TELECOM REGULATORY AUTHORITY OF INDIA
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Recommendations for permitting usage of Strings containing #, $, £ etc. for accessing High Speed Data Services in Wireless Networks

1. Background

1.1 In order to ensure compliance of terms and conditions of ISP licence and to protect the interest of consumers, the Authority had issued a directive on 29th December 2003 to all CMSPs and BSOs to ensure the accessibility to Internet Services as per the provisions of National Numbering Plan-2003.

1.2 Most of the BSOs/UASPs, who are providing services through wireless based network, expressed their inability to provide Internet access by dialing 172xxx as per the provision of National Numbering Plan-2003 pertaining to dialup Internet access due to technical non-feasibility. Their customers are provided access to the Internet service by keying-in #777 as a standard feature of CDMA handsets and 99 and *99 £ as a standard feature of GSM handsets to invoke the service option for Internet access.

1.3 The issue was initially examined and it was found that both CDMA and GSM/GPRS based networks use strings in their handsets which begin with # or $ or * for accessing Internet through packet switched path. The "always on" connection provided by the CDMA and GSM / GPRS based operators provide speeds in the range of 5-12 times higher than normal dialup connection. GSM/GPRS based operators also provide the option of circuit switched path for accessing internet node through the use of 172XXX code additionally whereas CDMA based network operators have expressed their inability to incorporate this for reasons of technical difficulties and requirements for modification in each handset including those already in the market.

1.4 Thereafter TRAI as a part of the consultation process obtained the comments of various stakeholders on this issue. Comments of stakeholders received are tabulated and annexed at 'A'.

2. Summary of Stakeholders Comments

2.1 All the stakeholders, who responded have stated that presently there is no alternative to usage of strings containing #, $, £ etc. for High Speed Internet access on Wireless Networks, as these are hard coded in the handsets and used just to indicate the option that data network has to be accessed. As per them it will not be practically possible to alter and reprogram all the handsets of the subscribers. Also, as part of the international roaming requirements, all the operators follow the same code practice; else, the users while traveling abroad would not be able to access the data services through their handsets.

2.2 Few of the stakeholders are of the view that it is not possible to provide the choice of ISP to the customers. However, some have stated that it is possible to provide such option provided ISPs agree to establish interconnection with access providers, along the lines of any two networks that establish interconnection.

2.3 Some of the stakeholders have stated that NNP 2003 defines decimal based numbering pertaining to N(S)N for the basic as well as cellular mobile services. Internet access numbers as per the NNP 2003 are defined under Level `1' services and not as N(S)N. As per them strings with #, $, £ remain within service provider's network and these are not numbers that a handset dials to the switch. At the time of formation of NNP-2003, the country had maximum subscribers based on wireline system. Since the use of #777 and *98/99 was not envisaged in the wireline system, NNP-2003 would not have taken note of such requirements.

2.4 All the stakeholders have stated that NNP 2003 should be reviewed and amended to accommodate new capabilities of the networks

and dialing procedures containing strings #, $, £ etc. for special services within a service provider's network. By defining these special characters alongwith numbers like #1/ #2 etc, a lot of services on the data based services can be provided to the subscribers.

3. Analysis of Stakeholders' comments

3.1 As per the provisions of National Numbering Plan 2003, dialup access to Internet services should be 6 digit numbers in the format 172XYZ, where XYZ is service provider code.

3.2 Also NNP 2003 has following provisions regarding usage of strings starting with #, $, £ etc as per clause 1.6 of Introduction Part: -

"Only the decimal character set 0-9 has been used for all number allocations. Letters and other non-decimal characters shall not form part of the National (Significant) Number [N(S)N]."

Therefore the National Numbering Plan 2003 is silent about the usage of such strings to indicate the option for higher speed Internet access within the service providers' network.

3.3 At the time of formation of NNP-2003, access to Internet services was mainly PSTN dialup and the strings containing #, $, £ for High Speed Internet access on Wireless Networks were not known to be used in general and hence these strings might not have been considered for inclusion in NNP-2003, for this purpose.

3.4 Based on the comments of stakeholders, it is observed that presently there is no alternative to strings containing #, $, £ etc. for High Speed Internet access on Wireless Networks, as these are hard coded in the handsets and these strings remain within service provider's network and these are not numbers that a handset dials to the switch. Use of strings containing #, $, £ etc. for High Speed data services on Wireless Networks is an industry accepted global practice.

3.5 Regarding the choice of ISP for the customer there is a need for mutual interconnection between access providers and the ISPs, which is to be mutually agreed up among themselves, as it is forborne by TRAI.

3.6 It is observed that if the use of such strings in both CDMA and GSM/GPRS networks is not explicitly allowed, the customers of these networks will be deprived of access to high speed "always on" Internet services and hence such step will not be in the interest of consumers.

4. Recommendation

In view of above it is recommended that relevant provisions of NNP-2003, viz. clause 1.6 of Introduction Part and Numbers for Special Services described in Annex IV, be elaborated and clarified so that the usage of strings containing #, $, £ etc. for indicating option of High Speed Internet access through wireless networks is explicitly allowed in the large interest of consumers.

Summary of stakeholders' comments on Usages of Strings containing #, $, £ etc. for High Speed Internet access on Wireless Networks.

Q1. Whether usage of strings with # or $ or * for high speed Internet access in "Always-On" configuration in both CDMA and GSM/GPRS networks is a must or are there alternatives to their usage?

S.No.	Name of the Company/ Organisation	Response
1.	**Lucent**	The usage of strings with # or $ or * for high speed Internet access is an asset for GSM and CDMA networks and we strongly recommend their usage to continue. As such the usage of these characters only help us to increase the possibility of having more number combinations.
2.	**Spice Communications Pvt Ltd**	Usage of strings with # or $ or * for high speed Internet access in GSM/GPRS networks is must & for the time being their seems to be no alternative to their usage.
3.	**HFCL Infotel Ltd**	Presently # 777 is hard coded in the CDMA instruments so only # 777 is used to access internet services in CDMA. There is no other alternative number in CDMA to provide the Internet access service.
4.	**Reliance Infocomm.**	The procedure for Internet access over CDMA networks is a well-defined and accepted standard across the world. It is universally agreed and implemented by technology and equipment vendors and network service providers across the world. To insist on changing this would entail justification not just in terms of cost and volumes but also the necessity of tinkering with a globally accepted standard. It is possible that the size and economies of scale do not justify such a change. Further, it should be noted that the # 777 string is used primarily to indicate to the handset/modem that the data network has to be accessed thus enabling high speed access to the Internet. Some key points about the `#777' function are: • `#777' is a packet data service, not a dial-up service in the PSTN or circuit switched sense. • '#777' does not get sent to the switch like a dialed NSN. • This number is a standard feature defined into all CDMA handsets and networks for data calls. • `#777' is a code/indicator to the modem for accessing the data network. • User gets connected to the data network and gets an IP address to browse on the Internet.
5.	**MTNL**	High speed internet service in CDMA is done by dialing #777 as all CDMA handsets are programmed with #777 to invoke the SO33, which is the service option for establishing a high speed data call. It is theoretically possible to change this string into some other string but it will require re-programming in all the hand-sets including those in use by the customers which will take considerate effort and resources. Strings like #,$,* (*99#) is used in our network for GPRS through PC. These strings act only as AT commands for communication between mobile handset and local PC.

Q2.   Is it possible to provide customers of CDMA/GSM networks the option to choose ISP of their choice in the above arrangement?

S.No.	Name of the Company/ Organisation	Response
1.	**Lucent**	Yes, it is technically possible to provide the customers of CDMA/GSM networks the option to choose ISPs of their choice. Further discussions are required with TRAI in order to define and finalize these options and network topology to support choice of multiple ISPs for CDMA and GSM subscribers.
2.	**Spice Communications Pvt. Ltd**	For the time being there is no possibility of providing choice of ISP to the customers of GSM networks, however possibilities in future can be explored.
3.	**HFCL Infotel Ltd**	No, it is not possible to provide customers of CDMA the option to choose ISP of their choice.
4.	**Reliance Infocomm.**	It is possible to provide such option provided ISPs seek technically comply to the requirements of the APs network and agree to establish interconnection with access providers, along the lines of any two networks that establish interconnection.
5.	**MTNL**	It is not possible to provide high-speed internet access to customers to enable them to choose ISP of their choice since it is a Value Added Service supported by operator's switch. However Internet access using circuit switch path by dialing 172xxx to any ISP is possible. This call is routed through IWF, which allocates modem to the user for making call to ISP node. Data transfer speeds are limited in these cases.

Q3. **Does the usage of non-decimal characters in the handset to invoke the high speed data access option is in line with the spirit of clause 1.6 of NNP-2003.**

S.No.	Name of the Company/ Organisation	Response
1.	**Lucent**	We suggest that the NNP-2003 should be amended to include the use of # or $ or * for invoking high-speed data access by GSM/CDMA subscribers. However the spirit of NNP-2003 of having uniform and non-proprietary numbering scheme still remains valid.
2.	**Spice Communications Pvt. Ltd**	We understand that for accessing of high-speed data services, use of non-decimal characters in the handset does not fall under National (Significant) Numbers. (N(S)N) in NNP-2003.
3.	**HFCL Infotel Ltd**	Presently, most of the CDMA instruments/ handsets only support non-decimal characters so "CDMA instrument manufacturers" should check the possibility of using only decimal character 0-9 for accessing the Internet services. Till the time, decimal character 0-9 for accessing the Internet services are not available in CDMA instruments, usage of non-decimal characters in the CDMA instruments/ Handsets should be allowed.
4.	**Reliance Infocomm.**	The NNP 2003 does not specifically address the requirements of mobile networks and evolving technologies but is based more on the PSTN network architecture and requirements of the same. It does not address the needs of accessing a packet data network. With today's rapidly evolving technologies and licensing regime that is completely technology neutral, restrictions should not be imposed on account of exclusion or inability by existing policy to foresee new capabilities in the network. It is also to be noted that the NNP 2003 defines decimal based numbering for the basic as well as cellular mobile services. Internet access numbers as per the NNP 2003 are defined under Level `1' services, not as N(S)N, but as services that operators can offer to their subscribers within their network. *"Certain level `1' codes are earmarked for all service providers to offer various subscribers related services, as per their choice, within their network".* It would be relevant to mention that '#777' is an origination string and not a number that a handset dials to the switch.
5.	**MTNL**	The usage of non-decimal characters in the hand-sets to invoke high speed data access is in line with the spirit of clause 1.8 of NNP-2003 as this arrangement of internet access is a value added service provided by the operator to its subscribers only and not meant for subscribers of different operator.

Q4.   Is it necessary of to recommend any amendment in NNP-2003 in this context?

S.No.	Name of the Company/ Organisation	Response
1.	**Lucent**	We suggest that the NNP-2003 should be amended to include the use of non-decimal characters for GSM/CDMA subscribers for accessing miscellaneous services.
2.	**Spice Communications Pvt. Ltd**	Amendment in NNP-2003 should be done by clearly bringing out the use of special characters in accessing data services.
3.	**HFCL Infotel Ltd**	Yes, till the time, decimal character 0-9 for accessing the Internet services are not available in CDMA instruments, usage of non-decimal characters in the CDMA instruments/ Handsets should be allowed.
4.	**Reliance Infocomm.**	Periodic review and streamlining of existing policy and regulatory framework is a desirable exercise. It is especially needed in the telecom environment of today where evolving technologies require Regulation to keep pace. In this regard therefore it would be useful to carefully review the NNP and modify it to accommodate new capabilities and paradigms in the network and dialing procedures. This would include acceptance of various additional dialing strings and patterns for accessing new types of evolving services.
5.	**MTNL**	NNP-2003 may be modified accordingly as explained above and feedback from other stakeholders.