

**Materials for First Draft of the Secretary General's Report
/ Group Discussions on the 4th WTPF, 2009**

/Topic proposed: “ The implications of the continued development of convergence, next-generation networks, and Internet for several domains, particularly for capacity building, especially in developing countries”/



**Facilitating Interoperability for Legacy and
Next Generation Networks**

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1. Interconnectivity Challenges

Cubio has significant experience of operations in different business fields, which include rendering landline, mobile (GSM MVNO), and data networks – related services. The company has also constructed and operated SIP-based networks both on local and international levels.

Our company represents a business positioned in the middle of the seismic shift in which ICT industry finds itself today. This dramatic change towards IP-enabled NGNs is a logical evolution from separate PSTN- and IP network infrastructures to converged and interoperable networks' landscape.

The transformation process towards NGNs is accompanied by numerous regulatory challenges, among which, from the market players' point of view, the aspect of Universal Service and Access creates an urgent need for developing the regulatory

framework for the new realities.

Universal accessibility, as a key NGN facilitation's policy goal, needs an approach to numbering, naming and addressing schemes shared by vast majority of market players. At the same time, current incompatibility of numbering and/or addressing in legacy, transitional, and NGN networks puts a huge barrier on the way of achieving further progress in global spreading of widely affordable and accessible multi-layered services.

Emerging NGN businesses, together with transitional-era carriers and service (content) providers face major connectivity challenges as they try to roll out new services. What can be a catalyst for allowing IP services addressed by telephone numbers to be delivered globally?

2. Universal Addressing Format

It may sound obvious, that the lack of the unified approach and a regulating standard of addressing for NGNs, and SIP-based networks in particular, creates background for the variety of practices individually adopted by the carriers. Accordingly, the operators develop and implement their own addressing or numbering systems used for service delivery and inter-carrier operations. In particular, there are instances of using numbers, similar to unoccupied E.164 country codes or just numbers similar to E.164 numbering, which do not clash with the existing E.164 geographical numbers only because such particular networks do not have interconnect with PSTN networks.

Introduction of an addressing format for NGNs, which creates a unified addressing environment compatible with the traditional numbering used by legacy networks, would remove most of contradictory practices being currently implemented by operators, and resolve the issue of open and transparent interaction of the networks of different generations.

It has to be mentioned that one of the solutions found was ENUM, developed as set of IETF specifications. One of the central points of the its concept is so called ENUM domain name, which in the process of establishing a voice or multi-media session

between a few parties, resolves to the SIP uniform resource identifier (URI). The SIP proxy server then uses the URI to establish a session between the originating and the terminating SIP users. While some lump SIP and ENUM together, SIP depends on ENUM in terms of technology in no way. ENUM is just one of practical solutions able to translate telephone numbers into IP service addresses. Therefore, introduction of an alternative to this concept would be useful in order to create a fruitful discussion regarding different visions on how to link networks based on different ideologies or contradicting protocols.

One of the approaches, which seem to avoid extra intermediaries such as ENUM domain name, assumes that SIP address itself could be a «uni-format» for assisting with interconnectivity between networks of different generations, and at the NGN-NGN level of interconnection.

Such an addressing format, containing both indicators of PSTN-type and NGN-type numbers and/or names is shown below:

[COUNTRY CODE][TELEPHONE NUMBER]@[NETWORK NAME].NET

In case of a client of Cubio Communications, a relevant example could be the following SIP name for an end-user of the network:

3589424700001@cubio.fi

where «3589424700001» represents the country code of Finland together with the client's E.164 telephone number, and «cubio.fi» stands for the operator's domain name.

Through such an addressing format, carriers or service providers are able to communicate to each other the types of services they provide, telephone numbers associated with these services, and particular addresses (URIs) of their end-users. Presence of a standard E.164 number in the prefix of the proposed SIP addressing format would make a good contribution into creating full compatibility of the traditional and new NGN networks. Therefore, IP-enabled services, such as MMS or

video conferencing, could be delivered to much wider populations of traditional telecommunication services' users.

However, even with the universal addressing format to be introduced this or that way, there are plenty of other «dividers» remaining powerful in the future world of universal access.

3. Open Proxy Policy

Thousands of microscopic, small and medium size IP-based networks newly born across the globe collectively take responsibility for bigger and bigger portion of the world ICT industry services delivery. In an ideal world, any client of any network (or even any person with a SIP end-user terminal, who is not a client of a network) should be able to interconnect to any other network's subscriber. That is what both universal access and interoperability are mostly about. Is there a path to this dreamland, or it is a complete utopia so far?

Provided that certain operators' community shares practical value of SIP uniform addressing scheme as described above, and, in addition to that, cooperatively builds a database of their services, such a path could be found at least within this particular group of companies.

Earlier, the the SIP address of
[COUNTRY CODE][TELEPHONE NUMBER]@[NETWORK NAME].NET - type
was given as a model of universal addressing format.

With an open proxy, being represented by the right part of it, [NETWORK NAME].NET, this address makes good example of how other network's users could interconnect to this particular network. The Open Proxy Policy proposed here makes the doors open for interconnectivity between operators regardless the type of protocol they use, or size of their customer base.

The Open Proxi Policy is able to create a community of networks, which will be open for the SIP-based multi media sessions to be established between the subscribers of

not only directly interconnected networks, but also include end-users with SIP terminals not associated with any of existing networks. In developing countries, new layers of population would receive access to the IP-enabled services supported by the Open Proxy Policy.

4. Conclusion

The uniform addressing for SIP-based networks, as well as Open Proxy Policy as proposed by Cubio Communications represent a market player's point of view derived from our day-by-day practice and observations. End-users wish to be able to reach anyone and any service anywhere. In other words, to use fruits of transparent and legitimate universal accessibility.

As a general rule, standards and formats should be market driven, although regulatory oversight may be required to ensure transparency in format setting procedures. We also strongly believe that with the help of ITU, national regulators may have to proactively facilitate implementation of practices ensuring interoperability of services at the edge of interconnected new generation and traditional networks.