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TELECOMMUNICATIONS NUMBERING ADVISORY COMMITTEE

Expanding the Number Supply for Fixed and Mobile Services (II)

Introduction

At the 31st NAC meeting held in April 1999, the proposal of reserving "66X" and "69X" number levels for future migration of mobile numbers from 8-digit to 9-digit length was discussed and was subsequently adopted. The implementation options of (a) insert a "5" in front of all FTNS numbers and mobile numbers, and; (b) insert a "5" in front of all FTNS numbers and a "6" in front of all mobile numbers was also raised for discussion. Having considered that as long as number levels "5", "66" and "69" are reserved in the numbering plan, the two options were left open for decision in due course. It was also mentioned at the meeting that, should there be a need to review or make a decision on the issue, the TA would consult Members of the NAC again.

2. At the 49th NAC meeting held in 2003, NAC Paper No. 4/2003 entitled "Expanding the Number Supply for Fixed and Mobile Services" was discussed. Members have different views on the proposals of deploying "7X" numbers to mobile services and opening up the reserved levels "66X" and "69X". Some members supported the opening of the reserved levels "66X" and "69X" (as well as the "32X" and "33X" for fixed services). A member suggested that "5X" numbers should also be considered for deployment to mobile services. No conclusion had been made on these issues.

Number Supply for the Fixed Services

3. As regards the number supply for fixed services, there are 42 spare number blocks available for allocation. At the current consumption rate of about one block per quarter, it is estimated that the current supply could last for over 10 years. Furthermore, an additional 10 number blocks reserved for Special Number Arrangement would be made available when the Arrangement is implemented. In this connection, OFTA does not envisage the need for additional supply of numbers for the fixed services in the medium term. In the event of unexpected surges for demand of fixed network numbers, spare "8X" number blocks may be considered for deployment to the fixed services. If it

is decided that "8X" numbers are to be allocated to fixed services, level "38" of the current number plan should be reserved to ensure smooth migration of fixed services to 9-digit "3X" numbers in the future.

Number Supply for the Mobile Services

4. Owing to the rapid growth in the mobile market with a recent penetration of over 7 million subscribers, there is an urgent need to explore number resources to cope with the growth. It is noted that all options under consideration would have an impact on the future migration of the numbering plan to longer digit length. This paper would address these issues.

Status of the Current Number Supply for Mobile Services

5. In the numbering plan, levels "6X" and "9X" are allocated to mobile services. Out of the 200 number blocks (each comprises 100,000 numbers) at these two levels, 13 blocks are allocated/reserved for special services and emergency services, 129 blocks have been allocated to mobile operators, 15 blocks are reserved for Special Number Arrangement and 20 blocks are reserved at the "66" and "69" levels. Under this circumstance, there are 23 spare number blocks available for allocation to the mobile operators.

6. Based on the current consumption rate of about one mobile number block per month, it is estimated that the current number supply would be exhausted in 2 years. If no additional number supply were deployed for mobile services, it is likely that mobile numbers would have to be increased to 9 digit using the reserved "66X" and "69X" levels under the partial migration approach (more details at paragraph 10), and the industry and the community would have to bear the costs and inconvenience caused by number changes. OFTA considers this to be the least desirable course of action to be pursued only if there is no other viable alternative.

7. Having reviewed the supply of spare numbers in the numbering plan, OFTA identifies a number of options to extend the life of the 8-digit number plan. Each of the options would provide different amount of additional supply of numbers under different future migration approach of the numbering plan. The amount of supply and impact of these options on the future migration plan would be further elaborated at the following paragraphs. These options are briefly described below:

(a) Spare "5X" number blocks - 100 spare blocks at the entire level "5"
(b) Spare "7X" number blocks - 36 spare blocks scattered over level "7"
(c) Spare "8X" number blocks - 60 spare blocks at sub-levels "84-89"

Migration approaches and the supply of additional mobile numbers

8. As mentioned earlier, any options on the provision additional numbers to mobile services would have a direct impact on future migration of the numbering plan to longer digit length. Under this circumstance, OFTA has devised a number of proposed migration approaches for deliberation by Members of the NAC. In evaluating these proposed migration approaches, OFTA have made reference to the guiding principles that were adopted in concluding the current numbering plan in 1995. The guiding principles relating to the structure of the numbering plan include:

(a) uniform numbering plan - uniform digit length for subscriber numbers
(b) integrated number plan - network operators share same number levels
(c) leading digit/s convey service information - dedicate number level/s for individual services

The various proposed migration approaches are described below. It should be noted that OFTA current preference is that numbering plan migration should not affect the access codes at levels "0" and "1", emergency codes at level "99" and network numbers (deployed for number portability) at level "4".

9. **Straightforward Migration Approach**. This approach makes use of the current reserved level "5" for numbering plan migration to longer digit length. In other words, "5" would be prefixed to all the fixed, mobile and paging numbers. This approach is simple and easily understood by the users. In addition, large amount of spare numbers at levels 2, 3, 6, 7, 8 and 9 would be available. This option, however, has a serious drawback as it is in conflict with the guiding principle of having the leading digit/s to convey service information. This would adversely affect the efficient metering and charging of interconnection charges for various types of services.

10. **Partial Migration Approach**. This approach allows individual services to migrate to longer digit at different time frames in accordance with the demand of individual services. For the purpose of this approach, levels "32/33X" and "66/69X" have been reserved for the migration of fixed and mobile services respectively. Under

this approach, migration would only affect those services which are running out of number supply and would therefore only affect a smaller number of users. In addition, level "5" comprising 100 number blocks could be released for other uses. The disadvantages of this approach are obvious: in conflict with the guiding principle of having a uniform numbering plan, involves several migration exercises, services with sufficient numbers (such as paging services) may never need to migrate to longer digit.

11. **Two-step Migration Approach (A)**. The gist of a two-step migration approach is to make full use of the current 8-digits number resources before resorting to migration of numbering plan to longer digit length. In order to ensure full utilization of the current 8-digit number resources (thus deferring the numbering plan migration), it is necessary to address the usage of any under-utilized number blocks in the numbering plan. Currently, the utilization rate of the allocated "7X" numbers is very low. There are less than 180,000 paging service users representing a utilization rate of less than 4% of the 5.4 million allocated paging numbers. Consideration should be given to rationalized the level "7" in order to provide additional spare number supply to support the growth of telecommunications industry. Options for rationalization include:

(a) consolidation of active "7X" numbers into consecutive "7X" number blocks
(b) migration to longer digit with a new prefix, say, "57X"
(c) allocate a service access code, say, xy or xyz to the paging services. Paging numbers would then become xy-7xxx xxxx or xyz-7xxx xxxx.

12. Under the two-step migration approach (A), spare "8X" and then "7X" number blocks would be allocated to mobile services in order to obviating any immediate need for migration to longer digit length. When the consumption of the spare "8X" number blocks has reached a prescribed level, say, 50%, the "7X" paging numbers would first be migrated to other level under one of above mentioned options thus vacating the whole or part of level "7" for mobile services. As the fixed and mobile services would eventually migrate to 9-digit "3X" and "6X" levels respectively upon consumption of all 8-digit number resources, level "5" 8-digit numbers could be considered for allocation to other mobile-related value-added services, such as the access codes for value-added SMS.

13. This approach has the advantage of deferring the migration to longer digit length for mobile and fixed services and releasing level "5X" for other uses. On the other hands, the disadvantages include: only sub-levels "684-689" are allocated to mobile services in the 9-digit plan (which means that "68X" will become a level of mixed mobile and fixed services); and the reserved levels "66X-69X" comprising 4 million numbers which would otherwise be made available under some other migration

approaches. Since this approach would need to reserve levels "66, 67, 68 and 69", consideration should be given whether such arrangement is appropriate if the introduction of "8X" and "7X" number blocks to mobile services would leave four million "6X" mobile numbers idle.

14. **Two-step Migration Approach (B)**. The essential elements of this approach are to release level "5X" to the mobile services and to use prefix "5" as the 9 digit mobile number in future. This approach is featured by the immediate availability of 4 million mobile numbers in levels "66X-69X", thus deferring the need to introduce new number levels to the mobile services. Together with the 15 (including 3 "66/69X" blocks) mobile number blocks reserved for Special Number Arrangement (SNA), a total of 52 spare "6X" and "9X" mobile number blocks would be available for allocation. It is estimated that the number supply could meet the demand for mobile numbers in the coming four to five years.

15. Upon the exhaustion of "6X" and "9X" mobile numbers, "5X" number blocks would be allocated to the mobile services. To facilitate future migration of mobile numbers to "5X" 9-digit numbers, number levels "55", "56", "57" and "59" would be reserved. The other spare "5X" levels could also be considered for deployment to other mobile related value- added services. As a last resort, the "7X" numbers may also be deployed to mobile services after the migration of the paging services to another number level. By adopting the two-step migration approach (B) and based on the current consumption rate of one mobile number block per month, it is forecasted that the life-time of the 8-digit numbering plan could be extended to:

(a) year 2008 by deploying the 52 spare "66-69" and SNA number blocks
(b) year 2013 by deploying an additional 60 spare "5X" number blocks (i.e. except the "55, 56, 57 and 59" sub-level numbers reserved to facilitate migration)
(c) year 2021 by deploying an additional 100 spare "7X" number blocks

16. Having considered the pros and cons and implication of individual number supply options provided under different migration approaches, OFTA is of the preliminary views that that the two-step migration approach (B) (which allows full utilization of the "6X" and "9X" mobile numbers) should be pursued. A suggested roadmap to implementing the one-step migration approach is given below:

(a) release levels "66X-69X" for allocation to mobile services
(b) reserve levels "55, 56, 57 and 59" for future migration of mobile numbers
(c) monitor the consumption of the spare mobile number blocks

(d) if the spare number blocks supply at "5/6/9/" drop to a level which could last for a further 24 months only (based on the latest consumption rate at that time), to implement rationalization of under-utilized number levels (currently, level "7")
(e) potential allocation of level "7" for mobile services
(f) continue to monitor the consumption of numbers
(g) if the spare number blocks supply at "5/6/7/9/" drop to a level which could last for a further 24 months only (based on the latest consumption rate at that time), to implement the number plan migration to 9-digit.

Advice Sought

17. Members are invited to give their comments and views on these issues.

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