



## **Increasing Telecommunication Market Competition with Number Portability**

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## Executive Summary

The telecommunication sector is nowadays one of the most important markets and needs to be carefully regulated due to its importance and ever increasing influence on our daily personal and business life. The role of every national regulator is to regularly monitor the telecommunication market in the country, to promote competition, consumer protection, to ensure fairness and efficiency and to intervene in case any of these conditions are not meet.

With an increasing need for a communication, a telephone number (fixed or mobile) has become one of the most socially important information for a person or a company. From that reason, the change of a telephone number is a very sensitive and significant event for any person or an enterprise.

Each national telecommunication market usually consists of one big (sometimes referred to as incumbent) operator/service provider and many small to medium privately held alternative service providers. Because most of the mobile and fixed line users are emotionally and socially attached to their phone number, the need to changing a phone number due to the change of a service provider represents a big barrier to all alternative service providers in their efforts to win new subscribers.

A well established and organized national number portability service and infrastructure is a very important part of national regulation process. **Number portability (NP) service enables telephone users to retain their telephone number when changing service providers.** Users can change the existing service provider and opt for a service provider that offers the services that best fit to their specific needs without having to change the number. Users change the service provider, but not the telephone number! The established number portability infrastructure provides steady grounds for a healthy and well regulated telecommunication market in the country.

## **Introduction**

Prior number portability epoch, a change of a service provider, mobile or fixed, always resulted in the change of the phone number. As the result, a consumer had to undergo an inevitable and tedious process of notifying all contacts about the change. This is especially inconvenient for companies when they want to reduce expenses by selecting a cheaper service provider, but on the other side they are faced with additional expenses as they need to notify all business partners about the contact change and they also need to update their business documents, web pages, business cards, etc. In long term, this results in a less competitive national telecommunication market conditions.

The majority of the subscriber base is usually held by the largest – incumbent operator. Most commonly, this is a national operator owned by the government with a very good established telecommunication network and services. The need of changing the phone number when changing the service provider is a big barrier especially for alternative operators. Winning new subscribers is even harder for them if the process of swapping a service provider has such significant collateral impacts in terms of social and business life.

New infrastructure and services need to be introduced to address the issue and to provide a proper solution that is in benefit of the users and national telecommunication market itself.

## **Number Portability**

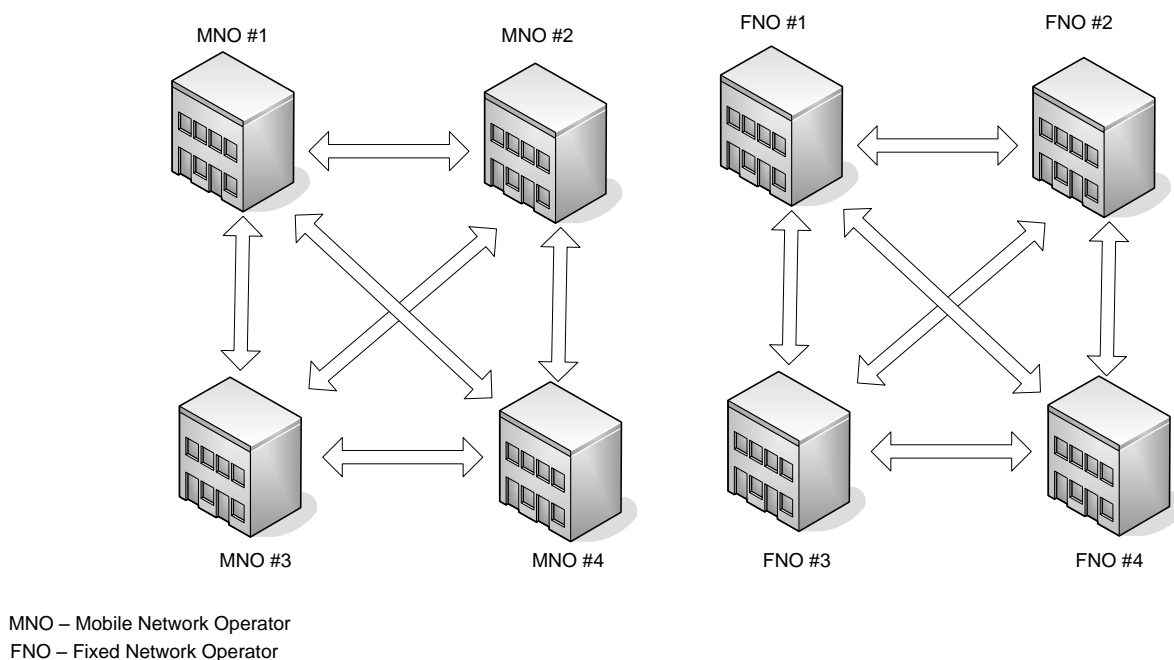
Number portability is the facility that allows consumers to change their mobile or landline communication carrier without having to change their telephone number. Many consumers, especially businesses are reluctant to change the communication carrier if they have to suffer the costs and especially the inconvenience of changing a telephone number. Number portability is one of important competitive criteria on the telecommunication market that must be assured by national telecommunication regulator guidelines. The main advantage of the mobile phone portability is a free choice, i.e. unsatisfied consumer can change the communication provider and keep the phone number.

There are currently three different number portability designs that are being used in different countries:

- Decentralized NP system
- Central Reference Database
- Clearing House

## Decentralized NP System

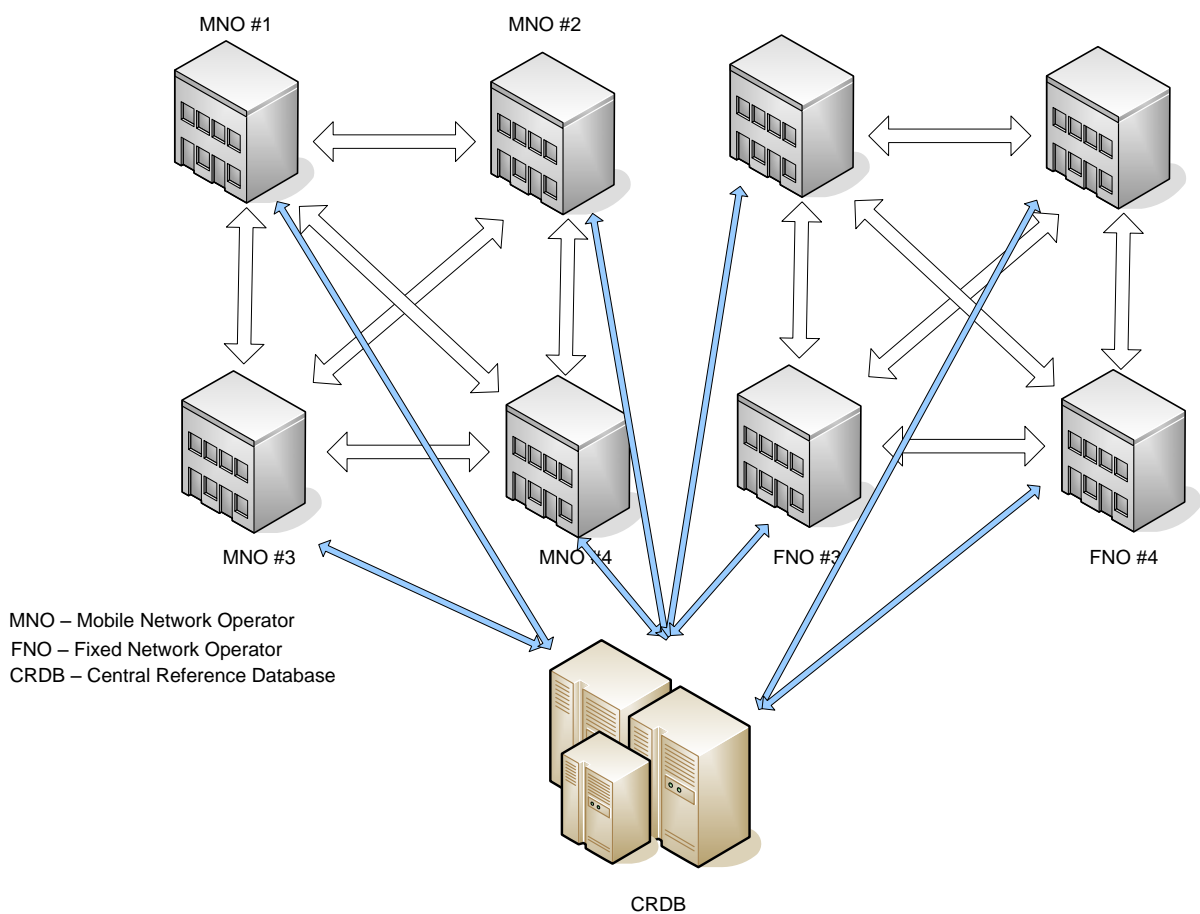
Decentralized number portability system is a NP solution used by countries that were pioneers in introducing the NP in the world. The design does not require any additional mediator but has many drawbacks. The communication goes directly between the operators. The two operators (donor and recipient) have to directly negotiate about the terms of the porting process. There are often cases when the donor's right to define porting terms is abused by many operators – especially incumbent. Operators are also obligated to synchronize porting data between each operator. This leads to further synchronization and routing problems in the network. Solving such data inconsistency problems is very time consuming, expensive and user unfriendly as the phone service is unavailable for the number stalled in the porting process until the problem has been solved. Due to numerous problems caused by the decentralized NP system, the use of this design is decreasing and current installations are being substituted with better designs.



Picture 1: Decentralized NP system

## Central Reference Database

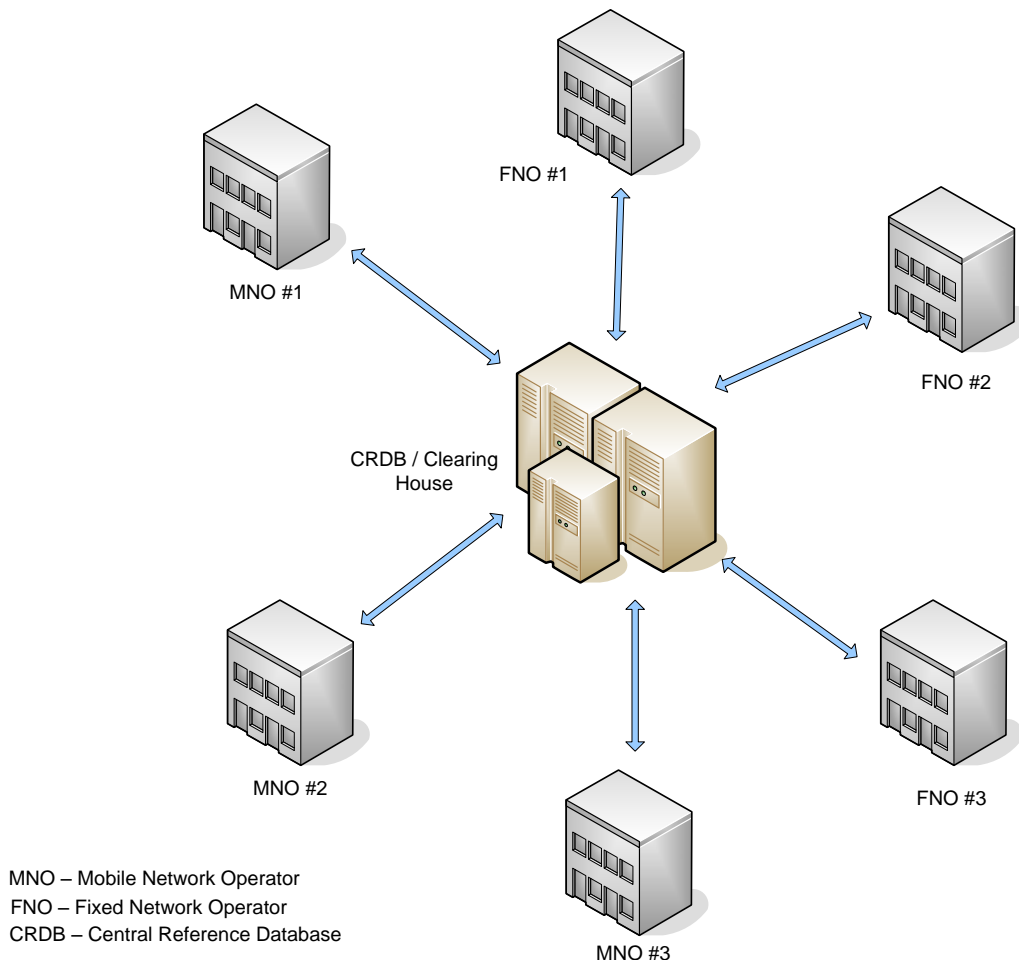
Improved decentralized NP systems are using central reference database (CRDB) as a reference point for all NP data. All operators are still communicating directly to each other, so the operators can still abuse the right to define porting date and other porting terms, but are also obliged to notify CRDB on every number portability change, e.g. porting of number, etc. With reference data stored in the CRDB routing problems are avoided. All operators are referring and routing calls according to the same secure and reliable data source. Another benefit of systems with CRDB is also that all ported numbers – mobile and fixed are stored in one central and reliable place.



Picture 2: Central Reference Database

## Clearing House

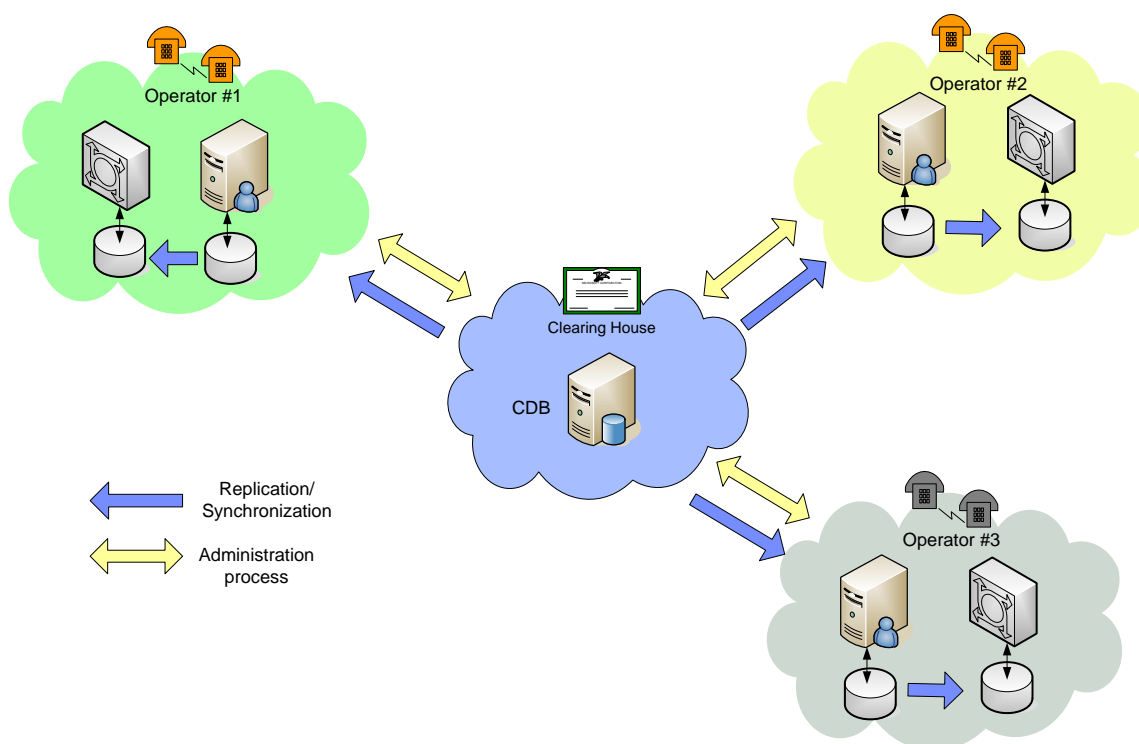
The most advanced number portability systems today are using a Clearing House as a mediator for all NP related communication between operators. All operators communicate with each other through one central point - Clearing House and are obliged to follow its rules. Operators are not allowed to define their own porting rules and have to use a Clearing House's data as a reference data source for routing purposes. All communication between operators and porting processes are closely monitored. Regulation authority can always intervene in case of any operator system or process misbehavior and abuse. Regulator can generate custom system reports for business and system administration purposes. All number portability data is stored in a secure and reliable place. By this design all routing and administration problems are minimized. This is today the most commonly used NP solution design as it has proven to be the most cost affecting solution that is easy to control, monitor and maintain. It offers the highest level of professional services to customer, operator and regulatory authority.



Picture 3: NP system with Clearing House

## Quadon™ Number Portability Solution

Telettech's Quadon™ number portability solution is following best practices of the NP Clearing House design with many additional integrated improvements that increase customer's, operator's and regulator's satisfaction. It is designed as a „one stop shop“ for a consumer. In order to change the communication provider and keep the phone number, the consumer just pays a visit to his new communication provider (the recipient) and the whole process of porting a number is initiated and administrated by the recipient on behalf of the consumer. For a consumer, there is no need to contact the current (old) communication provider (the donor). This approach diminishes the risk of the “win-back” scenario. Prepaid consumers can stay anonymous after porting the number if desired.



Picture 4: Quadon NP system

Quadon™ NP solution alleviates and optimizes the process for all involved parties. For the consumer, the process is friendly, fast and transparent. For the communication carrier, the process is easy to install, it minimizes the required resources and costs and is easy to implement and automate. Finally, for the regulator, the process is easy to manage with maximal customization level, out-of-the-box consumer oriented, friendly and transparent solution. Important features of Quadon™ NP solution are high configurability level and module based architecture. Utilizing these features, the specifics of business processes, as well as future upgrades, among the regulator, communication carriers and consumers can be easily taken into account. Furthermore, Telettech NP solution also provides ENUM and LLU applications and services, which makes it unique on the market. As one of the pioneers in the field, Telettech has incorporated these functionalities into NP solution, called Quadon™ NP solution, and

has also made the first production deployment in the world. Also countries with fully functioning NP have recognized the benefits of such integration and have taken first steps towards the implementation. By already having a fully functioning solution, Teletech's Quadon is a world leading number portability solution.

Quadon™ NP solution is always fine tuned for the national regulator in each country that wants to properly regulate mobile and fixed operator market. Teletech has all the required knowledge and rich experience in terms of technology and business processes to deliver professional number portability services. Teletech with its local partners is responsible to establish, operate and maintain NP, LLU and ENUM services. We provide an appropriate environment for the Clearing House:

- Quadon™ NP solution
- Advanced reporting and monitoring systems and tools
- High availability hardware (no single point of failure)
- Reliable and secure data storage
- Secure data room for equipment
- Fast, reliable and secure connections
- Help desk with all levels of support

Quadon™ NP systems are designed from highest demands in telecommunication sector. The system is reliable and offers more than 99,999% service up time, including software and hardware upgrades and maintenance. All hardware and software components are duplicated with no single point of failure. Data can be stored on two physically and also geographically separated locations to offer the highest possible level of data disaster recovery. The system is scalable and can be extended with additional resources when needed. Quadon™ NP system has a modular and a very flexible architecture. New services like LLU, ENUM and user ENUM can be easily added to the same platform without affecting existing production services. Security and consistency of the data is the first concern of the Quadon™ system. Data can be accessed and managed only by an authorized personnel and users. Data is always checked and verified against any data errors and inconsistency.

## **Summary**

Telecommunications has become one of the most important sectors and services in a daily life. For majority of customers the phone number has become one of the most important and personal data. The persistence of a customer's phone number must therefore be assured regardless of customer's selection of telecommunication service provider.

National telecommunication regulation authorities have a key role in assuring a healthy and well regulated telecommunication market in the country. By introducing a secure and reliable number portability system, subscribers are able to select the best possible service provider without a need to also change their personal phone number.



Telecommunication market automatically becomes more competitive and attractive for any future investors.

Quadon™ NP system offers the most reliable, secure and advanced number portability solution to answer the highest customer, operator and regulator's demands. With its modular, scalable and high availability design it offers easy service upgrades, maintenance and scalability and delivers the highest service quality for all stakeholders.

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