

CLARIFICATION NOTE
ON THE USE OF GEOGRAPHICAL NUMBERING ON PRIVATE MULTI-SITE NETWORKS

I FRAMEWORK

ICP-ANACOM, in its monitoring of technological development and having been presented with a request for clarification related to the use of geographic numbering on private multi-site networks, especially with respect to the conditions of use associated with such numbers, hereby discloses the position that follows.

The migration of traditional telephone networks to private telephone networks supported by IP technology and networks is a strategic goal for many companies, as a means of streamlining and simplifying existing communications networks. This also has also the key objectives of increasing the efficiency of communications, allowing the development of features not possible with traditional networks and, finally, reducing communications related costs associated with investment and operation.

The profitability of private networks is often achieved through the reduction of the number of interfaces with the public network, allowing optimal use of capacity between the private network and public network. Therefore, most large private networks which are geographically dispersed usually choose to have one or two connections to the public network (the second, for security reasons), with these connections using IP protocol for greatest efficiency (if the operator of public network supports this interface / protocol in access) rather than traditional interfaces - ISDN primary access.

This entails a multi-site network, distributed throughout the national territory with access interfaces to the public networks at only one or two geographical points, whereby the addressing of end users is performed from the outset, or through the use of the geographic numbering of the interfaces at the various sites (belonging to the geographical areas where the private network has access to public network) or through the use of the nomadic use numbering, without any geographic significance.

This classification generally corresponds to corporate or institutional customers of electronic communications services where the broadband Internet access service is centralized, the customer's owns systems and where the intention is also to centralize, often with a single connection point to the public network, the telephone services currently offered at each geographical point where the company has a branch office or subsidiary, while maintaining the geographic numbering.

II POSITION

The use of numbers is subject to the conditions of the operators to whom the rights of use are granted by ANACOM. Law No. 5 / 2004 of February 10,¹ defines the terms - article 3 - and establishes the framework- article 34 - governing the allocation of rights to use numbers and their conditions of use.

According to the definitions of number², geographic number³ and NTP (network termination point);⁴, the use of geographic numbers has been subject to conditions, notably with regard to its use in a fixed location - the address of the subscriber - which must be located in the geographical area indicated by the digits having geographic significance within these numbers. Therefore these operators are required to have the technical capability to control subscriber access to its network.

It is noted that the conditions for the use of geographic numbers do not depend on whether or not they refer to an IP network, but instead on the fact that the operator is able to ensure the use of the telephone service in a single fixed location, which site is required to be in the geographical area indicated by the digits having geographic significance within the number or numbers assigned to that fixed location. See in this regard the Clarification Note published on the website of ICP-ANACOM⁵

¹ <http://www.anacom.pt/render.jsp?contentId=159011>

² «Number» means a series of digits indicating a electronic communication network termination point, comprising the information necessary in order to route calls to that termination point”

³ «Geographic number» means a number from the national numbering plan containing certain digits of geographic significance, used for routing calls to the physical location of the network termination point (NTP);”

⁴ «NTP» means the physical point at which a subscriber is provided with access to a public communications network; in the case of networks involving switching or routing, the network termination point is identified by means of a specific network address, which may be linked to a subscriber number or name”

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http://www.anacom.pt/streaming/esclarecimento8jun2008.pdf?contentId=603476&field=ATTACHED_FILE

The importance of this condition reflects the need to match the CLI (Calling Line Identification) with the location of the call's origination. Indeed, the use of geographic numbering in the circumstances of a scenario of access of a private multi-site network to the public network at a single point, may raise serious problems for services which use CLI to ascertain the location of the call's origination.⁶

This is the case of the Emergency Services, when normally, in calls made to "112", the only information currently available to emergency call centres (PSAP⁷) is the address of the geographical points of access of the private network to the public network. As such the PSAPs have no information with regard to the address from where the call originates, knowing only that it is a PBX⁸ (in the case of IP would be a IPBX) with a set of extensions (DDI ranges), whereas in the case of a multi-site network with a single point of access to the public network, there is a high probability that any information provided about the address is incorrect.

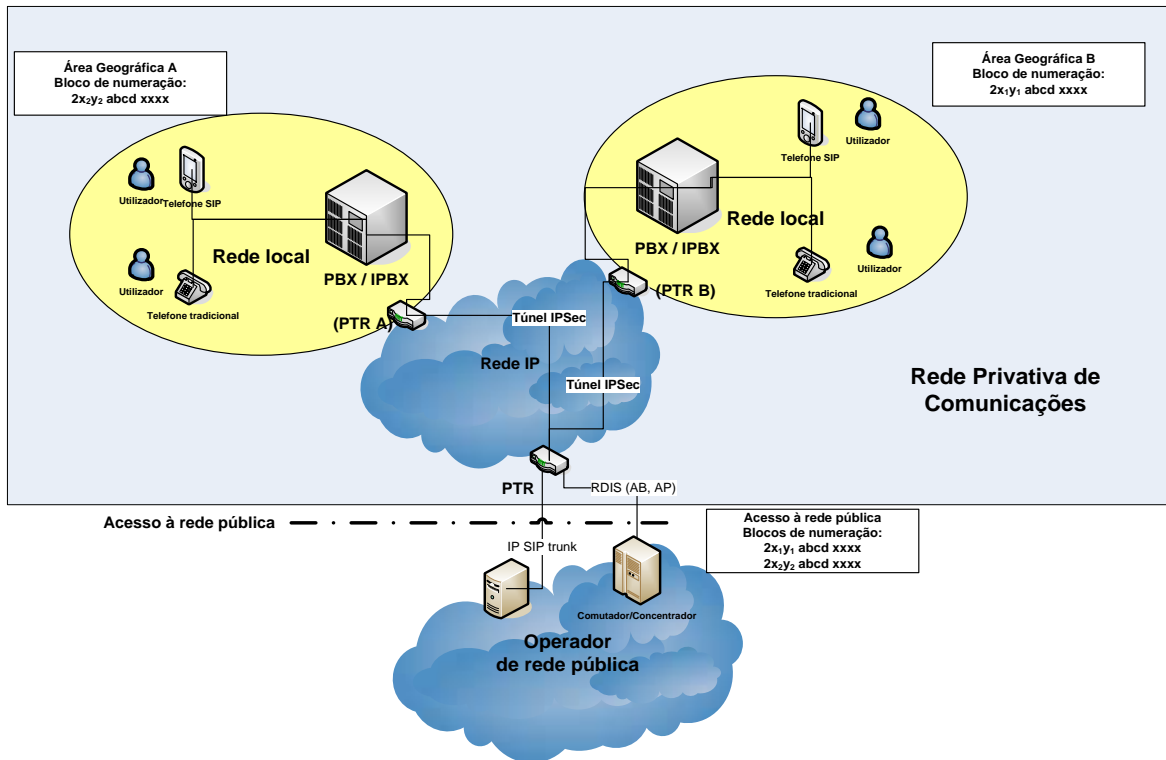
Meanwhile, the gradual replacement of traditional private networks with IP-supported networks and the reduction of the number of interfaces with the public network, combined with the conditions associated with the use of geographic numbers, which require correlation between the number and location of the private network's point of access to the public network, can cause difficulties in locating the user originating a call to "112".

However, there are technical solutions used in IP networks (e.g. IPSec tunnelling) that may enable the use of geographic numbers by the public network operator to be controlled, when combined with active equipment on the private network, which is controlled by the operator. As an example a simplified diagram is presented.

⁶ See Clarification Note on the use of CLI (*Calling Line Identification*) on the origination of calls (http://www.anacom.pt/streaming/esclarecimento_cli.pdf?contentId=729978&field=ATTACHED_FILE)

⁷ Public Safety Answering Point

⁸ Private branch exchange



In this example, the private network entails the elimination of two NTPs (in geographic areas A and B), and in their place, the public network operator provides for the installation of two pieces of virtual data circuit terminal equipment (e.g. routers) at the PBX / IPBX sites (one in each geographical area - (PTR A) and (B PTR)).

As part of a tunnelling solution, guaranteeing control of telephone communication services at a fixed location at each of the remote points, it is considered that there is an emulation of the now eliminated PTRs, or, which is the same in practical terms, there will be remote NTPs ((PTR A) and (B PTR)) of the NTP where access is made from the private network to the public network, which should, in this scenario, be identified by their own geographic numbers associated with the addresses of these remote points.

III CONCLUSION

In scenarios of private IP multi-site networks, at the most with a single point of access to the public network, and taking into account technological developments and the many requests received from the market and in accordance with the principles underlying the allocation of numbers included in the national numbering plan, the position is taken that, in addition to the geographic numbers corresponding to the PTR of this access point, other geographic numbers may be used, provided that for each number used, the network operator offering the public access enables conditions governing the use of geographic numbers, which implies (i) the ability to control the location where the calls made using these numbers are originated (and delivered) through an appropriate technique (e.g. IPSec tunnelling); and (ii) validation of the correct correspondence between this location and the address associated with the geographic number or numbers at each physical points of the NTP meanwhile eliminated.

Alternatively nomadic use numbering may be adopted. This numbering system also allows greater flexibility with respect to the mobility of people involved. This is due to the fact that, since the number has no geographic significance, it may be used anywhere within the national territory, enabling therefore a number to be assigned to a company employee, which number may be kept even where the national geographical area is changed. However, where such numbering is used, PSAPs will not be able to ascertain, at present, the address of the call's origin, which fact is alerted to by the presentation of a number from a distinct range, whereas it is expected that when the technical procedure are specified with respect to the sending of location information by providers of Internet access services, it will also be also possible in this case for the location to be identified with respect to the origin of emergency calls.