

Telecommunications Numbering Advisory Committee

The Use of Carrier Selection Code in Services across the Network

P Plus Communications Limited (P Plus) has submitted the attached paper on the captioned subject to the Secretary and will make a presentation on it to members in the meeting on 6 November 1997.

2. Members are requested to give their considerations and comments on the paper to the Secretary on or before 20 November 1997.

The use of carrier selection code in services across the network

(Prepared and Submitted by P Plus Communications Ltd.)

Purpose

This paper includes proposal on how to use the carrier selection codes in services across the networks.

There is a lot of services which can not be implemented at the moment, because CPE/PBXs do not provide identification information (CLI). Example of services depending on CLI from CPE are listed in this document. Finally the solution is described.

Introduction

A large number of CPEs in Hong Kong are using analogue signalling towards the switches they are connected to. This creates certain problems. For example, the analogue signalling does not supply any kind of identity information either of the caller under PBX or of the PBX itself. That means that when somebody is making a call from PBX extension and the call is terminated through PSTN switch to another network, the networks after PSTN switch can not know where the call is originated from.

Since no identity of either PBX/extension can be provided to the terminating switch/operator that operator can not offer services to the PBX customer.

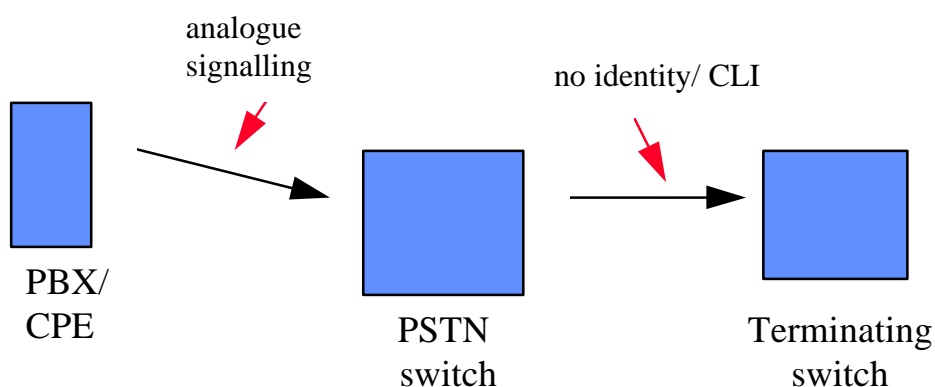


Figure: Network configuration of the described situation

In such cases, there are 2 possibilities to make it possible for terminating operator to offer services for PBX customer.

1. change/upgrade PBX signalling interfaces from analogue to digital
2. use a carrier selection code based solution for identifying the PBX

Since the 1st solution above is not applicable in the near future, this document aims to describe the alternative solution no. 2.

CLI is used for identifying the A party caller. This information is also passed across the networks. This is the case in all mobile to mobile calls as well as mobile to fixed calls. This is not depending on the originating nor the terminating network operator.

But in CPE originating call CPE may not provide CLI which limits the possibilities to provide services across the networks in following call cases

- call from fixed Operator A's CPE to fixed Operator B's fixed line
- call from fixed Operator C's CPE line to mobile Operator D's mobile

At last, we feel that the suggested approach is both pro customer and pro competition approach: this way CPE customers would be able to obtain the most advanced services from any operator they want to. Also, we feel that it is essential that the widest choice of telecommunications services should be made available to the Hong Kong customers so as to maintain the competitiveness of Hong Kong as the regional telecommunications hub.

Services requiring the suggested change

Basically all services where either A party caller or CPE/PBX needs to be identified could utilize this feature. A list of potential services can be found at the end of this document.

Example of the proposed solution

The following example illustrates the advantage of the 15-digit called number:

Operator 1 has the prefix 150. In the customer interface - at the CPE end - a specific number (not longer than 8 digits) is dialed to access the new service. Within the CPE necessary modification is implemented into the Called Party Number, and then the modified Called Party Number is sent to the Operator 1 with the prefix 150, i.e.:

150 x yy zz 1234

- | | |
|------------|--|
| where: 150 | - the prefix (carrier selection code) of the operator 1. |
| x | - overdecimal digit |
| yy | - service code or charging index. |
| zz | - user id, (in case of the CLI is not available in that interface) or routing index. |
| 1234 | - number dialed by the customer. |

The extra information can facilitate the development of the new advanced service, and further enhance the competitive environment in the telecommunication field of Hong Kong.

Besides, the customers will get most of the benefits, as they can enjoy more advanced services, and they can freely choose from which operator they subscribe their services.

Recommendations to OFTA

The following principles is proposed to be adopted:

1. OFTA should assign Carrier selection codes to each operator to support services across the network.

The carrier selection code already stipulated in the Numbering Plan may act as a potential candidate in serving such application. OFTA may also allocate other codes for such purposes if they think fit. However, number of digits should not be too long. The same carrier selection code may be used also for end user selection of operator, if needed. That is - the carrier selection code based number could also be used as a service number.

When using carrier selection code, the length of the number which is passed across the networks should not be limited to less than ITU-T standards. I.e. after IAM+SAM is implemented in Hong Kong the limit is over 15 digits.

2. For CPE originated calls overdecimal digit/digits could be used after the carrier selection code to prevent end user to dial to the service codes. OFTA should adopt changes to the specification HKTA 2202 in order to make it possible to use overdecimal digits across networks in Hong Kong.

The support of over decimal numbers should be implemented in Hong Kong telecommunication switches. This is normal function available in telecommunication switches.

3. The corporate using the CPE should have the right to alter the call routing originating from its CPE. OFTA should adopt such a policy, if TA feels it is needed.

The actual digit change alteration in the CPE should be done by the licensed CPE provider. This change should be done upon the request of the company using the CPE.

Conclusion

The implementation can be done in phases: the most important part for OFTA and NAC members to consider is the adoption of carrier selection code for the purpose described in this document. Use of overdecimal digit/digits is suggested just to protect the network for maluse.

A list of potential services acquiring identification information from CPE /PBX

FIXED -> FIXED direction

1. The change would enable corporate to buy IDD services also from other operators except from only the one corporate is connected to.
2. Bills can not be generated down to terminal/extension level if CLI is not passed. Detailed and flexible billing are clear requirements by corporate customers.

FIXED -> MOBILE direction

Terminating services where called party's service depends upon the A caller. For example, services where the A caller and B caller are from the same corporate.

List of potential terminating services:

1. Terminating call routing
If call originates from the corporate and terminates to a specific - e.g. company - mobile it is routed at the terminating end differently.
2. Terminating location based routing
If call originates from the corporate and terminates to a specific - e.g. company - mobile and the called party is at a certain location the call is routed at the terminating end differently.
3. Terminating time based routing
If call originates from the corporate and terminates to a specific - e.g. company - mobile and if it is a certain time of a day/week the call is routed at the terminating end differently.
4. Terminating call screening
If call originates from the corporate and terminates to a specific - e.g. company - mobile the call can be screened/only those allowed.
5. Terminating hunting
If call originates from the corporate and terminates to a specific - e.g. company - mobile it is routed at the terminating end differently using a special hunting list where the terminating terminal can be fixed, mobile, pager etc.
6. Terminating call announcement
If call originates from the corporate and terminates to a specific - e.g. company - mobile it is routed at the terminating end to an announcement.
7. Terminating charging
If call originates from the corporate and terminates to a specific - e.g. company - mobile it can be charged differently.

8. Integrated virtual private network

The PSTN calling party under corporate can use short extensions when calling to company mobile and vice versa.

9. Any group service

Where the corporate forms a group.

10. Business or private line

If call originates from the corporate and terminates to a specific - e.g. company - mobile the call can be handled as business/private call.

11. Any combination of the above

Originating services where calling party's service depends upon the CLI.

List of potential originating services:

1. Originating call routing

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

2. Originating location based routing

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

3. Originating time based routing

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

4. Originating call screening

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

5. Originating hunting

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

6. Originating call announcement

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

7. Originating charging

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

8. Integrated virtual private network

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

9. Any group service

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

10. Personal account

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

11. Business or private line

As for the terminating case but no preconditions for terminating side. A caller needs to be identified.

12. Any combination of the above