

Code of Practice Relating to the Use of Numbers and Codes in the Hong Kong Numbering Plan

Background

Pursuant to paragraph (3)(b) of Section 32F of the Telecommunications Ordinance (Cap 106), the Communications Authority¹ (CA) may issue codes of practice relating to the use of numbers and codes in the numbering plan, and any code so issued may include provisions relating to number portability. Paragraph (3)(e) of the same section further provides that the CA may delegate the administration of the numbering plan or a part of the numbering plan to any person.

2. To ensure that the allocations and assignments of numbers and codes for telecommunications networks/services meet up-to-date requirements of the telecommunications industry, the CA issues this Code of Practice (CoP) for the purpose of providing guidance to the telecommunications network operators and service providers, including paging service operators, mobile virtual network operators (MVNOs) and Services-Based Operator (SBO) Licensees etc., to whom the CA has delegated the administration of part of the numbering plan. This CoP will contain the necessary guidance principles for these operators to follow when assigning telecommunications numbers and/or codes to end customers. For ease of reference, a summarised description of the Hong Kong Numbering Plan and classification of short codes are given in Appendix 1 «Description of the Numbering Plan» and Appendix 2 «Classification of Short Codes» respectively.

Guiding Principles

3. In the drawing up of the numbering plan for Hong Kong, the CA has adopted the following guiding principles:

- (a) the numbering plan should be able to meet the future growth and requirements in telecommunications;

¹ Pursuant to the Communications Authority Ordinance (Cap 616), with effect from 1 April 2012, all duties and powers of the Telecommunications Authority are conferred on the Communications Authority, and all duties and powers of the Office of the Telecommunications Authority are conferred on the Office of the Communications Authority, the executive arm of the Communications Authority.

- (b) the numbering plan should be user friendly and be fair and equitable to all providers of telecommunications services; and
- (c) the numbering plan should be able to adapt to new technologies and services in future.

Allocation and Assignment

4. There are two levels of handling telecommunications numbers and codes, viz. allocation and assignment.

- (a) Allocation is the distribution of numbers and codes by the CA to the telecommunications network operators, paging services operators, MVNOs and SBO Licensees etc. (collectively referred to as “operators”) on a block-by-block basis; and
- (b) Assignment is the actual designation of individual numbers and codes to operators or end customers. In most of the cases of end customers, the assignment is entrusted by the CA to the operators providing the services.

Allocation Principles

5. In developing the allocation principles, the CA will ensure that the following requirements are met:

- (a) consumer interests should be properly taken care of;
- (b) competition is to be promoted;
- (c) allocations should encourage innovation in the provision of telecommunications services;
- (d) there is to be efficient use of numbers and codes; and
- (e) the allocation procedures should be fair and technically and economically feasible.

6. The approach taken by the CA in its management of the Hong Kong Numbering Plan is as follows:

- (a) the CA should ensure that number allocations are consistent with the numbering and code plan and other relevant regulatory instruments;
- (b) the CA should deal with number and code allocation requests in a timely manner;
- (c) the CA should be responsive to applicants in providing information and assistance in relation to number and code allocation requests;
- (d) the CA should ensure that number and code allocations foster user convenience and ease of understanding and use;
- (e) the CA should be fair and consistent in its application of the allocation procedures; and
- (f) the CA should promote stability for end users in the administration of number and code allocation procedures.

7. The principles and application procedures for the allocation/assignment of numbers and codes for different types of operators are given in the appendices to this CoP as follows:

- (a) Appendix 3 «Guidance Notes for the Submission of Application for the Number Block(s)/Codes for the Fixed Services, Mobile Services, Paging Services and Machine-to-Machine Services in Hong Kong» – provides the principles and application procedures for the allocation/assignment of numbers and codes for the fixed services, mobile services, paging services and machine-to-machine (M2M) services.
- (b) Appendix 4 «Allocation of Subscriber Numbers and Assignment of Mobile Network Code (MNC) to Mobile Virtual Network Operator (MVNO)» – provides the principles and application procedures for the allocation/assignment of numbers and codes for MVNOs.

- (c) Appendix 5 «Allocation of Subscriber Numbers to SBO Class 1 and Class 2 Licensees» – provides the principles and application procedures for the allocation of numbers for Class 1² and Class 2³ services operated by SBO Licensees.

Assignment Principles

8. For efficient assignment of telecommunications numbers and codes to end customers, operators should observe the following principles:

- (a) assignment of numbers and codes by operators to end customers and their service offerings must comply with this CoP and the statements issued by the CA related to the numbering issues. The assignment principles of telecommunications numbers for Class 3 service⁴ operated by SBO Licensees are given in Appendix 6 «Assignment Principles of Telecommunications Numbers for SBO Class 3 Licensees». The assignment principles of fixed network numbers to Direct-Dialling-In (DDI) services are given in Appendix 7 «Assignment Principles of Fixed Network Numbers for Direct-Dialling-In (DDI) Services». The assignment principles of M2M numbers are given in Appendix 8 «Assignment Principles of “4500X” Numbers for Machine-to-Machine (M2M) Services»;
- (b) operators to whom the CA has delegated the administration of the assignment process must treat customers equitably and fairly;
- (c) each of the operators will maintain a record of the numbers and codes under its administration in accordance with the CA’s guidelines;
- (d) operators should recover immediately any numbers or codes which have been given up by customers leaving the service (except for number portability requirements) or which are no longer used for a particular service. The recovered numbers/codes should be recycled for use within six months;

² “Class 1 service” means an internal telecommunications service as described in Special Condition (SC) 17.2 of the SBO Licence.

³ “Class 2 service” means an internal telecommunications service as described in SC 18.2 of the SBO Licence.

⁴ “Class 3 service” means a telecommunications service as described in SC 16.1 of the SBO Licence.

- (e) unless otherwise specified in this CoP or specifically approved by the CA, all numbers and codes in the Hong Kong Numbering Plan should allow “any-to-any communication” i.e. a calling party can reach a called party by dialling the number or code of the called party, irrespective of the networks (mobile and fixed inclusive) used by the calling party and the called party and irrespective of whether the calling party is calling from overseas or from a local station; and
- (f) operators allocated with the Hong Kong telephone numbers for the provision of Class 1 and Class 2 services should not sell or pass the numbers to overseas operators for assignment to their customers. The licensees should maintain a direct supplier-customer relationship with the end-users assigned with the numbers and codes in the Hong Kong Numbering Plan, or be involved in operating or maintaining the Class 1 or Class 2 service enjoyed by the end users assigned with these numbers.

Number Fee

9. Operators shall note that subject to licence fee structure applicable to their licences, an annual number fee shall be charged for each subscriber number allocated to operators regardless of whether the subscriber number has been assigned to end user or not. A subscriber number is a number in the numbering plan within numbering blocks allocated by the CA to a licensee, which may be assigned by the licensee to its customer for use of a telecommunications service. The numbers which fall within such meaning and subject to number fee are given in Appendix 9.

Number Return Principles

10. The number return principles and the return procedures are given in Appendix 10 «Guidance Notes for the Return of Numbers for the Fixed Services, Mobile Services and Paging Services in Hong Kong».

International Numbering Resources

11. Operators shall only use international telecommunication numbering resources specified in the ITU-T Recommendations which have been assigned by the CA for the purposes for which they were assigned. Operators shall ensure that they do not use unassigned resources.

The Communications Authority
December 2016

Appendix 1

Description of the Numbering Plan

Leading Digit(s)	Description
00	Access codes for International Direct Dial (IDD) services.
000	Reserved for future expansion.
001	Prime access code for IDD calls via the network the customer has chosen as his/her access line provider.
002	To be used for the time being as the access code for IDD data/facsimile calls via the network the customer has chosen as his/her access line provider, pending a review of whether it is necessary to separate voice and data calls in future.
003-009	Access codes for IDD voice/data/facsimile of individual fixed network to gain access to the international gateways i.e. a customer can make IDD calls via a particular network of his/her own choice even though he/she may originate a call from another network.
01-09	Reserved for future trunk access to other places in the region.
10	Short codes for various fixed/mobile services.
110-111, 113-119	Short codes, possibly harmonised in some cases with those in use elsewhere in the region.
112	Emergency code for all mobile services.
12	Short codes for various fixed/mobile services.
130-132	Reserved
133	Code for blocking calling number display on a per call basis.
134	Reserved
1357	Code for unblocking calling number display transmission for a particular call.
136-139	Reserved
14	Network identifiers (NI) used by Fixed Carrier (FC) / Unified Carrier (UC) Licensees which are authorised to provide fixed services (hereafter referred to as "Fixed Services Licensees"), mobile licensees and SBO Licensees offering Class 1 service for number portability.
15-16	Service access codes for external telecommunications services.
17	Short codes for various fixed/mobile services.
18	Special service codes, which involve high volume of traffic, shall be standardised and portable across various fixed networks for commonly provided services. Examples are telemarketing and telebetting.
19	Network test codes and routing codes for carriers/operators of external telecommunications services, fixed services and mobile services.
200	Calling card services operated by Fixed Services Licensees.
201-206	Numbers for the fixed services except Class 2 service. Numbers shall be portable across networks of Fixed Services Licensees and SBO Licensees offering Class 1 service.
207-209	Calling card services operated by the Fixed Services Licensees.
210-229	Numbers for the fixed services except Class 2 service. Numbers shall be portable across networks of Fixed Services Licensees and SBO Licensees offering Class 1 service.

Leading Digit(s)	Description
23-29	Numbers for the fixed services except Class 2 service. Numbers shall be portable across networks of Fixed Services Licensees and SBO Licensees offering Class 1 service.
30	Numbers for Class 3 services. Numbers shall be portable across fixed networks. These numbers are normally assigned by Fixed Services Licensees to SBO Licensees. For the avoidance of doubt, these numbers shall not be used for Class 1 or Class 2 service operated under the SBO Licence.
31	Numbers for the fixed services except Class 2 service. Numbers shall be portable across networks of Fixed Services Licensees and SBO Licensees offering Class 1 service.
32-33	Reserved for future migration of numbering plan to longer digits.
34-39	Numbers for the fixed services except Class 2 service. Numbers shall be portable across networks of Fixed Services Licensees and SBO Licensees offering Class 1 service.
40-44, 451-459, 46-49 ^(Note)	Network numbers (NN) initially used by Fixed Services Licensees, mobile licensees and SBO Licensees offering Class 1 service for number portability. With effect from 1 July 2017, numbers shall be used for either network numbers or mobile services. Numbers for mobile services shall be portable across mobile networks.
4500	For M2M services. Numbers shall be assigned to machines but not subscribers. Numbers shall not be portable across networks and not be mandated to route across networks. Numbers shall not be used for voice and SMS communications.
4501-4509	Reserved for future development of M2M services.
500	Reserved for special services.
501-509	Codes for value-added SMS/MMS including a service indicator in the third digit.
51-57, 59	For mobile services. Numbers shall be portable across mobile networks.
58	Numbers for Class 2 service used by Fixed Services Licensees or the SBO Licensees.
600	Reserved for special services.
601-699	For mobile services. Numbers shall be portable across mobile networks.
700 ^(Note)	Reserved for special services.
701-709	Initially reserved for special services. With effect from 1 July 2017, numbers shall be used for mobile services. Numbers for mobile services shall be portable across mobile networks.
71-73 ^(Note)	Initially used for paging services. With effect from 1 July 2017, numbers shall be used for either paging services or mobile services. Numbers for mobile services shall be portable across mobile networks.
74-79 ^(Note)	Initially used for paging services. With effect from 1 July 2021, numbers shall be vacated and reserved for future migration to longer digits numbering plan.
800	Freephone services operated by Fixed Services Licensees and numbers shall be portable across fixed networks. Depending on the actual service arrangement, this number range may not be accessible to an overseas caller.
801-809	Reserved for future freephone expansion. Numbers shall be portable across fixed networks.
81-83 ^(Note)	Initially used for personal number service. Numbers for personal number service shall be portable across fixed networks. With effect from 1 July 2017, numbers shall be used for either personal number service or mobile services. Numbers for personal number service and mobile services shall be portable across fixed networks and mobile networks respectively.

Leading Digit(s)	Description
84-87, 89	For mobile services. Numbers shall be portable across mobile networks.
88	Reserved for future migration of numbering plan to longer digits.
900	Paid-for information services including a service indicator in the fourth digit. Numbers shall be shared by all fixed operators in a fair and equitable manner.
901-989	For mobile services. Numbers shall be portable across mobile networks.
99	For emergency services.

Note:

In accordance with the decisions as promulgated by the CA in its Statement of 24 June 2016 on More Efficient Utilisation of the 8-digit Numbering Plan⁵, the following measures shall be implemented by phases:

- (a) some number blocks in the 4X level shall be re-allocated for mobile services with effect from 1 July 2017;
- (b) some number blocks in the 7(0-3)X levels shall be re-allocated for mobile services with effect from 1 July 2017;
- (c) some paging numbers in the 7(1-9)X levels shall be relocated to certain specific 10,000 (or 10k) number blocks in the 7(1-3)X levels with effect from 1 July 2021; subsequently, vacated number blocks in the 7(1-3) levels shall be re-allocated for mobile services; and vacated numbers in the 7(4-9)X levels shall be reserved for future migration to longer digits numbering plan; and
- (d) some number blocks in the 8(1-3)X levels shall be re-allocated for mobile services with effect from 1 July 2017.

For the actual designation of the number blocks for re-allocation for mobile services as mentioned above, please refer to the Hong Kong Numbering Plan⁶ which will be updated from time to time.

⁵ The CA Statement is available at:
http://www.coms-auth.hk/filemanager/statement/en/upload/369/ca_statements20160624_en.pdf.

⁶ The Hong Kong Numbering Plan is available at:
http://www.ofca.gov.hk/filemanager/ofca/en/content_311/no_plan.pdf.

Classification of Short Codes

Allocation of Short Codes

Short codes are defined as those telephone numbers which consist of no more than 7 digits in length. They are either used for services with high volume of traffic so that public telecommunications networks will not be unduly overloaded or where expeditious access by customers is required. Examples are the enquiry services and hotlines provided by the FC/UC licensees (with provision of fixed services authorised) (hereafter referred as “fixed operators”) under the “10X” and “12X” codes, the “188X” telebetting services provided by the Hong Kong Jockey Club, the “180” payment-by-phone services provided by the banking industry and utility companies and the “999” emergency services. Since short codes are valuable scarce resources, any request for allocation of a short code will be scrutinised by the CA closely.

Categories of Short Codes

2. The CA classifies the short codes into the following three categories:

- | | |
|-------------------|--|
| <u>Category 1</u> | Codes which are universally accessible by customers and universally allocated to all operators e.g. “99X” for emergency services; |
| <u>Category 2</u> | Codes which are universally accessible by customers and allocated to a single operator e.g. “10X”, “12X”, “15XX”, “16XX”, “17X” and “20X” codes; and |
| <u>Category 3</u> | Codes which in general will not be passed across networks and are universally allocated to all operators e.g. “108X” for the directory enquiry services, “109” for the fault reporting services and “1850X” for time and temperature services. However, operators are permitted to pass these codes across networks under bilateral or multilateral commercial arrangements. |

3. All the short codes will be classified into the above three categories in the Numbering Plan for ease of reference by the operators.

Short Code Assignment to Fixed and Mobile Operators

4. In order to utilise the short codes more efficiently and effectively, the CA may assign to every fixed operator a “10”-prefix or “12”-prefix code and every mobile operator (including MVNO) a “17”-prefix code for their various customer enquiry, hotlines requirements and operator-assisted services. Depending on their own operational requirements, the fixed and mobile operators can be flexible with the application and the digit length of the allocated short codes provided that they do not exceed 7 digits in length. In addition, the use of these short codes should not duplicate those services which have already been catered for under a separate numbering range in the Numbering Plan. Except for the “18” level, all short codes and their sub-levels should not be assigned to customers under any circumstances. However, subject to compliance with the licence conditions and relevant legislative provisions, as the case may be, concerning the prohibition of anti-competitive practices and abuse of dominant position, operators which simultaneously own and operate fixed and mobile networks are allowed to implement and use the allocated “10”-prefix or “12”-prefix and “17”-prefix codes in their fixed and mobile operations provided that they comply with the above restrictions and requirements.

Short Code Assignment to SBO Licensees for the provision of External Telecommunications Services

5. To enable an easy and convenient customer access to the external telecommunications services offered under the SBO Licences, the CA will assign to each licensee a unique 4-digit “15XX” or “16XX” short code as service access code. The licensees may, at their own discretion, extend the digit length of the assigned short codes from 4 digits to a maximum of 5 digits in length.

**Guidance Notes for the Submission of Application for the
Number Block(s)/Codes for the Fixed Services,
Mobile Services, Paging Services and Machine-to-Machine Services in
Hong Kong**

1. Introduction

- 1.1 Application should be submitted to the Communications Authority (CA) at the following address:

The Communications Authority
Office of the Communications Authority
29/F Wu Chung House
213 Queen's Road East
Wanchai
Hong Kong

- 1.2 Enquiries concerning these Guidance Notes should be addressed to:

Principal Regulatory Affairs Manager, Regulatory Section 13
Office of the Communications Authority
Telephone No.: +852 2961 6367
Facsimile No. : +852 2803 5112
Email : numbering@ofca.gov.hk

- 1.3 The Communications Authority is not bound by this document to grant a number block or code to any applicant.

2. General Principles

- 2.1 Processing of an application will normally take a maximum of 8 working days from the date of receipt of the application complete with all the required documents and supporting materials. Specifically, when applying for additional numbers, the applicant shall submit supporting information demonstrating that the utilisation rate of the numbers already allocated to it is equal to or greater than the Minimum Utilisation Rate specified below:
- (a) 70% (for application received by the CA on or before 31 December 2016);
 - (b) 75% (for application received by the CA between 1 January 2017 and 30 June 2017, both dates inclusive);
 - (c) 80% (for application received by the CA on or after 1 July 2017).⁷
- 2.2 The successful applicant will be invited for a balloting session to draw the required type of number block(s)/code(s) from a pool which is pre-determined by the CA in a fair, reasonable and transparent manner.
- 2.3 The CA has adopted the first-come-first-served principle whereby the priority of an applicant applying for relevant number block(s)/code(s) will be determined from the date and time when its application, complete with all the required documents and supporting materials, is received by the CA.
- 2.4 If the whole block of allocated number(s) or the code(s) is not implemented in the network within 12 months from the date of approval, it will automatically be withdrawn by the CA.
- 2.5 If an application is rejected by the CA, the applicant may appeal by filing a formal written request to the CA through registered post. Within 14 working days from the receipt of the request, the CA shall inform the applicant of the result of the appeal and the reasons for the determination.

For Fixed Services under the Fixed Carrier (FC) Licence / Unified Carrier (UC) Licence (paragraphs 2.6-2.9(B))

- 2.6 If the applicant is to launch a new fixed network service, it needs to give full technical and operational details before the application for the required numbers is considered. For each successful application of

⁷ The requirements as set out in paragraph 2.1 (b) and (c) follow the decisions of the CA made in its Statement of 24 June 2016 on More Efficient Utilisation of the 8-digit Numbering Plan (http://www.coms-auth.hk/filemanager/statement/en/upload/369/ca_statements20160624_en.pdf).

numbers to launch basic telephone services⁸, the CA will allocate a 10k number block while for each successful application of numbers to launch Class 2 service, the CA will allocate a 10k number block to the applicant.

- 2.7 For additional numbers for the existing basic telephone service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. For successful application, the CA will allocate one 10k block or more with an amount of numbers equal to six times its average monthly number demand, to be rounded up to the nearest 10k numbers, to the applicant.

For additional numbers for Class 2 service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. For successful application, the CA will allocate one 10k block or more with an amount of numbers equal to six times its average monthly number demand, to be rounded up to the nearest 10k numbers, to the applicant.

- 2.7(A) For additional numbers for the personal numbering service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. For successful application, the CA will allocate 10k numbers to the applicant. No more personal numbers will be allocated to fixed operators with effect from 1 January 2009.

- 2.8 For additional numbers for information services or Class 3 service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. The CA will allocate 10k numbers to the successful applicant.

- 2.9 For additional numbers for freephone services, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. The CA will allocate 1,000 (or 1k) numbers to the successful applicant.

- 2.9(A) For additional 7-digit “18” short codes for services of high volume of traffic, the applicant should have achieved a minimum utilisation rate of 80% with the block or blocks of “18” short codes already allocated to it. Otherwise the applicant needs to give justification. The CA will allocate 1k block of the 7-digit “18” short codes to the applicant.

⁸ For the purpose of this Appendix, basic telephone services refer to direct exchange line, facsimile line, centrex line and direct dialling in (DDI) line.

- 2.9(B) For any application for 5 or less digits “18” short code(s), the applicant should submit the application to the CA directly or through the Fixed Services Licensees providing the fixed services. The application should enclose all the necessary supporting justification and information for using the required short code(s). If the application is accepted and approved by the CA, the applicant will then be assigned directly with the required “18” short code(s). In considering the application, the CA will use the following criteria:
- (a) There is a strong public demand and interest for the service in the community;
 - (b) The service provider must be a public organisation, utility company or non-profit making entity;
 - (c) The service must be of a type that generates extremely high volume of traffic which involves mass calling. The applicant must obtain the support from the relevant fixed services providers who provide the required network service to the applicant; and
 - (d) The service provider must be equipped with sufficient equipment and manpower resources in order to provide a satisfactory service.

For Class 1 and Class 2 Services under the Services-Based Operator (SBO) Licence (paragraphs 2.10-2.11)

- 2.10 If the applicant is to launch Class 1 or Class 2 service, it needs to give full technical and operational details before the application for the required numbers will be considered. For successful application, the CA will allocate a 10k number block for the relevant class of service to the applicant (i.e. two 10k number blocks if both Class 1 and Class 2 services are applied).
- 2.11 For additional numbers for either the Class 1 or Class 2 service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the respective type of number blocks already allocated to it. Otherwise the applicant needs to give justification. For successful application, the CA will allocate one 10k block or more with an amount of numbers equal to six times its average monthly number demand, to be rounded up to the nearest 10k numbers, to the applicant.

For Mobile Services (paragraphs 2.12- 2.13)

- 2.12 If the applicant is to launch a new mobile service, it needs to give full technical and operational details before the application for the required numbers is considered. For each successful application to launch

mobile service for subscribers, the CA will allocate a 10k number block to the applicant.

- 2.13 For additional numbers for existing mobile service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. For successful application, the CA will allocate one 10k block or more with an amount of numbers equal to six times its average monthly number demand, to be rounded up to the nearest 10k numbers, to the applicant.

For Paging Services (paragraphs 2.14-2.16)

- 2.14 If the applicant is to launch a new paging service, it needs to give full technical and operational details before the application for the required numbers is considered.
- 2.15 For additional numbers for the existing automatic/secretarial service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. For successful application, the CA will allocate one 10k block or more with an amount of numbers equal to six times its average monthly number demand, to be rounded up to the nearest 10k numbers, to the applicant.
- 2.16 For additional numbers for the existing operator-assisted service, the CA will consider whether the traffic of the installed telephone lines will justify additional number block(s). If the application is successful, the CA will allocate one 1k block for calling and one 1k block for replying.

For M2M Services (paragraphs 2.16(A)-2.16(B))

- 2.16(A) If the applicant is to launch a new M2M service, it needs to give full technical and operational details before the application for the required numbers is considered. For each successful application to launch mobile service for subscribers, the CA will allocate a 100k number block to the applicant.
- 2.16(B) For additional numbers for existing M2M service, the applicant should have achieved the Minimum Utilisation Rate specified in paragraph 2.1 above with the number blocks already allocated to it. Otherwise the applicant needs to give justification. For successful application, the CA will allocate one 100k block or more with an amount of numbers equal to six times its average monthly number demand, to be rounded up to the nearest 100k numbers, to the applicant.

International Signalling Point Codes (ISPC) (paragraphs 2.17-2.18)

- 2.17 External facilities-based and service-based operators who establish direct C7 signalling links and interconnections with overseas carriers are entitled to apply for and use ISPCs.
- 2.18 For additional ISPCs, the external facilities-based and service-based operators have to show that all the assigned ISPCs have already been fully utilised and that they have new or additional requirements for ISPCs. If the application is considered justified, the CA will then assign additional ISPCs to them.

Signalling Point Codes (SPC) (paragraphs 2.19-2.22)

- 2.19 Network operators (mobile network operators and fixed network operators which include external facilities-based operators), MVNOs, SBO Licensees and other telecommunications service providers operating a C7 signalling network or switch are entitled to apply for and use SPCs. Unless prior approval from the CA is obtained, the SPCs should be solely used by the operator to whom the SPCs have been assigned.
- 2.20 The CA will assign initially 64 SPCs to a newly licensed network operator (either a mobile operator or fixed operator which may be an external facilities-based operator) who has a need to operate a C7 signalling switch/network with local carriers.
- 2.21 The CA will assign initially 8 SPCs to a newly licensed telecommunications service provider (e.g. MVNO, SBO Licensee and external telecommunications service provider) who has a need to operate a C7 signalling switch/network with local carriers.
- 2.22 For any additional requirements of SPCs, the applicant should have achieved a minimum utilisation rate of 90% with the SPCs already assigned to it before application for the additional SPCs may be considered. For each successful application, the CA will assign 64 additional SPCs to a network operator and 8 SPCs to a non-facility-based operator.

Data Network Identification Code (DNIC) (paragraphs 2.23-2.23(A))

- 2.23 Only operator operating a packet-switched public data network with X.75 interconnection with other public data networks or fixed network operator operating Public Switched Telephone Network or Integrated Services Digital Network interworking with public data networks is entitled to apply for and use a DNIC.

2.23(A) Applicant should give full technical and operational details before the application for a DNIC is considered. For successful application, the CA will assign one DNIC to the applicant.

Calculation Method of Utilisation Rate (paragraphs 2.24-2.24(B))

2.24 The calculation method used by the CA in calculating the utilisation rate of the number block(s)/code(s) (other than fixed numbers, personal numbers and mobile numbers) already allocated to an applicant is:

$$\text{Utilisation Rate} = (A + B) / (\text{total capacity of allocated number block(s)/code(s) for the service(s)}) \times 100\%$$

Where A = total capacity of number block(s)/code(s) assigned to active customers at the time of application

B = total capacity of number block(s)/code(s) reserved for inactive customers who have left the service(s) for the last 6 months calculated from the date of application

2.24(A) A fixed network operator may divide its allocated basic telephone services numbers up to a maximum of three categories (i.e. Direct Exchange Line (DEL), NGN (New Platform) and Direct-Dialling-In (DDI)). The regrouping of the number blocks from one category to another needs prior approval from the CA. The calculation method used by the CA in calculating the utilisation rate of each category of fixed numbers and personal numbers already allocated to an applicant is:

$$\text{Utilisation Rate} = (A + B + C) / T \times 100\%$$

Where A = Total capacity of originally allocated fixed/personal numbers assigned to active customers at the time of application

B = Total capacity of originally allocated fixed/personal numbers reserved for inactive customers who have left the service(s) for the last 6 months calculated from the date of application

C = Total capacity of ported-out fixed/personal numbers under number portability at the time of application

T = Total capacity of originally allocated fixed/personal numbers

2.24(B) The calculation method used by the CA in calculating the utilisation rate of mobile numbers already allocated to an applicant is:

$$\text{Utilisation Rate} = (A + B + C + D) / T \times 100\%$$

Where A = Total capacity of originally allocated mobile numbers assigned to active customers at the time of application

B = Total capacity of originally allocated mobile numbers reserved for inactive customers who have left the service(s) for the last 6 months calculated from the date of application

C = Total capacity of ported-out mobile numbers under number portability at the time of application

D = Total capacity of originally allocated mobile numbers used for supporting call routing, including handover numbers, roaming numbers, global title numbers, etc. (i.e. not greater than 1% of the total capacity of originally allocated mobile numbers)

T = Total capacity of originally allocated mobile numbers

Codes for Value-added SMS / MMS (paragraph 2.25)

2.25 The codes “50(1-9)” are allocated for value-added short message service (SMS) / multimedia messaging service (MMS). Mobile Carrier Licensees and Unified Carrier Licensees providing mobile services are entrusted by the CA to administer these codes. The CA may appoint other operators (e.g. Fixed Services Licensees and MVNOs offering SMS / MMS) to administer these codes.

3. Information to be provided by Applicant

3.1 In order to facilitate the CA to process an application, the applicant has to supply the following information:

- (a) Name of company and contact person;
- (b) Address of company, facsimile number and telephone number of the contact person;

- (c) Details of the service: whether the applicant intends to launch a new service or to expand/improve an existing service;
- (d) The requirement of the number blocks/codes and indication of any preferences;
- (e) Operational and technical details relating to the requirement of the number block(s)/code(s);
- (f) For the expansion/improvement of the existing services, an applicant needs to give the justification for the additional number block(s)/code(s) required. Information regarding the utilisation of numbers/codes in the existing number block(s)/code(s), the amount of numbers/codes which are recovered and recycled at each month for the past six months from the date of application, type of services, forecast of customer growth and the way to deploy the new number block(s)/code(s) is required for evaluation;
- (g) If an applicant applies for new number block(s) to expand or to improve his existing operator-assisted paging service, then in addition to the requirement in (f) above, it needs to supply the traffic data of the telephone lines that it has currently installed;
- (h) If an applicant applies for number blocks/codes to launch a new service, it needs to explain and give full operational and technical details of the proposed service; and
- (i) The target service launch date.

3.2 For application for ISPCs and SPCs, the applicant is required to submit the following additional information:

- (a) Schematic of the C7 switch/network set-up showing the types and interconnection with local and overseas carriers;
- (b) Model and type of the C7 signalling equipment;
- (c) Documentary evidence to prove that the C7 signalling equipment are in compliance with the relevant ITU-T standards (e.g. Q.7xx series);
- (d) Physical address of the installation at the Hong Kong end;
- (e) At least one planned C7 signalling interconnection with overseas carriers, with name and address of distant signalling point,

location of distant signalling point, and ISPC of distant signalling point, if known; and

(f) In-service date of the ISPCs and SPCs (month/year).

Allocation of Subscriber Numbers and Assignment of Mobile Network Code (MNC) to Mobile Virtual Network Operators (MVNOs)

Subscriber numbers and MNC may be allocated/assigned to a licensed MVNO if it meets the following requirements:

- (a) Provide, or intend to provide, mobile services to a customer base, including the general public;
- (b) Provide its own mobile switching and gateway infrastructure, for circuit and/or packet switched traffic;
- (c) Enter into its own interconnection and roaming agreements;
- (d) Provide its own business support systems, such as billing and customer care;
- (e) Maintain its own Home Location Register of subscribers (or equivalent functionality);
- (f) Satisfy requirements for call control, as required by the CA and normally associated with an operator (such as emergency calls, number portability etc.); and
- (g) Issue its own SIM cards.

2. The MVNO applying for subscriber numbers and MNC should submit sufficient justifications and information to the CA in supporting its application of MNC and subscriber numbers. Upon the completion of the equipment installation or service launch of the MVNO concerned, the CA may, if necessary, conduct a physical audit of the MVNO's installed equipment or ask the MVNO to supply additional information in order to verify whether the MVNO has already fulfilled the requirements given in (a) to (g) above.

**Allocation of Subscriber Numbers to
SBO Class 1 and Class 2 Licensees**

Subscriber numbers may be allocated to SBO Licensees if they meet the following requirements:

- (a) Provide, or intend to provide, Class 1 or Class 2 service to the general public and any local customer;
- (b) Provide their own service platforms, such as IP infrastructure and media gateway for interfacing with the hosting Fixed Services Licensees; and
- (c) Provide their own business support system, including the billing and customer care systems.

2. The CA may inspect the applicant's installed equipment or ask the applicant to furnish the relevant information in order that it may verify that the applicant fulfils the requirements given in (a) – (c) at all time.

**Assignment Principles of Telecommunications Numbers for
SBO Class 3 Licensees**

Classification of Class 3 Services

In the Hong Kong Numbering Plan, telecommunications numbers with leading digit “30” are reserved for Class 3 service for which no specific numbers under the Hong Kong Numbering Plan have been assigned. These numbers are normally assigned by the fixed operators to the SBOs. Fixed operators may also use these numbers for the provision of similar services under their licences. Based on the numbering usage and the operational nature, Class 3 service can be broadly classified into two groups:

Group 1

2. Group 1 services are Internet access services, facsimile/data store and forward services, electronic data interchange, database access and retrieval, IDD-type of services including International Simple Resale (ISR) voice, data and fax services, calling card services and etc. These services usually make use of Direct Exchange Lines (DEL) or Direct Dialling In (DDI) lines for connection to the fixed networks. Customers subscribing to these services usually access the services by dialling a prime number with the leading digits “30”.

Group 2

3. Group 2 services are public messaging services whereby each customer subscribing to the services is assigned with a unique “30” number as the access number for his/her personal mailbox. Callers will dial this unique “30” number to deposit messages in the called party’s mailbox and the messages can be voice, fax or electronic mail. The services usually make use of DDI lines for connection to the fixed network.

Assignment of “30” Numbers to SBOs under Normal Applications

4. For Group 1 Class 3 services, the maximum circuit-to-number ratios for DEL and DDI lines are 1:1 and 1:5 respectively.

5. For Group 2 Class 3 service, SBOs could request for the assignment of up to a maximum of 300 numbers from the fixed operator for every installed or additional T1 circuit or 24 DDI circuits. The maximum ratio of circuit-to-number for DDI service is 1:12.5.

Assignment of “30” Numbers to SBOs under Special Circumstances

6. If an SBO operator has an operational need to use more numbers than that available from the normal assignment, it can submit an application together with its reasons and justifications to the CA stating its required circuit-to-number requirement. The CA will study the operator’s request based on the operational requirements, service nature, traffic demand and the existing utilisation of “30” numbers already assigned to the operator. If the application is successful, the CA will issue an approval letter to the requesting operators to facilitate it to apply for the required numbers from the fixed operator.

**Assignment Principles of Fixed Network Numbers for
Direct-Dialling-In (DDI) Services**

**Assignment of DDI Numbers to Customers of PABX Systems by Fixed
Services Licensees and SBO Licensees**

Direct-Dialling-In (DDI) numbers are assigned to corporate customers for the provision of telephone extensions in private automatic branch exchange (PABX) systems.

2. To cater for DDI numbers requirement of a customer installed with a PABX system, the Fixed Services Licensees or SBO Licensees (the telecommunications licensees) could assign a basic quantum of 100 DDI numbers to the customer.

3. However, if customers have actual requirements of using more than 100 DDI numbers, the telecommunications licensees could assign in multiple of 100 DDI numbers to the customers according to a) the ratio of circuit-to-number of 1:12.5 for incoming only DDI circuits; and b) the ratio of circuit-to-number of 1:6.3 for new both way DDI circuits (both way circuits refer to both the incoming and outgoing traffic can be put through on the same circuits). The amount of numbers to be assigned to customers would be rounded up to the nearest 100 DDI numbers.

4. For exceptional cases where customers (such as hotels) with relatively low traffic volume per PABX extension compared with the ordinary office operation, the telecommunications licensees could assign DDI numbers (in multiple of 100) to cater for the user's requirement according to the actual number of installed extensions.

**Assignment Principles of “4500X” Numbers for
Machine-to-Machine (M2M) Services**

M2M communications refer to the communications between machines / devices where data can be exchanged in an automatic or schedule manner with little or no human intervention. The 12-digit “4500X” M2M numbers should be assigned to machines instead of end users for machine-to-machine communications.

2. In differentiating the “4500X” M2M numbers from the ordinary subscriber numbers, operators should note the following characteristics in the assignment of “4500X” numbers:

- (a) The numbers should be in the length of 12 digits.
- (b) The numbers shall not be required to support number portability.
- (c) No mandatory requirement of inter-network routing is imposed on the numbers. Operators may freely enter into commercial arrangements with their interconnecting partners for routing of 12-digit “4500X” M2M numbers across networks based on their own business decisions.
- (d) The numbers should not be used for voice and SMS communications. In case any M2M application would require communications via SMS, operators should assign ordinary 8-digit subscriber numbers for the application.

3. Mobile network operators, MVNOs, fixed network operators, services-based operators in providing Class 1 or Class 2 service, and paging operators who provide M2M communications through the public telecommunications network using E.164 numbers may apply for the allocation of “4500X” M2M numbers.

Appendix 9

Telecommunications Numbers subject to Number Fee

Operators are required under their respective licences to pay the number fee for subscriber numbers of the following number levels allocated by the CA.

Number Levels	Remark
2X	Exclude those levels for the provision of calling card services (i.e. 200X, 207X, 208X, 209X).
3X	Exclude the levels for the provision of access codes reserved for number translation devices (i.e. 3000)
4X	Exclude the levels for the provision of network numbers and Machine-to-Machine (M2M) services (i.e. 4500X).
5X	Exclude those levels reserved for special services and value-added SMS/MMS services (i.e. 500X, 50(1-9)X).
6X	Exclude the level reserved for special services (i.e. 600X).
7X	Exclude the level reserved for special services (i.e. 700X).
8X	
9X	Exclude those levels for provision of information services and emergency services (i.e. 900X, 99X).

**Guidance Notes for the Return of Numbers
for the Fixed Services,
Mobile Services and Paging Services in Hong Kong**

1. Introduction

- 1.1 Return of numbers should be submitted to the Communications Authority (CA) at the following address:

The Communications Authority
Office of the Communications Authority
29/F Wu Chung House
213 Queen's Road East
Wanchai
Hong Kong

- 1.2 Enquiries concerning these Guidance Notes should be addressed to:

Principal Regulatory Affairs Manager, Regulatory Section 13
Office of the Communications Authority
Telephone No.: +852 2961 6367
Facsimile No. : +852 2803 5112
Email : numbering@ofca.gov.hk

- 1.3 The Communications Authority is not bound by this document for the return of numbers by any applicant.

2. General Principles

- 2.1 Return of non-contiguous numbers from applicants is accepted on a condition that they accept re-allocation of formerly returned numbers when they have new demand for numbers in future. The applicant may however choose, among the formerly returned numbers, the preferred prefixes that it wishes to be allocated on the subsequent applications for additional numbers.
- 2.2 An applicant may return unassigned numbers at most once in a licensing year and no additional numbers will be allocated to this applicant within a period of six months from the date of its last return of numbers.
- 2.3 An applicant should submit a written request together with an electronic file containing all the numbers to be returned. The format and the

structure of the electronic file are given in Appendix 10A. The quantity of returned numbers should be in multiples of 1,000.

The CA will check the format of the submitted file, the quantity of the returned numbers, and will ensure that the returned numbers are within the number blocks previously allocated to the applicant. The CA will provide an acknowledgement, or otherwise a request for clarification, to the applicant within 10 working days. The CA may conduct sample-check to verify that the returned numbers are of 'unassigned' or 'vacant' status.

The numbers are considered 'returned to the CA' on the date when an acknowledgement is sent by the CA to the applicant. If subsequently any mismatch with the status of the return numbers are found, e.g. through sample check or auditor's certification, the applicant will be required to make clarification or rectification on its former submission.

3. Information to be provided by Applicant

3.1 In order to facilitate the CA to process an application, the applicant has to supply the following information:

- (a) Name of applicant and contact person;
- (b) Address of applicant, facsimile number and telephone number of the contact person; and
- (c) The electronic file (i.e. mentioned in 2.3 above) should be stored in an electronic media e.g. CD/DVD.

**Format and Structure of the Electronic File
for the Return of Numbers**

The numbers listed in the file can be individual numbers or number ranges. Each line shall be ended with a carriage return <CR> and a line feed <LF>. The format of an electronic file is given below:

Line 1: Licence Number	
Format	<Licence_Type>-<Licence_Number>
Example	UCL-001
Remarks	<p><Licence_Type> are defined below: UCL Unified Carrier Licence FCL Fixed Carrier Licence MCL Mobile Carrier Licence MVN Mobile Virtual Network Operator Licence SBO Service-Based Operator Licence PAG Public Radio Paging Licence</p> <p><Licence_Number> is a number indicating the licence number of the licensee.</p>
line 2: Number Return Request Submission Date	
Format	YYYY-MM-DD
Example	2009-01-23
line 3: Total quantity of returned numbers	
Format	<Integer>
Example	3000
Remarks	The quantity of returned numbers must be a multiple of 1000.
line 4+: List of returned numbers	
Format	<p><Single_Number> or <Single_Number>,<Location_Code> or <Start_Range>-<End_Range> or <Start_Range>-<End_Range>,<Location_Code></p>
Example	90102030 90102031,KT1 90102041-90103050 90104000-90105000,TST15
Remarks	1) The list of numbers and number ranges must be in ascending order. 2) To indicate a range of numbers in one line, the start-number and

	<p>end-number (inclusive) are delimited by a hyphen (-).</p> <p>3) The optional field <Location_Code> shall be separated from a number or number range in the same line by a comma (,).</p> <p>4) The <Location_Code> is determined by each operator. It must consist of 3 to 5 alphanumeric characters only.</p>
Sample File	
File content	UCL-001 2009-02-05 3000 90000000,TST 90001001-90003000,TST 90005123 90008001-90008998
