

Non-Geographic Number Portability

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Foreword

This NICC Document (ND) was originally produced by NICC PNO-ISC. This revision, produced by NICC NNA, updates earlier versions to reflect current industry practises.

Introduction

Non-Geographic Number Portability (NGNP), mandated by Ofcom General Condition 18 [1], allows subscribers to communications services to retain their non-geographic number when changing Communications Provider (CP).

1 Scope

This document is intended to serve as a Service Description for the deployment of Non-Geographic Number Portability (NGNP) among different Communication Providers (CPs) in the UK.

This Document presents the requirements for the call control functionality necessary to support NGNP.

Operation and Maintenance aspects of GNP are described in the End-to-End Process Manual [i1].

Mobile, paging and personal numbers are not within the scope of this document.

2 References

2.1 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] “Consolidated Version of General Conditions”, Ofcom, available at http://www.ofcom.org.uk/telecoms/ioi/g_a_regime/gce/
- [2] “Guidelines for the provision of Calling Line Identification Facilities and other related services over Electronic Communications Networks”, Ofcom, available at <http://www.ofcom.org.uk/telecoms/ioi/orp/cli/>

2.2 Informative references

- [i1] End to End Process Manual for NGNP

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Communications Provider : The provider of electronics communications service.

Directory Number : UK E.164 telephone number [2].

Network : The telecommunications system operated by the Communications Provider under the terms of the OFCOM General Condition 18 [1]

Originating Network : The network from which the call is originated.

Rangeholder Network : The Network from which the number has been ported. Sometimes referred to as the Donor Network.

Recipient Network : The Network which has gained the ported number.

Routeing Number : Number used to route the call to a ported number between the Rangeholder and Recipient Networks.

Routeing Number Prefix : Prefix which, together with the ported number, forms the Routeing Number.

Service Logic Function A sequence of processes / functions performed by the Recipient Network to provide a specific service.

Transit Network : A Network involved in carrying a 'ported' call between Rangeholder Network and Recipient Network, but which is not either Rangeholder nor Recipient Network.

3.2 Abbreviations

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

CLI	Calling Line Identity
IUP	Interconnect User Part
NGNP	Non-Geographic Number Portability
NTAI	Network Translated Address Indicator
OFCOM	Office of Communications
POC	Point of Connection

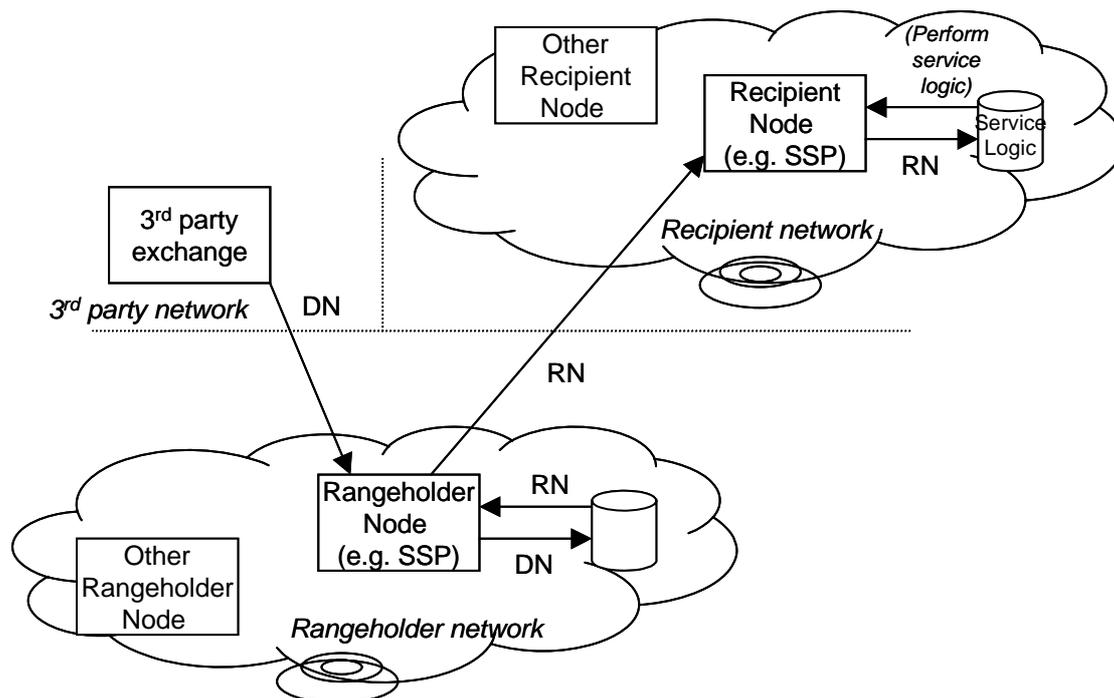
4 Overview of NGNP solution

The Phase One UK NGNP solution is an Onward Routing type solution, with Phase Two introducing an enhancement to avoid inefficient routing for calls originating in the recipient network. Implementation of Phase One is mandatory on all CPs with applicable number ranges, implementation of Phase Two is an optional choice for individual CPs.

During Phase One, calls are routed on the basis of the dialled number to the Number Rangeholder Network. There the Routing Number is determined and added to the call details. The call is then routed onwards on the basis of the Routing Number to the Recipient Network. Phase Two is identical, except that where the Originating Network is the Recipient Network, calls to ported numbers are trapped without routing via the Number Rangeholder network.

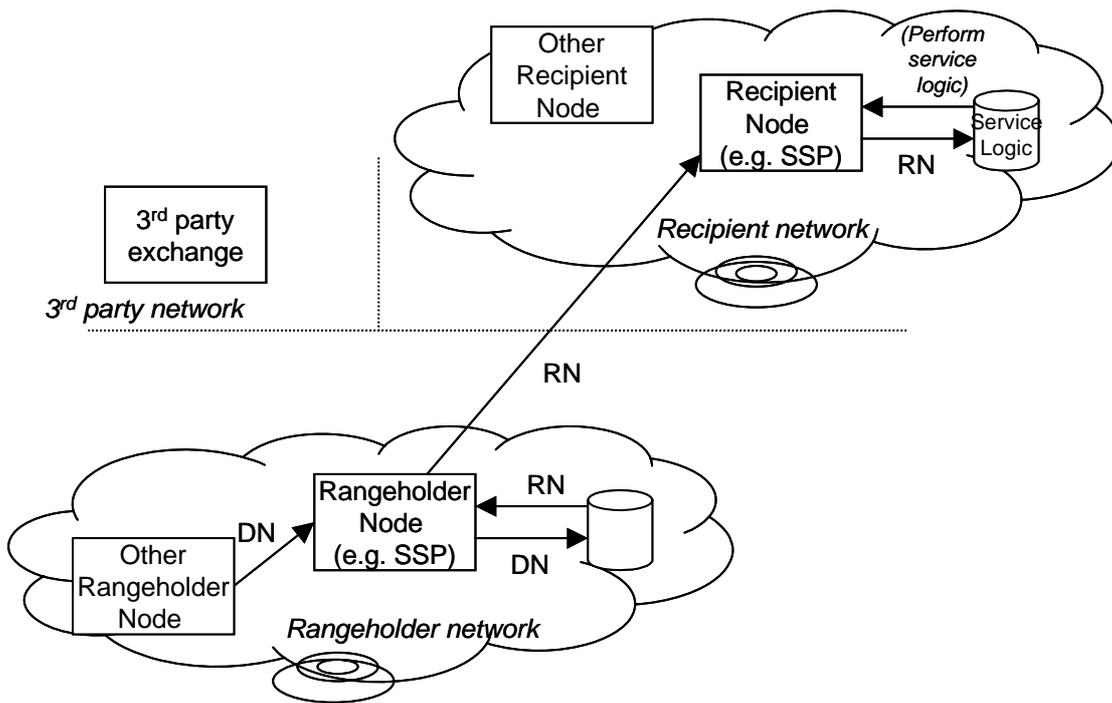
In determining and adding the Routing Number the characteristics of the call are not to be modified. However, with this proviso Rangeholder operators are free to choose the mechanism used to determine and add the Routing Number within their network.

Typical call flows are illustrated in Figures 4.a, 4.b, 4.c and 4.d. These are representative call flows to aid understanding only. In practise, for example, technology other than IN could be used, or all of a CP's nodes could be IN-equipped.



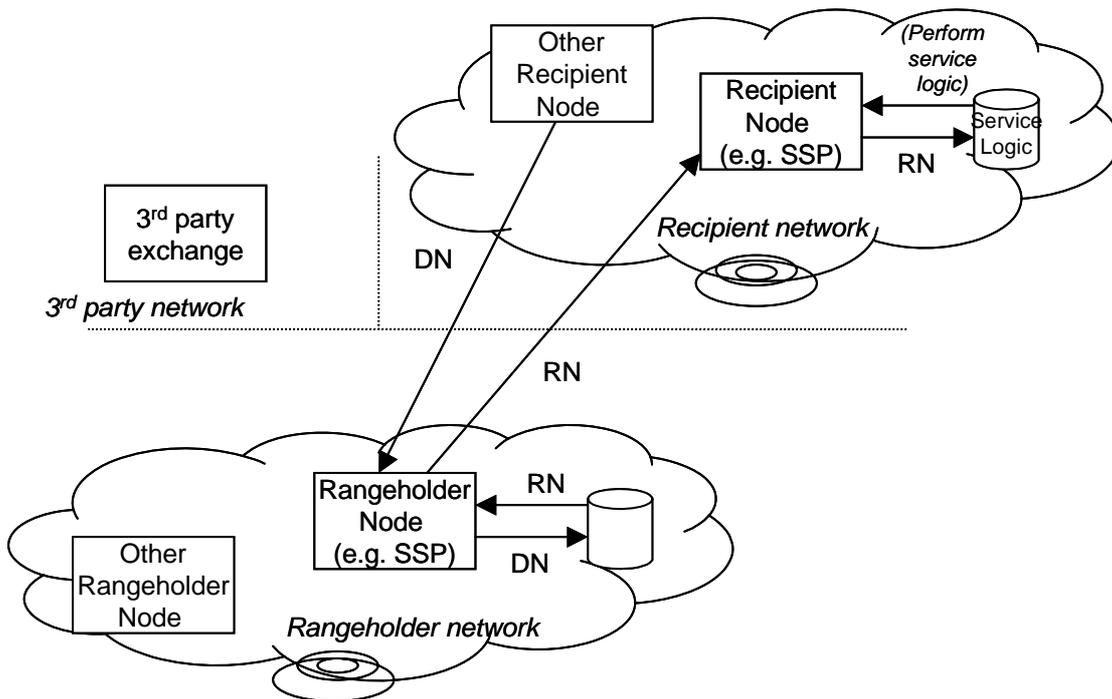
DN = routing based on dialled digits
RN = routing based on Routing Number

Figure 4.a : Call flow (call originates in 3rd party network)



DN = routing based on dialled digits
 RN = routing based on Routing Number

Figure 4.b : Call flow (call originates on Rangeholder network)



DN = routing based on dialled digits
 RN = routing based on Routing Number

Figure 4.c : Call flow (call originates on Recipient network, Phase One)

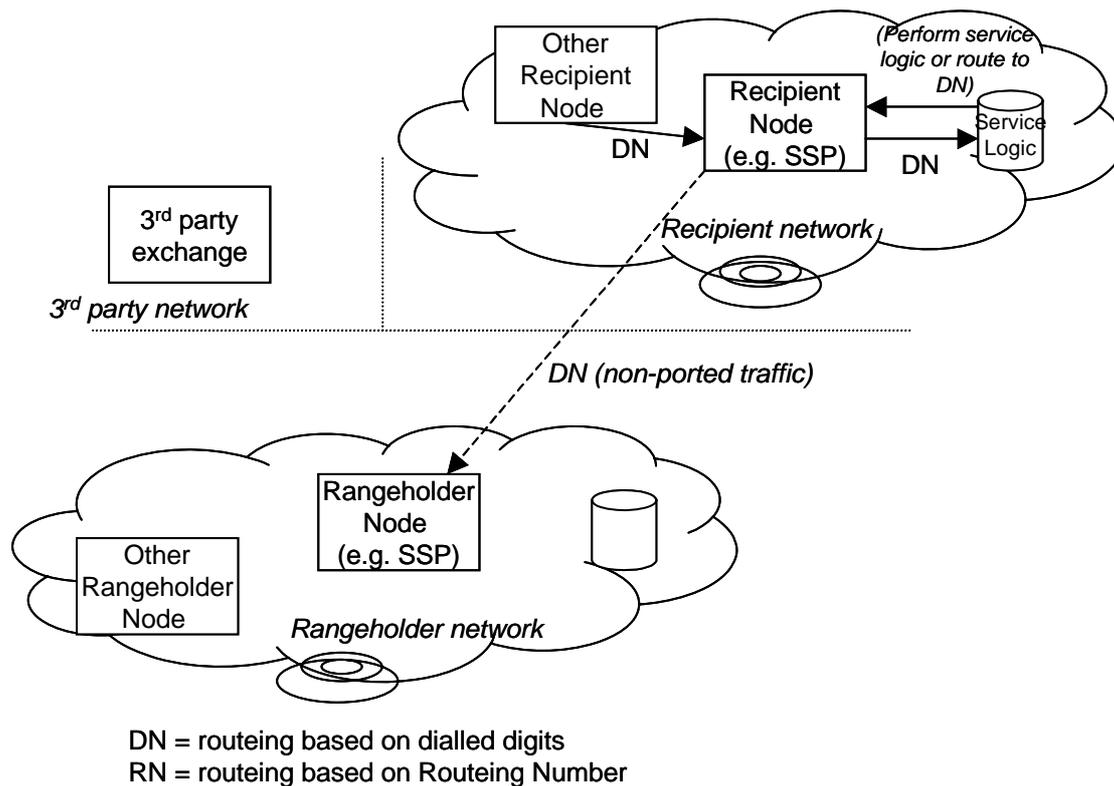


Figure 4.d : Call flow (call originates on Recipient network, Phase Two)

5. Requirements

5.1 General requirements

A model comprising four network roles is used to describe NGNP functionality. The network roles in the functional model are:

- the Originating Network -the network where the call is originated from;
- the Rangeholder Network - the network to which the number range has been allocated;
- Transit Network(s) - a network that carries calls between other networks;
- the Recipient Network - the network where a number is located after being ported.

A network may perform the functions of one or more network roles, with the exception that the roles of Rangeholder and Recipient Network must be performed by different networks.

NGNP implementations adopted by one CP shall not affect any other CP's implementation. The means by which the Routeing Number (used to route calls between the Rangeholder and Recipient Networks) is determined is outside the scope of this document and is left to the individual CPs. However, it is anticipated that this will be accomplished by using either:

- The data decoding capabilities of the individual switches (onward routing)
- The result of a query to a database.

Calls transferred from the Rangeholder Network to the Recipient Network will use any appropriate and feasible routing which avoids undue post dialling delay. To avoid misrouting, in particular

circular routing, networks should not modify or remove the Routing Number other than at the recipient exchange. If a call containing a Routing Number cannot be completed the appropriate failure indications shall be returned.

Routing Numbers Prefixes are codes which uniquely identify the Recipient Network. The structure of the Routing Number Prefixes and their allocation are subject to control by the UK Number Plan Administrators (currently Ofcom). The Routing Numbers used will not be treated as Directory Numbers if dialled by customers.

When a number is ported from one CP to another, the CPs will be required to be able to pass the following information across the POC:

- Called Directory Number (in full national form)
- Destination Information (Routing Number Prefix)
- Calling Directory Number (The original calling party's CLI)
- CLI Display Restrictions
- Malicious Call Intercept

The CLI Guidelines [2] must be adhered to, that is transmission of the CLI and associated information shall not be impaired by the implementation of GNP. Calls transferred across the POC from the Rangeholder Network to the Recipient Network shall have the Calling Line Identity (CLI) set to the originating caller. The CLI must not be transferred unless the status of Presentation Restriction is maintained.

5.2 Requirements of Networks

5.2.1 Requirements of Originating Networks

Unless the Originating Network is carrying out any NGNP functions, there are no specific requirements imposed by NGNP.

5.2.2 Requirements of Rangeholder Networks

Calls originating in the Rangeholder Network and calls received by the Rangeholder Network from other networks which are destined for the ported number shall be passed to the Recipient Network over one or more pre-determined POCs. The Routing Number format specified in Section 6 shall be used.

The Rangeholder Network shall not modify signalling parameters that indicate the destination number has been translated, in particular the IUP Enhanced Diversion Indicator (EDI) and Network Translated Address Indicator (NTAI).

The Rangeholder Network CP will maintain an administrative record of numbers ported and thereby ensure that any such number is not reallocated to another customer of the Rangeholder Network CP unless and until the number is relinquished.

5.2.3 Requirements of Transit Networks

Any exchange that has a call presented to it with a Routing Number shall route the call based on that number.

5.2.4 Requirements of Recipient Networks

The Recipient Network will perform the services associated with the ported non-geographic number. If a call is received with the Recipient Network's Routing Prefix but to a number which has not been ported to it, then the call shall be failed.

Where the Recipient Network is the also the Originating Network;

- For a Phase One implementation they may route the call to the Rangelholder Network.
- For a Phase Two implementation they should detect whether the call is to a ported non-geographic, and as appropriate either provide the services associated with a ported number, or route calls to non-ported numbers to the Rangelholder network.

6. Numbering Format

6.1 Background

The Specified Numbering Scheme which is utilised in the UK is of the format SABCDEXXX(X), where the 'S' digit identifies the category of service. For non-geographic numbers, 'S' is '3', '8' or '9'. A trunk access prefix of zero is used when dialling nationally, i.e. the format of the dialled number is 0SABCDEXXX(X). The maximum number length is ten digits, i.e. eleven digits including the trunk access prefix. Most non-geographic numbers are of this length, however a minority are of nine digits (i.e. ten digits with the trunk access prefix) and in exceptional cases a length of seven digits (i.e. eight with the trunk access prefix) is implemented.

In order to route calls to the appropriate terminating operator, analysis of the first six or seven digits of the UK telephone number (excluding the trunk prefix) is required.

Systems used within the UK impose limitations upon the number length that can be carried; at the time of the design of the scheme the lowest common denominator that could be assumed is that called party address field requirements should not exceed 18 digits.

6.2 Requirements

The generic approach to number portability set out in Section Four requires that a Routing Number be used. The Routing Number is added by the Rangelholder Network, and subsequently be used to route the call to the Recipient Network.

No additional numbers shall be allocated from the user-diallable part of the Specified Numbering Scheme in order to implement number portability, i.e. the Routing Number should not be taken from the space available for service provision.

The format of the Routing Number should not cause it to exceed the maximum number length specified or require networks to analyse any further digits than specified in Section 6.1.

6.3 Routeing Number format

The Routeing Number shall consist of a Routeing Prefix and the Called Party Number.

To remain consistent with the prefix principles of Geographic Number Portability, calls to ported non-geographic numbers will be routed using six digit fixed length 5xxxxx prefixes of the form 504xxx, where '5' indicates 'Number Portability', '04' indicates that the type of portability is for 'non-geographic numbers' and 'xxx' identifies the Recipient.

6.3.1 C7 Signalling using Interconnect User Part (IUP)

In IUP the Routeing Number shall be a concatenation of the Routeing Prefix, trunk access code and the Called Party Number. As the trunk access prefix is carried within C7 Interconnect User Part (IUP), this means that the leading '5' of the Routeing Prefix (hence Routeing Number) is sufficient to identify it as a Routeing Number as against;

- a call to a non-ported number, which will have a leading digit of '0'
- a call utilising an access code, which will have a leading digit of '1'
- a call utilising the Targeted Transit service, which will have a leading digit of '7'
- a call to emergency services, which will have a leading digit of '1' (112) or '9' (999)

6.3.2 Other signalling systems

In other signalling systems, the trunk access prefix may not generally be carried. In this case, indication will be required that the call is to a ported number, and hence a Routeing Number is being used.

6.4 Administration

In accordance with Ofcom General Conditions 17 and 18 [1], CPs wishing to implement number portability shall apply to the Numbering Scheme Manager for an allocation of a Routeing Prefix.

History

Document history		
Issue 1	May 2000	Initial Issue
1.2.1	September 2010	Refresh to reflect actual implementation