T-Mobile response to the Ofcom consultation “Routing Calls to Ported Telephone Numbers”

Executive Summary

T-Mobile supports the principle of introducing direct routing for calls to ported numbers. T-Mobile believes that there are considerable benefits to ensuring that operators receive their own termination rates, notably in ensuring that arbitrage opportunities and risks to do not arise. Consequently, T-Mobile considers that direct routing should be introduced for all calls to ported numbers and that the scope of the solution proposed by Ofcom is inadequate in so far as it only addresses some calls to some ported numbers.

Nevertheless, T-Mobile does not consider that Ofcom has established the case for direct routing through a central database. First, T-Mobile does not believe that the routing efficiencies identified by Ofcom are in fact based on the correct assumptions, or that they would in fact arise. Second, T-Mobile considers that a central database solution is too expensive to be justified.

Absent an NPV or over-riding public policy justification T-Mobile does not consider that Ofcom can properly mandate the introduction of direct routing via a central database, or that, in the alternative, such a solution is proportionate. Further, any delivery of a central database, or alternative solution, must be conducted in line with proper procurement practice and not dictated by inflexible deadlines set in advance of the project being fully defined.

However, T-Mobile does wish to see the introduction of direct routing and believes that there are significantly lower cost alternative solutions which should be considered. Consequently, T-Mobile considers that the NICC should be tasked with the identification of such an alternative. T-Mobile sets out its own proposal at Annex 1, an alternative that is low cost, quick to implement, and can be implemented on an incremental basis by individual operators.

T-Mobile therefore supports direct routing and the procurement of a direct routing solution. While it does not support Ofcom’s proposals specifically, T-Mobile is willing to commit to engaging in an industry-led project to identify and implement a low cost alternative (assuming such a solution can be agreed).

Consultation Question Responses

Question 3.1: Do you agree that there is a problem in the way mobile originated calls to ported mobile numbers are routed? If not, why not?

T-Mobile would like there to be a system of direct routing for all calls to ported numbers in the UK. T-Mobile considers that there should be a change to the current position and that operators should receive calls directly in order to charge their own termination rate, on all calls, and that where they do not this creates arbitrage risks and other unintended consequences, the costs of which can be significant, both literally, and through their wider effect on competition.

Hence, contrary to Ofcom’s assessment, T-Mobile considers that the most significant issue with indirect routing is that operators do not charge their own termination rate on calls to ported numbers. T-Mobile considers this to be a general issue and not limited to mobile originated calls to ported mobile numbers. Moreover, T-Mobile does not consider that the consequence of indirect routing on termination rate payments is a barrier to direct routing but a reason for it: the current system creates arbitrage risks which could create millions of pounds worth of damage when the risk is realised.

A number of the established mobile operators have been the victim of arbitrage opportunities in the past, where a third party has used in-bundle numbers to run services funded through termination rates, resulting in huge net wholesale payments unrelated to the service provided. Under the present system there is a considerable risk of arbitrage services being run on ported numbers, using the rangeholder's termination rate. This is particularly the case for the 5 network operators, whose tariffs typically place each others numbers in bundle, such that a third party porting-in numbers from an MNO can offer arbitrage services for "free", resulting in huge outbound volumes to their numbers from the MNOs.

To date T-Mobile has managed this risk through contractual provisions in its bilateral contracts with MNP participants and the careful negotiation of new entrant's termination rates. However, this does not protect T-Mobile in the scenario where another operator has not also put in place equivalent safeguards: an off-net number could be ported between third parties and used for arbitrage services, with significant consequences for both T-Mobile and the rangeholder, particularly where this number is treated as in-bundle. As such, under the current system an operator's precautions against this risk are only as strong as the precautions taken by third parties. Individual operators have no control over the aggregate level of risk to which they are exposed. An increasing number of new entrants are joining the existing system, which relies on incomplete bilateral contractual relationships to manage a systemic risk. A move to direct routing would eliminate this.

Second, T-Mobile also considers that as a point of principle, operators should receive their own termination rate. The current system undermines MTR regulation and has given rise to a number of disputes between existing operators (i.e. H3G's disputes with each other mobile network operator regarding (i) the donor conveyance charge; and (ii) mobile termination rates on calls to ported numbers). The underlying cause to these disputes is onward routing and these disputes have each consumed significant resource, both at Ofcom and within operators. Moreover, they create the danger of significant distortions in competition through their resolution: where industry-wide issues are resolved on a fragmented bilateral basis the solution is incomplete and/or results in significant transfers of money between particular operators, without reconciliation of similar amounts between operators not also in bilateral disputes.

It follows from the above that onward routing creates systemic risks that could be avoided if a system of direct routing were implemented. T-Mobile considers that Ofcom has not taken sufficient account of these risks in its analysis, but that these represent a significant cost in the current system.

Nevertheless, while T-Mobile would support a move to a system of direct routing, it does not consider that Ofcom has identified the relevant drivers for such a change. As set out further below, T-Mobile does not consider that Ofcom has (as yet) demonstrated that there is an economic basis for a move to a direct routing system, or at least not one based on a central database solution.

Question 3.2: Do you agree with our assessment of the issues associated with onward routing?

T-Mobile does not agree with Ofcom's assessment of the issues associated with onward routing: T-Mobile considers that the problems with the current system relate to the risks and costs associated with the effect of indirect routing on termination rates. It does not consider that these represent a disincentive to change, or that there are particular technical, service-related or commercial vulnerabilities in the current system.

Absence of incentive to change

T-Mobile does not fully agree with the Ofcom assessment of the above. T-Mobile's position on MTRs and the DCC is broadly neutral on an industry wide basis and accordingly any move to an industry-wide solution would not remove a financial advantage in the current system for T-Mobile.

This can of course be distinguished from the position between operators on a bilateral basis, notably where looking at historic positions where MTRs and the DCC were significantly higher. However, given their reduction, the forward looking nature of Ofcom's proposals, and the fact that any solution should be implemented on an industry-wide basis, T-Mobile does not agree with Ofcom's assessment at paragraph 3.10.

In T-Mobile's opinion the most significant "absence of incentive to change" is the substantial direct cost involved in the implementation of a direct routing solution, together with the opportunity cost of making an investment in such a system when there are other demands on investment that would generate a higher return. T-Mobile considers that Ofcom has neither robustly demonstrated that there is an NPV in its proposals, nor that this NPV would represent an efficient investment in the context of alternative opportunities for industry and the consumer.

Commercial or technical failure

T-Mobile welcomes Ofcom's more balanced assessment of the risks of such failure. However, T-Mobile remains concerned that Ofcom continues to view this issue as an influential factor in its decision making.

While T-Mobile acknowledges the severe disruption that commercial or technical failure could cause, Ofcom is mistaken to consider that direct routing would necessarily resolve this, or improve on it.

- First, depending on the means of implementation, a direct routing system may in fact continue to rely on the donor network.
- Second, placing reliance on a central database only displaces the risk from one set of infrastructure to another: not only does this create an additional piece of infrastructure to be maintained at the same service, resilience and security levels as the relevant rangeholder network infrastructure, but it concentrates the risk and therefore ultimately amplifies it - if the central database suffers commercial or technical failure this will affect calls to all ported numbers (and possibly all calls), rather than only those calls ported from a particular rangeholder network. Accordingly, to the extent that Ofcom

continues to consider the risk of commercial or technical failure in its decision making, then it must also consider the much greater equivalent risk in a central database solution.

- Third, Ofcom is not proposing that all mobile to mobile calls are directly routed, or that any fixed to mobile calls are directly routed. There will therefore remain an issue of donor network reliance for all such calls (i.e. the substantial minority). Accordingly, to the extent that there was ever commercial or technical failure in a rangeholder network, this could still significantly disrupt voice calls for consumers. Similarly, a central database solution would not encompass SMS or MMS, further adding to the scope of communications that would not be preserved by a central database system in the unlikely scenario foreseen by Ofcom.

More generally, T-Mobile does not consider that, in the event of a commercial or technical failure, calls to ported numbers would in fact be likely to be impacted. First, commercial failure is unlikely to result in the cessation of all call routing, since there will remain value in the failed company's customer base to be preserved, and there are a number of contingency plans in place. Second, network operators maintain multiple back ups of their systems such that technical failure should never materially impact service.

<u>Quality of service</u>

T-Mobile agrees with Ofcom's primary conclusion, which is that there is no evidence that onward routing gives rise to any significant quality or service concerns. T-Mobile is therefore surprised that Ofcom subsequently concludes that direct routing may nevertheless deliver some benefit in terms of quality of service.

Furthermore, Ofcom's conclusion is based on the assertion that this may become an issue as networks develop in the future. However, Ofcom provides no evidence to substantiate that QoS will in fact become a problem in the future, or to distinguish the scale of development in the future from that to date and explain on what basis it foresees an issue arising.

<u>Call trap</u>

Ofcom also observes at 3.17 that the implementation of the so called call trap by a number of operators demonstrates the economic case for a move to direct routing. T-Mobile does not agree. Avoiding an unnecessary charge from a third party to route traffic to yourself is very different to an avoidable charge for a service that is necessary to complete a call.

It should also be noted that call trap was typically implemented by operators at a time when the DCC was 8 times its current level (i.e. greater savings) and can be done so at a fraction of the costs of a direct routing solution (i.e. lower costs). Accordingly, call trap is not a relevant benchmark.

Question 4.1: Do you agree with our proposed approach for assessing the net benefit? If not please explain why not.

T-Mobile believes that the benefits calculated by Ofcom are in excess of those that would in fact be realised by the implementation of direct routing. While it broadly agrees with Ofcom's approach (other than that it does not capture the benefits referred to above), T-Mobile does not consider that Ofcom's benefits assessment is accurate.

In particular, T-Mobile disagrees with Ofcom's assessment of saved transmission costs.

First, T-Mobile considers that Ofcom's calculation of these costs is inaccurate. T-Mobile understands that Ofcom has used publicly stated prices and has rightly then applied a 33% discount to these in order to attempt to reflect the actual costs incurred by operators. This is an appropriate approach in the absence of information on actual costs, but does not result in an accurate outcome: (i) T-Mobile pays considerably less for the equivalent transmissions links (STM-1s); and (ii) does not in fact use STM-1s, but STM-4s and higher, such that the actual transmission costs are in fact significantly lower on a like for like basis.

This is summarised in the following table:

Cost	**Units**	**Ofcom figure STM-1 costs**	**T-Mobile figure STM-1 actual costs**	**T-Mobile figure STM-4 costs**
Local end connection charge	£k one off	7	[✂]	[✂]
Local end rental	£k pa	74	[✂]	[✂]
Main link rental	£k pa	159	[✂]	[✂]
Main link	£k one off	3	[✂]	[✂]
Installation + 1st year cost	£k	256	[✂]	[✂]
Cost per Capacity (155Mb/s) based on installation + 1st year	£k	1.6	[✂]	[✂]

Note (1): Full leased line costs included in "Local end" charges

It follows that T-Mobile's actual costs for STM-1 capacity are [✂]% of those assumed by Ofcom. Moreover, the actual cost to T-Mobile of transmission capacity, using an STM-4 is a 12th (i.e. on a like for like basis STM-4 capacity costs £[✂]k) is [✂]% of Ofcom's assumed cost.

Second, T-Mobile does not believe that there would in fact be any transmission cost savings through the implementation of direct routing. Although there would in effect be less traffic, the elimination of ported traffic would not actually result in a step change in transmission overheads: investment in transmission capacity is "lumpy" and the elimination of ported traffic would not be sufficient to make a difference. The marginal cost of additional capacity is smaller than the savings made by reducing capacity procurement to a level tailored to the precise volumes required. Hence, it is cheaper for T-Mobile to purchase excess capacity (for example using an STM-4) and allow for volume growth than it is to buy the three STM-1s. In addition, T-Mobile necessarily procures significant amounts of excess capacity to account for projected growth and peak demand. In this context the elimination of ported traffic volumes will never be sufficient to materially alter the procurement of capacity.

The consequence of this is to effectively negate the NPV identified by Ofcom, as illustrated in the following table.

Mobile to Mobile solution	Ofcom	T-Mobile (including lower transmission cost savings)	T-Mobile (reflecting actual transmission cost savings)
Payback	Year 5	[✂]	[✂]
NPV (10 year)	£26m	[✂]	[✂]

Hence, were the transmission cost savings (refer to Q4.1) reduced or removed then payback would not occur until year [✂]at the earliest, or never. The effect on the NPV is therefore to reduce it to zero or eliminate it.

This makes the economic case for direct routing for Ofcom's mobile to mobile solution look poor.

Finally, even were Ofcom's analysis correct, it demonstrates an NPV of £26m over 10 years only. Even though there is a positive NPV, this level of NPV is inadequate over such a long time frame to justify regulatory intervention. In its own projects T-Mobile would ordinarily require payback within 5 years (and frequently less) in order to justify investment. Naturally, if there were no resource limitations then any project with a positive NPV is worth investing in, but no UK operator has unlimited funds and accordingly they must be invested efficiently. Ofcom's position that a positive NPV absolutely justifies investment is inappropriate for two reasons.

- It ignores the opportunity cost of diverting investment from other projects. Investment in a direct routing solution will reduce the amount of money available to invest in consumer services directly, since it will directly reduce the funds available to develop, launch, market and fund new products such as lower cost or higher value tariffs.
- It ignores the duty to encourage efficient investment that Ofcom is currently subject to but which is likely to be strengthened. By requiring companies to invest in a project that returns a low NPV (absolutely, and compared to alternatives) Ofcom would be requiring inefficient investment.

It should also be noted that by not including fixed to mobile traffic or new mobile entrants as part of a direct routing solution, mobile operators would need to run two routing systems, one for indirect routing (existing system) to continue to accommodate the fixed to mobile traffic and new entrants, plus the new direct routing system.

While T-Mobile understands the desire of Ofcom to develop a compelling argument for a move to direct routing, T-Mobile's analysis and experience have consistently identified that it is unlikely that there is a compelling case for direct routing using the current economic analysis. Indeed, it may be that it is not possible to demonstrate a purely economic justification.

In this context, and absent an over-riding public policy objective, T-Mobile does not foresee that Ofcom can justifiably require industry to adopt a direct routing solution. T-Mobile does consider that there are likely to be alternative solutions to a central database system however, and that these are likely to be cheaper to implement. A cheaper system would also make any economic case significantly stronger.

If industry can be given the opportunity to identify a low cost direct routing system then it may nevertheless be the case that industry invests in its implementation. As the current dispute before Ofcom on calls to ported numbers illustrates, there are compelling reasons to ensure that operators do in fact each received their own termination rate on calls to ported numbers, and, as set out above, there are additional benefits to direct routing not currently accounted for in Ofcom's analysis. T-Mobile, and no doubt others, would like to see these issues resolved permanently by a means that does not distort competition – i.e. through direct routing.

Question 4.2: Do you agree that we have identified the relevant cost drivers resulting from a move to direct routing? If not please explain why not.

T-Mobile broadly agrees with Ofcom's assessment of the cost drivers in the implementation of a central database solution, albeit that T-Mobile considers that there are good reasons not to rely on the current outputs derived from the Logica bid. In particular, (a) T-Mobile did not expect that Logica would deliver within budget; and (b) the deadlines newly proposed by Ofcom would require a "crash project" to be followed, which would require substantially greater resource than a project implemented according to standard best practice. It would therefore be delivered at greater cost than anticipated in Ofcom's model.

Nevertheless, notwithstanding the fact that these costs included are estimates, and may in fact be optimistic, T-Mobile broadly agrees with the overall magnitude of costs assessed for a mobile to mobile solution, including the operator specific and the shared central database costs.

Question 5.1: Do you agree with our assessment of doing nothing?
If not, please explain why.

As stated above, T-Mobile would like to see the introduction of direct routing in the UK, for all calls. T-Mobile therefore does not consider that it is appropriate to do nothing. Nevertheless, T-Mobile does not (i) agree with Ofcom's suggested reasons as to why direct routing will not be introduced absent regulatory intervention, or (ii) agree with the regulatory intervention proposed.

Question 5.2: Do you consider that an industry agreed solution is likely to emerge that would deliver direct routing no later than 2012? If not, please explain your reasons. Would you be supportive of such a solution?

Whether industry can deliver direct routing no later than 2012 substantially depends on the nature of the solution to be implemented. A solution that requires only incremental changes to existing infrastructure could potentially be implemented well before 2012, whereas a central database would require longer (regardless of whether this solution is industry agreed or mandated).

Notwithstanding the above however, T-Mobile does support in principle the proposal that industry should work to investigate and ideally implement a direct routing solution. For this to succeed will require both an alternative solution, and time.

An alternative solution

Although T-Mobile does not support Ofcom's current economic analysis, T-Mobile considers that this overlooks some of the potential benefits of direct routing – in particular the reduction in the risk of arbitrage opportunities being exploited through onward routing, and the wider principle of ensuring that operators receive their own termination rate on calls to ported numbers in future.

Moreover, T-Mobile considers that there are likely to be lower cost alternatives to the central database solution used by Ofcom in its cost analysis. T-Mobile would support an industry initiative to investigate lower cost alternatives with a view to implementing such a system in the near future. T-Mobile sets out one potential solution at Annex 1. T-Mobile considers that the identification of a lower cost alternative will substantially boost the economic case for direct routing, or result in costs that industry may be prepared to bear even absent a clearly quantifiable NPV.

Time

T-Mobile does not consider that 2012 is a feasible deadline for the delivery of a central database solution, regardless of whether a new system is mandated by Ofcom or industry-led.

Even were Ofcom to mandate direct routing by 2012, this could not be achieved:

- there is no agreed specification for a mobile to mobile (excluding new entrants) data base solution; and
- even if there was, the procurement, delivery, migration and testing process would require a more generous timetable, particularly in the current economic climate.

It follows that an industry-led central database solution would similarly require longer than Ofcom anticipates:

- as set out above, it is necessary for industry to work to identify and agree a lower cost alternative to a central database solution;
- this solution would require detailed specification and for any necessary standards to be agreed; and
- industry would seek to implement it according to standard best practice (in order to maximise efficiencies, and minimise costs and risks). Ofcom has not accounted for proper procurement practices and has underestimated the time necessary to deliver a successful project.

Nevertheless, an industry-led solution based on current infrastructure could potentially be delivered well within the 2012 deadline proposed by Ofcom. For example, if industry were to pursue the solution proposed by T-Mobile at Annex 1, standardisation could potentially be achieved within 3 months, with implementation subsequently taking relatively little time thereafter given the absence of any requirement to go through an elaborate procurement and delivery process with external vendors.

Consequence

As noted above, T-Mobile anticipates that Ofcom will not be able to justify a central database solution on a purely economic basis, and that the other benefits of direct routing cannot be deemed sufficient to overcome the lack of a positive NPV for a system based on generating efficiencies.

It follows that a lower cost alternative must be sought and that this can only be identified by industry. Only a simpler alternative to a central data base solution is realistically capable of being delivered within Ofcom's timescales. Given the opportunity, industry is likely to be able to identify a low cost solution that can be implemented within Ofcom's deadlines. Ofcom's own proposal could not.

Question 5.3: What steps do you consider Ofcom should take to ensure that such an industry commitment is serious? Do you agree with the proposed steps set out by Ofcom or are there additional measures that should be taken?

As set out above, T-Mobile does not consider that industry can commit to deliver a central database solution within the timescales proposed by Ofcom, in particular absent a sound business case. This is the case regardless of the seniority of commitment sought.

Absent a clear business case for a central database solution, T-Mobile does not consider that it is within Ofcom's remit to create a regulatory obligation to introduce one, and the question of industry commitment therefore becomes substantially irrelevant. T-Mobile believes that industry, potentially with Ofcom's assistance, can delivery a direct routing solution without Ofcom being required to repeatedly attempt to force it to do so.

First, there is a wider business case for direct routing: operators will only agree to make an investment absent a robust NPV if that can achieved on a low cost basis. A central database solution is too expensive to justify in the context of the efficiencies identified.

Second, there is no reason for industry to obstruct a move to direct routing where this can be achieved at low cost. The extent of any potential economic incentives that may have previously influenced some operators' enthusiasm for direct routing has been significantly diminished by regulation of the DCC and the termination rates of H3G. Ofcom's own persistent efforts to regulate in this area may also have disincentivised investment and coordination, since operators are reluctant to make investments where there it is likely that Ofcom will attempt to intervene in any event.

At a wider level, the benefits of direct routing accrue primarily to operators and its implementation is primarily a technical project. Absent an over-riding public interest concern, T-Mobile therefore does not consider it is foremost an issue for Ofcom to resolve and intervene in. At such point as a business case can be established, or there is otherwise industry agreement to identify one (i.e. through collaboration to ascertain a lower cost solution) it is for industry to organise and implement any future direct routing project

Nevertheless, T-Mobile would support Ofcom undertaking a similar initiative to that which it undertook in respect of the Operator Steering Group: i.e. hosting meetings to coordinate and drive industry. In this context however, the appropriate forum within which to progress the identification of an achievable direct routing solution is the NICC Technical Steering Group ("TSG"). It is this group which holds to appropriate membership and remit to formulate technical standards and to develop a network solution. Accordingly, Ofcom should engage the NICC/TSG to undertake the next step in the process.

T-Mobile is happy to provide such reassurance to Ofcom as necessary that it would attend, contribute and otherwise engage with ensuring the identification of a lower cost direct routing solution through the NICC. Thereafter, should the cost benefit analysis of such a system provide an adequate NPV, T-Mobile would similarly make such commitment as necessary to work with industry to implement it within demanding, but realistic, timescales.

Question 5.4: What steps do you consider should be taken to ensure that any industry solution that emerges does not foreclose the opportunity for other mobile operators to participate in the short term or longer term?

Ofcom's question highlights one of the fundamental difficulties of requiring only a subset of industry to implement a solution which by its nature ought to be applied consistently among competitors.

As set out above, T-Mobile consider that a significant driver for the introduction of direct routing is the elimination of arbitrage opportunities: any implementation that does not extend to all operators would therefore create only different arbitrage opportunities. Partial implementation of the sort envisaged by Ofcom therefore removes a significant element of the benefit T-Mobile would anticipate in moving to a direct routing solution. This is the case both in respect of mobile to mobile, and fixed to mobile calls.

T-Mobile therefore does not wish to see a system introduced that creates arbitrage risks and significant difficulties in its expansion (for both new and establish operators). T-Mobile therefore considers that any system for the direct routing of calls to mobile numbers must be mandated for all operators, or at least all mobile operators.

At a practical level, T-Mobile is also mindful of the situation that has arisen at various stages with regards to the Operator Steering Group. The OSG was established among a closed group of operators at a time when there were no other operators in scope (in that scenario, because there were only 4 mobile operators). It has been subsequently necessary to widen the OSG to encompass new members, however this has been problematic on every occasion. There are a number of reasons for this:

a) Money

Establishing a new system incurs costs which are shared among the initial beneficiaries. Subsequent new joiners will quite fairly be asked to share in the original costs of the system in order to benefit from it. However, agreement on the level of these costs is difficult and may be a barrier to entry for a small company.

b) Governance

New joiners to a system will justifiably want to ensure that their needs are not overlooked, particular where they are asked to contribute to the costs of the system. However, typically a new joiner will not be a significant user of the system and a proportionate voting system will not provide them with particular influence.

c) Inherently compromised negotiations

Difficulties in agreeing the financial and voting aspects of accession therefore create substantial obstacles to speedy resolution. Given that the parties involved are competitors, this is not easy to resolve. In particular, new entrants are likely to allege that the position of established operators is anti-competitive, while established operators are concerned that new entrants are trying to free-ride while exercising disproportionate influence given the low proportion of traffic they are responsible for.

T-Mobile considers that Ofcom's proposal to not include new entrants in a direct routing system is therefore short-sighted. Ofcom has witnessed first hand, over several years, the difficulties that would in fact be caused by its suggested approach. For new entrants, joining the OSG has been time consuming just as they urgently attempt to launch a commercial service. For the established operators it has been equally time consuming, as well as costly, in particular through the resource required attending meetings, negotiating, employing new OSG staff etc. T-Mobile is therefore adamant that any new direct routing system should include new entrants from the outset.

If Ofcom were nevertheless to mandate direct routing between established operators only, then Ofcom would have to consider carefully the difficulties that this would create and anticipate them through clear guidance to industry on how these should be resolved. T-Mobile considers that the simplest approach would be a strict application of the principle of proportionality, with costs and votes allocated on the basis of usage. This could be implemented within a technical and governance/funding structure that set the lowest possible barriers to entry. It would require new to entrants accept the extent of their likely influence on the system and for established operators to accept that they would bear almost all the costs of the new system. It would however enable a significantly better alternative to a repeat of the last 3 years experience of the OSG.

It should be noted that a solution in the form proposed by T-Mobile would require no governance or funding structure, since there would be no requirement for centralised infrastructure to fund or govern. Accordingly, such a solution could be introduced on a near unilateral basis, without a requirement for new entrants to make an application or payment to a central committee structure established by its competitors to-be.

Question 5.5: If there was a firm commitment to an industry-led solution, what role would you expect Ofcom to play?

As set out above, T-Mobile would not expect Ofcom to be required to play a significant role in any industry-led initiative, other than in supporting industry to maintain momentum in the identification of a lower cost alternative to a central database, and any subsequent procurement, as set out above.

Question 5.6: Do you agree with Ofcom's proposal for a backstop to mandate direct routing in the event that an industry initiative fails? Do you agree that reviewing the situation in late 2010/early 2011 is appropriate before deciding on the need to mandate?

T-Mobile does not agree with Ofcom's proposals on timing, as set out above. There is little difference in the timing proposed for a mandatory or industry led initiative, and accordingly it is in effect Ofcom that determines the solution to be delivered and the deadlines for implementation. T-Mobile does not consider that Ofcom is well placed to decide the parameters of a technical project in any event, but given the underlying similarity in mandatory/industry led alternatives so far as systems procurement is concerned, T-Mobile does not see the merit in these choices as currently presented. The timescales and threat of mandation are such that an industry-led initiative would be in effect driven by Ofcom.

Moreover, it is unclear how a backstop of this fashion would in fact assist in implementation. If an industry led initiative is running late, this is unlikely to be because industry is deliberately allocating resource to a project for as long as possible, but because there is a fundamental issue within the project that is causing a delay. Simply setting a more aggressive deadline in reaction to this would not address whatever fundamental problem was delaying delivery, but likely compound it by forcing industry to further compromise its efforts to run an effective project. There is a clear precedent for this in UKPorting, where industry was in effect forced by Ofcom's timelines to launch a procurement process before it had determined the detail of what it was it wanted to procure.

In the context of the above, T-Mobile does not consider that Ofcom's proposal for a backstop to mandate direct routing in the event that an industry led initiative fails is appropriate. T-Mobile does not consider that there is likely to be scope for Ofcom to justifiably mandate a central database solution in any event and that accordingly any implementation of direct routing will rely on the identification of a lower cost alternative. Given that the nature and detailed specification of such an alternative is unknown, it is inappropriate for Ofcom to attempt to determine deadlines at this stage. Again, Ofcom must move away from attempting to force industry to implement a new system absent there being sufficient efficiencies to outweigh the costs. Once an adequately low cost alternative is identified then there will be an incentive for industry to procure it of its own accord and Ofcom will not be required to repeatedly intervene, or to place deadlines upon industry that in fact harm the procurement process by hampering the ability of industry to procure an effective solution.

Question 5.7: Do you agree with our assessment of Option (3)? Please set out your reasons.

T-Mobile agrees that economic incentives are the most appropriate and likely means by which industry could be led to implement a direct routing solution. However, T-Mobile does not consider that deliberately distorting the existing economic signals is necessarily appropriate or possible. As such, T-Mobile considers that the most appropriate economic incentive would arise if Ofcom allowed industry to investigate lower cost alternatives to a central database solution, such that industry would move to adopt such a solution of its own accord.

As set out above, T-Mobile does not consider that, on a forward looking industry wide basis, the current DCC or MTR arrangements are responsible for preventing a move to direct routing. T-Mobile therefore disagrees with Ofcom's assessment that these are required to be changed or otherwise manipulated to create incentives for direct routing. Nevertheless, while adjusting the DCC is clearly a potential means by which to create routing incentives, T-Mobile does not consider:

- that the legal framework clearly allows for the DCC to be altered as proposed;
- that a revised DCC would necessarily be sufficient to create adequate incentives; or
- that each network building its own database of ported numbers (to publish/to use) is necessarily the most efficient solution.

Question 5.8: If Ofcom was to take Option (3) forward, what would be the costs involved in (i) making changes to wholesale billing systems and (ii) other costs?
Please explain the basis of your estimates.

Absent a set of agreed functional and non-functional requirements, and a clear specification, it is not possible to accurately estimate the likely costs of implementation. T-Mobile does not currently have adequate resource to investigate the likely requirements and specifications of hypothetical solutions and has therefore been unable to undertake a substantial analysis in order to answer this question.

Nevertheless, the costs of such a system are likely to be substantial for the rangeholder since in order to bill the originator the relevant charges, the rangeholder will need to know that the incoming call requires onward routing at the point of billing. As such, the issue is the same as for termination rates, where the rangeholder cannot bill the originating network a termination rate other than their own.

It follows that in order to implement the billing aspect of Option 3 it would be necessary to change the call record flow within each mobile network and to create new billing systems, links between them and a reconciliation system to govern them. T-Mobile does not expect that the costs of investment would be outweighed by the additional income from the originator, or that rangeholders would invest in such systems in order to incentivise a third party to avoid a cost. This is particularly unlikely given the likely low rate of return for the rangeholder once originators begin to route directly. The financial benefits of rangeholders investing in option 3 are self-defeating.

Ofcom must also not overlook the further substantial costs that could be incurred by the rangeholder/recipient network to publish information on ported numbers (which would need to be frequently extracted and published via a to-be-agreed standard and via a new (centralised?) system) in order to enable call originators to make their routing decisions. Similarly, there would be implementation costs for originating networks wishing to avoid the new charges, which would need to invest in systems to download, consolidate and reconcile the ported number information published by other networks and then integrate it in their networks.

Question 5.9: Do you agree with Ofcom's assessment that mandating direct routing for mobile originated calls to ported mobile numbers is likely to be the most effective way of removing routing inefficiencies? If not, what other factors that we should take into consideration, and why are they relevant to our analysis?

For the reasons set out above T-Mobile does not agree with Ofcom's assessment. In summary, T-Mobile considers that:

- Ofcom has substantially over estimated the benefits of a move to direct routing in its current assessment;
- there are likely to be substantially lower cost alternatives to a central database solution;
- there are significant benefits in ensuring that all operators, or at least all mobile operators, use direct routing;

- absent an agreed specification of the system to be implemented it is not possible to accurately measure the likely costs;
- absent an agreed specification of the system to be implemented it is not possible to accurately estimate the likely time required to fully implement the system and it is therefore inappropriate to set deadlines at this stage;
- in any event, Ofcom should not bind industry to a timetable that is insufficiently flexible to enable industry to procure a solution according to best practice; and
- any timetable that requires industry to procure a new system outside best practice will result in significantly higher costs, and is likely to result in compromises being made to ensure timely delivery that will result in long term costs / reduced benefits.

As such, T-Mobile does not agree that there is currently sufficient basis for Ofcom to mandate a direct routing solution, and that mandating a solution would result in a severely compromised delivery.

Beyond any disagreement over the cost/benefit analysis, T-Mobile would draw Ofcom's attention to the progress of the UKPorting project, which was similarly mandated by Ofcom and for which it set strict deadlines. In T-Mobile's opinion UKPorting is a text book example of "how not to do things", and a disaster was only averted by the project's cancellation prior to a contract being entered in to by industry, which contract would have without doubt led to a late, substandard and substantially over budget delivery.

Such a result would not have been a reflection on the vendor, but an inevitable consequence of a failed procurement process that was run to a deadline rather than to a professional project plan, and which consequently ignored proper procurement practice. The clearest demonstration of this can be found in the fact that neither of the vendors was prepared to guarantee delivery to the timescales Ofcom had proposed, and that neither contract contained a detailed specification of what was to be delivered.

T-Mobile cannot over emphasise the extent to which it is important that Ofcom draw the necessary conclusions and ensure that the same mistakes are not repeated in any future procurement process. While T-Mobile accepts that Ofcom may legitimately place some pressure on industry to deliver on a timely basis (where it has a mandate to do so), it does not accept that Ofcom can sensibly set deadlines for the delivery of a technical project, or that it is possible for any operator to make suggested estimated implementation timelines before it is agreed what is to be implemented.

As suggested by the Tribunal in its judgement in the Vodafone appeal, any project plan will have to be phased, with each stage contingent on completion of the preceding step. If Ofcom is determined to mandate a system and to set fixed delivery deadlines, then these must substantially work in step with procurement practice in order to ensure that the system procurement is not derailed by an inflexible haste to see delivery achieved.

Question 5.10: Do you agree that if Ofcom were to mandate direct routing, the obligation should be designed in a way that would avoid mobile operators having to use direct routing where the scale of ported traffic is not sufficient to justify the up-front investment to implement direct routing?

As set out above, T-Mobile does not agree with the implementation of a direct routing system that does not include all relevant operators.

First, any mobile to mobile direct routing solution must include all mobile operators if it is to eliminate arbitrage opportunities, the realisation of which could erase the NPV of the mandated system within months. T-Mobile and at least one other mobile network operator have been caught out by other operators using such arbitrage opportunities and suffered tens of millions of pounds of costs.

Second, any such implementation would create substantial difficulties for the future, since, as is clear from industry's experience with the OSG, the accession of new members to a system created and funded by a small number of established operators inevitably leads to protracted negotiation and therefore delays the accession of new entrants. It does so while consuming significant resource.

Third, T-Mobile does not consider that there will be substantial costs for new entrants to download information from a system to which they already upload. T-Mobile understands that Ofcom has identified considerable costs for new entrants though the All Call Query function, requiring that the database be able to handle queries directly with new entrants, and that these establish signalling links etc with the database in order to make these queries. However, no new entrant ever confirmed that it would in fact require this functionality under the implementation of Ofcom's November 2007 statement. Instead, such operators were much more likely to take downloads of the database in the same way as established operators, since it would be significantly more efficient to hold the information on their own HLRs, particularly once they were already required to provide information from these to populate the database.

Fourth, Ofcom's proposed distinction between new entrants and established operators discriminates between them. While T-Mobile appreciates that Ofcom justifies this through its cost/benefit assessment and whether investment by new entrants would result in a proportionate benefit to them, T-Mobile considers that Ofcom's assessment of the cost to new entrants is overstated and that the costs of them joining the system need not be disproportionate. More generally however, a point of discrimination would remain in the charging system for calls to/from new entrants: established operators would have to pay the DCC for all calls from new entrants, whereas new entrants would not be required to pay the DCC to established operators. This is not only discriminatory, but will also distort competition between them. T-Mobile does not consider that this can be justified as proportionate. New entrants frequently launch with aggressive price positioning that established operators cannot immediately match. That is good for competition, but it is only sustainable if the established operator can replicate the same efficiencies in the long term. This cannot be the case if they are required to pay costs that new entrants avoid.

Question 5.11: Do you agree that by framing the obligation in a way that obliges mobile operators to route calls to mobile ported numbers in the same way as non ported traffic should avoid the risks of any unintended consequences? If not, please comment on how this obligation could best be framed.

As set out above, T-Mobile considers that all traffic (fixed and mobile originated) should be routed directly in order to ensure operators receive their own termination rate and to avoid arbitrage opportunities arising. To the extent that Ofcom pursues only a limited implementation of direct routing, there is therefore the possibility that new arbitrage opportunities will be created. While T-Mobile notes Ofcom's conclusions on the cost/benefit analysis with regard to calls originated on fixed networks, to the extent that a cheaper solution can be identified then its application to fixed operators should be considered.

To the extent that Ofcom persists with a mobile to mobile solution only, Ofcom should define the scope of traffic subject to the principle above as widely as possible in as detailed a fashion as possible. At present the obligation as framed above does not match Ofcom's precise proposals, but T-Mobile does agree with the principle of this approach.

Question 5.12: Do you agree that the obligation to provide information on ported mobile numbers should apply to all mobile network operators from the start and not just the five incumbent MNOs? Do you agree that if there is a central database of ported mobile numbers, this should contain all ported mobile numbers including those of newer entrants who would not be obliged to implement direct routing from the start?

As Ofcom will have already understood, T-Mobile believes that it is essential that any direct routing obligation applies to at least all mobile operators in order to ensure that operators receive their own termination rate on calls to ported numbers. It follows that all operators should use it and that all numbers should be included.

Second, T-Mobile does not believe that there is a cost/efficiency reason for excluding new entrants from any direct routing solution. Under a central database solution, if new entrants' networks are already obliged to provide information to the database, it requires little additional functionality to download it also. All networks perform a look up in order to route all calls, so if their local database contains the downloaded ported number information then they can route directly in the same way as an established network.

Question 5.13: What do you consider to be an appropriate timescale for implementation of direct routing from the point at which Ofcom issues a final decision? Please provide a full and detailed explanation as to why you agree or disagree with the 2012 target date proposed by Ofcom.

T-Mobile notes that Ofcom considers that a direct routing solution would likely be lower cost than that envisaged under UKPorting, in part because of the longer timetable for implementation. Given that Ofcom is unlikely to publish a final statement in this consultation before mid 2010, T-Mobile does not see any difference between the timetable proposed now, and the timetable under UKPorting.

It should also be noted that under the UKPorting project there was at least high level agreement on the specification of a central data base (through the NICC). There is no such specification for a partial mobile only database. Accordingly, this project would in fact begin at a disadvantage to that under UKPorting, and therefore require a longer implementation period.

Finally, as noted above, the timescale provided is in any event significantly too short to enable a best practice procurement project to be implemented in the case of a central database solution.

It follows that the 2012 target date proposed by Ofcom is more ambitious than was the case for the UKPorting project. Given that UKPorting was running several months behind schedule and that neither vendor was prepared to guarantee delivery to the Ofcom deadlines, T-Mobile believes that the 2012 target date is wholly unachievable for a central database solution. That Ofcom appears to have drawn no lessons for the experience of UKPorting is both surprising and disheartening.

Moreover, as noted above, it is only possible to estimate the time to delivery once it is known what is to be delivered. There is no agreement on the functional and non-functional requirements of Ofcom's proposed database solution, nor agreement on the specification necessary to achieve the requisite functionality. Moreover, T-Mobile does not consider that a database solution is appropriate and accordingly it is necessary to first identify and agree a lower cost alternative.

Finally, T-Mobile would again note that, in the absence of an adequately robust NPV calculation, Ofcom has not established an overriding public interest concern to warrant implementation of a central database, or direct routing generally. In this context, T-Mobile fails to see the urgency that Ofcom appears to attach to implementing direct routing. Even if there was a robust NPV that justified the implementation of direct routing, the urgency of realising those gains must be set against the necessity to plan the implementation properly. A rushed delivery will only result in a delayed realisation of the benefits hoped for. Best practice project planning has developed for a reason, and Ofcom should not seek to assume that setting aggressive deadlines will lead to a more positive outcome. It will not – it will lead to a failed system that takes longer to get right than a system delivered properly in the first place.

It follows that Ofcom must move away from its aggressive determination to set deadlines. It is not possible to set a deadline for an unspecified requirement and it is not possible to deliver an effective system without adequate time to do so. T-Mobile appreciates that Ofcom will inevitably be keen to ensure that industry does not procrastinate, but Ofcom must adopt a more restrained and pragmatic approach if it is not to preside over the implementation of a failed system that derails the UK's mobile communication in the year of the Olympics.

Alternatively, Ofcom should allow industry to identify a lower cost solution. As set out above, T-Mobile can propose an alternative to a central database solution that is likely to be deliverable both at considerably lower expense than a central database, and in shorter timescales.

Question 6.1: Do you agree that it is appropriate for Ofcom/industry to appoint a qualified independent third party to work with industry to develop a provision technical specification for direct routing? If not, please state why.

T-Mobile wholeheartedly supports Ofcom's proposal to ensure industry develops a technical specification for direct routing. However:

- T-Mobile does not believe that this specification should relate to a central database solution, since the costs of such a solution are inherently too high; and

- T-Mobile does not believe that it is necessary that a qualified independent third party is appointed – there are already a number of established technical forums attended by highly qualified industry experts which are well placed to identify and agree a lower cost alternative.

T-Mobile therefore believes that Ofcom should initially ask the NICC to work to identify a low(er) cost direct routing solution. T-Mobile sets out its own high level proposal at Annex 1. The NICC/TSG is the appropriate body to identify appropriate technical standards: it combines operator and vendor technical expertise and is better qualified than any particular individual to develop these.

Only once a low cost routing solution has been developed that can deliver direct routing would it be appropriate to proceed to the development of a technical specification. T-Mobile agrees that it would be appropriate for Ofcom/industry to appoint a third party to develop this specification, if the solution requires delivery by a third party vendor. In the case of the proposal set out by T-Mobile at Annex 1, a direct routing system could be delivered through modest internal network development and the procurement of additional signalling capacity. As such, no external vendor would be required and it would be for each network operator to implement the specification.

Question 6.2: Do you agree with the criteria for selecting an independent expert/consultancy? If not, please state what different/additional skills or qualities this independent party should bring?

T-Mobile considers that the criteria set out by Ofcom are appropriate, but that the selection of a qualified independent third party is not necessary at this stage. Instead, T-Mobile considers that an initial stage should be for industry to agree at a high level on a lower cost alternative to a central routing database. Thereafter it may in fact not be necessary to appoint an external expert, since solutions are foreseeable that would not require detailed technical specifications to be agreed on an industry-wide basis or system delivery by a third party.

Question 6.3: If you would like to recommend suitable experts/consultancies to Ofcom, please do so, on a confidential basis.

As set out above, T-Mobile considers that the NICC is well placed to undertake the work required at this stage.

Question 6.4: Do you agree that three months is an appropriate period of time to produce a provisional technical specification from which stakeholders can derive reasonable accurate cost estimates? If not, explain why and detail what you consider to be an appropriate time scale.

As set out above, T-Mobile does not consider that a central database system is a solution that can be justified under the current CBA. T-Mobile believes that it is necessary to identify an alternative solution that could be implemented at significantly lower cost. Absent an NPV or overriding policy reasons T-Mobile does not believe that Ofcom can properly mandate the introduction of a central database solution.

If Ofcom were to allow industry to investigate alternatives, T-Mobile believes that three months would be adequate for the NICC/TSG to develop proposals for an alternative system and to agree the standards necessary to implement this. Indeed, thereafter T-Mobile believes that implementation could be achieved relatively quickly for certain solution scenarios.

Question 6.5: Do you agree that a further three months is a sufficient period of time to derive cost estimates based on the provisional technical specification? If not, please explain why and detail what period you think would be appropriate.

Once a detailed specification has been agreed, T-Mobile considers that three months is likely to be adequate to engage with potential vendors and internal suppliers and seek initial indications on likely costs for a central database solution.

However, a solution in the form set out at Annex 1 is likely to be able to be procured without the requirement to go through a procurement process with external vendors (other than in respect of the installation of additional signalling capacity). As such, in this scenario it is likely that cost estimates could be derived well within the three month period suggested by Ofcom.

Question 6.6: Do you agree that the conditions we have set out as being necessary to make this process successful in its aims are appropriate?

T-Mobile agrees with the conditions Ofcom has set out other than with respect to the time limitation. As above, T-Mobile considers that Ofcom's determination to set deadlines is inappropriate and short sighted. Ofcom does not routinely procure complex technical telecommunications infrastructure and systems, whereas industry does. Industry has well established best practice and this should be followed in order to ensure the best outcome.

Question 6.8: Do you agree with Ofcom's proposed next steps following responses to this consultation? If not, how do you think Ofcom should proceed to bring this assessment of calls to ported numbers to a final decision?

As set out above, T-Mobile believes that the appropriate next step is for the NICC/TSG to be tasked with identifying and costing an alternative solution to the central database system proposed by Ofcom.

Question A6.1: Do you have any comments on the assumptions used in the CBA?

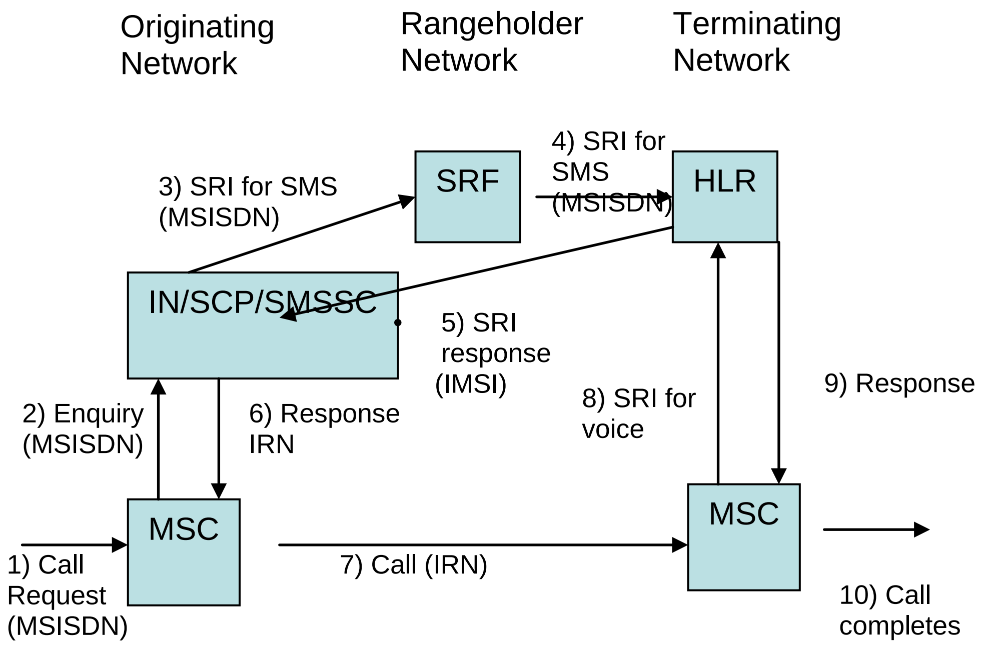
Please see above.

Annex 1 - T-Mobile Proposal For A Low Cost Direct Routing Solution

Direct routing using SMS SRI look up

All mobile networks already route SMS directly. This is achieved by looking up the MNC of the terminating network before the message itself is dispatched. The same sequence is used for MMS.

In this implementation the originating network would use the SRI for SMS MAP signalling sequence to retrieve the IMSI of the terminating party. The IMSI identifies the recipient network because the IMSI contains the MNC of the terminating network. A simple table would link the MNC to the IRN code and hence the originating network could route directly to the recipient network. This is summarised below:



Impact on networks

The originating network would have to construct a service that used the IN to find the recipient network for the mobile number dialled. This would involve:

- functional changes to the IN services to be implemented in the SCP or the creation of a new service;
- text messaging functions to do the SRI for SMS. This could either be the present text centres or ones bought for the purpose;
- IP connectivity between the SCP and SMS centres; and
- a modest signalling and HLR capacity uplift to deal with the extra traffic/services.

The rangeholder network would not need any new functionality. The rangeholder SRF would still take one hit per call (no change from present) but would otherwise have reduced capacity demands because the GMSC would no longer be involved in the call routing function.
The recipient network would get two HLR hits for each terminating call (instead of one). This would therefore require an increment in HLR capacity, but this would not be significant because most HLR capacity is driven mostly by location updates and other mobile originating functions. No new functions would be required.

Impact on administration

The SMS-based approach to direct routing requires no additional IT or process functionality. The rangeholder would continue to be the definitive reference for numbers in its range. Accordingly, no changes would be required.

Impact on call set up timing

It is understood that Ofcom has already considered the possibility of an SMS-based look up solution, but dismissed it on the basis that SMS delivery is frequently delayed and that such a solution is therefore not sufficiently fast to establish call set up within acceptable timeframes. Ofcom is understood to have hypothesised that networks would therefore cache the recipient network information for mobile numbers over time, effectively leading to the establishing of distributed databases within each operator.

T-Mobile submits that the use of the above system would not result in unacceptable delays in call set up. The signalling would be done over the C7 standard and accordingly there would be no delay. Indeed, the similar signalling functionality would be used in an All Call Query look up to a central database. The delay in SMS delivery is with delivery, not look up.

Costs

T-Mobile estimates that the solution outlined above could be implemented at an initial set up cost of approximately [✂]. Indeed, it is possible that this figure would represent a ceiling on the likely costs for T-Mobile. Costs for other operators may exceed those of T-Mobile where they have outsourced core network functionality (e.g. H3G), but are unlikely to be significantly higher and would in all cases be significantly lower than the costs of any contribution towards the creation of a central database solution.

Conclusions

The introduction of a system using the above functionality could be achieved at relatively low cost, since it would require only some modest network development, no IT development and additional signalling capacity. Furthermore, it could be done quickly (as there would no need for a protracted central procurement process) and could be phased in since each originating operator could implement it independently of other networks. Since this arrangement uses existing signalling procedures the only coordination between networks would concern signalling capacity. T-Mobile considers that a system of this nature is an appropriate alternative to the central database solution and should be considered in detail by industry as a means of achieving direct routing.