Reply to the TRAI (India):
Consultation Paper on Mobile Number Portability (MNP)
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1. What is the anticipated impact of number portability on customer satisfaction and increased competition between services and operators?

    In answer two points need to be considered: (1) Customer satisfaction and increased competition arising from the network level; and (2) at the level of the consumer:

    As regards (1), at the network level, customer satisfaction and increased competition can be facilitated through efficient *network routing* for MNP and should be promoted and encouraged by the TRAI as lower network costs are likely to result in lower retail prices and added consumer benefit. As such, TRAI when introducing MNP should also reserve powers in the implementing regulations for MNP to encourage operators to use the most efficient technologies and the most cost effective means of routing. For example, if the TRAI were to introduce a central database (discussed at point [4] below), it might be beneficial in the long term for the Indian telecommunications industry (organised by circles) interconnection arrangements to encourage the deployment of Intelligent Network (IN)[3] routing.

    Furthermore, if TRAI introduces a *block routing* system and the allocation and portability of individual numbers continues to grow, an increasing volume of calls will route via transit operators (the holder of the block range of numbers). As transit routing becomes more common, more conveyance and transit costs will be incurred by the terminating operator (the operator to whom the number has been ported). At

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[3] An Intelligent Network is an overlay computer system providing intelligence to enable the routing of telephone calls; intelligence which is additional to the normal processing and routing functions of a switch.

present, the Indian position on *Number Translation Services* (NTS)[4] is unclear, and interconnection payments under a NTS system are yet to be fully determined. It is likely under the current system that the originating and transit operators will continue to retain their costs, which will mean that there is no incentive for the originating operator to seek the most efficient means of routing the call. Furthermore, there is no means by which the terminating operator will be able to influence the routing decisions of the originating operator. However by mandating IN routing from the start (through any implementing legislation for MNP), the TRAI will be able to avoid such problems. TRAI will need to balance the need for IN with the commercial decision by operators to invest in IN technology. One option could be to review current commercial interconnect arrangements, for example the current flow of NTS payments (if any).

As regards (2), at a practical level from the consumer's perspective, a customer (or consumer or subscriber) despite being unsatisfied with the service operator (operator) for any reason whatsoever thinks twice before changing the operator. The reason being that if he changes the service operator, he would have to forego his well circulated mobile number. The older the mobile number is the more difficult it is for him to change his mobile number. The situation is equally complex for both individual subscribers and corporate subscribers.

The exponential rise in the number of grievances and the pending cases in consumer courts may be taken as a live example of dissatisfaction prevalent among the subscribers. Despite of having known this fact for long, the operators have done little to improve the customer care services.

MNP would definitely provide an opportunity to the unsatisfied subscriber to switch the operator in hope of better service and hence would be an answer to all their grievances. Consequently, the operators in order to retain the customers would be required to improve their services and customer response time.

The subscriber is an asset for any operator and no operator would like to forego its asset for the reasons well within its control. With the introduction of MNP, operators with good services and economical pricing schemes would be able to attract and retain customers. In the end, the rules of the free market would prevail and only serious players with good services would sustain in the market and the incompetent ones would be driven out due to migration of subscribers.

2. The following technical options have been discussed in the consultation paper. Please indicate your preference with reasons:
   a. All-Call-Query
   b. Query-On-Release

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[4] NTS services is the process associated with the routing of a non-geographic number to a network termination point eg. the number is translated from its non-geographic format into a geographic or mobile number to enable it be routed to a geographic location or to a mobile phone.

c. Onward Routing (Call Forwarding)
d. Call-Drop-Back
e. Any other solution

Taking into consideration, technical and economic aspects it is advisable that Onward Routing and Query-On-Release may be implemented.

The reasons for the above observations are:
Onward Routing –
(a)   Establishment costs are low
(b)   Easier database management (use of internal/distributed database)
(c)   Easier and quicker to implement

[5]Query-On-Release –
(a)   Supports optimal call routing
(b)   Sharing of number information between operators
(c)   Minimizes the dependence on the other operator as the database is centralised
(d)   Establishment costs are moderate
(e)   Long term solution
(f)   Reduces unnecessary traffic on the network[6]

3. In the past, some countries have followed the approach of implementation of a short-term solution, with parallel planning for a long-term solution. Several other countries have opted directly for a long-term solution. The issues associated with either approach are discussed in this paper. Please give your opinion, with reasons, on the path India should adopt.

    As stated above, India should initially implement short-term solution, with parallel planning and implementation of long-term solution. By this arrangement the operators would not have to incur heavy (initial) cost burden and their would be expeditious implementation of the same. Moreover, this would give enough time to operators to understand and shift from easier to more complex option.

4. In case of a centralized database approach, who should be responsible for the setup, ownership, administration, and management of such a database? Should the administration and operation of a centralized database be assigned to a third party duly licensed by the licensor as an other service provider (OSP) on the lines of a clearing-house, or should some other approach be adopted?

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[5] None of the countries have implemented this solution. we are not sure about the feasibility. Most of the countries have implement All-Call-Query.

[6] This is in comparison to All-Call-Query option where traffic is generated on each call to check location of dialed number.

It is advisable that the setup, ownership, administration and management of database be assigned to a private sector body, such as a *Number Portability Organisation (*NPO) under contract to the TRAI. The NPO could be a consortium of network operators. This is enumerated from the fact that even the database for roaming mobile numbers is being successfully managed by a consortium of network operators. Alternatively, the NPO could be independent of operators and service providers and selected by the TRAI through competitive tender to both allocate blocks of numbers and manage MNP for a specified period, for example [five] years. Under this approach, the TRAI would be able to:

- retain the traditional *policy functions* of a national regulatory authority, such as ensuring equitable, transparent, and timely allocation of numbers, reviewing and amending national numbering conventions, reviewing operators number plans, ensuring implementation of non-geographic and MNP, extending portability policy to paging and personal devices, and supervision of fee allocation and determinations;
- remain publicly accountable for the national Numbering Scheme;
- set or approve block prices;
- appoint the NPO and monitor their performance under the terms of the contract;
- deal with disputes and administrative appeals against NPO decisions;
- deal with cases with policy content referred to it by the NPO (falling outside conventions or normal practice)

Furthermore, if the NPO also had responsibility for numbering, the NPO could be independent of operators and have the power to:

- maintain a database of block allocations;
- allocate and reserve blocks in accordance with conventions;
- deal with enquiries from operators, service providers and the public;
- collect fees on behalf of the government;
- arrange auctions.

Such an arrangement would be similar to the position in the USA, where the FCC is responsible for policy setting and the administration is carried out under contract for the FCC. To ensure transparency and accountability of the NPO's activities, all allocations and reservations could be published regularly on the internet and an annual report produced. Furthermore, it may be more desirable for the transfer of responsibility for number administration to be phased in by number range. The simple number ranges being transferred first, followed by the more complex ranges (for example access codes) where policy is still evolving.

5. How should the database updates between different operators be synchronized? Where could the central database be located?

For the above purpose, it is suggested that the reference data from the centralized database should be copied to operational databases on frequent basis. As the database for roaming mobile numbers was earlier being managed at Bangalore, the central database can on the same lines be located at Bangalore.

6. What should be the level of centralization (metro, circle, national) for a centralized database? Should this be a permanent arrangement, or be subject to later revision?

    Level of centralization for a centralized database should depend upon the level of MNP implementation. At present the network operators are divided into circles (service areas), therefore accordingly if MNP is allowed within the same circle, then it is advisable that the level of centralization should be at a circle level. A national level centralized database server may be required upon introduction of MNP at national level irrespective of the circle, state or city. The policy in this regard should remain open for later revision as and when required.

7. How should NLDOs and ILDOs handle the routing of calls to support number portability?

    See the comments on IN and NTS services made at point (1) above. In terms of interconnect routing, major issues will include signalling functions (support of relevant standards), the fexibility of access points since the incumbent operator and Other Licensed Operators (OLOs) may drop calls at any access point and not necessarily via the shortest route, and also MNP concatenation (i.e. the need to do things like porting a subscriber from one operator to another but also moving locations shortly after)

8. Are the existing interconnection arrangements (such as signaling) between mobile-to-mobile, mobile-to-fixed networks sufficient to achieve number portability, or are any changes required?

    The following areas will require focus by TRAI and operators for successful implementation of MNP:

    - Interconnect billing (this will require a full understanding of MNP tariffing)
    - Interconnect signalling (as mentioned above, particularly on support of relevant standards)
    - Interconnect routing (flexibility of access points)
    - MNP concatenation (mentioned above)

- Preservation of Calling Line Identification (CLI)
- Whether MNP is to be based on enhanced call forwarding or IN
- Whether the incumbent operator will only support MNP between "like" services eg. freephone, premium rate etc
- Whether a large volume of ported numbers will be required to use full IN solutions (as recommended above at 1) as query on request (QQR) becomes inefficient.

Implementation of all the above by operators will require effective network design and the ability to be supported by current network equipment.

9. Are there any technical issues in the portability of services such as SMS, data, voicemail, or fax?

See comments on IN and NTS services above.

10. What problems do you foresee with the current National Numbering Plan in implementing number portability that may necessitate the modification of the existing National Numbering Plan?

As per the current national number plan the first two digits in a mobile number are operator specific and denotes his service area. The calls are forwarded/switched, from one operator to another or from one service area to another, based on the first two digits of the mobile number. Therefore, if the subscriber shifts to another operator or service area, the switch would not be able to identify the recipients network.

Moreover, the subscriber is required to prefix 'zero' when dialing a number outside the service area, else he dials the number directly. If the same numbering plan is maintained it would be difficult for the subscriber to ascertain whether the dialed number is within the service area or not. The following example may help us in understanding the problem- Subscriber X shifts from Delhi to Bangalore and does not change his mobile number. Caller Y in Delhi dials X's mobile number (unaware of the fact that X has shifted to Bangalore) receives a response that the number does not exits. So for Y the number is no longer in use.

For the purpose of successful and efficient implementation of MNP the National Numbering Plan would require a change. To resolve the above problem, it is advisable that the National Numbering Plan be changed to create uniformity for the dialer to dial any number, irrespective of its circle, with ease. One such option is that 'zero' be prefixed to all the mobile numbers so that the calls can be connected with ease within and outside the circle. This system would be similar to the one being followed in Great Britain where the first digit of all the mobile numbers is 'zero'. See also the comments for a suggested Number Portability Organisation (NPO) made at (4) above together with its suggested powers.

Further problems with the current national numbering plan will be that in the future, multimedia and broadband services are also likely to require significant new numbering capacity. The business community will also require "corporate numbering", where each corporate customer would want control over the way in which numbers were used and routed within their private networks (VPNs). This would indicate a move towards individual number allocations.

11. Should number portability related charges be regulated? If not, then what measures will ensure that the portability charges are not set such as to discourage portability?

A pricing mechanism would send a clearer signal to operators and give greater incentives to utilise both number stocks more efficiently and also to bring down the costs for routing through use of IN and therefore the tariffs for MNP. The use of Long Run Incremental Costs (LRIC) to calculate MNP charges should be recommended to keep in line with current best practice in the telecoms industry worldwide

12. What measures will ensure tariff transparency?

As mentioned in #10, after the implementation of MNP it would become difficult for the caller to ascertain whether he is making a STD call or local call. For the purpose it is advised that upon dialing a number, if the said number is outside the circle/the call is an STD call, a pre-recorded message in English, Hindi or the local language should inform the caller that the dialed number has shifted outside the circle and hence he would be charged at higher/STD rate. The caller, under such circumstances, may be given some time to decide whether he wants to continue or discontinue with the call. The above suggestion should be implemented as it is important that the caller is informed about the higher call rates and his consent is taken before connecting the call.

Secondly, any subscriber wanting to switch his operator should be advised about all the costs involved and tariff (plans) for availing such service. Such information should be passed on to the subscriber in writing and only upon receiving his consent the same should be implemented.

13. Considering that the Indian market is a growing market and number portability offers the possibility of attracting customers by an efficient operator, should it be mandated that the cost of the number portability should be absorbed by recipient network?

India has a total of 59.3 million mobile subscribers (at the end of July 2005) and overall tele-density (fixed and mobile) is 9.86 per cent (as per press release no. 65/2005 dated August 09 2005); and approximately 7.61 million mobile subscribers were added in the first four months of this fiscal year (April'05- March'06) with percentage of growth rate during the financial year 2005 over the financial year 2004 standing at 55 per cent[7]. The aforesaid figures are the indicators of the phenomenal growth rate and the enormous subscriber base, which an efficient operator can attract. It is only the efficient operator, who would benefit under the number portability regime.

The TRAI should recommend to all operators that it should be their (the operator's intention) to absolve their customers from any cost impact that may be prevalent in bringing them onto the respective operator's network. Therefore, customers porting from any one operator's network will shift the cost responsibility onto the accepting operator.

14. Please share any additional information that you might have about number portability implementations in countries and jurisdictions around the world, and what we might learn from these experiences.

See the comments about NTS in the UK and the NPO mechanism in the US stated above. Furthermore, best practice in the UK has followed the following procedure in setting chronological dates for the following target milestones:

- initiation of interconnection discussions with the incumbent operator;
- sign-up to first schedules to incumbent operator interconnect;
- implement technical discussions on MNP issues outlined in (8) above;
- sign-up to MNP schedules of incumbent interconnect
- begin testing for MNP;
- MNP in-service date fixed.

As the TRAI will be aware, the above timetable is driven more by the achievement of a full interconnect and implementation of the relevant schedules to the incumbent operator's interconnection agreement (plus any other operator).

15. Give your comments, with reasons, as to when number portability should be introduced in India?

With a tele-density of 9.86 per cent and annual growth rate of 55 per cent, it is the appropriate time to introduce number portability in India. As mentioned in the consultation paper the number portability will add to the competition and will result in improvement of services. Today, the market may not be mature or saturated, but

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[7] Report 17 June 2005 on TRAI website

with the growth rate of 55 per cent, number portability be introduced as early as possible.

16. Should MNP be implemented progressively by service area or directly across the nation at one time?

It would be advisable that the number portability be implemented progressively by service area. The above advice is strengthened by the reasoning given in 5.2.a, 5.2.b, 5.2.c and 5.2.d of the Consultation Paper. The same are reproduced below for reference:

a. Some service areas may have relatively higher levels of business subscribers and so the benefits to customers may be higher in such areas than others.

b. Some service areas may have more modern network infrastructure resulting in lower system set-up costs to operators than in other areas.

c. The early experience gained may be helpful in quicker and smoother implementation in the remaining service areas and eventually the national level. Any technical and procedural hitches may be removed before proceeding for implementation in the remaining service areas.

d. The overwhelming proportion of porting activity may be expected to occur when customers change to another service provider within the service area, rather than when they move to live or work for extended periods in another service area.

17. What will be the effect, if any, on the different aspects of implementation if phased roll-out is adopted?

In our opinion phased roll-out should not have any major effect on the implementation of number portability.

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