

REPUBLIC OF LEBANON
TELECOMMUNICATIONS
REGULATORY AUTHORITY

Consultation on National Numbering Plan

March 19th, 2008

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This document is issued by the Telecommunications Regulatory Authority of the Republic of Lebanon and is made publicly available via its web site to allow interested parties to provide their views on the issues that it raises. Anybody who wishes to do so should respond in writing to the Authority during the public consultation period. Responses must be received no later than 5.00pm on 12 April 2008.

The address for responses to this Consultation is:

Telecommunications Regulatory Authority
Marfaa 200, Building
Beirut, Lebanon
Attention: The Chairman
Facsimile: +961 1 964 341

Alternatively, e-mail responses may be sent to the Authority's e-mail address at Numberingplan@tra.gov.lb or by fax to +961 1 964 341

The Authority may publish the comments as received unless respondents explicitly ask that their responses be treated as confidential, in total or in part. If any party wishes to have the whole of its submission withheld, it should state that clearly at the beginning of the submission. If the respondent wishes to have some parts withheld, it should put them in separate annexes and clearly mark them as such.

1 Introduction

The Telecommunications Law 431/2002 (Article 5.1.f and Article 31.1) gave to the Telecommunications Regulatory Authority ("the Authority") the responsibility for establishing and managing the numbering needed for Customers and Users of Public Telecommunication Services. The Authority is consulting on numbering management in stages, dealing particularly with proposed changes in the Numbering Plan.

In this first stage, the Authority is providing details of the changes to fixed and mobile numbering, and provides outlines of the changes to short codes and number charges. Later, the Authority will set out arrangements for numbering change implementation and new numbering administration and provide further details of the changes to short codes and number charges.

This document therefore has the following main sections:

- Scope of numbering management
- Description of the Proposed Numbering Plan.
- Motivation for the Proposed Numbering Plan.
- Charging for numbers.
- Allocation of numbers.

This document also provides the following Annexes:

- Annex A: Other Network Codes.
- Annex B: Summary of the Existing Numbering Plan.
- Annex C: Summary of the Proposed Numbering Plan.
- Annex D: List of the Consultation Questions.

The Authority will welcome comments on all the sections from all the respondents.

2 Scope of numbering management

Numbering management is principally concerned with telephone numbers, which customers need to use when making calls or sending messages in telephone networks. Because these numbers are used by customers, they can affect the success of competition, especially if customers can obtain and use numbers from one service provider more simply than from another service provider. Many of these numbers can be used from abroad (when preceded by an international prefix and a country code, such as 961 for Lebanon), in conformance with ITU-T Recommendation E.164. Others are short codes; these are not used from abroad or sometimes, even, from other networks in the same country.

The Authority is taking over the management of telephone numbers in Lebanon. Most of the rest of this document deals with these numbers.

However, telephone numbers are not the only numbers that can affect competition. There are several sets of numbers and codes that ensure that telephone networks work together to connect calls and transmit messages correctly. The incumbent fixed network Service Provider has currently a comprehensive record of some of these numbers and codes, which it administers on behalf of all Service Providers. The Authority will take over the management of these numbers and codes in order to achieve consistency and eliminate potential impediments to market entry. It will publish allocation information to interested parties. For completeness these numbers and codes are described briefly in Annex A.

IP addresses and Internet domain names are outside the scope of numbering management by the Authority. ENUM, which relates telephone numbers to IP addresses and Internet domain names, will be considered in a later document.

Question 1. Should any of the numbers and codes in Annex A receive particular attention in the near term from the Authority? If so, which are they?

3 Description of the Proposed Numbering Plan

No country introduces a new Numbering Plan without good cause, which is normally a shortage of number blocks available for allocation to Service Providers. In Lebanon, the existing Plan is experiencing such a shortage. This has led to the use of new codes for mobile services, a review of the existing Numbering Plan, and, now, the proposed Numbering Plan.

There are two causes for this shortage. The first is the popularity of mobile network services, which has resulted in the limited numbering capacity being used quickly. That limited capacity was a result of the second cause of the shortage. The existing Numbering Plan was designed when fixed network services were the only telecommunications service, so geographical significance was used throughout almost all of it. This results in inefficient use of the available numbers as, for example, there are 1 million numbers available for fixed line service in South Lebanon or Keserwan region, even though the population in those areas is unlikely ever to require this capacity.

The theoretical capacity of the existing Numbering Plan (in Annex B) is 8 million numbers for numbers beginning with 0, but the geographic significance of most numbers dramatically reduces the useable capacity. As already stated, this limited capacity is under growing pressure from demand for mobile network services. Also, international analysis indicates that the potential demand for shared cost and premium rate services (not yet widely available within Lebanon) could require significant numbering capacity.

The proposed Numbering Plan (in Annex C) addresses these mismatches in capacity. It ensures that numbers for fixed network services can still have their existing geographic significance but that numbers for other services are freed from the current capacity limitations. The number range used for a service can indicate to users the expected tariffs for calls to that service; this is so most obviously for shared cost and premium rate services, but also for mobile network services and for future services that might be introduced, with ‘nomadic’ and ‘personal’ numbers such as are found with some managed voice over IP services. (The intention here is to provide something that is robust in dealing with possible future services, including the wide range that might be based on voice over IP: in many countries, there are basic voice over IP services that have geographic numbers, but there may also be services that let Customers have their own private freephone or shared cost numbers, which they tell only to their friends and family.)

Question 2. Are there any other potential problems in the existing Numbering Plan?

3.1 Overall structure

The proposed Plan is a *closed* Numbering Plan, by which is meant that there is no local dialling: as at present in Lebanon, national numbers are dialled, even for calls between numbers for fixed network services in the same locality. It makes all numbers (except international numbers and short codes) have the same length, reducing potential customer confusion and simplifying the introduction of Number Portability. It conforms with ITU-T Recommendation E.164, with the exception of the code for Syria.

The high-level structure of the proposed Plan is shown in the table below. The following sections provide more detail on different parts of the plan, arranged according to the initial digit.

Initial digit	Number of digits	Planned use
0	up to 17	International
1	3 or 4	Short codes
2	8	Services with fixed network tariffs
3	8	Future expansion or new services
4	8	Future expansion or new services
5	8	Future expansion or new services
6	8	Future expansion or new services
7	8	Services with mobile network tariffs
8	8	Shared cost services
9	8	Premium rate services

Adoption of the proposed Plan will require customers to change their existing dialling behaviour as follows:

- All customers will cease to dial the first digit “0” for calls to fixed networks in Lebanon, and replace it by the first digit “2”.
- All customers will cease to dial the first two digits “03” for calls to mobile numbers on MIC 2 network in Lebanon, and replace it by the digits “74” and also will cease to dial the first two digits “70” on the same network and will replace it by the digits “75”..
- All customers will cease to dial the first two digits “03” for calls to mobile numbers on MIC 1 network in Lebanon, and replace it by the digits “71” while the mobile numbers beginning with digits “70” on the same network will remain unchanged.

These changes will require a number of technical changes to the network and operational support systems, but the critical issue for a smooth introduction of the changes will be customers’ understanding and use of the new numbers. To achieve this level of understanding the changes must be described in terms of straightforward messages.

The Authority plans that the changes should take place as soon as reasonably feasible. The dates for change and an implementation plan will be decided later.

3.2 Initial digit 0

This is reserved for international traffic in accordance with international recommendations.

Code 00 is used for international access. The internationally allocated Country Codes and the Numbering Plans of the destination countries determine the maximum length of numbers that customers dial after the code. The international recommendation is that this is limited to 15 digits, but this cannot be controlled from within Lebanon.

Historically Lebanon has allowed 02 to be used as the code for calls to Syria. This resulted from the then significant difference in the cost of calls to Syria compared with other international destinations and the consequent need to manage subscribers' access to international calls. Although this price difference is dramatically reducing and Syria can be called using the standard international country code, subscribers are familiar with this code and there is no compelling reason to remove the facility at this time. The Authority however reserves its right to cancel it in the future. Calls dialled using 02 are in any case charged at the same rate as calls dialled using 00963 (the international access code followed by the country code for Syria).

The remaining numbers with initial digit 0 are protected until there are international standards or new requirements for their use.

Question 3. Should the code 02 for Syria be retained? If so, in what circumstances should it be abolished?

3.3 Initial digit 1

All numbers in the 1xx(x) range have been designated for use as short codes and are regarded as lying within the Numbering Plan. Callers dial these codes to obtain access to Service Providers or to indicate the choice of routing when alternative network services are available. In order to create more numbering capacity than the one hundred combinations available using 100 to 199, some blocks of 1xx codes are expanded to four-digit 1xxx codes.

The Authority will place conditions of use on each short code in the range 1xx(x), taking into account established current usage. The conditions of use will be those for the following types of short code:

- **Common:** Short codes used by Service Providers offering equivalent services (whether directly or through the agency of other Service Providers). Different Service Providers must use the same code for equivalent services.
  - **Mandatory Common Services:** Short codes used for services that are widely recognised by customers and that Service Providers are obliged to provide. Emergency calls form an example.
  - **Optional Common Services:** Short codes used for services that are widely recognized by customers and that Service Providers may opt out of providing. Directory enquiries might form an example, if they are liberalised.
  - **Public Institutions:** Short codes used for access to government and other public institutions. There must be a provision for these codes to be withdrawn if the services in question become commercial.
  - **Carrier Selection:** Short codes used to select Service Providers to carry calls. The Customer is required to dial a national or international telephone number immediately following the code. Networks therefore need to accommodate up to 17 digits more following the code, as 17 is the maximum length of an international number (including the international prefix).
- **Proprietary:** Short codes used by Service Providers offering their own services (whether directly or through the agency of other Service Providers). Different Service Providers may use the same code for different services.
  - **Non-commercial:** Short codes used to access the services of the Service Provider (or services provided by third parties on behalf of the Service Provider) for which no charge is made.

– **Commercial:** Short codes used to access the services of the Service Provider (or services provided by third parties on behalf of the Service Provider) for which a charge is made. The charges made for any such calls may be at no more than shared cost levels (discussed in "Initial digit 8" below).

the Minister's Letter dated 06/02/2003 set out which short code ranges were to be used for which purposes. The table below summarises the effect of the Minister's Letter, interpreted in terms of the short code types above.

First Digit	Second digit	Third digit	Fourth Digit	Type/Use
1	**0**	**0-9**	**0-9**	Proprietary
	1	**0-1**	**0-9**	Proprietary
	1	**2**		Common Mandatory (Emergency)
	1	**3-9**	**1-9**	Proprietary
	2	**0**		Proprietary
	2	**1-4**	**0-9**	Proprietary (Commercial)
	2	**5**		Common Mandatory (Emergency)
	2	**6-9**	**0-9**	Proprietary (Commercial)
	3	**0-4**	**0-9**	Proprietary
	3	**5-8**	**0-9**	Proprietary (Commercial)
	3	**9**		Proprietary
	4	**0-4**	**0-9**	Proprietary (Commercial)
	4	**5**		Proprietary (Commercial)
	4	**6-9**	**0-9**	Proprietary (Commercial)
	5	**1**	**0-4**	Proprietary (Commercial)
	5	**1**	**5**	Proprietary (Non-commercial)
	5	**1**	**6-9**	Proprietary (Commercial)
	5	**2-9**	**0-9**	Proprietary (Commercial)
	6	**0-9**	**0-9**	Proprietary
	7	**0-4**	**0-9**	Common (Public institutions)
	7	**5**		Common Mandatory (Fire Department)
	7	**6-9**	**0-9**	Common (Public institutions)
	8	**0-9**	**0-9**	Common (Carrier Selection)
	9	**0-9**	**0-9**	Common (Carrier Selection)

The Authority will review existing allocations and will allocate individual short codes designations for all 1xx(x) short codes in conformity with this new plan. It will replace any non-conformant codes in use by conformant codes or by suitable numbers in the appropriate number ranges having initial digits 8 and 9. In particular, it will move to those number ranges any premium rate services and any shared cost services that are not justified in using short codes. Justification will be case-by-case; the general principle will be that the 1xx(x) short code range will be reserved for services which cannot reasonably be provided on a number starting with 8. Full criteria for which services may have 1xx(x) short codes will be part of the new plan.

Question 4. Are these types of short codes the right ones? If not, which types should be added, combined or removed?

Question 5. Should the tariffs for services using short codes be subject to these rules? If not, what should the rules be?

3.4 Initial digit 2

The main change proposed is to prefix all current geographic numbers by the digit 2 (taking the place of the current national prefix 0). The digit 2 has been chosen for this purpose because it is currently unused (apart from the code 02 for dialling Syria mentioned above). This change will provide ample geographic numbering capacity for the foreseeable future, while at the same time freeing the first digits 3 to 9 for non-geographic uses. The table below shows the planned structure. All codes are followed by the same six digits as at present.

Existing code	Proposed code	Planned use
-	20	Future expansion
01	21	Beirut and part of Metn South and North
-	22	Future expansion
-	23	Future expansion
04	24	Part of Metn (North)
05	25	Part of Metn (South), Alay and part of Chouf
06	26	North Lebanon
07	27	South Lebanon and part of Chouf
08	28	Bekaa Valley
09	29	Keserwan

If the numbering capacity with the ranges designated to a specific geographic area is fully utilized one of the codes 20, 22 or 23 will be designated to serve that geographic area. (This is only likely to occur in Beirut in the medium term.) Geographic significance can be maintained by designating the whole of the range to serve that area despite the risk of inefficient utilization through designating more capacity than is likely to be required. Where necessary, the digits 0 and 1 can be used as first of the six digits after 2X, so each code can offer 1 million numbers.

The Authority will review existing allocations and will withdraw blocks that are not needed now or very soon.

The Authority will allocate additional capacity according to need for both current and future Service Providers. It will not set aside numbers for specific Service Providers until they apply to the Authority for numbers that they need.

Similarly, it is only when there is insufficient capacity with initial digit 2 to meet the identified actual demand for geographic numbers, that the Authority will decide which of the ‘spare’ initial digits (3, 4, 5, and 6) will be set aside partly or wholly for geographic services.

In Lebanon, people can distinguish between current fixed network services and mobile network services and can identify the appropriate number ranges for the services. Future services are likely to be less obviously distinguishable. The Authority is aiming both to preserve current conventions and to provide principles that can be used in the future. It intends to allocate numbers without taking account of technology: both wireline and wireless fixed network services will be eligible for geographic numbers, provided that they conform with the conditions of use.

The Authority intends usually to make allocations of these numbers in blocks having 1,000 numbers each but may allocate multiple contiguous blocks to Service Providers experiencing high demand. The Authority will require efficient use of the available capacity when allocating blocks. A block will take the form 2X ABCxxx, using ABC digits that have already been designated for use. The Authority will require efficient use of the available capacity when allocating blocks.

Question 6. ***Should fixed network numbers be allocated in the future according to the principles above?***

Question 7. ***Are there likely to be any difficulties for networks or users in implementing the proposed change to fixed network numbers? If so, what are they?***

3.5 Initial digits 3, 4, 5 and 6

The Authority will not initially define a use for these initial digits, in order to keep 40 million numbers (50% of the available capacity) for future services. Over the last twenty years there have been many innovations in telephony that we now take for granted. This suggests that such 'spare' numbering capacity might be needed for future innovations, despite the growth in the use of non-numeric addresses (such as email addresses).

This 'spare' capacity is in addition to the spare capacity of individual initial digits (e.g. more than 30% spare capacity of initial digit 2 for geographic numbers). If the available numbers with individual designated initial digits (such as 2 and 7) are exhausted then the Authority will set aside some of this 'spare' capacity for those purposes.

Question 8. ***Are there any services envisaged already for which these initial digits (as opposed to the other initial digits in the proposed Numbering Plan) would be appropriate?***

3.6 Initial digit 7

Many countries use the initial digit 7 for their mobile services, and Lebanon has already made available numbers of the form 70xx xxxx for mobile services. There is a benefit in customer familiarity with the code. In this context the term 'mobile' refers to any service that conforms with certain tariff expectations. A 'nomadic' voice over IP service, for example, might well be less expensive and would not then necessarily use numbers with the initial digit 7.

. The existing Numbering Plan clearly distinguishes numbers allocated to the two existing mobile Service Providers. There could be a plan whereby this distinction is significantly reduced. However, such a plan is likely to require a complex series of changes that are unhelpful to users.

The proposed Plan is shown in the table below.

Existing code	Proposed code	Planned use
70/1,2	70	Services with mobile network tariffs allocated to MIC 1 network.
03/1,2,3,4,5	71	Services with mobile network tariffs (used to transfer mobile numbers in the 03 range from MIC 1
-	72	Services with mobile network tariffs reserved for Future Liban telecom
	73	Services with mobile network tariffs reserved for Future Liban telecom
03/0,6,7,8,9	74	Services with mobile network tariffs (used to transfer mobile numbers in the 03 range from MIC 2)
70/8,9	75	Services with mobile network tariffs used to transfer mobile numbers in the 70 range from MIC 2)
-	76	Services with mobile network tariffs
-	77	Services with mobile network tariffs
-	78	Services with mobile network tariffs
-	79	Services with mobile network tariffs

The Authority will allocate additional capacity according to need for both current and future Service Providers. It will not set aside numbers for specific Service Providers until they apply to the Authority for numbers that they need beyond those provided for in their licences.

The Authority intends usually to make the additional allocations of these numbers in blocks having 10,000 numbers each but may allocate multiple contiguous blocks to Service Providers experiencing high demand. A block will take the form 7X ABxxxx, using AB digits that have already been designated for use. The Authority will require efficient use of the available capacity when allocating blocks.

Question 9. ***Is it acceptable for mobile network numbers to indicate in the first two digits which mobile service provider is being used (in the absence of number portability)?***

Question 10. ***Should mobile network numbers be allocated in the future according to the principles above?***

Question 11. ***Are there likely to be any difficulties for networks or users in implementing the proposed change to mobile network numbers? If so, what are they?***

3.7 Initial digits 8 and 9

The clear international trend in countries with closed numbering plans is to utilise initial digit 8 for freephone services (and sometimes other shared cost services) and, to a lesser extent, initial digit 9 for premium rate services. (In shared cost" services the receivers of calls pay the originating network operators, so the makers of calls pay less than their "normal" tariffs; in "premium rate" services the receivers of calls are paid by the originating network operators, so the makers of calls pay more than their "normal" tariffs.) In particular, 800 (or 80) has become the conventional code for freephone services, while 900 (or 90) is often chosen for premium rate services. The proposed plan follows these international trends. Adoption of this plan will create up to 20 million numbers for these services.

In the first instance the Authority proposes to make available only the following numbers, with their associated conditions of use:

- 800 xxxxx for freephone.
- 850 xxxxx for shared cost calls other than freephone. These may be charged at no more than the normal on-net national tariff from the originating network in question (or with a fixed charge of no more than a one minute national call).
- 900 xxxxx for premium rate calls. These may be charged at higher rates than shared cost calls, but the Authority may apply consumer protection rules (such as requiring an uncharged tariff message at the start of each call and demanding adherence to particular codes of practice, or possibly limiting tariffs where this appears to be justified).

The Authority might revise the conditions of use (particularly the tariff expectations) after reviewing the current allocations of short codes. It might also consider introducing 6-digit numbers (having the forms 81 xxxx, 86 xxxx and 91 xxxx, for example) after assessing the demand for short codes and specially tariffed numbers.

The Authority proposes to allocate these numbers according to one of the following principles:

- Allocating blocks having 1,000 numbers each, with the expectation that the recipients will make these available to third parties offering services.
- Allocating individual numbers.

Question 12. ***Are these distinctions between number ranges the right ones? If not, which number ranges should be added or removed?***

Question 13. ***Should the tariffs for services using initial digits 8 and 9 be subject to these rules? If not, what should the rules be?***

Question 14. ***Is there likely to be much demand for having 6-digit numbers?***

Question 15. ***Should the numbers having initial digits 8 and 9 be allocated according to the first principle or the second principle above? If neither, how should they be allocated?***

4 Motivation for the Proposed Numbering Plan

According to the Telecommunications Law 431/2002 (Article 31.2), the Authority has the following duties:

- Managing the Numbering Plan without discrimination.
- Making the details of the Numbering Plan available to the public.
- Ensuring that Service Providers obtain numbers without any unjustified delay.
- Ensuring that changes in numbering do not cause unusual disturbance to Customers, Users and Service Providers.
- Ensuring that the allocation of numbers does not give rise to any competitive advantage or obstruction to activities of Service Providers.

These duties are reflected in the desired major attributes of the proposed Numbering Plan, which include:

- Capacity for known and unknown future demand.
- Simplicity for Users during changes and in use.
- Equality of access to numbers for all Service Providers.
- Transparency and efficiency of allocation.

The following sections examine the respects in which the proposed Numbering Plan has these desired major attributes.

Question 16. Are any other major attributes desired? If so, to what extent does the proposed Numbering Plan have them?

4.1 Capacity for known and unknown future demand

Shortages of numbers in Lebanon have led to several numbering changes, including the introduction of 70 alongside 03 for mobile numbers. The proposed Plan is intended to avoid frequent changes and numbering difficulties by providing capacity for both known and unknown future demand.

There is a rule of thumb that a lasting numbering plan should provide capacity for at least 5 telephone numbers per head of population. If the Lebanese population doubles in the next 20 years to, say, 9 million people then this rule would suggest that some 45 million numbers should be available within the Numbering Plan. The proposed Plan provides a theoretical capacity of 80 million numbers. The specific provisions for 'spare' capacity are below.

International experience is that the introduction of new services and competition amongst Service Providers creates a significant demand for additional numbers. Such demand can be anticipated in Lebanon, with the introduction of shared cost and premium rate services and the widespread use of value added services in the mobile network. However, services that are as yet unknown are also likely to create a significant demand; possible examples using voice over IP are mentioned above.

The proposed plan accommodates these demands through:

- Ensuring spare capacity exists for the proposed geographical numbers, both within the proposed geographical allocations and through reserving 20, 22 and 23 for future expansion (more than 3 million available additional numbers).
- Ensuring capacity for current and future mobile Service Providers, with 10 million numbers of which 6 million will be available for future allocation if the two existing mobile Service Providers are each allocated 2 million numbers.
- Using some numbers with initial digits 8 and 9 for shared cost and premium rate services, providing a capacity of up to 20 million numbers.

- Saving 40 million numbers, with initial digits 3, 4, 5 and 6 for services that do not exist at present but might be developed in the future.

Question 17. Does the proposed Numbering Plan provide enough capacity to satisfy foreseeable demand? If not, how should it be modified?

4.2 Simplicity for users during changes and in use

A numbering plan can be made friendly to users by adopting various tactics, such as identifying the tariff expectations from the first two digits, being neutral about network technologies, aligning with international trends, and having short and uniform numbers (to avoid misdialled numbers).

The proposed Plan does all of these things and exhibits the additional benefit that the change will be straightforward for users to understand

The proposed Plan also aligns with international trends for new numbering plans in its use of initial digits. This helps business and leisure visitors to Lebanon to understand and use the system, whilst assisting Lebanese when they travel abroad and use overseas telecommunications facilities.

Question 18. Would different proposals for the Numbering Plan help users while satisfying the other objectives of changing it? If so, what are they?

4.3 Equality of access to numbers for all service providers

In a competitive environment the numbering scheme must treat all Service Providers equally.

Ultimately there should be no Service Provider identity information contained in the initial digits of the numbers. However, both internationally and within Lebanon it has been the practice for mobile Service Providers to be allocated early digits that allow their identification. Wholesale changes merely to eliminate this would be difficult to justify. However, future allocations should be competitively neutral (so, for example, different Service Providers get numbers having equal lengths). The proposed Plan does this and requires just a simple change from the existing Plan (replacing the leading 0 with 7 for mobile numbers).

To ensure competitive neutrality the allocation procedures will include a ‘first-come-first-served’ approach to requests for number blocks.

The common length of numbers, for all but international calls and short codes, will facilitate the introduction of Number Portability if the Authority decides to introduce it. The plan for short codes takes account of the possible introduction of Carrier Selection. Both Number Portability and Carrier Selection can encourage the creation of a competitive environment.

Question 19. Would different proposals for the Numbering Plan increase equality of access while satisfying the other objectives of changing it? If so, what are they?

4.4 Transparency and efficiency of allocation

To ensure that the introduction of new services is not delayed through the absence of allocated numbers, the Authority might ‘reserve’ number blocks, for a limited period of time, in response to confidential requests from Service Providers.

To ensure efficiency of use the allocation procedures will require Service Providers to demonstrate needs for extra numbers in applications for number blocks.

Question 20. ***Is there likely to be much demand for a confidential 'reservation' procedure?***

Question 21. ***Is efficiency of allocation important for any number ranges, given the increase in capacity made available in the proposed Number Plan? If so, for which ranges is it important?***

5 Charging for numbers

The Telecommunications Law 431/2002 (Article 11.second.1.a) implies that the Authority may charge fees for fulfilling its responsibilities (including numbering management), provided that the total fees collected are commensurate with the costs of regulating the sector and, when necessary, the overall turnover of the Service Providers. The Authority is not required to ensure that the fees collected for numbering management are the same as the costs of numbering management.

The Authority considers that fees for numbering management could have the following objectives:

- Recovering the costs of maintaining the Numbering Plan (making and publishing entries in the numbering database, for example).
- Encouraging care in the number allocation by Service Providers.
- Recovering the costs of supervising number use (checking for infringements of conditions of use, for example).
- Recognising the inherent value of memorable numbers to Service Providers and users.

Question 22. Should any other objectives be considered? If so, how do they affect the charging principles suggested?

5.1 Overall implication

Fees for numbering management usually comprise initial fees, which are paid when numbers are allocated, and renewal fees, which are paid annually. However, most of the costs associated with numbering management are not one-off but continuing. The Authority therefore proposes to make the initial fees and the renewal fees the same; all mentions of 'fees' later in this document refer to fees that are charged both on initial allocation and annually thereafter until the numbers are returned by the Service Provider to the Authority.

At this stage the Authority is putting forward for consultation principles for charging for numbers, not details of fees. The following sections discuss these principles.

In summary, the principles suggest that the fees for a block of numbers can depend directly on the proportion of the relevant numbering space occupied by the block and the conditions of use for the relevant numbering space. (The "relevant numbering space" comprises those numbers that can be used in the same way as those in the block; it might comprise, for example, all the numbers beginning with 7 for which services could have mobile network tariffs.) For the options in the following sections that are preferred by the Authority, the dependency can be expressed through the formula

annual fee per number =
scale factor *
effort in regulating relevant numbering space /
capacity of the relevant numbering space

Here the effort in regulating the relevant numbering space depends on the number (and therefore on the conditions of use) but the scale factor does not.

However, other, more complicated, formulas might be better tuned to public sentiment about the value of numbers.

5.2 Recovering the costs of maintaining the Numbering Plan

Maintaining the numbering plan mostly consists of making and publishing entries in the numbering database. Its costs are not the only ones of numbering management (or even the main ones), which are discussed in later sections. The effort involved in making and publishing an entry in the numbering database is largely independent of how many numbers the entry describes; in other words, it is largely independent of the size of the block of numbers allocated. Fees intended to cover only the costs of this aspect of numbering management might therefore have a flat rate (independent of the size of the block of numbers allocated).

Flat rate fees alone (in the absence of fees related to other aspects of numbering management) could encourage Service Providers to apply for large blocks instead of small ones. To encourage care in the use of numbers, therefore, any flat rate fees should constitute a low proportion of the overall fees.

In fact the cost of maintaining the Numbering Plan is low enough that the Authority might choose to set these flat rate fees to zero; in other words, the costs of maintaining the numbering plan would be recovered in other ways. The overall fees for numbering management would not necessarily be zero, as there are costs besides that of maintaining the Numbering Plan.

Question 23. Should the costs of maintaining the Numbering Plan (but not necessarily the overall fees for numbering management) be regarded as zero for charging purposes? If not, how should they be recovered?

5.3 Encouraging care in the number allocation

Numbering resources are limited and, in some circumstances, can be scarce. With the existing Numbering Plan, there are currently shortages of mobile numbers and short codes, and there might in the future be shortages of fixed numbers in Beirut. These shortages can distort service offerings (if prepaid mobile services, for example, are priced to conserve numbers) and impede market entry. With the proposed Numbering Plan, there will initially be no shortages of numbers other than short codes. Nonetheless, there is a case for having fees that encourage careful use of numbers (particularly short codes), by, for example, providing incentives to using numbers having initial digits 8 and 9 instead of short codes.

Fees that depend on the sizes of the block of numbers allocated can encourage careful use of numbers: more blocks or larger blocks cost more. However, the fees needed to achieve the right incentive could be assessed only by experience, over some years. Moreover, care in the use of numbers can be encouraged in administrative ways as well as in financial ways: for instance, the Authority will require Service Providers to demonstrate needs before allocating new blocks. The costs associated with these administrative ways of encouraging careful use of numbers can themselves be estimated, by considering the cost of the staff involved in the work. For the present, it is more realistic to use these costs in formulating fees than to use incentive prices.

Much of the work involved in demonstrating needs for new blocks falls on the Service Providers. For example, to justify obtaining for extra blocks for fixed or mobile services, Service Providers will have to show that their existing comparable blocks are already well utilised; also, to justify keeping short codes, Service Providers might have to show that traffic levels are high enough. If the Authority felt a need to audit the utilisation or traffic claims of a Service Provider, then the costs of the audit might fall on the Service Provider directly. Consequently, the costs to the Authority of encouraging careful use of numbers are likely to be modest.

The Authority might relate the fees for a block to the proportion of the relevant numbering space occupied by the block. For example, a block comprising one short code might be regarded as occupying either 1/100 or 1/1000 of the relevant 1xx(x) short code space, depending on whether the code had three digits or four digits. (This example ignores the fact that short codes have types, so "the relevant 1xx(x) short code space" might have many fewer than 1000 codes: if there were, say, only 200 codes having the same type then one short code would occupy 1/20 or 1/200 of the relevant 1xx(x) short code space, depending on its number of digits.) The 1xx(x) short code space, or the space for numbers "behind" any other initial digit in the proposed Numbering Plan, would be regarded as occupying 1/10 of the whole numbering space.

Question 24. ***Should the fees intended to encourage care in number allocation for a block in a relevant numbering space be proportional to the fraction of the relevant numbering space that the block occupies? If not, what should they be?***

5.4 Recovering the costs of supervising number use

Some uses of numbers have exceptional costs. In particular, the numbers used by shared cost and premium rate services require supervision to ensure that Service Providers adhere to the conditions of use. Where there are few such services, resulting from the migration of services from 1xx(x) short codes, supervision is not onerous, and the Authority might regard the supervision fees as zero. However, if the number of such services grows, the burden of supervision will grow.

The costs of supervision could be recovered from licence fees, if licence fees were related to the revenues associated with these services. However, there might be several different number ranges, having different conditions of use and therefore requiring different degrees of supervision. The Authority might then wish to have fees related to the numbers. The Authority proposes to do this in one of the following ways:

- Making the fees depend on a factor representing the effort in supervising numbers having the given conditions of use.
- Taking for the fees a fraction of the revenues from the numbers.

The first of these ways, which is preferred by the Authority, is related fairly directly to the costs of the Authority, in principle. The second entails examining the accounts of the value-added Service Providers; however, the fraction of the revenues forming the fees would still be determined by the costs of the Authority, in accordance with the Telecommunications Law.

Question 25. ***Should the costs of supervising number use be recovered in the first way or the second way above? If neither, how should they be recovered?***

5.5 Recognising the inherent value of memorable numbers

Service Providers recognise certain numbers as more memorable than others and often put them in "gold", "silver" and "bronze" classes. The classes are defined differently in different countries. Any classification is slightly arbitrary and potentially variable: a Service Provider might well notice memorable numbers that were not in the official classes. Because of this, the Authority does not intend generally to set fees according to how memorable numbers are. Instead, the Authority will set the same fees for two blocks that have the same sizes, conditions of use and first few digits. In effect, the inherent value of memorable numbers will be recognised in the costs of supervising uses of numbers.

No matter what classification is used, Service Providers might make windfall gains if they could sell numbers (or, more strictly, the rights to use numbers) at open prices. Windfall gains made in this way are unfair to competitors that happen not to have equally memorable numbers. In various countries there have been auctions of memorable numbers, with the proceeds of the auctions going to charities or governments. The Authority does not intend to adopt this practice or to permit Service Providers to adopt it. Instead, the Authority proposes one of the following actions:

- Placing an absolute limit on how much a Service Provider charges for a number.
- Preventing Service Providers from charging for a number.

The first of these actions, which is preferred by the Authority, diminishes the opportunities for petty corruption of Service Provider staff and lets Service Providers exercise some skill in marketing but is difficult to formulate well. The second is simple but restricts the market.

Equally, Customers might make windfall gains if they could sell numbers to other Customers. Also, selling numbers tends to reinforce the belief that people own the numbers that they buy. Consequently, the Authority proposes to prevent Customers from selling numbers, except as part of a larger transaction (such as the sale of a business or house). (Contracts with Customers should clearly specify that Customers do not own the numbers that they are allocated and have rights of use only while their Contracts are in force.)

Question 26. ***Should the fees for using a block in a relevant numbering space be independent of the memorable numbers in the block? If not, how should they depend on the numbers?***

Question 27. ***Should the sale of numbers by Service Providers be regulated by the first action or the second action above? If neither, how should it be regulated?***

Question 28. ***Should the sale of numbers by Customers be prevented****?*

6 Allocation of numbers

The Authority intends to treat in the same ways two blocks that have the same size, conditions of use and first few digits. Nonetheless, some blocks might be more desirable than others; for instance, numbers having 4444 as their first few digits might be more memorable than numbers having 4796 as their first few digits.

The Authority does not intend to withhold blocks that might be more desirable than others, as doing so involves identifying the blocks rather arbitrarily and depriving Customers of usefully memorable numbers. To ensure that the blocks have approximately the same quantities of memorable numbers, the Authority proposes one of the following rules:

- Allocating blocks randomly from the number range defined by their first few digits.
- Allocating blocks sequentially from the number range defined by their first few digits.

The first of these rules prevents Service Providers from trying to schedule applications for allocations so as to obtain more desirable blocks; it might be well suited to 1xx(x) short codes, which are allocated individually, as a lottery could be held publicly for all Service Providers and regularly in response to all eligible applications for short codes received since the previous lottery. The second permits simple checks, permits the allocation of multiple contiguous blocks to the same provider and avoids fragmentation of the numbering space; it might be well suited to other numbers, which are allocated in blocks that are large enough to allow convenient distribution to Customers but small enough to encourage careful use.

The Authority does not intend to withdraw blocks after allocation unless the numbers have not been used, the conditions of use have been violated or the numbers are replaced in a change in the Numbering Plan.

Also, the Authority does not intend to allocate numbers for short periods of time. A number might be used for several special services in rapid succession; however, switching the number between the services, is a task for the Service Provider, not the Authority. Of course, the Authority will expect Service Providers to demonstrate that numbers have been used enough, and in accordance with the conditions of use, despite being switched between services.

Question 29. Should the sale of numbers by Service Providers be regulated by the first action or the second action above? If neither, how should it be regulated?

Annex A Other Network Codes

1 Data Network Digits

A Data Network Identification Code (DNIC) comprises a Data Country Code (DCC) and a network digit. Each network digit identifies a data network in a country. ITU allocates DCCs; Lebanon has DCC 415. The Authority will be responsible for allocating network digits to network providers.

The ITU-T Recommendations on the management and structure of DNICs are X.121 ("International Numbering Plan for public data networks") and X.122 ("Numbering Plan for inter-working between a packet switched public data network ('PSPDN') and an integrated services digital network ('ISDN') or PSTN in the short term").

2 Telex Numbers

Telex networks have a well-established numbering structure, described in ITU-T Recommendation F.69. ITU allocates numeric and alphabetic country codes.

As the use of this technology is reducing there are no capacity issues. Equally there is no evidence of any new Service Providers seeking to enter this market. As such there is no regulatory pressure on the related Numbering Plan, though in principle the Authority will be responsible for allocating blocks of telex numbers to service providers for assignment to end terminals.

3 Signaling Point Codes

Signaling Point Codes (SPCs) are used in public telephone networks using the ITU-T Recommendation on Signaling System Number 7 (known as 'C7' or 'SS7'). There are three types of SPCs:

- International Signaling Point Codes (ISPCs), issued by ITU-T;
- National Signaling Point Codes (NSPCs), used to route calls to around the country and between Service Providers;
- Network Specific Signaling Point Codes (NSSPCs), used by Service Providers within their own networks

Each of these types constitutes an independent addressing plan.

Digital exchanges use these codes to communicate with each other using C7 messages. The SPC identifies the origin and destination of the message, referred to as the 'node'. A node may have more than one SPC allocated to enable it to be partitioned into logically separated entities to identify various functions. Relevant ITU-T Recommendations are Q.704 ("Signaling Network Functions and Messages"), Q.705 ("Signaling Network Structure") and Q.708 ("Numbering of International Signaling Point Codes").

An ISPC comprises a Signaling Area / Network Code (SANC) and a Signaling Point Identification (SPI). Each SPI identifies an international gateway in a country.
ITU assigns SANCs. The Authority will be responsible for allocating SPIs (using criteria given in ITU-T Recommendation Q.708) and for notifying the ITU.

An NSPC usually has a structure similar to that of an ISPC. The Authority will be responsible for allocating the entities analogous to SANCs and Service Providers will be responsible for assigning entities analogous to SPIs to nodes in their own networks.
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4 Mobile Network Codes

The Mobile Network Code (MNC) is part of the International Mobile Station Identity (IMSI) that identifies the subscriber terminal, especially when roaming. The MNCs for GSM mobile networks are two (2) digits long in accordance with ITU-T Recommendation E.212.

The MNC is used alongside the Mobile Country Code (MCC). ITU allocates MCCs; Lebanon has MCC 416. The Authority will be responsible for allocating MNCs to Service Providers.

Only mobile network Service Providers that have the capacity to authenticate a roamed subscriber (i.e. have a Home Location Register (HLR), switching capacity and an authentication centre) should be eligible to apply for an MNC.

5 Carrier Selection Codes

Once a country has introduced Call-by-Call Carrier Selection, Carrier Selection Codes are used by customers to select the network carriers that they wish to connect their calls or override their default carriers. When network resale is allowed, such codes are also used to select resellers.

Provision has been made within the structure of short codes for these codes when they are required.

Carrier Selection Codes are used by customers and might be important to the branding of carriers and resellers. The Authority will allocate them. They might also be used inside networks, in some implementations of Carrier Pre-Selection.

6 Number Portability Prefix Codes

In the event of some implementations of Number Portability being introduced, Service Providers will require codes for use within their networks to ensure that calls to numbers initially implemented on one network are correctly routed to the new network. These codes are not used by customers but should be allocated centrally, by the Authority.

7 Targeted Transit Codes

In some transit networks codes are needed to route traffic between two points of interconnection. Again these codes are not used by customers, but having them allocated centrally, by the Authority, would reduce the potential for confusion.

8 Carrier Codes

The ITU-T has identified Carrier Codes for helping within documentation to identify individual Service Providers. They consist of up to 6 alphanumeric characters, in accordance with ITU-T Recommendation M.1400. The ITU-T scheme now applies to routes between national Service Providers as well as to routes between international Service Providers, but its use inside countries is subject to national regulation and bilateral agreement between Service Providers.

Although such codes inside countries are not mandatory many countries have them (with names such as ‘LOPIDs’ and ‘CUPIDs’). They provide unique identifiers in documentation, including changes for number allocation, network data management, phone book entries, Number Portability and Carrier Selection.

The Authority will establish, maintain and publish Carrier Codes to be used in documentation. If required by individual procedures, a Service Provider may be allocated more than one code - one for each franchise / license / management contract. When network resale is allowed, the codes are also used to identify resellers.

The Authority will also advise the ITU-T of the allocated codes within the framework of ITU-T Recommendation M.1400.

Annex B Summary of the Existing Numbering Plan

Prefix	Next digit	Use	Number of digits	Capacity	Comment
00		International access	up to 17		ITU-T limit "time T", 15-digits max.
01	**2-9**	Beirut, part of Baabda and part of Metn North	8	800,000	Possibly not adequate in capacity for the medium term
02		Syria access	11		Contrary to ITU-T Recommendation E.164
03	**0**	MTC	8	100,000	
03	**1**	Alpha	8	100,000	
03	**2-5**	Alpha	8	400,000	
03	**6-9**	MTC	8	400,000	
04	**2-9**	Part of Metn (North)	8	800,000	Adequate in capacity for the long term
05	**2-9**	Part of Baaba, Aalay and part of Chouf	8	800,000	Adequate in capacity for the long term
06	**2-9**	North Lebanon	8	800,000	Adequate in capacity for the long term
07	**2-9**	South Lebanon and part of Chouf	8	800,000	Adequate in capacity for the long term
08	**2-9**	Bekaa	8	800,000	Adequate in capacity for the long term
09	**2-9**	Keserwan	8	800,000	Adequate in capacity for the long term
1	**0-9**	1xx(x) short codes	3 or 4		Possibly not used to best effect always
7	**0**	MTC and Alpha	8	1,000,000	Used as an addition to the original ranges
7	**1, 2 & 4**	New licensees	8	1,000,000	Intended for expansion according to the new mobile licence

Annex C Summary of the Proposed Numbering Plan

First digit	Second digit	Status	Use	Number of digits	Capacity	Comment
0	**0**	In service	International access (unchanged)	up to 17		ITU-T limit "time T", 15-digits max.
	1	Protected	Future services			Protected with Changed Number Announcement 2 years
	2	In service	Syria access	11		Unchanged for the present (though contrary to E.164)
	3-9	Protected	Future services			
1	**0-9**	In service	1xx(x) short codes	3 or 4		Used
2	**0**	Designated	Geographic expansion	8	1,000,000	Reserved
	1	In service	Beirut	8	1,000,000	Moved from current 01
	2	Designated	Geographic expansion	8	1,000,000	Reserved
	3	Designated	Geographic expansion	8	1,000,000	Reserved
	4	In service	Metn (North)	8	1,000,000	Moved from current 04
	5	In service	Metn (South)	8	1,000,000	Moved from current 05
	6	In service	North Lebanon	8	1,000,000	Moved from current 06
	7	In service	South Lebanon	8	1,000,000	Moved from current 07
	8	In service	Bekaa	8	1,000,000	Moved from current 08
	9	In service	Keserwan	8	1,000,000	Moved from current 09
3	**0-9**	Protected	Future services	8	10,000,000	Reserved
4	**0-9**	Protected	Future services	8	10,000,000	Reserved
5	**0-9**	Protected	Future services	8	10,000,000	Reserved
6	**0-9**	Protected	Future services	8	10,000,000	Reserved
7	**0-5**	Used	Services with mobile network tariffs	8	6,000,000	Used and Reserved
	6-9	Designated	Expansion	8	1,000,000	Reserved
8	**0-9**	Designated	Shared cost services	8	10,000,000	
9	**0-9**	Designated	Premium rate services	8	10,000,000	

Annex D List of the Consultation Questions

Comments are invited on all parts of the document. In particular, responses are invited to the following questions.

Question 1. Should any of the numbers and codes in Annex A receive particular attention in the near term from the Authority? If so, which are they?

Question 2. Are there any other potential problems in the existing Numbering Plan?

Question 3. Should the code 02 for Syria be retained? If so, in what circumstances should it be abolished?

Question 4. Are these types of short codes the right ones? If not, which types should be added, combined or removed?

Question 5. Should the tariffs for services using short codes be subject to these rules? If not, what should the rules be?

Question 6. Should fixed network numbers be allocated in the future according to the principles above?

Question 7. Are there likely to be any difficulties for networks or users in implementing the proposed change to fixed network numbers? If so, what are they?

Question 8. Are there any services envisaged already for which these initial digits (as opposed to the other initial digits in the proposed Numbering Plan) would be appropriate?

Question 9. Is it acceptable for mobile network numbers to indicate in the first two digits which mobile service provider is being used (in the absence of number portability)?

Question 10. Should mobile network numbers be allocated in the future according to the principles above?

Question 11. Are there likely to be any difficulties for networks or users in implementing the proposed change to mobile network numbers? If so, what are they?

Question 12. Are these distinctions between number ranges the right ones? If not, which number ranges should be added or removed?

Question 13. Should the tariffs for services using initial digits 8 and 9 be subject to these rules? If not, what should the rules be?

Question 14. Is there likely to be much demand for having 6-digit numbers?

Question 15. Should the numbers having initial digits 8 and 9 be allocated according to the first principle or the second principle above? If neither, how should they be allocated?

Question 16. Are any other major attributes desired? If so, to what extent does the proposed Numbering Plan have them?

Question 17. Does the proposed Numbering Plan provide enough capacity to satisfy foreseeable demand? If not, how should it be modified?

Question 18. Would different proposals for the Numbering Plan help users while satisfying the other objectives of changing it? If so, what are they?

Question 19. Would different proposals for the Numbering Plan increase equality of access while satisfying the other objectives of changing it? If so, what are they?

Question 20. Is there likely to be much demand for a confidential 'reservation' procedure?

Question 21. Is efficiency of allocation important for any number ranges, given the increase in capacity made available in the proposed Number Plan? If so, for which ranges is it important?

Question 22. Should any other objectives be considered? If so, how do they affect the charging principles suggested?

Question 23. Should the costs of maintaining the Numbering Plan (but not necessarily the overall fees for numbering management) be regarded as zero for charging purposes? If not, how should they be recovered?

Question 24. Should the fees for encouraging care in number allocation for a block in a relevant numbering space be proportional to the fraction of the relevant numbering space that the block occupies? If not, what should they be?

Question 25. Should the costs of supervising number use be recovered in the first way or the second way above? If neither, how should they be recovered?

Question 26. Should the fees for using a block in a relevant numbering space be independent of the memorable numbers in the block? If not, how should they depend on the numbers?

Question 27. Should the sale of numbers by Service Providers be regulated by the first action or the second action above? If neither, how should it be regulated?

Question 28. Should the sale of numbers by Customers be prevented?

Question 29. Should the sale of numbers by Service Providers be regulated by the first action or the second action above? If neither, how should it be regulated?