

MOBILE NUMBER PORTABILITY

1.1 Introduction

Mobile Number Portability offers the subscriber the flexibility to retain his telephone number even when he switches to another operator in a service area. Number portability is a feature that allows a mobile subscriber to use the same number across different service providers. The person/user has the liberty to opt for any service provider without the time-consuming exercise of letting the rest of the world know about the change of number

Very often subscribers do not switch to another operator even if the competitor is offering lower tariff and better services because they do not want to change their number.

In a consultation paper issued in July 2005, TRAI said that subscribers and operators would benefit from the introduction of the number portability system. As per TRAI, "In most service areas in India, subscribers have a choice of operators, however, the subscriber's inability to retain his telephone number when changing operators is an obstacle to competition. Therefore, MNP will benefit subscribers and increase the level of competition, rewarding operators with the best customer service, coverage, and service quality."

1.2 Types of Number portability

Number portability can be of different types.

1.2.1 Location-based: This enables a mobile subscriber to use the same number when shifting from one geographical area to another.

1.2.2 Operator-based: This makes it possible for a mobile subscriber (or a fixed telephony subscriber) to shift from one mobile (or a fixed) service provider to another in the same area and retain his original number too.

1.2.3 Service-based: Enables subscribers of a company to use the same numbers across different mobile technologies — Global System for Mobile Communications (GSM) and Code Division Multiple Access (CDMA) based Wireless in Local Loop (WLL).

1.2.4 Convergence-based: Allows usage of the same number while shifting from fixed to mobile telephony.

1.2.5 Total number portability: Enables usage of the same number across different technologies, geographical regions and national boundaries and is the ultimate aim of number portability. It will also be the most difficult to implement and would require a collaborated effort on the global scale among different service providers. It will be a combination of different types of portability options.

Number portability when used to transfer numbers from one service provider to another is called Mobile Number Portability. MNP is already being used in developed markets, which are mature and have a much higher teledensity.

1.3 What number portability would mean to subscribers & service providers ?

When fully implemented nationwide by both wireline and wireless providers, portability will remove one of the most significant deterrents to changing service, providing unprecedented convenience for consumers and encouraging unrestrained competition in the telecommunications industry. In short, this is the best method to

increase the efficiency of the service provider by increasing the competition, thereby ensuring better services in all respects.

From the subscribers' perspective, this is a deceptively simple and very welcome change, because they can change wireless service providers without worrying about notifying friends, family and business contacts that their wireless number is changing. In addition, being able to 'port' a number from one provider to another eliminates the hassle and expenses of changing business cards, stationery, invoices and other materials for businesses.

From the wireless carrier's perspective the change is anything, but simple. Virtually all of wireless carriers' systems are affected. Especially any system that relies on mobile identity numbers (MINs) or mobile directory numbers (MDNs) will be affected. Examples of critical systems and processes that would be affected are: billing, customer service, order activation, call delivery, roamer registration and support, short messages service center, directory assistance, caller ID, calling name presentation, switches, maintenance and CSC systems, home location registers (HLRs), and visiting location registers (VLRs).

1.4 The Challenges

- **Huge Costs:** telecom services sector in India requires an investment of Rs 50,000 crore over the next three years to meet the growing demand. A substantial share would be required for the mobile services market. The GSM service providers are yet to justify the huge investments made in this field and are not keen on MNP.
- **Customer Retention/Increased Competition-** The service providers are also on guard against the risk of losing customers and revenues in the post-MNP era.
- **Infrastructure Upgrade:** To support MNP, a company has to upgrade both its hardware and software capabilities, which will amount to some cost.
- **Cost Recovery and Bill Reconciliation/Query Processing:** When a customer plans to shift, the old service provider (OSP) has to perform a query to identify if there are any billing amounts pending, which they need to recover before the subscriber moves to the new service provider (NSP).
- Several issues need to be cleared by the regulator before implementing the MNP. Primary among these are the limited mobility versus mobile services, carrier access code (CAS), finalisation of the Interconnect Usage Charges (IUC), etc.
- The regulator must ensure that there is absolute transparency in the charges for the person calling a ported number and another receiving the call on a ported number. Only such clarity will ensure widespread usage among the Indian mobile users and make MNP a widely used feature.

1.5 Implementing Number Portability

Let us look at some of the basic terminologies used in any porting process:

Donor network: The initial network where the number was located before ever being ported.

Originating network: The network where the calling party is connected.

Recipient network: The network where a number is located after being ported.

Database: The store of ported numbers with their relevant routing numbers.

Routing number: A specific number that is derived and used by the network to route the call towards a ported number.

New service provider (NSP): It is the recipient carrier i.e., the **new service provider** to which the subscriber wishes to subscribe to.

Old service provider (OSP): The donor carrier is the **old service provider**, which the subscriber wishes to leave.

Number Portability Administration Center (NPAC): The authority responsible for maintaining NP solutions in different regions.

Both the OSP and NSP carriers will have access to their own wireless network, order entry and point of sale terminals. Further, the two competing carriers' WNP architectures will be connected at two points:

- Intercarrier communications process (ICP)
- Number portability administration center (NPAC).

In number portability the "donor network" provides the number and the "recipient network" accepts the number. The operation of donating a number requires that a number is "snapped out" from a network and "snapped into" the receiving network. If the subscriber ceases to need the number then it is normal that the original donor receives the number back and "snaps back" the number to its network. The situation is slightly more complex if the user leaves the first operator for a second and then subsequently elects to use a third operator. In this case the second operator will return the number to the first and then it is assigned to the third

Calls to ported numbers are completed when a customer who calls a ported number sends the dialed number to a provider's SSP (Service Switch Point), where it is identified either as a local call or not. If the call is local, the switch has the NPA-NXX in its routing table as portable, so it sends a routing request to the STP (Signaling Transfer Point) which accesses a local database that is updated by an LSMS (Local Service Management System) which holds all routing for all ported numbers to which the carrier is responsible for completing calls. If routing information is found, a response is sent to the "query" containing the information necessary to properly route the call. If it is not a local number, the call is passed on to the STP and routed until it gets to a local carrier who will perform the "query" mentioned earlier and route the call accordingly.

1.6 ELEMENTS of MNP

- MNP Clearing house (MCHA) & its Disaster recovery site
- NP Database (NPDB) & its Disaster recovery site with security provisions
- NP gateways at operator's end
- NPDB at operator's end

1.7 Database Management for MNP

All implementations of mobile number portability involve the use of databases which contain information of the networks and associated ported numbers. This information is used for a call to determine the correct terminating network of a ported number. Databases relating to Number Portability are typically managed either in a centralised or in a distributed manner. Logically Centralised Database with regionally located databases is setup and managed by neutral third party setup by operators. Logically Centralised approach may serve as a common platform for ordering, provisioning, and notification process of number portability

1.7.1 Synchronisation of Database Updation of different operators

Port information is kept in a centralized master of Reference Database. Any update to the Reference Database is broadcasted more or less in real time to all operators. (push method). Alternatively Reference Database can be downloaded by operators (pull method).

1.8 NP Ordering Process

1.8.1 One-stop shopping process

The customer only needs to contact the recipient operator and authorize this operator to handle the porting

1.8.2 Two-stop shopping process

- 1st step: the customer requests the existing mobile operator, the cancellation of his contract and a Porting Authorisation Code (PAC);
- 2nd step: the customer apply a new contract with the new operator and ask him to port his number with the PAC.

1.9 Technical Solutions

1.9.1 Direct Routing (All Call Query)

Routing of a call directly from the originating network to the terminating mobile network, which requires the originating network to determine the correct destination for a given number

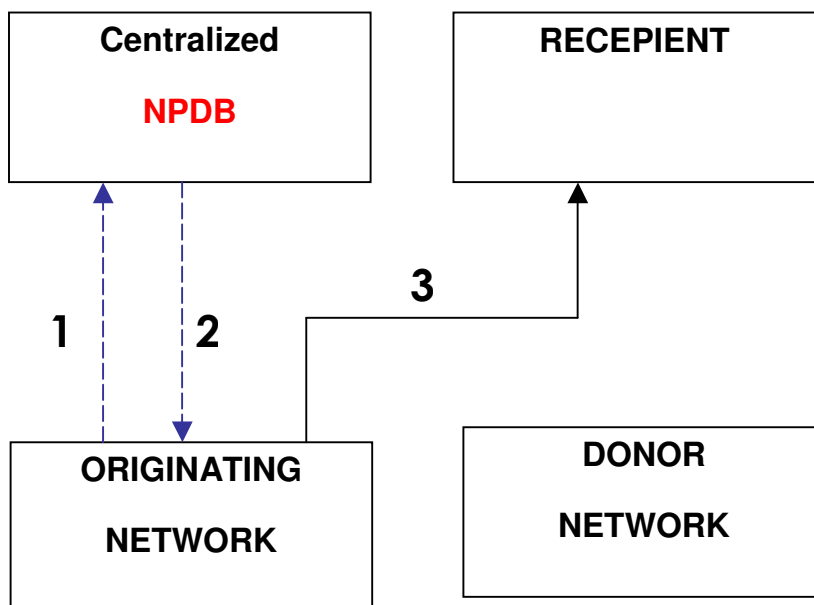


Figure 3.1 All Call Query

1.9.2 Query on Release

The donor network after confirming that the number is ported, returns a message to the originating network indicating that the number is moved. The originating network then queries a database to obtain information identifying the correct terminating network

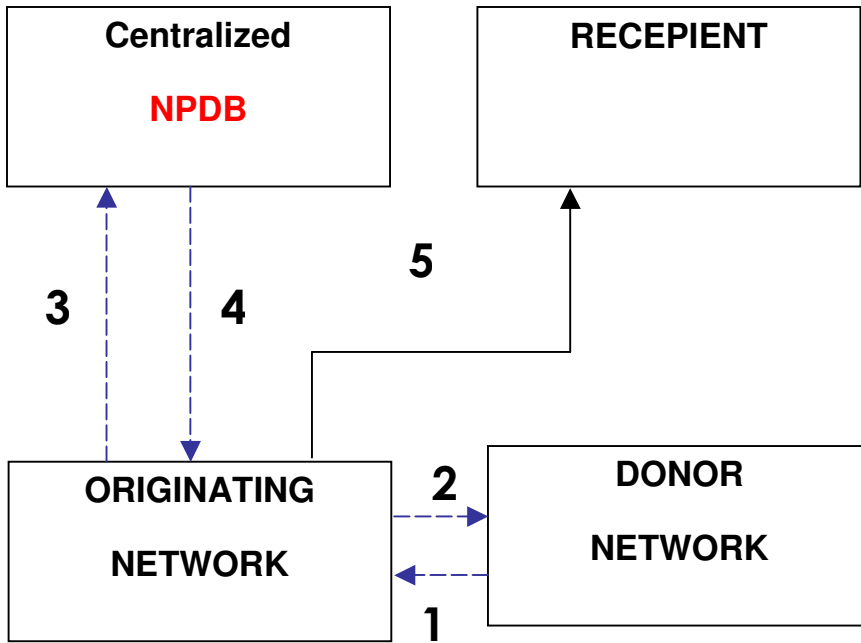


Figure3.2 Query on Release

1.9.3 Onward Routing

The donor network identifies the correct terminating mobile network and routes the call onwards to that network

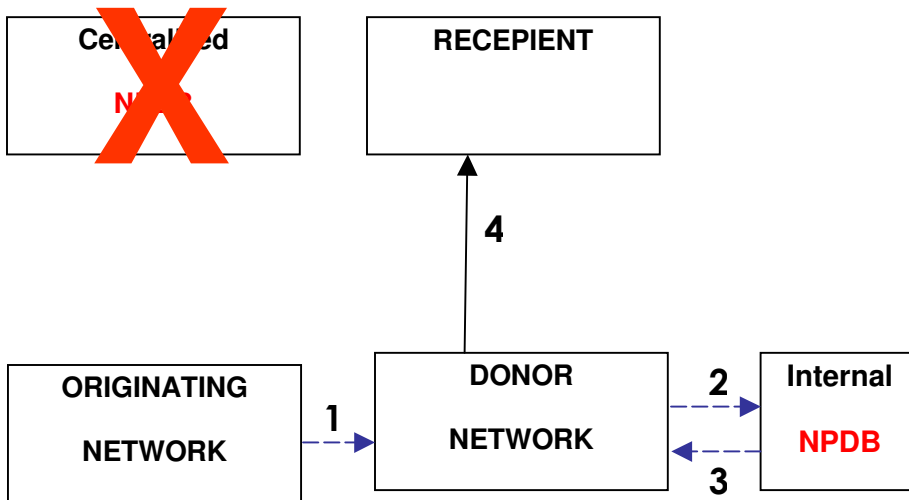


Figure 3.3 Onward Routing

1.9.4 Call Drop Back

The donor network after confirming that the number is ported, releases the call back to the originating network together with the information identifying the correct terminating network

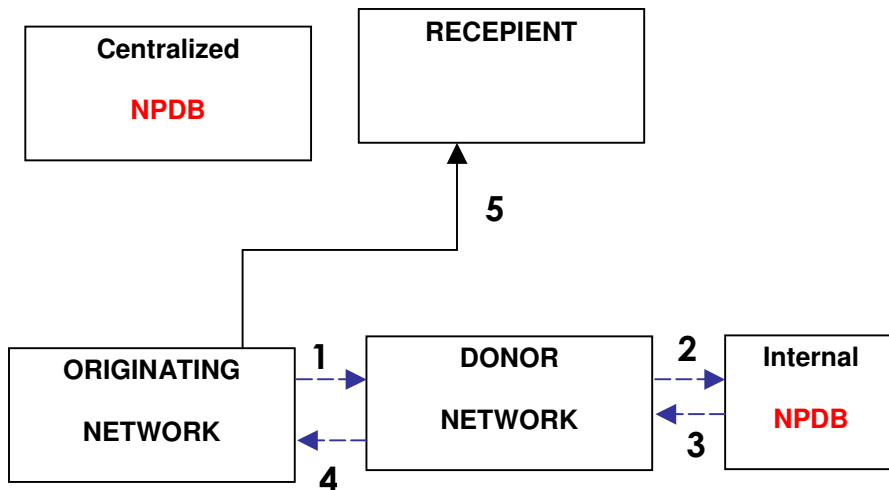


Figure 4 Call drop Back

1.10 Recommendations of TRAI on Mobile Number Portability

- MNP within service area [MNP to be launched in Metro cities initially and in all India subsequently within service area Accepted]
- Mandate all UASLs/ CMSPs to implement Mobile Number Portability
- All Call Query Method be implemented
- When N operators are involved in the complete call setup considering 1 being the originating operator and N being Terminating operator, (N-1)th operator shall be responsible for routing the call to ported numbers.(accepted)
- Mobile Operators through neutral third party shall establish logically centralised database with not more than 5 regionally located databases. Cost of this database shall be borne proportionately based on subscriber base by each operator
- Other issues relating to creation of database, interfaces, performance parameters, service levels shall be resolved by discussion and coordination among all the stakeholders.
- A steering committee consisting of operators, industry association and TEC under the aegis of TRAI shall be constituted to workout the details of these implementation issues
- Mobile Operators shall adopt Centralised Clearing house preferably electronic processing approach for processing porting requests. Cost of such central clearing house shall be borne by all the operators. A neutral third party will administer such clearing house
- The design of clearing House will be such that total time to port should not exceed three working days initially but up gradable to much faster levels.
- Customer shall approach the recipient operator for porting his number.
- In respect of porting charges, only Recipient operator shall be permitted to charge a fee for successful porting
- Donor operator shall not use ported out numbers till such time it is in use by the ported subscriber. After the surrendering of number by ported subscriber the number shall revert back to the original donor operator
- The up-gradation cost of their network shall be borne by the operators.

- Common setup costs for Number Portability Administration Center (NPAC), Clearing House would be borne by operators based on the subscriber market share of operators as on 1st Jan 2007 [Accepted date of subs base date will be 1st Jan'08]

1.11 Costs associated with Number Portability

The costs incurred in the provision of number portability may be broadly divided into three categories

The System Setup Cost (CAPEX of Database Setup) & OPEX

These costs ensure that all or most users have the capability to use number portability. These may be the costs of establishing/maintaining routing databases, conditioning existing networks, upgrading network switches, and modifying existing software. These are the costs that a provider may incur in establishing the capacity to provide number portability on its own network and in its associated operational support and administration

Administration Cost (Customer Transfer Cost)

These are customer transfer costs or porting costs. They include the costs incurred by service providers in closing an existing account, setting-up a new account and coordinating the network operators in the switching over of the mobile number and routing of the calls; costs of new handsets or SIM cards; and caller costs (the additional delay in setting up a call to a ported number).

Call Conveyance Cost (Not Relevant in case of Direct Routing)

The costs of additional conveyance of calls to ported numbers in the case that they must transit the donor network.

1.12 MNP implementation in India and Role of TRAI

In November 2007 the telecom ministry decided to introduce MNP in various stages, beginning with metros. The government had announced the plan to introduce mobile number portability in the first phase in the four metros - Delhi, Mumbai, Kolkata and Chennai - by the fourth quarter of 2008. Implementation of MNP in 'A' circles like Maharashtra, Gujarat, Andhra Pradesh, Karnataka and Tamil Nadu was to be taken up from April 2008.

Telecom regulator TRAI on 11th April 2008 recommended the implementation of nation-wide mobile number portability from June 2009 onwards in a phased manner. TRAI has also sought the Department of Telecom's (DoT's) nod to select an operator for providing and operating mobile number portability solutions.

TRAI had earlier set up a steering committee to deliberate issues pertaining to implementation of mobile number portability in India. Based on the interim report of the committee, the regulator has now come out with draft guidelines for appointment of a central agency. It was this steering committee which helped the regulator put together its interim report on certain key issues including the request for proposal for selection of an operator.

While stating that a neutral third party should implement request for proposal, TRAI has also added that this company should not have any substantial equity directly or indirectly in any of the Indian service providers.

The regulator has also clarified that telcos would have to bear the cost of the cost of upgrade of their networks for the implementation of Mobile number portability.

1.13 Conclusion

Over the past decade, number portability of various types has been implemented in a range of countries. The detailed history of number portability implementation in each country is unique, but later implementations had the advantage of being able to take into account the experiences of earlier implementations.

Recently IDC had conducted a study, which revealed that 30 per cent of mobile users are ready to change their operator if given a better option. TRAI said that the introduction of number portability will also benefit operators as they will strive to offer better service to prevent churn. However, mobile operators are not keen to implement it fearing huge churn. International experience proves that there is substantial improvement in the QoS after introduction of NP. The roadmap to MNP requires cooperation of all the stakeholders.