

**Network Aspects (NA);
Number Portability Task Force (NPTF);
Signalling requirements for number portability**



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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Network Aspects (NA).

1 Scope

The scope of the present document is to provide the signalling requirements for Number Portability and is limited to "Service Provider Portability for Geographic Numbers (GNP)" and "Non Geographic Numbers (NGNP)" in the National Fixed Network, e.g. number portability between Service Providers within geographic country boundaries.

The scope of the requirements is limited to:

- the portability of individual customer numbers;
- porting of individual Multi Subscriber Numbers (MSN) members;
- porting of complete DDI ranges.

For this phase of Number Portability, drop back is not included.

However, whilst it will not be possible to port single numbers from a DDI range, dividing the range into blocks and porting the resultant sub block will have the same effect. Therefore there is no need to support the portability of individual numbers within a DDI range.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [2] TR 101 118: "Network Aspects (NA); High level network architecture and solutions to support number portability".
- [3] TR 101 122: "Network Aspects (NA); Numbering and addressing for Number Portability".
- [4] TR 101 119: "Network Aspects (NA); High level description of number portability".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [2], [3] and [4] apply.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CdPN	Called Party Number
CLIP	Calling Line Identification Presentation

CLIR	Calling Line Identification Restriction
COLP	Connected Line identification Presentation
COLR	Connected Line identification Restriction
DDI	Direct Dialling In
DN	Directory Number
GN	Geographic Numbers
ISDN	Integrated Services Digital Network
MCID	Malicious Call Identification
MSN	Multiple Subscriber Number
NGN	Non Geographic Numbers
NP	Number Portability
POI	Point of Interconnection
PSTN	Public Switched Telephone Network
QoR	Query on Release
REX	Recipient Exchange
RN	Routing Number
RNID	Recipient Network ID

4 Objectives

The objective of the documents is to provide a set of Requirements to the Signalling protocol group.

5 Requirements

The information below contains the signalling requirements that have been extracted from the associated documentation [2], [3] and [4].

5.1 General Signalling Requirements

Based on the reference contained in the proceeding sections of the present document, the following are the general requirements for signalling systems that support number portability.

- 1) The signalling mechanisms that support number portability should not place any restrictions on the PSTN and ISDN services, including basic, supplementary and non-circuit related based services.
- 2) Only the E.164 number (not including prefixes, etc.) should be considered eligible to be ported.
- 3) The entire E.164 number and not only part of it should be ported.
- 4) Single numbers within a MSN can only be ported if a different access is provided to the ported number.
- 5) Groups of contiguous numbers (e.g. DDI/multi line groups) can be ported.
- 6) Porting of single numbers within a DDI range is not allowed.
- 7) The privacy of the user that has ported his/her number should be guaranteed. That means that the calling/called party should not be informed that the called/calling party has ported his number.
- 8) Number portability should not affect the dialling procedures for calls incoming to the ported number.
- 9) The dialling procedures for calls outgoing from the ported customer should be the same as those of non ported customers served by the same Service Provider.
- 10) Introducing service provider portability shall not adversely affect conformance with national or international propagation and echo standards.
- 11) Calling Line Identification Presentation (CLIP) and Calling Line Identification Restriction (CLIR) shall work in same way as for subscribers not porting the number. For the CLIP service, if the call is originated by a calling

user which has been ported, the calling line identification is the ported number. This is valid for both PSTN and ISDN subscribers.

- 12) Connected Line Identification Presentation (COLP) and Connected Line Identification presentation Restriction (COLR) shall work in same way as for subscribers not porting the number. For the COLP service, if the called user's number has been ported, the connected line identity presented to the calling user is the ported number. This is valid for both PSTN and ISDN subscribers.
- 13) Calls from a ported number to the emergency services should be supported by the same functionality as calls from non ported numbers to the emergency services.
- 14) Variable number length shall be supported.
- 15) Overlap signalling shall be supported before and after obtaining the routing number
- 16) The redirection counter, used for the Call Forwarding Supplementary service, shall not be stepped at redirection by a Number Portability procedure.
- 17) Number Portability solutions shall allow that Transit Network(s) be used between Originating and Donor/Serving (note 1) Networks.

NOTE 1: Also known as Initiating.

- 18) Number Portability solutions shall allow that Transit Network(s) be used between Donor/Serving (note 2) and Recipient Networks.

NOTE 2: Also known as Initiating.

- 19) Number Portability solutions shall not interfere with Carrier Selection.
- 20) Interoperability of the various methods shall be provided. e.g. The signalling has to be capable of providing interworking between onward routing and other methods.
- 21) NP should not result in the looping of calls.
- 22) The solution shall be backward compatible to exchanges not updated for NP.
- 23) Transparent support for NP at transit nodes.
- 24) It shall be possible to transfer both an unchanged Called Party Number (CdPN) and a Routing Number (RN) unambiguously.
- 25) It shall be possible to indicate one or more of the following destinations with the Routing Number (RN):

- i) Recipient Network ID (RNID; or/and
- ii) Point of Interconnection (POI); or/and
- iii) Recipient Exchange (REX).

NOTE 3: This list is not exhaustive.

- 26) An indication in the forward direction (from the serving (note 4) exchange) to indicate a call to a ported number.

NOTE 4: Also known as Initiating.

- 27) In an environment of number portability calls from ported numbers shall convey both logical and physical calling party information.
- 28) RN need not be in E.164 format.
- 29) Outgoing international calls are unaffected.
- 30) For incoming international calls, the incoming gateway should be considered as the originating network for Number Portability.

31) The Number used to route the call is constructed as one of the following:

- i) Concatenated Address = Routing Number + DN (as a single piece of information);
- ii) Separated Address = Routing Number and DN (as two separate pieces of information);
- iii) DN only.

32) SCCP Addressing based on RN should be supported.

33) To support "Query on Release (QoR)" principles there is a requirement that as a Network option be able to indicate in the Backward direction, from Donor Network/Exchange, that the dialled Number is:

- Ported-out.
This case is used when the Donor network also keeps track of status for all numbers part of dialled Number Series and therefore can differentiate between ported-out and vacant numbers. Number Portability Database (Db) look up shall be done if this indication is set.
- It shall be possible to transfer "ported out" indication, transparently through network elements without QoR support.

34) Location Information related to calling party shall be transferred in the signalling procedures, this to support Malicious Call Identification (MCID) and calls to Emergency centres. The location information should preferably have similar structure as E.164, have International Significance and may indicate:

- i) Country Code;
- ii) Network Code;
- iii) Exchange Code (optionally);
- iv) Access Line (optionally);
- v) Location information.

35) To support "Query on Release (QoR)" principles there is a requirement that a Network option be able to indicate in the forward direction that QoR is supported.

History

Document history		
V1.1.1	November 1998	Publication