

TELECOMMUNICATIONS NUMBERING ADVISORY COMMITTEE

The Use of Carrier Selection Code in Service Across Networks (III)

Introduction

At the 25th Telecommunications Numbering Advisory Committee (TNAC) meeting held on 22 January 1998, NAC Paper No. 3/1998 was discussed. An example was given in the paper to explain how carrier selection codes could be used to allow a PABX customer to send, under a coordinated dialing plan, other additional service digits to a particular mobile network. The arrangement is illustrated in Figure 1 below :

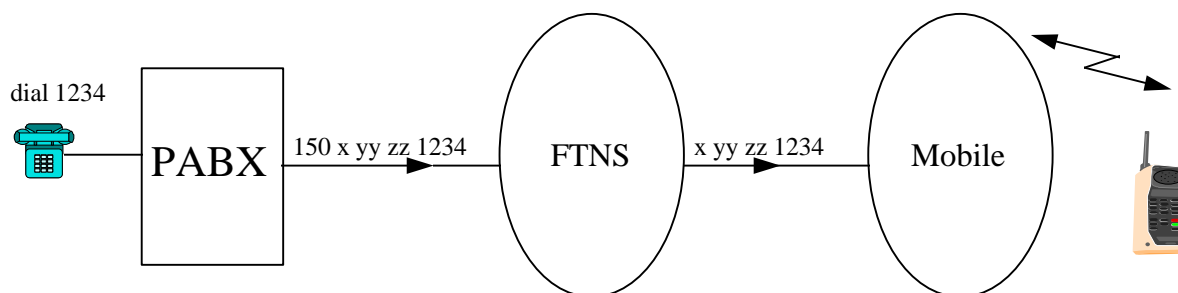


Figure 1 : Use of Carrier Selection Code to send Service Digits

The codes and numbers used in the example are of the following format:

150 x yy zz 1234 where

- 150 - carrier selection of the mobile network
- x - overdecimal digit
- yy - service codes or charging index
- zz - user identity (if CLI is not available in the CPE interface)
or routing index
- 1234 - the number dialed by the customers.

2. Since the digits “x yy zz 1234” following the carrier selection code are used to carry both service and routing information of a specific customer of the recipient network, some Members requested the Telecommunications Authority (TA) to clarify whether the use and conveyance of non-routing codes and numbers over the public telecommunications networks would be permitted under the Hong Kong Numbering Plan. Four submissions from Members and operators giving comments and views on

NAC Paper No. 3/1998 have been received. Their comments and views are summarized in the Annex.

3. The purpose of this paper is to illustrate some other possible applications of carrier selection codes in fixed and mobile networks. The TA's views and consideration on whether carrier selection codes should be assigned to fixed and mobile operators are also given.

Other Applications of Carrier Selection Code

4. Figure 2 illustrates another application of carrier selection code. Other than using "00x" codes as the indirect access codes for International Direct Dial (IDD) calls, a PABX or keyline customer of FTNS operator X can access the special IDD service of FTNS operator Y by dialing the carrier selection code, say, "150" of FTNS operator Y together with the required user's dependent service code(s) "x yy zz 123456". FTNS operator Y will then decode/translate the whole of the dialed number "150 x yy zz 123456" and route the call to the required overseas destination according to the customer's requirements such as least cost routing, time dependent routing or premium rate service routing etc. In addition, if the service profile information contains the user identity, it is possible for FTNS operator Y to bill the customer of a particular extension of the PABX or keyline system. The advantage of this application is that the PABX and keyline customer can rely on FTNS operator Y for the call management and routing of its IDD traffic.

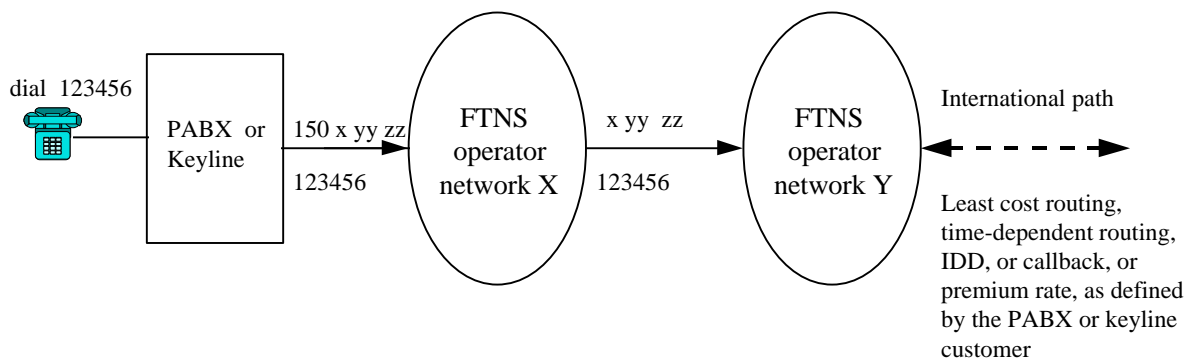


Figure 2 : Access to the Special IDD Service through Another Network Using Carrier Selection Code

5. Another possible application of using carrier selection code in fixed or mobile network is illustrated in Figure 3. A customer may need to gain access to some services offered by network operator Y via network operator X. These services may be the "109" for telephone fault reporting, "108X" for telephone directory services and other services such as the "1850X" for time and temperature information services etc. As defined in the numbering plan, since these "109", "108X" and "1850X" numbers are universally allocated to all fixed and mobile operators, but will generally not be passed across networks, the use of carrier selection code will provide a means for the customer to gain access to these services offered by operator Y via operator X.

6. For example, if a customer has subscribed to FTNS operator Y’s residential line and in the event that he needs to report the fault of his telephone line to FTNS operator Y’s “109” telephone fault reporting centre, he has to use the telephone line of the FTNS network Y. However, such telephone lines might not be available at a particular moment, e.g. when the customer is in his office where the telephone lines are offered by FTNS operator X. With the use of carrier selection code, say “150”, the customer can use the telephones in his office and dial “150 109”. The call will then be routed to FTNS network Y through FTNS network X.

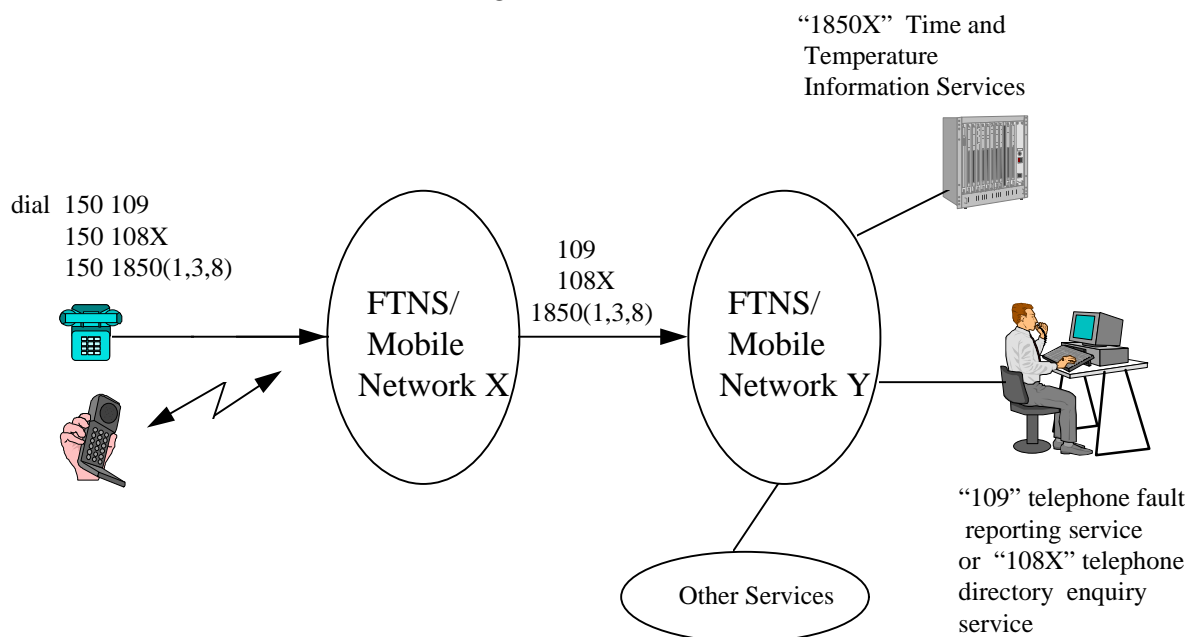


Figure 3 : Access to the Services of One Network through Another Network Using Carrier Selection Code

The TA’s Considerations

The Need of Carrier Selection Code

7. Many existing PABX and keyline systems are analogue systems. They are not capable of sending Calling Line Identifications (CLI) signals to the fixed or mobile networks. As such, users of these systems cannot enjoy some special services which require the use of the CLI signals. It is expected that these analogue systems will not be phased out entirely for a long period of time. The use of carrier selection code will overcome this shortcoming. The TA therefore considers that the use of carrier selection code would benefit these analogue system users.

8. One Member was of the view that it would not be necessary to assign new type of carrier selection code to operators as the “00x” codes have already served the carrier selection purpose. The TA considers that “00x” codes are assigned to fixed

network operators to enable customers of one fixed network to access another networks for international calling services. They are not intended to be used for other applications such as those mentioned in paragraph 4-6.

Delivery of Non-routing Information Across Networks

9. In the Hong Kong Numbering Plan, codes and numbers allocated by the TA are used for routing calls in the public telecommunications networks. There are at present no codes or numbers reserved for network operators to carry service profiles or customer information. When the Hong Kong Numbering Plan was devised in 1994, no restriction had been imposed on the use of codes and numbers. The TA cannot see any strong reason to restrict the use of codes and numbers to the routing of calls only. If the use of carrier selection code is of benefit to the users, the TA would have no strong objection to the allocation of such code. The TA also believes that the use of carrier selection code in service would enable network operators to develop advanced and enhanced services and would promote more competition and bring additional benefits to customers.

Proposed Number Format for Carrier Selection

10. In view of the above considerations, the TA intends to allocate “15” and “16” levels as the carrier selection codes. These levels are currently vacant and have been reserved for such purposes in the Hong Kong Numbering Plan. Each fixed or mobile operator will be assigned one of these carrier selection codes to meet their various carrier selection requirements. The proposed number format for carrier selection is as follows -

Carrier Selection Number **15XX Y₁..... Y₈ and
16XX Y₁..... Y₈**

(Total up to 12 digits)

where

15XX and 16XX are the 4-digit carrier section codes for which each fixed and mobile network will be assigned one of these codes;

and

Y₁.....Y₈ are the service number with variable length ranging from 1 to 8 digits.

11. Depending on the operational requirements, individual operator can flexibly apply different digit lengths ranging from 1 to 8 digits to the Y₁.....Y₈ service number. However, fixed or mobile operators should coordinate with all other on the preferred digit length of Y₁.....Y₈ in advance before passing them to the required recipient network.

Advice Sought

12. Members are invited to give further comments and consideration on the TA's proposal on the allocation of carrier selection codes in the Hong Kong Numbering Plan and the number format for carrier selection codes proposed in this paper.

Office of the Telecommunications Authority
25 March 1998

**Comments and Views from
Members and Network Operators on NAC Paper 3/1998 -
The Use of Carrier Selection Code in Service Across Networks (II)**

OFTA received four submissions from P Plus Communications Limited (P Plus), Peoples Telephone Company Limited (Peoples), Mandarin Communications Limited (Mandarin) and New T&T Hong Kong Limited (New T&T) on NAC Paper 3/1998. Their views and comments are summarized as follows :

- P Plus**
- P Plus supports the example given in the Paper as it reflects the initial idea raised by P Plus.
- Peoples**
- Peoples supports the use of carrier selection code in the way described in NAC Paper 3/1998. This solution gives the single network operator the same possibilities to provide fixed-mobile services, which can be done today only by operator having both fixed and mobile networks.
- Mandarin**
- The use of Carrier Selection Code will be a simple and convenient way to allow one operator to provider services to subscribers of another operator. The specific example quoted in the Paper can be viewed as an extension of mobile Virtual Private Network (VPN) service to fixed network users with PABX connection.
 - If Mandarin wants to expand the concept of VPN beyond the mobile network to include PABX users, Mandarin requires direct connection of PABX to the MSC to make PABX users as on-net users. PABX users are widely distributed in Hong Kong and this will not be a good solution. With the use of Carrier Selection Code, the mobile network concept of VPN can be expanded to anywhere in Hong Kong easily without the requirement of connecting all PABX to the MSC directly. In doing so, the usefulness of VPN can further be expanded and the efficiencies of those companies joining this service can also be improved.
 - In order to achieve this concept, each operator has to be assigned with a unique carrier selection code, say , 4 digits. However, the format of the digits for PABX/CPE users to select service providers should be open rather than standardized. More flexibility and freedom should be given to the originating PABX/CPE users and the terminating operator which provides the service to determine the access method.

New T& T

- OFTA should define the use of carrier selection codes and the interconnection charging principles that will apply;
- No real and non-substitutable demand for the use of carrier selection code at the moment;
- The proposed application by P Plus can be better implemented by means of interactive voice response interface;
- Short code is a rare numbering resource and should only be used under real and essential demand; and
- The Use of Carrier Selection Code will lead to duplicated use of numbers in the numbering plan and it is a waste of valuable numbering resources.