

19 February 2010

Dr. J. S. Sarma, IAS
Chairman
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhavan
Jawaharlal Nehru Marg
New Delhi 110 002



**Sub: Comments for consideration of TRAI on Efficient
Utilisation of Numbering Resources**

Respected Dr Sarma

Please see enclosed a copy of our comments on the various issues mentioned in the consultation paper on "Efficient Utilisation of Numbering Resources".

We firmly believe that there is no need in the foreseeable future to go in for 11 digit numbering scheme. There are enough numbers available by rearranging some of the numbering schemes and prevent squatting of numbers by a few operators just for the sake of an identity.

We request the authority to take our views into consideration while formulating their recommendation to the Government.

*With warm personal regards
Yours sincerely
B. K. Syngal
19 Feb 2010*

B. K. Syngal
Senior Principal

Encl: as above

Cc: Principal Advisor (I&FN), TRAI

DUA CONSULTING PRIVATE LIMITED

Registered Office: 301-303, Tolstoy House, 15 Tolstoy Marg, New Delhi - 110 001, India

Tel: 91-11-23359347-49 Fax: 91-11-23738450 E-mail: dua@duaconsulting.com

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Summary

The TRAI Consultation Paper on Efficient Utilisation of Numbering Resources discusses various alternatives available for rationalising the numbering plan to meet growing demand for numbering requirements in coming years – both in near future and long term scenario. In particular the consultation paper discusses relative merits, demerits and possibility of retaining 10 digit numbering scheme vis-à-vis migration to 11 digit scheme.

The consultation paper takes up the following important issues for deliberations:

- Long term suitability of numbering plan
- Effective utilisation of numbers
- Allocation and pricing of the numbers

National Numbering Plan

As a forerunner to the Indian telecom revolution, Indian numbering plan was reviewed in 1993 (NNP 1993). The plan covered basic as well as other services like cellular mobile, paging etc. Though the 1993 Numbering Plan could cater to the needs of existing and new services for another few years, yet it was felt to rationalise and review the then National Numbering Plan because of introduction of a large number of new telecom services and opening up of the entire telecom sector for private participation.

The existing Numbering Plan (NNP 2003) was formulated at a time when there was no competition in the basic telecom services and the competition in cellular mobile services had just started, paging services were in a stage of infancy and Internet services were not available in the country.

The decade gone by has witnessed tremendous growth in the field of cellular mobile services. As in case of many other countries, these services have already exceeded the traditional basic services in India as well. NNP 2003 was formulated for a projected forecast of 50% Tele-density by the year 2030, making numbering space available for 750 million telephone connections in the country comprising of 300 million basic and 450 million cellular mobile connections.

While formulating NNP 2003, regulator kept in mind the challenges that may be posed by and unique for multi-operator, multi-service environment and flexible enough to allow for scalability for next 30 years without any change in its basic structure.

The other main objectives of the plan are:

- i) To plan in conformity with relevant and applicable ITU standards to the extent possible.
- ii) To meet the challenges of the changing telecom environment.
- iii) To reserve numbering capacity to meet the undefined future needs.
- iv) To support effective competition by fair access to numbering resources.
- v) To meet subscriber needs for a meaningful and user-friendly scheme.
- vi) To standardize number length wherever practical.
- vii) To keep the changes in the existing scheme to the minimum.



During the last decade cellular mobile services witnessed unforeseen rapid growth, which has resulted in need to revisit the numbering plan and ensure efficient utilization of the same.

National Numbering Plan (NNP) 2003 which was originally designed to take care of the numbering requirements for about 30 years timeframe, may soon run out of feasible number. During this period, while the fixed line connections showed a decline, the mobile segment has grown by leaps and bounds. The anticipated 450 million cellular connections by 2030 have already been achieved and it is expected that the 1 billion mark would be crossed very soon. In view of the fact that some of the assumptions made in drawing up the NNP 2003 are no longer applicable, the plan falls short of meeting the developments and needs to be reviewed and an alternative/way-around be suggested.

Availability of numbering resources for telecommunication services is similar to spectrum for provisioning wireless services. It is both finite and scarce and a judicious use of same is important since revision of numbering plan is a complex and expensive exercise.

Other than indicating termination points, telephone numbers also contains other information such as service provider, type of service, call routing, originating circle, etc.

Present numbering plan (NNP 2003) uses 10 digit numbering scheme, wherein any combination of digits can be used. However a number cannot start with "0" since, "0" has different significance in numbering plan.

Capacity of existing numbering scheme

For a 10 digit numbering scheme, a theoretical capacity of 10 billion numbers is possible. However, according to NNP 2003, level¹ '0' and level '1' cannot be used as they have been assigned special purposes. This leaves level '2', '3', '4', '5', '6', '7', '8' and '9' for allotting numbers. This also implies that now theoretically speaking 8 billion numbers are possible.

Out of the possible 8 levels as mentioned above, allocation to various service providers has been done as per the table below:

Level	Type of Service	Service Provider
Level – 2 (Complete)	Fixed Line Services	BSNL/MTNL
Level – 3 (Complete)	Fixed Line Services	Reliance Communication
Level – 4 (Complete)	Fixed Line Services	Bharti Airtel
Level – 5 (Sub-level)	Fixed Line Services	Shyam/HFCL
Level – 6 (Complete)	Fixed Line Services	Tata Teleservices
Level – 7 (Sub-level)	Fixed Line Services	Datacom
Level – 8 (Sub-level)	Sub-level allocated for cellular mobile services	
Level – 9	Cellular Mobile Services	Miscellaneous

¹ Level '0' refers to a number starting with 0; example – 0xxxxxxx. Similarly level '8' example would be 8xxxxxxx, where 'x' can be any digit from '0' to '9'.

Apart for being used as subscriber numbers, sublevels of various main levels are currently being used as SDCA codes and thus cannot be used for numbering. SDCA code allocation can be summarized as per the table below²:

State	SDCA sub-levels utilised by State
Andaman	31
Andhra Pradesh	40, 84, 85, 86, 87, 88, 89
Assam	36, 37, 38
Bihar	61, 62, 63, 64, 65
Mumbai	21, 22
Gujarat	26, 27, 28, 79
Haryana	12, 13, 16, 17, 18
Himachal Pradesh; Jammu & Kashmir	17, 18, 19
Kerala	46, 47, 48, 49
Karnataka	80, 81, 82, 83, 84
Maharashtra	20, 21, 23, 24, 25, 71, 72, 83
Madhya Pradesh	71, 72, 73, 74, 75, 76, 77, 78
Delhi	11
North East	36, 37, 38
Orissa	66, 67, 68
Punjab	16, 17, 18
Rajasthan	14, 15, 29, 30, 56, 74
Tamil Nadu	41, 42, 43, 44, 45, 46
Uttar Pradesh	12, 13, 51, 52, 53, 54, 55, 56, 57, 58, 59
West Bengal	31, 32, 33, 34, 35

After allocation of SDCA, spare codes left till 3rd sub level i.e. LLL XXX XXXX are as per table below:³

Level	Spare codes
Level – 2	210, 239, 240, 249, 254, 260, 270, 272
Level – 3	39, 300, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 318, 320, 327, 328, 329, 340, 344, 349, 350, 357, 388
Level – 4	410, 412, 419, 430, 438, 439, 450, 453, 458, 459, 460, 464, 466, 467, 468
Level – 5	50, 510, 513, 520, 523, 529, 530, 537, 538, 539, 540, 543, 547, 550, 553, 555, 557, 558, 559, 560, 563, 570, 575, 576, 577, 578, 579, 580, 589, 590, 593, 597, 598, 599
Level – 6	60, 69, 610, 614, 616, 617, 619, 620, 623, 626, 628, 629, 630, 635, 636, 637, 638, 639, 640, 644, 648, 649, 650, 660, 666, 669, 670, 677, 687, 688, 689
Level – 7	70, 730, 735, 738, 740, 750, 787, 789
Level – 8	810, 812, 814, 829, 843, 860, 879, 880, 887, 888, 889, 890, 895, 897, 898, 899
Level – 9	Entire level reserved for cellular services

² Source – NNP 2003

³ Source – NNP 2003

Using simple permutation and combination formulas of mathematics shows that the capacity of numbers available to be allotted to subscribers⁴ in various levels is as follows:

Level	Numbering Capacity
Level – 2	80,000,000
Level – 3	370,000,000
Level – 4	150,000,000
Level – 5	430,000,000
Level – 6	490,000,000
Level – 7	170,000,000
Level – 8	160,000,000
Level – 9	1,000,000,000
Total	2,850,000,000

As depicted in table above, total number available using 10 digit numbering scheme is 2,850,000,000⁵. Out of these 2.85 billion numbers available, 1.69 billion numbers are reserved for provisioning of fixed-line services and 1.16 billion are ear-marked for cellular services.

Apart from this 3rd level vacant codes, hundreds of 4 and 5 levels SDCA codes are also left vacant, and has not been accounted for in our calculation for the ease of reference.

At the end of September 2009, wireless subscriber base stood at 471.73 million and wire line subscriber base stood at 37.31 million.⁶

At the time of formulation of NNP 2003, regulator and policy makers had not foreseen the tremendous growth potential of cellular services and had taken conservative estimates for earmarking entire series of available numbers in level '2' to '7' for fixed-line services. However, there estimate has not been proven correct and this calls for a review of existing numbering plan.

We are of the view that, moving forward, regulator should not reserve entire series of numbers for fixed line service providers as is presently a practice, but must allocate numbers as per use of service providers. This will ensure that numbers are judiciously used by the operator and also tax payers money is not wasted in upgrading the network for 11 digit numbering scheme.

We also suggest that instead of having 2/3/4 digit SDCA code and 8/7/6 digit fixed line number to be allocated to subscribers, moving forward it would be more prudent to allot a unique 10 digit number to a subscriber comprising of SDCA as well as subscriber identity number. This practice is not unique and is currently being followed for cellular services and in many other countries including USA. This will also make 10 digit numbering scheme independent of type of service provided by service provider.

This unique 10 digit will work as a unique identity of a subscriber. After successful implementation of number portability for cellular service, this may also bring a case for

⁴ Calculation is based on vacant SDCA codes.

⁵ Approximately using back of envelope calculations

⁶ Source – TRAI press release dated 7th January 2010

inter-circle/service and intra-circle/service based number portability; thereby bringing in lots of benefits to users.

Pricing of Numbers

Unique telecommunication numbers using 10 digit numbering scheme is a finite resource. This also helps in recognizing type and brand of service provider and hence is of much interest to service provider. For example a telecommunication number starting with '2' can easily be associated with BSNL/MTNL fixed line services. However, we have seen from NNP 2003 that due to different projections regulator allotted entire series to various fixed line service provider. This coupled with the fact that fixed line numbers are re-used in different circle, has made them sit on huge numbering resource which is currently being wasted.

As per our broad calculations in above section, 1.69 billion numbers are allocated against fixed-line service which currently only has 37.31 million subscribers. Considering a conservative estimate of wired subscriber base reaching 100 million subscribers in next 5 years (150% cumulative growth rate), numbering resource allocated to fixed line operators has 1: 16.9 ratio. This clearly calls for re-allocation of levels/sub-levels of numbers to fixed line providers.

Also, need of the hour is to have an efficient utilization of numbering resources. One way of ensuring the same is to have an "annual charge per number" payable by service provider. This will also ensure that service provider does not hoard numbering levels but keep it free, which is available for all on need and expansion basis. This concept is already being practiced by many countries.



Questions for Consultations

- Q1. Do you believe that 10 digit numbering scheme should be continued? If yes, then what method(s) do you suggest to make adequate resources available for next five years i.e. up to December 2014 and beyond?**

Present 10 digit numbering scheme being used by India has adequate capacity. Barring level '0' and '1', which are not used for subscriber numbers, unique numbering capacity as per NNP 2003 is as per table below:

Level	Numbering Capacity
Level – 2	80,000,000
Level – 3	370,000,000
Level – 4	150,000,000
Level – 5	430,000,000
Level – 6	490,000,000
Level – 7	170,000,000
Level – 8	160,000,000
Level – 9	1,000,000,000
Total	2,850,000,000

This clearly means that using 10 digits numbering scheme 2.85 billion numbers are available. However, out of this pool of 2.85 billion numbers, 1.69 billion unique numbers have been reserved for fixed-line services. Clearly, this is not in sync with the market demands and technology dictates.

We are of the view that instead of migrating to 11 digit numbering scheme which will result in huge inconvenience to users both in terms of dialling habit as well as monetary burden on tax-payers resources; it will be more prudent to have a re-look at existing number allocation criteria.

We believe that it would be more practical and less cumbersome to let sub-levels series be allocated to fixed line providers instead of prime level series. For example instead of allocating level '2' to '7' to individual operators, let them be allocated sub-levels like '2xx', '3xx', etc as per their number of subscriber of the operators. This will free up various main levels such as level '5' and '6' etc, (level numbers are used only as an illustration) which can then be used for mobile services or another new services.

This re-allocation will not put any unwanted burden on network architecture currently being deployed and/or dialling habits of subscribers.

- Q2. Comment on the advantages and disadvantages of accessing intra service mobile from the fixed line by dialling '0' for generating additional numbers resource for mobile services?**

The practice of accessing intra service mobile from fixed line by dialling '0' is not a new one. Presently, a mobile subscriber can dial another mobile number using any of the following ways:

- Using '0' dialling
- Using '00' dialling
- Using '+91' dialling

However, dialling subscriber is charged according to the destination number. Even if dialling subscriber dials a local mobile number using '0' or '+91' he is charged local rates only (since destination subscriber is local). Same is case with '00' dialling as well.

This clearly indicates that billing software is intelligent enough to bill subscriber on the basis of destination number. This can only be done if billing software can filter home location/circle of destination number. Thereby pointing out that

- (a) billing software bills subscribers by filtering into sub-levels of dialled number; and
- (b) onus of determining call as local, national or international lies with dialled number.

Extending the above reasoning to fixed-line services, we are of the view that regulator must think of permitting intra service from fixed lines using '0' dialling. Billing software of fixed line can be similarly extended to consider a dialled number as local, national or international based on dialled number's location. A little effort/cost required in tweaking/updating billing software is nothing as compared to the numbers generated using one additional digit. Permitting '0' dialling will increase our current 10 digit numbering scheme capacity by 1 billion additional numbers. This benefit out-runs all other cost-benefits related to changes in billing software modification.

Very recently too, sub levels of 9 were freed and replaced by 0124, 0129 etc in order to accommodate more mobile numbers. **Therefore, we strongly suggest that "0" dialling from fixed lines to mobile numbers has no serious impact on billing and charging.**

Q3. Do you believe that the only solution to the number resource problem is to migrate to an 11 digit numbering scheme for mobile and retaining 10 digits numbering scheme for fixed line? What kind of problems do you foresee in having a mixed numbering scheme?

As discussed earlier, we are of the view that migrating to 11 digit numbering scheme is an unnecessary burden. Our calculations have also supported that there is sufficient unique numbering capacity available using 10 digit numbering scheme. **This is easily achievable by freeing the hoarded levels for the sake of a few customers and as wasteful identity measure.** We would like to reiterate that regulator must re-look at present number allotment criteria and instead of allotting entire levels to any type of service provider, only allot sub-levels for services such as fixed-line services. **This will in turn free-up levels for mobile services, thus eliminating requirement of 11 digit numbering scheme for the foreseeable future.**

Q4. If your preference is 11 digit numbering scheme for mobile services then what comment on the advantages and disadvantages of such a scheme.

We are of the view that there is no need to migrate to 11 digit numbering scheme and that present 10 digit has sufficient unutilised unique numbering capacity to take care of telecom growth story for years to come.



Q5. Comment on advantages and disadvantages of migrating to integrated service area based scheme for fixed and mobile. If this scheme is adopted what should be the time frame for migration?

We are of the view that moving forward India must adopt a uniform numbering scheme. This means that instead of a subscriber having number 011-xxxxxxx being recognized as Delhi subscriber with xxxxxxxx number, he must be uniquely recognized as 011xxxxxxx. The SDCA code must form an integral part of subscriber identity. This unique number could be used to uniquely identify the subscriber.

This may also act as a predecessor to implement full-fledged number portability across services. The concept would force market players to offer more value to customers thereby raising competition and service levels in the country. **Number portability would become simpler than the present service specific numbering plans.**

Q6. Do the present criteria for allocation of the numbers ensure efficient utilisation of numbering resources or would you suggest some other criteria?

The present numbering criteria was based on certain assumptions that looked viable a decade back. Presently, the factors contributing to telecom revolution have changed and this requires a re-look at numbering scheme as well. We have to move with times and not remain frozen in time warp.

One such assumption was that fixed-line services will grow at a higher rate than mobile services. However, the growth story has reversed, calling for more numbering resources for mobile services.

We are of the view that instead of migrating to 11 digit numbering scheme; it would be more prudent that the regulator has a re-look at numbering criteria in the present context. A broad look at NNP 2003 has made us to observe that far more levels and sub-levels have been reserved for fixed line services than that for mobile services. It would be more practical and prudent to free-up levels allotted for fixed line services and allocate them for mobile services. This will save all stakeholders from pain induced by migrating to 11 digit numbering scheme.

We are of a definitive view that number squatting amounts to hoarding of a precious national resource. It is wasteful to allocate say numbers 3, 4, 5, 6 and 7 for a miniscule of fixed line subscribers for the sake of an artificial and egoistical identity causing losses to the "Aam Aadmi"

Q7. With reference to Para 3.3.1, comment on the need to file a numbering return to the numbering plan administrator for monitoring and ensuring efficient utilisation of the numbers?

Numbering resource is a limited national resource. Any way of scaling the same, has its own set of limitations and burden – cost of scaling being a major factor. Keeping this in mind, we are of the view that tax payers and government must

be knowledgeable of how this limited national resource is being used by the operators. We believe that filing of numbering return would bring accountability to the allotment and use of same.

Q8. Give your views on pricing of numbering resources? If pricing is implemented, what should be the method adopted for such pricing.

Pricing of numbering resources is a way of ensuring that this limited national resource is being utilised properly by operators and also that it is not being hoarded/squatted by any service provider. The squatters will only act when forced to pay a price. **Has anyone given up a freebee?**

We are of the view that an annual charge per block of numbers held will be a suitable option. Also, the same should be applicable for both present and future allocation of blocks.

Q9. If pricing is implemented should it be for all resources held by the service providers or only for future allocations?

As discussed above, we are of the view that the regulator must implement an annual pricing process for all service providers based on numbers being allocated to him. The same should be applicable on both present and future allocations.

