

TELECOMMUNICATIONS NUMBERING ADVISORY COMMITTEE

Number Supply for IP Telephony

Background

The International Telecommunication Union adopted Internet Protocol (IP) Telephony as a generic term¹ for the conveyance of voice, fax and related services, partially or wholly over packet-switched IP networks. In Hong Kong, some fixed network operators and external telecommunications services providers make use of IP network one way or another in the provision of their local and/or international voice and fax services. With the increasing use of IP telephony in place of the conventional circuit-switched public switched telephone network (PSTN), there is a need to review its impact to the regulatory regime.

2. In this connection, the Telecommunications Authority issued a consultation paper on regulation of IP telephony in October 2004, with the concerned numbering being one of the issues seeking views and comments from the industry and interested parties. The consultation paper is available online at <http://www.ofta.gov.hk/report-paper-guide/paper/consultation/20041004.pdf>. While the subject consultation is still open till 4 December 2004, this paper focuses on the number supply issues arising from the rapid development in IP telephony for discussion.

Overseas Development

United Kingdom

3. In the United Kingdom, providers of Electronic Communications Networks and Electronic Communications Services as authorized by the Office of Communications (Ofcom) are entitled to obtain telephone numbers from the Office.

¹ Such working definition of "IP Telephony" was adopted in the IP Telephony Workshop and World Telecommunications Policy Forum convened by the ITU in Geneva in June 2000 and March 2001 respectively.

Concerning special numbers for IP telephone service, Ofcom designated a new number level '056' for "Location Independent Electronic Communication Service"², which is generally a kind of IP telephone service. Apart from a special level '056' for such services, Ofcom also decided that geographic numbers (i.e. like normal fixed numbers) could be released for such services, subject to some geographic number conservation measures that would be reviewed in a separate consultation.

4. The '056' number of the United Kingdom is 11 digits long, same as other fixed line and mobile numbers. However, it is a non-geographic one (without area code prefix), thus different from normal fixed number. Leading digits '01' and '02' are allocated for fixed lines there, while leading digit '05' previously reserved for corporate customer was redeployed for more refined use of the '05X' levels. Under the new numbering arrangement, '056' is allocated to "Location Independent Electronic Communication Service" regardless of the customer type, while '055' is restricted to corporate customer only. The '056' level for such IP telephone services is therefore not much differentiated from the corporate numbers for fixed line services.

United States

5. In the United States, only service providers with a carrier status are entitled to obtain telephone number directly from the North American Numbering Plan Administrator (NANPA). Any operator offering IP telephone services without a carrier status has to obtain telephone numbers through its Local Exchange Carrier partner. There is no specific numbers assigned for IP telephone services in the NANPA numbering plan. The numbers used for IP telephone services in the United States are therefore of the same format as traditional fixed telephone numbers, though some may not have a normal area code which corresponds to the user's physical location.

² Ofcom defines "Location Independent Electronic Communication Service" as services where: (i) the Numbering Plan of the Communications Provider offering the service has no geographic significance; (ii) the location of the Customer's Apparatus identified by a given Telephone Number at the time of use is not necessarily permanently associated with a particular Network Termination Point; (iii) number translation to a Geographic Number is not involved; and (iv) the service is not a Mobile Service.

Japan

6. In Japan, the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) received applications since September 2002 for IP telephone numbers, which allowed for call from PSTN to IP phone. Not only fixed carriers offering traditional PSTN services can apply for the IP telephone numbers, but IP telephone service providers without carrier status may also apply. MPHPT identified a new number level '050' for IP telephone service, with a digit length of 11. MPHPT started the allocation of '050' numbers in November 2002, while network connection from PSTN to '050' phones was put into service in October 2003.

7. The format of IP telephone number in Japan is 050-CDEF-GHJK, where CDEF is the operator code and GHJK is the subscriber number. In Japan, the fixed line number format is 0-ABCDE-FGHJ (10 digits) (so-called '0AB~J' numbers) while the mobile number format is 080-CDEFGHJK or 090-CDEFGHJK (both being 11 digits). The levels '052' to '059' have already been used for fixed telephone services in Japan. The '050' level for IP telephone is therefore not much differentiated from normal fixed telephone numbers, other than the digit length difference.

8. In Japan, IP telephone services with quality and functionalities equivalent to traditional telephone services (including ability to make emergency calls, provision of information on callers' physical location, etc.) may be allocated '0AB~J' numbers instead of '050' numbers. Nevertheless, given the stringent provisions governing the use of such '0AB~J' numbers for IP telephone services, only fixed carriers actually deploy such numbers for the services at present.

Singapore

9. The Infocomm Development Authority (iDA) of Singapore conducted an industry consultation on IP Telephony and ENUM, which was just closed in early November. While there is not yet any conclusion of the consultation, iDA indicated in the consultation paper that it would allocate telephone numbers to licensees of both Facility Based Operator and Service Based Operator for provision of IP telephone services.

10. Concerning number supply for IP telephone services, there are four options put up by iDA, as follows:

- A. Continue to assign existing local fixed-line numbers of 8 digits for IP telephone services
- B. Open a new number level of the same digit length from the remaining spare levels for the services
- C. Assign a new national destination code (4-digit prefix) on top of an 8-digit number for the services
- D. Adopt Option B first, followed by migration to option C if demand warrants

In the consultation paper, iDA proposed to adopt option D above.

Local Access Service via Broadband Connection

11. In Hong Kong, the IP telephone service is implemented in such a way that overseas customers may also subscribe to the local access service. As such, there may be a significant demand on the numbering resources stemming from the overseas market, rather than just the local market.

12. OFTA considers that there may be two viable numbering approaches for the abovementioned local access service in Hong Kong. One is sharing the use of 8-digit number blocks currently allocated to or planned for traditional fixed telephone services, like that in the United States. The other is a special access code for such kind of IP telephone service, as in the case of the United Kingdom and Japan. For the former approach, there are two options, one being the use of existing number blocks already allocated to or planned for fixed line telephone services, i.e. level '2' and '3' numbers, and the other being creation of new and separate numbering range(s) out of the spare '36' – '39' levels or even '8x' levels, with customer numbers of the same digit length, for IP telephone services.

13. Concerning the number resources available for IP telephone services in Hong Kong, the following statistics are relevant:

- 100 million spare numbers are available if a special access code followed by a 8-digit subscriber code is adopted for IP telephone service;
- Around 3 million spare numbers in the '36' – '39' levels currently planned for fixed line services, are available for sharing between traditional fixed line services and IP telephone service, or for segregation into two ranges for each of

the services;

- Around 5 million spare numbers are available in the '8x' levels currently planned for personal number services.

14. In Hong Kong, we may consider the allocation of a special access code to certain types of IP telephony users, such as nomadic users who may use the service at different locations and external users who use the service at a location outside Hong Kong, while telephone services offered by FTNS operators to fixed local locations may continue to use the existing 8-digit numbers, whether the technology behind is circuit switching or IP telephony. Such approach helps to ease the pressure on the number resources as a whole. However, this may possibly result in a need for users to change number when switching between operators.

15. The numbering approach to be adopted for IP telephone service in Hong Kong depends on our numbering resources and the projected demand, which would require inputs from the FTNS operators and other interested parties wishing to offer IP telephone services. The Telecommunications Authority would decide on this issue after due consideration of the views and comments received in response to the consultation on regulation of IP telephony currently in progress.

Advice Sought

16. Members are invited to review the issue of number supply for IP telephone services in Hong Kong and offer their views. Any views expressed by Members, oral or written, will be fed into the consultation process currently in progress. There are also other regulatory issues which are covered in the consultation paper on IP telephony issued by this Office in October 2004. Should Members have any view or comment on these issues, including number supply for IP telephony in Hong Kong, they are welcomed to respond to the consultation paper.

Office of the Telecommunications Authority
November 2004