NUMBER PORTABILITY
AND INDIAN SCENARIO

Retain your mobile number even after you have jumped from one service provider to the other. The magic word that can make this possible is ‘number portability’

Currently in India, subscribers are required to change their telephone numbers when changing operators. Changing a telephone number can be a major inconvenience and a barrier preventing them from exercising the choice of changing operators. As a result, the customer may be unable to take full advantage of the growing competition among operators or the introduction of new services and technologies.

Number portability allows customers not only to move from one mobile service provider to another within the global system for mobile communications (GSM) but also from GSM to code-division multiple access (CDMA) services (you have to change your phone in this case), and also from landline to wireless phones.

Subscribers with number portability are able to avoid the costs of reprinting stationary, informing callers, changing signs and lost business. Other benefits arise out of efficiency and service quality improvements and any associated price reduction resulting from increased competition. Callers to porting users also benefit from this, who are able to avoid the need to change entries in their diaries, directories and databases. They would also dial fewer wrong numbers and make fewer directory inquiries. So portability benefits subscribers and increases the level of competition between service providers, rewarding service providers with the best customer service, network coverage and service quality.

At present, India’s tele-density (fixed and mobile combined) is approximately 12 per cent and approximately 60 million cellular mobile subscribers are connected through four to seven cellular mobile operators within each service area. Subscribers have a significant choice of services to choose from and move between, if they desire so.

However, the inability of the subscriber to retain his telephone number when he wishes to change the operator presents an obstacle to competition. If we look at other developing countries, the Netherlands decided to provide mobile number portability (MNP) when mobile penetration was 10 per cent, and Pakistan, with 6.9 per cent cellular penetration, is planning to introduce MNP shortly. This suggests that it is not too early for India to discuss number portability, and Indian service providers should consider it seriously to provide better services for Indian customers.

Types of number portability

Number portability is not only limited to operator switchover but also enables a subscriber to switch between services or locations while retaining the original telephone number, without compromising on quality, reliability and operational convenience. So there are three basic types of number portability: operator, location and service portability.

Operator portability. This is the ability of a subscriber to retain within the same service area an existing telephone number even if he changes from one service provider/operator to another. This type of portability is for the same service, i.e., fixed-to-fixed or mobile-to-mobile. Different categories of operator portability follow from these different types of numbers, and fixed-number portability (FNP) is the portability of landline telephone numbers and mobile number portability (MNP) is the portability of mobile telephone numbers.

Fixed-number portability. In India, Bharat Sanchar Nigam Ltd (BSNL) and

- PRATEEK BHATIA
- SANMEET BHATIA
Mahanagar Telephone Nigam Ltd (MTNL) have approximately 90 per cent of the total fixed-line subscribers, with the rest shared by private operators. However, the annual growth of private operators in the year ending March 31, 2005 was 116.6 per cent as opposed to 1.5 per cent of the BSNL and MTNL. This significant difference indicates that there is potential for the growth of private operators, and this growth can introduce competition in the fixed-line market.

The main hurdle in the implementation of fixed-number portability is that it requires again a change in the national numbering plan, which may not be a small issue for a country like India. So at this stage it is easy to go for mobile number portability and then look for fixed-number portability.

Mobile number portability. MNP is operator portability applied to a mobile-to-mobile porting process. There is a latent demand for MNP in India. In a survey, International Data Corporation (IDC) India found that “30 per cent of mobile subscribers are likely to shift to an operator offering better service if given the option.” Competition between mobile service providers in India is already intense. The beneficiary of this competition would be the Indian consumer, and MNP may increase the level of competition further. The Telecom Regulatory Authority of India (TRAI) considered that this level of portability is easy to achieve and it will be first step for implementation of number portability in India.

Location portability. Location portability is the ability of a subscriber to retain an existing telephone number when changing from one physical location to another. It becomes complex in the Indian situation if the subscriber moves to a region where his original network operator has no footprint. Location portability has varying levels of complexity depending on whether the porting is occurring within or outside an exchange area and/or charging area. There might be differing impacts of routing and billing depending on the new location of the number.

Location portability is not required in the existing mobile services as long as the subscriber moves within the service area, i.e., circle or metro. Internal migration patterns in India suggest that migration is “predominantly short-distance, with around 60 per cent of migrants changing their residence within the district of enumeration and over 20 per cent within the state of enumeration while the rest move across the state boundaries.” So at this stage there is no immense need for location portability and it may be considered as a futuristic arrangement.

Service portability. Service portability is the ability of a subscriber to retain the existing telephone number when changing from one service to another service, say, from fixed to mobile services. The United States successfully implemented it. In the Indian context, service portability will encourage the introduction and adoption of new telecom services and technologies. This will not only benefit users but also those service providers who continually upgrade and innovate. Additionally, it is a source of competition between all telecom operators, whether fixed or mobile.

However, there might be concerns about possible confusion for callers about the charges for different phone calls, i.e., tariff transparency is affected. In the current context, this is especially true when wire-line numbers become wireless numbers. A caller would no longer be able to estimate call charges based on the format of the phone number.

Implementing mobile number portability

The technical solution adopted for the implementation of number portability is important as it will have cost implications on service providers/network operators, and will affect the services offered and the performance of these services made available to the subscriber.

Number portability can be provided by two broad categories of methods: off-switch solutions or on-switch solutions.

Off-switch solutions. Off-switch solutions require the use of database to acquire the information of ported numbers and route the query to concerned switches depending upon the result of query. This type of solution allows for efficient routing of the call towards the recipient switch.

The originating switch (the switch where the calling party is connected) can intercept a call to a ported number by querying the database that contains the list of all ported numbers plus routing information associated with each ported number. There could be two ways to access the database: the all-call-query and the query-on-release methods.

All-call-query method. The originating network first checks the location of the dialed number in the central database and then routes the call directly to the recipient network (the network where a number is located after being
ported).

Query-on-release. The originating network first checks the status of the dialed number with the donor network (the initial network where the number was located before ported). The donor network returns a message to the originating network identifying whether the number has been ported or not. The originating network then queries the central database to obtain the information regarding the recipient network and routes the call directly to the recipient network.

On-switch solutions. In the case of on-switch solutions, the donor network manages the routing information for a ported number. Thus, the donor switch performs the interception, either routing the call itself, or providing routing information to the originating network that then routes the call to the recipient network. Consequently, this involves the use of internal databases.

The two ways to implement on-switch solutions are: onward routing (call forwarding) and call-drop back.

Onward routing (call forwarding). Here the originating network connects to the donor network. If the dialed number has been ported, the donor network itself routes the call to the recipient network.

Call-drop back. Here the donor network checks whether the number is ported and if it is, it releases the call back to the originating network together with information identifying the correct recipient network. The originating network then routes the call to the recipient network.

On-switch solutions are usually seen as a short-term interim solution for number portability. These are relatively easy and quick to implement compared to off-switch solutions. Some countries initially chose a transient, short-term solution. This was not necessarily the most technically efficient solution, but allowed implementation in a timely way and with minimal investment. Simultaneously, a long-term solution was also studied and deployed progressively.

Management of database. The various technical options related to the implementation of MNP mentioned above involve the use of databases that contain routing information. The databases can be centralised or distributed.

The centralised model involves a single reference database containing data for all mobile numbers or alternately all ported numbers. A consortium of network operators may manage this centralised number database for mobile number portability, or it may be outsourced to a third party.

The distributed model involves multiple databases containing subsets of the total data. For example, in the on-switch case each separate database in the distributed model may comprise only the numbers ported from a particular mobile network operator.

Comparison of different technical options. Onward routing is often regarded as the simplest routing method to implement and the all-call-query method as the most complex, with the other methods lying between these two extremes.

The centralised database solution is perceived as a long-term target solution for number portability. It supports optimal call routing and is adapted to an environment where all operators share number information. However, it is technically much more complicated to implement, involves significant investment and requires considerable national coordination. Alternatively, distributed database solutions might need less coordination because every operator will have to handle the information only of his ported-out or ported-in numbers.

Other important issues
There are some other important issues that will greatly affect the implementation of number portability.

Operational aspects. The challenges in administrative arrangements, which facilitate porting of numbers, may need equal attention. Designing efficient, simple, secure and yet practical porting procedures for number portability may involve addressing is-
issues such as the role of retailers, the need to change SIM cards or handsets, authentication of customers requesting a port, communication arrangements between entities during the porting process, refusal to port, time to port and procedures for porting large quantities of numbers at a given time. These issues must be addressed properly for successful implementation of number portability.

Economic aspects. The success of introduction of any service in a telecom network is highly dependent on how cost-effective it is to the end users, and the cost burden it imposes on the concerned parties for its implementation. In this respect, the implementation of number portability should be cost-effective to ensure its success.

The system requires a significant investment from a provider to establish the capacity to provide number portability on its own network and in its associated operational support and administration. Administrative costs include the costs incurred by service providers in closing an existing account, setting up a new account and coordinating the network operators in switchover of the mobile number and routing of the calls, and costs of new handsets or SIM cards.

There are different methods by which the setup, administration and conveyance costs of porting might be allocated. In the case of off-switch distributed or centralised database implementations, operators use a look-up database for routing the information of ported numbers. A third party or network operator may setup and manage this database and recover the cost from the service provider according to its usage of central database.

The donor network may pass costs of porting to the recipient network operator. The recipient network operator may decide whether to recover the costs from end-users or to bear by own.

The donor network operator may charge the user for the costs of a port. It may become necessary to regulate this charge to ensure that an inflated price charged by the donor network does not discourage users from porting to a competitor. The administrative costs of the recipient network and the donor network could pass on to the user requesting a port. These prices may need to be regulated to ensure that subscribers are not overcharged.

Tariff transparency. Users find it desirable to be able to predict the price of calls, and porting numbers should not undermine this capability. For example, some cellular service providers charge less for calls within their network, and more for calls to phones on other networks. If portability is implemented, it may not be possible for a caller to determine what the tariff for a call might be. This could lead to confusion for the calling subscriber. Implementing tariff transparency will help to avoid this situation.

Tariff transparency can be achieved through the use of recorded announcements at the start of a call or when the caller has a terminal with a screen where the tariff or service information could be displayed.

National numbering plan. Since a database query returns the routing information in the form of a re-routing number (which may be a prefixed original called ‘party number’), it is important that this re-routing number is recognisable and routable by the transit switches and fits into the National Numbering Plan. Additionally, the National Numbering Plan needs modification because after introduction of number portability, the recipient network should be allowed to use numbers originally assigned to the donor network.

Short messaging services. SMS messages are routed between mobile networks via signaling paths rather than over voice circuits and so the methods used for routing of calls to ported numbers are not applicable to handling of SMS messages forwarded to ported numbers. Service providers may have to use a separate solution for handling SMS traffic for ported numbers.

The Indian scenario

Considering the growth of telecom services in India, it is appropriate at this stage to discuss number portability in order to ensure full competition in the telecom industry. In this direction, TRAI came up with a consultancy paper on mobile number portability in July 2005. However, it is necessary to determine the implications of implementing MNP for the mobile subscribers, the service providers and the regulatory body before commenting anything on its implementation.

It appears from the feedback of service providers to the consultation document of TRAI that the Indian mobile industry is still not ready for MNP. The service providers are not keen on its introduction, as that would require substantial investment in upgrades to the routing and the billing mechanisms. Since the service providers are already operating with very low margins, they feel that instead of spending more money on upgrading their systems for a value-added service, the existing resources could be utilised for providing better voice quality and services to the customers. Undoubtedly, the introduction of MNP would keep the service providers on their toes.

Most of the service providers are of the view that “number portability is introduced in countries as an instrument to increase competition. But in India, we already have so much of competition and the lowest tariffs in the world. Introducing portability will only increase tariffs—it makes no sense now.”

In the CDMA space, the main players—Reliance Infocomm and Tatas—are divided on the issue. While Reliance Infocomm has been pushing for number portability only in fixed lines, the Tatas have demanded that port-
ability should be extended to both fixed as well as wireless services.

Telecom experts say that incumbents like BSNL and MTNL, which control over 90 per cent of the fixed-line phones, have resisted number portability in fixed lines as this would give the private sector a chance to nibble into their stable subscriber base. However, Reliance has demanded that number portability should be introduced in fixed lines first as that would give it an opportunity to take a swipe at BSNL’s customer base.

Tata Telecom Services said that considering cheap labour and lower software costs in India, the cost per subscriber would be around Rs 300. Assuming that 15 per cent of the total subscriber base of 200 million (projected in 2007) opt for the service, operators would need to fork out about Rs 9 billion.

But in most countries, a substantial portion of the cost is borne by the customer to avail the service. They argue that customers could easily pay up to Rs 200 (one-time cost) for the service—so telecom operators need not fork out more than Rs 3 billion. Divide that amongst six national operators and it amounts to only Rs 500 million. These calculations suggest that it is not as costly affair as predicted by most service providers.

Is MNP feasible in India?

The points in favour of MNP in India are:

1. The cost per subscriber to introduce MNP is Rs 675 in Australia and Rs 900 in Europe, but around Rs 300 in India.
2. Pakistan and the Netherlands are introducing MNP despite only 6.9 per cent tele-density.
3. The Netherlands is introducing MNP in spite of only 10 per cent tele-density.
4. The US has over 8.5 million customers who have opted for MNP.
5. Tariffs have not gone up in countries that have adopted MNP.

The points against MNP are:

1. In the US, only 5 per cent phone subscribers have adopted MNP so it has got a lukewarm response.
2. Tele-density in India is only 12 per cent, so the market has not matured yet.
3. Churn rates (changing service providers) will increase by 15 to 30 per cent.
4. Additional expenditure will be in the range of Rs 30 to 40 billion, hence tariffs to go up.
5. Indian mobile tariffs are the lowest in the world, hence no justification to use portability as a weapon to ensure competition.

Finally, TRAI has recommended that subscribers who wish to avail the facility will have to pay a one-time fee of Rs 200 to the operator the subscriber wants to switch to. The fee will enable the service provider to recover his investment cost in three to five years. A time frame of 12 months between the acceptance of recommendation by the government and launch of this facility is recommended. The facility, implemented from April 1, 2007, would be first available to mobile subscribers in metro’s. TRAI has asked DoT to make suitable changes in the licence, enabling it to issue guidelines.

Most service providers had recommended that number portability be implemented for landlines first, but TRAI said that this is not the right time for this. The telecom regulator is of the opinion that this is the right time to introduce MNP since India has 12 per cent tele-density, which is expected to cross 20 per cent by 2007-end. Most countries introduced MNP when their tele-density was 25 to 30 per cent. Also, most mobile operators are at present involved in rolling out network in semi-urban or rural areas. Introducing the MNP infrastructure will hence just be an add-on. Further, there is enough competition in all licence areas. Mobile number portability will raise the bar of competition in the cut-throat telecom market, thereby increasing the quality of service and reducing tariffs in India.

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