Mobile Number Portability Task Force – PT1

Service Description Mobile Number Portability

AMENDMENT HISTORY

Date	Version	Comments
14/02/2001	0.1	First draft
15/02/2001	0.2	Input Ivana Manevic
16/02/2001	0.3	Further input engineering
13/03/2001	0.4	Adaptation Proximus
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24/07/2001	2.0	Final adjustment after SteerCo July 2001

Contents

1. Scope

The present document defines the stage 1 of Mobile Number Portability between MOBILE networks in the same country. Stage 1 is an overall service description, primarily from the customers and user's point of view, but does not deal with the details of the human interface itself.

Mobile Number Portability is applicable only to those telecommunication services identified by an MSISDN, without changing the nature of the service. The present document includes information applicable to Mobile Network Operators and to Mobile Service Providers. The document will contain the core requirements for Mobile Number Portability between Mobile Network Operators or Mobile Service Providers in the same country which are sufficient to provide a complete service.

The following topics will be dealt within this document:
- Regulatory context
- Explanation of the definitions and abbreviations used in Mobile Number Portability
- High Level Service description of Mobile Number Portability
- Assumptions of customer's expectations
- Assumptions of Mobile Network Operators expectations
- High Level description of the responsibilities of the different involved entities when providing Mobile Number Portability

The scope of the requirements is limited to:
- The portability of an individual MSISDN

For the sake of clarity, the following Number Portability types are outside the scope of this document:
- Number Portability for Geographic and Non-Geographic fixed Numbers
- Fixed-to-Mobile convergence portability (e.g. Number Portability between fixed and mobile networks)
- Number Portability of service numbers (internal network operator short-codes)
- The portability of complete number-blocks as assigned to a mobile network operator
- The portability of all non-MSISDN numbers
- The portability of number ranges
- IMSI numbers

The portability of multiple numbers for 1 customer at the same time[1]
To be checked if feasible and than to be adjusted in this PT1 doc.

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[1] modalities to be defined in PT3

2. Regulatory Requirements

This document serves as a basis to introduce Mobile Number Portability in Belgium. Belgian legislation for this matter is currently in preparation. The EC regulatory framework is also currently in preparation.

3. References

The documents referred to in this point are used as support to write the document. They are not to be considered as The reference as such.
Etsi documents:

ETSI EN 301 716 v7.3.1 (GSM 03.66)	Digital Cellular Telecommunications system (Phase 2+) ; Support of Mobile Number Portability (MNP) ; Technical Realisation ; Stage 2
ETSI TR 101 118 v1.1.1	Network Aspects (NA) ; High level architectures and solutions to support number portability
ETSI TR 101 122 v1.1.1	Network Aspects (NA) ; Numbering and addressing for number portability
ETSI TR 101 621 v1.1.1	Network Aspects (NA) ; Number Portability task Force (NPTF) ; Consequences of mobile number portability on the PSTN/ISDN and synergy between geographic and mobile number portability
ITU Q.730 (12/99)	Specifications of Signalling System No 7 – ISDN Supplementary Services
ITU Q.769-1 (12/99)	ISUP enhancements for the support of number portability
	M-PT1 draft delivery document
Belgacom ICX – C2213 (Ed. 5)	Technical specifications " Address Information Templates".

4. Definitions and Abbreviations

4.1 Definitions

The following definitions and terms will be used by the different project teams involved in the implementation of Mobile Number Portability in Belgium.

Active MSISDN[2]
All MSISDN that are not "non-active" as defined further on.

Customer
- A post-paid customer is a physical or moral person in whose name and on whose behalf the contract was signed for the specific MSISDN(s) with the MSP or MNO.
- A pre-paid customer is the end-user of pre-paid services via the MSISDN.
- For the sake of clarity; when we talk about a customer in this document, we mean a post-paid customer or a pre-paid customer

Call Trap Function (CTF)
The function whereby a mechanism is employed to determine whether or not a MSISDN is ported.

Donor Network (DON)
The network from which a MSISDN was last ported-out.

De-activated MSISDN[3]
All MSISDN in ageing period or in pool of available MSISDN numbers, including reserved numbers and /or where a first call has not yet been made, nor a contract has been signed.

Database Query Function (DQF)
The function whereby a database is accessed in order to ascertain whether a MSISDN is ported, and if it is, Routing Information is obtained that may be used to route the call to the appropriate destination.

End-user
The physical person who uses mobile network services by means of a MSISDN.

Suspension
Hard suspension: due to operator barring, the customer can not make outgoing calls except for last call redirect.
Soft suspension: due to operator barring, the customer can not make outgoing calls nor receive incoming calls.

Home PLMN
The network containing the subscription data for the subscriber and offering the basic mobile telephony services to this subscriber.

International Mobile Subscriber Identity (IMSI)
Is a unique identity number allocated to each mobile subscriber in the MOBILE system. IMSI is composed of Mobile Country Code (MCC), identifying uniquely the country of domicile of the mobile subscriber, Mobile Network Code (MNC) identifying the Home Public Land Mobile Network (HPLMN) and Mobile

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[2] To be further discussed in PT5 and than adjusted within this document
[3] [3] To be further discussed in PT5 and than adjusted within this document

Subscriber Identification Number (MSIN) identifying the mobile subscriber within MOBILE Public Land Mobile Network (MPLMN).

International Tetra Subscriber Identity (ITSI)
An ITSI provides a globally unique identity for an individual user within the TETRA environment. Dialling all or part of an ITSI is a valid means of communicating with other TETRA subscribers, i.e. from any TETRA network connected to any other TETRA network. Each ITSI consists of a Mobile Country Code MCC), a Mobile Network Code (MNC) and a Short Subscriber Identity (SSI). The MCC is 10 binary bits, the MNC 14 binary bits and the SSI 24 binary bits long. The MCC and MNC together are referred to as the Mobile Network Identity (MNI). The TETRA Subscriber Identity has a structure similar to ITU recommendation E.212 (i.e. the IMSI – International Mobile Subscriber Identity, as used by GSM networks).

Interrogating Network
The network performing the Database Query Function.

Mobile Number Portability (MNP)
Mobile Number Portability refers to the ability for a Customer to retain the same MSISDN when changing Mobile Network Operator or Mobile Service Provider within the same country without changing the **nature of the service**[4] offered. Mobile Number Portability is therefore a facility provided by all Mobile Network Operators and supported by all Mobile Service Providers to their customers which enables those customers to keep their existing MSISDN numbers when changing Mobile Network Operator or Mobile Service Provider.

Mobile Network Operator (MNO)
The entity which has been granted a mobile license and exploits a public mobile network using frequencies and number ranges assigned to it
by the BIPT.

Mobile Service Provider (MSP)
Mobile Service Provider is a reseller of a given Mobile Network Operator using MSISDN numbers assigned to him by the MNO.

Multiple Numbers
Multiple numbers for 1 customer (not necessarily successive)

Mobile Station Integrated Services Digital Network Number (MSISDN)
Is allocated from the CCITT Recommendation E.164 numbering plan. The MSISDN consists of the country code of the country where the Operator, who grants the MSISDN to subscribers, is licensed to operate, followed by National Significant mobile number which consists of National Destination Code (NDC) and subscriber number.

Mobile Station Roaming Number (MSRN)
Is used to route calls directed to the mobile station and is passed on request from Home Location Register (HLR) to the Gateway Mobile Switching Centre (GMSC). It consists of the country code of the country where Visitor Location Register (VLR) is located, a national destination code of the visited Public Land Mobile Network (PLMN) or numbering area, and a subscriber number with the appropriate structure for that numbering area.

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[4] this will be described within PT5

Number Block Allocated Mobile Network Operator (NAMNO) The initial Mobile Network to which a MSISDN was originally assigned to by BIPT.
Nature of service[5]
Number Portability Routing Information (to check definition MNPT2) Information that allows a call to a ported MSISDN be routed to the Recipient Network.
Originating Network (ORN) The network to which the calling party is connected. For the purpose of this document it should be noted that where carrier selection or pre-selection is employed, the Originating Network is the selected carrier network. Similarly, for incoming international calls, the Originating Network is the network containing the gateway connected to the international network.
Portable MSISDN Portable MSISDN is a MSISDN that is within the scope of Mobile Number Portability. This does not take the validation into account. • Pre-paid: all MSISDN which are active (??) on the HLR and from/to which a first phone call has been made [6] • Post-paid: • All MSISDN for which a valid contract exists • All MSISDN for which a valid contract was terminated less than 7 days ago • All MSISDN reserved by contract for a customer[7]
Ported-In MSISDN An MSISDN that has been subject to Mobile Number Portability and that has been ported to a Recipient Network.
Ported-out MSISDN An MSISDN that has been subject to Mobile Number Portability and that has been ported out from the Donor Network.
Ported MSISDN A MSISDN that has been subject to Mobile Number Portability.
Portability Domain A set of PLMN's in a country between which MSISDN's may be ported.
Point of Interconnect (POI) The physical point located on the interconnect link where two networks are interconnected (and through which the calls are handed over from one network to another). The POI is the boundary between the operators domains of responsibility.
Recipient Network The network to which a MSISDN is ported-in.
Range of Analysis Function (RAF)

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[5] Definition to be given by PT5 and than adjusted within this document
[6] To be further discussed in PT5 and than adjusted within this document
[7] To be further discussed in PT5 and than adjusted within this document

The function whereby a number of significant digits are examined in order to determine the appropriate routing to a destination entity.

Routing Information Addition Function
The function which determines and adds the information necessary to enable the call to be routed to the appropriate destination.

Serving Network Functionality (SNF) (to check definition MNPT 2)
The serving network functionality consists of the following functions:
- Call Trap Function
- Database Query Function
- Routing Information Addition Function
- Range Analysis Function

Subscription Network
The network containing the subscription data for the subscriber and offering the basic mobile telephony services to this subscriber.

Soft Suspension
Definition to be forwarded following to final draft PT3

Serving Network (SEN)
A mobile network that performs all or part of the Serving Network Functionality. The Serving Network Functionality may be split across multiple networks and may reside in the Originating, Transit, Donor or Recipient Network.

Subscriber Identity Module (SIM)
A small card containing, amongst other things, the IMSI.

Slamming
Action whereby the porting of a MSISDN is requested by the recipient without a customer's previous firm consent.

Transit Network
 A network offering the transport of the call between two other networks, e.g. the NAMNO that serves as Transit Network between the Originating Network and the Recipient Network in case of Onward Routing.

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4.2 Abbreviations

BP	Block Portability
CCBS	Call Completion to Busy Subscriber
CLI	Calling Line Identity
CLIP	CLI Presentation
CLIR	CLI Presentation Restriction
COLP	Connected Line Presentation
COLR	connected Line Presentation Restriction
CTF	Call Trap Function
DDI	Direct Dialling In
DN	Directory Number
DOE	Donor Exchange
DON	Donor Network
DQF	Database Query Function
ETSI	European Telecommunications Standards Inst.
FAC	ISUP Facility Message
F-PLMN	Foreign PLMN
GMSC	Gateway Mobile Switching Centre
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HLR	Home Location Register
IAM	Initial Address Message
IMSI	International Mobile Subscriber Identity
IN	Intelligent Networks
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
ITU	International Telecommunications Union
MAP	Mobile Application Part
MN	Mobile Number
MPIN	Mobile Ported-in Number
MPN	Mobile Ported-out Number
MSC	Mobile Switching Centre
MSISDN	Mobile Station ISDN Number
MSRN	Mobile Station Roaming Number
MWI	Message Waiting Indicator
NAMNO	Number Allocated Mobile Network Operator
NDC	National Destination Code
NM	Number Mobility
NO	Network Operator
NOC	Network Office Code
NP_DB	Number Portability Database
NSN	National Significant Number
OP	Network Operator Portability

OQoD   Originating call Query on Digit Analysis
ORE   Originating Exchange
ORN   Originating Network
PLMN   Public Land Mobile Network
POI   Point of Interconnect
PON   Ported-out Number
PSTN   Public Switched Telephone Network
QoHR   Query on HLR Release
RAF   Range Analysis Function
REE   Recipient Exchange
REL   ISUP Release Message
REN   Recipient Network
RFDB   Reference Database
RI   Routing Information
RIAF   Routing Information Addition Function
RN   Routing Number
RP   Routing Prefix
RTBD   Real-time Database
SCCP   Signalling Connection Control Part
SEN   Serving Network
SIM   Subscriber Identity Module
SMS   Short Message Service
SN   Second Nmber
SNF   Serving Network Functionality
SP   Service Portability
SRF   Signalling Relay Function
SRI   Send Routing Information (MAP)
SS7   Signalling System N°7
TC   Transaction Capability
TETRA   Terrestrial Trunked Radio
TQoD   Terminating call Query on Digit Analysis
TRE   Transit Exchange
TRN   Transit Network
UMTS   Universal Mobile Telecommunication System
VLR   Visitors Location Register
VMSC   Visitor MSC

5. Service Definition

Mobile Number Portability refers to the ability for a Customer to retain the same MSISDN when changing Mobile Network Operator or Mobile Service Provider within the same country without changing the **nature of the service**[8] offered. Mobile Number Portability is therefore a facility provided by all Mobile Network Operators and supported by all Mobile Service Providers, to their customers which enables these customers to keep their existing telephone numbers when changing Mobile Network Operator or Mobile Service Provider.

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[8] To be defined in PT5

6. Service Description

Overview

6.1 Description

MNP refers to the ability for a Customer to retain the same MSISDN when changing MNO or MSP within the same country without changing the nature of the service offered. This document will focus on the portability of the MSISDN and not any MNO service. Moreover, the Recipient Network will provide the Customer with a new IMSI – ITSI number and – if applicable – a new SIM card. IMSI – ITSI numbers and SIM cards are thus the facto not portable. The MSISDN that can be subject to porting will be defined within MNPT5. (including active, de-active, suspended and reserved MSISDN)

Regarding MSP, the same procedure does apply between the MSP and the original MNO from whom the MSP received its MSISDN numbers. (see further 6.2.1)[9].. .

Because of the complexity in implementing MNP for multi numbering products (1 SIM card with different MSISDN numbers for voice, fax and data), the limited number of customers with these products and the time constraint, suggestion is to implement the porting of these kind of number in a second phase[10].

As discussed and agreed, MNP will be applicable to individual MSISDN numbers and in a first phase handled one by one. Therefore we can confirm that Block portability will be out of the scope. The overhead of splitting mobile number blocks in smaller blocks is not worth the effort as no customers have mobile blocks of 10.000 numbers. Portability of Range of numbers [11]will also be out of the scope as there are no installations with number ranges as known in the fixed network. Internal processes are generally set up for handling single numbers. The implementation of these processes for number ranges would incur significant costs for the operators.. However, PT3 will investigate wether they can define processes enabling or facilitating the porting of multiple numbers for 1 customers at the same time.

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[9] *Procedure to be defined by PT3*
[10] (position still to define and to be agreed upon: MNPT5)

[11] Modalities to be defined in PT3 and/or PT5

6.2 Scope

Offer MNP to any customer wanting to churn from one MNO – MSP to another, treating him in a same way as a customer that joins the MNO – MSP without requesting MNP. Acquisition process should be as transparent as possible.

In order to avoid limits, hesitations, constraints for Customers wanting to port their number, the Recipient Network will be the 1st point of contact, offering one-stop-shopping for both the operational and commercial issues related to the porting of the specific MSISDN. All agreed criteria for valid rejection should be respected by the Recipient Network as well Donor Network, enabling – especially – the Donor Network to deal with any operational and commercial issue, such as bad payment, fixed term contract, etc[12] Only after agreement by the Donor Network, the porting procedure will take place and activation of the Customer's SIM card or the customer (Tetra) will be performed by the Recipient Network.

Vanity numbers are ported in the same way as any other regular MSISDN number.

6.2.1 Who is entitled to MNP

From a customer's perspective
Any customer to whom a portable MSISDN was allocated by an MNO or MSP can request the porting of his MSISDN number.

From a MNO's perspective
All MNO that has MSISDN numbers attributed by BIPT.

From a MSP's perspective
MNO have the possibility to work with MSP. It is clear that porting of an activated MSISDN (part of the number ranges that a MNO has reserved for the use of a MSP) is also subject to porting between MSP's and the original MNO (for this MSISDN) as well as between the MSP and another MNO or MSP. The responsibility of MNP from or to an MSP remains at all time the responsibility of the MNO that serves the MSISDN linked to this MSP.

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[12] to be further discussed within MNPT5 and than adjusted within this document.

6.3 Obligations and Responsibilities

6.3.1 Customer's Obligations and responsibilities

- Identify himself as authorised owner of the MSISDN
  Pay all outstanding and final invoices at Donor Network and comply with all other remaining contractual obligations and with all rules set for MNP
- Provide all information needed to make the porting Customer authorises the Recipient Network to request termination of the service at the Donor Network.

6.3.2 MNO and MSP's Obligations and responsibilities

- The Recipient Network should clearly inform the Customer requesting MNP about his rights, duties, its contractual obligations and consequences after MNP and possible consequences in case of bad conduct[13]
- The NAMNO has the responsibility to route the communication (voice, fax, data and sms) to the Recipient Network for all numbers that have been ported out.
- The Donor Network may not charge the Customer for the porting process itself. Of course, all charges due to the contract signed before the porting are due by the Customer.
- As a principle it has been agreed that every Customer should pay his last bill. [14]
- It is the responsibility of each MNO – MSP to inform Preventel (according to rules defined between participants) (and/or CRDC) of all the Customers that correspond to the fraud criteria.[15]
- It is the responsibility of each MNO – MSP to check for ported MSISDN whether it is Preventel-listed.
- Recipient Network will issue a new IMSI – ITSI and a new SIM card – if applicable – to the Customer porting his number.
- When a Customer ports its MSISDN to a new MNO – MSP, the Donor Network does not need to provide any more support for the services of the ported number (meaning supplementary services and value added services). This means that if the Recipient Network does not support a specific service, the MNP mechanism will not provide that service to the Customer. The Customer will thus not have access anymore to that particular service after having ported its number.
  (Except for specific cases as described in MNPT2 document, where the availability to the ported subscriber of a service offered by the recipient network might depend on the routing mechanism used)
- A MNO – MSP can be Donor and Recipient Network of MSISDN. One MSISDN can be ported several times to different MNO – MSP and eventually ported back to the NAMNO – MSP.[16]
- Operational aspects for the routing of the calls to ported MSISDN numbers will be handled in MNPT2 and 3.

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[13] (It will be defined by PT3 WHEN the recipient Network will inform the Customer about this)..

[14] the discussion regarding fixed term contracts, modalities of how and when to pay this last bill will be discussed in PT5

[15] (to be further discussed in MNPT 3 and 5

[16] How to treat this ported MSISDN will be handled in MNPT2.

- The MNO – MSP in charge of handling calls to a ported MSISDN number is responsible to minimise the difference in quality of service between ported and non-ported MSISDN.
- The Recipient Network must return the MSISDN to the NAMNO within maximum 31 (days following to its permanent de-activation. During this period, it is the responsibility of the Recipient Network to play the regular announcement for non-attributed numbers.
- Processes should be defined in order to avoid as much as possible slamming. In case of slamming, adequate processes should be defined in order to resolve the problem[17].
- Recipient Network must provide info to the Donor Network in order to identify the Customer who requested MNP for a specific MSISDN on simple request of the Donor Network.

- [17] (to be further discussed within MNPT 3 and 5).

6.4 Expectations and Needs

6.4.1 Customer's expectations and needs

- Clear and transparent procedure independent of the MNO/MSP
- If possible through all existing distribution channels
- Avoid risk of slamming as much as possible
- Offer possibility to request porting of a group of MSISDN numbers (e.g. company)
- The calling party may be informed that the called party has ported his number. (today, the network of the customer is not a private information and is in advantage of the customer. This does not need to change)[18].
- MNP should not affect the call dialling procedure.
- When CLIP is required, it shall be the ported MSISDN.
- The mechanisms by which MNP is provided should have a minimal impact on the call performance compared to that offered to non-ported numbers. This includes both post dial delay and transmission.
- Customers will get access to services determined by the recipient MNO – MSP to whom they are connected, minimising the difference in service offer to ported and non-ported numbers within the Recipient Network.
- Customers expect to have limited interruption of their service and if possible a continuous service.
- During porting process, the process for and the moment of changing SIM card – if applicable – must be as easy as possible for the Customer.

6.4.1 MNO – MSP's expectations and needs

- Clear and transparent procedure between operators.
- Collection – bad debt linked to MNP – slamming rules – procedures should be respected by Recipient Network.
- Identification of the Customer.
- For porting processes, an efficient and effective way to exchange porting information needs to be found with respect to existing privacy legislation.
- Cost effectiveness for implementation of MNP.
- Time to implement MNP correctly.

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[18] (Privacy aspects to be verified in PT5)

6.5 Subsequent Porting

Once a number has been ported to one MNO – MSP, the Customer may wish to switch again to another MNO – MSP, still retaining the original number. Provided the Customer is not returning to the NAMNO – MSP from whom he first obtained the number (in which case we talk about porting back), these subsequent changes of MNO – MSP are known as "subsequent porting". So far as the Recipient Network is concerned, it makes no difference whether the portability it is providing is an initial or a subsequent porting.

Dealer driven porting is not allowed. It implies that dealers working for the MNO's are not allowed to urge potential customers to change MNO/MSP using MNP in order to benefit from the acquisition commissions offered by the MNO/MSP. The MNO/MSPs will install a gentlement agreement to avoid this kind of practice.

6.6 Number Management

In this section, the responsibilities related to the service provision and number management are described.

NAMNO
The NAMNO must not reallocate ported numbers to another Customer.

Donor operator
The donor operator must not reallocate ported numbers to another Customer.

Recipient Network
The Recipient Network must inform all operators of any change associated with any ported number that may affect calls being delivered to a ported number.

ANNEX 1 : ITEMS TO BE COMPLETED

1. MSP part of porting or not: Decision of PT5 and BIPT (Jan Vannieuwenhuyse

2. Definition MSP: An MSP is a reseller of a given MNO.

3. Range portability in scope: Depending on modalities defined in PT3 and/or PT5.

4. Definition of portable MSISDN: For PRE-PAID PT5 defines definition.

   All MSISDN which are active (??) on the HLR and from/to which a 1st call has been made.

5. Definition of active MSISDN: PT5 to define.

6. Definition of de-actived MSISDN: PT5 to define.

7. Crosscheck definitions in PT1 document

   and include in PT2 deliverable: PT2 to check.

8. Define Nature of the service: PT5 to define.

9. MSP procedure: PT3 to define if any.

10. Define position on multi-numbering: PT5 to define.

11. Fix term contract in the scope: PT5 to decide.

12. Customer obligations information: PT3 to define when a customer is informed about his rights, duties,… .

13. Definition range, multiple numbering products, multiple numbers   (to be completed)

14. Definitions nature of service   PT5

15. Definition ITSI number (TETRA)   Dolphin to complete