Infocommunications Development Authority Of Singapore (IDA)

Number Portability In Singapore - the Technical Approach

5 May 2000

NUMBER PORTABILITY - THE TECHNICAL APPROACH

1   Introduction

1.1   This document describes the technical approach to the deployment of non-geographical Number Portability (NP) service by licensed telecommunication operators in Singapore.

1.2   Number Portability refers to the ability for subscribers to switch Licensees (or location(geographical), in the case of fixed networks), without the need to change telephone numbers. The service applies to all telephone numbers including 1800 (toll-free) calls, 1900 (premium) services, mobile and paging numbers. iDA requires all Facilities Based Operators (FBOs) to support and implement NP. Fixed network NP was made available from 1 April 2000, whereas Mobile and Paging NP has been available since 1 April 1997.

1.3   Number Portability Working Groups

1.3.1   In order to decide on the best solution to use for implementing NP and to work out the implementation and administrative details, the fixed network operators, the mobile operators and the paging network operators have formed the Fixed NP, Mobile NP and Paging NP working groups respectively. The working groups also work with each other when necessary in order to ensure that the other networks can support their solutions. The current working group participants are listed in Annex 1.

2   Terms used in number portability

Donor Network: the initial network where a number was located before ever being ported

Originating Network: the Network where the calling party is connected.

Recipient Network: the Network where a Network number is located after being ported.

Routing Number: for the purposes of this document, a specific number that is derived and used by the Network to route the call towards a ported number

Database: the storage of ported numbers with their relevant Routing Numbers

3   Fixed Number Portability (Non-Geographical)

3.1   iDA had commissioned a consultancy study to look into the cost and benefits of implementing Fixed NP and to recommend the most cost-effective and practical technical solution. The study recommended the use of originating call re-routing method, where signalling is used to detect first if a number is ported before the actual call is physically set up.

3.2   <u>Fixed NP Working Group</u>

3.2.1   The Fixed NP Working Group discussed the recommendation of the consultancy study and, with the approval of the iDA, decided to implement NP using an Intelligent Network (IN) solution based on the Query on Release (QoR) method which is a form of originating call re-routing method. In order to support the QoR method, the network is required to implement a signalling option to indicate to the originating network that the dialled number has been ported out.

3.2.2   SingTel and StarHub have signed a Number Portability Agreement to provide fixed NP services to each other. New FBOs intending to provide NP services should also make similar agreements for the provision of NP services.

3.3   <u>Query on Release (QoR)</u>

3.3.1   The QoR method is where the Donor Network sends a Release message with a specific cause value to the Originating Network. The Originating Network will then query the Database for the Routing Number and route the call to the Recipient Network. To support this solution, each network its own Database as the solution requires the Originating network to make the query. The cause value to be used for QoR is '0001110' or 14 to indicate a ported number.

3.3.2   Signalling Requirements

Each ported subscriber will have two numbers used by the network: the Directory Number (N1) and the Routing Number (N2) that is used to route the call towards the subscriber. An ISUP parameter (ACLI) is defined under national option to carry N2 in the IAM message across the network.

3.3.2 Call Scenario

The following describes the general call scenario on how a ported number is routed.
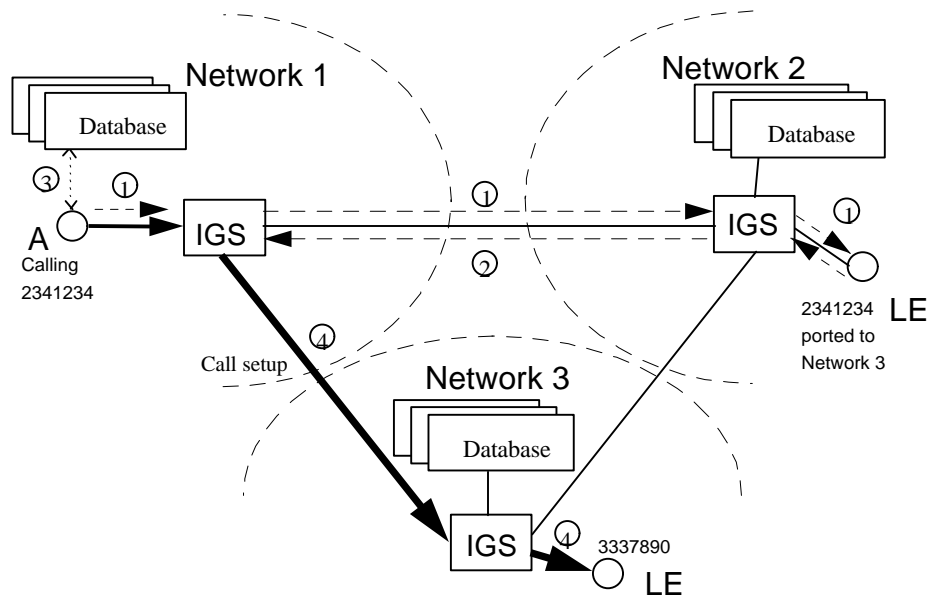

Figure 1: Customer with number 2341234 has ported from
Network 2 to Network 3

When caller A dials 2341234, network 2 will send the cause value to Network 1 to indicate that the number has been ported out. Network 1 then query the Database and obtained the routing number 333 7890 and route it to Network 3.

4   Mobile Number Portability

4.1   Mobile NP was introduced in Singapore on 1 April 1997. With the entry of the third mobile operator, the service was also made available to the subscribers of the third operator from 1 April 2000.

4.2   Mobile NP Working Group

4.2.1 The Mobile NP Working Group, with the approval of the iDA, decided to continue the use of simple call forwarding as the interim solution and look at an IN-based solution for the long-term solution. The working group is working with the timeframe of year 2002-3 to implement an IN-based solution.

4.2.2 The Mobile NP Working Group meets on a "needs" basis. New operators intending to join the working group can contact any of the participants in this working group to indicate its interest.

4.3   Call-forwarding solution

4.3.1 The simple call-forwarding solution is where the Donor Network sets the ported number (N1) to be forwarded to the number (N2) assigned by the Recipient Network to the ported subscriber.

5   Paging Number Portability

5.1   There are currently four paging operators in Singapore. The paging operators currently uses SingTel's Automatic Interception Service (AIS) to implement paging NP. When a customer requests for NP service from the Recipient operator, the Recipient operator requests for the pager number to be redirected to its network using the AIS.

Annex 1 - Number Portability Working Group Participants

Fixed NP Working Group
Singapore Telecommunications Ltd
StarHub Pte Ltd

Mobile NP Working Group
MobileOne (Asia) Pte Ltd
SingTel Mobile Pte Ltd
StarHub Mobile Pte Ltd

Paging NP Working Group
MobileOne (Asia) Pte Ltd
Hutchison IntraPage Pte Ltd
SingTel Paging Pte Ltd
ST SunPage Pte Ltd