Porting charges under General Condition 18

Guidance on the setting of porting charges in compliance with GC18 and consultation on a new mobile donor conveyance charges Direction

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Statement on Guidance and Consultation

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About this document

Number portability enables consumers to keep their mobile and/or fixed line telephone number(s) when switching between communications providers. This document is about the level of wholesale porting charges that communications providers charge each other to recover certain costs associated with the provision of number portability.

General Condition 18 (GC18) places obligations on communications providers to provide number portability. These include, amongst other things, the requirement to set wholesale porting charges that are cost oriented and based on the incremental costs of providing portability. In March 2014, we consulted on guidance on how communications providers should set charges to meet this requirement. Taking account of the responses to our consultation, this document sets out our guidance.

The document also contains a consultation on the appropriate maximum level of certain porting charges between communications providers in the mobile sector.

Contents

Section 1

Summary

1.1 Number portability enables subscribers to retain their telephone number(s) when they switch between communications providers (CPs). When a subscriber keeps their telephone number when changing CP the number is described as 'ported' from one CP to another. Calls that the subscriber subsequently receives are usually first routed to the CP that originally held the number being called. The call is then identified as a call to a ported number and 'onward routed' to the CP to which the number has been ported.

1.2 Wholesale porting charges are levied between CPs to recover certain costs associated with the provision of number portability. General Condition 18 (GC18) sets out the terms that CPs must comply with in setting porting charges. GC18.5 states that any porting charges levied by CPs must, subject to the requirement for reasonableness, be cost oriented and based on the incremental costs of providing portability.[1] GC18.5 also prohibits CPs from charging for certain specific types of costs.

1.3 Costs that may be recovered include the cost of conveying onward routed calls: between mobile CPs these charges are called donor conveyance charges (DCCs); and between fixed CPs these charges are called average porting conveyance charges (APCCs). CPs may also levy charges for some non-conveyance costs such as per number set-up (i.e. the cost of handling and processing customer orders for number portability) and service maintenance costs (i.e. costs associated with making technical changes to a CP's porting service after it has been set-up).[2]

1.4 Recent developments in the fixed and mobile sectors have led us to review how we consider CPs should set porting charges to be compliant with GC18. These developments are set out in the 2013 Narrowband Market Review (2013 NBMR)[3] and the review of mobile DCCs, which concluded in February 2014 (the 2014 DCC Review). [4]

2013 NBMR

1.5 During 2012 and 2013, we conducted the 2013 NBMR which reviewed fixed narrowband telephony services. In concluding the 2013 NBMR, we decided to change the basis on which the charges for terminating calls to geographic numbers on fixed networks (fixed termination rates or FTRs) are calculated. As a consequence, FTRs reduced considerably from January 2014 from (on average) 0.219 pence per minute (ppm) to 0.034 ppm (in 2012/13 prices).

1.6 Some CPs considered that this change should cause us to review our approach to geographic APCCs (the relevant charges for porting in this context) because the updated FTR would be below the APCCs currently set by BT.

[1] Unless the relevant CPs agree another basis for charges, or as otherwise directed by Ofcom.
[2] See Section 2, sub-section *Scope of the proposed guidance*, paragraph 2.51.
[3] Ofcom, *Review of the fixed narrowband services markets*, Statement, 26 September 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final_Statement.pdf
[4] Ofcom, *Review of mobile donor conveyance charges*, Statement and Direction, 14 February 2014, http://stakeholders.ofcom.org.uk/consultations/review-mobile-donor-conveyance-charges/

1.7 We recognised stakeholders' requests for guidance on the level of geographic APCCs in the 2013 NBMR, and said we would give further consideration as to how GC18 should be applied in setting porting conveyance charges.[5]

2014 DCC Review

1.8 On 14 October 2013, we commenced a review into whether we should set a maximum DCC on an *ex-ante*, mobile industry-wide basis and, if so, at what level. We undertook this review as an alternative means of resolving disputes brought by Hutchinson 3G UK Limited (H3G) against each of EE Limited (EE) and Telefónica UK Limited (Telefónica) about the level of the DCC charged between them.

1.9 On 14 February 2014 we published a statement, concluding that whilst it was appropriate to set a new maximum DCC at the time to reflect our updated view on costs, it would be preferable to undertake a wider policy review to determine how, on a forward looking basis, GC18 should be interpreted in relation to the setting of porting charges. We directed that the maximum DCC was set at 0.028ppm in 2013/14 and 2014/15 and 0.027ppm in 2015/16[6] (the 2014 DCC Direction).[7]

March 2014 consultation

1.10 On 24 March 2014 we published a consultation document setting out our proposals for guidance on GC18 compliant porting charges, seeking views from industry stakeholders and other interested parties (the March 2014 consultation).

1.11 In the March 2014 consultation we identified three relevant issues: (i) the appropriate cost standard for calculating porting costs, (ii) the appropriate technology for calculating conveyance costs, and (iii) the appropriate recovery of porting costs.

1.12 We proposed that all porting charges should be calculated using Long Run Incremental Cost (LRIC), that CPs should be able to set charges based on the costs of their own networks (except for the DCC which we proposed to continue to set) and that donor CPs (DCPs) could charge recipient CPs (RCPs) up to 100% of the incremental costs of conveyance and non-conveyance porting activities.

1.13 We received 13 responses to the March 2014 consultation. Non-confidential responses from stakeholders are published on our website.[8]

Conclusions on Guidance

1.14 Having considered the responses to the March 2014 consultation, we have decided to adopt the proposals set out in the March 2014 consultation on guidance as to how we consider GC18 compliant charges should be set. Specifically:

1.14.1 all porting charges[9] should be calculated using Long Run Incremental Cost (LRIC);

[5] 2013 NBMR Statement, paragraph 8.140
[6] See Table 2.5 in Section 2
[7] Ofcom, *Review of mobile donor conveyance charges*, 14 February 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/review-mobile-donor-conveyance-charges/statement/statement.pdf
[8] See http://stakeholders.ofcom.org.uk/consultations/gc18-porting-charges-guidance/?showResponses=true

1.14.2 for the mobile sector, consistent with our current approach, the DCC should be set with reference to a benchmark average efficient operator;

1.14.3 for the fixed sector, both Time Division Multiplex (TDM) networks (based on depreciated asset values) and Next Generation Networks (NGNs) could be an efficient choice, and that it would be reasonable for fixed CPs to charge for porting conveyance based on the costs of the technology of their own network (whether that be TDM or NGN); and

1.14.4 donor CPs (DCPs) could charge recipient CPs (RCPs) up to 100% of the incremental costs of conveyance and non-conveyance porting activities not otherwise precluded by GC18.

1.15 This guidance is relevant for any charges for the provision of portability, including conveyance and non-conveyance porting charges, levied by fixed and mobile CPs.

Further consultation on a new DCC Direction

1.16 In relation to mobile DCCs, we have considered our approach to the direction set in the 2014 DCC Review, which sets the maximum DCC until 31 March 2016.

1.17 The 2014 DCC Direction is modelled on a LRIC+ cost standard, using the costs of a benchmark average efficient mobile CP using 2G/3G technology and where the recovery of costs is split 50:50 between the DCP and the RCP.

1.18 In light of our decision to move to LRIC and a RCP pays charging rule, we consider it appropriate to revise the DCC model and consult on a new DCC direction to set the maximum DCCs.

1.19 Previously, we have used inputs from the mobile call termination (MCT) model in our DCC modelling. We have continued with that established approach – using the most up-to-date information on mobile network costs from the 2014 MCT model to derive a LRIC DCC estimate.

1.20 We propose to set maximum DCCs for future periods, as set out in Table 1.1 below:

Table 1.1: Proposed maximum DCCs to be applied when charged on all donor conveyance calls (nominal ppm)

	2015/16	2016/17	2017/18
DCC	0.024	0.024	0.023

Source: Ofcom 2014 LRIC of DC model.

Note: The DCC shown in this table is calculated from the costs related to off-net originated donor conveyance traffic but is assumed to be recovered over all (i.e. both on-net and off-net originated) donor conveyance traffic as explained in Section 9. The figures in the table may change subject to responses to this consultation.

1.21 We propose to set these maximum DCCs by way of a Direction issued under GC18. The draft Direction on which we are consulting is set out in Annex 5 to this document.

1.22 Our modelling of the proposed DCC is explained in Section 9 and the model will be published alongside this document on our website. We are seeking responses to the

[9] That is, all charges covered by GC18 (e.g. APCCs, DCCs and non-conveyance charges).

specific consultation questions on the revised maximum DCC which are set out in Section 9 by 5pm on 10 November 2014.

1.23 We will take responses to this consultation into account when we publish a statement setting out our final decision on the level of the DCC. We intend to publish that statement simultaneously or shortly after the final statement of the MCT review covering the period 2015-18 (the 2015 MCT Statement) is issued.

Section 2

Background, context and purpose

2.1 In this section, we explain what number portability is and set out the background and the reasons why we have decided to carry out this review.

Number portability

2.2 Consumers are more likely to benefit from competition in communication markets when they are able to switch easily between CPs. Number portability was introduced to facilitate switching by allowing subscribers to keep their telephone number(s) when changing CP within either the mobile or fixed sector. It is thus an important facilitator of consumer choice and fosters effective competition in markets for electronic communications. In particular, it has made switching possible for those consumers who would not switch if it meant having a new telephone number[10], and also for those consumers discouraged from switching due to the costs and hassle of having to take a new number. It also reduces the cost of switching for those consumers who would have switched even without number portability. Number portability also benefits callers by, for example, reducing the number of calls to wrong numbers where the person they want to call would have changed their number in the absence of number portability.

2.3 The UK was one of the first countries to introduce number portability. Subscribers were able to keep their geographic telephone numbers (numbers which today begin with 01 and 02) when switching between fixed-line CPs from 1996. Subsequently, number portability was extended to include non-geographic numbers (numbers which nowadays begin with 03, 08 and 09). From 1999 mobile subscribers were also able to keep their numbers when switching between mobile CPs.

2.4 Since the introduction of number portability, millions of UK consumers and businesses have ported their telephone numbers when switching between competing providers of fixed-line and mobile telephony services.

Implementation of portability

2.5 In the UK we have a technical solution commonly referred to as 'onward routing'. Although the way in which onward routing is technically implemented is different as between geographic, non-geographic and mobile porting, the principles of this approach are common and are described below.[11]

2.6 When a subscriber makes a call to a ported fixed-line or mobile telephone number, the call is first routed to the CP which originally held that number (the DCP or number

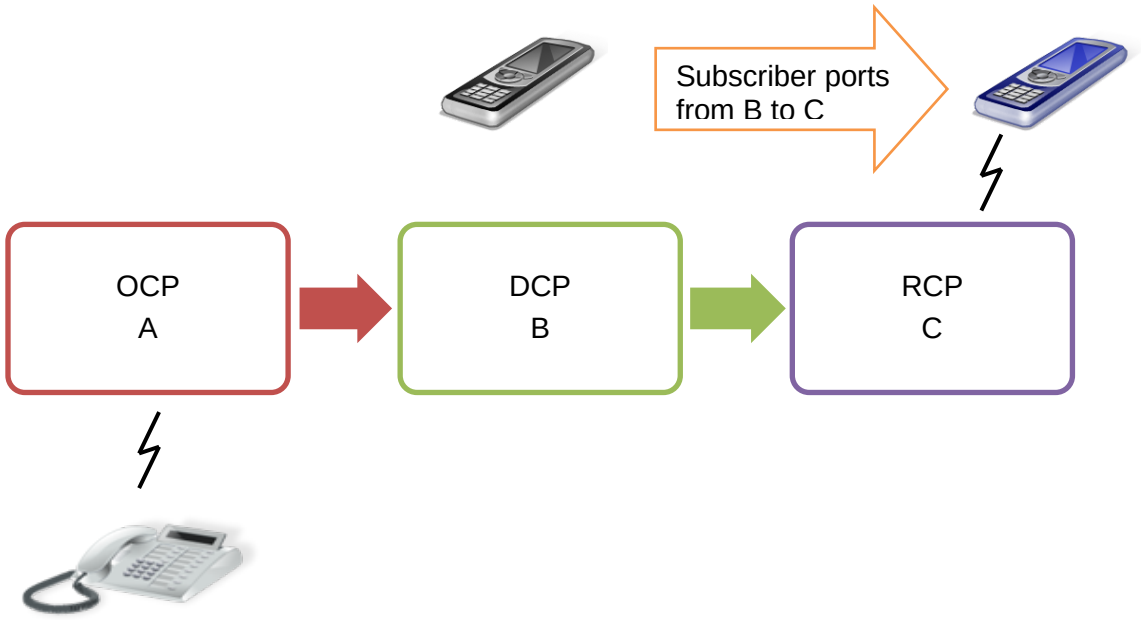
[10] For consumers who highly value their telephone number, for example, businesses and institutions which rely on a well-known publicised telephone number and/or for whom the costs of changing their number may be high.

[11] We note that Laurasia Associates appeared to have understood footnote 93 of our March 2014 consultation to mean that TDM-based CPs have the capability to support direct routing of traffic to non-geographic numbers by querying a database. What we sought to explain was that calls to non-geographic numbers are handed-over by the originating CP (OCP) to the DCP which then queries its own internal database to conduct number translation to determine the routing for termination or (where the dialled non-geographic number has been ported out) prefix addition to determine the onward routing to the RCP.

range holder) and that DCP then 'onward routes' the call to the CP to whom the number has been ported (the RCP or gaining provider).

2.7 This is illustrated in Figure 2.1 below, showing three different networks: the originating CP (OCP) from where the call to a ported number is made; the DCP which originally held the number before the subscriber first ported-out; and the RCP which currently serves the called customer having ported-in the telephone number.

Figure 2.1: Onward routing for calls to ported numbers



Source: Ofcom.

2.8 There is an alternative to onward routing known as direct routing, whereby the OCP routes calls to ported numbers directly to the serving RCP rather than onward routing calls to the RCP via the DCP. Where a direct routing solution is implemented the OCP has access to information about ported numbers and identifies that the telephone number, dialled by their calling subscriber, has been ported and to whom, and routes the call to the RCP as it would a non-ported call to that CP.

Types of porting charges

2.9 DCPs that have ported-out geographic, non-geographic or mobile numbers generally levy porting conveyance charges on RCPs for onward routing calls to ported numbers. In respect of fixed networks, this charge is known as the APCC and between mobile CPs it is known as the DCC.

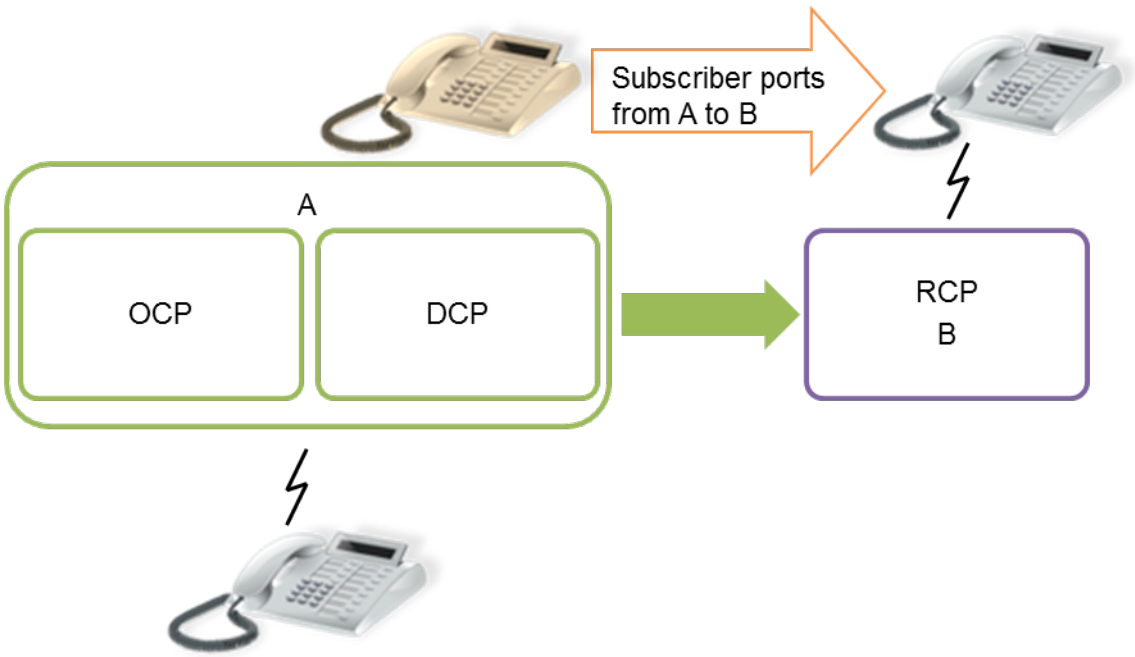
2.10 CPs may also levy charges for some non-conveyance costs such as per number set-up (i.e. the cost of handling and processing customer orders for number portability) and costs associated with making technical changes to a CP's porting service after it has been set up (for example, as a result of the RCP requesting that the DCP modify the routing of ported traffic) which we refer to as service maintenance costs. In the context of discussions in this document which also concern per number set-up costs, our references to costs being incurred and recovered by the DCP should also be taken to include, where relevant, the losing RCP. For example, where a subscriber subsequently ports from their current (losing) RCP to another (gaining) RCP or back

to the DCP, per number set-up costs may be incurred and charged by the losing RCP.

The APCC

2.11 Geographic and non-geographic APCCs are based only on the costs incurred in onward routing traffic originated on a different network to the DCP, which we refer to as off-net traffic (illustrated in Figure 2.1), not traffic originated on the DCP's own network (on-net originated traffic) to ported numbers illustrated at Figure 2.2 below. However, industry convention is that the costs to be recovered are spread across all traffic (on and off-net) to ported-out numbers.[12] As a result the APCC is lower than if costs were recovered only on off-net traffic.

Figure 2.2: On-net calls to ported numbers



Source: Ofcom

2.12 Geographic and non-geographic APCCs are levied by any CP who, as a DCP, onward routes calls to geographic and non-geographic numbers which have been ported out to an RCP. BT is the biggest exporter in the fixed sector and we set out below how it conveys calls to ported geographic and non-geographic numbers across its network.

Geographic APCCs

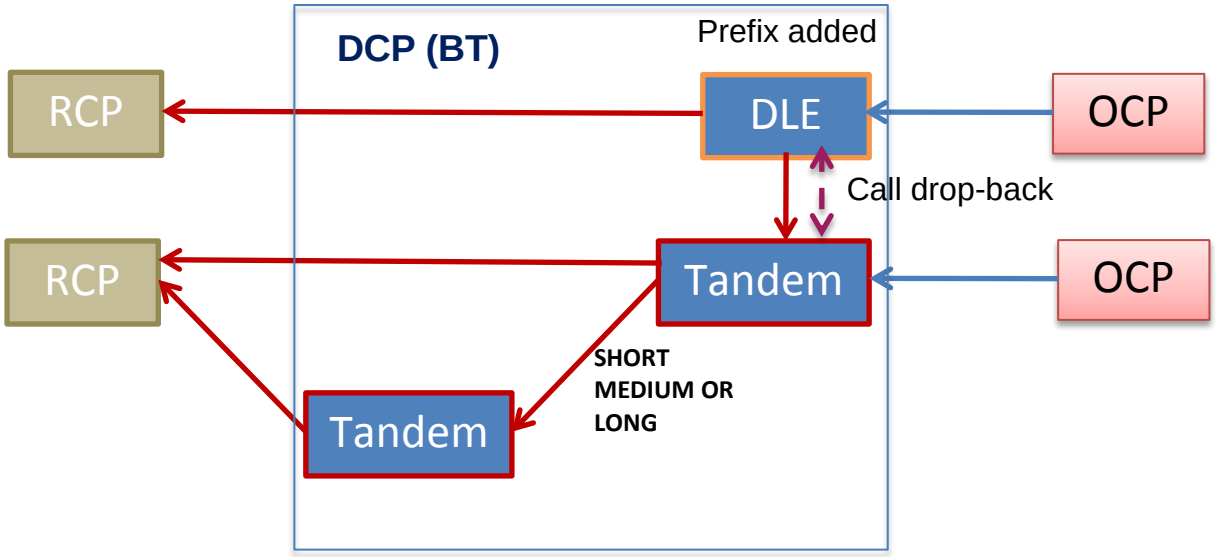
2.13 The APCCs which BT levies for conveyance to ported geographic numbers vary by CP. This is because the cost of providing onward routing for each CP depends on the interconnection arrangements between BT and that CP. The elements of BT's network that are required to convey the call from where BT receives it from the OCP

[12] This approach avoids the requirement for more complex billing arrangements.

(in most cases at BT's Digital Local Exchange (DLE) on which the number was originally hosted or, alternatively, at a tandem switch) to the RCP identified by a geographic porting prefix will depend on the location of the interconnect that carries the traffic from the BT network to the RCP.

2.14 The elements of BT's network used to provide onward routing include local exchange handover, local-to-tandem conveyance, single transit and inter-tandem conveyance (at short, medium and long distances). Where BT receives a call to a ported geographic number from the OCP at a tandem switch, a function called call drop-back enables the routing to the RCP to be determined and onward routed from the tandem switch i.e. without the additional conveyance costs of maintaining a circuit from the tandem switch to the donor DLE and back again for the duration of the call. This is illustrated in Figure 2.3 below.

Figure 2.3: BT geographic porting conveyance



Non-geographic APCCs

2.15 The APCCs which BT levies on other CPs for conveyance to ported non-geographic numbers varies by the type of non-geographic number (e.g. 03, 080, 084, 087 and 09) rather than by CP. We understand that such variations in non-geographic APCCs arise primarily because of differences in the proportions of on/off-net traffic to different types of non-geographic numbers whereas (unlike fixed geographic conveyance described above) the usage of network elements to convey traffic to non-geographic numbers across BT's network from the handover from OCPs to the handover with RCPs is broadly similar.

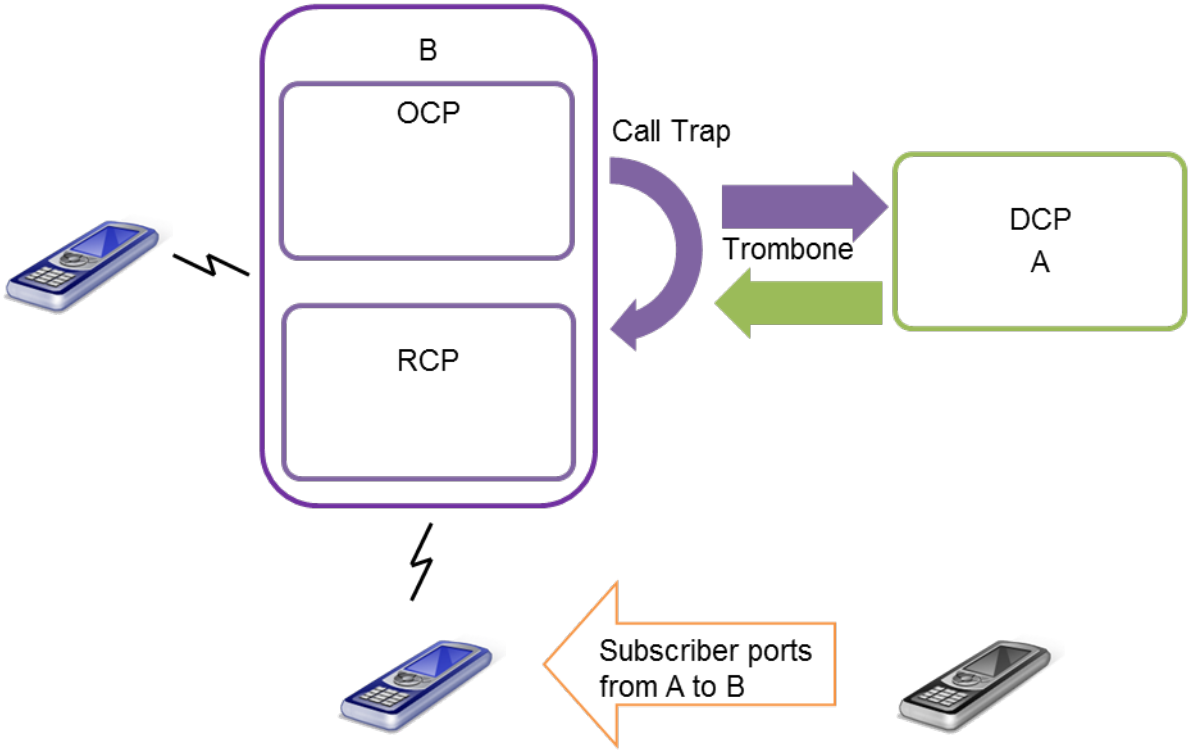
The DCC

2.16 As explained above, the DCC is the charge payable by the RCP to the DCP for the onward routing of a ported mobile call by the DCP to the RCP. As described in paragraph 2.11 above with regard to APCCs, DCCs are also based only on the costs incurred in onward routing off-net calls to ported mobile numbers although industry practice is to levy the DCC on all traffic (on and off-net) to ported-out mobile

numbers.[13] As a result the DCC is lower than if it were levied on just off-net traffic to ported mobile numbers.

2.17 Calls to ported numbers that originate with an RCP can be connected without routing via the DCP where the RCP has installed a Call Trap facility. Most mobile CPs have implemented Call Trap. This allows the RCP to 'trap' calls that it originates to numbers that have been ported into its network. Call Trap removes the requirement for a call to be routed (sometimes described as 'tromboned') to the DCP and then back to the RCP in circumstances where the call originates on the RCP's network. Calls that are effectively trapped do not incur a DCC (since routing via the DCP is avoided). This is illustrated in Figure 2.4 below which shows how Call Trap avoids traffic being tromboned via DCP A.

Figure 2.4: Call Trap and tromboned traffic



Source: Ofcom

Regulatory and factual background

Introduction of GC18

2.18 The Communications Act 2003 (the Act) and the general conditions of entitlement entered into force in July 2003. GC18 obliges a CP to provide number portability[14] to its subscribers, and to provide portability[15] to other CPs for that purpose.

[13] This approach avoids the requirement for more complex billing arrangements.
[14] Number portability is defined in GC18 as a facility whereby subscribers who so request can retain their telephone number on a public communications network, independently of the person providing the service at the network termination point of the subscriber provided that such retention of a telephone number is in accordance with the National Telephone Numbering Plan.

2.19 GC18.5 obliges CPs to comply with certain principles when levying a charge for the provision of portability.

2.20 We set out the legal framework in Section 3 of this statement.

The 2007 Determinations

2.21 On 3 April 2007, H3G submitted disputes to Ofcom about the DCCs charged to it by each of T-Mobile (UK) Ltd (T-Mobile), Telefónica (then trading as O2) and Orange Personal Communications Services Ltd (Orange). As part of its assessment of the disputes, Ofcom engaged Analysys Mason to provide an estimate of the costs of donor conveyance that would be incurred by an average efficient operator. Analysys Mason estimated the costs using data from the cost model constructed for the 2007 MCT market review.[16]

2.22 Analysys Mason estimated that an average efficient operator would incur donor conveyance costs of 0.2ppm in 2007. On 17 August 2007, Ofcom determined the disputes by directing that the DCC payable between the parties should be 0.1ppm (the 2007 Determinations). [17] This was based on the donor conveyance cost estimate of 0.2ppm being split equally between the DCP and RCP to derive the DCC.[18]

Industry wide DCC

2.23 On 8 February 2008, Ofcom wrote to all mobile CPs (which at the time was H3G, T-Mobile, Vodafone, Orange and Telefónica (O2)) noting that, in making the 2007 Determinations, it had assessed the costs of donor conveyance that would be incurred by an average efficient operator and, consequently, the results were applicable on an industry-wide basis.[19] Ofcom therefore expected all mobile CPs to ensure that their DCCs were cost-oriented, in accordance with GC18, which required them to be set at 0.1ppm, based on an equal split of recoverable costs between the DCP and the RCP.

2.24 On 7 March 2008, in light of responses to the 8 February letter, Ofcom wrote to all mobile CPs advising that compliance with GC18.5 required them to be charging a

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[15] Portability is defined in GC18 as any facility which may be provided by a CP to another CP enabling any subscriber who requests number portability to continue to be provided with any public electronic communications service by reference to the same telephone number irrespective of the identity of the person providing such a service.

[16] Donor conveyance and MCT are wholesale services which involve the use of a number of common mobile network assets.

[17] Ofcom, *Determinations to resolve disputes between Hutchison 3G and each of O2, Orange and T-Mobile concerning donor conveyance charges*, 17 August 2007, see: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_952/deter.pdf.

[18] The decision in the 2007 Determinations that the DCC should be split equally was based on a review of determinations made by the Office of Telecommunications (Oftel) into the level of the DCC in 1999 published at http://www.ofcom.org.uk/static/archive/oftel/ind_info/numbering/mnpdetre.pdf

[19] T-Mobile had appealed the 2007 Determinations to the Competition Appeal Tribunal (CAT) in October 2007. However, T-Mobile did not challenge Ofcom's assessment of the costs of donor conveyance (0.2ppm), nor Ofcom's decision that this cost estimate should be split equally between the DCP and the RCP to produce a cost oriented DCC of 0.1ppm. In light of the fact that Ofcom decided to consider enforcement of GC18.5 on an industry wide basis, T-Mobile subsequently applied, and was granted permission by the CAT, to withdraw its appeal and the dispute determinations were therefore not overturned. *T-Mobile (UK) Limited v Office of Communications (Donor Conveyance Charge)* (Case 1093/3/3/07), see: http://www.catribunal.org.uk/237-655/1093-3-3-07-T-Mobile-UK-Limited.html.

DCC of 0.1ppm as from 8 February 2008. The letter requested the mobile CPs to confirm, by 12 March 2008, that their DCC was set at 0.1ppm. All of the mobile CPs provided this confirmation to Ofcom.

H3G's 2013 dispute submission and alternative means

2.25 On 20 September 2013, we received a request from H3G to resolve disputes under section 185 of the Act between H3G and each of EE and Telefónica. H3G subsequently revised the scope of its dispute submission on 9 and 11 October 2013.

2.26 The dispute submission (as revised) advised us of the current DCCs and requested that we determine a new DCC payable going forward under each agreement.

2.27 After consideration of the parties' submissions we agreed with H3G's assertion that the parties were in dispute. However, we considered it would be preferable for us to assess the appropriate level of DCCs on a mobile industry-wide basis. In particular, we have a duty under Article 30(2) of the Universal Service Directive (USD)[20] to ensure that pricing between operators related to the provision of number portability is cost oriented. We therefore considered, in this particular case, that the outcome of our assessment (if we were to determine a new rate) should be applied across the mobile industry with effect from a common date, rather than being set in determinations of two bilateral disputes which only formally bind the parties to those disputes. We considered that a review of DCCs on a mobile industry-wide basis would constitute appropriate alternative means for resolving the disputes, consistent with the requirements of section 186(3) of the Act.

2.28 Therefore, on 14 October 2013, we decided not to handle the disputes, as we considered them suitable for resolution via alternative means, and we commenced a review.

2.29 Following a consultation[21], we published the 2014 DCC Review Statement on 14 February 2014 in which we set a maximum DCC across the mobile industry by way of a Direction issued under GC18.5(a)(ii) until 31 March 2016 (the 2014 DCC Direction).[22] The maximum DCC is set out in Table 2.5 below:

Table 2.5: DCCs to be applied to all donor conveyance calls (ppm, nominal prices)

	2013/14	2014/15	2015/16
DCC (50% of cost, with on-net adjustment[23])	**0.028**	**0.028**	**0.027**

Source: 2014 DCC model.

2.30 As shown in the table, in this review we decided to continue to apply the 50:50 DCP:RCP charging rule established in 1999 and followed in 2007 and made an

[20] Directive 2002/22/EC as amended by Directive 2009/136/EC.
[21] Ofcom, *Review of mobile donor conveyance charges – consultation document*, 6 December 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/review-mobile-donor-conveyance-charges/summary/condoc.pdf
[22] Ofcom, *Review of mobile donor conveyance charges – Statement and Direction*, 14 February 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/review-mobile-donor-conveyance-charges/statement/statement.pdf
[23] The on-net adjustment recognises that the DCC should not be applied to on-net originated traffic to ported numbers but, for practical reasons, is billed on all calls to ported numbers.

adjustment to account for the DCC being charged for on-net originated calls to ported numbers.

2.31 In carrying out that review we did not examine substantive issues in relation to the appropriate cost standard and the recovery of costs, explaining that we would examine these as part of this review.

The current level of porting charges other than the DCC

2.32 Unlike DCCs, there is no direction in place in respect of APCCs or other non-conveyance porting charges.[24] As a result, APCCs are set by commercial agreement between CPs but are still subject to the requirements of GC18.5.

2.33 BT's geographic APCCs for each CP and non-geographic APCCs are currently published in its Carrier Price List (CPL). [25] BT also publishes details of:

- the APCC it pays for porting conveyance performed by most[26] other CPs to geographic and non-geographic numbers ported-in to BT[27];
- the per number set-up charges levied by BT on other CPs, and the charges BT pays out to other CPs when porting-in other CPs' geographic and non-geographic telephone numbers;[28] and
- the charges for service maintenance in relation to geographic and non-geographic portability services e.g. porting prefix additions.[29] In its published

[24] However, we note that in 2010 we determined a dispute between Opal Telecom and BT regarding BT's APCCs. The scope of this dispute did not require us to determine the level of the APCC. Instead it required us to determine whether BT should be required to hand over calls to ported numbers at the relevant DLE; and if so, whether BT should be required to bear the costs of any resulting necessary system development in BTs network. http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01030/

[25] BT Wholesale, Carrier Price List, https://www.btwholesale.com/pages/static/Library/Pricing_and_Contractual_Information/carrier_price_list/index.htm Section B1 Telephony (Part 1.08 Number Portability); Section B3 Ancillary Service (Part 3.27 Operator Imported NTS Service Calls)

[26] [✂]

[27] BT Wholesale, Carrier Price List, https://www.btwholesale.com/pages/static/Library/Pricing_and_Contractual_Information/carrier_price_list/index.htm Section B1 Telephony (Part 1.08 Number Portability); Section B3 Ancillary Service (Part 3.26a Average Porting Conveyance)

[28] Openreach Service Product Pricing, Part 4.3.1.1, http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=kDkYlXGkuDxhC5oS0XKPJocCWTtNCZBtKnb0bsRD3FtZ6rNZujnCs99NbIKJZPD9hXYmiijxH6wr%0ACQm97GZMyQ%3D%3D; BT Wholesale Price List, Section B3 Ancillary Service, Parts 3.26 and 3.27, https://www.btwholesale.com/pages/static/Library/Pricing_and_Contractual_Information/carrier_price_list/cpl_sectionb3ancillaryservice.htm

[29] Openreach Service Product Pricing, Openreach data management charges for geographic and non-geographic number portability Part 4.3.4.1, BT Set-Up Charges for Geographic & Non-Geographic Number Portability, http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=z2xg89UCwFHm%2BivgEVRZAydNht4ujW0IXJwzbRNaqxBZ6rNZujnCs99NbIKJZPD9hXYmiijxH6wr%0ACQm97GZMyQ%3D%3D

pricing, Openreach agrees to pay the same charges to other CPs for the same service.[30]

2.34 In some instances, the commercially agreed charges between CPs other than BT are set with reference to BT's CPL.

2.35 With regard to per number charges, we note that, even where such charges have been agreed, in some instances, they are not invoiced.

2.36 Some CPs (other than BT) also have agreements which include service maintenance charges which are in most cases the same as Openreach's charges. Based on the information we gathered, no CPs reported either paying or receiving service maintenance charges since 2011.[31]

2.37 Finally, we understand that mobile CPs do not charge each other per number set-up charges or service maintenance charges in relation to the provision of mobile number portability.

Why we are doing this review

2.38 Recent developments in the fixed and mobile sectors have led us to review GC18 to provide clarity to CPs as to how we consider charges should be set in order to comply with GC18. These developments include the 2013 NBMR and the 2014 DCC Review.

2013 NBMR

2.39 During 2012 and 2013, we conducted the 2013 NBMR which reviewed fixed narrowband telephony services.[32] In the 2013 NBMR, we decided to change the basis on which the charges for terminating calls to geographic numbers on fixed networks (FTRs) are calculated.[33] This included changing the cost standard to LRIC for the cap on FTRs, which means that FTRs no longer include a mark-up for recovery of common costs. This, along with other modelling factors (such as modelling an NGN), resulted in FTRs reducing considerably from January 2014 from (on average) 0.219ppm to 0.034ppm (in 2012/13 prices).

2.40 This change resulted in porting charges (which are based on charges for network services that, when last regulated, included a mark-up for common costs) being calculated on a different cost basis to FTRs. Some CPs considered that this change merited a review of the way geographic APCCs are set (the relevant charges for porting in this context), not least because geographic APCCs set by BT and paid by RCPs would be above the FTRs received.

[30] Openreach Service Product Pricing, Openreach data management charges for geographic and non-geographic number portability Part 4.3.4.2 Operator Set-Up Charges for Geographic & Non-Geographic Number Portability, http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=z2xg89UCwFHm%2BivgEVRZAydNht4ujW0IXJwzbRNaqxBZ6rNZujnCs99NbIKJZPD9hXYmiijxH6wr%0ACQm97GZMyQ%3D%3D

[31] Specifically the third calendar quarter of 2011 to the third calendar quarter of 2013.

[32] Ofcom's publications relating to this market review can be found at http://stakeholders.ofcom.org.uk/consultations/nmr-13/

[33] To take effect from 1 January 2014.

2.41 In particular, in their responses to the 2013 NBMR Consultation[34], a number of CPs argued that:

- the reasonableness requirement and a cost orientation obligation in GC18 does not specify what costs and cost standard should be considered; and
- Ofcom should therefore review what is "reasonable" in the context of GC18 for the purposes of setting APCCs and provide guidance, although CPs expressed different views on the appropriate cost-basis for APCCs.[35]

2.42 We recognised stakeholders' requests for guidance on the level of geographic APCCs in our draft 2013 NBMR Statement which we notified to the European Commission on 20 August 2013.[36] We said we would give consideration to how GC18 should be applied in setting the APCC once we had concluded the 2013 NBMR.

2.43 We published our final statement on 26 September 2013[37] in which we concluded that:

> "We do not consider it appropriate in this market review to determine how GC18 might be interpreted in the context of a dispute in the light of our decision to set FTRs at LRIC based on the costs of an NGN. Even though we did not explicitly consult on the interpretation of GC18, from the responses received to the February 2013 consultation it is clear that different stakeholders take differing views on how GC18 should be interpreted in future. We recognise that further guidance on the interpretation of GC18 has been requested by a number of stakeholders and that this would provide greater certainty for CPs. Therefore, following the completion of the Narrowband Market Review we will commence a project to consider how GC18 should be applied in setting porting conveyance charges.
>
> We have concluded that the basis on which we set regulated FTRs should not be altered for the fact that calls to certain numbers will incur an APCC levied on the terminating CP. APCCs are currently commercially negotiated between CPs, but must be set on terms compliant with GC18."

DCC Review

2.44 In its dispute submission of 20 September 2013, H3G proposed setting DCCs on the basis of LRIC. In our 2014 DCC Review, we explained our view that the use of a LRIC cost standard would constitute a change in policy in how we derive cost-based DCCs. We considered that it would be inappropriate to consider and address this question by looking at mobile porting conveyance costs and charges in isolation,

[34] Ofcom, *Review of the fixed narrowband services markets – Consultation*, 5 February 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/summary/NMR_Consultation.pdf
[35] Sky, ITSPA and TalkTalk argued that APCCs should now be based on the LRIC of an NGN whereas Vodafone argued for LRIC+ of an NGN. We note that in response to the March 2014 consultation TalkTalk argued for a SRMC approach and Vodafone supported the use of LRIC.
[36] Ofcom, *Review of the fixed narrowband services markets – draft Statement*, 20 August 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Draft_Statement.pdf
[37] Ofcom, *Review of the fixed narrowband services markets – final Statement*, 26 September 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final_Statement.pdf, paragraphs 8.140 to 8.141,

noting that the question of how to derive cost-based charges is relevant to any charges for portability pursuant to GC18 (including, for example, fixed porting conveyance charges) and therefore any such change in policy may have broader implications. In this regard, we observed that a number of stakeholders had raised the question of the appropriate cost standard to be used to derive cost-based geographic APCCs taking into account the decisions reached in the 2013 NBMR (as discussed above).

2.45 We therefore explained that we intended to address the question of the appropriate cost standard for DCCs in this policy project. For similar reasons, we also decided that it was not appropriate to address the issue of charging arrangements as part of the DCC review. We noted, in particular, that the split of costs between the DCP and the RCP represented an important difference between the methodologies used to derive APCCs and DCCs and that this question would be more appropriately addressed within this policy project.

MCT Review 2015-2018

2.46 On 4 June 2014 we published a consultation[38] seeking stakeholders' view on our proposals for the regulation of MCT for the period 1 April 2015 – 31 March 2018 (the MCT review). This consultation document outlined proposals for the *ex-ante* regulation of MCT, including a proposed charge control on mobile termination rates (MTRs) which would apply from 1 April 2015. Consultation on the MCT review closed on 13 August 2014 and we plan to publish a statement by March 2015.

2.47 As a consequence of the MCT review, the model for calculating MTRs has been updated. We have therefore used this updated cost model to determine efficient donor conveyance costs, taking into account our guidance on porting charges as set out in this Statement. In Section 9 we set out a revised maximum DCC for the mobile industry. We aim to publish a Statement and Direction on the new DCC simultaneously or shortly after the 2015 MCT statement is issued.

Aims and objectives

2.48 In light of the above regulatory background, we commenced this review to look at the following issues:

- the appropriate cost standard for calculating porting costs (see Section 4);
- the appropriate technology choice for conveyance costs (see Section 5); and
- the appropriate recovery of porting costs (see Section 6).

2.49 Our aim is to provide greater clarity as to compliance with the requirements of GC18 going forward; avoid unnecessary disputes, so far as is possible; and facilitate the resolution of disputes, should CPs fail to agree commercial terms after the publication of this guidance.

2.50 We would expect to apply this guidance when resolving a dispute concerning porting charges, taking into account the specific circumstances of the case.

[38] Ofcom, *Mobile call termination market review 2015-18 – Consultation*, 4 June 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/mobile-call-termination-14/summary/MCT_Consultation.pdf

Scope of this review

2.51 The scope of this review is fixed and mobile wholesale porting charges (i.e. charges for the provision of portability levied between CPs), including conveyance charges (geographic and non-geographic APCCs and mobile DCCs) and non-conveyance porting charges (per number set-up charges and any relevant charges relating to the provision of service maintenance).

Outside of the scope of this review

2.52 We have not considered the following as part of this review:

2.52.1 Retail porting charges i.e. direct charges to subscribers relating to the provision of number portability. GC18 requires that any such charges are reasonable (GC18.1) and do not act as a disincentive to subscribers against changing their CP (GC18.5(e)).

2.52.2 Wholesale ported transit charges i.e. charges levied by a transit provider for conveying ported traffic by agreement between the DCP and the RCP (e.g. absent direct interconnection between the DCP and the RCP).

2.52.3 Interconnection circuits. CPs may choose to enter into direct interconnection arrangements with each other which are generally negotiated on a commercial basis.[39] These negotiations will include the totality of traffic between the two CPs, of which ported conveyance traffic will be only one element.

2.52.4 How calls to ported numbers are routed i.e. the costs and benefits of a direct routing solution relative to the current onward routing solution.

Responses to the March 2014 consultation

2.53 We received 13 responses to our consultation, which are discussed throughout this document:

- BT plc (BT)
- EE Limited (EE)
- Internet Telephony Services Providers' Association (ITSPA)
- Laurasia Associates Limited (Laurasia Associates)
- Magrathea Telecommunications Ltd (Magrathea)
- Simwood eSMS Limited (Simwood)
- British Sky Broadcasting Ltd (Sky)
- TalkTalk Group PLC (TalkTalk)

[39] Interconnection negotiations are also subject to GC1. Interconnect circuits are subject to significant market power (SMP) conditions when interconnecting to BT (for call origination and call termination services) and KCOM (for call origination services). See 2013 NBMR Statement, Section 10.

- Hutchison 3G UK Limited (Three)
- Virgin Media
- Vodafone Group plc (Vodafone)
- [✂]
- [✂]

Structure of the document

2.54 The remainder of this document is structured as follows:

- In Section 3 we set out the legal framework;
- In Section 4 we discuss the choice of cost standard;
- In Section 5 we discuss the choice of technology;
- In Section 6 we consider the recovery of porting costs;
- In Section 7 we consider the impact of our proposals;
- In Section 8 we set out our conclusions; and
- In Section 9 we consult on a proposed revised maximum DCC

Section 3

Legal framework

The Universal Service Directive and GC18.5

3.1 Article 30(2) of the USD[40] imposes a duty on Ofcom to ensure that pricing between operators and/or service providers related to the provision of number portability is cost-oriented.

3.2 In 2006, the European Court of Justice (ECJ) held that, subject to the requirement for cost orientation, Article 30(2) USD confers a discretion on national regulatory authorities (NRAs) to define the methodology which appears to them to be the most suitable to make portability fully effective, in a manner which ensures that consumers are not dissuaded from making use of that facility. The ECJ considered that an NRA would be acting within the scope of its discretion by defining a maximum cost-oriented price, provided that it is genuinely possible for new operators to contest the application of maximum prices by operators already present in the market by showing that those prices are too high in relation to their cost structure. In principle, therefore, NRAs may adopt a national measure that lays down the specific method to be used in calculating costs under Article 30(2) USD and which fixes maximum *ex ante* prices in respect of all CPs on the basis of an abstract model of costs.[41]

3.3 GC18.5 implements Article 30(2) USD:

> "18.5 The Communications Provider shall, pursuant to a request from another Communications Provider, provide Portability as soon as is reasonably practicable in relation to that request on reasonable terms […]. Any charges for the provision of such Portability shall be made in accordance with the following principles:
>
> (a) subject always to the requirement of reasonableness, charges shall be cost oriented and based on the incremental costs of providing Portability unless:
>
> (i) the Donor Provider and the Recipient Provider have agreed another basis for the charges, or
>
> (ii) the Office of Communications[…] has directed that another basis for charges should be used;
>
> (b) the Donor Provider shall make no charge in relation to System Set-Up Costs or Additional Conveyance Costs;
>
> (c) in respect of Mobile Portability, the Donor Provider shall make no charge or annual fee for ongoing costs relating to registration of a ported Telephone Number or a Subscriber;

[40] Directive 2002/22/EC as amended by Directive 2009/136/EC.
[41] Case C438/04 *Mobistar v IBPT* (the Mobistar case), paragraphs 32 to 37. Although the case specifically concerned set-up costs incurred by mobile operators in implementing requests for number portability, we consider that the ECJ's comments apply equally to any costs recovered through wholesale charges for portability.

(d) charges levied by the Donor Provider shall be based on the reasonable costs incurred by it in providing Portability with respect to each Telephone Number;

(e) any direct charges to Subscribers for providing Number Portability do not act as a disincentive to Subscribers against changing their Communications Provider."[42]

3.4 In summary, therefore, any charges for the provision of portability shall be reasonable and cost oriented, and must be based on the incremental costs of providing portability unless, either, the DCP and RCP have agreed another basis for the charges or Ofcom has directed that another basis for charges should be used.

3.5 Any decision by Ofcom to direct that another basis for charges should be used under GC18.5(a)(ii) is subject to the statutory safeguards set out in sections 49 to 49C of the Act. In particular, these sections impose a requirement for consultation where the proposal would have a significant impact on the market and requirements that the giving or withdrawal of the Direction is proportionate, not unduly discriminatory and transparent in relation to what it is intended to achieve.

Ofcom's general duties

3.6 Our principal duty in carrying out our functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition.

3.7 In doing so, we are required to secure a number of specific objectives and have regard to a number of matters, as set out in section 3 of the Act. We consider the objective of securing availability throughout the UK of a wide range of electronic communications services as particularly relevant to this review.

3.8 In performing our general duties, we are also required under section 3(4) of the Act to have regard to a range of other considerations, which appear to us to be relevant in the circumstances. The desirability of promoting competition in relevant markets and of encouraging investment and innovation in relevant markets appear to us to be most relevant in the context of this review.

3.9 Pursuant to section 3(3) of the Act, in performing our general duties, we must have regard, in all cases, to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed, and any other principles appearing to us to represent the best regulatory practice.

3.10 In this regard we note our general regulatory principles[43], in particular:

- operating with a bias against intervention, but with a willingness to intervene firmly, promptly and effectively where required;
- ensuring our interventions will be evidence-based, proportionate, consistent, accountable and transparent in both deliberation and outcome;

[42] Consolidated version of General Conditions as at 22 September 2014 (including annotations) available at: http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/GENERAL_CONDITIONS_22Sept2014.pdf

[43] Ofcom, *Statutory Duties and Regulatory Principles*, http://www.ofcom.org.uk/about/what-is-ofcom/statutory-duties-and-regulatory-principles/

- always seeking the least intrusive regulatory mechanisms to achieve our policy objectives; and
- consulting widely with all relevant stakeholders and assessing the impact of regulatory action before imposing regulation upon a market.

3.11 Section 4 of the Act requires us to act in accordance with the six European Community requirements for regulation. The following requirements appear particularly relevant to this review:

- promoting competition in the provision of electronic communications networks and services, associated facilities and the supply of directories;
- taking account of the desirability of Ofcom in carrying out its functions in a manner which, so far as practicable, does not favour one form of or means of providing electronic communications networks, services or associated facilities over another; and
- encouraging, to such extent as Ofcom considers appropriate for certain prescribed purposes, the provision of network access and service interoperability, namely securing efficient and sustainable competition and the maximum benefit for customers of communications providers.

3.12 Finally, we have an on-going duty under section 6 of the Act to keep the carrying out of our functions under review with a view to ensuring that regulation by us does not involve the imposition of burdens which are unnecessary or the maintenance of burdens which have become unnecessary.

Impact assessment

3.13 The analysis presented in our March 2014 consultation represented an impact assessment, as defined in section 7 of the Act.

3.14 We have considered the responses we received to the March 2014 consultation, including those which commented on the impact of our proposals, and have taken all those representations into account in reaching our final conclusions in this document. We address those representations in the relevant sections of this document.

Equality impact assessment

3.15 We are also required to assess the impact of our functions, policies, projects and practices on particular groups such as those identified by age, race, religion, disability, maternity, gender and sexual orientation. Equality Impact Assessments also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers.

3.16 We do not consider the impact of the guidance or the proposal to withdraw the 2014 DCC Direction and replace it with a new Direction set out in this document to be to the detriment of any such group within society; in particular, we do not consider that our guidance will have a differential impact on consumers in different parts of the UK or consumers with low incomes. This is because our guidance and proposal for a new Direction will primarily affect wholesale payments between CPs. Therefore, we do not consider it necessary to carry out a full Equality Impact Assessment.

Section 4

Choice of cost standard

Summary

4.1 In this section we consider the appropriate cost standard to calculate the costs of porting under GC18.

4.2 We consider the choice of cost standard in this section, and the choice of technology in Section 5, ahead of the question of the recovery of costs in regulated charges in Section 6. This is because the first two determine the level of costs to be recovered in any charges and consist of issues we have considered previously in setting charge controls, particularly in the related, but distinct, markets of fixed and mobile termination.

4.3 In the March 2014 consultation we considered whether to adopt a LRIC or a LRIC+ cost standard to calculate the costs of porting under GC18.[44] The fundamental difference between the two cost standards is whether the DCP is allowed to recover common costs[45] through its charges:

4.3.1 LRIC: LRIC takes the service in question as the relevant increment of output over which to measure costs.[46] LRIC does not include a contribution to the DCP's network and non-network common costs. LRIC estimates are thus lower than those under LRIC+ when measured on a consistent basis (i.e. same volume increment, time period, network technology and so on).

4.3.2 LRIC+: A LRIC+ cost standard reflects long run incremental costs including a mark-up for common costs.

4.4 We assessed these options against the six principles of pricing and cost recovery (henceforth the 'six principles'). In the March 2014 consultation we proposed to change the cost standard from LRIC+ (currently) to LRIC for all porting charges (both conveyance and non-conveyance, and both fixed and mobile) because this was most consistent with the six principles taken in the round.

4.5 The majority of respondents agreed with our proposal.[47]

4.6 Three respondents disagreed. BT and EE argued that the cost standard should be LRIC+. EE considered that LRIC+ would better promote efficient recovery of overall costs than alternative pricing approaches such as LRIC.[48]

[44] For the purpose of this assessment we mean both the conveyance and non-conveyance porting-related costs (and charges) which can be recovered under GC18.
[45] Common costs arise from the provision of a group of services but are not incremental to the provision of any individual service
[46] This definition is consistent with the concept of LRIC as used in the Commission Recommendation of 7 May 2009 on the regulatory treatment of fixed and mobile termination rates in the EU (2009/396/EC). With regard to our consideration of porting conveyance costs, the increment would be the donor conveyance of incoming voice calls to ported numbers which originate from CPs other than the DCP.
[47] [✂], Sky, Three, Magrathea, ITSPA, Vodafone, Laurasia Associates and Virgin Media all agreed that the cost standard should be LRIC.

4.7 TalkTalk agreed that common costs should not be recovered from porting charges, but further suggested that porting charges should be set below LRIC. TalkTalk considered there was a range of incremental costs that could potentially be appropriately recovered - ranging from zero to LRIC. It considered that a suitable 'balance' between these two extremes was short run marginal cost (SRMC).[49]

4.8 Having considered stakeholder responses we have decided to adopt a LRIC cost standard. Below we set out our analysis and conclusions, including a discussion of stakeholder comments.

4.9 In the rest of this section we:

4.9.1 briefly summarise the current situation;

4.9.2 describe the options for the choice of cost standard;

4.9.3 explain the criteria used to assess these options;

4.9.4 evaluate the options; and

4.9.5 present our conclusions.

Current situation

4.10 Currently in the mobile sector the cost standard used to determine DCCs is LRIC+, as most recently determined in the 2014 DCC Review.[50]

4.11 In the fixed sector we understand the porting conveyance charges that BT pays and receives were originally based on the charges for the network services used to provide porting conveyance. These network services include inter-tandem conveyance/transit (ITC/ITT), single transit (ST) and local-tandem conveyance/transit LTC/LTT), and are used to different degrees depending on the CP's interconnection arrangements with BT. Regulation has now been removed from these network services and, therefore, charges for these services are set on a commercial basis.[51] When these services were subject to charge controls we allowed a mark-up for common costs.

4.12 Fixed sector non-conveyance porting charges are also currently agreed on a commercial basis. When BT's charges were last regulated (in 2002) they were set

[48] EE made some further comments about how the DCC should be modelled. These are discussed in Section 9.
[49] SRMC is the cost of producing an additional unit of output in the short run. Marginal cost is a special case of incremental cost where the increment is equal to one unit of output. In the short run some costs are fixed i.e. they do not vary with output over the specified increment and period in question.
[50] See paragraphs 4.3 to 4.36 of the 2014 DCC Review Statement. We excluded administrative costs when setting the DCC in 2007, these costs were included in the 2014 Determination (see paragraphs 4.24 and 4.30 to 4.34 of the 2014 DCC Review Statement).
[51] Regulation was removed from ITC/ITT in 2005 and from LTC/LTT in 2009. The last charge control on ST expired in 2009 and all remaining regulation was removed in 2013.

based on LRIC with a 9.5% mark up for common costs, i.e. a particular form of LRIC+.[52]

4.13 As noted in paragraph 2.34, we understand that sometimes other (i.e. non-BT) fixed CPs reference the rates that BT pays to other CPs in the BT CPL in their porting agreements.

Options for the cost standard

4.14 In the March 2014 consultation we compared LRIC and LRIC+. This is consistent with the options considered when setting charge controls for fixed and mobile termination rates. We consider that these options remain appropriate.

4.15 We note that TalkTalk has suggested an alternative option based on SRMC – we discuss TalkTalk's proposal within the option assessment below.

Assessment criteria

Consultation proposals

4.16 In the March 2014 consultation we considered the appropriate assessment criteria were the six principles, namely:

- Cost causation: costs should be recovered from those whose actions cause the costs to be incurred at the margin;
- Cost minimisation: those that can affect the size of the costs should have an incentive to minimise them;
- Distribution of benefits: costs should be recovered from the beneficiaries, including a consideration of the wider benefits of number portability e.g. benefits arising due to increased competition;
- Effective competition: the mechanism for cost recovery should not weaken effective competition. The charging structure should not distort competition;
- Practicability: the mechanism for cost recovery needs to be practicable and relatively easy to implement; and
- Reciprocity: where services are provided reciprocally, charges should also be reciprocal.

4.17 These were originally developed by Oftel and also used by the Monopolies and Mergers Commission (MMC) for assessing geographic number portability (MMC Inquiry)[53] and have been used in a number of Ofcom decisions since.[54]

[52] Oftel, *Determination of fixed portability costs and charges and statutory consultation on proposed modifications to BT's Licence to give effect to charge controls for portability*, May 2002 paragraph 11.7 http://www.ofcom.org.uk/static/archive/oftel/publications/pricing/2002/nupo0502.pdf.

[53] MMC, *Telephone number portability: A report on a reference under section 13 of the Telecommunications Act 1984*, 1995, available at http://webarchive.nationalarchives.gov.uk/+/http:/www.competition-commission.org.uk/rep_pub/reports/1995/374telephone.htm

4.18 In relation to the assessment of the appropriate cost standard we considered whether some of the criteria were more relevant than others. We considered that effective competition, cost causation and cost minimisation were most relevant.

Stakeholder responses

4.19 Only BT and TalkTalk commented on the assessment criteria.

4.20 BT noted that dynamic efficiency (i.e. incentives to invest) was not directly addressed within the criteria.

4.21 TalkTalk saw the following as the main economic efficiency aims in setting porting charges:

- Strong incentives to compete and lower barriers to switching in the downstream market;
- Effective competition in the downstream market by ensuring a level playing field, so that services are produced by those CPs who can do so most efficiently;
- Cost minimisation – incentives should be created on BT to reduce its cost of providing porting conveyance and/or incentives on the OCP to avoid porting conveyance costs through direct routing;
- Allocative efficiency – generally maximised where prices are equal to the marginal costs caused by production of the product/service; and
- Opportunity for cost recovery – although some of BT's costs may be sunk (and as yet unrecovered) allowing BT to recover its efficiently incurred costs can improve investment, since without an expectation that it can recover costs BT may reduce future investment below an efficient level.

Our analysis and conclusions

4.22 As explained in the March 2014 consultation, we think the six principles are appropriate to addressing the choice of cost standard.

4.23 We recognise that in our statements regarding the regulation of voice call termination, other criteria were used. Specifically, in the 2011 wholesale mobile voice call termination statement (2011 MCT Statement); the subsequent appeal to the Competition Appeal Tribunal (CAT) which was referred to the Competition Commission (2012 CC Determination)[55]; and in the 2013 NBMR,[56] we looked at: economic efficiency; competition effects; effects on vulnerable consumers; and commercial and regulatory consequences. The main reason for adopting LRIC in the

[54] For example, when determining the approach to the regulatory treatment of conversion costs between NGN and TDM networks in the 2013 NBMR.
[55] CC, *BT v Ofcom, EE v Ofcom, H3G v Ofcom and Vodafone v Ofcom – telecommunications price control appeal: wholesale mobile voice call termination*, http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/our-work/directory-of-all-inquiries/bt-everything-huthchison-vodafone-telecoms-appeal-mobile-call-term .
[56] 2013 NBMR Statement, see Section 8.

case of call termination (for both mobile and fixed CPs) was the effect on competition.[57] [58]

4.24 However, in considering the regulation of porting charges, we do not consider it necessary to add to the six principles. Specifically:

4.24.1 economic efficiency: we consider that this is already covered under the six principles (in particular under cost causation, cost minimisation and distribution of benefits);

4.24.2 competition effects: this overlaps directly with one of the six principles (i.e. effective competition);

4.24.3 vulnerable consumers: the choice of cost standard may have some redistribution effects. First, when a RCP wins a customer that ports in their number, the net termination revenues associated with calls to that customer would be lower if porting charges were calculated based on LRIC+ rather than LRIC. Second, LRIC based charges mean that more of the common costs must now be recovered from the DCP's own customers. In both of these situations, the way in which the CP structures its retail prices could in principle have differing effects on different consumer groups. For example, to the extent that a CP chose to recover any revenue shortfall by increasing the line rental price, there could be a greater proportionate impact on more vulnerable consumers.

However, we expect the impact on retail prices that would result from moving from LRIC+ to LRIC for porting charges would be small, and so unlikely to adversely impact vulnerable customers. We have considered the potential impact of our proposals in the round in Section 7 - where we find that any impact on consumers is likely to be small;[59] and

4.24.4 commercial and regulatory consequences: in part, these considerations will overlap with issues of practicability that would be addressed under the six principles. For commercial and regulatory consequences that go more to the financial effects on CPs, we have considered these separately in Section 7.

4.25 In relation to TalkTalk's comments, we consider that the first four criteria it suggested are already covered within our framework. More specifically, the first two criteria i.e. 'strong incentives to compete...' and 'effective competition in the downstream market…' are covered under the effective competition criterion. Cost minimisation is already one of our criteria. Allocative efficiency arises when prices (in this case porting charges) reflect underlying resource costs. In this regard, it straddles aspects of cost causation, cost minimisation and distribution of benefits. Therefore, we do not see this criterion as further adding to the six principles. We have addressed TalkTalk's specific point under the cost minimisation heading.

[57] See paragraph 8.159 of the 2011 MCT Statement, and 2012 CC Determination, paragraph 2.929(a).
[58] 2013 NBMR Statement, paragraph 8.35.
[59] It is also worth noting that in the 2011 MCT Statement (paragraph A3.272) Ofcom considered the effects on vulnerable consumers, but also stated that it would not be appropriate to pursue social objectives via regulation of (mobile) call termination.

4.26 Regarding BT's comment and TalkTalk's fifth criterion, we discuss dynamic efficiency and opportunity for cost recovery under a separate heading of "other stakeholder comments" below.

4.27 In considering which of the six principles are particularly relevant to porting charges, as noted in the March 2014 consultation Recital 47 of the USD makes it clear that number portability is intended to facilitate competition through switching and that, amongst other things, charges should not hinder consumers from changing providers. In addition, when considering the appropriate cost standard for both MTRs and FTRs we considered the impact on competition to be particularly important, not least in light of our principal duty to further the interests of consumers, where appropriate by promoting competition.[60] In light of this, we consider that the principle of effective competition is an important criterion in the assessment of porting charges.

4.28 We also consider that cost causation and cost minimisation are important to the choice of cost standard. The distribution of benefits criterion concerns how costs should be recovered from the beneficiaries of the activities/services giving rise to those costs. We cover this in Section 6 where we consider the implications of recovering porting costs between different consumers (via wholesale charges to their CPs), rather than in our assessment of the cost standard.

4.29 We consider that practicability and reciprocity are not determinative in our choice of cost standard. The two cost standards are similar in terms of practicability in that, in general, the ability to estimate the costs with and without common costs should be equally practicable. Reciprocity is not determinative in the choice of cost standard because it is about equalising the charges set between parties (and so reciprocity could be achieved at any cost level provided it was the same level between the parties).

4.30 For the above reasons, our assessment as to the appropriate cost standard focuses on cost causation, cost minimisation and effective competition.

Assessment of the choice between LRIC and LRIC+

4.31 In assessing the appropriate cost standard for porting charges we consider it appropriate to include the status quo as one of the options.[61] The recovery of porting costs differs in the fixed and mobile sectors. While in the fixed sector porting costs are recovered from the RCP in full, in the mobile sector porting conveyance costs are split equally between the DCP and RCP using a 50:50 charging rule.[62] For consistency and ease of exposition we consider the choice between LRIC and LRIC+ below on the basis that the RCP pays the charge – i.e. a charge based on 100% of

[60] See paragraphs 8.25 to 8.35 of the 2013 NBMR Statement and Section 8 and Annex 3 (in particular paragraphs 8.158 to 8.159) of the 2011 MCT Statement.
[61] This is consistent with our general approach to impact assessments described in: *Better Policy Making – Ofcom's Approach to Impact Assessments*, July 2005, available at http://www.ofcom.org.uk/about/policies-and-guidelines/better-policy-making-ofcoms-approach-to-impact-assessment/
[62] Mobile CPs do not currently levy non-conveyance charges which means they are effectively borne by the DCP.

the LRIC or LRIC+. Where appropriate, we also discuss whether our proposals would be affected under a 50:50 DCP:RCP charging rule.[63]

Cost causation

Consultation proposals

4.32 In the March 2014 consultation we considered that both LRIC and LRIC+ could be consistent with the cost causation criterion. Under a RCP pays charging rule we said that cost causation pointed slightly in favour of LRIC as this more directly reflected the costs caused by the decision to port.

Stakeholder responses

4.33 BT considered that three parties cause the costs of number portability:

- the RCP causes the one-off costs of the port;
- the OCP causes the costs of onward routing by not routing directly to the RCP; and
- the DCP is responsible for providing the port and onward routing efficiently.

4.34 BT agreed with our general preference for recovering costs from the competitive side of the market (see paragraph 4.42 below).[64] In relation to cost causation it thought this pointed to the OCP causing the cost as, on the retail side, it is the calling party who chooses to make the call in a competitive environment. It also noted that the OCP has a choice over whether a call is directly or onward routed and therefore whether any onward routing cost is incurred.

4.35 [✂] interpreted our proposal to mean that common costs (no longer recovered in porting charges) should be recovered from the DCP's own retail products which it thought would, "*avoid the one-sided distortion any other situation could cause*."

Our analysis and conclusions

4.36 As explained in the March 2014 consultation in terms of cost causation we can distinguish between:

4.36.1 Per number set-up costs that can be thought of as being caused by the RCP's customer when he or she ports his or her number;[65] and

4.36.2 Porting conveyance costs which two parties could arguably be considered to cause, as follows:

[63] In Section 6, where we discuss the recovery of porting costs, we also consider OCP and DCP cost recovery rules. We do not discuss these options here because we do not consider they would affect the results of our assessment of the choice of cost standard.

[64] BT noted paragraph 4.28 of the March 2014 consultation where we stated that, ".. in a situation of situation of two-way access, we prefer that common costs are recovered from the 'competitive' (e.g. retail) side of the market."

[65] In this assessment we focus on per number set-up costs as fixed CPs currently levy these charges. We do not discuss service maintenance costs (see paragraph 2.10) given these charges are not currently levied (see paragraphs 2.36 to 2.37). However, in principle, we consider that our analysis of per number set-up cost is applicable to service maintenance charges.

- one perspective might be that the cause of the conveyance costs is the initiation of calls to people who have ported their numbers i.e. it is the caller that causes the relevant parts of the DCP's network to be used; or

- an alternative perspective is that the incremental resource costs from onward routing arise because of the RCP customer's decision to port – i.e. had the RCP's customer not ported, calls to that customer would follow the normal call path (for a call to a fixed or mobile number) without incurring the costs of onward routing.

4.37 BT considered that the OCP causes the cost as it is the calling party who chooses to make the call. We recognise that in the UK the established principle of telephony charging is that the caller typically pays the full costs for the call - i.e. the calling party pays (CPP) principle – although this is not the case for all call types.[66]

4.38 However, we do not think this is the most satisfactory view of cost causation in the present case because the incremental resource costs arising from a call to a ported number, over and above those arising from a call to a non-ported number, are not caused by the calling party. While a calling party can be thought of as "causing" the costs of a typical call to mobile or a fixed number, the need for additional routing (i.e. onward routing) when that number has been ported, has not been caused by the actions of the calling party (compared to the counterfactual of the same call had the receiving party not ported).

4.39 BT considered that the OCP causes the costs of onward routing by not routing directly to the RCP. As set out in Section 6, we are carrying out this assessment on the basis that the current system of onward routing is maintained. We also discuss the case for direct routing in that Section. In any case, the decision to route directly cannot be determined unilaterally by the OCP – i.e. it requires co-ordination between the OCP and the RCP.

4.40 BT suggested that the DCP also causes porting costs because the DCP is responsible for providing the port and onward routing efficiently. We agree that once the call recipient has decided to port the DCP is responsible for providing porting services. However, we do not agree that the DCP causes the porting set up or conveyance costs to arise; as discussed above these are caused by the prior decision of the call recipient to port the number. We consider the incentives for the DCP to provide this onward routing service efficiently under the cost minimisation criterion below.

4.41 LRIC is the cost standard which most directly measures the costs causally related to the provision of a service, such as porting conveyance. Common costs are not causally related to a given service increment (such as porting conveyance); rather they are common across a number of service increments (for example much of the switching and conveyance infrastructure will be common across many different voice traffic services – e.g. call origination, transit, etc.). Consistency with the cost causation principle suggests that common costs should be recovered from the services within the group to which they are common, but they do not have to be recovered from any one service.

4.42 In the context of MCT, when considering which services common costs should be recovered from, we note that the CC in its 2012 Determination said, "...*in general it is*

[66] Examples of alternative charging arrangements arise in the case of calls to customers roaming internationally (where the costs of international conveyance and overseas termination are borne by the receiving party) and calls to certain non-geographic numbers (such as calls to 0800 numbers).

preferable for costs to be recovered where there is competition, so that regulated firms have the appropriate incentives to minimise their costs and behave efficiently."[67] While number portability is not a service where we have found individual CPs to hold SMP, it is clear that number portability is not a contestable service – since only the DCP can provide onward routing to the RCP. This would point towards common costs being recovered from services other than porting.

4.43 We do not agree, as suggested by BT, that a preference for recovering common costs from the competitive side of the market points to the OCP causing the costs. The basis for this argument is unclear but, in any case, the DCP and RCP also participate in the competitive retail market and could recover the common costs of providing porting services from their retail customers if this were appropriate.

4.44 We note that [✂] interpreted our proposals to mean that common costs should be recovered from the DCP's own retail products. While in practice this may be where common costs are most likely to be recovered, it need not necessarily be the case. That is, common cost recovery (from charges previously recovered via LRIC+ porting charges), could be made on the wholesale side of the market.[68]

4.45 Since charges set at LRIC+ start – explicitly or implicitly – from LRIC (i.e. LRIC+ involves a mark-up over LRIC) then in some sense both might be seen as reasonably following cost causation. However, we note that charges set at LRIC might be considered to be more immediately linked to the costs directly attributable to the service in question, at least taking the service increment in isolation. However, charges set at LRIC do of course raise the question of how common costs should be recovered (including those costs which would become incremental if considering a broader traffic or service increment – e.g. all voice traffic or all network traffic).

4.46 Moving from LRIC+ to LRIC for porting charges would not change the amount of common costs to be recovered by the DCP, and so we would expect some redistribution of common costs from porting services to competitively provided services in the event that we move from a LRIC+ cost standard (i.e. the status quo) to a LRIC cost standard for porting charges. As discussed in Section 7, porting charges are very small in the context of retail revenues (and common costs form only a portion of porting charges), therefore we expect that any redistribution of common costs if we adopt a LRIC cost standard would have a relatively small impact.[69]

4.47 If a 50:50 DCP:RCP charging rule is assumed, LRIC based charges mean that the RCP (and ultimately its customer(s)) pays less than the incremental cost as it would only bear 50% of incremental costs, with the DCP (and ultimately its customer(s)) bearing the other 50% and all common costs. Therefore, under a 50:50 DCP:RCP charging rule, we consider that the case for LRIC would be less compelling under the principle of cost causation than it would be for LRIC+.

4.48 Our conclusion is that both LRIC and LRIC+ could be consistent with the cost causation criterion. Under a RCP pays charging rule we have a slight preference for LRIC as this more directly reflects the costs caused by the decision to port. For similar reasons to those considered in the regulation of termination rates, in a

[67] See 2012 CC Determination, paragraph 2.577.

[68] Where there was recovery via wholesale charges, this could not be from services subject to other forms of price regulation – e.g. markets where there is Significant Market Power and a charge control remedy.

[69] Moreover, in the case of mobile porting conveyance costs, these are currently split using a 50:50 DCP:RCP charging rule so the present extent of common cost recovery from the RCP is limited in the mobile sector.

situation of two-way access, we prefer that common costs are recovered from the 'competitive' side of the market where possible.

Cost minimisation

Consultation proposals

4.49 In the March 2014 consultation we noted that, in principle, the higher the proportion of costs the DCP is required to bear, the stronger its incentives to minimise costs. Following this principle, in theory, a LRIC cost standard provides stronger incentives to minimise common costs. However, we also noted that, in practice, the infrastructure used to deliver ported calls (i.e. switching and transmission assets) is also used to provide services now subject to effective competition, which will act to incentivise cost minimisation. In light of this, we suggested that the difference between the cost standards in relation to cost minimisation may be less material, but that LRIC would provide slightly stronger incentives for the DCP to minimise porting costs.

Stakeholder responses

4.50 TalkTalk considered that incentives should be created on BT to reduce its cost of providing porting conveyance. It noted that if charges are too high then demand will be suppressed below its optimal level. TalkTalk considered that allocative efficiency is generally maximised where prices are equal to the marginal costs caused by the production of a service. TalkTalk considered that sunk costs should not be recovered from the perspective of allocative efficiency because recovery of sunk costs implies that charges are above (short run) marginal costs. It noted that setting charges below SRMC may cause allocative inefficiency, since the charge would result in 'excessive' demand. However, it considered that setting porting charges to reflect SRMC would provide incentives for cost minimisation while achieving allocative efficiency.

4.51 BT considered it unfair that the DCP is limited to LRIC as a device to minimise costs – noting on that basis the incentive would be even greater if no payment was made at all.[70]

Our analysis and conclusions

4.52 As explained in the March 2014 consultation, porting charges reflect activities the DCP undertakes to provide and facilitate number portability. The DCP's incentives to minimise such costs are directly related to the proportion of these costs it has to bear. As a general principle, the higher the proportion of costs that the DCP is required to bear, the stronger its incentives to minimise the costs.

4.53 Following this principle, we consider that LRIC provides greater incentives for cost minimisation than LRIC+ under both a RCP pays and a 50:50 DCP:RCP charging rule as it means the DCP would recover less of its costs from the RCP.[71]

[70] BT felt that the true incentives for cost minimisation should rest with the OCP (who can decide to direct route). We discuss the case for OCP pays and direct routing further in Section 6.
[71] Under a LRIC cost standard and a RCP pays rule, the DCP would recover its incremental costs but not its common costs from the RCP, whilst under a 50:50 DCP:RCP charging rule it would recover only half of its incremental costs from onward routing and none of its common costs.

4.54 We recognise, as noted by TalkTalk and BT, that setting charges below LRIC may provide an even greater incentive for cost minimisation. However, such an approach implies that the DCP would be unable to recover incremental costs which implies that porting services would be provided at a loss. While we want to provide incentives to minimise costs, we believe that the DCP should be able to recover the incremental costs, including sunk costs, of providing porting services. In general terms, a failure to allow the recovery of efficiently incurred sunk costs undermines incentives to invest. In this case, we consider that not allowing full recovery of incremental costs could also have negative consequences for the incentives of the DCP to provide high quality porting services.

4.55 Further, adopting SRMC could result in additional practical difficulties, for example, in determining the time period over which to measure costs (i.e. what do we mean by 'short run') and the appropriate traffic increment to calculate marginal costs. SRMC can be volatile which we consider to be a disadvantage when choosing the cost standard to set regulated charges. This is because it is low over a range of output below existing capacity, but high when the additional unit of output triggers a requirement for increased capacity deployment.

4.56 In both the mobile and the fixed sectors, a large proportion of the infrastructure used to deliver ported calls (i.e. switching and transmission assets) is in general also used to provide services now subject to effective competition, which should act as an independent incentive to minimise common costs.[72] While some dedicated infrastructure used for porting is not likely to be shared with other activities – e.g. system set-up – some of these costs are not in any case recoverable under GC18. Therefore, the difference between the cost standards in relation to cost minimisation may, in any case, be less material. (We consider the materiality of the charging rule in terms of incentives to minimise costs in Section 6.)

4.57 Therefore, we conclude that LRIC is preferable. But in light of the fact that there are independent incentives to minimise costs (beyond the choice of cost standard - see paragraph above), we note that LRIC would provide only slightly stronger incentives for the DCP to minimise its porting costs than LRIC+.

Effective competition

Consultation proposals

4.58 In the March 2014 consultation we considered that a LRIC cost standard was most consistent with the criterion of effective competition. We noted that number portability was introduced to facilitate consumer switching and is thus an important facilitator of retail competition. We considered that the higher the porting charges that the RCP has to pay, the fewer incentives it would have to compete intensively to gain customers that are likely to port their number.

4.59 We noted in other cases where we have set charges that have a direct impact on switching costs we have also adopted a LRIC cost standard to promote competition.

[72] The only remaining exceptions are fixed and mobile call termination and (in the case of BT and KCOM, call origination). However, for BT charges for fixed call termination are subject to price cap regulation and for the four largest mobile CPs (i.e. EE, Vodafone, O2 and Three) mobile call termination is also subject to price cap regulation. For other CPs the charges are required to be fair and reasonable, benchmarked to the relevant price cap rate (i.e. the charge control on MTRs or FTRs as appropriate). One of the objectives of price cap regulation is to provide incentives for cost minimisation.

Further, we considered that, because CPs levy porting charges on each other, porting services were more akin to a two way access service (such as call termination) than one way access services (such as wholesale line rental). When we considered the regulation of wholesale charges for two way access (i.e. mobile and fixed call termination), we considered that a LRIC cost standard was more appropriate, in particular to facilitate effective competition.

Stakeholder responses

4.60 BT disagreed with our suggestion that porting services have the characteristics of a two way access service, although it recognised that porting takes place in both directions. BT considered that with number portability up to three parties are involved (OCP, DCP, RCP) and there is not necessarily a reciprocal relationship between the DCP and RCP (or OCP and RCP).

4.61 BT considered, by contrast, that call termination is clearly a two-sided service because both the calling and called consumers benefit from the call. Further, there is a direct relationship between the parties, and the cost of the call can be recovered from the calling and/or called party. BT considered that the main reason why the EC regulation moved to advocating LRIC for call termination, with recovery of common costs from call origination, was the competitive effects at the retail level from asymmetry in the position of the two parties.

4.62 BT considered that porting was different to call termination because the costs of onward routing are incurred by the DCP who only has a relationship with the OCP and the RCP at the wholesale level similar to transit. The DCP has no retail option for recovering common costs or porting costs excluded from the charge from either the specific calling or called party other than when it is an on-net call (i.e. the OCP and DCP are the same).

4.63 TalkTalk also disagreed that number portability was a two way service due to asymmetry in the flows of ported numbers between CPs. It argued that the vast majority of non-BT CPs have a higher proportion of ported in numbers than BT, and this is not likely to change materially in the next five to ten years. Where a CP has won a customer with a ported in number from BT it is not possible to avoid paying BT porting charges. For instance, it is not possible to have another operator provide porting conveyance instead of BT. TalkTalk felt that the service was not contestable and there was no constraint on BT's pricing.

4.64 TalkTalk argued that porting charges were different to other regulated charges because:

4.64.1 Other wholesale products and charges are largely symmetric or reciprocal in nature because both BT and non-BT CPs incur costs/charges. TalkTalk felt this was not the case for porting charges because BT does not have a significant amount of ported in numbers. It noted porting charges lower the profitability from winning a customer and therefore reduce incentives for other CPs to compete for customers.

4.64.2 When BT loses a customer it gains porting conveyance revenues which, TalkTalk felt, weakened BT's incentives to compete and encouraged BT to raise prices to its customers.

4.65 It considered that the net effect was harm to consumers due to increased prices and decreased incentives for CPs to compete for customers. TalkTalk argued that setting

porting charges below LRIC would result in greater incentives for CPs to compete to attract each other's customers and lead to more effective competition, by creating a more level playing field.

4.66 BT thought it unfair for large DCPs to only receive LRIC as their remaining customers have to bear all the fixed common costs associated with sustaining onward routing from which they derive no direct benefit. It felt this was not consistent with effective competition because BT is a net exporter of numbers and its competitive position is undermined by only receiving LRIC. BT considered that the DCP should be able to charge for all efficiently incurred costs associated with the provision of porting including those specifically excluded by GC18, such as system set-up costs. [73]

Our analysis and conclusions

4.67 As there were a number of comments on the topic of effective competition we have grouped this sub-section under the following three themes: (i) impact on incentives to compete; (ii) recovery of common costs; (iii) costs excluded under GC18.

Impact of porting charges on incentives to compete

4.68 As we explained in the March 2014 consultation, number portability was introduced to facilitate consumer switching and is, thus, an important facilitator of retail competition. Effective competition could be undermined if the choice of cost standard resulted in barriers to entry and expansion, or reduced the incentives to compete for customers. The lifetime profitability of customers who port their numbers is affected by the level of the porting charges the RCP has to pay. The higher the porting charges the RCP has to pay, the fewer incentives it would have to compete intensively to gain customers that are likely to port their number. Porting charges would be higher under a LRIC+ cost standard (relative to LRIC) which could therefore have a negative impact on incentives to compete.

4.69 In terms of barriers to entry and expansion the cost standard could have an impact because later entrants, who tend to win customers from established providers, are likely to have a larger proportion of customers with ported-in numbers compared to incumbent CPs. This, in itself, is likely to disadvantage later entrants since they will have to pay porting charges for a greater proportion of their customer base. This competitive disadvantage is exacerbated under LRIC+ since porting charges are higher.

4.70 Generally, we wish to minimise the wholesale charges that affect the costs of acquiring customers or switching suppliers. This is consistent with our decisions in the recent Fixed Access Market Review (FAMR) statements where we have adopted a LRIC cost standard for wholesale charges that have a direct impact on switching costs. In the 2014 FAMR we decided that Generic Ethernet Access (GEA) migration charges should reflect incremental costs, noting that, "*setting migration charges on an incremental basis, rather than including a contribution to fixed and common costs, is likely to reduce switching costs. Lower switching costs are generally likely to be in consumers' interests since they help strengthen retail competition."*[74] We also set

[73] BT also commented that RCP pays discriminates against new entrants who are importers of numbers because the OCP decides whether to employ direct routing and their commercial interest is not necessarily the same as the RCP. We discuss this, and other comments related to direct routing, in Section 6.

[74] Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. Volume 1: Statement on markets, market power determinations and*

wholesale line rental (WLR) and metallic path facility (MPF) migration service charges based on incremental costs. We noted that, "*we would expect there to be benefits from setting charges closer to these services' incremental costs, i.e. from more effective switching and hence competition*."[75] Given that porting charges also clearly affect the costs of acquiring customers we consider that LRIC is also appropriate in this case.

4.71 TalkTalk argued that lower porting charges increase incentives for CPs to compete for subscribers. At a general level we agree, indeed the competition benefits of lower porting charges are a key reason to favour LRIC over LRIC+, but we do not think we should regulate porting charges below LRIC, specifically down to SRMC as TalkTalk suggests. For the reasons set out earlier in this section (paragraph 4.53) we think that setting porting charges below LRIC will adversely affect incentives to invest in the provision of porting services in the long-run. Moreover, there are practical difficulties in setting regulated charges at SRMC (as note at paragraph 4.54).

4.72 We are not convinced by TalkTalk's argument that revenue BT earns from porting is likely to weaken BT's incentives to compete and encourage it to raise prices to its customers. When porting charges are reduced to LRIC there will be no "margin" in the provision of that service in the long-run. Even if LRIC is above SRMC for some period of time, we anticipate that profits from serving retail customers are very likely to exceed any short-run margin on the provision of porting. Therefore, BT (and other CPs) will be better off retaining retail customers, rather than risk losing them, even if there were a small or time limited wholesale margin arising from the loss of a retail customer (i.e. from the provision of onward routing).

4.73 Since CPs levy porting charges on each other, we consider that porting services have features of a two way access service (such as call termination). When we have recently considered the regulation of wholesale charges for two way access, we considered that a LRIC cost standard was more appropriate, in particular to facilitate effective competition.

4.74 BT and TalkTalk disagreed that porting conveyance services have the characteristics of a two way access service.[76] Although we recognise that the DCP does not retain a retail relationship with the customer that has ported, the provision of porting conveyance is clearly a service which CPs provide to each other and a full service offering is not possible without access from other CPs (i.e. telephony services including the ability to port in from another CP). Moreover, the DCP retains its own customer base (i.e. customers that have not switched and ported away), many of whom are likely to want to call (or have the option to call) customers that have ported away from the DCP. This provides a second 'side' to the market from which to recover costs. Because of these market features, we remain of the view that number portability is more akin to a two-way access service (and a two-sided market) than a one-way access service.

4.75 We recognise, as noted by TalkTalk, that there is an asymmetry in the flows of ported numbers. However, we do not consider that this alone provides a basis for departing

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remedies, June 2014, paragraph 12.181 http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume1.pdf

[75] Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. Volume 2: LLU and WLR charge controls*, June 2014, paragraph 4.87 http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume2.pdf

[76] Virgin Media and Sky agreed that porting conveyance was akin to a two way access service.

from LRIC. Specifically, we do not consider it appropriate to set regulated charges below LRIC with the aim of further promoting competition (i.e. beyond that arising from reducing porting conveyance charges to LRIC). Setting porting charges at SRMC ignores sunk costs and implies that the DCP would provide porting services at a loss in the long-run which we do not consider appropriate. For example, adopting SRMC may generally reduce incentives to invest in regulated services, and may reduce BT's and other DCPs' incentives to invest in the quality of the porting service.

Recovery of common costs

4.76 We recognise, as noted by BT, that under a LRIC cost standard the DCP does not have an option to recover common costs from the OCP or RCP (at either a wholesale or retail level). Instead the DCP would have to recover the contribution to common costs that is currently included in LRIC+ porting charges from either its remaining customers or the customer that has ported out via an exit or contract-termination charge (see also paragraphs 4.77 to 4.80 below). [77] We discuss at paragraphs 7.11 to 7.12 that porting charges are relatively small in the context of retail revenues (and common costs form only a portion of porting charges), therefore we expect any redistribution of common costs if we adopt a LRIC cost standard would have a small impact on the charges of the services from which they are recovered.[78] In the case of BT we have specifically considered the magnitude of common costs it would need to recover from its own customers, if APCCs are set at LRIC rather than LRIC+. We estimate this to be less than [✂] per BT exchange line per year.[79] We consider this will not have a have a material impact on BT's competitive position. We expect the impact to be even smaller for other CPs as they will have a smaller proportion of customers with ported out numbers.

4.77 We have considered whether under a LRIC cost standard the DCP could have some incentives to pass the contribution to common costs to the switching consumer in the final bill - e.g. via an exit or contract-termination charge. If the level of the retail exit charge for porting were high this might discourage some consumers from porting, and in turn switching, which could have a dampening impact on competition.

4.78 However, we understand that retail exit charges for number portability are not currently levied in the mobile sector, despite the fact that DCPs in the mobile sector currently bear the entire non-conveyance costs and half of the (LRIC+) conveyance costs.

4.79 Moreover, we consider that retail exit charges for number portability could dis-incentivise switching which may contravene the requirements of GC18 (dependent on the nature and level of any such charges).

4.80 We consider that the introduction of retail exit charges for number portability is undesirable, and in light of the points above, in practice, unlikely. If a 50:50

[77] That is, a one-off charge levied on the customer when he or she leaves the CP by terminating his or her contract.

[78] Mobile porting conveyance costs are currently split using a 50:50 DCP:RCP charging rule so the present extent of common cost recovery from the RCP is limited.

[79] BT's total conveyance and non-conveyance porting charge revenues (on a LRIC+ basis) were [✂] over Q4 2012 to Q3 2013 which equates to less than [✂] per BT retail exchange line per year (BT had 13.9m business and residential exchange lines in Q3 2013, Source: Ofcom Telecommunications Data Tables Q4 2013). As this includes both common and incremental costs it will overstate the amount of common costs BT would need to recover from its own customers under a LRIC cost standard (i.e. under LRIC BT will continue to recover its incremental costs, it is only common costs that would need to be recovered from other charges).

DCP:RCP charging rule is assumed, this risk from retail exit charges could, in principle, be higher when LRIC is applied – although, again, this would depend on whether exit charges might in any case be precluded under GC18 (dependent on their level and impact on incentives to switch). Other than this, we do not consider that a 50:50 DCP:RCP charging rule would affect our assessment under the effective competition criterion.

Cost excluded under GC18

4.81 BT argued that we should modify GC18 so CPs could recover costs specifically excluded under GC18 such as system set-up costs. System set-up costs are those incurred by the DCP:

a) *"in the course of making network and system modifications, configuration and reconfiguration, including adapting or replacing software;*

b) *in the course of testing functionality within that provider's network and in conjunction with any Recipient Provider's network,*

c) *thereby establishing the technical and administrative capability to provide Portability;"*[80]

4.82 The decision that these porting costs are not recoverable was made by the MMC in 1995 and later incorporated into GC18. The MMC considered that each operator bearing its own system set-up costs would contribute towards an appropriate balance of cost-recovery between BT and other CPs, and would also be the most practicable method of apportionment. The MMC also noted that BT had made it clear that it was prepared to bear these costs itself.[81]

4.83 We agree with the MMC's view and further note that any future set-up costs (such as systems modifications, replacing software etc.) are likely to be undertaken as part of wider upgrade/maintenance programmes so the incremental cost attributable to number portability is likely to be low.

4.84 The second type of porting cost that is not recoverable under GC18 is additional conveyance costs. Additional conveyance costs are those incurred by the DCP associated with resources used in:

a) *"effecting the switch-processing required to set up each ported call; and*

b) *providing the switch and transmission capacity for any part of the duration of each ported call, additional to the costs of conveyance of non-ported calls from the Donor Provider's network to the Recipient Provider's network;"*[82]

4.85 Additional conveyance costs have fallen significantly since number portability was implemented due to the adoption of call drop back.[83] From 1997 (when it was envisaged call drop back would be introduced) the MMC considered that BT should

[80] GC18.11(r), see Consolidated General Conditions.
[81] See http://www.ofcom.org.uk/static/archive/oftel/publications/1995_98/numbering/mmc95.htm paragraph 13.
[82] GC18.11(a), see Consolidated General Conditions.
[83] Call drop back was a technical development that enabled a call to be 'held' at the digital main switching unit (DMSU) while a signalling message is sent to the DLE which establishes whether a number is ported and the appropriate routing path. This avoided the need for the call to incur additional conveyance stages between the DMSU and DLE.

not be allowed to recover additional conveyance costs reflecting the significant external benefits flowing from the introduction of number portability. Instead the costs would be recognised as a cost to be borne by BT Network - one of the then internal BT business units - and recovered by BT Network both from other BT business units and from interconnecting operators through small additions to standard charges for services.[84]

4.86 This is consistent with our current view on external benefits and cost recovery (see paragraphs 6.46 to 6.60) and we consider the MMC's reasoning still stands. In any case, given the likely small size of additional conveyance costs we do not consider that the DCP bearing the cost will result in any material competitive distortion.

4.87 The final type of cost mobile CPs are not allowed to recover under GC18 is ongoing costs relating to maintaining the registration of a ported telephone number or a subscriber who has ported their number to another CP.[85] When mobile number portability was introduced Oftel considered that, "*any ongoing fee for providing portability would be contrary to the principles of effective competition and cost minimisation. An ongoing fee would effectively deter subscribers from using portability. There would, moreover, be little incentive for the donor operator to minimise such costs. Finally, it should be noted that reciprocity and symmetry should ensure that such costs are largely incurred equally amongst all operators.*"[86] Oftel concluded that DCPs should not charge ongoing fees for providing portability. We remain of the view that CPs should not charge ongoing fees relating to the costs of maintaining the registration of a ported telephone number or subscriber.

Conclusion on effective competition

4.88 For the reasons set out above we consider that a LRIC cost standard is most consistent with the criterion of effective competition.

Other stakeholder comments

4.89 BT felt that dynamic efficiency was not directly addressed in the six principles. It felt that LRIC+ was most appropriate under this criterion because investments have to yield revenue which takes into account fixed and common costs.

4.90 TalkTalk also noted that allowing BT to recover its efficiently incurred costs can improve investment, since without an expectation that it can recover costs BT may reduce future investment below an efficient level. However, in arguing for porting charges to be set below LRIC, it considered the impact on incentives to invest to be limited because there is no choice as to 'how much' porting to provide i.e. CPs are mandated by regulation to provide porting. It also considered that BT has no incentives to undertake investments which would reduce the costs of providing porting to other CPs because it can pass porting costs through to its competitors. It noted there were other cases where porting costs are not recoverable in charges such as system set-up costs and additional conveyance costs.

4.91 BT felt that LRIC+ was the most appropriate cost standard to reflect the opportunity cost of onward routing and so is the correct cost standard for fair competition. BT

[84] http://www.ofcom.org.uk/static/archive/oftel/publications/1995_98/numbering/mmc95.htm paragraphs 16 to 22.
[85] GC18.5(c), see Consolidated General Conditions.
[86] Oftel, *Number portability in the mobile telephony market*, July 1997, paragraph 4.23. Available at http://www.ofcom.org.uk/static/archive/oftel/publications/1995_98/numbering/noport.htm

noted that it has to maintain an onward routing capability for over eight million of its ported out numbers. BT is seeking to reduce the size of its TDM network and reuse network elements that are no longer in production to sustain the service while demand persists. It felt the resulting additional conveyance and traffic arising from onward routing could be a barrier to reducing the size of its TDM network. [87]

Our analysis and conclusions

4.92 We have grouped this sub-section by theme.

Incentives to invest

4.93 In relation to BT's comment on dynamic efficiency, we agree that regulation should, in general, provide firms with an opportunity to recover efficiently incurred costs. However, we do not consider that this means LRIC+ is the appropriate cost standard in this case (in consideration of the overall assessment set out above). As noted in paragraph 4.46, while we expect that moving to a LRIC cost standard will result in some redistribution of common costs from porting services to other competitively provided services, we expect the overall impact to be small. Moreover, what matters for incentives to invest is the incremental revenue from the investment decision relative to the forward looking incremental costs of that investment. Provided the provision of porting conveyance is not incrementally loss making and there is an opportunity for the operator to recover its efficiently incurred common costs from its range of other services, we do not consider that incentives to invest in these services will be undermined.

4.94 With respect to TalkTalk's comments, we consider that CPs should be able to recover the incremental costs, including the efficiently incurred sunk costs, of providing the porting service. We do not consider it appropriate to require CPs to provide porting services at a loss. Where costs are not recoverable under GC18 (e.g. system set-up and additional conveyance costs) this forms an explicit part of the terms of GC18 which reflects the MMC's findings (which we note used the six principles in reaching its decision).

4.95 In relation to TalkTalk's second point on incentives to invest in cost reducing activities, we recognise that BT could have limited incentives to invest in reducing the cost of providing number portability because it can recover these costs from its competitors. However, our decisions set out in this guidance about the appropriate cost standard and technology choice should restrict the ability of the DCP to pass inefficiently incurred costs through to its competitors. We also consider (as set at paragraph 4.56 above) that DCPs have wider incentives to minimise costs.

Opportunity costs of onward routing

4.96 We consider that the correct measure of opportunity cost is the cost avoided if onward routing were not provided (in the long-run). This is precisely what LRIC measures. BT's argument that LRIC+ should be used to reflect the opportunity costs of onward routing effectively characterises the provision of onward routing as inefficiently perpetuating the operation of its TDM network. We do not find this argument persuasive, not least since BT plans to continue with TDM voice for some

[87] BT felt that LRIC+ would help CPs take the correct economic decision on introducing direct routing, both to ensure that consumers get the benefits of internet protocol (IP) to IP calls as soon as possible and that investment in legacy technology is minimised. We discuss direct routing in Section 6.

time.[88] In any case, for as long as onward routing remains in place between CPs for the routing of calls to ported numbers, these CPs, including BT, are required to onward route under GC18 irrespective of their choice of network technology. That said, we see no reason why BT would not be able to onward route on an NGN such that it would need to maintain a TDM network in parallel solely to support onward routing.

Conclusion

4.97 For the reasons set out above, we consider that a LRIC cost standard is most consistent with the principles of effective competition, cost minimisation and is likely to be at least as consistent with cost causation as LRIC+. Therefore, our conclusion is that all porting charges (both conveyance and non-conveyance, and those both in the fixed and mobile sectors) should be set using a LRIC cost standard.

[88] Based on BT's response to the 2013 NBMR about its plans for continuing the TDM network (which suggest it is likely to maintain it beyond 2020) before ultimately shutting it down.

Section 5

Choice of technology

Summary

5.1 In this section we discuss how technology choice should be considered for setting porting charges under GC18. The focus of our analysis is on porting conveyance costs.[89]

5.2 In the fixed sector there are currently two distinct technologies in use: TDM and NGN. The choice of technology may affect porting costs by influencing the way CPs route traffic to ported numbers, and the amount of network conveyance used by the DCP to deliver calls to ported numbers. By contrast, differences in technology, and in particular topology (which affects the number of points of interconnection (POI)), are less pronounced in the mobile sector.

5.3 In the March 2014 consultation we considered whether porting charges should be set using an own network technology approach (where each CP sets its charges based on its own network) or a benchmark technology approach.

5.4 In the mobile sector, we proposed that porting charges should continue to be set as currently, that is with reference to a benchmark technology based on the MCT cost model (which was the approach used in the 2014 DCC Review).

5.5 In the fixed sector our preference was to provide guidance to allow CPs to set their own charges (as they do currently) rather than set the APCC ourselves.[90] We recognised that both TDM networks and NGNs may be efficient, consistent with our findings in the 2013 NBMR. In the 2013 NBMR a benchmark NGN cost model was used to set the caps on call termination and call origination. However, we recognised that adopting a benchmark technology approach would cause practical difficulties for a number of CPs in the fixed sector because it would require them to set charges on the basis of a technology and topology they do not use. Therefore, our proposal was that CPs should be allowed to set charges based on the technology and topology actually used. We expected costs to be calculated on a forward looking basis, which in the case of a TDM network would reflect the depreciated nature of the network assets.

5.6 The majority of respondents broadly agreed with our proposals.[91] We note specific stakeholder comments at paragraphs 5.19 to 5.26.

5.7 Having considered stakeholder responses we have decided to adopt the proposals set out in the March 2014 consultation. This means that for:

[89] We have not considered the choice of technology in relation to per number set-up charges. This is because per number set-up costs reflect activities undertaken in order handling systems and differences in these system costs would be difficult to assess due to the large number of possible system configurations. Furthermore, we consider that per number set-up charges are of a lower order of magnitude relative to conveyance charges. For reference, based on data provided by BT, its combined geographic and non-geographic per number set-up revenues were around [✂] over Q4 2012 to Q3 2013, which compares to geographic and non-geographic conveyance revenues of [✂] over the same period.

[90] We discuss stakeholder responses about setting the APCC at paragraph 5.60 to 5.63 and in Section 8.

[91] [✂], BT, Sky, Three, Vodafone, Virgin Media and TalkTalk broadly agreed with our proposals.

- the mobile sector, we will continue to set the DCC with reference to a benchmark technology as defined by the average efficient operator used in the latest MCT cost model; and

- the fixed sector, both NGNs and TDM networks (the latter reflecting depreciated network costs) may be efficient and CPs should be allowed to set charges based on the technology and topology used in their own networks.

5.8 In the rest of this section we:

5.8.1 briefly provide some background and summarise the current situation with respect to the technology used to set porting charges;

5.8.2 describe the options assessed;

5.8.3 summarise our consultation proposals;

5.8.4 set out stakeholder responses; and

5.8.5 set out our analysis and conclusions.

Background and the current situation

5.9 In the mobile sector, in the 2007 Determinations we set an industry wide DCC for mobile CPs based on the costs of an efficient operator carrying donor conveyance traffic using 2G and 3G technologies.[92] Our modelling of costs drew on intermediate outputs from the 2007 MCT cost model. In the 2014 DCC Review we maintained this approach, but used intermediate outputs from the 2011 MCT cost model as the basis for calculating efficient donor conveyance costs. [93]

5.10 In the fixed sector, the current porting charges have not been directly set by Ofcom, although, as in the mobile sector, all CPs have an obligation to set them in a manner consistent with GC18.

5.11 As discussed in Section 2, BT sets the APCCs that it levies on other CPs based on its own network technology and topology. It is also our understanding that the APCCs that BT pays to other CPs are generally based on BT's own charges.

5.12 While non-BT CPs can negotiate bilateral charges between themselves (providing they comply with GC18), we understand that they sometimes reference the BT CPL in their porting agreements. Where the charges are based on BT's CPL, our understanding is that they are based on BT's TDM network (even though the CP may actually use a different technology).

Options

5.13 In the March 2014 consultation the two options we considered in relation to technology choice were:

5.13.1 An own network technology approach: under this option each CP sets charges based on its own network; or

[92] The costs are split between the DCP and RCP using a 50:50 charging rule to derive the DCC.
[93] In the 2014 DCC Review Statement, we explained that we would consider substantive issues of approach in this review of GC18 guidance. See Section 4 of the 2014 DCC Review Statement.

5.13.2 A benchmark technology approach: this is the current situation in the mobile sector where a maximum DCC for all CPs is determined with reference to an average efficient operator as used in setting other regulated charges in that sector (i.e. MTRs).

Consultation proposals

5.14 Following the approach taken in the 2013 NBMR, our March 2014 consultation considered the choice of technology taking account of allocative efficiency, productive efficiency, dynamic efficiency and effective competition.

5.15 When assessing the options against the framework we noted that, in theory, we might prefer a benchmark technology approach. This was because:

5.15.1 it provides stronger incentives to minimise costs (productive efficiency) as the DCP cannot pass on inefficiently incurred costs into charges; and

5.15.2 it performed better under effective competition because CPs with less efficient technologies could not pass higher costs through to their competitors.

5.16 However, we also noted that there are broader commercial and regulatory considerations, in particular wider incentives to minimise costs, which suggested that the potential gains in economic efficiency and effective competition may be limited.[94]

5.17 We considered that in practice, an own network approach would be expected to deliver an efficient outcome where the costs incurred by the CP using its own particular technology are consistent with (or at least no higher than) the network costs calculated using a benchmark technology model.

5.18 In making our proposals we considered the specific circumstances in the fixed and mobile sectors as follows:

5.18.1 In the mobile sector we effectively use the benchmark technology approach in setting DCCs (based on an average efficient operator as used in the MCT cost model). We saw no reason to depart from this approach.

5.18.2 For the fixed sector, we noted that in the 2013 NBMR we concluded that both NGN and TDM networks could be efficient, depending on the particular circumstances of the CP.[95] We also noted that there is a greater range of technologies and topologies in use in the fixed sector in comparison to the mobile sector. We considered that it would cause practical difficulties if we required that fixed CPs set porting charges on the basis of a benchmark technology, because some CPs would have to set their charges based on the costs of a technology and topology which they do not use. Therefore, we considered that it would be reasonable for fixed CPs to charge for porting conveyance based on the costs of the technology and topology of their own network.

[94] See paragraphs 5.17 to 5.19 of the March 2014 consultation.
[95] As we explained in the 2013 NBMR Statement, paragraph A5.63.

Stakeholder responses

5.19 Stakeholders broadly agreed with our proposals.[96] However, a number of respondents made specific comments in relation to our proposals for the fixed sector.

5.20 In relation to our proposals for the fixed sector, BT agreed that prices should reflect forward looking costs. For a TDM network, it argued that if charges reflected the depreciated nature of the network assets, this would generate a low price and reduce the incentive to invest in direct routing. It thought it important to adopt a LRIC+ cost standard to reflect the full opportunity cost to the DCP. We discuss BT's comments on the cost standard in Section 4.

5.21 Sky considered that ideally charges should be based on the modern equivalent asset, i.e. an NGN, but thought that our proposed approach could be justified and proportionate in this case. It thought that if the costs based on an NGN were materially different from the actual TDM network costs then it could be appropriate to adopt an NGN.

5.22 Magrathea was concerned that if BT was able to set APCCs on the basis of its TDM costs then there is potential for the APCC to be comparatively high in relation to FTRs. It also considered that NGN operators with fewer POI with BT would incur higher APCCs than TDM operators with multiple POIs. It considered this would have a distorting effect on competition and penalise new entrant NGN operators. It considered that the overall level of concern would depend on the size of APCCs in relation to the FTR. It suggested that Ofcom should set a benchmark figure for APCCs based on an NGN.

5.23 Vodafone and Virgin Media, while agreeing with our broad approach, considered that greater guidance should be given as to the acceptable level of the APCC. Virgin Media noted that the continuing reliance on BT's network to act as a benchmark placed importance on ensuring that BT's charges are appropriately cost orientated. It noted that BT is a net exporter of numbers and might have a self interest in setting charges as high as was permissible. Vodafone noted that, if an operator has chosen to continue to use TDM technology, it presumably has done so because the cost of using this depreciated equipment is less than the cost of deploying an NGN. Therefore, it followed that the cost of an efficient NGN solution represented an absolute cap on what can be considered to be a reasonably and/or efficiently incurred cost.

5.24 Vodafone also commented that a given technology choice may be most efficient for the generality of services, but inefficient for the narrow service of number portability. In this situation, it thought the RCP should not have to meet the cost of the "inefficiency overhead" due to the use of sub-optimal technology for porting services. Vodafone gave a specific example where usage of TDM technology could mean that the DCP incurs multiple switching stages whereas an equivalent NGN implementation would involve only one call server interaction. Vodafone thought it unreasonable to expect the RCP to meet those multiple-switch costs, and a reasonable APCC should be based on a single call server interaction.

5.25 Laurasia Associates disagreed with our proposals for the fixed sector. It thought that charges should be based on an efficient benchmark technology and did not agree that BT's TDM network was representative of an efficient benchmark. Laurasia Associates commented that, "[it] *does not concur with the assumption that BT's CPL*

[96] [✂], BT, Sky, Three, Vodafone, Virgin Media and TalkTalk broadly agreed with our proposals.

is a representative efficient benchmark for fixed conveyancing charges since BT's core network is still largely TDM-based and such a benchmark would merely propagate the current inefficient and complex conveyance charging framework."[97] It suggested that we adopt an approach in the fixed sector similar to that for the mobile sector (i.e. based on an average efficient operator cost model).

5.26 In relation to the assessment of productive efficiency, in the March 2014 consultation we noted that the threat of regulation (in this case dispute resolution) may provide a further discipline to minimise costs.[98] TalkTalk considered that this would only be the case if we resolve the dispute based on efficient costs (rather than incurred costs). It considered that we had not said that disputes would be resolved on the basis of efficient costs, so the threat of regulation will not create a cost minimisation incentive. It also thought that, even if we were to resolve a dispute based on efficient costs, there would not (absent a punitive fine) be any incentive to voluntarily set charges at the efficient cost level.

Our analysis and conclusions

Assessment for the mobile sector

5.27 No stakeholder objected to our proposed approach to continue with the DCC being set by reference to a benchmark cost model (based on an average efficient operator as used in MCT cost model). Our analysis with respect to the mobile sector remains as set out in the consultation and therefore we have decided to adopt the consultation proposal for the mobile sector. This means the DCC will continue to be set using the average efficient operator consistent with our MCT cost model.

Assessment for the fixed sector

Network technologies in use in the fixed sector

5.28 There are two distinct technologies (TDM and NGN) in use in the UK to provide fixed communications services and fixed CPs use predominantly one or other of these. The choice of technology has a significant influence on the topology for interconnection and call conveyance between competing networks. Moreover, the network technology and topology between competing CPs in the fixed sector differs more markedly than it does in the mobile sector.[99] As a result, and for the further reasons below, the issue of technology choice for porting conveyance for fixed CPs is somewhat more complex than it is for mobile CPs and raises important practical issues.

TDM networks

5.29 Calls on a TDM network are connected via switches (which establish an end-to-end circuit for each call). The number of switches in a TDM network will depend on the scale of the network, in terms of traffic volume, number of customers connected and

[97] Laurasia Associates response to March 2014 consultation, page 5.
[98] March 2014 consultation, paragraph 5.18.
[99] In contrast, in the mobile sector, mobile CPs use 2G and 3G technology to a greater or lesser extent, and the use of 2G and 3G technology does not significantly influence the topology for interconnection and call conveyance between competing networks. We also note that voice over 4G is likely to be available in the near future but we don't anticipate this to affect network topology and interconnection to the same extent as the use of TDM or NGN in the fixed sector would affect topology and interconnection.

geographic coverage of the network. In the case of BT, in order to support the customer and traffic volumes on its network, it has built a tiered TDM network, with local layer switches (i.e. DLEs) and tandem layer switches.

5.30 In order to allow customers of other networks to call BT's customers, other CPs must interconnect to BT's network. They may connect to any of BT's DLEs or tandem exchanges. This means traffic to a particular number may take different routes through the BT network, depending on where it is handed over to BT. Where the call is to a number ported away from BT, the call would need to be onward routed from BT to the RCP. Again, the extent of interconnection between BT and the RCP will determine the routing of the call through BT's network and therefore the cost incurred by such onward routing.

5.31 TDM networks of other CPs may also have a similar hierarchical structure, although the lower volumes (of customers and/or traffic) and smaller geographic footprint may mean that the local exchange and tandem exchange functionality are combined into a single layer.

5.32 Whilst voice services may share some equipment with other services in a TDM network (for example, transmission between locations could be shared) the switches are dedicated to voice services.

NGNs

5.33 NGNs use Internet Protocol (IP) technology. To a much greater extent than for TDM networks, voice and other traffic share the same network elements on an NGN. However, there would still be some voice specific elements (for example, call servers and directory servers that manage the voice service and call routing). To connect to an NGN, the CP operating the network must make available POIs. In an NGN, there is no direct equivalent of the TDM switches to which other CPs could interconnect.

5.34 In the 2013 NBMR, we included 20 POIs in our NGN cost model although we accepted that other numbers could also be reasonable.[100] Because the call server is queried at the point where the call enters the network, the routing across the DCP's network to the POI with the RCP can be determined straight away. That is, the POI and the destination of the call can be determined at this point (i.e. if it is to a ported number and, if so, to which CP the number was ported). This is in contrast to the current approach on a TDM network such as BT's where, for geographic number portability, we understand the call queries the switch that originally hosted the number to determine if it has been ported (see Figure 2.3 in Section 2). [101] [102]

Assessment framework

5.35 In the March 2014 consultation we proposed to assess technology choice using the objectives and framework employed for the discussion of technology choice in the

[100] 2013 NBMR Statement, paragraph A5.73.
[101] Where a TDM network supports non-geographic number portability, the routing of the call (including whether it is ported or not) can be determined through querying a database in the DCP network. Each switch in the DCP network may be able to query the database, depending on the specific network implementation.
[102] In TDM networks operated by CPs other than BT tandem/transit exchanges may not be present, or (as in the case of BT) call drop back may be used within networks to avoid tromboning. Also, a network may determine and add the routing number at a location other than the donor switch (for example using a database query at an interconnect switch).

2013 NBMR. No stakeholders commented on these criteria and therefore we have continued to use them.

5.36 In the 2013 NBMR we assessed technology choice with the following objectives in mind:[103]

- Allocative efficiency – i.e. to ensure that prices reflect forward looking (marginal or incremental) costs;[104]
- Productive efficiency – i.e. to ensure that access providers and access seekers face incentives to minimise costs and to give efficient buy/build signals;
- Dynamic efficiency – i.e. to provide incentives to invest in the most efficient production techniques. Delivering dynamic efficiency in regulated markets typically involves providing an opportunity for firms to recover efficiently incurred costs, although not providing a guarantee of cost recovery – consistent with what would be expected in a competitive market; and
- Effective competition – i.e. to ensure that our intervention promotes competition but does not unnecessarily restrict CPs already operating in regulated markets from competing.

5.37 In the 2013 NBMR, we recognised that often these objectives would be in tension:

- Pricing at forward looking (marginal or incremental) cost, while good for allocative efficiency, would not allow for recovery of sunk costs. Regulating in a way which does not provide an opportunity to recover sunk costs is undesirable for dynamic efficiency, because it undermines incentives to invest in new assets which, once acquired, are themselves sunk.
- Setting prices on the basis of full replacement costs is likely to be good for effective competition (since access seekers face appropriate 'buy/build' signals – i.e. whether to 'buy' access or 'build' their own infrastructure). However, prices based on full replacement costs, may not be good for allocative efficiency (since prices would depart from marginal/incremental costs if the replacement cost of existing sunk assets is included). Moreover, if investment in competing infrastructure is not practicable or commercially viable, prices set on the basis of replacement cost may result in access seekers paying a higher price than the incumbent needs for cost recovery.

5.38 We consider these tensions in the present context later in this section.

5.39 In addition to the criteria above we consider it appropriate to add a criterion of practicability.[105]

5.40 We recognise that rather than using the above framework, the six principles (as used in our assessment of the cost standard and the recovery of porting costs) could in theory be used for the decision on technology choice. However, given the use of the

[103] 2013 NBMR Statement, paragraph A5.40.
[104] Economic theory suggests that prices set at marginal cost lead to allocatively efficient outcomes. However, fixed and common costs are a feature of telecoms services and need to be recovered in some way, although not necessarily from regulated charges (as we explain in Section 4).
[105] We considered practicability in our assessment of technology choice in the March 2014 consultation, see paragraphs 5.28, 5.30 and 5.41.

preceding framework in the recent 2013 NBMR to decide between TDM and NGN cost modelling (which is a specific consideration in the present context) our preference is to be consistent with that framework. In any event, we do not think that an assessment based on the six principles would lead us to a different decision on technology choice.

5.41 In principle, the benchmark technology would typically be based on the modern equivalent asset (MEA) approach which seeks to set prices based on the costs that would be faced by an entrant if the market were contestable. [106] However, as discussed in the 2013 NBMR, there are some difficulties with the MEA approach in this case.[107] These include the fact that the MEA approach involves placing a value on all assets. This means that even sunk assets will be valued on a replacement cost basis, even if they would not be replaced in the foreseeable future, which does not fit well with allocative efficiency; and that differences in the topology of TDM networks and NGNs make an appropriate (like-for-like) comparison of the value of TDM networks and NGNs difficult. In the 2013 NBMR we did not identify either TDM networks or NGNs as the MEA, however, we used a hypothetical NGN as the basis to set regulated charges.[108]

5.42 TDM equipment is no longer available for new build TDM networks and TDM networks are unlikely to be replaced on a like-for-like basis using TDM technology. In light of this, and the significant level of sunk but useable TDM assets, we consider an assessment on a full TDM replacement cost basis is not appropriate. Where a CP uses a TDM network, we consider that assessing the costs of that network on the basis of the depreciated TDM assets is consistent with allowing the recovery of forward looking and actual sunk costs (reflecting past investments).

5.43 Below we assess the two options i.e. an own network technology approach and a benchmark technology approach against each criterion for the fixed sector.

Allocative efficiency

5.44 In the March 2014 consultation we considered that this criterion did not allow us to differentiate significantly between an own network and a benchmark technology approach because under either approach prices should reflect forward looking costs. However, because an own network approach is likely to better reflect the actual resource costs incurred in providing the service, we consider that this would better reflect allocative efficiency than a benchmark technology approach when this differs from the network actually used by the CP in question.

Productive efficiency

5.45 The assessment under this criterion depends on whether the own technology is more or less efficient (i.e. generates lower or higher costs) than the benchmark technology. Where the own technology is less efficient than the benchmark technology we might be concerned that an own network approach does not provide as strong an incentive to minimise costs because the DCP could potentially pass inefficiently incurred costs

[106] This was the approach recommended by the Byatt report; *Accounting for Economic Costs and Changing Prices, A Report to HM Treasury by an Advisory Group,* Volume I, HMSO 1986. Paragraph 57 states: *"In principle, the CCA valuation of the tangible assets to a business is based on what a competitor would be prepared to pay for them in a fully competitive market, ie the cost of an asset of equivalent productive capability – a Modern Equivalent Asset (MEA) – if the asset would be worth replacing or the recoverable amount if it would not be."*

[107] 2013 NBMR Statement, paragraphs A5.47 to A5.48.

[108] 2013 NBMR Statement, paragraph A5.62.

through to other CPs. Where the own technology and the benchmark technology are similarly efficient (or the own technology generates lower costs) this would no longer be a concern.

5.46 Magrathea and Vodafone were concerned that APCCs set on the basis of a TDM network may be higher than charges set on the basis on an NGN. Where a CP has made a commercial decision to continue to use TDM technology (factoring in, on the one hand, the actual cost of operating and maintaining legacy TDM equipment and, on the other, the actual cost of replacement with NGN) we consider that this is likely to be an efficient choice. This is consistent with our analysis in the 2013 NBMR where we compared the cost of an end to end call using an NGN with 20 POI and a depreciated TDM. Our analysis in the 2013 NBMR indicated that the forward looking costs of running a TDM network with a number of assets that are heavily depreciated were low (and for the period up to 2016/17 were likely to lie below the full replacement costs of an NGN).[109] We concluded that both NGN and TDM networks could be efficient, depending on the particular circumstances of the CP.

5.47 Vodafone commented that a given technology choice may be most efficient for the generality of services, but inefficient for the narrow service of number portability. In this situation, it thought the RCP should not have to meet the cost of the "inefficiency overhead" due to the use of sub-optimal technology for porting services. Vodafone noted that usage of TDM technology could mean that the DCP incurs more switching stages than an equivalent NGN.

5.48 We consider that where a technology choice is efficient for the generality of services (including number portability), it is reasonable to use it as the basis for setting cost-based charges for number portability. CPs make choices about the technology that best suits their needs taking into account the range of services and quality they want to offer, the majority of which are offered in markets subject to effective competition.[110] They generally do not make different technology choices for each service and would lose economies of scope if they did so.

5.49 As noted at paragraph 4.56, the infrastructure used to deliver ported calls is in general also used to provide services now subject to effective competition, which would act to incentivise cost minimisation. While some dedicated infrastructure used for porting is not likely to be shared with other activities – e.g. system set-up – some of these costs are not in any case recoverable under GC18.

5.50 In addition, where charges are subject to the threat of regulation (in this case, dispute resolution under GC18), this may provide a further discipline to minimise costs. TalkTalk considered that this would only be the case if we resolve a dispute based on efficient costs (rather than incurred costs). It considered that we have not said that disputes will be resolved on the basis of efficient costs, so the threat of regulation will not create a cost minimisation incentive. TalkTalk also thought that, even if we resolve a dispute based on efficient costs, there would not (absent a punitive fine) be any incentive to set charges voluntarily at the efficient cost level.

[109] Indeed, in the 2013 NBMR Statement we compared the sum of the 2013 NCC model unit costs of origination and termination (based on an NGN) with the sum of the 2009 NCC model estimates for origination, termination and product management, policy and planning (based on a depreciated TDM network). The latter was estimated by extending the forecast period covered by the 2009 NCC model, and adjusting it to reflect the depreciated nature of TDM assets. The results of the exercise are shown in Figure A6.14 of the 2013 NBMR Statement.

[110] The retail fixed voice and broadband markets are effectively competitive, as are a large number of wholesale voice and broadband markets, including all transit voice markets.

5.51 In response to TalkTalk, our view is that where the outcome of a regulatory determination is to set a limit on pricing (either explicitly or because it influences future expectations) it should deliver similar incentive properties to price cap regulation (i.e. the incentive to 'outperform' the charge control by minimising costs). We consider that the threat of regulation (via dispute resolution) would be expected to exert some form of discipline on CPs when setting commercially agreed rates.

5.52 While at the margin a benchmark technology approach may provide slightly stronger incentives to minimise costs, we note the fact that the infrastructure used to deliver ported calls is in general also used to provide services now subject to effective competition. We consider that this latter effect is likely to be the main factor acting to incentivise cost minimisation (rather than a decision to use an own technology or a benchmark technology basis for the setting of porting conveyance charges).

Dynamic efficiency

5.53 In principle, an own network approach could be less likely to encourage investment or innovation (specifically investment in lower cost technology) than a benchmark technology approach, because a CP using a technology less efficient than the benchmark would be able to pass its costs through to its competitors. Conversely, failure to allow CPs to recover sunk investments would, more generally, undermine incentives to invest in technologies which, in the future, will themselves become sunk.

5.54 In practice, the first of these concerns would seem less relevant given our conclusion in the 2013 NBMR (reiterated above) that TDM networks (reflecting depreciated asset values) and NGNs are both likely to yield efficient unit costs for voice services in the period covered by the 2013 NBMR, i.e. at least to the latter half of 2016.

5.55 In respect of the second consideration noted above (i.e. incentives to invest in new technology), we note that migration from TDM to NGN is a major commercial decision, affecting a large number of services. We consider that the recovery of costs associated with porting conveyance, or the charges set by rivals for porting conveyance, are unlikely to significantly shape such decisions. As set out in Section 7, the total size of wholesale porting charges covered under GC18 is small in the context of retail revenues in both the fixed and mobile sectors.[111]

Effective competition

5.56 Under an own network approach, there is a risk that CPs with less efficient technologies could pass higher costs though to their competitors. At the same time, less efficient CPs might benefit from more efficient competitors' lower conveyance costs. This would not arise under a benchmark technology approach applied to all CPs in the sector (fixed or mobile as appropriate).

5.57 However, as noted above, our view is that both TDM networks and NGNs may be efficient technologies depending on the particular circumstances of the CP in question. In light of this, and the broader commercial and regulatory considerations which are likely to drive incentives for cost minimisation (see paragraphs 5.49 to 5.51 above), we consider that in this case there is little difference in the implications for

[111] Fixed porting charges at current levels represent around 0.2% of total industry retail fixed access and call revenues (see paragraph 7.12), while mobile porting charges represent 0.02% of mobile retail revenues (excluding out of bundle data service revenues to facilitate comparison with the revenue comparison made for the fixed sector) (see paragraph 7.11).

effective competition between the benchmark technology and own network technology approaches for the setting of APCCs.

Practicability

5.58 We consider that it would cause practical difficulties if we were to require that CPs set porting charges on the basis of a single benchmark technology because some CPs would have to set their charges based on the costs of a technology and/or topology which they do not use.

5.59 Unlike for mobile CPs, where we have previously set a single DCC for all CPs based on our view that mobile CPs use more technologically and topologically comparable voice networks, in fixed networks, CPs do not use the same technologies and topologies and have, to date, commercially agreed porting charges.[112] The choice of technology largely reflects when the network was built. We explained in the 2013 NBMR that BT, KCOM, Vodafone[113] and Virgin Media built, and continue to use, to a large extent, TDM networks whereas other CPs including TalkTalk and Sky have deployed NGNs. [114]

5.60 As discussed above, BT's network provides national coverage and connects more customers than other networks and this also drives topology differences. These topology differences are reflected in different costs of conveyance for porting traffic between different CPs, because of the way networks connect to BT. BT reflects these topology and interconnection differences in APCCs, which it sets on a CP by CP basis. This means porting charges between fixed CPs vary depending on the specific interconnection points agreed between the OCP, DCP and RCP networks.

5.61 Sky also noted that practicality points to an own network approach. It said, "*Practically the costs of a legacy TDM network can be accurately measured, whereas the costs of a NGN network for CPs such as BT would require estimation. This could introduce estimation error to APCCs calculated based on a hypothetical NGN whereas a more reliable estimate based upon actual TDM costs should provide a similar cost estimate."*[115]

5.62 In light of the points above coupled with our view in the 2013 NBMR that both TDM networks and NGNs may be efficient,[116] and our preference that fixed CPs commercially agree porting charges, we consider that practicability strongly points towards an own technology approach. This approach is also consistent with our regulatory principle to operate with a bias against intervention, but with a willingness to intervene firmly, promptly and effectively where required (see paragraph 3.10).

5.63 Given the above, we do not consider it appropriate (as suggested by Magrathea, Vodafone and Virgin Media) to provide further guidance on the acceptable level of the APCC or set the rate. We consider that our guidance on GC18 provided in this document gives a sufficient basis for fixed CPs to set porting charges in compliance with GC18 using their own network. It is not clear what further guidance we could give short of prescribing the network model to use which, as noted previously, would logically point towards us setting porting charges directly.

[112] As noted in Section 2 (footnote 24), in the one instance where we have resolved a dispute in the fixed sector regarding APCCs, the focus was on the POI that porting charges apply from rather than the porting charges themselves.
[113] Previously Cable & Wireless (for example, under the Mercury Communications brand).
[114] 2013 NBMR Statement, paragraph A5.90.
[115] Sky response to March 2014 consultation, paragraph 3.6.
[116] 2013 NBMR Statement, paragraphs A5.61 and A5.63.

Summary

5.64 On the grounds of allocative efficiency and practicability we consider that the own network approach performs better. In terms of dynamic efficiency there is little to choose between the two approaches. While consideration of productive efficiency and effective competition in isolation might point towards a benchmark technology approach, in practice we do not see there being much difference between the approaches in this case. Specifically, there are commercial pressures which will drive cost minimisation (given the shared nature of the infrastructure in question) and our view is that both NGN and TDM networks are likely to be efficient for the period in question. Therefore, we have decided to adopt an own network technology approach for the fixed sector.

5.65 In light of the above and our regulatory principles of operating with a bias against intervention and seeking the least intrusive regulatory mechanisms to achieve our aims, our preference is that fixed CPs continue to agree bilaterally the porting charges they pay and receive, subject to the requirements of GC18.

Other issues

5.66 BT, in addition to setting charges for when a number is ported from its network, would also need to agree the charges it pays to other CPs when it ports in a number. For geographic APCCs, BT has historically published a rate in its CPL for this purpose (although we note CPs may agree a different rate with BT subject to compliance with GC18). In agreeing the rate that other CPs charge BT (for numbers BT has ported in), our view is that if a CP sets its charge based on BT's network costs, this could meet the CP's obligations under GC18 as its charges would be based on the costs of a network technology that is likely to be efficient.

5.67 To the extent that BT continues to agree and publish these rates in its CPL, we consider that other CPs could also reference this in their own commercial agreements on the basis that it would be reflective of an efficient technology. Laurasia Associates disagreed with this approach. It considered that BT's CPL was not representative of an efficient benchmark because BT's core network is still largely TDM-based and such a benchmark would propagate the current inefficient and complex conveyance charging framework.

5.68 We have set out above why we consider that existing TDM networks (with usable sunk assets in place) can represent an efficient technology in this case. We consider that allowing CPs to reference BT's charges has practical advantages because there are a large number of CPs, some with low volumes of ported-out numbers, and we consider it would result in a significant additional regulatory burden on them to develop porting cost models and negotiate rates based on them with BT and other CPs. We also consider that there is unlikely to be a material impact on competition and consumer outcomes between CPs setting charges using their own cost models or charges derived from BT's network costs.

5.69 In relation to Laurasia Associates' suggestion that the current onward routing system is complex – we note that CPs have not raised complexity as a concern to us. Further, we consider that is the current onward routing arrangements are unlikely to impose avoidable costs on stakeholders given that CPs are familiar with the current set-up and have billing systems to accommodate it. In addition, the alternative advocated by Laurasia Associates (i.e. centralised all call query direct routing) may introduce complexities of its own.

Conclusion

5.70 In the mobile sector, we conclude that porting charges should continue to be set with reference to a benchmark technology model, namely that determined by the average efficient operator as used in the MCT cost model.

5.71 In the fixed sector we recognise that both TDM networks and NGNs may be efficient, and therefore our view is that CPs should be allowed to set charges based on the technology (and topology) of their own network. We would expect the costs to be calculated on a forward looking basis, which in the case of a TDM network would reflect the depreciated nature of the network assets. Our consideration of the fixed sector technology choice in this guidance has drawn on the analysis and conclusions from the 2013 NBMR. Therefore, it may be appropriate for us to review this in light of our conclusions in future narrowband market reviews.

5.72 We also consider that it would be consistent with GC18 for charges that BT pays to other CPs to be calculated by reference to charges derived from the costs of using BT's network. Further, we consider that it would be practicable and consistent with GC18 if CPs reference these rates for setting charges to CPs other than BT.

Section 6

Recovery of porting costs

Summary

6.1 In Sections 4 and 5 we considered the appropriate cost standard and the choice of technology that CPs should use to set their porting charges under GC18. In this section we consider the recovery of porting costs that are incurred by the DCP.[117] [118]

6.2 In the March 2014 consultation we considered four options for a charging rule: OCP pays, DCP pays, RCP pays or an equal split of costs between the DCP and the RCP. Before assessing the options, we considered whether the current system of onward routing should be taken as a given, or whether the OCP should be viewed as having a choice as to whether to onward route or directly route a call to a ported number.[119] We decided to assess the options on the basis that onward routing is maintained. We assessed the options using the six principles (see paragraph 4.16) and proposed an RCP pays rule for both fixed and mobile porting charges.

6.3 Seven stakeholders agreed with our consultation proposals on the assumption that onward routing is maintained.[120] However, a number of stakeholders commented on this assumption. Some stakeholders thought that we ought to provide additional incentives for OCPs to direct route as, they claimed, this is more efficient. One way to achieve this, in their view, would be to adopt an OCP pays rule (in conjunction with provision of information on ported numbers). In light of these comments we have divided our assessment into two parts. In the first part we assess the options on the basis that onward routing is maintained. In the second part we examine arguments put forward by some stakeholders that: (i) there are benefits from direct routing of calls, at least in some circumstances; and (ii) our consultation proposals would not provide the right incentives to achieve these benefits.

6.4 In summary, having taken into account responses to the March 2014 consultation, we conclude that allowing the DCP to charge the RCP for all porting costs that are recoverable under GC18 (see paragraph 6.6) is appropriate. Whilst our assessment is based on the onward routing approach, an RCP pays approach will not, in our view, dis-incentivise the implementation of direct routing where this is efficient. We do not perceive there generally to be any materially significant regulatory barriers to CPs implementing direct routing should they wish to do so. We consider that CPs are well placed to discuss and agree how best to achieve the provision of information on ported numbers in the first instance (for example, via the existing industry porting groups) as long as this complies with other legal obligations, such as competition law governing agreements and the exchange of information between competitors. Should these discussions reveal barriers to achieving an efficient outcome, we will consider whether further regulatory intervention would be appropriate at that time.

[117] In the case of subsequent ports the per number set-up costs may be incurred and charged by the losing RCP.
[118] Currently, in the fixed sector the porting costs incurred by the DCP are recovered in full from the RCP. In the mobile sector the porting conveyance costs incurred by the DCP are split equally (50:50) between the DCP and RCP while non-conveyance costs are currently borne by the DCP as they do not charge for these services.
[119] Descriptions of onward and direct routing are provided at paragraphs 2.5 to 2.8.
[120] EE, ITSPA, Three, [✂], Vodafone, Magrathea and Sky.

6.5 In this section we:

6.5.1 briefly summarise the current situation with respect to the recovery of porting costs in the fixed and mobile sectors;

6.5.2 describe the options for charging rules;

6.5.3 explain the assessment criteria;

6.5.4 assess the options on the basis that onward routing is maintained;

6.5.5 discuss stakeholder comments on direct routing and set out our response; and

6.5.6 present our conclusions.

Current situation

6.6 GC18 explicitly prohibits the DCP from recovering certain porting costs through porting charges. In particular, GC18.5(b) and (c) prohibit DCPs from charging in relation to system set-up costs, additional conveyance costs and (in the case of mobile CPs) fees for ongoing costs relating to the registration of ported numbers. This means the DCP has to bear these costs in full. In relation to porting costs that are recoverable under GC18, the cost recovery differs across the fixed and mobile sectors:

- in the fixed sector the porting costs[121] incurred by the DCP are recovered in full from the RCP; and
- in the mobile sector the porting conveyance costs incurred by the DCP are split equally (50:50) between the DCP and RCP while non-conveyance costs are currently borne by the DCP as they do not charge for these services.

6.7 In addition, porting costs are recovered within each sector – i.e. fixed callers do not contribute to mobile porting costs and vice versa.

Options for charging rules

6.8 In the March 2014 consultation we identified four charging rule options as to which CP(s), and ultimately consumers, should bear the porting costs which are recoverable under GC18:

- Option 1 - OCP pays (i.e. the DCP's porting costs are entirely recovered from the OCP);
- Option 2 - DCP pays (i.e. the DCP bears its porting costs in full);
- Option 3 - RCP pays (i.e. the DCP's porting costs are entirely recovered from the RCP); and
- Option 4 - a 50:50 charging rule splitting the DCP's costs equally between the DCP and the RCP.[122]

[121] By which we mean porting conveyance costs, and non-conveyance costs (where charged).

6.9 BT, TalkTalk and Laurasia Associates suggested an alternative charging rule where the porting costs are split between the OCP and RCP. More specifically:

- BT suggested that the OCP should pay the porting conveyance costs but that the RCP should continue to pay the non-conveyance costs;
- TalkTalk suggested that the OCP should pay at least 50% of the porting conveyance costs; and
- Laurasia Associates suggested that porting conveyance costs are split 50:50 between the OCP and RCP.

6.10 We have not considered as a separate option a charging rule that splits costs between the OCP and RCP. However, we address arguments put forward by stakeholders for such a charging rule in our assessment below. We also discuss this option in the direct routing section.

Assessment criteria

Consultation proposals

6.11 We considered that the six principles were the appropriate assessment criteria in this case. We proposed that the cost causation, distribution of benefits, effective competition and practicability criteria were the most important in this case. While cost minimisation is relevant, we considered it less important than the other criteria in the present context. We considered that the principle of reciprocity was not determinative because reciprocal charging can be implemented under all the options considered.

Stakeholder responses

6.12 Laurasia Associates disagreed that cost minimisation was less important in the assessment of this question – we discuss this point under the cost minimisation heading below.

6.13 BT and TalkTalk made some overarching comments on the six principles which we discussed in Section 4, paragraphs 4.19 to 4.26 and paragraphs 4.89 to 4.95.

Our analysis and conclusions

6.14 No stakeholders suggested that the six principles were unsuitable to address the question of from which party (or parties) porting costs should be recovered. Therefore, we have retained the six principles as the basis for our assessment.

[122] We could envisage other charging rules recovering the costs between the OCP, DCP and RCP in different proportions. However, the four options set out appeared to us to be the most obvious options and, in the interests of proportionality and practicability, we did not include further options in our assessment for the consultation.

Option assessment

Cost causation

Consultation proposals

6.15 In the March 2014 consultation we noted that it was possible to view either the calling party (and in turn the OCP) or the called party (in turn the RCP) as causing the costs of porting conveyance. While this could mean there is a case for the OCP bearing some of the costs, in our view this was not the most satisfactory view of cost causation since the need for onward routing is not determined by the actions of the calling party. Therefore, we considered that this principle pointed to the costs being recovered from the RCP (and hence its customers).

Stakeholder responses

6.16 In the absence of a database to facilitate direct routing (see discussion below), Magrathea agreed that, from a cost causation perspective, the RCP should bear the porting costs.

6.17 EE considered that the DCP should not bear any of the costs of porting conveyance because its customers neither cause the costs to be incurred nor benefit from the conveyance of calls between the OCP and the RCP.

6.18 TalkTalk thought there was a case for the OCP bearing some of the porting conveyance cost. It considered that this would improve allocative efficiency because the OCP (or OCP's customer) causes the porting conveyance costs to be incurred. It noted that if the call was not made by the OCPs' customer then there would not be porting conveyance costs.

6.19 Laurasia Associates believed that a 50:50 split of porting costs between the OCP and RCP was the fairest cost allocation approach as this addressed the cost causation principle.[123]

Our analysis and conclusions

6.20 For this principle we consider separately the costs associated with (i) per number set-up and (ii) porting conveyance. [124]

6.21 As discussed in the March 2014 consultation, per number set-up costs can be thought of as being caused directly by the provision of portability to a particular customer. Therefore, if the recovery of costs was determined solely by reference to the principle of cost causation, the porting customer should pay. This suggests an RCP pays rule is appropriate for per number set-up costs. We note that RCP pays would align to cost causation most closely if the RCP passed on the costs directly to the individual customer that has ported the number.[125]

[123] Laurasia Associates and TalkTalk both considered that an OCP pays rule would encourage OCPs to directly route traffic (avoiding porting conveyance costs). We discuss this under the direct routing sub-heading later in this Section.
[124] As in Section 4, we do not explicitly discuss service maintenance charges. See footnote 65.
[125] However, any CP doing setting porting charges to end customers would need to do so in compliance with the principles set out in GC18.5, which states in part (e) that, "*any direct charges to*

6.22 With respect to porting conveyance costs, there are two possible views as to causality (see also paragraph 4.36):

i) the normal principle of telephony charging is that the caller pays the full cost of the call because they have initiated the call, thus causing the costs to arise. This would point to the OCP pays rule; or

ii) the additional resource costs involved are determined by the RCP customer's decision to port – which causes the need for calls to this customer to be onward routed. This would point to a RCP pays rule.

6.23 Viewed in either of the above two ways, it could be argued that it is either the calling party (and in turn OCP) or the called party (in turn the RCP) that is causing the costs of porting conveyance and not the DCP (and its customers). Therefore, we consider that the DCP pays and 50:50 DCP:RCP charging rules are not supported by the cost causation criterion.

6.24 TalkTalk and Laurasia Associates argued for the OCP bearing some of the costs as the caller initiates the call and triggers the use of network resources to handle the call.[126] However, as explained in Section 4, we do not think this is the most satisfactory view of cost causation since the need for onward routing is not determined by the actions of the calling party. That is, the incremental resource costs arising from a call to a ported number, over and above those arising from a call to a non-ported number, are not caused by the calling party. Rather it is the recipient customer that causes additional porting costs through its prior decision to port.

6.25 On the basis that onward routing is maintained, even if the calling party faced the additional resource costs involved, there is little he or she could do to avoid the porting conveyance costs arising (e.g. by calling the recipient on another number) because they are unlikely to know that the number is ported.

6.26 Therefore, we consider that the principle of cost causation points to the costs being recovered from the RCP (and hence its customers). An RCP pays charging rule is also consistent with our general approach to regulated services whereby the CP providing the regulated service should be able to recover efficiently incurred costs from the CP causing the costs to be incurred by using the service.

6.27 In light of the above, we consider that an RCP pays rule is most consistent with cost causation for both conveyance and per number set-up porting costs.

Cost minimisation

Consultation proposals

6.28 We noted that, in principle, options where the DCP bears at least part of the costs of supplying number portability would provide the greatest incentive to minimise costs. However, because we have already considered the appropriate level of cost recovery in the cost standard and technology choice sections we considered the impact of providing additional incentives to minimise costs in the context of this question was less likely to be material.

Subscribers for providing Number Portability do not act as a disincentive to Subscribers against changing their Communications Provider." See Consolidated General Conditions, GC18.5(e).

[126] BT made a similar point in relation to the discussion of the cost standard which we discuss in Section 4.

6.29 In light of this, we considered that the DCP already faces incentives to minimise costs, irrespective of the decision of who should bear porting costs.

Stakeholder responses

6.30 TalkTalk noted that if the porting conveyance charge is set in excess of SRMC then there was a case based on economic efficiency for the DCP to bear some of the cost.

6.31 Laurasia Associates did not agree that cost minimisation was less important in the assessment of this question. It believed that cost minimisation was a critical principle that should drive the efficient and fair recovery of porting conveyance costs. Without a focus on cost minimisation it felt there was no incentive for the DCP or OCP to invest in efficient routing since their inefficiency will be paid for by their competitors.

6.32 Laurasia Associates considered that, for the mobile sector, moving from a 50:50 DCP:RCP charging rule to a 100% RCP pays charging rule would discourage the DCP from investing to improve the efficiency and quality of mobile traffic routing between the different networks.

Our analysis and conclusions

6.33 TalkTalk considered that if porting conveyance charges are set in excess of SRMC then there is an economic efficiency case for the DCP to bear some of the cost. We have set out in Section 4 why we think LRIC (which is often, but not always, above SRMC) is appropriate and we do not discuss that further here.

6.34 Porting costs reflect actions the DCP undertakes to achieve portability. Therefore, in principle, we agree with TalkTalk that options where the DCP bears all, or part of the costs, would provide the greatest incentive to minimise costs.

6.35 However, as noted in the March 2014 consultation and at paragraph 4.56, in both the mobile and the fixed sectors, the infrastructure used to deliver ported calls is in general also used to provide services now subject to effective competition, which should act as an independent incentive to minimise common costs. While some dedicated infrastructure used for porting is not likely to be shared with other activities – e.g. system set-up – some of these costs are not in any case recoverable under GC18.

6.36 Moreover, we have already considered the appropriate level of cost recovery in the cost standard and technology choice sections, where we concluded that cost recovery should be based on LRIC using an efficient technology.

6.37 Given that our guidelines would limit porting charges to efficiently incurred incremental costs and where much of the infrastructure is shared with competitively provided services, we do not consider that providing additional incentives to minimise costs is necessary.

6.38 We note that, other things equal, the DCP pays and 50:50 DCP:RCP charging rule options would, in principle, provide greater incentives for the DCP to minimise its costs. However, in light of the above considerations, we have concluded that the DCP already faces incentives to minimise costs, irrespective of the decision of who should bear porting costs. As discussed at paragraph 4.54, we consider that not allowing recovery of incremental costs could also have negative consequences for the incentives of the DCP to invest in the provision of porting services (with adverse consequences for the quantity or quality of provision).

6.39 For the reasons set out above, we remain of the view that the cost minimisation principle is less important in this case.

Distribution of benefits

Consultation proposals

6.40 Based on the original cost benefit analyses (CBAs) undertaken for fixed[127] and mobile[128] number portability, we identified three types of benefits from number portability:

i) Type 1: the benefits to customers who retain their telephone number when switching suppliers. These include savings from not having to change number and from switching to lower cost operators;

ii) Type 2: the benefits which accrue to all UK telecommunications customers. These arise from efficiency improvements and price reductions which result from increased competitive pressure due to the availability of number portability;[129] and

iii) Type 3: the other resource savings arising from fewer number changes (fewer misdialled calls, directory enquiry calls, updates to directory information and changes to information stored in customer equipment). These benefits mainly accrue to subscribers calling ported numbers as a result of there being fewer number changes.

6.41 We noted that Type 1 benefits accrue directly to customers that port their numbers and are therefore consistent with an RCP pays charging rule. Type 2 and 3 are indirect benefits of number portability, in that they accrue to customers more generally, and can be thought of as 'externalities'. Based on previous estimates (see paragraph 6.46 below) we considered that Type 2 benefits could still be larger than the two other types of benefit identified.

6.42 We considered whether the presence of externalities might suggest a deviation from a pure RCP pays rule. However, our view was that an RCP pays rule for the costs that are recoverable under GC18 was appropriate because GC18 already involves a degree of cost sharing (as explained in paragraph 6.51 below).

Stakeholder responses

6.43 Vodafone agreed that the principal beneficiary of number portability is the RCP and its customers, and therefore it followed that the RCP should meet the additional conveyance costs associated with providing number portability.

6.44 BT agreed that Type 1 benefits accrue to porting customers. It considered that the one-off porting costs (i.e. per number set-up costs) incurred by the DCP should be borne by the RCP.

[127] The cost benefit analysis of fixed number portability was conducted by National Economic Research Associates (NERA) for Oftel, the results of which are discussed in the MMC Inquiry.
[128] The CBA for the introduction of mobile number portability was conducted by Ovum for Oftel and is available at http://www.ofcom.org.uk/static/archive/oftel/ind_info/numbering/ovum1.htm#3
[129] As discussed in paragraph 6.45 of the March 2014 consultation, we expected the benefits from UK fixed and UK mobile number portability to be largely confined within the UK fixed sector and UK mobile sector, respectively. For example, we would expect mobile number portability to largely affect mobile switching and enhance competition in the mobile sector.

6.45 BT noted that Type 2 benefits accrue to all UK telecommunications customers and are the largest benefit type. BT's view was that porting conveyance costs fall in this category, and the fair and reasonable way for them to be recovered is from the OCP. It noted that the OCP does not currently bear any porting conveyance costs - the DCP bears the costs excluded from recovery under GC18 and in the fixed sector the RCP bears the recoverable costs (while these costs are shared equally with the DCP in the mobile sector). It thought this unreasonable because all consumers enjoy the benefits of number portability and therefore all UK consumers should bear the costs equitably. It considered that OCP pays best met this desirable outcome.

Our analysis and conclusions

6.46 The categories of benefits from number portability (see paragraph 6.40 above) were originally identified and estimated by NERA in its 1993 CBA for the introduction of fixed number portability. NERA's CBA was later considered as part of the 1995 MMC Inquiry into fixed telephone number portability. NERA, on behalf of Oftel, found that the benefits to competition (Type 2) were significantly larger than the two other types of benefit identified.[130] The MMC concluded that, while a precise quantification of the benefits (for fixed number portability) was not possible, the indirect benefits of (fixed) number portability (i.e. Types 2 and 3 above) were significant in relation to the direct benefits (Type 1).[131]

6.47 We recognise that any quantification of the benefits from number portability is likely to be imprecise. Furthermore, we do not think that a quantification of the benefits is necessary or proportionate for the purposes of this guidance on the interpretation of GC18. We have therefore not undertaken such an exercise. However, we consider that the relativity of the benefits identified by NERA may still hold - i.e. the broader competition benefits from portability (that is, Type 2 benefits) could still be the largest. Nevertheless, we note that the NERA CBA was undertaken in 1993 when the competitive landscape was different (for example, BT had a significantly larger market share than today in retail access and voice calls and fixed voice was the dominant telecommunications service, which is no longer the case today).[132] Therefore we need to be cautious in applying the benefits derived by NERA to the current situation.

6.48 Type 1 benefits accrue directly to the porting customer and are therefore consistent with a RCP pays rule. However, as noted above, Type 2 and 3 benefits can be thought of as 'externalities', meaning that benefits accrue to customers other than the customer that decided to port. Because of the presence of such externalities, we have considered whether the distribution of benefits principle suggests that we should deviate from a RCP pays charging rule.

6.49 Such externalities would matter to economic efficiency if certain consumers did not port because their private benefit from doing so was less than the costs they face

[130] NERA estimated the Type 1 benefits at £554m, Type 2 benefits at £1280m and Type 3 benefits at £19m. These are undiscounted benefits for the period 1995/96 to 2004/05, in 1993 prices. Source: MMC Inquiry, Table 7.7 page 105. We note that if these figures were discounted it might affect the relative contribution of the different benefit types, depending on the profile of each benefit type over time.

[131] MMC Inquiry, paragraph 2.155.

[132] Today, fixed internet access, and increasingly pay-TV, account for a significant proportion of consumer expenditure on communications services, with fixed voice usage and revenues falling in absolute and relative terms. See, for example, Ofcom Communications Market Report 2014 figure 5.33 available at http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/cmr14/uk/

from switching and porting, but the total benefits (private and external) were more than the costs of their switching and porting. If external benefits were large this might suggest that the RCP should not bear all the porting costs and that such costs should be shared more widely (either with the DCP, the OCP or both). Type 2 benefits arise due to increased competitive pressure from which most customers are likely to benefit.[133] This might suggest that porting costs should be distributed across all CPs and ultimately consumers.[134] Type 3 benefits instead give rise to resource cost savings for consumers calling ported numbers, which might suggest that the OCPs and ultimately their customers ought to bear a portion of the costs.

6.50 BT thought that it was appropriate to deviate from an RCP pays charging rule for porting conveyance costs. The essence of BT's argument appears to be that, because the largest benefits from number portability (i.e. increased competitive pressure) accrue to all telecommunications customers, it is appropriate that the costs of number portability are spread across the OCP, DCP and RCP. We interpret BT's proposal on an appropriate split of costs as follows:

- the OCP bears the porting conveyance costs;
- the DCP bears the costs not recoverable under GC18; and
- the RCP bears the per number set-up costs.

6.51 We agree with BT that the presence of externalities might suggest a deviation from a pure RCP pays rule (i.e. where the porting customer is required to bear the entire cost of porting). However, we consider the need for an adjustment to porting charges to reflect these externalities is mitigated for two reasons:

i) some porting costs are not recoverable under GC18, for example system set-up costs and additional conveyance costs. These costs are effectively borne by the DCP which means that there is already some cost sharing inherent under GC18; and

ii) currently, in both the fixed and mobile sectors, the porting conveyance (and, for fixed CPs, also per number set-up) charges paid by RCPs are not passed through to only the porting customers, but instead they are recovered from (and therefore shared across) all the RCP's customers.

6.52 While some costs are already shared, we recognise that the current share might not precisely reflect the distribution of benefits arising from the externalities that may exist. Therefore, we have considered whether failure to take further account of externalities is likely to matter.

[133] The distribution of Type 2 benefits may partly depend on other features of the market, including the nature of the switching process. In particular, switching processes which enable CPs to target retention offers to customers looking to switch may mean that the benefits are less widely spread than in the absence of such targeted price discrimination. In the mobile sector, where a customer wants to switch and port their number, they must contact their current CP to get a porting code which provides an opportunity for targeted retention activity. In the fixed sector there is no requirement for a switching customer to contact the current CP (although he or she may choose to do so). If CPs can segment customers based on likely switching behaviour then the benefits from competition may tend to accrue to a greater extent to customers that express an interest in switching and may not be felt as widely by less active customers.

[134] As discussed at paragraph 6.74, we consider it appropriate that mobile and fixed porting costs are contained within the mobile and fixed sectors respectively. This is because the main benefit of number portability is to promote competition within each sector (i.e. mobile and fixed).

6.53 We have estimated the difference in DCC and APCC payments by a number of large fixed and mobile CPs under a RCP pays rule and a 50:50 DCP:RCP charging rule.[135] We note that, given the costs already borne in full by the DCP, a 50:50 DCP:RCP charging rule would lead to the DCP bearing a greater proportion of the overall costs of porting than the RCP.

6.54 Taking each large CP individually, if we compare a 50:50 DCP:RCP charging rule to an RCP pays charging rule the increase in porting conveyance charges (under the RCP pays rule) is at most 0.67% relative to its total retail revenues. [136] [137] If such costs were passed through to retail prices in full and distributed across the whole subscriber base (in line with current practice), the increase in the average bill would amount to £1.71 per year[138] for a fixed customer and £1.24 per year[139] for a mobile customer, based on annual bills of £255[140] and £185,[141] respectively.

6.55 BT suggested a more equitable cost split would be achieved if the OCP bore the porting conveyance costs. It is not clear in what context BT considers this to be a more 'equitable' cost split. Conveyance costs form the largest portion of total porting costs.[142] In the mobile sector per number set-up costs are not currently recovered therefore conveyance costs represent 100% of the porting costs recovered through the DCC.

6.56 While customers of OCPs may gain to some extent from the competition benefits of number portability, we do not consider it efficient (or in BT's words 'equitable') that the OCP (and ultimately the calling customer) is required to bear all, or even the significant majority of, porting costs. It might be appropriate under the distribution of

[135] To estimate mobile DCC payments we took onward routed minutes which attract a DCC from Q4 2012 to Q3 2013 (based on information provided by EE, Vodafone, Telefonica and Three) multiplied by the current DCC (0.028ppm). This provides an estimate of the overall DCC payments under the current 50:50 DCP:RCP charging rule. Under a RCP pays rule these payments would be doubled. For fixed CPs we took the actual geographic and non-geographic APCC payments by the 5 largest fixed CPs that also provide data for Ofcom Telecommunications Market Data Tables (BT, Vodafone, Virgin Media, TalkTalk and Sky) over Q4 2012 to Q3 2013 under the current RCP pays rule. Under a 50:50 DCP:RCP charging rule these payments would be halved.

[136] This analysis looks at each CP individually. In Section 7 we present aggregated porting charges in the context of aggregated retail revenues.

[137] For each CP we took the difference in porting charges under a 50:50 DCP:RCP and a RCP pays charging rule and divided it by the total retail revenues for that CP. For fixed CPs retail revenues include access and calls revenues for residential and business customers (excluding fixed broadband revenues). For mobile CPs retail revenues includes access, bundled services, calls and SMS revenues (but excludes out of bundle data services revenues) for subscribers. This excludes broadband revenues for the fixed sector and out of bundle data services for the mobile sector and thus is a conservative estimate of the average customer bill.

[138] i.e. 0.67% x £255

[139] i.e. 0.67% x £185

[140] This is the average retail revenue per exchange line for fixed access and calls across residential and business customers (excluding fixed broadband revenues). Our estimate was calculated as total retail access and calls revenues for residential and business customers over Q4 2012 to Q3 2013 (£8,457m) divided by total residential and business exchange lines at Q3 2013 (33.2m). Source: Ofcom Telecommunications Market Data Tables Q4 2013 available at http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/tables/

[141] This is the average annual retail revenue per mobile subscriber (source: Ofcom Telecommunications Market Data Tables Q4 2013, page 19 table 4). The average monthly retail revenue for Q3 2013 (£15.39) is multiplied by 12 to provide an annual figure.

[142] Based on the information received from fixed CPs in response to our October 2013 s135 request, porting conveyance represents the vast majority of porting costs recovered. We consider that porting costs not recoverable under GC18 are likely to be small – see paragraphs 4.81 to 4.87.

benefits principle for the OCP to bear some of the porting costs, but other parties also benefit from number portability – indeed, we consider that the customers of the RCP are likely to be significant beneficiaries.

6.57 In summary, under an RCP pays charging rule, cost recovery is already spread beyond the individual customer who has ported, which is consistent with recognising the presence of the external benefits created by a customer's decision to port. An RCP pays charging rule might not precisely reflect the relative balance of benefits between different parties, but we consider that attempting to more precisely assess the distribution of benefits to determine a cost sharing arrangement is unlikely to generate sufficiently accurate estimates on which to base a regulatory decision.

6.58 Considering the costs associated with providing number portability in the round (including those not recoverable under GC18), coupled with the current spreading of costs across the RCP's customer base, we think that an RCP pays charging rule is consistent with the likely distribution of benefits because there is inherently already a degree of cost sharing.

6.59 We recognise that as OCP customers benefit to some degree from number portability it may be appropriate for the OCP to bear some, but not all of the porting costs under the distribution of benefits principle. However, in practice, each OCP is likely to also be an RCP to a greater or lesser extent, and given the current practice of spreading cost recovery across the base of RCP customers, we do not think that reducing or eliminating charges faced by RCPs, with the shortfall made up from OCPs, is likely to lead to a more efficient recovery of the costs of onward routing.

6.60 Finally, we consider that a DCP pays or a 50:50 DCP:RCP charging rule is unlikely to be consistent with the distribution of benefits principle because, after taking account of non-recoverable porting costs, the DCP would end up bearing the majority of the porting costs.

Effective competition

Consultation proposals

6.61 In the March 2014 consultation we reached the preliminary conclusion that the DCP pays and 50:50 DCP:RCP charging rules did not perform as well as the RCP pays rule in terms of effective competition.

Stakeholder responses

6.62 Laurasia Associates noted that moving from the current 50:50 DCP:RCP charging rule to a 100% RCP pays charging rule in the mobile sector was unlikely to have a significant impact on retail pricing or competition. However, it thought that this change would unfairly penalise entrant mobile CPs who use number portability to grow their market share, and would also discourage DCPs from investing to improve the efficiency and quality of traffic routing between mobile networks.

Our analysis and conclusions

6.63 As noted in the March 2014 consultation, we recognise that if the RCP bore none or only a small proportion of the porting costs, it might be encouraged to compete more vigorously for customers (resulting in general benefits of enhanced competition). If the DCP has to bear a portion of the costs it might also have incentives to compete more strongly not to lose customers (because its profitability would be reduced to the

extent it has to bear porting costs for customers it no longer earns revenues from). However, we have already considered the external benefits from competition arising from number portability (i.e. Type 2 benefits) under the distribution of benefits heading above. We do not consider it appropriate to double count these benefits and therefore do not discuss them further here.

6.64 Laurasia Associates thought that moving from the current 50:50 DCP:RCP charging rule to a 100% RCP pays charging rule in the mobile sector would unfairly penalise new mobile entrants. We noted at paragraph 6.54 that, based on the information from large mobile CPs, moving from a 50:50 DCP:RCP charging rule to a RCP pays charging rule has a very small impact in relation to retail revenues. We recognise that the impact might be greater for a small mobile CP with a large proportion of ported in numbers. However, even in this case we consider that the impact is unlikely to be material.[143]

6.65 Where we have imposed regulation for the purpose of encouraging competition, we have generally allowed the provider of the regulated services to recover its efficiently incurred costs. We do not generally set regulated charges below incremental cost (i.e. LRIC) with the aim of further promoting competition. If we required the subsidisation of regulated services in this way (without allowing for the recovery of costs via other regulated services), some of the costs would need to be recovered from the regulated entity's own customers. Whilst this may lead to more customers purchasing services from competing suppliers, it would not necessarily, in the long term, be more effective in promoting efficient entry and competition. This is because it would reduce incentives to invest in the regulated service.

6.66 Laurasia Associates also argued that moving from a 50:50 DCP:RCP charging rule to a 100% RCP pays charging rule in the mobile sector would discourage mobile DCPs from investing to improve the efficiency and quality of mobile traffic routing. We discuss incentives to achieve direct routing below. In relation to incentives to improve efficiency under the current onward routing system, we set out under the cost minimisation heading above that the DCP already faces incentives to reduce porting costs irrespective of the decision of who should bear porting costs. We consider that denying the DCP an opportunity to recover its efficiently incurred incremental costs (as would follow from a DCP pays rule or 50:50 DCP:RCP charging rule coupled with a LRIC cost standard) could reduce its incentive to invest in the capacity or quality of onward routing infrastructure.

6.67 Therefore, for the reasons outlined above, we do not consider it appropriate to reduce the amount of costs the DCP is allowed to recover below an efficient LRIC level. We consider that the DCP pays and 50:50 DCP:RCP charging rules do not perform as well as the RCP rule under the principle of effective competition.

6.68 On balance we consider that OCP pays and RCP pays rules are equally likely to be consistent with effective competition.

[143] For example, ([✂]), adopting an RCP pays charging rule leads to an increase in its porting conveyance charges of [✂] relative to its total retail revenues, when compared to a 50:50 DCP:RCP charging rule.

Practicability

Consultation proposals

6.69 We proposed that the DCP pays, RCP pays and a 50:50 DCP:RCP charging rule were all practicable.

6.70 We noted potential practicability issues with an OCP pays charging rule. We considered that the most likely benefit of number portability is to promote competition within each sector (i.e. mobile and fixed).Therefore, we considered that if we were to adopt an OCP pays approach, porting conveyance charges would only be levied for mobile originated calls to mobile ported numbers, and fixed originated calls to fixed ported numbers. However, with a separation between the fixed and mobile sector, the OCP would have the incentive and opportunity to avoid the charges altogether. This arises because the DCP (which levies the porting charges) may not be able to identify the OCP, particularly if the call is delivered via a transit CP. This means the system could be open to arbitrage - e.g. mobile CPs could send mobile originated traffic to ported mobile numbers via fixed transit to avoid paying conveyance charges. We also noted that internationally originated traffic would raise similar issues.

Stakeholder responses

6.71 Three considered that under the current system of onward routing, requiring the OCP to bear some of the porting conveyance costs would be impractical. It noted that the OCP would have no means to reconcile a DCC invoice from the DCP. Further, where the OCP sends ported calls via transit the DCP would have no reliable means to identify the OCP.

6.72 BT saw no reason to confine cost recovery within the mobile and fixed sectors i.e. the OCP should bear the porting conveyance costs for all calls they originate to both fixed and mobile numbers. It considered that all customers benefit from improved competition and the charges should be cost orientated and reflect the costs incurred in each sector to incentivise the most efficient routing. It considered that porting charges could be billed in the same way as currently, but with the DCP charging the OCP rather than the RCP.

Our analysis and conclusions

6.73 No stakeholders commented on the practicability of the DCP pays, RCP pays or 50:50 DCP:RCP charging rules. We remain of the view that these are all practicable, as follows:

- DCP pays: under this option the DCP does not recover its costs, so simply does not bill any other parties;
- RCP pays: this is the current situation in the fixed sector. In the mobile sector the RCP already pays 50% of the porting conveyance costs, amending this to 100% would be straightforward since it simply involves changing the value of the DCC paid by the RCP; and
- 50:50 DCP:RCP charging rule: this is currently the situation in the mobile sector, the only change in the fixed sector would be changing the APCCs and non-conveyance charges so the DCP only recovers half of the porting costs (which we expect would be straightforward to implement).

6.74 BT suggested that under an OCP pays rule, cost recovery should not be confined within the fixed and mobile sectors and therefore the practical concern about the opportunity for gaming should not arise. BT's reasoning was that all customers benefit from improved competition. We remain of the view that this is not appropriate for the reason set out a paragraph 6.70 - i.e. the main benefit of number portability is to promote competition within each sector (i.e. mobile and fixed). This means that under an OCP pays rule, we would want porting conveyance charges to only be levied for mobile originated calls to mobile ported numbers, and fixed originated calls to fixed ported numbers. We consider that, under these arrangements, the OCP would have the incentive and could have the opportunity to avoid the charges altogether because the DCP (who levies the porting charges) may not be able to identify the OCP, for example, if the call is delivered via a transit CP (as discussed in paragraph 6.70). This may also encourage excessive use of transit, which would be inefficient when the OCP would otherwise find it least cost to route the traffic using its own infrastructure (i.e. not relying on third party transit). Three also noted that the DCP would have no reliable means of identifying the OCP where ported calls are received via transit.

6.75 Stakeholders had mixed views as to whether billing the OCP for porting conveyance charges was practicable. Three considered it would be difficult for the OCP to reconcile a porting conveyance charge bill from the DCP.

6.76 We agree with Three that it would be problematic for the OCP to reconcile the bill from the DCP, particularly if it did not have information on numbers that had been ported from the DCP to each RCP (as it would be unable to determine which of the traffic it had sent to the DCP had been, in fact, to ported numbers).

6.77 In relation to the points made by BT, we accept that it is likely to be possible for DCPs to bill OCPs; at least if the charging rule were a blanket charge on all OCPs and not confined to mobile CPs paying the DCC and fixed CPs paying the APCC. However, we do not consider that the existence of current billing arrangements would address the issues around inefficient arbitrage. This is because whereas existing payments (such as termination rates) are paid for all traffic, we consider that any OCP pays rules should confine porting charges to the sector in question (i.e. DCCs for mobile originated traffic and APCCs for fixed origination traffic). Moreover, because the DCP does not currently bill the OCP for porting charges, an OCP pays rule could incur implementation costs not required (or already incurred) compared to charging rules where the RCP is billed.

6.78 In light of the above, we conclude that DCP, RCP, and 50:50 DCP:RCP charging rules would be practicable, but the OCP pays option is likely to involve practical difficulties if it were to be implemented satisfactorily.

Other stakeholder comments

6.79 Virgin Media considered that the discussion of the six principles was more nuanced than we suggested in the March 2014 consultation. It suggested that the application of the six principles did not lead to either the RCP pays or the 50:50 DCP:RCP charging rule being clearly favoured over the other. For example, it believed that cost minimisation, distribution of benefits and effective competition criteria point towards a shared position (i.e. not exclusively an RCP pays position). In light of this it suggested that we should retain the status quo, which for the mobile sector would mean a 50:50 DCP:RCP charging rule. In arguing for the status quo to be retained it noted our general regulatory principles which include operating with a bias against

intervention and seeking the least intrusive regulatory mechanisms to achieve our policy objectives.

6.80 Virgin Media thought that the key drivers of this Review were the questions of cost standard and technology choice, and it considered that the recovery of costs between CPs was less of a concern to industry. In light of this, it thought that there was less of a case to intervene in relation to the recovery of costs where it could not see clear benefits. Virgin Media considered that porting charges apply in a sector specific way and the competitive benefits of switching are largely confined within the relevant sector (fixed or mobile). It felt that alignment between the fixed and mobile sectors was neither necessary nor efficient.

6.81 BT thought that adopting an OCP pays charging rule would allow a wider choice of transit with different solutions co-existing. It thought this would encompass the requirements of both entrants and incoming international traffic.

6.82 BT thought that porting charges should be levied on the RCP when the OCP and DCP are the same CP (i.e. the call is on-net – see paragraph 2.11) because the RCP causes onward routing costs to be incurred in the same way as for off-net calls. It thought that it would only be appropriate for the DCP as an originator of the calls to bear the cost under an OCP pays option.

Our analysis and conclusions

6.83 We disagree with Virgin Media that the assessment against the six principles leads to RCP pays and a 50:50 DCP:RCP charging rule being equally favoured. We have explained in the assessment above why we favour an RCP pays charging rule. In relation to the principles which Virgin Media suggested for costs being shared between the DCP and RCP our response is as follows:

- cost minimisation – we recognise that a 50:50 DCP:RCP charging rule may provide greater incentives to minimise costs. However, for the reasons set out at paragraph 6.35 to 6.39 above we consider that the cost minimisation principle is less important in this case;

- distribution of benefits - we consider that there is already a degree of cost sharing between the DCP and RCP because some porting costs are not recoverable under GC18 (see paragraph 6.51); and

- effective competition – we consider it appropriate for the DCP to be able to recover its efficiently incurred costs in providing number portability which is achieved under an RCP pays charging rule, whereas a 50:50 DCP:RCP charging rule in conjunction with a LRIC cost standard would require the provision of porting conveyance at a loss (see paragraphs 6.65 to 6.67).

6.84 For these reasons (and those set out in the rest of this section) we consider that an RCP pays rule is appropriate for both the mobile and fixed sectors.

6.85 In response to BT's comment that an OCP pays charging rule would allow a wider choice of transit which would meet the needs of entrants and international traffic, we note that this may be possible if an OCP pays rule leads to direct routing (provided this is efficient) and such a move to direct routing would not otherwise happen. However, as we discuss below, we do not consider that a RCP pays rule acts as an impediment to efficient direct routing in any material way.

6.86 We do not agree with BT that porting charges should be levied for on-net calls (i.e. when the OCP and DCP are the same). For calls to non-ported numbers, the OCP recovers the costs it incurs via the charges to its own retail customers. To the extent that additional conveyance costs are incurred in routing calls to ported numbers, these are not recoverable under GC18.[144] By having to bear these additional conveyance costs, the DCP is incentivised to seek to route calls to ported numbers from its customers as efficiently as possible.

6.87 Where amending billing systems to exclude on-net calls is not practicable (or not sufficiently low cost) so that porting charges are applied to all calls to ported numbers, we consider that porting charges should be adjusted (i.e. reduced) to recover only the costs associated with genuinely onward routed traffic (i.e. when the DCP is not the OCP). This is the current approach for both mobile and fixed porting conveyance charges and we see no reason to depart from it.

Conclusion on the charging rule

6.88 We consider that the cost causation criterion points towards an RCP pays rule. Whilst some stakeholders argued that the OCP causes the costs to be incurred, we do not consider that this is an appropriate characterisation given that we are concerned with the cost caused in addition to calls to non-ported numbers.

6.89 The distribution of benefits principle suggests that the benefits from portability are, to some extent, felt by all consumers which might suggest that the RCP should not bear all of the recoverable costs. However, in practice there is already a degree of cost sharing because the recovery of certain costs is excluded under GC18, and the RCP already spreads the porting costs it incurs across its retail subscriber base. Our decision to adopt a LRIC cost standard means the DCP will bear common costs associated with providing number portability and, in addition, already bears the costs excluded under GC18. In light of this we do not consider it appropriate to also recover other costs from the DCP. Recovery of some costs from the OCP may be consistent with the principle of distribution of benefits, but is unlikely to contribute to a more efficient recovery of the costs of onward routing (given the difficulties in estimating the distribution of benefits, the existing practice by RCPs of spreading costs across their customer base and because each RCP is likely to be an OCP to a greater or lesser extent).

6.90 We concluded earlier that, on balance, both the RCP pays rule and OCP pays rules are likely to be consistent with effective competition.

6.91 Practicability offers little differentiation between the DCP pays, RCP pays and 50:50 DCP:RCP charging rule options, but tends to point away from an OCP pays rule.

6.92 We consider that the cost minimisation criterion is less important in deciding how porting costs should be recovered. While cost minimisation would tend to point towards the DCP bearing at least some of the costs, we consider that there are already likely to be adequate incentives for cost minimisation given the sharing of porting conveyance infrastructure with competitively supplied services and our earlier conclusions on the cost standard and the technology choice.

[144] See Consolidated General Conditions, GC18.5(b)

6.93 Considering the relevant six principles in the round, our view is that an RCP pays rule is most appropriate for the recovery of porting costs in both the fixed and mobile sectors.[145]

6.94 We now go on to consider direct routing, and whether this would alter our conclusion above.

Direct routing

Consultation proposals

6.95 In the March 2014 consultation we noted that our analysis in the 2010 review of routing calls to ported numbers, suggested that regulatory intervention to mandate direct routing in the UK was not appropriate at that time.[146] We considered that the results of that analysis are likely to remain valid today.[147] We also reasoned that moving to an OCP pays charging rule would be highly unlikely – in itself – to lead to substantial direct routing and would just shift the porting costs from the RCP to the OCP.

6.96 We also noted that any expectation that OCP pays might lead to direct routing is based on the assumption that the OCP has stronger incentives to directly route the call than the RCP. We argued that this would not necessarily be the case because if the benefits of direct routing were sufficiently high RCPs could agree bilaterally with OCPs to directly route the call. Given that CPs are likely to be both OCPs and RCPs we considered that such an arrangement could be mutually beneficial as long as benefits were larger than costs.

Stakeholder responses

6.97 Many stakeholders commented on whether there were benefits from direct routing and whether there was a need to provide further incentives for CPs to directly route calls to ported numbers.

6.98 While some stakeholder positions were nuanced, Vodafone, [✂], Three, Magrathea, EE and ITSPA broadly agreed with our proposals in the March 2014 consultation.

6.99 Vodafone argued that direct routing did not require regulatory intervention and that CPs could implement direct routing under the proposed framework. [✂] noted that a debate was needed about the benefits of direct routing, and considered that while an OCP pays rule had some merit, it would be "wholly inappropriate" to use this review as a means to impose it without substantial further work. [✂] saw no reason to incur

[145] As discussed in Section 2 (see paragraph 2.10), costs incurred by a losing RCP (for example, in the case of a subsequent port or a number returning the donor) could be recovered from the gaining provider for the same reasons.

[146] Ofcom's consultation and statement on *Routing calls to ported telephone numbers* is available at http://stakeholders.ofcom.org.uk/consultations/gc18_routing/

[147] We noted that, even if the costs of achieving direct routing are now lower than estimated in the 2010 review of routing calls to ported numbers statement, this does not necessarily mean that it is cost justified for two reasons. First, the net present value (NPV) for achieving direct routing for some call types was strongly negative e.g. the NPV for implementing direct routing for fixed originated calls to fixed ported numbers was -£130m over 7 years so that even a very large decrease in costs would be unlikely to result in a net benefit. Second, we expected the costs of onward routing to have declined in the intervening years as a result of technological improvements. For mobile we noted that the costs of onward conveyance decreased significantly between the 2007 and 2014 Determinations of the DCC.

the significant practical consequences of changing the current RCP pays system. Three considered that direct routing was more efficient for implementing mobile number portability, but in the absence of direct routing it agreed with our proposals. ITSPA considered that a debate on the incentives for direct routing was needed, in particular in light of the shift to NGN. Nevertheless, ITSPA supported our proposals. Similarly, EE supported our proposals but thought a forward looking policy review in the UK should give consideration to whether porting charges could be eliminated with an industry-wide reform to implement direct routing in the future. Magrathea believed that the benefits of a central porting database would outweigh the costs and that we should intervene to achieve this. However, in the absence of such a database, Magrathea agreed with Ofcom that, largely from a cost causation point of view, an RCP pays rule was appropriate.

6.100 Although Virgin Media argued in favour of a 50:50 DCP:RCP charging rule for mobile, it also recognised the incentive for RCPs to negotiate with OCPs to implement direct routing in the event that traffic flows from the OCP were large enough and agreed with our view that an OCP pays approach would not be appropriate.

6.101 A number of stakeholders (BT, TalkTalk, [✂] and Laurasia Associates), however, argued that there are benefits from direct routing and that the framework proposed in the March 2014 consultation would not allow for these benefits to be fully realised. They argued, broadly speaking, in favour of an OCP pays charging rule and publication of up to date information on ported numbers as a way to provide further incentives to achieve direct routing.

6.102 BT argued that the UK is virtually alone in continuing with onward routing and that direct routing is more efficient. BT stated that since Ofcom reviewed the case for direct routing in 2010 there have been significant changes in the industry and the potential for innovation has grown dramatically. It noted more consumers are migrating to cheaper and innovative IP services and IP services are now at the point of becoming available to the mass market. It also argued that onward routing via TDM networks severely restricts the addressable market for new services and could impact on the quality of service for calls between IP networks.

6.103 BT recognised that direct routing could happen under the current charging arrangements, but it considered it will not readily happen based on the available evidence for the following reasons:

- OCPs have no incentive to directly route the calls because RCPs pay porting conveyance charges;
- CPs have some reticence to disclose ported-in numbers (probably because these customers have a higher propensity to switch); and
- some CPs have an interest in causing other CPs (new entrants) to incur costs.[148]

6.104 BT argued that the collective benefit of direct routing is greater than the sum of the benefits of bilateral arrangements for CPs and therefore intervention by Ofcom is required. It also stated that the incremental cost of implementing direct routing is falling. Therefore, BT argued that Ofcom should now incentivise and enable the direct routing of calls by:

[148] BT also argued that reducing porting charges faced by the RCP (as would occur under our proposals) would be likely to lead to the status quo being maintained.

- Moving to an OCP pays option; and

- Mandating the timely publication of all ported numbers with their prefixes.

6.105 BT criticised Ofcom's conclusions that bilateral agreements could be reached under the regime proposed in the March 2014 consultation. It argued that each bilateral agreement would be different depending upon net traffic, growth, direct interconnect points, transit operator arrangements etc. Furthermore, it stated that under the current regime only the OCP could choose to directly route and could, hence, exploit what BT termed "supplier power", a problem which it considered is exacerbated by lack of transparency on ported number destinations.[149] BT also stated that it was not aware of any such bilateral agreements. It considered that agreeing these bilateral deals is costly and time consuming and an agreement would only be likely to be reached when the balance of traffic and power is roughly equal and a simple agreement not to bill each other reduces the implementation costs. Furthermore, there would need to be a large number of bilateral agreements. Lastly it stated that incentives to enter such bilateral agreements would be weaker for new, innovative CPs with a smaller consumer base.

6.106 BT also disagreed with Ofcom's conclusion that the results of the 2010 review of routing calls to ported numbers remained valid today and criticised a number of aspects of the CBA.

6.107 TalkTalk argued along similar lines as BT that the UK onward routing system is outdated and inefficient and that there are strong arguments for some of the costs to be incurred by the OCP as otherwise they would have no incentive to direct route. [150] Therefore TalkTalk considered that in order for direct routing to be implemented more widely Ofcom should provide OCPs with the incentive to review the routing of calls to ported numbers. This would not require a central database, but could be implemented with an agreement for RCPs to publish accurate and timely information on their ported numbers.

6.108 Lastly TalkTalk discussed a number of issues that its approach could raise:

- it argued that its proposed approach would only work if there was an obligation on the RCP to publish information on ported in numbers;

- it considered whether smaller OCPs may be disadvantaged. It said they would not. This is because smaller OCPs normally interconnect with BT at the tandem layer. For calls to ported numbers (from BT to an RCP) under an onward routing approach where the RCP pays the porting charge, the OCP would pay the DLE termination rate and, in addition, the local-tandem conveyance (LTC) charge. Under an OCP pays approach, TalkTalk proposed that the OCP could continue to hand over the traffic as it currently does at the tandem layer (that is, direct routing can be implemented but is not mandatory and OCPs can still route traffic via the DCP). BT would treat this as commercial transit traffic to the terminating operator (the RCP). As such, the OCP would pay the regulated termination rate of the

[149] We understand this to mean that an OCP could have a stronger bargaining position when negotiating with an RCP wanting to switch to direct routing. This, according to BT, would arise because under an RCP pays regime it is the RCP that gains from direct routing, whereas the OCP has no financial gain.

[150] Instead, TalkTalk argued, they have an incentive to route the call to the DLE in BT's network to minimise termination costs, whereas porting conveyance charges would be minimised if the calls were handed over at the tandem layer instead.

RCP (which would, in general, be the same as the BT DLE rate) plus the BT transit charge. The OCP would be better off as long as the cost of transit is less than that of LTC, and TalkTalk assumed the transit charge would be the BT single transit rate;

- in the case of international calls the OCPs' share of the porting conveyance charge could be added to the termination rate; and

- RCPs already bill OCPs for termination, hence, they could add the OCPs' share of the porting conveyance charge to their current billing.

6.109 In order to implement its proposed approach, TalkTalk considered that 50% of the porting conveyance charges should be incurred by the OCP to provide the appropriate incentives, and a case could even be made for this being 100% since if the RCP published details of its ported in numbers, then any porting conveyance costs would be fully caused by the OCP.

6.110 Laurasia Associates, while recognising that the scale of porting conveyance charges are small in the context of overall industry revenues, nevertheless considered that the £17m per year in fixed and mobile porting conveyance charges incurred reflected the cost of the current inefficient onward routing approach. It considered that this might not portray the full impact on onward routing because these charges may not reflect the actual operational and technical challenges posed by onward routing.

6.111 [✂] made similar arguments to BT. It argued for all CPs to publish a list of numbers that have been ported out of their networks and that Ofcom should mandate OCP pays. Laurasia Associates argued that a 50:50 split between OCP and RCP would better reflect cost causation (a point we disagree with for the reasons set out at paragraphs 6.20 to 6.27 above) and also incentivise OCPs to directly route traffic and minimise onward routing costs.

Our analysis and conclusions

6.112 The main arguments put forward in favour of an OCP pays rule and publication of information on ported numbers can be divided into two main strands:

6.112.1 First, there are benefits from direct routing compared to the current onward routing approach. According to this argument, the conclusions reached in the 2010 review of routing calls to ported numbers no longer hold; and

6.112.2 Second, the approach suggested in the March 2014 consultation would not provide sufficient incentives for direct routing to be chosen by OCPs even when this would be efficient.

6.113 We consider these two main arguments separately.

Net benefits from direct routing

6.114 TalkTalk argued that direct routing would be more efficient than onward routing but did not provide evidence that this was the case. BT argued instead that we could not rely on the CBA for the 2010 review of routing calls to ported numbers.

6.115 We accept that in contrast to the 2010 review of routing calls to ported numbers, the approach proposed by BT and TalkTalk would not require setting up a centralised database and its associated costs. Relative to the solution based on a centralised

database, the solution proposed by BT and TalkTalk therefore is likely to be less costly, which on its own would make direct routing comparatively more attractive (although we note that the previous calculations suggested a very strongly negative NPV resulting from the relatively low benefits in addition to the costs of the central database).[151]

6.116 However, it is also true that porting conveyance costs are likely to be much lower than previously estimated thus making direct routing comparatively less attractive. *A priori* it is unclear whether collectively these opposing factors would change the outcome of our 2010 CBA.

6.117 However, in the light of the conclusions we reach below at paragraph 6.131 on the need to provide incentives for direct routing, we do not consider that it is necessary to run a detailed CBA (as we did for the review of routing calls to ported numbers in 2010) to estimate the costs and benefits of direct routing without a centralised database.

Incentives for direct routing

6.118 We now consider in detail the proposal of some stakeholders that we should opt for an OCP pays regime and an obligation for CPs to provide up-to-date information on ported numbers. This, according to these stakeholders, would provide stronger incentives than the current and proposed regime for CPs to implement direct routing, in situations where this was efficient.

6.119 Direct routing may or may not be the most efficient solution for each of the many bilateral ported traffic relationships or routes which could exist between CPs and the cost of implementing direct routing between CPs could vary substantially.

6.120 There are a number of costs of implementing direct routing. These include the costs to the RCP (or DCP) of providing data on ported numbers on a regular basis and the costs to the OCP of gathering this information and implementing it into its network in order to route directly. Interconnection costs could also be relevant. If the OCP already has a direct interconnection agreement with the RCP (i.e. for the conveyance of non-ported traffic), the incremental costs to the OCP of interconnection to route ported traffic directly to the RCP may be low. Costs could be higher if direct routing also required establishing a direct interconnection, or increasing the capacity of existing links. Whilst the use of a transit provider would save the costs of direct interconnection between the OCP and the RCP, there would still be costs of implementing direct routing faced by the OCP, the RCP and the transit provider (in addition to any costs of interconnection between the OCP and the transit provider and between the transit provider and the RCP).

6.121 Direct routing between two CPs would only be efficient where the costs identified in the previous paragraph were lower than the benefits of avoiding onward routing and, hence, cost-based porting charges.

[151] The 2010 CBA showed a negative NPV for the database solution at around -£128m over 7 years and -£138m over 10 years for fixed to fixed traffic while for all calls the NPV was estimated at -£162m over 7 years and -£164m over 10 years. See Ofcom, *Routing Calls to Ported Telephone Numbers - Statement*, April 2010, Table 16, available at http://stakeholders.ofcom.org.uk/binaries/consultations/gc18_routing/statement/statement.pdf

6.122 We consider that an OCP or an RCP pays charging rule is unlikely to change the level of the costs and benefits (from a societal perspective) of direct routing relative to onward routing.

6.123 Currently, in order to implement direct routing on a bilateral basis the RCP (or, alternatively, the DCP[152]) needs to provide information on ported numbers and the OCP needs to decide whether to send traffic directly to the RCP (and incur any costs in order to enable it do so) or continue to route based on the number block via the DCP. Under the current and proposed regime, if direct routing was implemented the RCP would benefit by saving on the porting charges (a cost incurred by the DCP but paid by the RCP) while both the OCP and the RCP would face the implementation costs of direct routing.

6.124 Because costs are incurred and benefits enjoyed by different parties, the OCP and RCP need to agree on how to split the net benefits of direct routing (when there are net benefits). Where the RCP pays the porting conveyance charges, we would expect it to be willing to share (at least some of) the benefit of avoiding these charges with the OCP, if the parties moved to direct routing. Therefore, there are potentially mutual gains from negotiating and reaching an agreement to implement direct routing. Absent such agreement the OCP would have no incentive to introduce direct routing (irrespective of whether it is efficient or not from a society point of view) because it would not gain anything from doing so.

6.125 Therefore, as long as there are no barriers to reaching such agreements (such as the presence of transaction costs that outweigh the net benefits of an agreement to directly route), it would not matter whether the OCP or the RCP pays the porting conveyance charges.[153] However, under the current and proposed regime there are some potential transaction cost which arise from the need of the OCP and the RCP to agree on a number of issues, such as:

- How to share the net benefits for implementing direct routing;
- How to make information on ported numbers available to the OCP; and
- How to agree on implementation of direct routing (for example, agreeing routing plans) between the two CPs.

6.126 First, we consider whether such transaction costs in reaching an agreement are likely to be material. Although we recognise there are likely to be costs involved in negotiations under the current and proposed regime, where OCPs and RCPs already have direct interconnection, we are not aware of any reason to believe that these costs would be particularly material, as the OCP and RCP are likely to be in regular communication on a variety of issues.

6.127 BT noted that there are potentially a large number of bilateral agreements, that such agreements are costly and time consuming to negotiate and will only be agreed when the balance of traffic (or bargaining power) is roughly equal. We agree that there are

[152] We note that while the RCP may often have an incentive to provide the information on ported numbers, the DCP is unlikely to face a similar incentive.

[153] We consider direct routing has similar characteristics to our discussion of incentives to implement direct interconnection in the discussion of which CP should be responsible transit costs in our statement on simplifying non geographic numbers. See Ofcom, *Simplifying Non-geographic numbers – policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges,* 15 April 2013 http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-no/annexes/Part_B_Annex.pdf , paragraphs A23.47 to A23.61.

many potential bilateral agreements, but for a large number of these relationships or routes, direct routing is unlikely to be efficient. For example, when CPs do not directly interconnect already and/or if the payments in porting charges are limited, it is unlikely that direct routing would be efficient. In practice, the number of routes where direct interconnection is already in place for voice traffic in general may be a good indicator of where direct routing may be efficient. Since this will be a subset of each CP's bilateral traffic flows (with the exception of BT which interconnects with every CP), it seems unlikely that in practice there would be a prohibitively large number of direct routing agreements to negotiate.

6.128 Second, we consider whether the OCP pays rule is likely to perform better - i.e. would reduce transaction costs compared to the current and proposed regime.

6.129 While an OCP pays rule would provide the OCP with a stronger incentive to implement direct routing if efficient to do so, this, in itself, would not eliminate all the transaction costs identified above (at paragraph 6.120). In particular, the OCP and RCP will still need to negotiate in order to agree the relevant interconnection arrangements. Moreover, the OCP will need to negotiate with the RCP in order to obtain information on ported numbers unless, as some stakeholders have suggested, an agreement (or obligation) is in place that all CPs publish up-to-date information on ported numbers. However, the compilation, presentation and frequency of access to such information on ported numbers will involve at least some cost.

6.130 Therefore, relative to the current regime, the regime proposed by some stakeholders may reduce the scope of what the two CPs need to agree on (i.e. they would not need to agree how to share some of the net benefits of direct routing) and, hence, to an extent the potential level of transaction costs. However, there will be an additional cost if all CPs need to publish up-to-date information which also needs to be considered.

6.131 Therefore, we conclude that on balance, an RCP pays charging rule is unlikely to act as a material barrier to CPs implementing direct routing between themselves when it is efficient to do so. Indeed, we understand that TalkTalk has recently negotiated direct routing with some other CPs under the current RCP pays model.

Other issues

6.132 BT and TalkTalk also argued that Ofcom should mandate the timely publication of information related to ported numbers. We do not see any regulatory barrier to prevent CPs from publishing information. Further, it would be appropriate for industry to agree the requirements (such as the format and frequency) that such a publication would need to meet in order that OCPs could use the information. We do not currently see a requirement for regulatory intervention and encourage CPs to reach an industry agreement. We note that BT is the largest DCP in relation to fixed number portability and has suggested that it may be appropriate for the DCP to publish data (rather than the RCP). As such, BT is well positioned to participate in establishing information publication in support of direct routing.

6.133 Should CPs pursue such industry agreement in support of direct routing, we recognise that, if implemented, this could lead to the introduction of more dynamic routing arrangements for calls to ported numbers. We would be concerned if such arrangements led to the mis-routing of calls and note that a significant degree of co-ordination may be necessary particularly in relation to subsequent ports (from one RCP to another RCP) and un-ports (porting back to the DCP). We would expect CPs

to ensure that, in developing any direct routing arrangements, the subscriber porting experience is not compromised.

6.134 Should CPs identify barriers to agreement on information sharing, we would consider at that time what further work may be appropriate for us to undertake.

6.135 In relation to BT's comments about new services, we do not consider that, in the absence of direct routing, CPs would face a disincentive to launch new IP-based services.[154] If CPs considered that they would benefit from launching new IP-based services and that these required direct routing, then the CPs would need to put in place direct interconnection agreements with a range of CPs with IP based networks to support all traffic (not just traffic to ported numbers). As such, we consider that our analysis and conclusions reached above would be equally relevant and therefore these CPs would have the appropriate incentives to launch these services.

6.136 TalkTalk argued that its proposal could potentially raise some practical implementation issues but that these could be easily overcome. Although we do not need to conclude on this, we considered that some of the practical issues identified may not be amenable to simple solutions. For example, TalkTalk argued that if the OCP paid some of the porting conveyance costs, these could be added to the termination rate. We take this to mean that the CP that hands the call to the DCP would be treated as being the OCP and it could decide whether to pass this on to CPs that use it as a transit provider (including international operators). This may be appropriate and implementable but raises the same concerns that we noted above paragraph 6.74 in relation to the costs of portability being passed between the fixed and mobile sectors.

6.137 More generally, we consider that the proposal to impose an OCP pays regime along the lines put forward by BT and TalkTalk, could give rise to disruption and other complexities as a result of changing incentives. In particular, we consider that the impacts on interconnection and associated commercial arrangements would require further consideration.

6.138 We do not agree with Laurasia Associates' comment that the mobile and fixed porting conveyance charges do not portray the full impact of onward routing as they do not reflect the actual operational and technical challenges. With the exception of those costs that cannot be recovered by the DCP under GC18, all charges should be reflective of (efficient) costs. We also note that number portability and charges for onward routing have been in place in the UK for about two decades, so our proposals do not involve any implementation or transition costs.

Conclusion on direct routing

6.139 In light of the reasons above, we do not consider that the framework proposed in the March 2014 consultation creates a material impediment to direct routing agreements being struck between CPs when they are mutually beneficial (and thus likely to be efficient for society as a whole).

Overall conclusion

6.140 We have concluded that an RCP pays charging rule is appropriate given the current arrangements whereby calls to ported numbers are onward routed.

[154] We note that no respondents specified the services that they intended to launch, but had not, due to the current onward routing and charging arrangements.

6.141 We do not agree with certain stakeholders that argued that an RCP pays charging rule provides a material impediment to direct routing (when this might be efficient) other than possibly in very few circumstances. Therefore, we do not see a need for us to carry out a more detailed assessment of the merits of direct routing as compared to onward routing, since CPs are free to adopt the approach that is most efficient in their specific circumstances.

6.142 We also note that even if we concluded that it would be appropriate to provide further incentives to encourage direct routing, this does not necessarily mean that it would be optimal to adopt an OCP pays charging rule. This is because even under an OCP pays rule, a proportion of ported traffic is likely to remain onward routed and we concluded above (see paragraphs 6.88 to 6.93) that where onward routing prevails, an RCP pays charging rule is preferred over an OCP pays charging rule.

6.143 To the extent that information on ported numbers may be helpful in reducing any impediment to agreeing direct routing (where efficient), we are of the view that CPs are well placed to discuss and agree how best to achieve the provision of information on ported numbers in the first instance, noting that any such agreements would need to be compliant with other legal obligations, such as competition law governing agreements and the exchange of information between competitors. Should these discussions reveal barriers that may require regulatory intervention we would consider what further work we should undertake at that time. In pursuing approaches which could lead to more dynamic routing arrangements for calls to ported numbers, CPs should ensure that the subscriber porting experience is not compromised.

Section 7

Assessment of the impact of our decisions

7.1 In this section we set out the estimated impact of our decisions on consumers (and citizens), competition and on fixed and mobile CPs. This should be seen as complementary to our broader assessment of the policy options in the remainder of this document.

Consultation proposals

7.2 In the March 2014 consultation we noted that the porting charges under consideration are wholesale charges between CPs and, currently, consumers who port their numbers do not generally face separate retail charges for porting. We did not expect that to change as a result of our proposals.

7.3 We noted the total size of wholesale porting charges covered under GC18 is small in the context of retail revenues in both the fixed and mobile sectors. Given the relatively small size of porting charges (and the fact that these are wholesale charges between CPs) we anticipated that our proposals would have a limited impact on consumers.

7.4 We noted that our proposed changes were expected to have offsetting impacts on the mobile DCC (we expected that moving from LRIC+ to LRIC would reduce the DCC, while moving from a 50:50 DCP:RCP charging rule to a 100% RCP pays rule would increase it). Given the offsetting impacts, and the small size of DCC revenues in the context of retail revenues, we thought that our proposals would have a very small impact in the context of total mobile revenues.

7.5 We expected that our proposals would reduce fixed porting charges across the industry. We noted that this would affect fixed CPs differently depending on whether they are net exporters or importers of numbers. We anticipated that our proposals would have a larger impact on the fixed sector relative to the mobile sector, but we considered that any change would be very small in the context of retail fixed CP revenues.

Stakeholder responses

7.6 BT considered that we should assess the costs and benefits of introducing direct routing. It considered the benefits of direct routing were significantly larger, and its costs lower, than Ofcom suggested. We have discussed these points in Section 6.

7.7 Three, [✂] and Magrathea agreed with our assessment of the impacts. Magrathea noted that the real impact in the fixed sector will not be known until the level of the new APCC is known.

7.8 Laurasia Associates noted that mobile porting charges were significantly lower than fixed porting charges and inferred that this can only be explained by a difference in the level of ported traffic or what it claimed was an excessive level of the APCC. Laurasia Associates thought that we should investigate this apparent disparity. It suggested that we consider a) undertaking a global benchmarking exercise to compare the fixed porting conveyance costs in other countries; and b) explore the

feasibility of encouraging fixed CPs to use existing central routing database facilities to directly route traffic.

Our analysis and conclusions

Impact on consumers and competition

7.9 Porting costs[155] are recovered through wholesale charges between CPs and, generally, CPs do not charge retail customers directly for porting. Therefore, porting costs have so far usually been recovered in the prices paid by all customers of fixed RCPs, and the prices paid by all customers of mobile RCPs and DCPs.

7.10 Nevertheless, number portability is, in our view, important in facilitating switching by enabling subscribers to keep their telephone number(s) when changing CP. As such, consumers may well be more willing to switch if porting exists than if it does not. It is thus, in our view, an important enabler of competition.[156] Since we expect the wholesale charges associated with number portability to reduce, CPs would be expected to earn higher net revenues over the customer lifetime when winning customers that port their number. This might encourage CPs to compete more strongly for customers. We expect that this increased incentive to compete is likely to bring benefits to consumers.

7.11 CPs could decide to reflect any change to their net porting revenues as a result of our proposals in overall retail prices (e.g. line rental/subscription and call charges).[157] We expect the impact of our proposed level for the DCC on mobile CPs to be very small and thus would not anticipate any material impact on mobile retail pricing. Mobile porting DCC revenues at current levels represent only around 0.02% of UK mobile retail revenues (excluding out of bundle data service revenues).[158]

7.12 Similarly for the fixed sector we expect the financial impact of our guidance on CPs to be small. For the five fixed CPs that provided information in response to a formal information request in October 2013, in aggregate their current APCC revenues represented only around 0.2% of their aggregate retail fixed access and calls revenues.[159] We expect fixed porting charges to fall, which will have a negative impact on net exporters of numbers, the biggest of which is BT. It is possible that BT might seek to recover this loss in wholesale revenues from other (non-regulated) services – including from its retail customers. However, we consider that even if BT were to do this, any impact on headline line rental/call prices would be very small,

[155] Here we refer to porting costs that are recoverable under GC18.
[156] Based on the information we gathered from the largest fixed and mobile CPs 11.0m mobile and 11.5m fixed numbers have been ported since number portability was introduced.
[157] As noted at paragraph 7.2, consumers do not generally currently face separate retail charges for portability and we do not expect this to change.
[158] This represents estimated porting conveyance revenues based on onward routed minutes which attract a DCC for the four large mobile CPs (Telefonica, Vodafone, EE and H3G) over Q4 2012 to Q3 2013 multiplied by the DCC published in 2014 Review Statement (estimated porting conveyance revenues equals £3.0m), divided total retail revenues generated by mobile telephony (excluding out of bundle data services) over Q4 2012 to Q3 2013 (£13.0bn, Source Ofcom Telecommunications Market Data Tables Q4 2013). The four large mobile CPs we have gathered onward routed minutes from correspond to the mobile network operators in the Ofcom Telecommunications Market Data Tables.)
[159] This represents geographic and non-geographic porting conveyance revenues received by five large CPs that also provide data for Ofcom Telecommunications Market Data Tables (BT, Vodafone, TalkTalk, Sky and Virgin Media) over Q4 2012 to Q3 2013 (£14.2m, Source October 2013 s135 information) divided by total retail access and call revenues for residential and business customers for the same CPs over Q4 2012 to Q3 2013 (£6.9bn, Source Ofcom/Operator data).

perhaps even imperceptible, because its porting revenues are very small in relation to its retail revenues.[160]

7.13 Therefore, overall, we consider that our guidance (in relation to charges other than the DCC) and our proposals on the DCC are likely to have a positive, although small, impact on competition and consumers.

Impact of our decisions on DCC revenues

7.14 Figure 7.1 summarises the impact on mobile CPs as a result of our decisions.

Figure 7.1: Impact on the DCC as a result of our decisions

	Decision	Impact
Cost standard	LRIC.	The cost standard is currently LRIC+, so moving to LRIC will reduce the DCC (all else equal).
Technology	Average efficient operator.	No change – except when the technology choice in the MCT cost model is revised as part of the MCT review.
Recovery of porting costs	100% RCP.	The costs of porting conveyance are currently split according to a 50:50 DCP:RCP charging rule. Our decision that the RCP bears 100% of porting costs will increase the DCC (all else equal).

7.15 The current DCC (based on a LRIC+ cost standard and a 50:50 DCP:RCP charging rule) is 0.028ppm. Our current estimate for the DCC consistent with this guidance (i.e. LRIC and 100% RCP pays) is slightly lower at 0.024ppm in 2015/16. We estimate that total DCC revenues for the four large mobile CPs are currently around £3.0m per year.[161] Based on the proposed DCC of 0.024ppm this will reduce to £2.6m per year.[162]

7.16 The small reduction to the DCC under this guidance does not change the DCC revenues as a proportion of total retail revenues generated by mobile telephony when reported to the nearest 1/100th of a percent (i.e. remains at 0.02%).

Impact of our decisions on APCCs and fixed sector revenues

7.17 Figure 7.2 summarises the impact on fixed CPs as a result of our decisions.

[160] BT's porting conveyance and non-conveyance revenues for geographic and non-geographic numbers were [✂] over Q4 2012 to Q3 2013, which compares to its total retail access and call revenues over Q4 2012 to Q3 2013 of £3,896m across residential and business services (Source: Ofcom Telecommunications Market Data Tables Q4 2013). Therefore porting conveyance revenues were only [✂] of retail revenues and any effect from our proposals would be less than this because BT (like other DCPs) would still be permitted to charge for (efficiently incurred) porting conveyance and non-conveyance costs, albeit without a contribution to common costs.

[161] To estimate current DCC revenues we took onward routed minutes which attract a DCC from Q4 2012 to Q3 2013 (based on information provided by the large mobile CPs) multiplied by the current DCC (0.028ppm).

[162] To estimate revised DCC revenues we took onward routed minutes which attract a DCC from Q4 2012 to Q3 2013 (based on information provided by the large mobile CPs) multiplied by the estimated DCC (0.024ppm).

Figure 7.2: Impact on APCCs as a result of our decisions

	Decision	Impact
Cost standard	LRIC.	When last regulated, the services that are inputs to BT's porting charges included a mark-up for common costs (i.e. LRIC+). Moving to LRIC will reduce porting charges (both conveyance and non-conveyance), all else equal.
Technology	TDM or NGN. However, for TDM CPs we consider that cost recovery should reflect the forward-looking and depreciated costs of the TDM network.	Our understanding is that most CPs set APCCs based on BT's network costs (with a number of CPs referencing BT's charges). For a TDM network operator (such as BT) our decision is likely to reduce APCCs (to the extent that current APCCs reflect historic or full TDM replacement costs, rather than forward-looking and depreciated network costs). We expect that any reduction in BT's APCCs would also affect CPs that base their APCCs on BT's charges. For any CPs that do not reference BT's charges when setting APCCs, the impact of our decision would depend on the extent to which their charges currently reflect the costs of an efficient network.
Recovery of porting costs	100% RCP.	No change.

7.18 Although we expect our decisions are likely to have a larger impact on the fixed sector relative to the mobile sector, we still consider that any change would be very small in the context of fixed CP retail revenues.[163] Given the sums involved, we do not expect the changes to the flow of funds between CPs to be significant.

7.19 We recognise, as noted by Laurasia Associates, that the current level of porting conveyance revenues differs in the fixed and mobile sectors. This reflects both the larger number of onward routed minutes terminating on fixed numbers[164] and the fact that the current APCCs are generally larger than the current DCC. Given that onward routing on mobile and fixed networks uses different network technologies and topologies we would not necessarily expect the cost of providing porting conveyance to be the same across the sectors.

[163] The five fixed CPs (see footnote 159) that provided information in response to the October 2013 s135 information request received, in total, £14.2m in geographic and non-geographic APCC revenues over the period between Q4 2012 and Q3 2013. As noted in paragraph 7.12, the total APCC revenues received represent only 0.2% of retail revenues generated by fixed network access and calls by these CPs.

[164] Based on information from the largest fixed and mobile CPs over Q4 2012 to Q3 2013, there were around 21bn onward routed minutes to fixed geographic and non-geographic numbers, compared to around 11bn onward routed minutes to mobile numbers that attract a DCC.

7.20 Finally, we do not consider it necessary to conduct an international benchmarking exercise for the APCC. It is not clear what this would achieve – particularly as the commercial arrangements for the recovery of porting costs, the technology mix and the way number portability is implemented differ between countries.

7.21 Laurasia Associates suggested that we explore the feasibility of encouraging fixed CPs to use existing central routing database facilities to directly route traffic. We are open to CPs pursing direct routing, but do not see a case for regulatory intervention at this time, as explained in Section 6.

Section 8

Conclusions and next steps

8.1 In this section, we conclude on how CPs should set reasonable and cost oriented charges for the provision of portability pursuant to GC18.

8.2 We also set out our considerations on implementation as follows:

8.2.1 we have decided it is appropriate to continue to set a maximum DCC; and

8.2.2 for all other porting charges (including APCCs) we have concluded that guidance is sufficient for CPs to set GC18 compliant charges.

8.3 We also consider other issues raised by stakeholders in response to our March 2014 consultation which were outside the scope of our review of porting cost and charging principles.

Decision to continue to set a maximum DCC

Consultation proposals

8.4 In the 2014 DCC Review, we gave a Direction setting a maximum DCC across the mobile industry on a forward-looking basis. We considered that this was appropriate because we have set a maximum DCC historically, and it had been six years since the last DCC was set by Ofcom. Furthermore, bilateral negotiations to revise the DCC had failed between some parties and disputes had been referred to us, such that we considered it unlikely that DCCs would remain at a suitable rate across the mobile industry going forward without our involvement.

8.5 The 2014 DCC Review did not examine substantive issues such as the appropriate cost standard, technology and recovery of porting costs. We noted that these issues would be more appropriately considered as part of this review in which we considered the application of GC18 to porting charges generally (i.e. for both fixed and mobile number portability).

8.6 In our March 2014 consultation we said that we believed that the reasons for issuing a Direction setting a maximum DCC remained relevant. However, the current Direction (which sets a maximum DCC until March 2016) is modelled on a LRIC+ cost standard, using the costs of an average efficient network based on 2G/3G technology and where the recovery of costs is split 50:50 between the DCP and the RCP.

8.7 We therefore proposed that, if we proceeded with the proposals set out in the March 2014 consultation, we would need to consider whether it was necessary to change the 2014 DCC Direction to reflect the change in cost standard from LRIC+ to LRIC and the change in the recovery of costs from a 50:50 DCP:RCP charging rule to RCP pays.

Stakeholder responses

8.8 No respondents specifically disagreed with our proposal to continue to set a maximum DCC by means of a Direction. Three was supportive of this and also of our reasoning. Vodafone noted that there are potentially several alternative ways to

arrive at a LRIC DCC and believed that we should derive our own forward looking view in order to eliminate uncertainty. EE said it would not make again arguments it made in its response of 24 January 2014 in relation to our 2014 DCC Review proposals, but, insofar as EE maintained the same arguments, we note that it agreed with the principle that we should seek to determine the maximum DCC rate across the mobile industry on a forward looking basis.

8.9 However, both Three and Vodafone noted that we had not clarified our approach as to how we would review the DCC in the future and that, absent a mechanism for future reviews of the DCC, we would likely be called upon to resolve further disputes.

Our analysis and conclusions

8.10 For the reasons set out above and in light of the responses received, we have decided to continue to set a maximum DCC by means of a Direction.

8.11 Section 9 sets out for consultation our proposals for a new DCC Direction to set a maximum DCC on a forward looking basis. We also address the points raised by Three and Vodafone concerning future DCC reviews in Section 9.

Approach for porting charges other than the DCC

Consultation proposals

8.12 In our March 2014 consultation we explained that we had considered whether it would be appropriate to issue a Direction under GC18.5(a)(ii) to set maximum APCCs as we have previously done for the DCC. We also considered whether it would be appropriate to issue a Direction requiring CPs to set charges in accordance with our conclusions on the cost standard, technology choice and the recovery of porting costs.

8.13 We proposed to provide guidance in respect of APCCs and non-conveyance porting charges. We explained that we would take this guidance as our starting point if we were asked to resolve a complaint or dispute about whether porting charges are reasonable, cost-oriented and based on the incremental costs of providing portability.

Stakeholder responses

8.14 We received different views from respondents on our proposal to publish guidance on setting porting charges (other than the DCC).

8.15 Sky supported our proposal considering it to be both practical and proportionate and encouraged us to publish our final guidance as soon as possible to provide certainty to CPs and enable them to adjust their charges in response. Simwood both welcomed the proposal to publish guidance and urged us to implement our proposals without delay.

8.16 Virgin Media noted that in order for any meaning to be attached to cost-oriented porting charges in GC18, guidance has to be published by us. Virgin Media also considered that we should ensure we remain on-track to deliver the clarity necessary as to cost-oriented porting charges.

8.17 BT, whilst proposing that we adopt a LRIC+ cost standard (see Section 4) and that the OCP should pay porting conveyance charges to facilitate migration to direct

routing (see Section 6), did agree with the publication of guidance on the cost standard to be used for porting charges.

8.18 However, other stakeholders took a different view.

8.19 [✂] said that it would prefer that our proposals were "encoded in GC18" as opposed to being issued as guidance on the grounds that such a light-touch approach might be flouted and that this could harm consumers' rights to port their numbers when switching. In relation to our comment that we had not been asked to resolve disputes about APCCs, [✂] commented that it, and possibly other CPs, would have referred a dispute to us on APCCs had we not consulted on porting charges. More generally there have been several disputes around number portability and on-going commercial issues between BT and other CPs in relation to geographic and non-geographic porting charges.

8.20 Vodafone argued that we should publish guidance on absolute values or a Direction specifying a cost reflective LRIC APCC in order to provide a measure of legal and regulatory certainty. Vodafone considered that the effect in practice of our proposed guidance (absent quantitative guidance) would result in BT setting an APCC rate at a high level which net-importer CPs would be forced to negotiate with BT before raising a dispute with us. Vodafone said this would then cause us to undertake the quantitative analysis which in its view should have formed part of the consultation. Vodafone argued that this approach will impose a period of avoidable regulatory uncertainty which is detrimental to efficient network investment and operation.

8.21 Vodafone did not agree that we could draw any reliable inference that, because there have been few disputes, industry have been able to reach satisfactory agreements.

8.22 Vodafone believed that, similar to mobile, the NBMR model must be capable of being used as a source for calculating an appropriate maximum level of porting charges. It also considered that the level of porting conveyance charges should be reviewed within or alongside our periodic reviews of the fixed and mobile termination markets.

8.23 TalkTalk believed that the interests of consumers and efficiency considerations would be better met if Ofcom set porting conveyance charges. It argued that whereas we can (by setting porting conveyance charges) ensure they are based on efficient cost levels and give rise to strong cost minimisation incentives, BT will base them on its actually incurred costs and retain an incentive to increase its costs. As also noted in Section 5, TalkTalk added that the threat of regulation (via a dispute) would not create an incentive to voluntarily set charges based on the efficient cost level. TalkTalk believed that if we did not set the charge a dispute was likely to be submitted to us and that, if we considered that providing guidance would reduce the burden on us, we were likely to be mistaken.

8.24 TalkTalk disagreed that there have been no disputes about APCCs and referred to its dispute which led to us mandating DLE handover in March 2010. It also noted that it had held off from submitting a dispute in light of the current review of porting charges. In any event, TalkTalk did not consider that the lack of disputes was a sound or sufficient reason not to set a charge.

8.25 ITSPA argued that, based on its concerns about some CPs failing to respect GC18 or otherwise "game-playing" it preferred that we issue a Direction to afford the fixed sector the same regulatory certainty as the mobile sector.

8.26 Magrathea welcomed our intention to publish guidance also but then suggested that we should publish a benchmark figure for APCCs based on a NGN in order to address its concern that BT's proposed charges might be too high and material relative to FTRs.

8.27 [✂]

Our analysis and conclusions

APCCs

8.28 In Section 5 we set out why, in relation to fixed CPs, the use of different technologies, different network topologies and associated interconnection between networks, results in a range of different porting conveyance charges. We further explained that given this complexity, and our view in the 2013 NBMR that both TDM networks and NGNs may be efficient technologies depending on the particular circumstances of the CP in question, we do not consider it appropriate to require charges be set by reference to a benchmark technology.

8.29 We therefore consider that practicability points towards an own technology approach, in relation to which we consider that the setting of different APCCs in the fixed sector is most appropriately achieved through commercial agreement between CPs applying our guidance on compliance with GC18. This is distinct from the mobile sector where, given the regulatory precedent of setting rates using an average efficient operator cost model (typically in order to resolve disputes between CPs), coupled with a more standardised topology for interconnection between mobile CPs, a different compliance approach is appropriate.

8.30 We have considered TalkTalk's arguments about, on the one-hand, BT's incentives to over-charge and CPs being reluctant to bring disputes to us and, on the other, that if we do not set APCCs (or BT's APCCs) we will be likely to receive disputes.

8.31 We consider that the guidance we have provided is sufficient for CPs to set GC18 compliant APCCs through commercial negotiation. However, if CPs are unable to reach commercial agreement with other CPs (whether BT or anyone else) then they have recourse to our dispute resolution process. In our view (and based on the information currently available to us), this approach best reflects our regulatory duties and principles that we will operate with a bias against intervention, intervene only where required and seek the least intrusive regulatory mechanisms to achieve our policy objectives.

8.32 We note the comments made by some stakeholders about the relevance of prior disputes in our decision as to whether to set APCCs or not. However, we consider it important to recognise the differing circumstances for the disputes between a number of mobile CPs[165], which led to our periodic setting of the DCC (most recently by Direction), and the absence of disputes regarding APCCs. Although we have determined a dispute regarding APCCs, this was more concerned with the point of handover for certain ported traffic. Prior to that, and since then, no substantive APCC disputes have been brought to us and, as noted above, our preference is to find the least intrusive regulatory mechanisms to achieve our policy aims; consistent with our regulatory duties and principles.

[165] All the large mobile CPs have been involved in disputes or disagreements about DCCs since the introduction of mobile number portability in 1999. These have required formal regulatory intervention by Oftel in 1999 and 2001 and by Ofcom in 2007 and 2013.

8.33 We note too Vodafone's arguments about addressing uncertainty over the setting of porting charges. In response, our aim in publishing guidance for setting reasonable and cost-oriented charges under GC18 and/or directing the maximum level of porting charges is one of providing appropriate legal and regulatory clarity. Our consideration of the appropriate approach to adopt is shaped by our statutory duties as we have set out in Section 3 of this document. For example, when performing our duties we must have regard in all cases, pursuant to section 3(3) of the Act, to the principles of, amongst other things, proportionality and ensuring our interventions are targeted only at cases in which action is needed.

8.34 We note that [✂] and ITSPA, whilst not explicitly saying that we should set the level of APCCs and/or non-conveyance charges, nevertheless favoured an approach which implemented our proposals by Direction under GC18 (or similar) to help ensure the rules are respected and limit "game playing". We have considered such options and also suggestions made by Vodafone and Magrathea that we should publish rates. However, we consider that the publication of guidance as set out in this document is the least intrusive measure to achieve our objective of ensuring GC18 compliant APCCs.

8.35 We conclude, therefore, that the most appropriate and proportionate approach is to provide CPs with the guidance contained in this document regarding the setting of GC18 compliant APCCs and non-conveyance porting charges. In the context of a dispute or investigation, subject to the particular circumstances in any case, we expect to use the principles set out above as our starting point in assessing whether porting charges are reasonable, cost-oriented and based on the incremental costs of providing portability as required by GC18.5.

Non-conveyance porting charges

8.36 Those stakeholders that believed we should publish absolute values in any guidance or specify the level of porting charges by way of imposing a Direction under GC18, were concerned specifically with APCCs (i.e. porting conveyance charges).

8.37 As set out in our March 2014 consultation[166], we note that both fixed and mobile CPs have set and/or reached commercial agreements regarding non-conveyance charges (including agreements not to charge). We have no evidence to suggest that we should set the level of non-conveyance porting charges.[167] Therefore, we have concluded that our decision to provide guidance on the setting of non-conveyance porting charges is appropriate and consistent with our duties and regulatory principles, in particular, the principles that we will operate with a bias against intervention (and intervene only where required) and seek the least intrusive regulatory mechanisms to achieve our policy objectives.

8.38 With regard to other porting charges (i.e. non-conveyance charges such as per number set-up charges), we therefore conclude that the guidance provided in this document is both sufficient and appropriate for CPs to act in compliance with GC18. (We separately respond to comments regarding service maintenance fees below.)

Service maintenance fees

8.39 Insofar as porting specific service maintenance fees (such as porting prefix addition) are charges for the provision of portability pursuant to GC18, they are subject to the

[166] See paragraphs 8.16 to 8.18
[167] Nor has any evidence been provided by stakeholders in response to our March 2014 consultation.

requirements in GC18 to be reasonable, cost oriented and based on incremental costs. We have set out in Section 4 above that the appropriate cost standard to be used to derive such charges is LRIC.

8.40 This regulatory requirement does not prohibit CPs from agreeing to porting arrangements whereby each CP bears its own costs for service maintenance (i.e. an agreement not to charge for this service) if they so wish.

8.41 We consider that this *ex ante* requirement for cost-based service maintenance fees affords RCPs sufficient protection from unreasonable and/or excessive charges relating to the provision of portability. Furthermore, the requirement provides that DCPs can recover (if they choose to do so) the reasonable costs incurred in making changes to established porting arrangements in response to RCP requests to make such changes (such as porting prefix changes). We do not consider this to be unreasonable.

8.42 However, where any CP considers that such charges are not compliant with GC18 or where a dispute arises between CPs as to the level of such charges, then they have recourse to our dispute resolution or enforcement processes. In the context of a dispute or investigation, subject to the particular circumstances in any case, we would expect to use the principles set out in this document as our starting point in assessing whether porting specific service maintenance fees are reasonable, cost-oriented and based on the incremental costs of providing portability as required by GC18.5.

8.43 Categories of porting costs which are specifically non-recoverable are set out in GC18 (i.e. system set-up costs, additional conveyance costs and ongoing costs relating to mobile registrations). We do not consider that service maintenance fees fall within these categories. As such, we do not consider that it would be appropriate for us to provide guidance in this document that no fee should be made for service maintenance costs incurred in the provision of portability.

Date of implementation

Stakeholder responses

8.44 Simwood sought a retrospective adjustment for the period between the reduction in FTRs in early 2014 and our guidance on APCCs. Similarly, ITSPA asked that our guidance be effective from when the reduced FTRs came into effect.

8.45 Laurasia Associates noted that it was not clear whether we plan to adopt an *ex ante* or *ex post* approach to this review.

Our analysis and conclusions

8.46 We are providing guidance on porting charges on a forward looking basis as we set out in our aims and objectives in the March 2014 consultation.[168] Since respondents' views to our consultation are an important part of our assessment of how we should define our GC18 guidance, we consider that it would undermine regulatory predictability to then apply that guidance retrospectively.

8.47 Therefore, our objective remains to provide CPs with greater clarity as to the appropriate interpretation of reasonable and cost-oriented charges under GC18 with

[168] Paragraphs 2.48-2.50.

effect from the date of this guidance, and to facilitate the resolution of disputes if CPs subsequently fail to agree commercial terms. We have explained above why we do not propose to set the actual level of any rates other than the DCC on an *ex-ante* forward looking basis.

Issues outside the scope of our review of cost and charging principles

Service establishment – refusals and recovery of costs

Stakeholder responses

8.48 [✂] argued that we had not made any proposals to address concerns around CPs refusing to establish porting arrangements with requesting CPs. It observed that it can take up to two years to establish porting arrangements and requesting CPs have no ability to recover the costs they incur in seeking to establish porting arrangements in these circumstances.

8.49 ITSPA also noted that its members experience difficulty in establishing portability with other CPs and/or their hosting networks, denying subscribers their right to port under European Law.

Our analysis and conclusions

8.50 In relation to concerns about CPs experiencing difficulties in getting other CPs to establish porting arrangements and seeking to recover the costs they may incur in doing so, we note that GC18 provides that CPs are required to provide portability to requesting CPs as soon as is reasonably practicable in relation to that request and on reasonable terms.[169] Furthermore, GC18.5(b) provides that the costs incurred in service establishment (defined in GC18.11(r) as 'System Set-Up Costs') are not chargeable.

8.51 It is open to any stakeholder to bring cases of suspected breaches of GC18 to Ofcom's attention through the dispute resolution process[170] or by submitting a complaint. Ofcom's powers in resolving regulatory complaints include the power to impose financial penalties and our Enforcement Guidelines[171] provide details on how we handle such complaints.

[169] We note that industry has documented the process for fixed porting service establishment including an indicative timescale of 85 working days from initial contact to being ready to pass ported traffic. Industry fixed portability documentation is available at http://www.magrathea-telecom.co.uk/industry_porting/

[170] Ofcom, *Dispute Resolution Guidelines: Ofcom's guidelines for the handling of regulatory disputes,* 7 June 2011 http://stakeholders.ofcom.org.uk/binaries/consultations/dispute-resolution-guidelines/statement/guidelines.pdf

[171] Ofcom, *Enforcement Guidelines: Ofcom's guidelines for the handling of competition complaints and complaints concerning regulatory rules*, 25 July 2012, http://stakeholders.ofcom.org.uk/binaries/consultations/draft-enforcement-guidelines/annexes/Enforcement_guidelines.pdf

Loss of service on ported numbers

Stakeholder responses

8.52 [✂] also noted that our proposals had not addressed its concerns about experiencing loss of service on numbers which it had ported in and those numbers being reallocated.

Our analysis and conclusions

8.53 We are aware that there have been some reported instances of apparently erroneous disconnection and reallocation of ported out numbers. We are also aware that, in relation to fixed porting, this issue is currently being considered by the OTA2[172] chaired industry group which oversees the processes for fixed number portability. We consider that, in the first instance, this is the appropriate forum in which to assess these reports and to ensure that fixed porting processes and procedures are robust.

8.54 More generally, we consider that it is incumbent on each CP to ensure that subscribers' fixed or mobile number port orders are properly validated and that the relevant industry documented processes are followed in order to ensure that porting is conducted efficiently and effectively for subscribers.

BT IP Exchange (BT IPX)

Stakeholder responses

8.55 Simwood expressed concern that, while CPs providing IP services to customers using BT's IPX are able to leverage BT's porting agreements to port-in customers, the reverse is not always true (i.e. other CPs cannot leverage established BT porting agreements to port-in BT IPX CP customers to the same extent). Simwood asked us to direct that any number ranges hosted on BT IPX be included in porting agreements in place with BT.

8.56 ITSPA also expressed concern on this point, in particular, the length of time being taken to resolve this issue which it noted was being pursued by the OTA2 chaired fixed portability group.

Our analysis and conclusions

8.57 We are aware of this issue and understand that BT Wholesale has announced that it is developing the functionality to enable BT IPX CPs to export their hosted geographic numbers via BT. We understand this is currently being trialled with CPs and, if successful, is expected to be launched shortly thereafter.

8.58 We welcome this development by BT Wholesale in that it should make porting from CPs (who, for commercial reasons, choose to host their own allocated numbers on BT IPX) to other CPs, quicker and easier. However, we consider that CPs who choose to host their numbers with another CP (whether BT IPX or any other similar service provided by another CP) remain subject to GC18 including the requirement to provide portability to requesting CPs as soon as is reasonably practicable and on reasonable terms.

[172] OTA2 is an independent organisation tasked by Ofcom to oversee co-operation between CPs and enable a competitive environment in the telecommunications sector. It is independent of both the regulator and CPs. Further details on the work of OTA2 can be found at http://www.offta.org.uk/.

Conclusions

8.59 Our guidance on how CPs should set porting charges which are reasonable, cost-oriented and based on the incremental costs of providing portability as required by GC18 is as follows:

8.59.1 all porting charges[173] should be calculated using LRIC;

8.59.2 for the mobile sector, consistent with our current approach, the DCC should be set with reference to a benchmark average efficient operator;

8.59.3 for the fixed sector, both TDM networks (based on depreciated asset values) and NGNs could be an efficient choice, and that it would be reasonable for fixed CPs to charge for porting conveyance based on the costs of the technology of their own network (whether that be TDM or NGN); and

8.59.4 DCPs could charge RCPs up to 100% of the incremental costs of conveyance and non-conveyance porting activities not otherwise precluded by GC18.

8.60 This guidance covers both conveyance and non-conveyance related charges for porting.

8.61 In the case of fixed CPs, we anticipate that CPs are likely to need some time to review their porting charges in light of our guidance. We would not expect this to take longer than two or three months from the date of this document.

8.62 We will consider any dispute on its merits but would take this guidance as the starting point of our analysis. We would expect that parties bringing a dispute would set out, based on the information available to them, why they considered charges were not compliant with GC18 and we would expect DCPs to provide sufficient cost data and reasoning to justify the level of their charges.

8.63 In the case of conveyance charges for mobile ported numbers, and consistent with the 2014 DCC Review, we propose to set a maximum DCC by way of a Direction under GC18. Section 9 sets out our proposals for a new Direction setting a new maximum DCC in light of our conclusions on how GC18 compliant charges should be set and withdrawing the 2014 DCC Direction. For the avoidance of doubt, prior to any new Direction being given and the withdrawal of the 2014 DCC Direction, we consider that DCCs set at or below the level set in the 2014 DCC Direction would be compliant with GC18.

[173] That is, all charges covered by GC18 (e.g. APCCs, DCCs and non-conveyance charges).

Section 9

Consultation on a Direction to set a new maximum DCC

Summary

9.1 As explained in Section 8, we have concluded that we should continue to set a maximum DCC. In this section we set out our proposals to give a Direction setting a new maximum DCC for consultation and withdrawing the 2014 DCC Direction.

9.2 We have calculated the proposed maximum DCCs taking account of our decisions in Sections 4, 5 and 6 of this document. We have also updated our model to reflect changes made in the 2014 DCC Review and in the 2014 MCT model. Based on this, we propose to give a Direction setting a new maximum DCC as shown in Table 9.1 below and withdrawing the 2014 DCC Direction.

Table 9.1: Proposed maximum DCCs to be applied to all donor conveyance calls (ppm, nominal prices)

	2015/16	2016/17	2017/18
Proposed maximum DCC (LRIC, RCP pays)	0.024	0.024	0.023

Source: Ofcom 2014 LRIC of DC model.

9.3 In this section we set out our proposals on setting a new maximum DCC, explaining in particular the methodology we have followed and the changes we have made, compared to the model used to set the maximum DCC in the 2014 DCC Review.

2014 DCC Review

9.4 On 14 February 2014 we published the 2014 DCC Review and the 2014 DCC Direction which set a maximum DCC across the mobile industry until 31 March 2016. The maximum DCCs set by the 2014 DCC Direction are shown in Table 9.2 below.

Table 9.2: Current maximum DCC applied to all donor conveyance calls (ppm, nominal prices)

	2013/14	2014/15	2015/16
Current maximum DCC (LRIC+, 50:50 split)	0.028	0.028	0.027

Source: 2014 DCC Review.

9.5 Following the precedent established in 1999 and followed in 2007, in the 2014 DCC Review we used a LRIC+ cost standard and applied a 50:50 split of costs between the DCP and the RCP. The 2014 DCC Review also introduced an adjustment to account for the DCC being charged for on-net originated calls to ported numbers.[174]

[174] The on-net adjustment recognises that the DCC should not be applied to on-net originated traffic to ported numbers (i.e. when the OCP is also the DCP) but, for practical reasons, is charged on all calls to ported numbers.

Scope of consultation

9.6 This consultation sets out our proposals for giving a Direction which would set a new maximum DCC across the mobile industry on a forward looking basis and withdraw the 2014 DCC Direction. In updating our assessment of the appropriate level of a maximum DCC we have developed a new model (the 2014 LRIC of DC model, published alongside this document), which takes into account our decisions in Sections 4, 5 and 6, as follows:

- We have changed from a LRIC+ to a LRIC cost standard;
- We have based our calculations on the 2014 MCT model which we published on 4 June 2014[175] (rather than the 2011 MCT model[176]). The 2014 MCT model contains proposals which may change in the 2015 MCT statement. As a result our proposed DCCs may also change to reflect our final position in the 2015 MCT Statement; and
- Changing from a 50:50 DCP:RCP charging rule to a 100% RCP pays charging rule.

9.7 Aside from these matters, we have carried forward the approach we took in the 2014 DCC Review. This includes:

- The decision to exclude transmission link costs;
- The decision not to allow DCCs to be charged for on-net originated traffic (and to make an adjustment to the calculation of the maximum DCC to take account of this); and
- The approach to allocate the costs of switch sites.

Our analysis of the maximum level of the DCC

Methodology

9.8 As noted above, our new analysis of the appropriate maximum level of the DCC is based on the recently published 2014 MCT model. We have built an additional module to estimate the cost of donor conveyance, which has been appended to the 2014 MCT model.

9.9 However, the 2014 MCT model does not contain donor conveyance traffic. Therefore, we introduced donor conveyance as a service and added donor conveyance traffic volumes to the 2014 MCT model. We also adjusted the 2014 MCT model so that the relevant increment over which to measure costs is donor conveyance volumes. Our approach to forecasting donor conveyance volumes is described below:

[175] The 2014 MCT Model was published as part of our consultation on the MCT review published on 4 June 2014 and is available at http://stakeholders.ofcom.org.uk/consultations/mobile-call-termination-14/.

[176] The 2011 MCT Model was updated following the Competition Appeal Tribunal judgment in 2012, and reflected the most up-to-date understanding of the costs of mobile service provision at the time we made the 2014 DCC Direction.

9.9.1 We start with total annual industry donor conveyance minutes. For the period between 1999/2000 to 2013/14, we used donor conveyance volumes collected under our information gathering powers provided for under section 135 of the Act (section 135 powers).[177]

9.9.2 For the period following 2013/14 we forecast total annual industry donor conveyance minutes by extrapolating the historic trend in the ratio of donor conveyance minutes to total call termination minutes and applying this to termination minutes projected in the 2014 MCT model. [178] The forecast donor conveyance minutes are projected to increase at an annual growth rate of just over 9% from 2014/15 declining to just under 4% by 2025/26.

9.9.3 We converted the total annual industry minutes to volumes for our average efficient MCP by applying the 2014 MCT model market share assumption to the total industry donor conveyance minutes.[179]

9.9.4 We also applied an 'on-net calls adjustment' leading to the exclusion of on-net originated calls from the traffic volumes. From 1999/00 the initial adjustment is set to 17.5% of all ported calls being treated as on-net,[180] which is trended to 33% by 2013/14 (33% was also used in the 2014 DCC model). The on-net call adjustment is then held constant at 33% from 2013/14 onwards.

9.9.5 To find the donor conveyance traffic split between 2G, 3G and 4G technologies we used the split of incoming calls from the 2014 MCT model and applied this to the total donor conveyance traffic.

9.9.6 We then converted the annual donor conveyance volumes for our average efficient MCP into quarterly volumes and inserted them into the traffic module of the 2014 MCT model.

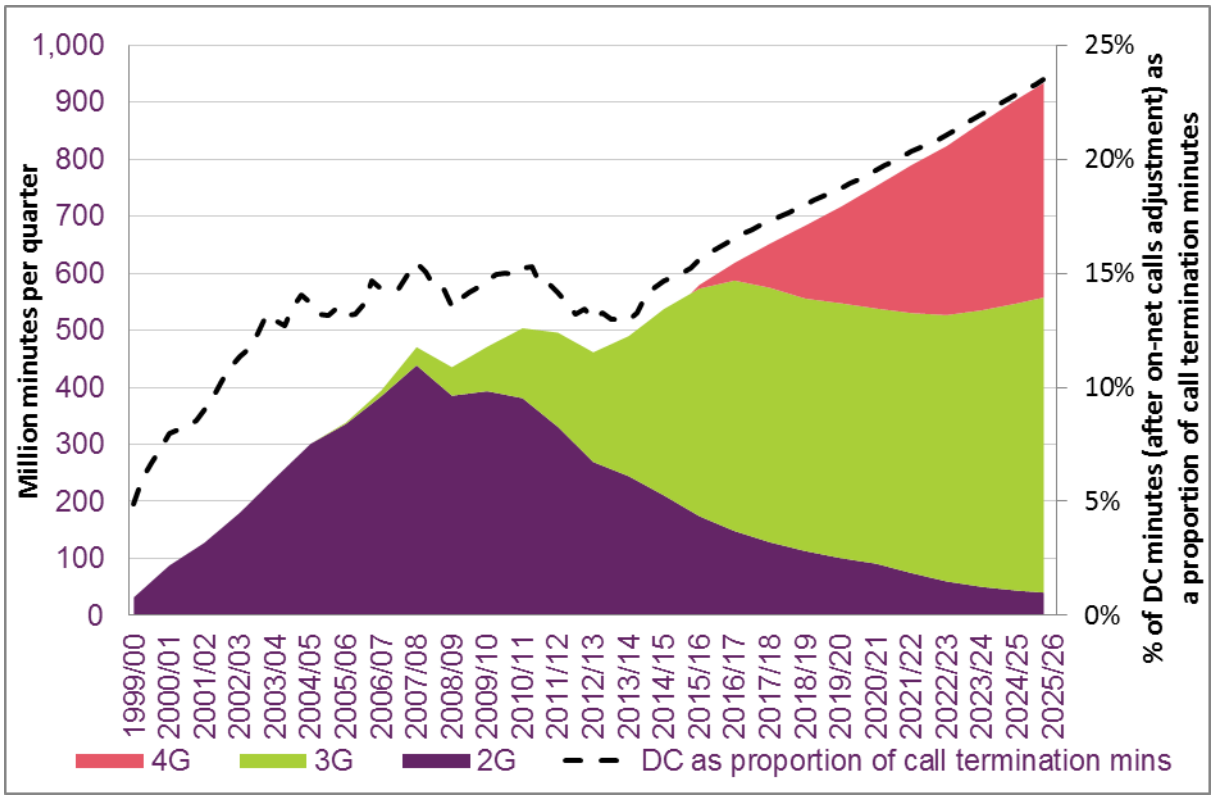
9.10 Figure 9.3 below shows total donor conveyance volumes split by technology. In the final year for which we are setting a maximum DCC (i.e. 2017/18), we have assumed 2G forms 20% of all donor conveyance traffic, 3G forms 68% of all donor conveyance traffic and 4G forms 12% of all donor conveyance traffic, consistent with the shares of MCT traffic by technology in the 2014 MCT model.

9.11 The percentage of donor conveyance minutes as a proportion of call termination minutes is forecast to increase from 2014/15 onwards for the average efficient

[177] Between 1999/00 to 2013/14 we have used donor conveyance volumes previously collected under section 135 powers. Where information had not been sought as part of this review we sought and gained permission from each MCP to use their data in the context of updating the DCCs.
[178] Specifically, we first calculated the geometric mean rate of growth of donor conveyance minutes as a proportion of call termination minutes for the 14 years of actual volumes (i.e. from 1999/00 to 2013/14). We then applied this average growth rate to the 2013/14 proportion of donor conveyance minutes to call termination minutes in order to obtain the 2014/15 proportion. This proportion is then applied to the projected volume of call termination for 2014/15 obtained from the 2014 MCT model. We repeated this process for subsequent years, assuming that the geometric mean rate of growth in the ratio of donor conveyance to termination volumes evolves as a moving average process.
[179] The 2014 MCT model market share assumption varies over time between 25% and 23%. In 2014/15 the market share is 24% and trends to 25% by 2021/22.
[180] This value is based on information in the 2010 direct routing CBA.

operator.[181] By the end of the period for which volumes are explicitly forecast in the model, 2025/26,[182] Figure 9.3 shows forecast donor conveyance volumes (after the on-net calls adjustment) will be 24% of the termination traffic forecast in the 2014 MCT model.

Figure 9.3: Donor conveyance volumes (million minutes per quarter) and donor conveyance volumes (after the on-net calls adjustment) as a proportion of call termination minutes



Source: 2014 LRIC of DC model and 2014 MCT model.[183]

9.12 In order to model the network equipment required for onward routing, we require routing factors. Routing factors are used to dimension the network on the basis of cost causation relationships and also to convert network element unit costs to service unit costs. We added routing factors for donor conveyance traffic based on the modifications we made in the 2014 DCC Review[184] to the routing factors already in the 2014 MCT model. The 2014 DCC Review was, however, based on a 2G/3G operator. We have updated our assumptions to include the 4G network by adding 4G routing factors for donor conveyance.[185]

[181] This is consistent with our previous estimates of onward routed minutes in the 2010 direct routing cost benefit analysis (which was shared with relevant stakeholders at the time but not published) and recent increases in the volumes of ported numbers.
[182] Volumes are held constant after this point, as in the 2014 MCT model.
[183] Note that the graph shows quarterly donor conveyance minutes, as indicated on the left-hand vertical-axis. However the horizontal-axis shows years (not quarters) for clarity of presentation.
[184] As explained in paragraph 4.18 of the 2014 DCC Review.
[185] A glossary has been included in the module '6-LRIC of DC'6, for all assets relevant to the estimation of the cost of donor conveyance.

9.13 We have taken the same approach to adjusting the Mobile Switching Centre (MSC) processor load that we took in the 2014 DCC Review.[186] This reflects our assumption (following advice from Analysys Mason in 2007) that a donor conveyance call uses the MSC less than an average incoming call. We have therefore assumed an MSC processor load of 20 miliseconds per busy hour call attempt, which is 40% of that of an incoming call assumed in the MCT models, but the same as that for an outgoing call in the MCT models.[187]

9.14 We note that in relation to this adjustment, EE's response to our March 2014 consultation[188] summarised its response of 14 January 2014 to the consultation on the 2014 DCC Review. EE argued that the DCCs should include efficient MSC processor costs. We consider the MSC processor load assumptions in the 2014 DCC Review (and used again in the 2014 LRIC of DC model) to be appropriate for the reasons explained in the 2014 DCC Review [189]

9.15 We have excluded both administration costs and "HLR look-up costs"[190] in our LRIC modelling. These costs were included in the 2014 DCC Review for the purposes of calculating the LRIC+ of donor conveyance. In its response to the March 2014 consultation EE argued that DCCs should be calculated using a LRIC+ cost standard and should include a mark-up for administration and HLR look-up costs. We addressed points raised by stakeholders in relation to the cost standard in Section 4 and concluded that porting charges should be set at LRIC.

9.16 Turning to administration costs, we consider that these do not form part of the LRIC of donor conveyance (measured as avoided costs and taken as the final traffic increment). Therefore, under a LRIC cost standard, we consider that these costs should be excluded. The exclusion of administration costs from the LRIC of donor conveyance is consistent with the approach to calculating the LRIC of MCT in the 2014 MCT model.

9.17 In relation to HLR look-up costs, in the 2014 DCC Review we found that where call trap was deployed, the Signalling Relay Functionality (SRF)[191] query is undertaken on all outgoing calls irrespective of which operator holds the dialled number.[192] We explained that we were seeking to set a maximum DCC based on a forward-looking assessment of the efficient costs of donor conveyance and, noting that most MCPs have chosen to deploy call trap, considered it reasonable to take account of the fact that an "HLR look-up" is performed on all outgoing calls.

9.18 We have revisited the question of the inclusion of "HLR look-up" costs in the context of the calculation of the LRIC of donor conveyance, and in particular bearing in mind

[186] An MSC is a switch which forms part of the core of a mobile network. The MSC processor load measures the processing burden related to different types of call, in busy hour milliseconds.
[187] Paragraphs 4.76 to 4.81 in the 2014 DCC Review Statement explain in more detail the reasoning behind adjusting the MSC processor load.
[188] See http://stakeholders.ofcom.org.uk/binaries/consultations/gc18-porting-charges-guidance/responses/EE.pdf.
[189] See paragraphs 4.76 to 4.81 of the 2014 DCC Review Statement.
[190] The HLR, or Home Location Register, is a central database that contains details of each mobile phone subscriber on the network. The "HLR look-up" is a query of that database used to set up the call routing to the RCP.
[191] SRF is the functionality within mobile networks which enables calls to ported mobile numbers to be identified and onward routed to the appropriate RCP using a porting prefix. It is closely related and, in some instances, integral to the Home Location Register (HLR)
[192] See paragraph 4.60 of the 2014 DCC Review Statement.

that the relevant increment of traffic is off-net donor conveyance traffic. We consider that:

9.18.1 The HLR itself is not incremental. This is because its costs are subscriber-driven and hence the off-net donor conveyance traffic increment would not cause additional HLR costs to be incurred. This treatment is similar to that of "HLR update costs" in the 2011 and 2014 MCT models.[193]

9.18.2 The additional SRF functionality is not incremental. This is because, as noted above, where call trap is deployed SRF functionality is required for all outgoing calls, and would be used in relation to both on-net and off-net donor conveyance traffic. As a result, the off-net donor conveyance traffic increment would not cause additional SRF costs to be incurred.

9.18.3 We are not aware of per call look-up costs that would be incremental to the off-net donor conveyance traffic increment.

9.19 EE argued in its response to the March 2014 consultation that DCCs should include "HLR look-up" costs. For the reasons above, we disagree with EE that "HLR look-up" costs should be included in the cost of donor conveyance since we are concerned with the LRIC, not the LRIC+ of that service.[194]

9.20 EE also argued in its response to the March 2014 consultation that DCCs should include transmission costs. Our position on this remains the same as that in the 2014 DCC Review.[195] We recognise that a DCP might incur transmission costs in onward routing ported calls, but consider that it is not appropriate for these costs to be recovered through the DCC as the cost of interconnection links are already recovered between the DCP and the RCP under separate commercial arrangements.

Results

Costs of donor conveyance and DCCs

9.21 To convert the cost of donor conveyance derived using the methodology explained above into a DCC it is necessary to make an 'on-net calls adjustment'.

9.22 The 'on-net calls adjustment' we have applied reflects our analysis from the 2014 DCC Review. EE argued in its response to the March 2014 consultation that the DCC should be recoverable from all off-net and on-net ported calls and therefore no on-net adjustment should be made. Our position on this remains as set out in the 2014 DCC Review. In the 2014 DCC Review we found that MCPs were unable to distinguish between on-net originated donor conveyance traffic and off-net originated donor conveyance traffic. As a result MCPs apply the DCC to total donor conveyance traffic, even though only costs incurred in providing donor conveyance for off-net originated calls should be recovered via the DCC. Therefore, we have again applied an adjustment to revise the DCC downward to reflect that in principle there should be no cost recovery from on-net calls.[196]

[193] 2011 MCT review paragraph A9.82 and 2014 MCT review consultation paragraph A15.54.
[194] We also note that the removal of "HLR look-up" costs does not have a material impact on the results. In the 2014 DCC Review the impact of including "HLR look-up" costs on the LRIC+ of donor conveyance was just 0.001ppm in 2013/14 (see Figure 4.3 of the 2014 DCC Review).
[195] See paragraphs 4.64 to 4.69 of the 2014 DCC Review Statement.
[196] The level of adjustment has been set to 33% of calls to ported numbers being on-net from 2013/14 onwards. To apply the adjustment we have multiplied our cost of donor conveyance by (1-33%). We

9.23 Table 9.4 below shows both the cost of donor conveyance and the DCC resulting from the application of the on-net adjustment.

Table 9.4: Blended LRIC of donor conveyance (nominal ppm)

	2015/16	2016/17	2017/18
LRIC	0.036	0.035	0.034
With on-net adjustment	0.024	0.024	0.023

Source: Ofcom 2014 LRIC of DC model.

9.24 This calculation leads to the proposed DCCs shown in Table 9.5 below.

Table 9.5: Proposed maximum DCCs to be applied to all donor conveyance calls (ppm, nominal prices)

	2015/16	2016/17	2017/18
Proposed DCC	0.024	0.024	0.023

Source: Ofcom 2014 LRIC of DC model.

Question 1: Do you agree with how we have derived the level of the maximum DCCs? If not, please explain why.

4G donor conveyance traffic and sensitivities

9.25 The blended DCCs included in the tables above include 4G donor conveyance calls, consistent with the treatment of 4G voice traffic in the 2014 MCT model (in which we assume that Voice over LTE (VoLTE) is introduced in 2015/16[197]). The 2014 LRIC of DC model shows that 4G donor conveyance has lower unit costs than its 2G or 3G equivalents.

9.26 For the purposes of calculating maximum DCCs we are interested in the treatment of 4G donor conveyance calls on mobile networks. In particular, we anticipate that 4G originated calls will be handed off to the DCP and subsequently the RCP using IP interconnection because VoLTE is natively an IP-based service.

9.27 Although the choice of radio interface used for voice services does not necessarily affect the type of interconnection used, we assume that traffic originating on VoLTE will be carried over IP interconnection, where this is available, and that 2G/3G voice will be carried over circuit switched (CS) interconnection (for as long as CS interconnection is in place). This is because changing the type of interconnection would require either the DCP or the RCP to transcode the voice traffic, using network resources and causing additional cost.

9.28 We have assumed that the percentage of calls originating on VoLTE is the same as the percentage of calls terminating on VoLTE in the 2014 MCT model.[198] We

have also included an on-net adjustment sensitivity in the model. Phasing in a reduction in the on-net adjustment from 33% in 2013/14 to 25% by 2025/26 hardly affected the DCC which fell by less than 0.001 ppm in 2015/16.

[197] Each of the four largest MCPs have already deployed 4G radio access networks to support data services and we expect VoLTE to be deployed in the UK within the period for which we propose to set the maximum DCC.

[198] We have also included a sensitivity in the 2014 LRIC of DC model to reduce the share of donor conveyance traffic that is 4G. The intention of this sensitivity is to reflect the fact some donor conveyance traffic originates on fixed networks, and the majority of fixed network traffic remains CS..

consider this is a reasonable assumption because the type of radio technology used for call origination depends on the same parameters that determine the radio technology used for call termination (i.e. availability of VoLTE-enabled devices and LTE coverage).

9.29 Notwithstanding the above, we have included the flexibility in the 2014 LRIC of DC model to exclude 4G donor conveyance traffic.[199] Table 9.6 below shows DCCs calculated excluding 4G donor conveyance. Comparison with the results in Table 9.5 shows that the exclusion of 4G donor conveyance calls does not have a material impact on the DCCs.

Table 9.6: DCC excluding 4G donor conveyance calls (nominal ppm)

	2015/16	2016/17	2017/18
2G	0.026	0.026	0.027
3G	0.024	0.024	0.025
Blended	**0.024**	**0.025**	**0.025**

Source: Ofcom 2014 LRIC of DC model.

Volumes sensitivity analysis

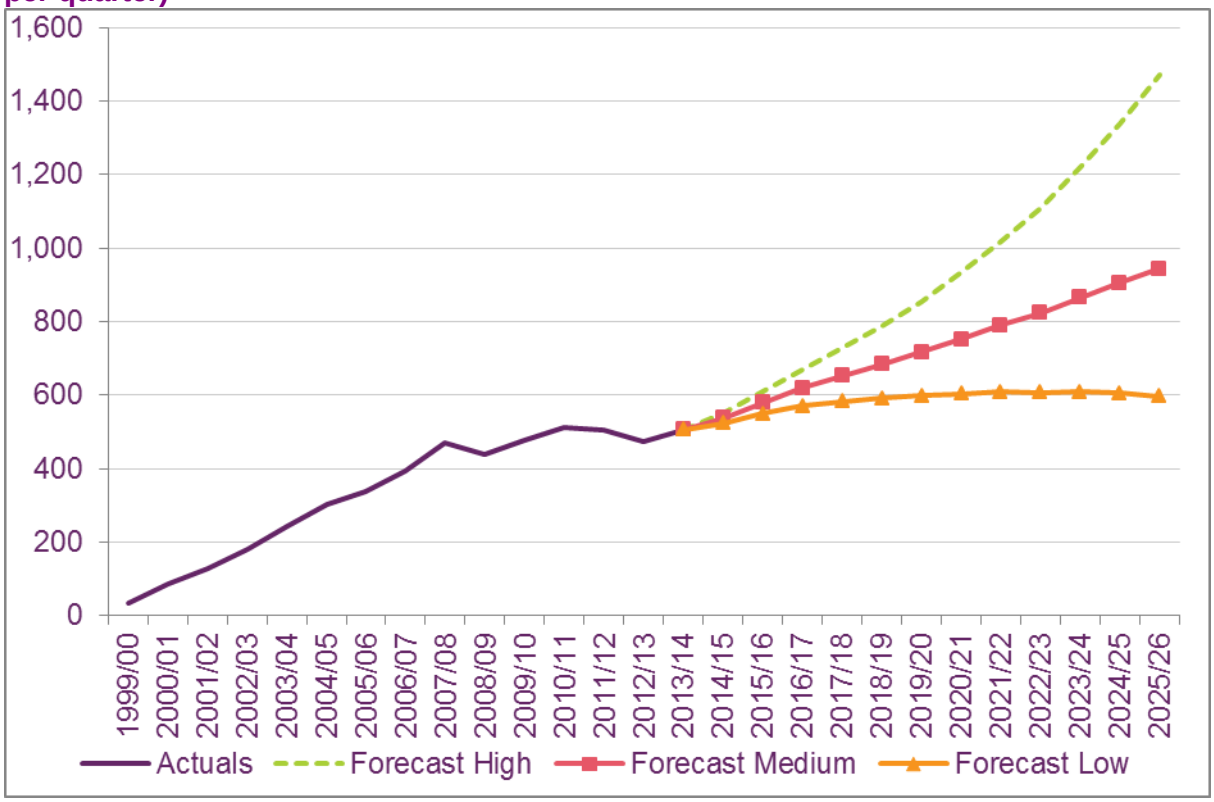
9.30 To assess the impact of varying the donor conveyance traffic forecasts we have included a volumes sensitivity test. Volumes have been adjusted by increasing and decreasing the base case total industry donor conveyance volumes. This is done through adjusting the geometric mean growth rate of donor conveyance traffic as a proportion of call termination traffic.[200] Figure 9.7 below shows the total volumes used for the high, medium (base case) and low scenarios.

In this sensitivity we reduced the share of donor conveyance traffic that is assumed to be 4G compared to the share of traffic terminated as 4G in the 2014 MCT model based on information in the 2014 MCT model on the proportion of calls to mobiles from fixed lines. We reduced 4G donor conveyance traffic by this proportion while increasing the share of 2G and 3G donor conveyance traffic by the same proportion. We found that this reduction in the 4G donor conveyance volumes and corresponding increase in 2G and 3G volumes reduced the results by 0.001ppm in 2016/17 and 2017/18. This sensitivity differs from Table 9.6 where we exclude all 4G donor conveyance traffic.

[199] Note that when excluding 4G donor conveyance volumes we keep total donor conveyance volumes unchanged and distribute the volumes that would have been on the 4G network between the 2G and 3G networks in their existing proportions. Other 4G (voice and data) traffic volumes in the 2014 MCT model have been left unchanged in the sensitivity results reported here.

[200] For the medium (base case) we have used the unaltered 14 year moving geometric mean of the growth rate for donor conveyance traffic as a proportion of call termination traffic, for the high scenario we have increased the geometric mean by 2.5% year on year and for the low scenario we have reduced the geometric mean by 2.5% year on year.

Figure 9.7: Donor conveyance volumes used for sensitivity analysis (million minutes per quarter)



Source: 2014 LRIC of DC model.

9.31 The results of the volume forecast sensitivity tests are shown in Table 9.8 below. The high and low scenarios are shown and compared to the medium scenario, which we have used as our base case. As expected, our sensitivity analysis shows higher donor conveyance volumes lead to a slightly lower nominal DCC and lower donor conveyance volumes lead to a slightly higher nominal DCC.

Table 9.8: Blended DCC volumes sensitivity analysis (nominal ppm)

	2015/16	2016/17	2017/18
High	0.022	0.022	0.021
Medium (base case)	0.024	0.024	0.023
Low	0.026	0.026	0.025

Source: Ofcom 2014 LRIC of DC model.

Proposed forward-looking DCC

9.32 As explained above and set out in Table 9.1 we have proposed maximum DCCs until 2017/18. Setting maximum DCCs out to 2017/18 enables us to link future DCC reviews with our periodic review of MTRs, as explained in paragraph 9.34.

9.33 In the 2014 DCC Review we set DCCs in nominal terms for each financial year and propose to do the same as part of a new DCC Direction. The nominal DCCs shown in the tables of results above assume CPI inflation at the rates forecast in the 2014 MCT model. An alternative way to set the maximum DCCs would be to calculate

them in real terms and adjust for inflation each year when the latest inflation data becomes available, as we do with the charge controls on MTRs.[201]

Question 2: Do you agree with setting the maximum DCCs in nominal terms? If not, please explain why.

Timing of a new DCC Direction and future reviews

9.34 We propose to publish our final Statement and Direction at, or shortly after, the time we publish our final statement on the MCT review. We expect to publish the 2015 MCT Statement by March 2015.[202] Aligning publication of our final statements regarding the separate reviews of DCCs and MCT will allow us to take into account stakeholder responses to the MCT review consultation and, in particular, comments on the 2014 MCT model (as well as comments on the 2014 LRIC of DC Model). We currently anticipate the new Direction coming into effect on 1 April 2015.

9.35 We propose linking any future DCC reviews to our periodic reviews of the market for MCT, so would expect to review the maximum DCC every three years in line with the current framework.

Question 3: Do you agree with our proposals around the timing of a new maximum DCC and for future DCC reviews? If not, please explain why.

Legal tests

9.36 As set out in Section 3, we have a duty under Article 30(2) USD to ensure that pricing between operators/service providers related to the provision of number portability is cost-oriented. We may also set a maximum DCC on an *ex ante*, industry-wide basis and consider that a Direction under GC18.5(a)(ii) is an appropriate means of doing so.

9.37 We consider that the proposed Direction setting new maximum DCCs and withdrawing the 2014 Direction as set out in Annex 5 satisfies section 49(2) of the Act as it is:

9.37.1 Objectively justifiable, in that it provides that pricing between MCPs related to the provision of number portability is cost-oriented as required under the legal framework for number portability detailed in Section 3;

9.37.2 Not unduly discriminatory, in that it would apply to all MCPs that levy a charge for the onward conveyance of a call to a ported mobile number;

9.37.3 Proportionate to what it is intended to achieve, in that the proposed Direction ensures that charges for mobile portability remain cost-oriented in line with our further policy decisions on how MCPs should set reasonable and cost oriented charges for the provision of portability pursuant to GC18. Moreover, prior to our decision to give the 2014 DCC Direction, we refrained from regulatory intervention for a period of time in order to allow MCPs to enter into bilateral commercial negotiations with regard to revised

[201] For example, see the charge ceiling for MTRs from 1st April 2014 to 31st March 2015 at http://stakeholders.ofcom.org.uk/consultations/mtr/charge-ceiling-14.
[202] See paragraph 1.10 of the MCT review consultation published on 4 June 2014 and available at http://stakeholders.ofcom.org.uk/consultations/mobile-call-termination-14/.

DCC(s). But, as has been the case previously[203], we were subsequently called upon to resolve disputes between certain MCPs over the level of the DCC; and

9.37.4 Transparent in what it is intended to achieve, in that the proposed Direction is explained in this document and set out in full at Annex 5.

9.38 We also consider that the proposed Direction is consistent with our principal duty under section 3 of the Act, and the Community requirements set out in section 4 of the Act. Ensuring that DCCs are capped at a cost-oriented level serves to promote effective competition, and through this furthers the interests of consumers. We have also had regard, as required by section 3(3) of the Act, to the principle that regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed, and to other principles of best regulatory practice. In particular, we have sought to ensure our modelling approach is consistent (where appropriate) with that used in the 2014 DCC Review and we have sought to provide a degree of consistency and regulatory certainty going forward by proposing that the new DCC be set at the time of, or shortly after, our decisions in relation to MCT and for it to be reviewed thereafter alongside our MCT market review (ordinarily every three years).

Conclusion and next steps

9.39 This consultation sets out our proposals for giving a Direction which would set a new maximum DCC across the mobile industry on a forward looking basis and withdraw the 2014 DCC Direction. This proposed Direction is set out in Annex 5. Our proposals are based on the decisions made regarding the setting of porting charges pursuant to GC18 set out earlier in this document and in light of the technical and cost-modelling assumptions underpinning the 2014 MCT model published in June 2014.

9.40 We seek responses from industry stakeholders and other interested parties by **10 November 2014**. Further details on responding to this consultation can be found in Annexes 1 to 4.

9.41 We intend to publish a final statement on the proposals set out in this consultation in March 2015, either simultaneously or shortly after the 2015 MCT Statement, and anticipate that the new Direction would come into effect on 1 April 2015.

[203] As explained in Section 2.

Annex 1

Responding to this consultation

How to respond

A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 10 November 2014**.

A1.2 Ofcom strongly prefers to receive responses using the online web form at http://stakeholders.ofcom.org.uk/consultations/gc18-sep14/howtorespond/form, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

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

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

Steve Perry
4th Floor
Competition Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 77834109

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

A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Steve Perry on 020 7783 4151.

Confidentiality

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your

response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

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

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

Next steps

A1.11 Following the end of the consultation period, Ofcom intends to publish a statement either simultaneously or shortly after the statement on the 2015 MCT Review.

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

Ofcom's consultation processes

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

A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Graham Howell, Secretary to the Corporation, who is Ofcom's consultation champion:

Graham Howell
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3601

Email Graham.Howell@ofcom.org.uk

Annex 2

Ofcom's consultation principles

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

Before the consultation

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

During the consultation

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

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

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

Consultation response cover sheet

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

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

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

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

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

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

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

Nothing ☐

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

If there is no separate annex, which parts?

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

DECLARATION

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

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

Name

Signed (if hard copy)

Annex 4

Consultation questions

A4.1 When responding to the consultation on the proposed DCC and Direction, respondents are asked that they do so by providing answers to the questions which are listed below.

A4.2 In answering these questions, respondents are also advised to consider the analysis included in the consultation, specifically Section 9 of this document.

Question 1: Do you agree with how we have derived the level of the maximum DCCs? If not, please explain why.

Question 2: Do you agree with setting the DCCs in nominal terms? If not, please explain why.

Question 3: Do you agree with our proposals around the timing of a new maximum DCC and for future DCC reviews? If not, please explain why.

Annex 5

Notification under section 49A(3) of the Communications Act 2003

Proposal for the withdrawal of and the giving of Directions under paragraph 18.5(a)(ii) of General Condition 18 in relation to charges for Mobile Portability

1. Ofcom, in accordance with section 49A(3) of the Act, hereby make the following proposals:

    - the withdrawal of the February 2014 DCC Direction; and

    - the giving of the proposed Direction under paragraph 18.5(a)(ii) of General Condition 18 set out in the Schedule to this Notification.

2. The effect of, and Ofcom's reasons for making, the proposals referred to in paragraph 1 are set out in the accompanying consultation document.

3. Ofcom consider that the proposals referred to in paragraph 1 are not of EU significance pursuant to section 150A(2) of the Act.

4. Ofcom are satisfied that the proposals referred to in paragraph 1 comply with the requirements of sections 49 to 49C of the Act, insofar as they are applicable.

5. In making the proposals, Ofcom have considered and acted in accordance with their general duties under section 3 of the Act and the six Community requirements set out in section 4 of the Act.

6. Representations may be made to Ofcom about the proposals set out in this Notification until **5pm on 10 November 2014**.

7. The February 2014 DCC Direction shall be withdrawn, and the proposed Direction set out in the Schedule to this Notification shall enter into force, on the date specified in the final Notification.

8. A copy of this Notification and the accompanying consultation document is being sent to the Secretary of State in accordance with section 49C(1) of the Act.

9. In this Notification:

    a. "the Act" means the Communications Act 2003;

    b. "the February 2014 DCC Direction" means the Direction under paragraph 18.5(a)(ii) of General Condition 18 in relation to charges for Mobile Portability given by Ofcom on 14 February 2014;

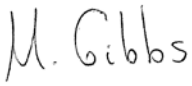
    c. "General Condition 18" means the General Condition 18 of the general conditions set under section 45 of the Act by the Director General of Telecommunications on 22 July 2003, as amended from time to time;

d. “Mobile Portability” shall have the meaning ascribed to that term in General Condition 18;

e. “Ofcom” means the Office of Communications.

10. Words or expressions shall have the meaning assigned to them in this Notification, and otherwise any word or expression shall have the same meaning as it has in the Act.

11. For the purposes of interpreting this Notification: (a) headings and titles shall be disregarded; and (b) the Interpretation Act 1978 shall apply as if this Notification were an Act of Parliament.



Marina Gibbs
Competition Policy Director

29 September 2014

A person authorised by Ofcom under paragraph 18 of the Schedule to the Office of Communications Act 2002.

[Draft] Direction under paragraph 18.5(a)(ii) of General Condition 18 relating to charges for Mobile Portability

WHEREAS:

A. Paragraph 18.5(a) of General Condition 18 provides that, subject always to the requirement of reasonableness, any charges for the provision of Portability shall be cost-oriented and shall be based on the incremental costs of providing Portability unless the Donor Provider and the Recipient Provider have agreed another basis for the charges, or Ofcom has directed that another basis for charges should be used.

B. The Donor Conveyance Charge is a charge for the provision of Portability.

THEREFORE, PURSUANT TO PARAGRAPH 18.5(a)(ii) of GENERAL CONDITION 18, OFCOM DIRECTS THAT:

1. The Donor Conveyance Charge shall not exceed:

    a. for any Call made during the period beginning on the date this Direction enters into force and ending on 31 March 2016, [0.024] pence per minute;

    b. for any Call made during the period beginning on 1 April 2016 and ending on 31 March 2017, [0.024] pence per minute

    c. for any Call made during the period beginning on 1 April 2017 and ending on 31 March 2018, [0.023] pence per minute;

2. This Direction shall cease to have effect on 31 March 2018.

3. In this Direction:

    a. “Act” means the Communications Act 2003;

    b. “Call” means a voice call that originates on a public electronic communications network (whether fixed or mobile) other than the mobile network of the Donor Provider and is terminated to a Mobile Number that:

        i. is within a number range that has been allocated to the Donor Provider; and

        ii. has been ported to the Recipient Provider;

    c. “Donor Conveyance Charge” means the amount charged by the Donor Provider to the Recipient Provider for the conveyance of a Call from the Donor Provider’s network to the Recipient Provider’s network;

    d. “General Condition 18” means General Condition 18 of the general conditions of entitlement set under section 45 of the Act by the Director General of Telecommunications on 22 July 2003, as amended from time to time;

    e. “Ofcom” means the Office of Communications;

    f. “pence per minute” means the sum in pence charged for a minute of a Call.

4. Any word or expression not defined in paragraph 3 shall have the same meaning as it has:

   a. in General Condition 18;

   b. if it has no meaning ascribed as mentioned in paragraph 4a, in the Act.

5. The Interpretation Act 1978 shall apply as if this Direction were an Act of Parliament.