles of cost recovery) that if, as a result of this consultation, Oftel requires BT to introduce INCA charging utilising the CLI (known as INCA/CLI) using Oftel's powers that arise as a consequence of BT's SMP designation in the wholesale

call origination market, then BT's costs should be recovered from all NTS CPs which purchase BT NTS call origination, including BT itself.

S5. Following lengthy discussions at BT sponsored workshops and the NTS Focus Group, Oftel has provided a list of principles that set out which of the available range of upgrades best meets the varying needs of NTS CPs. This is attached at Annex A to this document.

S6. The objective of this consultation is to gather the views of interested parties on different options for NTS wholesale charging including whether, despite the costs involved, the use of INCA/CLI should be imposed (and, if so, how the costs of doing so should be recovered) or whether the option to use the existing NCD methodology should be retained. Oftel's stance on this is broadly neutral although the move to a more cost oriented automated billing system is more appealing than the continuation of the existing methodology. An initial cost-benefit analysis has been carried out which indicates that a change from the NCD methodology to INCA/CLI charging may be justified. Comments are therefore sought on whether Oftel's assessments are reasonable and whether the benefits identified are achievable.

S7. Oftel is therefore seeking views on the following options:

i To introduce INCA/CLI charging for NTS calls at a date to be agreed depending on when BT and CPs can complete the necessary enhancements to their systems. The NCD methodology would then be withdrawn such that the whole industry uses the same INCA/CLI charging methodology;

ii To retain the NCD methodology for the foreseeable future and to continue allowing CPs to elect the method by which they wish BT's wholesale charges to be calculated. Ofcom would need to consider revising the NCD table setting out how the uplift is calculated (see Annex A) in order to remove the provisions included by Oftel in 1999 to mitigate the initial effect of de-averaging BT's charges on smaller CPs;

iii For Ofcom not to issue any direction specifying how BT should charge for NTS call origination and transit, but to rely on the SMP obligation, Condition AA11, placed on BT as a result of the November Review, ie the obligation to provide NTS call origination on fair and reasonable terms;

iv To implement an alternative methodology, as yet unknown, which may emerge from the responses to this consultation:

S8. Other proposals for improvements to the NCD methodology, including a CP-specific NCD methodology, have been considered by Oftel and the NTS Focus Group but none has been found acceptable. These have not, therefore, been discussed in this consultation. However, comments including other

suggestions for alternative charging methodologies will be considered before any final decision is made. If the first, second or fourth option is adopted by Ofcom then that will be implemented via a direction made under Condition AA11

S9. Oftel also asks NTS stakeholders to say whether moving to billing by INCA/CLI is likely, ultimately, to bring benefits, which further the interests of consumers (as required by Section 3 of the Act), over and above those achieved by the SMP obligation placed on BT by Condition AA11.

S10. The closing date for comments will be **23 January 2004**.

S12. The closing date for the consultation will be after Ofcom have assumed their duties under the Act therefore further steps following the consultation will be a matter for them. However, if Ofcom wish to impose a direction on BT under Condition AA11 then under the requirements of the Act they will have to issue a notification of a draft direction for consultation for at least one month.

Chapter 1

Introduction

This consultation discusses different options for the treatment of NTS interconnection charging, including the option of withdrawing the existing Network Charge Differential ("NCD") method of calculating BT's NTS call origination and transit charges and replacing it with the use of the Element Based Charging ("EBC") matrix via BT's Inter-Network Call Accounting wholesale billing system using Calling Line Indication ("INCA/CLI"), already in use for most other call types. By way of introduction, a brief history of NTS and the evolution of NTS interconnection charging is set out below.

A brief history of NTS and the evolution of NCD and INCA/CLI charging

The history

1.1 NTS calls are used for the provision of a variety of value-added services, for example the provision of information services and Internet access. In this chapter, "NTS calls" refers to calls to the following numbers: Special Service numbers (including freephone, special local rate and special national rate) and Premium Rate Services ("PRS") (services currently provided under 090 and 091 number ranges). Within these ranges calls to 0844 04 numbers for Surftime Internet access services and calls to 0808 99 for Flat Rate Internet Access Call Origination have different wholesale charging arrangements and are not classed as NTS calls.

1.2 What has become known as the NTS regime was established in an Addendum to Oftel's first determination of BT's wholesale charges under ICAS (InterConnection Accounting Separation) rules. This was the determination of *"Interim Charges for BT's Initial Standard Services for the Year Ending 31 March 1996"* published in January 1996 (the 1996 Determination. Addendum 8 to this determination, which detailed how NTS call revenues should be shared, has itself become known as the original "NTS Determination". This document was published in hard copy only and was never placed on Oftel's website. The NTS regime was, however, confirmed in an addendum to each subsequent determination of BT's Standard Services, an example of which can be found on Oftel's website at:

http://www.oftel.gov.uk/publications/1995_98/pricing/interim.htm

In that document the relevant section is Addendum 5.

1.3 In formulating the 'rules' underpinning the NTS regime it became clear that BT would be unable to calculate network charges for originating and terminating NTS calls on the basis of actual network usage. The relative lack of sophistication of billing systems meant that BT's charges had to contain certain approximations designed to ensure that, on average, BT recovered its regulated costs.

1.4 In the case of BT's charges for originating, and for transit of, all classes of NTS calls (including PRS) and carrying them across its network to the chosen points of interconnection with Terminating Communications Providers ("TCPs"), the 1996 Determination set a single tandem average charge for all TCPs regardless of the number of points of connection ("POCs") each had with BT. The background to this can also be found in Chapter 2 of Oftel's *"Direction of a dispute over BT's proposals to charge for NTS call origination using INCA and CLI – 20 December 2001"* ("the 2001 INCA direction").

www.oftel.gov.uk/publications/pricing/inca1201.htm

1.5 In the summer of 1998 Oftel formed the NTS Focus Group in response to the growing number of disputes and issues arising out of BT's various NTS charge change proposals and the uncertainty these created for TCPs' future revenues from terminating NTS calls. Key amongst the issues at the time was BT's initial attempt to de-average its single tandem NTS call origination charge using sampled 'route factors'. BT's proposal was rejected and led to Oftel's *"Direction concerning BT's NTS Conveyance"* ("the NTS Conveyance Direction") in November 1999.

http://www.oftel.gov.uk/publications/1999/pricing/nts1199.htm

This document established the Network Charge Differential ("NCD") sliding scale of charges which has remained in general use to the present day (as set out in Annex A).

1.6 When BT attempted to introduce Inter-Network Call Accounting ("INCA") based NTS charging at the end of 2000 to replace the NCD, a number of Communications Providers ("CPs") rejected BT's proposal on the grounds that the INCA/CLI system was unable to provide sufficient data to enable TCPs to invoice BT for their call termination outpayments. The resultant dispute was referred to Oftel by BT..

1.7 The particular problems with INCA/CLI were that it was unable to pass the identity of the Originating Communications Provider ("OCP") through to the TCP at the time of the call, when the calling number has been ported to another OCP or where the caller uses an Indirect Access ("IA") or Carrier Pre-Selection ("CPS") provider. In each case the CLI seen by the TCP is that of the OCP to whom the number has been allocated and not the one which originates the call.

Where the caller is a BT customer using an IA/CPS provider calls are assumed to have been originated by BT but are, in fact, transit calls for which the TCP will have made no allowance. IA/CPS calls may also enter the BT network at a completely different location than that indicated by the CLI. In the case of calls from numbers ported by BT to another OCP, the TCP will again assume calls to be BT originated rather than transit calls and will not, again, have made any allowance for BT's subsequent transit charges. This is important to TCPs for whom this misleading information makes it impossible to verify BT's transit invoices.

1.8 The other key principle governing the wholesale billing of calls was that call conveyance costs should be calculated according to the shortest distance across BT's network from the point of entry to the point of egress to the TCP's nominated POC. Thus regardless of whether calls were re-routed for any reason, eg congestion or route failure, or were overflowed to another point of egress (all of which would be controlled by BT), the charges would still reflect the least cost route. After the launch of INCA/CLI in October 2000 it became apparent that it measured calls to the actual point of egress and according to the actual route taken. Thus charges would not follow least cost routeing principles.

1.9 Following the dispute between BT and other CPs referred to in paragraph 1.6 , in December 2001 the Director made the 2001 INCA direction which rejected BT's proposal for universal use of INCA/CLI. The direction also gave TCPs the ability to opt to be charged using either the NCD or INCA/CLI methods until such time as the Director was satisfied that INCA/CLI could provide sufficient and accurate charging information. Most TCPs have opted to continue to use NCD whilst some have started to use INCA/CLI for BT originated traffic only.

Addressing the issues

1.10 In an attempt to comply with the requirements of the 2001 INCA Direction BT held a number of open workshops with CPs, during late 2002 and early 2003, to explore how the shortcomings of INCA/CLI could be addressed. Various means of identifying the source of transit calls at the point of handover between networks were discussed. These generally involved adding some sort of identification 'tag' to the signalling information attached to calls so that the recipient network would know, in real time, where geographically and on which network the call originated. At the same time the industry had identified a number of other applications and enhancements (not related to this issue) which could also be addressed using signalling 'tags'. It became apparent that attempting to implement them all would potentially make the string of signalling information each call carries so long that it would be impossible to manage.

1.11 The workshop attendees therefore concluded that no signalling based solution was likely in the near future. It was agreed that the problem could be

referred to the industry body known as the Network Interoperability Consultative Committee ("NICC") to devise a long term solution that could be implemented across all networks. This, however, would be likely to take some years to complete. Oftel is unaware of any industry moves to seek a long term solution but it may be that BT is already investigating the possibilities.

1.12 It is, however, possible to enhance the INCA/CLI call data files to differentiate, at varying levels of detail (according to cost), BT and non-BT originated calls together with the CLI. This will be discussed in greater detail in Chapter 2. It is also possible to re-write the current method used by INCA/CLI to measure the route between the BT entry POC (which may be where the call originates, or where the call enters the BT network if it is a transit call) and the exit POC (where the call leaves the BT network and enters the TCP's network) to ensure calls are charged at least cost.

1.13 Despite having initiated the INCA/CLI workshops, however, BT was unable to obtain a single specification for enhancements to INCA that was acceptable to all participants. Those CPs who took an active part each had their own requirements for enhancements to the data provided by INCA/CLI. BT had been unable to obtain an industry consensus which would enable it to scope the work nedded to be done and to provide costing details. In addition no agreement could be reached on whether or how BT's costs for enhancing INCA/CLI would be recovered.

1.14 Oftel attended the INCA/CLI workshops and opted to take the lead in drafting a Statement of Principles encapsulating changes to be made to INCA/CLI which met the majority of CPs' aspirations. An initial document was published with the notes of the minutes to the NTS Focus Group held on 29 May 2003. Comments were sought and the document was revised and re-issued at the meeting held on 3 September 2003. A copy of the 'agreed' Statement of Principles is attached to this document at Annex B. BT has been asked to use that document as the basis for preparing its Statement of Requirements for the work and to start the necessary costing and feasibility studies (in parallel with this consultation). This is in order that implementation, if agreed, can commence in a timely manner.

1.15 Within Oftel's statement of principles is the requirement that any enhancements to INCA/CLI should not preclude OCP specific billing in future. This matter is one Oftel's NTS Policy Project aims to address and if agreed at some future date it must be capable of being incorporated within the monthly call data INCA/CLI will provide to TCPs. At present BT makes the same outpayments (known as POLOs) to TCPs regardless of where calls originate and then, in general, invoices OCPs for calls that BT transits to the TCP on the OCP's behalf. This may not allow OCPs to retain a sufficient amount to cover their own costs without these being reflected in the OCP's retail price for calls. This means that OCPs with higher costs than BT are immediately faced with charging higher retail

prices for calls or retaining an insufficient amount to cover their costs if they wish to compete with BT on retail prices for NTS calls.

Legal framework

1.17 On 25 July 2003 a new regulatory regime for electronic communications networks and services came into force which, inter alia, required the abolition of licences for telecommunications operators. The new regime also required that National Regulatory Authorities (NRAs) undertake reviews of communications markets to establish whether Significant Market Power (SMP) exists in any market and, where it does, what regulatory obligations are considered necessary. Pending the outcome of those reviews certain licence conditions and directions made under the Telecommunications (Interconnection) Regulations 1997 ("the 1997 Regulations") were continued under Continuation Notices issued under the Act, so that they would continue to apply to relevant operators including BT. This included the NTS Conveyance Direction. Following the November Review, BT was found to have SMP in the markets identified in that review, and certain SMP conditions were imposed on BT including Condition AA11 (reproduced at Annex C to this document and set by way of a Notification published by the Director under section 48(1) and section 79 of the Act on 28 November 2003) which imposes an obligation to provide NTS Call Origination on fair and reasonable terms, and on such terms, conditions and charges as the Director may from time to time direct. Following the November Review continued licence conditions and interconnection directions, including the NTS Conveyance Direction, were discontinued by way of discontinuation notices issued under the Act and hence are no longer in force. However, the arrangements under the various NTS directions made under the 1997 regulations which were continued are still in place.

1.18 As referred to above Condition AA11 contains a direction-making power to set terms, conditions and charges for NTS Call Origination. Under section 49 of the Act, directions made under an SMP condition, including under Condition AA11, must be objectively justified, non-discriminatory, proportionate and transparent. Section 49 also sets out the procedural requirements for making proposals for such directions i.e. there must be a notification setting out the proposal, its effect and the reasons for making it, etc. and there must be consultation on the proposal for at least one month.

1.19 In making a proposal for a direction the Director must also have regard to his duties under section 4 of the Act to take account of the six Community requirements. These are contained in Annex D. He considers that the most relevant of these are likely to be the first Community requirement to promote competition in the markets for electronic communications networks and services, the fourth Community requirement not to favour one form of network, service or associated facility over another, and the fifth Community requirement to encourage the provision of network access for the purposes of securing

efficiency and sustainable competition in the markets for electronic communications networks and services and maximum customer benefit. The Director has also considered, in anticipation of the coming into force of Section 3 of the Act on 29 December 2003, relevant duties under Section 3 including furthering the interests of consumers in relevant markets, where appropriate, by promoting competition.

1.20 If as a result of this consultation the decision is taken to proceed with the introduction of INCA/CLI the obligation to do so rests entirely with BT, which will be subject to the direction under Condition AA11. However, in the absence of an alternative charging mechanism, non-dominant TCPs would need to configure their systems to inter-operate with INCA/CLI in order to be able to terminate NTS traffic. If following the consultation it is decided not to propose a direction under Condition AA11, then BT would simply be subject to an obligation to provide NTS Call Origination on fair and reasonable terms, and there may be more flexibility in the methodology used for NTS interconnection charging provided it is fair and reasonable.

The Scope of this Consultation

1.21 This consultation discusses the options for NTS interconnection charging, and whether a direction should be made under Condition AA11 setting out detailed and uniform requirements for NTS interconnection charging. One option is to replace the current NCD methodology with an EBC method based on BT's existing INCA/CLI system. The NCD method is used by BT to charge TCPs for NTS calls BT terminates on their networks. Such calls may originate from BT's retail consumers or from customers of other OCPs whose calls transit BT's network to be terminated on services hosted by other TCPs. It is also used to generate BT's transit charges raised against OCPs for calls to 0844/71 NTS numbers where the OCP is responsible for these charges. The NCD method is not, however, used by BT itself for its internal wholesale billing process. This is because all calls which both originate and terminate on BT's network, without leaving that network at any point, are assumed to have been originated using a maximum of one tandem switching stage and can not, therefore, incur charges above single tandem.

1.22 The existing NCD methodology was never intended to accurately measure the exact amount of BT's network used in (and hence the exact cost to BT of) conveying NTS calls for termination on the networks of other TCPs. It was created as a temporary expedient until an INCA/CLI based mechanism, which measured conveyance costs on an individual call basis using EBC principles and assuming that the call would take the least cost route across the BT network, could be put in place. Oftel considers that BT is now able to provide TCPs with sufficient information to enable invoicing for termination payments and for validation of BT's subsequent transit charges using EBC principles. For the purposes of this document the use of INCA to provide EBC based call records for

NTS wholesale billing, using the CLI of the originating customer, is known as INCA/CLI.

1.23 Charging using EBC principles is already used for other traffic types, namely:

- Geographic traffic terminated by BT;
- All other, non-NTS, transit traffic;
- BT originated Indirect Access ("IA"), Carrier Pre-Selection ("CPS") and Directory Enquiry ("DQ")118 traffic;
- Targeted transit calls; and
- BT originated NTS traffic where the TCP has already signed a CLI-based contract:

1.24 In the case of BT-terminated geographic traffic the destination DLE is identified from the dialled digits and this, in conjunction with the POC at which the call was sent to BT, may be used to identify the cheapest connectivity path in the BT network.

1.25 In the case of incoming (to BT) transit traffic, whilst the "entry" POC is known the exchange at which the call will leave the BT network is not. In order to work out the cheapest connectivity path through the BT network the EBC system must therefore derive the destination POC. This is achieved using a set of rules.

1.26 In the case of BT-originated IA, CPS and 118 traffic BT does not know the POC at which the call leaves the BT network as the interconnect call records are produced at the originating DLE rather than the POC (this was done to ease the loading on the trunk layer). Consequently whilst the originating exchange may be derived from the CLI the destination POC must again be assumed in order to work out the cheapest connectivity path. This is achieved using a set of rules.

1.27 In the case of CLI-based BT-originated NTS currently the real exit POC is used in conjunction with the exchange associated with the CLI; for non-BT CLIs the transit algorithm above is "reversed".

1.28 In the case of Targeted Transit the exit POC is that associated with the first choice route from the entry POC to the targeted transit code.

1.29 Oftel is conscious of the concerns of some members of the Industry about the inherent inability of INCA/CLI to convey details of the OCP, where NTS calls transit the BT network, in call records provided to TCPs. This means that it is difficult for TCPs to distinguish BT originated calls from transit calls, and therefore to be able to verify BT's subsequent transit invoices. The lack of this information also makes it difficult for OCPs to enter commercial negotiations with TCPs about commercial arrangements for call origination and termination outside BT's standard interconnect agreement.

1.30 System developments to enable automatic identification of the CLI by the TCP at the point of handover of each call need to be planned alongside other signalling system enhancements and will not be available for some years. Such enhancements are outside the scope of this consultation and are not discussed in any detail. In the meantime BT is able to provide varying levels of detail to enable TCPs to distinguish BT originated from transit calls. Paragraphs 2.15 to 2.17 set out the possible levels of detail available and the costs involved in providing them. Interested parties can choose the detail they require and are asked to comment on how BT's and TCPs' costs in adjusting their systems to work with each of the available options should be met (see Annex J).

1.31 This consultation also seeks comments on the process by which INCA/CLI charging would be introduced, if it is decided to introduce it, and how NCD charging would be withdrawn. Oftel is aware that, in the years following the introduction of the NCD methodology through the NTS Conveyance Direction and as a result of Oftel's *"Determination of a dispute between BT and a number of CPs regarding a proposal to charge for NTS links from January 1 2001"*(the NTS Links direction), in June 2001,

http://www.oftel.gov.uk/publications/1999/pricing/nts1199.htm

many TCPs have taken steps to optimise their interconnection arrangements with BT in preparation for the introduction of INCA/CLI . The delay brought about by INCA's inability to identify all OCPs in transit calls has meant that some of those TCPs are now being penalised. This is because the single NCD sliding scale fails to take account of the fact that single tandem charges for all calls can be achieved without having to interconnect with every available BT tandem switch (currently 69). According to the NCD scale, however, TCPs have to extend their networks to 69 POCs to be charged at single tandem by BT (see Annex A).

1.32 Equally there are likely to be TCPs whose interconnection arrangements may not be optimal in that they have simply built the number of POCs necessary under the NCD methodology to achieve a target *assumed* percentage of single tandem calls, rather than designing these POCs to minimise the *actual* percentage of single tandem calls. For these TCPs, the introduction of INCA/CLI may result in a significant increase in BT's charges and a consequential reduction in their terminating revenues. Oftel considers that these TCPs have had ample opportunity to adjust their networks for maximum efficiency and that, if it is decided to introduce INCA/CLI and withdraw NCD, then no further additional delay, other than that required to complete the necessary modifications to INCA/CLI and TCPs' billing systems, should be granted before NCD is withdrawn. Oftel welcomes comments on this proposal. Optimisation of interconnection arrangements is discussed in Annex G.

Relationship to other Oftel NTS activity

NTS Policy Project

1.37 This consultation is part of Oftel's NTS Policy Project, which Oftel has set up to ensure that the NTS regime continues to meet Oftel's strategic objectives of promoting competition and getting the best deal for the consumer in terms of quality, choice and value for money. Oftel intends that the NTS Policy Project will examine other NTS issues such as the potential for individual billing relationships between OCPs and TCPs in separate pieces of work but would always work within the basic framework established by Condition AA11 ie the NTS call origination SMP condition.

Oftel is also consulting on the retail pricing arrangements for calls to 0845 and 0870 NTS number ranges, currently designated as local and national rate respectively. A consultation document entitled *"0845 and 0870 numbers: Review of retail price and numbering arrangements"* was issued on 26 September 2003 and responses are required by 30 December. This document can be found at:

http://www.oftel.gov.uk/publications/numbering/2003/0845condoc0903.pdf

As this consultation process will not have reached a conclusion by the vesting of Ofcom on 29 December 2003, Ofcom will decide whether and how to reach a final decision on this matter. Additionally Oftel is investigating BT's charge for its retail costs in originating NTS calls to TCPs services (the NTS Retail Uplift) and a consultation will be conducted by Ofcom early in 2004.

Open Cases

1.38 There are currently no disputes involving how BT calculates its wholesale conveyance charges for NTS. Oftel is, however, investigating whether a margin squeeze exists at the Internet Service Provider ("ISP") level as a result of BT's 1 June 2003 reduction in the retail price for evening 0845 calls. This investigation has no direct impact and is not relying, in any way, on the decision in this consultation. This is because this consultation simply covers the methodology BT should use for calculating its NTS call conveyance charges, and does not address fundamental matters of policy such as BT's right (or otherwise) to change NTS termination payments overall.

Oftel and Ofcom

1.39 In December 2003 Oftel will cease to exist and a new regulator, Ofcom, will regulate the communications sector under the new framework established by the the Act, which received Royal Assent on 17 July 2003. In the period between 25th July 2003, when certain provisions of the Act were brought into force, and

29th December 2003, when Ofcom will assume their powers under the Act, the Director General of Telecommunications has had the power (pursuant to section 408 of the Act and Article 3(1) of the Communications Act 2003 (Commencement No. 1) Order 2003) to carry out certain functions under the Act.

1.40 The closing date for the consultation, 23 January 2004, will be after Ofcom have assumed their duties under the Act therefore further steps following the consultation will be a matter for them. However, if Ofcom wish to impose a direction on BT under Condition AA11 then as highlighted above under the requirements of the Act they will have to issue a notification of a draft direction for consultation for at least one month.

Chapter 2

Modifications and Enhancements to INCA/CLI

The Issues

2.1 As described in Chapter 1, CPs have, until now, generally rejected the use of INCA/CLI for NTS charging on two main grounds:

(i) its inability to identify transit calls from IA/CPS providers or ported numbers at the point of handover; and
(ii) the fact that calls may not always be charged according to least cost routeing principles.

Transit

2.2 As described in paragraph 1.7 INCA/CLI is currently unable to provide accurate CLI information to TCPs for some call types calls that originate from other OCP's networks. Calls that originate on the network of a non-dominant fixed line OCP, such as a cable CP, and which transit the BT network for termination on a TCPs network will present the correct CLI. That is unless the number of the calling customer has been ported from one OCP to another. In this case the calls will continue to present the CLI of the 'donor' OCP and not that of the new 'recipient' OCP.

2.3 Moreover, calls from fixed OCP's networks but where the customer uses an IA or CPS supplier present the CLI associated with the fixed OCP. This means that, in the case of a BT fixed line customer, TCPs will assume calls to have originated from the BT switch associated with the geographic location of the number. In actual fact, the call will have left BT's network and may have re-entered via a completely different handover POC as chosen by the OCP. The TCP will therefore incur unexpected transit charges which may bear no relation to the geographic location of the caller.

2.4 The current charging process for transit differs according to whether calls are to made 0844/71 numbers or to all other NTS/PRS number ranges. With the former the OCP is responsible for transit charges given that the TCP, in theory, sets their required POLO and that the retail price is the sum of the POLO plus the OCP's retention and any transit charge. The retail price set by the OCP should therefore be sufficient to cover its retention, BT's transit charge and the TCP's POLO. The, as yet unresolved, issue of non-dominant OCPs specific retentions may (subject to Ofcom agreement) form the basis of further NTS Policy work.

2.5 For all other NTS/PRS calls BT will submit its invoice for transit charges to the TCP after it has paid the TCP's POLO invoice. In other words BT pays the TCP the total POLO for all the calls (BT originated and transit) BT has handed

over to the TCP and later asks the TCP for its transit charge to be repaid. Because of the issues described in paragraphs 2.2 and 2.3, the problem for TCPs is that they have no means of verifying the number of calls BT claims to have transited from any particular OCP, and in many cases, the identity of the OCP or the point of origin on BT's network. They cannot, therefore, estimate the number of transit calls for which they need to accrue payments in any given period or whether these transit calls were correctly charged according to the distance travelled across BT's network.

2.6 Both the current INCA/CLI functionality and the NCD methodology share this failing. However, where TCPs may be expected to incur costs for 'upgrading' to the new INCA/CLI methodology and to contribute towards BT's set-up costs for making these changes, it is only reasonable to expect improved functionality.

Least cost routeing

2.7 Following the establishment of the NCD methodology in the NTS Conveyance Direction in late 1999 a number of TCPs sought to optimise their interconnection arrangements with BT. This was in order to minimise BT's call origination charges both under NCD and when INCA/CLI charging commenced. These TCPs have established numbers of new POCs with the aim of reducing BT's average charge to as near to single tandem as possible. With the prospect of a move to INCA/CLI based charging, TCPs want to be sure that the larger numbers of POCs now in place (and for which they are paying) continue to result in minimised charges. In other words BT's network should be capable of routeing calls by the shortest route from the point of origin to the exit POC with the TCP's network and charging accordingly.

2.8 In the event of equipment faults, route failure or congestion between BT tandem switches, it may not be possible for BT to route calls directly to an exit POC. BT may then (at its discretion) re-route calls over longer distances or via additional switching stages or overflow calls to another more distant POC. One of the key requirements of any automated charging system is that in this event the system should be capable of raising charges which reflect the theoretical use of the least cost route, since BT is re-routing at its own discretion and for its own purposes, and OCPs and TCPs should not have to bear the additional cost to BT of this re-routing.

2.9 As it is currently designed INCA/CLI measures the routeing of calls backwards from the exit POC over the actual route taken which may not be the shortest route. For least cost routeing to be guaranteed INCA/CLI needs to identify both the point of origin on or entry to BT's network and the nearest possible exit POC and charge accordingly. Where the TCP has nominated specific exit POCs, INCA/CLI must again identify the point of origin and the shortest route to the exit POC and charge accordingly.

Resolving INCA/CLI's shortcomings

2.10 As described in Chapter 1, following the 2001 INCA Direction, BT held a number of workshops to try to seek agreement across the industry on how the shortcomings of INCA, detailed above, could be addressed and how any additional costs involved could be recovered. This activity has culminated in Oftel drafting the agreed statement of principles which were presented to the NTS Focus Group on 3 September 2003. A copy of this document is attached at Annex B to this consultation.

2.11 The statement of principles provides BT with a single frame of reference on which to scope the feasibility and costs of the upgrades to INCA/CLI necessary to address, if not fully resolve, INCA/CLI's shortcomings. In regard to NTS transit, as stated in paragraph 1.10, it is not possible to enhance INCA/CLI to include full details of non-BT originated calls at the point of handover. To do this would require a significant modification of the current signalling arrangements which would also affect other facilities not related to wholesale billing. As a consequence the NICC will be asked to look at the problem with a view to devising a solution that can be universally applied by the industry as a whole. This will necessarily take some years to design, test and implement.

2.12 In the meantime a partial solution has been proposed by BT which involves enhancement of the Call Data Records ("CDRs") provided by INCA at the end of each month. This was initially proposed by BT via the NTS Focus Group in April 2003 and was a response to a series of questions posed at the previous NTS Focus Group meeting. The text of BT's proposal is reproduced at Annex E including a Glossary of the terms and acronyms used.

2.13 Whilst acknowledging that this proposal formed a useful description of what BT could provide, the TCPs remained concerned that it did not address the two key concerns of the absence, in the billing information provided by BT to TCPs, of the CLI on transit calls and the process for reflecting changes to numbers and location of exit POCs.

2.14 BT has recently tabled proposals for a new rule for determining the exit POC for all traffic types including NTS. This is mentioned further in paragraph 2.21 and BT's detailed proposal is attached to this document at Annex F.

<u>Transit CLI</u>

NB: A Glossary of terms used in text provided by BT is included at the end of Annex E

2.15 This issue surrounds the absence of any identification of the OCP for transit calls in the monthly 09A report (or the new "statement" proposed by BT) that BT provides to TCPs each month. Subsequent discussions led BT to outline

two options for the data content of the statement. The following text is an extract taken from information supplied to Oftel by BT, explaining its proposals, in July 2003. Option 1, proposed by BT itself consisted of data for incoming NTS transit traffic with CLIs from within BT's range only. The data in each report would include:

- *"Destination number type / number range (which of these to be determined at the design phase)*
- *Time period*
- *LCFA / PRS Clawback flag as appropriate*
- *Number of calls*
- *Number of minutes*

2.16 Option 2, requested by some TCPs, would provide data for all incoming NTS transit traffic. In this case the data in each report would include:

- *Sending OCP*
- *Entry POC*
- *CLI in BT range indicator*
- *Destination number type / number range (which of these to be determined at the design phase)*
- *Time period*
- *LCFA / PRS Clawback flag as appropriate*
- *Number of calls*
- *Number of minutes"*

2.17 BT has provided initial estimates of the costs of the development and incremental ongoing costs for both Options 1 and 2. These are depending on precise content:

- *"Option 1 - £1.2m to £1.3m for development plus £108k ongoing annual costs*
- *Option 2 - £1.5m to £1.6m for development plus £210k ongoing annual costs*"

Inclusion of new exit POCs

2.18 TCPs have raised the concern that by bringing NTS into EBC through INCA/CLI, they will lose the current advantage they have of including a new exit POC in the NCD formula *as soon as it is ordered* rather than the later date from which traffic actually uses the POC. In contrast, the EBC update mechanism (network snapshot) currently operates on a 3 monthly cycle and only includes new POCs when they are operational. This means that with the timescales necessary for an order for a new POC to be processed plus the normal lead time for installation and testing of new routes, several months can elapse following an order for a new POC being placed and the new POC being counted for INCA/CLI

charging purposes. Through discussions at the NTS Focus Group, TCPs have suggested possible mechanisms to alleviate this perceived problem. Broadly speaking these are:

1) Produce EBC data monthly, hence reducing the delay before a new exit POC counts for INCA/CLI charging. CPs suggested this for NTS charging data only, though the principle could be extended to all EBC.

2) Use predicted future network configurations when creating EBC data, moving away from network snapshots when identifying exit POCs. This would require policing and bill adjustment to cater for the predicted future not coming to pass.

3) Use the EBC matrix to match the CLI, "scanning" up and down a list of monthly agreed NTS exit POCs to identify the cheapest exit POC in the "normal" EBC matrix and using the associated charge band, This will cause a processing overhead for BT and CP systems and also require a mechanism of maintaining "agreed" exit POCs.

2.19 Clearly option (3) by definition is not compatible with the initiative to improve the exit POCs used for EBC charging.

2.20 Options (1) and (2), however, will work with the suggested improvement in the same manner as with assumed exit POCs.

An alternative to Least Cost Routeing

2.21 Since agreement was reached on the principles behind the INCA/CLI methodology, BT has made a further proposal in relation to the choice of exit POC for which calls are charged. This is designed to standardise the various rules which currently apply to the routeing of different call types which were created in 1994. Since then new traffic types have emerged for which specific arrangements have to be made. Annex F contains the detailed proposal for using the exit POC designed in a TCP's routeing plan for destination number ranges for all traffic types ie a TCP's intended exit POC, even if it does not exist yet. This work is ongoing as BT's modifies its proposals in response to comments made by CPs at the NTS Focus Group.

Enhancements to EBC

2.22 On 26 September 2003 BT hosted the first in a series of workshops with the aim of improving the usefulness, accuracy and functionality of the EBC Matrix for all call types including NTS. This work is ongoing and, whilst welcomed, does not appear to Oftel to have a direct bearing on the merits, or otherwise, of the proposals discussed in this document.

Chapter 3

Analysis of Costs versus Benefits of INCA/CLI

Overview

3.1 One of the questions that the Director must consider is whether the benefits of introducing a more accurate charging system, which measures actual as opposed to approximate network usage, outweigh the costs that the industry may incur in contributing to BT's costs of addressing INCA/CLI's shortcomings and in adapting their billing systems to use it. This is part of the question of whether a direction to impose INCA/CLI is objectively justified, as required by section 49(2) of the Act.

Costs

3.2 BT will incur development and ongoing costs which would (under Oftel's proposals) be distributed across all NTS TCPs as discussed above. These have yet to be precisely quantified from BT's feasibility studies but have been provisionally estimated at £1.5 to £1.6 million for development and ongoing costs of approximately £210k per year (see paragraph 2.17).

3.3 TCPs will incur costs in adjusting their billing systems to work with INCA/CLI data output. These costs have been estimated by TCPs at between £100k and £250k per CP. This may differ for TCPs who have contracted out their billing function and will depend on the costs of switch suppliers in applying the requisite software modifications.

Benefits – optimisation of interconnect arrangements

3.4 The key benefit associated with element-based charging is that it provides an incentive to all TCPs to optimise their interconnect with BT. The current NCD-based system is sub-optimal in two respects:

- It provides an incentive to TCPs to establish more points of interconnection (POCs) with BT than is actually required for the efficient conveyance of traffic.
- It provides no incentive to TCPs to optimise the geographic locations of these POCs.

3.5 The current NCD relationship requires a TCP to establish 68 POCs in order to benefit from single tandem call origination charges. However it is possible in principle to obtain full single tandem connectivity with between 25 and 30 POCs, assuming that the locations of those POCs are optimised (see Annex G). Indeed, it should be possible to obtain single tandem connectivity for around 90% of traffic with only 15 POCs. There are a number of TCPs that have established well in excess of 30 POCs, and this results in costs being incurred

unnecessarily. There are two ways in which reducing the number of POCs can deliver benefits:

- Reducing the number of POCs directly reduces the level of fixed costs (i.e. those costs that are not capacity dependent) associated with interconnect links. These fixed costs may well be significant, especially for ISI links, where TNCs will have had to lay fibre in order to establish a POC. If, for, example, each TCP were to reduce their POC count to a maximum of 30, then the total number of POCs between BT and TCPs would be reduced by about 400. Estimating the annual fixed cost for each POC at £5k, then this corresponds to an annual cost saving of around £2 million.

- Reducing the number of POCs also reduce the level of variable (i.e. capacity dependent costs), since increased trunking efficiency reduces the amount of interconnect capacity that is required. Consider for example a TCP that currently has a number of POCs, each with 2 * 2 Mbit/s interconnect links. Halving the number of POCs, and doubling the number of interconnect links per POC, makes it possible to increase the link utilisation by 13% (this assumes a target grade of service of 99.9%, implying a maximum utilisation of a 2 link POC of 68%, and a maximum utilisation of a 4-link POC of 77%), allowing a corresponding reduction in the amount of interconnect link capacity that is required. It seems reasonable to suggest that eliminating unnecessary POCs, and consolidating traffic onto those that remain, might deliver efficiency savings in relation to variable costs of between 5 and 10%, at least for the larger TCPs.

3.6 The current NCD relationship does not require a TCP to consider where it is most appropriate to establish POCs in order to maximise single-tandem connectivity. An TCP that establishes 30 POCs within a single region of the UK will pay the same call origination charges to BT as another TCP that establishes 30 POCs located optimally across the UK. The result is that there are a number of TCPs, with POC counts in the range 30-40, that ought to be able to get single tandem connectivity for most calls, but who in practice are only achieving this for around 50% of their calls. This estimate is based on data provided by BT to Oftel in 2002. The data also showed that around 18% of NTS calls include inter-tandem conveyance, ie route at double tandem, implying that 12 billion OLO-terminated NTS call minutes per year include inter-tandem conveyance.

3.7 Assuming that increased optimisation of interconnect arrangements reduced the percentage of TCP-terminated NTS calls using inter-tandem conveyance from 18% to 10%, this would correspond to a reduction of 5.3 billion call minutes per year, or an annual saving of around £8.5 million (using the current 24 hour average charge for Inter-Tandem Short routeing of 0.16 ppm).

<u>Other Benefits</u>

3.8 The ability for INCA/CLI to include the CLI of the OCP on transit calls creates the potential for OCPs and TCPs to conclude separate payment agreements as has been seen with DQ118 services. In addition to BT paying the standard POLO to TCPs, additional payments or refunds could be made between OCPs and TCPs as agreed commercially between themselves (without involving BT). This would enable OCPs to achieve OCP-specific call origination charges instead of being forced to accept the BT equivalent payments as a proxy.

3.9 The perverse incentives created by NCD to put in as many POCs as possible to reduce conveyance/transit costs will be removed. TCPs will be able to design networks which relate to the sources and volumes of calls to the services they host. Redundant or little used capacity in small routes put in place simply to reduce NCD charges can be eliminated.

Cost Recovery

3.10 As has already been stated any direction made by the Director in relation to this issue must be objectively justified and proportionate i.e. it must be the least onerous method of achieving its aim. Oftel is conscious that any move to introduce a new wholesale charging system for NTS using INCA/CLI will incur costs for both BT and the community of NTS Communications Providers. The main reason for the change is because the NCD methodology does not, in Oftel's view, create the correct incentives for efficient interconnection. The new methodology is likely to result in greater efficiency. This in turn will result in cost savings for some TCPs who have hitherto been paying too much for conveyance across BT's network due to the estimation technique used in the NCD methodology. For other TCPs, costs will increase, because under the NCD they have been charged at levels that are not cost-reflective due to the same NCD estimation methodology.

3.11 However, the existing NCD method, though cost based, does not accurately reflect the usage made of BT's network by each call that terminates on a TCP's network. In setting the NCD sliding scale in 1999 Oftel deliberately depressed the level of uplift that applied to smaller TCPs in order to give them time to optimise their networks in advance of INCA/CLI . It was also assumed then that 100% single tandem charges could not be achieved with less than 69 POCs whereas it is now recognised that with careful planning, TCPs can achieve virtually 100% single tandem charges with something around 25 to 30 POCs. Annex G contains some analysis to support this carried out by Oftel in December 2001. As a consequence the current charging system may penalise TCPs with more than 25 POCs by applying an unjustified uplift on single tandem charges for calls that they terminate. At the same time it undercharges TCPs with less than 10 or so POCs, some of whom should be receiving almost 100% double tandem charges.

3.12 Furthermore, under the NCD methodology, the relatively low level of uplift on the single tandem charge for TCPs with very few POCs creates insufficient incentives for them to optimise the efficiency of their interconnection arrangements by increasing their numbers of POCs. At the same time the NCD methodology artificially encourages larger TCPs to install more POCs than they might otherwise need in order to achieve single tandem interconnection.

3.13 BT has stated its belief that the overall effect of any change may be revenue neutral for BT. Any move to INCA/CLI is unlikely to change, significantly the total amount it pays out in POLOs for any given volume of calls across all TCPs. What will change is the amounts paid to individual TCPs who have either done nothing to prepare for INCA/CLI or, at the other extreme, have carefully adjusted their interconnection arrangements to obtain single tandem charges with the minimum number of POCs.

3.14 This section concentrates primarily on the set-up costs incurred by BT as the dominant originator of NTS calls and how these should be recovered. Interconnection cost savings for TCPs are also discussed.

The questions are:

1. Which parties should bear the costs incurred by BT of changing from the NCD to the new method?
2. Should Oftel also consider how CPs' costs, incurred by switching to the new method of billing, are recovered?

3.15 An indirect benefit of implementing the regime that Oftel is considering is the fact that, as a result of enhancements to the INCA/CLI regime, TCPs will have better information regarding on which networks their calls originate. Up until now, TCPs have not been able to accurately distinguish traffic that is BT-originated from traffic that is transited by BT from other originators. This lack of information has hampered efforts by TCPs to negotiate different commercial arrangements with other (non-SMP) originators. This information would assist them in opening these negotiations which in turn has the potential to create more competition, with associated benefits for consumers.

Costs incurred by BT

3.16 Regarding question 1 in paragraph 3.14, in order to reach a view, it is necessary to consider Oftel's six principles of cost recovery. Oftel's analysis of these principles in relation to the recovery of costs incurred by BT for INCA/CLI are set out in Annex H.

3.17 In general, the starting point for any analysis of cost recovery is the principle of *cost causation,* on the grounds that economic efficiency is enhanced by requiring parties to pay for costs which they directly cause to be incurred. In

this case (as was also case in the CPS cost recovery analysis) this is not straightforward. The rationale of economic efficiency as the determinant of the mechanism of cost recovery is not as relevant where costs are caused to be incurred by the imposition of a regulatory obligation.

3.18 As a result, it is probably not fruitful to place too much reliance on cost causation. The other principles should thus be considered to be of more importance when deciding how BT's system set up costs should be recovered.

3.19 The over-riding steer from the principle of *distribution of benefits* is that set up costs should be borne by the consumers of terminating CPs, i.e. NTS service providers. Unit costs should also be borne by the TCPs which cause them to be reasonable about what they are demanding from BT. Contrary to *distribution of benefits* , the *cost minimisation* principles suggest that set up costs should be recovered from BT. To a degree this is supported by the *effective competition* principle, which states that either the system set up costs should be born by BT as an originator or by TCPs (including BT) – hence NTS consumers.

3.20 Judging from above, there appears to be two main options:

1. Set up costs and unit costs equally spread across all TCPs ie an addition to BT's NTS retention to cover system set-up, per call and per CP costs. This is the steer given from the *distribution of benefits* principle;

2. As indicated by the *cost causation* principle, BT makes some contribution towards set up costs (other than simply as a TCP). This option is unlikely to be very practical, due to the uncertainty surrounding the extent to which BT should contribute as an OCP. The unit costs are recovered from TCPs.

3.21 If the *cost causation* principle is departed from, it seems therefore that (1) is the best option.

Recovery of TCPs' costs of switching to the new regime

3.22 The rationale of the new INCA/CLI charging method for TCPs is to have a more cost-reflective charging methodology, which will benefit some TCPs in terms of lower conveyance payments, but will disadvantage others who will have to pay higher conveyance payments. All TCPs will benefit by being able to identify the call originator as a result of the new charging methodology. Given that none of the TCPs have any market power and are not obliged to be active in the NTS termination market (whereas BT is obliged to offer NTS call origination), they should be liable for any costs that they incur.

Conclusions

3.23 BT's costs are unlikely to be substantial and should be shared across all TCPs (including BT itself) through an addition to BT's pence per minute retention charge.

3.24 The potential benefits felt by some TCPs, particularly those with 20 or more POCs, could be substantial assuming their interconnection arrangements are rationalised accurately. Smaller TCPs will, however, face potentially significant initial costs in increasing their connectivity (POC count) with BT or will see increases in BT's call origination charges.

3.25 Oftel seeks comments from interested parties on whether they consider benefits that will accrue from moving to INCA/CLI outweigh the costs outlined in this consultation. Oftel also seeks comments on potential costs and benefits not identified here.

Questions - Annex J refers:

Q1 In relation to Oftel's analysis of Costs and Benefits do BT and CPs agree that:
- **i the estimates of costs are reasonable;**
- **ii the analysis of potential benefits is reasonable and achievable;**
- **iii the benefits outweigh the costs:**

Q2 Do CPs agree that BT's costs should be shared equally by all NTS TCPs, including BT and that other TCPs should meet their own costs of inter-operating with INCA/CLI?

Q3 How should BT's costs be recovered?
- **i Through an addition to BT's NTS call origination and transit charges**
- **ii Through an addition to PPP - BT's Product Management, Policy and Planning component of its general network charges**
- **iii As a one off payment levied against all NTS CPs**
- **iv Any other suggestions**

Chapter 4

Assessing the Options

Objective

4.1 The objective of this consultation is to assess options for wholesale charging methodologies for NTS. In the Director's current view any method of calculating NTS conveyance charges which measures actual traffic and charges would be preferable to a system based on sampling techniques and adjusted to soften the impact of the move from single tandem to fully de-averaged charges. As discussed in Chapter 3, the benefits of moving to the 'better' system appear to outweigh the costs to both BT and NTS CPs. The Director considers that the benefits would also be felt in terms of confidence that calls are being charged accurately, increased potential for direct commercial negotiation between TCPs and OCPs and probably, in time, more efficient processes for invoicing POLOs and realising the effects of changes to connectivity (POCs). However, Oftel invites the NTS CP community to state whether they believe the perceived benefits will outweigh the likely costs and, where possible, to provide evidence in support of their view. Oftel also invites respondents to give their preference from the options set out below.

The Options

4.4 This consultation seeks comments on the following options (see Annex J – Summary of Questions):

i To introduce INCA/CLI charging for NTS calls at a date to be agreed depending on when BT and CPs can complete the necessary enhancements to their systems. The NCD methodology would then be withdrawn such that the whole industry uses the same INCA/CLI charging methodology;

ii To retain the NCD methodology for the foreseeable future and to continue allowing CPs to elect the method by which they wish BT's wholesale charges to be calculated. Ofcom would need to consider revising the NCD table setting out how the uplift is obtained (see Annex A) in order to remove the provisions included by Oftel in 1999 to mitigate the initial effect of de-averaging BT's charges, on smaller CPs;

iii For Ofcom not to issue any direction specifying how BT should charge for NTS call origination and transit, but to rely on the SMP obligation, Condition AA11, placed on BT as a result of the November Review, ie the obligation to provide NTS call origination on fair and reasonable terms;

iv To implement an alternative methodology, as yet unknown, which may emerge from the responses to this consultation:

Questions – Annex J refers

Q4 Which of the above Options is preferred

Q5 Give reasons for this preference.

Q6 If Option (i) is preferred, over what timescale should the process of introducing INCA/CLI and withdrawing NCD take place?

Q7 Should INCA/CLI be introduced at the same time as NCD is withdrawn or should there be an overlap period to enable INCA/CLI to be tested while NCD remains in operation?

Q8 Given that BT and TCPs will need some time to complete the enhancements to their systems do you consider that those TCPs with sub-optimal interconnection arrangements should be allowed further time to optimise the number and location of their POCs?

Q9 If Options (ii) or (iii) are preferred, do CPs believe the NCD Table of Uplift on Single Tandem against numbers of POCs should be revised to, more accurately, reflect actual conveyance charges?

Q10 If CPs have suggestions for an alternative charging method that has not already been considered, please supply full details in the response to this document. Please ensure that any description is not marked Confidential so that it can made available to all other NTS CPs, via the Ofcom website and the NTS Focus Group, for consideration.

Q11 Do stakeholders consider that moving to billing by INCA/CLI is likely, ultimately, to bring benefits, which further the interests of consumers (as required by Section 3 of the Act), over and above those achieved by the SMP obligation placed on BT by Condition AA11.

4.5 Other proposals, including one for for an CP specific variant of NCD charging, have been already discussed and rejected by the NTS Focus Group.

4.6 The first, second and fourth option would require a direction made under Condition AA11 setting out the detailed requirements of the particular option. The third Option would not require any direction but is similar to the second in that it effectively maintains the status quo but without any separate formal enforcement

by Ofcom. Any charging methodology which might be introduced in the future by BT would have to be fair and reasonable under the terms of Condition AA11.

4.7 If the final decision, following this consultation, is to retain the NCD charging methodology it may be necessary to revise the NCD table of percentage uplift against POCs to remove some of the artificial distortions Oftel introduced in 1999 when the methodology was first introduced, as a stop-gap. Such a revision will not form part of the final statement following this consultation but the matter would be referred to the NTS Focus Group to discuss and agree.

4.8 If the option to move to INCA/CLI charging is chosen a decision will need to be taken about when the change can be introduced, allowing time for BT and TCPs to make the necessary changes to their systems. Comments on timescales are therefore sought from all interested parties so that the decision on the introduction date can be included in the final statement and direction.

4.9 The direction would provide for the NCD methodology to continue to be used, un-amended, until that date, which will necessarily coincide with the start of a quarterly billing cycle. Thereafter, the NCD will cease to be available for use by any CP. It is therefore essential that adequate notice is given by BT to every NTS TCP that interconnects with BT along with detailed instructions about what they will need to do to accommodate the change.

Chapter 5

Ofcom's consultation process

5.1 Oftel considers that this document meets the requirements of Ofcom's consultation process as detailed in the Guide to be found on Ofcom's website at:

http://www.ofcom.org.uk/consultations/how_consult/how_will_ofcom_consult.htm

Complex consultations

5.2 Ofcom will generally allow 10 weeks for complicated policy issues. This is slightly shorter than the Cabinet Office guidelines on consultation (12 weeks). But Ofcom thinks this is appropriate given the speed with which the communications industry changes. Ofcom will also aim to speak informally to a number of people and organisations before the 10-week period to test our thinking and to listen to their thoughts.

Shorter consultations

5.3 Some formal consultations will need to be shorter than 10 weeks. In those cases Ofcom will usually aim to allow five weeks. However, the time may vary depending on the issue. Consultations may be shorter than 10 weeks if:

- the issue or community involved is small or only affects a particular group, which has been identified ahead of time;
- a proposal will have a limited effect on a market;
- a proposal is only a limited amendment to existing policy; or
- an issue needs to be looked at urgently.

5.4 We may also run a shorter formal consultation process if:

- the law says Ofcom must act within a specific time period;
- the organisations involved in a specific consultation agree they want a faster timetable; or
- this is the second consultation on the same issue.

5.5 Under the Communications Act 2003 Ofcom must allow at least one month for consultation on issues related to electronic communications networks and services. Ofcom also needs to consult for at least one month on a formal direction or approval given to organisations which provide those networks and services. This will allow all concerned to share their views with us. Ofcom believes one month will be long enough for most of these kind of consultations. However, Ofcom will extend this in some cases if needed.

In this instance Oftel has adopted a one month consultation period (plus an additional one week to allow for the Christmas and New Year holidays) because the issue is relatively narrow and because the community involved (NTS Communications Providers) is relatively small.

How to make comments

5.6 Oftel is publishing this consultation document so that interested parties may comment on the issues which it addresses. Comments are sought on the questions summarised in Annex J and on any other points on which interested parties may wish to respond. The closing date for submitting comments is **23 January 2004**.

5.7 Where possible, comments should be made in writing and sent by e-mail to geoff.brighton@ofcom.org.uk. Copies may also be posted or faxed to the address below at any time up until the closing date of the consultation. If any interested parties are unable to respond in one of these ways, they should discuss alternatives with the Oftel/Ofcom manager named below:

Geoff Brighton
Ofcom
Riverside House
2A Southwark Bridge Road,
London
SE1 9HA

Tel: 020 7783 4175
e-mail: geoff.brighton@ofcom.org.uk

Further copies of this document

5.8 This document can be viewed in the Oftel area of the legacy regulator section of Ofcom's website at:

http://www.ofcom.org.uk/legacy_regulators/oftel/index.htm

Publication of comments made by stakeholders

5.9 On this occasion, Oftel is not programming a formal period during which interested parties may comment on the responses made by others. Nevertheless, in the interests of transparency, comments will be published, except where respondents indicate that a response, or part of it, is confidential. Respondents are therefore asked to separate out any confidential material into a confidential annex which is clearly identified as containing confidential material. Ofcom will take steps to protect the confidentiality of all such material from the moment that it is received at Ofcom's offices. However, in the interests of

transparency, respondents should avoid applying confidential markings wherever possible.

5.10 Non confidential responses will be posted on Ofcom's website in the Oftel area of the legacy regulator section at:

http://www.ofcom.org.uk/legacy_regulators/oftel/index.htm

ANNEX A

The Table for calculating NCD uplifts

Numbers of POCs	*NCD (%)* *NCD = 138.2 – 0.6POI*	Numbers of POCs	*NCD (%)* *y = 138.2 – 0.6POI*
1	137.6%	**35**	118.7%
2	137.1%	**36**	118.1%
3	136.5%	**37**	117.6%
4	135.9%	**38**	117.0%
5	135.4%	**39**	116.5%
6	134.8%	**40**	115.9%
7	134.3%	**41**	115.4%
8	133.7%	**42**	114.8%
9	133.2%	**43**	114.3%
10	132.6%	**44**	113.7%
11	132.1%	**45**	113.1%
12	131.5%	**46**	112.6%
13	130.9%	**47**	112.0%
14	130.4%	**48**	111.5%
15	129.8%	**49**	110.9%
16	129.3%	**50**	110.4%
17	128.7%	**51**	109.8%

18	128.2%	**52**	109.3%
19	127.6%	**53**	108.7%
20	127.0%	**54**	108.1%
21	126.5%	**55**	107.6%
22	125.9%	**56**	107.0%
23	125.4%	**57**	106.5%
24	124.8%	**58**	105.9%
25	124.3%	**59**	105.4%
26	123.7%	**60**	104.8%
27	123.2%	**61**	104.2%
28	122.6%	**62**	103.7%
29	122.0%	**63**	103.1%
30	121.5%	**64**	102.6%
31	120.9%	**65**	102.0%
32	120.4%	**66**	101.5%
33	119.8%	**67**	100.9%
34	119.3%	**68**	100.4%

ANNEX B

Principles for the introduction of an EBC replacement for NCD based on INCA/CLI

B1. The principles listed below have been drawn together from Oftel's discussions with BT and operators and from discussions at the NTS Focus Group on 29 May and 16 July 2003. Comments on the initial principles, published after the 29 May meeting, were invited from interested parties by 15 August. Only Telewest responded and generally endorsed the proposals with particular emphasis on Item B4.

B2. As a result of the input received the statement of principles has been updated as follows:

INCA/CLI Principle Requirements

B3. Any automatic wholesale billing system must be capable of measuring the shortest possible routeing of calls from the point of origination on BT's network, or the point of entry to BT's network from another originating operator, to the nearest or nominated point of connection with a terminating operator.

B4. The system design must be such that future enhancements can be incorporated as easily as possible at a later date. In particular, if agreement is reached over operator specific call origination charges the EBC billing system must not preclude enhancements which enable the passing of such relevant information as is necessary to facilitate invoicing by terminating operators which reflects the point of origination of calls.

B5. The system should be capable of reflecting the addition or removal of interconnection routes by terminating operators in a timely and accurate way, commensurate with the costs involved in so doing.

B6. The system should provide accurate billing data at the earliest possible date of each calendar month. This data can be used by terminating operators to produce invoices for submission to BT at the beginning of the following month as shown in the example given in Figure 1 below.

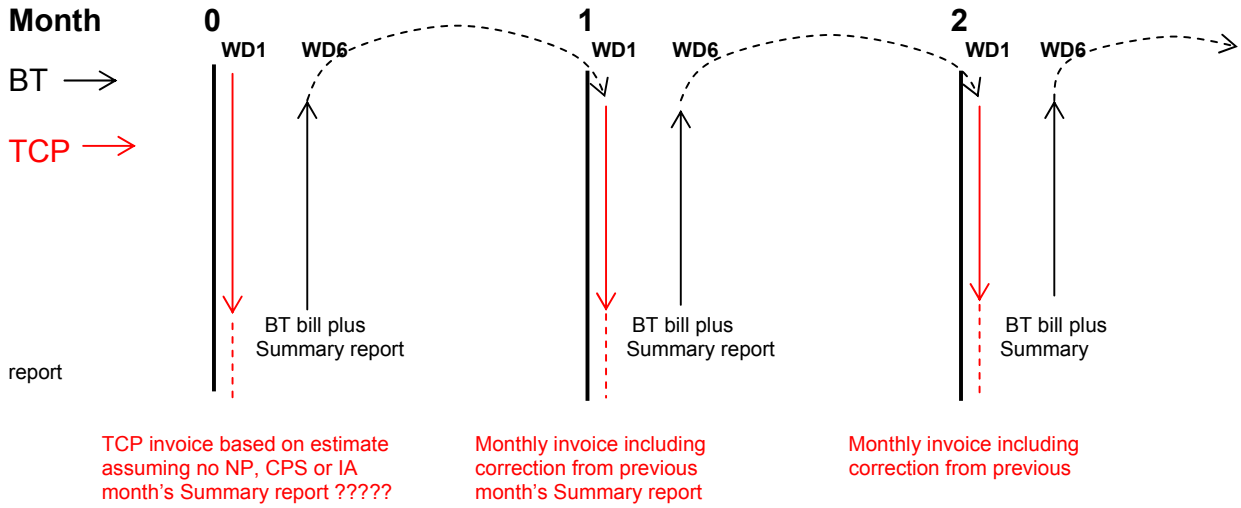


Figure 1

B7. The billing data in (4) should consist of a monthly Summary Report which contains sufficient information to enable terminating operators to identify which calls transit, as distinct from those which originate on, the BT network. This information should also include CDRs which contain details of originating operators in the case of transit calls. This has become known as Option 2. The question of how relevant costs should be recovered will be considered by Oftel in its forthcoming INCA/CLI consultation exercise, using details to be provided by BT as a result of its feasibility studies.

ANNEX C

BT's SMP Obligation to provide NTS Call Origination

Extract from Annex D of Oftel's "Review of the fixed narrowband wholesale exchange line, call origination, conveyance and transit markets"

Condition AA11

"AA11.1 The Dominant Provider shall provide NTS Call Origination as soon as it is reasonably practicable to every Third Party who reasonably requests it in writing.

AA11.2 Without prejudice to paragraphs AA11.3 and AA11.4 below and where a request is covered by paragraph AA11.1 above, the Dominant Provider shall provide NTS Call Origination on fair and reasonable terms, conditions and charges and ***on such terms, conditions and charges as the Director may from time to time direct.***

AA11.3 The Dominant Provider shall pass the Net Retail Call Revenue to the Third Party that is purchasing the NTS Call Origination, less the charges referred to in Condition AA11.4 below.

AA11.4 The Dominant Provider shall make no charges for providing NTS Call Origination covered by paragraph AA11.1 except for:

a) *a charge for the Call Origination Service used to originate the NTS Call;*

b) *a charge for the NTS Retail Uplift; and,*

c) *a charge for bad debt relating to the retailing by the Dominant Provider of Premium Rate Services calls.*

AA11.5 The Dominant Provider shall comply with any direction the Director may make from time to time under this Condition AA11.

AA11.6 This Condition AA11 is without prejudice to the generality of the provisions in Conditions AA1(a) to AA7 above."

Definitions

Dominant Provider: means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985, as amended by the Companies Act 1989;

Net Retail Call Revenue: means the retail revenue for calls, excluding VAT and after any applicable discounts;

NTS Retail Uplift: means the charge for retailing NTS Calls to the End-User;

A Bad Debt charge relating to Premium Rate Services (PRS) calls: a charge in, addition to that contained in the NTS Retail Uplift, to allow for the increased bad debt risk arising from higher value PRS calls."

ANNEX D

Relevant Sections of the Communications Act 2003

Section 3 - General duties of OFCOM

(1) It shall be the principal duty of OFCOM, in carrying out their functions-

(a) to further the interests of citizens in relation to communications matters; and

(b) to further the interests of consumers in relevant markets, where appropriate by promoting competition.

(2) The things which, by virtue of subsection (1), OFCOM are required to secure in the carrying out of their functions include, in particular, each of the following-

(a) the optimal use for wireless telegraphy of the electro-magnetic spectrum;

(b) the availability throughout the United Kingdom of a wide range of electronic communications services;

(c) the availability throughout the United Kingdom of a wide range of television and radio services which (taken as a whole) are both of high quality and calculated to appeal to a variety of tastes and interests;

(d) the maintenance of a sufficient plurality of providers of different television and radio services;

(e) the application, in the case of all television and radio services, of standards that provide adequate protection to members of the public from the inclusion of offensive and harmful material in such services;

(f) the application, in the case of all television and radio services, of standards that provide adequate protection to members of the public and all other persons from both-

(i) unfair treatment in programmes included in such services; and

(ii) unwarranted infringements of privacy resulting from activities carried on for the purposes of such services.

(3) In performing their duties under subsection (1), OFCOM must have regard, in all cases, to-

(a) the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed; and

(b) any other principles appearing to OFCOM to represent the best regulatory practice.

(4) OFCOM must also have regard, in performing those duties, to such of the following as appear to them to be relevant in the circumstances-

(a) the desirability of promoting the fulfilment of the purposes of public service television broadcasting in the United Kingdom;

(b) the desirability of promoting competition in relevant markets;

(c) the desirability of promoting and facilitating the development and use of effective forms of self-regulation;

(d) the desirability of encouraging investment and innovation in relevant markets;

(e) the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom;

(f) the different needs and interests, so far as the use of the electro-magnetic spectrum for wireless telegraphy is concerned, of all persons who may wish to make use of it;

(g) the need to secure that the application in the case of television and radio services of standards falling within subsection (2)(e) and (f) is in the manner that best guarantees an appropriate level of freedom of expression;

(h) the vulnerability of children and of others whose circumstances appear to OFCOM to put them in need of special protection;

(i) the needs of persons with disabilities, of the elderly and of those on low incomes;

(j) the desirability of preventing crime and disorder;

(k) the opinions of consumers in relevant markets and of members of the public generally;

(l) the different interests of persons in the different parts of the United Kingdom, of the different ethnic communities within the United Kingdom and of persons living in rural and in urban areas;

(m) the extent to which, in the circumstances of the case, the furthering or securing of the matters mentioned in subsections (1) and (2) is reasonably practicable.

(5) In performing their duty under this section of furthering the interests of consumers, OFCOM must have regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money.

(6) Where it appears to OFCOM, in relation to the carrying out of any of the functions mentioned in section 4(1), that any of their general duties conflict with one or more of their duties under sections 4, 24 and 25, priority must be given to their duties under those sections.

(7) Where it appears to OFCOM that any of their general duties conflict with each other in a particular case, they must secure that the conflict is resolved in the manner they think best in the circumstances.

(8) Where OFCOM resolve a conflict in an important case between their duties under paragraphs (a) and (b) of subsection (1), they must publish a statement setting out-

(a) the nature of the conflict;

(b) the manner in which they have decided to resolve it; and

(c) the reasons for their decision to resolve it in that manner.

(9) Where OFCOM are required to publish a statement under subsection (8), they must-

(a) publish it as soon as possible after making their decision but not while they would (apart from a statutory requirement to publish) be subject to an obligation not to publish a matter that needs to be included in the statement; and

(b) so publish it in such manner as they consider appropriate for bringing it to the attention of the persons who, in OFCOM's opinion, are likely to be affected by the matters to which the decision relates.

(10) Every report under paragraph 12 of the Schedule to the Office of Communications Act 2002 (c. 11) (OFCOM's annual report) for a financial year must contain a summary of the manner in which, in that year, OFCOM resolved conflicts arising in important cases between their general duties.

(11) A case is an important case for the purposes of subsection (8) or (10) only if-

(a) it involved one or more of the matters mentioned in subsection (12); or

(b) it otherwise appears to OFCOM to have been of unusual importance.

(12) Those matters are-

(a) a major change in the activities carried on by OFCOM;

(b) matters likely to have a significant impact on persons carrying on businesses in any of the relevant markets; or

(c) matters likely to have a significant impact on the general public in the United Kingdom or in a part of the United Kingdom.

(13) This section is subject to sections 370(11) and 371(11) of this Act and to section 119A(4) of the Enterprise Act 2002 (c. 40) (which applies to functions conferred on OFCOM by Chapter 2 of Part 5 of this Act).

(14) In this section-

"citizens" means all members of the public in the United Kingdom;

"communications matters" means the matters in relation to which OFCOM have functions;

"general duties", in relation to OFCOM, means-

(a) their duties under subsections (1) to (5); and

(b) the duty which, under section 107(5), is to rank equally for the purposes of subsections (6) and (7) with their duties under this section;

"relevant markets" means markets for any of the services, facilities, apparatus or directories in relation to which OFCOM have functions.

Section 4 (Parts 2 – 10) - The Six Community Requirements

“(2) It shall be the duty of OFCOM, in carrying out any of those functions, to act in accordance with the six Community requirements (which give effect, amongst other things, to the requirements of Article 8 of the Framework Directive and are to be read accordingly).

(3) The first Community requirement is a requirement to promote competition-

(a) in relation to the provision of electronic communications networks and electronic communications services;

(b) in relation to the provision and making available of services and facilities that are provided or made available in association with the provision of electronic communications networks or electronic communications services; and

(c) in relation to the supply of directories capable of being used in connection with the use of electronic communications networks or electronic communications services.

(4) The second Community requirement is a requirement to secure that OFCOM's activities contribute to the development of the European internal market.

(5) The third Community requirement is a requirement to promote the interests of all persons who are citizens of the European Union (within the meaning of Article 17 of the Treaty establishing the European Community).

(6) The fourth Community requirement is a requirement to take account of the desirability of OFCOM's carrying out their functions in a manner which, so far as practicable, does not favour-

(a) one form of electronic communications network, electronic communications service or associated facility; or

(b) one means of providing or making available such a network, service or facility, over another.

(7) The fifth Community requirement is a requirement to encourage, to such extent as OFCOM consider appropriate for the purpose mentioned in subsection (8), the provision of network access and service interoperability.

(8) That purpose is the purpose of securing-

(a) efficiency and sustainable competition in the markets for electronic communications networks, electronic communications services and associated facilities; and

(b) the maximum benefit for the persons who are customers of communications providers and of persons who make such facilities available.

(9) The sixth Community requirement is a requirement to encourage such compliance with the standards mentioned in subsection (10) as is necessary for-

(a) facilitating service interoperability; and

(b) securing freedom of choice for the customers of communications providers.

(10) Those standards are-

(a) standards or specifications from time to time drawn up and published in accordance with Article 17 of the Framework Directive;

(b) the standards and specifications from time to time adopted by-

(i) the European Committee for Standardisation;
(ii) the European Committee for Electrotechnical Standardisation; or
(iii) the European Telecommunications Standards Institute; and

(c) the international standards and recommendations from time to time adopted by-

(i) the International Telecommunication Union;
(ii) the International Organisation for Standardisation; or
(iii) the International Electrotechnical Committee."

ANNEX E

NTS Billing Requirements - BT System Development Proposals (April 2003)

The following text was supplied by BT to participants at an INCA/CLI workshop in April 2003. NB: The term 'operator' or OLO (Other Licenced Operator) used in this Annex refers to CPs other than BT.

"NTS CLI-based Charging: concept and operation

E1. This document defines the charging mechanism to be used for NTS, currently termed "CLI-based NTS". This document explains the charging model and how this will be applied. This document is not intended to provide any analytical content; this is available in BT's "NTS Charging Proposal – A Guide".

E2. NGNPT is direct accounting and unaffected by the NTS charging mechanism. The charging algorithms for LCFA and PRS Clawback are also out of scope of this document as these algorithms are independent of the generic NTS methodology.

E3. It is assumed that all operators will charge / be charged as described in this document.

E4. On a per call basis the sender will pay the deemed retail price less the sender's retention. In the case of BT this retention shall be determined, per call, on an EBC basis. In the case of OLOs this retention shall be assumed, and the value will be the same for all OLOs. The value may not necessarily be the same as any values used by BT against EBC charge bands.

E5. In the case of BT-originated traffic the EBC charge band (BT's retention) shall be that to carry the call from the originating DLE to the "cheapest[1]" POC capable of routeing this traffic type to the range holder / terminating operator.

E6. The EBC charge applicable to a specific CLI and dialled digits may change from quarter to quarter, but no more frequently that this, in line with the EBC charging principles established in 1994.

E7. In the case of OLO-originated traffic sent to BT (as the range holder or due to NGNP) the sender will be charged BT's deemed retail price less an assumed retention.

E8. In the case of transit traffic sent to BT the sender will be charged the deemed retail price less an assumed retention.

[1] "cheapest" is defined as the smallest number of exchanges in a logical connectivity path, and with in that the shortest inter-exchange distance.

E9. In the case of transit traffic sent to BT the EBC charge band shall be that to carry the call from the POC at which it was presented to BT to the "cheapest" POC capable of routeing this traffic type to the range holder / terminating operator. This EBC charge, the "TWIX", will be billed to the recipient. (Note that in the case of traffic which transits BT due to NGNP export the recipient will not be billed the TWIX.)

E10. In the case of transit traffic leaving BT the range holder / terminating operator will be paid the deemed retail price less an assumed originator's retention.

E11. Traffic with absent/corrupt CLI leaving the BT network will be assumed to be OLO-originated, and the recipient will be paid the deemed retail price less the assumed retention associated with all OLO-originated traffic.

E12. BT-originated and transit traffic leaving the BT network cannot be distinguished as the CLI range holder is not necessarily the originating (retail billing) operator due to the effect of number portability (export from BT), Indirect Access and Carrier Pre-Select.

E13. BT will cater for this by charging some apparent BT-originated (based on CLI) outgoing traffic as transit rather than BT-originated. This will occur for destination ranges having incoming transit minutes higher than the outgoing (CLI-based) transit minutes such that the incoming transit and outgoing transit minutes are identical. The most expensive retentions for BT-originated traffic will be "converted" to transit first. The destination ranges shall be matched directly or to post-prefix digits in the case of NGNP export (from BT).

E14. Geographic import to BT will be treated, as far as the outgoing call is concerned, as transit. This is of benefit to OLOs, who will only pay the standard OLO-origination retention (no TWIX will be charged) as opposed to the BT cost for call origination..

"Transit Conversion Data"

E15. BT will make available, either in the 09A report or a new "statement" for each OLO, information allowing terminating operators to emulate the above conversion to transit. The information will be in summary form (note it will not show sending operator or the POC at which the call was presented to BT). BT will endeavour to make this information available at month end plus 8 days.

E16. OLO Free-to-caller terminations shall be billed by BT and may use the above transit conversion data to verify this bill in conjunction with EBC reference data (see below).

E17. Other OLO NTS destinations will result in the NTS operator billing BT; the above transit conversion data will be needed to create this bill, in conjunction with EBC reference data (see below).

E18. BT will provide additional EBC reference data to enable OLOs to evaluate the EBC charge band associated with a call received from BT. This additional data will represent matching the CLI to the retarded number range in the existing EBC matrix and "scanning" the POCs in the matrix capable of accepting this traffic one month prior to the matrix "live" date, selecting the cheapest charge band. In the new data transit charge bands will be represented by a single new charge band representing the OLO-origination retention.

E19. The EBC charge band applicable to a transit call will be shown in the existing EBC matrix. Recipient operators may therefore use this to verify the EBC charge band if the originating operator makes the call record information available to them.

The additional data will take the form of two files; this data normalisation will reduce the data volumes. The first file will show:

`Retarded CLI, destination OLO code, EBC charge band`

Retarded CLIs representing OLO ranges will show a new transit EBC charge band representing the standard originating OLO retention. Number ranges are retarded in line with the EBC principles established in 1994 to both reduce volumes and ensure that number ranges going "live" in the life of a matrix will charge.

The second file will show:

`Destination OLO code, destination OLO name`

E20. Recipient OLOs should use the files as follows:

Identify the OLO appropriate OLO code from the second file.
Match the CLI to the longest retarded number string in the first file and record the charge band; if the CLI is absent assume the call is transit.
If the charge band represents an OLO origin then the recipient should charge BT the recipient's deemed retail price less the OLO origination retention rate.
The transit conversion data (above) should be used to additionally charge these volumes to BT as transit.
If the charge band represents a BT origin then, after reducing the most expensive charge bands by the volumes shown in the transit conversion data (above), the recipient should bill BT the deemed retail price less the remaining EBC BT retention.

E21. The OLO should bill BT after receiving the transit conversion data."

Glossary of Terms used in this Annex and Annex F

Clawback	(as in PRS Clawback) relates to subsequent adjustments in payments made by BT to accommodate the retail minimum call charge
LCFA	Local Call Fee Access - generally refers to calls to existing 0845 number ranges priced, by BT, at the geographic local call rate
NGNP	Non-geographic Number Portability
NGNPT	Non-geographic Number Portability Transit
PNPT	Personal Number Portability Transit
PRS	Premium Rate Services – calls to services priced at above 10 pence per minute
TWIX	BT's Transit Charge for carrying calls across the BT network from another OCP to a TCPs network

ANNEX F

NTS: Requested Exit POC

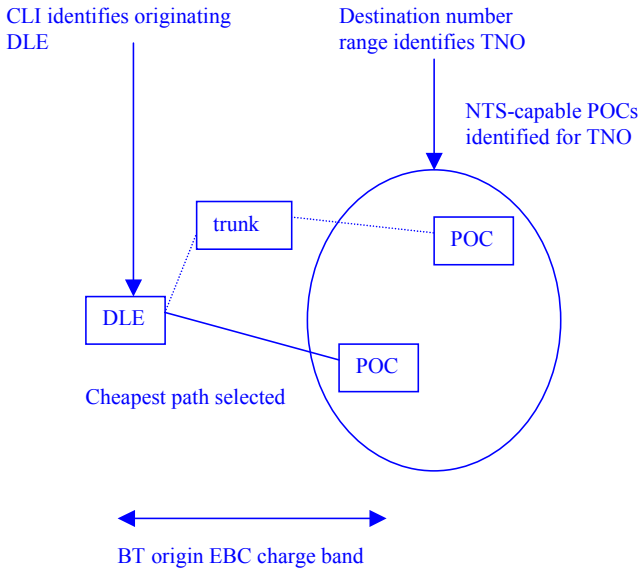
The following text was issued to members of the NTS Focus Group by BT on 21 October 2003. NB: The term 'operator' or OLO (Other Licenced Operator) used in this Annex refers to CPs other than BT.

Introduction

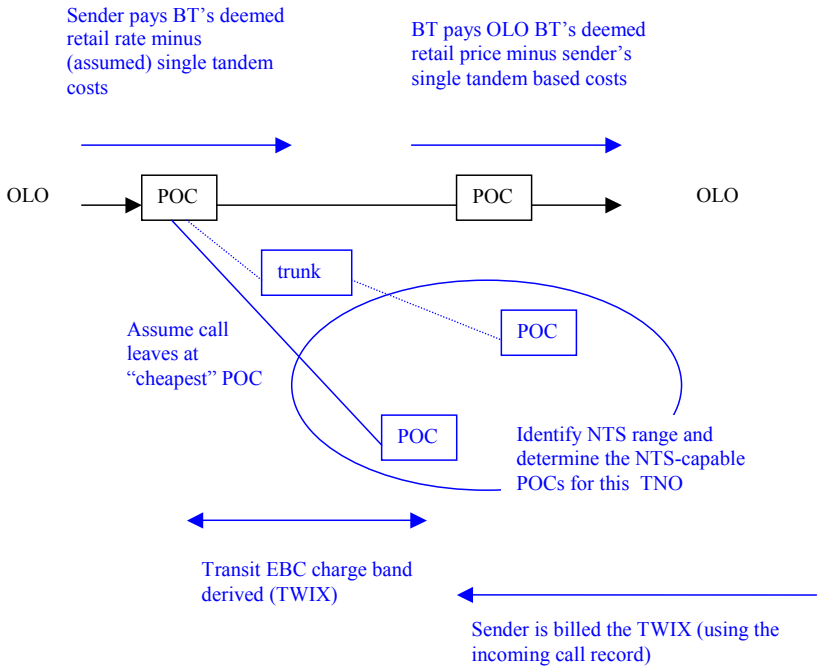
F1 The newly proposed CLI-based EBC NTS methodology to replace NCDs includes the proposal to use an assumed exit POC for traffic leaving the BT network, both for transit (as currently) and also for BT-originated (the real exit POC is used for this in current CLI-based NTS).

F2 The original basis of this assumed exit POC is that a list, for NTS ranges, of allowable exit POCs is obtained from the BT network for each EBC matrix build. For a given (BT) origin and NTS range this list is then "scanned" when creating the EBC matrix and the call assumed to leave at the POC in this list which results in the cheapest EBC charge band. EBC would then create NTS charging data showing originating number range, NTS range and EBC charge band, where the EBC charge band is that associated with the POC resulting in the cheapest charge (BT network use) for the originating DLE identified by originating number range.

BT-originated:



Transit:



F3 CPs have expressed concern at the inherent delay between a POC being requested and its appearance in the EBC charging data, as it has to be in the network prior to the EBC build for the matrix in which it will result in lower conveyance charges. In order to address this CPs have suggested four basic alternatives, broadly:

- *Produce the EBC data more frequently and hence the time lag before a POC is incorporated in the EBC matrix.*
- *Put futuristic (planned) lists of exit POCs into EBC rather than using a network snapshot*
- *There is a monthly-agreed list of exit POCs which are "scanned" in the normal EBC quarterly matrix, matching CLI to EBC number string and then selecting the cheapest charge band associated with any POC in the "scanning" list.*

F4 BT's original suggestion for exit POCs, and consequences of the above alternatives have been described previously[2]. The alternatives above are currently the subject of a BT feasibility study.

---

2 "NTS exit POC OLO options.doc"

F5 This document suggests a new alternative for the exit POC to be used for charging NTS traffic leaving the BT network, currently termed "requested exit POC" ("REP").

F6 This document is concerned only with a technical description of the proposal and is not intended to indicate any preferences or agreement from BT; the purpose of this document is to provoke discussion regarding the merits of using REPs and identifying any ambiguities with this approach.

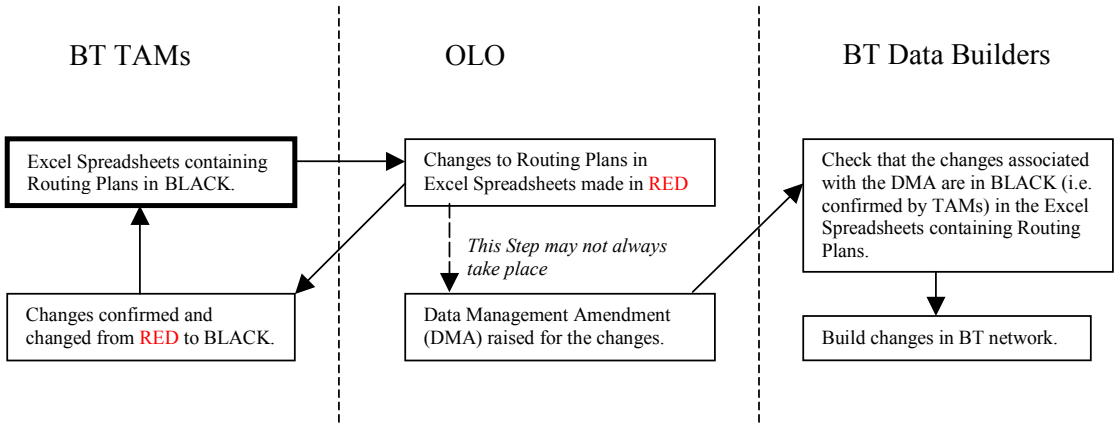
F7 All other aspects of the new NTS proposal other than BT exit POC are out of scope of this document.

Requested Exit POCs

Routeing Plans

F8 CPs currently agree a routeing plan with BT detailing how traffic should be routed to the CP. Once agreed the CP may raise a DMA which will result in BT's implementation of the requested routeing in the network.

F9 This process works as follows:



As can be seen from the above, the routeing plans are not datestamped nor is there a feedback loop to flag when a corresponding DMA has been raised by the CP nor when it has been implemented by BT.

F10 Routeing plans themselves contain (at least) data showing:

- *Originating (in BT) catchment area,*
- *NTS range,*
- *BT POC to send the call to the CP switch*

The catchment area is either a trunk exchange area or an explicitly identified DLE.

F11 It is proposed to enhance the routeing plan and process to additionally identify:

- *Date routeing plan changed by CP*
- *Date agreed with TAM*
- *Date DMA raised*
- *Date DMA implemented*
- *Similar for switching off routes*

F12 The routeing plan would then identify the exit POC requested by the CP for the call origin and the associated dates of the request and its implementation.

F13 The exact mechanism by which this enhancement to the routeing plan would be provided has yet to be ascertained.

Use of Requested exit POCs for NTS

F14 Given that the above information is made available the exit POC selection applied by EBC would work (at a high level) as follows:

F15 For a given CP NTS number range

For each BT DLE

Search for the DLE as catchment area in the appropriate routeing plan and if found then use the POC requested in the routeing plan to send this traffic to the CP

If not found identify from the BT network model the trunk units associated with the DLE, then search for these trunk units as catchment area in the routeing plan and extract the one or more exit POCs requested for the catchment area(s).

Obtain the EBC charge bands from the DLE to the one (or possibly more in the case of the DLE not being a POC) requested exit POC(s) identified above and select the cheapest. This is the charge band from the originating DLE to the NTS range in question.

Get next DLE

For each BT trunk unit

Search for the trunk unit as catchment area in the appropriate routeing plan. If found select the requested exit POC. Obtain the EBC charge band from the trunk to the requested exit POC.

If not found then this trunk unit cannot accept this traffic and a default charge band should be shown.

Get next trunk unit

Get next number string

F16 The date for which the requested exit POC (routeing plan change, DMA raised etc.) will need to be agreed, but one advantage of this approach is that there is a choice and it is not necessarily tied into network snapshots.

Advantages:

1. *An CP will be able to predict the EBC charge band which will apply based on the routeing plan, allowing easier planning and verification of the EBC charging data.*
2. *The concept of cheapest connectivity path is retained as this is still the mechanism used to identify BT's network use from the origin to exit POC.*
3. *In general a more transparent process than building "assumption" rules into the EBC system*

ANNEX G

Optimising interconnect for NTS traffic

G1. Chapter 1 of this document describes why Oftel has had to make a series of directions in relation to the conveyance charge for carriage of NTS traffic across BTs network. One important issue has been the way in which BT accounts for the routing of NTS traffic across its own network. Key decisions in relation to this were:

- In January 1996 Oftel determined a formula for the NTS conveyance charge. This treated all calls as single tandem, irrespective of the actual route taken across BTs network. Under this regime a Terminating Communications Provider (TCP) with 1 point of interconnect with BT paid the same conveyance charge as a TCP with 50 points of interconnect.
- In November 1999 Oftel modified this formula, applying an uplift to the NTS conveyance charge, intended to compensate for the estimated volume of double tandem traffic. BTs interconnect call accounting system (INCA) was at that stage unable to account for the actual volume of double tandem traffic. An empirical relationship was derived between the uplift factor, known as the Network Charge Differential (NCD), and the number of points of interconnection between a TCP and BT

G2. The current NCD applies an uplift to NTS conveyance charges of 25% when an operator has 25 points of interconnect (POCs) with BT. The uplift falls to 10% for a TCP with 50 POCs. Oftel's concern is is that these uplift factors appear high. Each local exchange in BTs network is connected to several transit switches, and it should not therefore be necessary to interconnect with every transit switch in order to ensure that all traffic is single tandem.

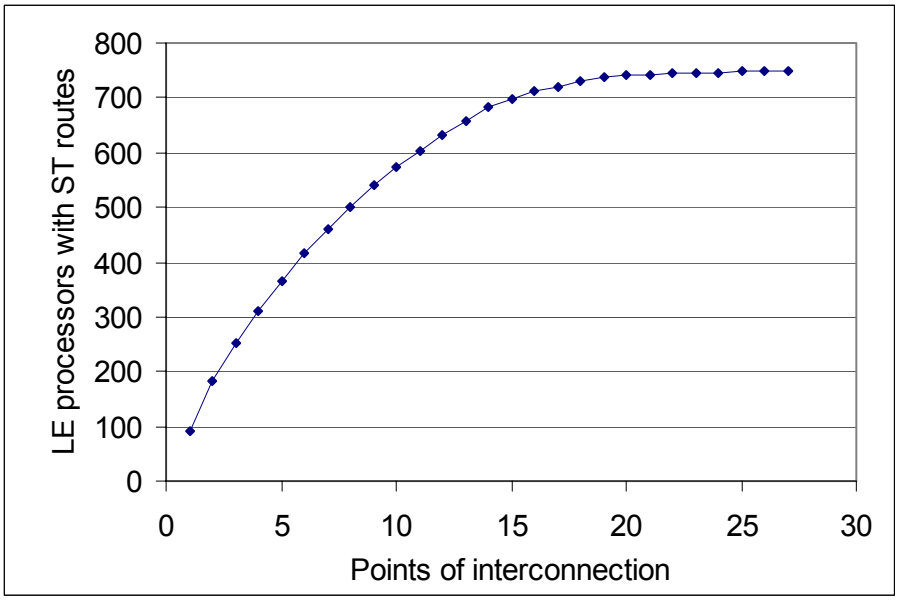
G3. BT provides detailed information on its network topology in the NIPP data files available in a closed website to TCPs. In an analysis carried out in December 2001 Oftel used NIPP data from October 2001, to determine a more accurate relationship between the number of POCs and the volume of single tandem traffic. The analysis is based on an optimisation routine which assumes that each time an operator adds a POC, they choose that POC which maximises the number of additional local exchange host processors with single tandem routes. A few comments on this approach:

- The optimisation routine takes no account of the number of lines served by each local exchange. This means, for example, that if we consider a POC at a BT tandem switch serving a large number of small rural local exchanges it could be possible to weight the optimisation algorithm differently either by lines served or by number ranges supported, for example. However, this would make the analysis more complex without significantly changing the headline conclusions.
- Each tandem switch listed by BT has been treated as an independent POC. This takes no account of the back-to-back operation of co-located NGS and

DMSUs. This results in the POC count being very slightly overestimated, since the co-located NGS and DMSUs do not always connect to exactly the same local exchanges. Again this is not believed to significantly affect the analysis.

- No account has been taken of the connectivity provided by Wide Area Tandem switches. These provide a high level of single tandem connectivity to local exchanges, but no double tandem connectivity. They are not widely used by TCPs as points of interconnection.
- The assumption that TCPs build one POC at a time, maximising the number of additional single tandem routes at each step, is a simplification. A TCP building a large number of POCs at the same time has more scope for global optimisation of their network, but this is a much more complex optimisation problem.

G4. The graph below shows how the number of local exchange processors with single tandem routes increases as the POC count is increased:



G5. The key conclusions are as follows:

- Full single tandem connectivity to all 751 local exchange host processors is provided with 28 POCs. The last few POCs only add 1 route each, thus it is reasonable to say that full connectivity is achieved at around 25 POCs. However, at this level of connectivity the current NCD still applies a 25% uplift to single tandem conveyance charges.

- 15 POCs are sufficient to provide single tandem connectivity to 700 of the 751 local exchange host processor processors. TCPs adding additional POCs above this level are likely to face steeply diminishing returns.

ANNEX H

Oftel's six principles of cost recovery – an analysis in relation to the recovery of costs incurred by BT for INCA/CLI

H1. The principles are namely:

- **cost causation** – costs should be recovered from those whose actions cause the costs to be incurred at the margin;
- **cost minimisation** – the mechanism for cost recovery should ensure that there are strong incentives to minimise costs;
- **distribution of benefits** – costs should be recovered from the beneficiaries especially where there are externalities;
- **effective competition** – the mechanism for cost recovery should not undermine or weaken the pressures for effective competition;
- **reciprocity** – where services are provided reciprocally, charges should also be reciprocal; and
- **practicability** – the mechanism for cost recovery needs to be practicable and relatively easy to implement.

H2. These principles derive from the six principles of cost recovery that the Monopolies and Mergers Commission (the "MMC") (now the Competition Commission) adopted in its 1995 enquiry; see the MMC's report entitled Telephone number portability: a report on a reference under section 13 of the Telecommunications Act 1984.

H3. When applying the principles, it is generally sound to start with cost causation on the grounds that economic efficiency is enhanced by requiring parties to pay for costs which they directly cause to be incurred. The other principles are then considered, to see the extent to which this starting point may require modification. BT's set up costs and BT's per CP costs [just to avoid any confusion with the TCP's costs, which are considered separately later] are considered separately with respect to each cost recovery principle. [There is also reference in some of this text to 'per unit costs' and 'per call costs'. Not sure myself that there will be any additional per call costs over an above the per call costs of NCD, but if we make this assumption, we should make it explicitly. We should be clear at the outset what different types of costs we think there are likely to be, and then under each cost recovery principle, we should be careful to systematically mention each different cost type.

Cost causation

H4. This principle can be given two possible interpretations in the case of system set up costs. On the one hand, it is arguable that BT incurs the costs arising from system set up only if TCPs demand the product. On this argument, it

is the TCPs that cause the cost to be incurred, and hence, under the cost causation principle, it is these CPs that should bear these costs.

H5. It is worth considering the case of cost recovery for CPS system set up costs, as this raised similar issues. In that case, it was argued that the primary causal factor was a regulatory obligation following from BT's market power, rather than the demands of CPS CPs. Oftel noted that both arguments had some validity and neither provided a compelling basis for attributing set up costs. On balance, Oftel concluded that the method of cost recovery should reflect current practice for apportioning costs associated with other regulations imposed for SMP CPs. This meant that all CPs including BT should bear a proportion of costs.

H6. Any obligation for a particular charging method for NTS call origination would be a regulatory obligation imposed by the Director, which could only be imposed following a finding that BT had market power in the relevant market. Therefore, it is arguable that the requirement to implement a new method for charging is directly attributable to an obligation resulting from BT's market power. This implies that, under cost causality grounds and contrary to the argument in the previous paragraph there is equally some merit to the argument that BT alone should bear the set-up costs.

H8. Yet there are strong arguments on cost causation grounds that per CP costs incurred by BT should be recovered from the CPs. This would also be consistent with CPS, where there was broad agreement that BT's per CP and per line costs should be met by CPS CPs, largely on the grounds of cost causation. In the case of any differences between per CP costs, they should be individually recovered from each CP that causes them so as to satisfy this principle.

Distribution of benefits

H9. There is a direct benefit to consumers of NTS calls if the NCD is superseded by a more efficient charging basis. This is that NTS consumers may benefit from lower retail prices (assuming cost savings are passed on downstream, as would be expected in a competitive market). This assumes that TCPs will migrate to different price points on the NTS ladder, which is not always possible given the problems associated with this. However, service providers may gain from the price reductions (for TCPs that see their costs reduced rather than increased) through greater revenue share, and they can use the additional funds to innovate. Therefore, all TCPs and hence NTS consumers should contribute equally towards the system set up costs, and any additional [this is the first use of the term 'per unit costs' – what are we talking about here?] costs BT incurs in maintaining a replacement charging system on an ongoing basis. These are referred to hereafter as 'per unit', 'per CP' or 'per call costs'.

Cost minimisation

H10. Whichever party has the ability to control the costs should contribute to them according to this principle. Presumably, BT determines all the system set up costs and per CP and per call costs that are incurred by BT, hence, according to this principle, BT should contribute towards them to provide incentives for cost minimisation. In addition, requiring other CPs to contribute towards the costs also creates an incentive to minimise costs as well.

Effective competition

H11. In accordance with the Director's duties under section 4 of the Act, including the six Community requirements (see Annex D) the first of which is to promote competition, the charging method should ensure competitive neutrality between BT-hosted NTS service providers and TCP-hosted NTS service providers. This condition is satisfied if the set up costs are borne by BT as an OCP. However, the principle of effective competition might count against the idea of BT bearing the set-up costs as an OCP, because this might distort competition between BT and other OCPs?], The competitive neutrality condition is also satisfied if the costs are allocated to all TCPs (including BT, to the extent that BT acts as a TCP). This principle would also suggest that the per CP and per call costs should also be allocated to TCPs.

H12. The method of allocation depends on whether the costs are equally spread across TCPs, or spread in a "weighted average form." So, for example, for the latter method, a TCP with a large number of calls would be allocated relatively more costs than one which had a smaller number of calls in a pro rata fashion. This method would be more conducive to effective competition compared to a method which spread costs equally across TCPs, regardless of size, number of calls etc.

Practicality

H13. It is arguable that the simplest approach would probably be for BT to recover the set up costs. In the CPS case, Oftel ruled out on practicability grounds a proposal for system set up costs to be borne up-front by CPS CPs. This is because CPS set up costs were high, and it would have created a disincentive to enter the market initially if CPS CPs had had to bear this cost at that time. However, the situation is different here because the market is mature and entry is not an issue, so this may also suggest that set up costs, in addition to per CP/call costs should be recovered from TCPs on practicability grounds. This is likely to be relatively easy; BT already has established billing relationships with TCPs, so it would not present major practicability issues for BT if BT has to bill TCPs to recover these costs. Oftel notes that if BT were (for example) to introduce a surcharge on its NTS retention to cover these costs, then the POLOs to TCPs would be reduced, and TCPs would be very reluctant to migrate to different retail price points to restore their POLOs (because, under current arrangements, this would require them to change their numbers).

Reciprocity

H14. Reciprocity is not a relevant principle here, because the service is not provided reciprocally.

ANNEX J

Summary of questions upon which comments are sought

Q1 In relation to Oftel's analysis of Costs and Benefits do BT and CPs agree that:
- i the estimates of costs are reasonable;
- ii the analysis of potential benefits is reasonable and achievable;
- iii the benefits outweigh the costs:

Q2 Do CPs agree that BT's costs should be shared equally by all NTS TCPs, including BT and that other TCPs should meet their own costs of inter-operating with INCA/CLI?

Q3 How should BT's costs be recovered?
- i Through an addition to BT's NTS call origination and transit charges
- ii Through an addition to PPP - BT's Product Management, Policy and Planning component of its general network charges
- iii As a one off payment levied against all NTS CPs
- iv Any other suggestions

Q4 Which of the following options is preferred:

i To introduce INCA/CLI charging for NTS calls at a date to be agreed depending on when BT and CPs can complete the necessary enhancements to their systems. The NCD methodology would then be withdrawn such that the whole industry uses the same INCA/CLI charging methodology;

ii To retain the NCD methodology for the foreseeable future and to continue allowing CPs to elect the method by which they wish BT's wholesale charges to be calculated. Ofcom would need to consider revising the NCD table setting out how the uplift is obtained (see Annex A) in order to remove the provisions included by Oftel in 1999 to mitigate the initial effect of de-averaging BT's charges, on smaller CPs;

iii For Ofcom not to issue any direction specifying how BT should charge for NTS call origination and transit, but to rely on the SMP obligation, Condition AA11, placed on BT as a result of the November Review, ie the obligation to provide NTS call origination on fair and reasonable terms;

iv To implement an alternative methodology, as yet unknown, which may emerge from the responses to this consultation:

Q5 Give reasons for this preference.

Q6 If Option (i) is preferred, over what timescale should the process of introducing INCA/CLI and withdrawing NCD take place?

Q7 Should INCA/CLI be introduced at the same time as NCD is withdrawn or should there be an overlap period to enable INCA/CLI to be tested while NCD remains in operation?

Q8 Given that BT and TCPs will need some time to complete the enhancements to their systems do you consider that those TCPs with sub-optimal interconnection arrangements should be allowed further time to optimise the number and location of their POCs?

Q9 If Options (ii) or (iii) are preferred, do CPs believe the NCD Table of Uplift on Single Tandem against numbers of POCs should be revised to, more accurately, reflect actual conveyance charges?

Q10 If CPs have suggestions for an alternative charging method that has not already been considered, please supply full details in the response to this document. Please ensure that any description is not marked Confidential so that it can made available to all other NTS CPs, via the Ofcom website and the NTS Focus Group, for consideration.

Q11 Do stakeholders consider that moving to billing by INCA/CLI is likely, ultimately, to bring benefits, which further the interests of consumers (as required by Section 3 of the Act), over and above those achieved by the SMP obligation placed on BT by Condition AA11.