



# Implementing Number Portability In Mobile Communication

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## a) OFF-SWITCH SOLUTIONS

There could be two ways to access the database, using the All-Call-Query, or the Query-on-Release methods.

### a.1 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.

### a.2 QUERY-ON-RELEASE

The originating network first checks the status of dialed number with the donor network. The donor network returns a message to the originating network identifying if 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.

## b) ON-SWITCH SOLUTIONS

The two ways to implement on-switch solutions are:

### b.1) 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.

### b.2) CALL DROP BACK

Here the donor network checks if the number is ported and if it is, 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.

## DATABASE MANAGEMENT

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 centralized or distributed.

The centralized model involves a single reference database containing data for all mobile numbers or alternately, all ported numbers. This reference data is usually copied to operational databases in each participating network on a frequent basis. A consortium of network operators may manage this centralized number database for mobile number portability, or it may be out-sourced 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. The full set of information about all mobile numbers (or all ported mobile numbers) is only available from these separate databases when taken as a whole.

#### COMPARING THE 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. This is also reflected in the costs of establishment, with onward routing regarded as cheaper to establish than the all call query method. By contrast, the ongoing costs associated with the all call query method are usually regarded as less than those of the onward routing method. Again, the costs associated with the other two methods lie between those of all call query and onward routing.

The centralized 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 (even from operators who are not directly concerned with number portability such as national long distance operators selected as indirect access providers), and requires considerable national co-ordination.

#### OPERATIONAL ASPECTS

Although the technical implementation of number portability involves particular challenges, the challenges in devising the administrative arrangements facilitating porting of numbers may need equal, if not more, attention. Inefficiently designed, complex or flawed procedures for porting of mobile numbers may act as a bottleneck to the successful implementation of portability and severely affect the expected benefits.

Designing efficient, simple, secure and yet practical porting procedures for number portability may involve addressing issues such as the role of retailers, the need to change SIM cards or handsets, existing customer obligations, 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 can be addressed through a Consultation at a later stage.

#### 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.

#### COSTS ASSOCIATED WITH NUMBER PORTABILITY

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

##### SYSTEM SET-UP COSTS

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.

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