

SOURCE : ACIF

TITLE : Transition to NGN

AGENDA ITEM : GTSC9 5.7

DOCUMENT FOR :

Decision	
Discussion	X
Information	

INTRODUCTION

The attached paper provides a report on work (or lack of it) within the GSC during the last year on “recognizing k” in Resolution GSC-8/9 “Next Generation Networks” and the associated “resolves” dot point.

GSC-8

Recognizing

.....

k) that many services are likely to be supported by both current networks and by NGNs; interworking between services will need to address issues such as numbering, naming and addressing, which will require work in areas such as

- current E.164 numbering arrangements
- current requirements for features such as number portability, and the techniques used to implement them
- the need to route calls to provide maximum functionality (for example, for NGN to NGN calls to remain within the NGN)
- available tools such as the IETF ENUM protocol;

resolves

a) to promote collaboration among SDOs for NGN issues that have cross impacts, including (but not limited to) the following:

-
-
- the interworking of services supported by both current networks and NGNs, and the transition of these services from legacy networks to NGNs

The Transition to NGN

Services & Networks

GSC9 May 2004

Peter Darling

International Manager

*Australian Communications Industry
Forum*

RESOLUTION GSC-8/9: Next Generation Networks



- At GSC8, we continued the GSC7 Resolution on NGN and added some additional points, including

recognizing k)

– that many services are likely to be supported by both current networks and by NGNs; interworking between services will need to address issues such as numbering, naming and addressing, which will require work in areas such as

RESOLUTION GSC-8/9: Next Generation Networks



recognizing k) continued

- *current E.164 numbering arrangements*
- *current requirements for features such as number portability, and the techniques used to implement them*
- *the need to route calls to provide maximum functionality (for example, for NGN to NGN calls to remain within the NGN)*
- *available tools such as the IETF ENUM protocol;*

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RESOLUTION GSC-8/9: Next Generation Networks



- **We also added some additional points, including a new dot point in our “resolves” for areas of co-operation:**
- *the interworking of services supported by both current networks and NGNs, and the transition of these services from legacy networks to NGNs*

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Report to the GTSC

- **At the last meeting of the GSC Heads of Delegation, ACIF volunteered to report on this topic**
- **In brief**
 - **There has been no work done within the GSC on these topics, but**
 - **Much work has been done by PSOs and policy makers / regulators.**

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What is “NGN”

- **There has been general agreement that “NGN” is not a single network, but a concept.**
- **Nevertheless, much of the standards work about NGN sees the future network as “all singing and dancing”, a successor to the concept of “Broadband ISDN” with a focus on multimedia**
- **The next few slides outline an ITU-T view of NGN**

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The ITU View – Defining NGN



- **From NGN 2004**

“ A Next Generation Network (NGN) is a packet-based network able to provide services including Telecommunication Services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It offers unrestricted access by users to different service providers. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.” ⁹

NGN is characterised by...



- **Packet-based transfer**
- **Separation of control functions among bearer capabilities, call/session, and application/ service**
- **Decoupling of service provision from network, and provision of open interfaces**
- **Support for a wide range of services, applications and mechanisms based on service building blocks (including real time/ streaming/ non-real time services and multi-media)**
- **Broadband capabilities with end-to-end QoS and transparency**
- **Interworking with legacy networks via open interfaces**

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NGN is characterised by...



- **Generalized mobility**
- **Unrestricted access by users to different service providers**
- **A variety of identification schemes which can be resolved to IP addresses for the purposes of routing in IP networks**
- **Unified service characteristics for the same service as perceived by the user**
- **Converged services between Fixed/Mobile**
- **Independence of service-related functions from underlying transport technologies**
- **Compliant with all Regulatory requirements, for example concerning emergency communications and security/privacy, etc.**

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What comes next?



- **This concept of “NGN” is a desirable goal, but it is not the only area where services beyond current, legacy tele-communications services are being developed.**
- **Part of the challenge will be to manage the transition from current to next generation services.**

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The Killer Application?

- In our work in ACIF, we have seen the “killer application” for many future networks will be voice, in particular telephony.
- Internet telephony, often described as “VoIP”, is now getting considerable attention
- Many future networks (including “the NGN”) will have to support telephony, and interwork with the PSTN.

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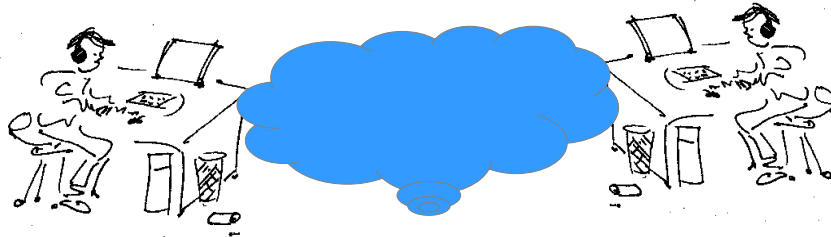


Voice and the Internet

- Two-way voice communication only needs a relatively low data rate, but must have low latency (not tolerant of delay).
- The current Internet can be used for telephony, but reliable service requires a consistently high Quality of Service (QoS)
- QoS over the current Internet is good enough to support telephony *most of the time, but not all of the time.*

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Voice over Internet



- **There has been considerable hobbyist / expert use of point-to-point voice, using suitably equipped computers.**
- **Service such as Microsoft Messenger and Skype are combining voice and instant messaging.**

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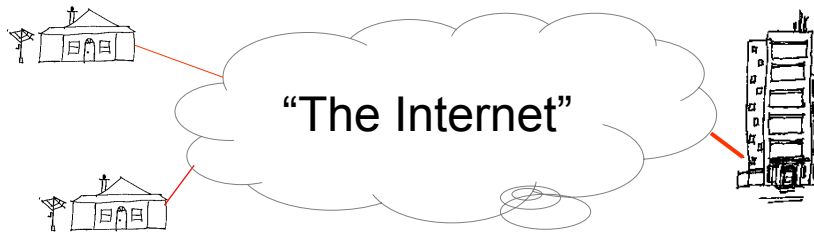
Voice over the Internet



- **Availability of broadband access for residential users is growing rapidly**
 - Cable, xDSL and optical fibre
- **The quality of service on the Internet core has improved**
 - (relatively) slower growth;
 - Availability of much cheaper bandwidth
- **VoIP is becoming a more attractive commercial proposition**

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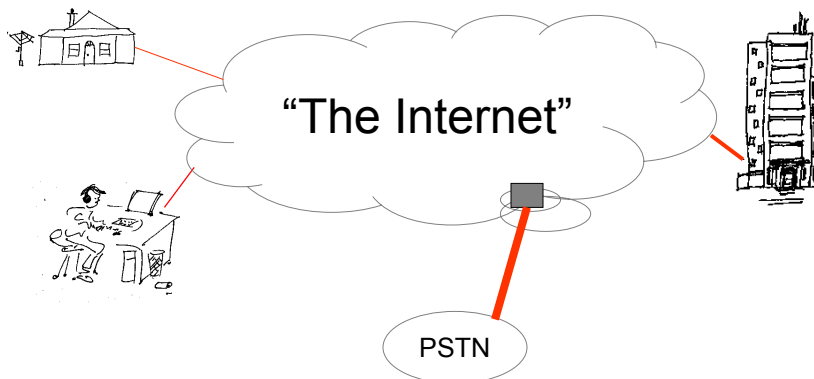
Current Residential Broadband – Uncertain QoS



- **Broadband is designed to Internet standards – “cheap and cheerful?”**
- **QoS drops with increasing total load – considerable contention beyond DSLAM or in cable design.**

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Current Residential Broadband – Uncertain QoS

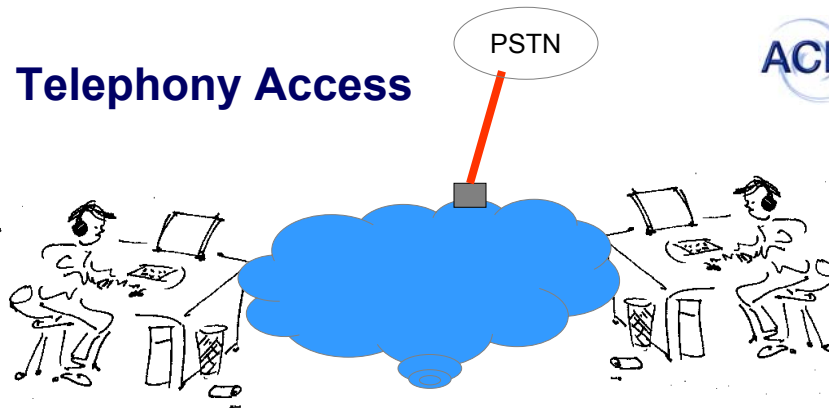


- **Internet telephony possible at (lightly laden) times**

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Telephony Access

ACIF



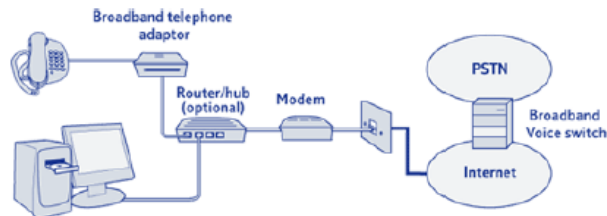
- Services such as Microsoft Messenger and Skype could also be used for access to the PSTN
- Access from the PSTN to these services would add another level of complication.

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Telephony Service over Broadband

ACIF

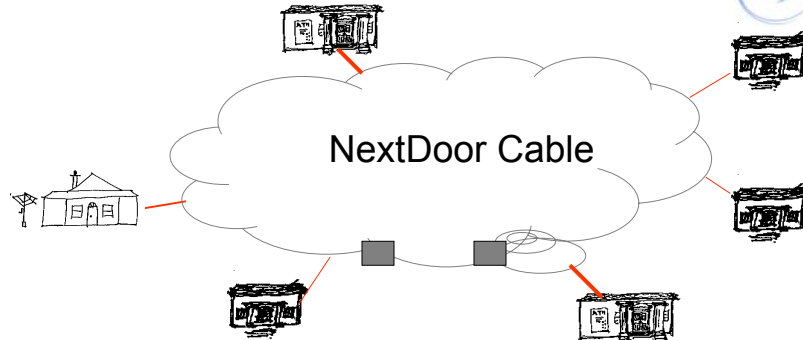
- There is a market for full telephony access (originating and terminating) via broadband.
- It is being offered by companies in the USA, Korea, Japan and the United Kingdom (diagram from BT Broadband)
- Commercial products generally use standard telephones with telephone adapters.



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Cable Networks

ACIF

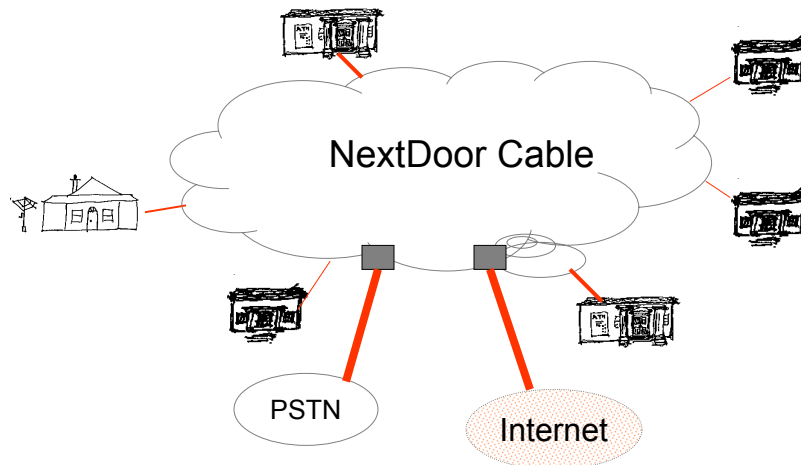


- Cable networks provided for entertainment (cable TV) are now being developed for the “triple play” of video, telephony and Internet.

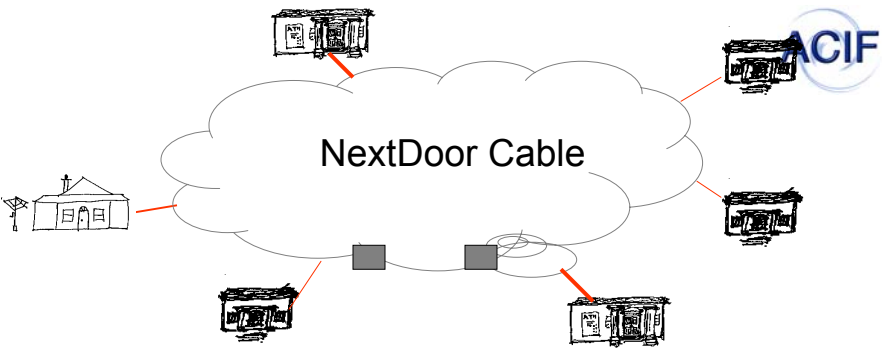
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Cable Networks

ACIF



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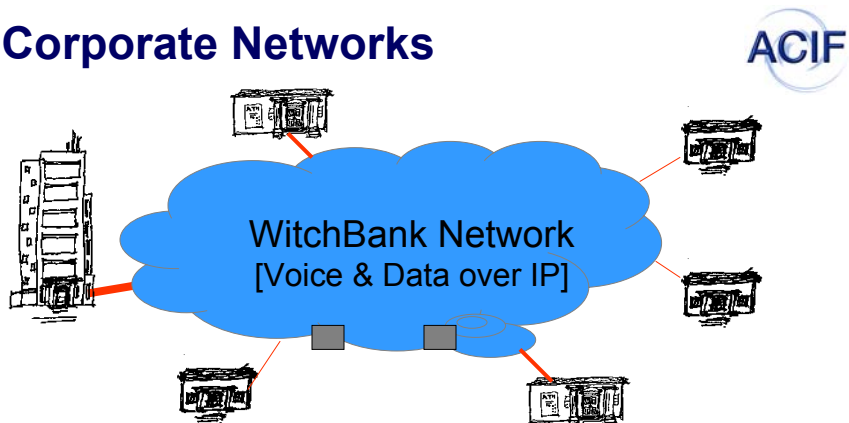


The diagram shows a central cloud labeled "NextDoor Cable". It is connected to several icons: a house with a satellite dish, a building with a sign, a building with a sign, a building with a sign, and a building with a sign. The ACIF logo is in the top right corner.

- **Technically, access and network are under the operator's control and the network could support standard telephony.**
- **The cost of providing uncontested access and meeting network regulatory requirements could be high, so design may be to less than PSTN standards.**

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Corporate Networks



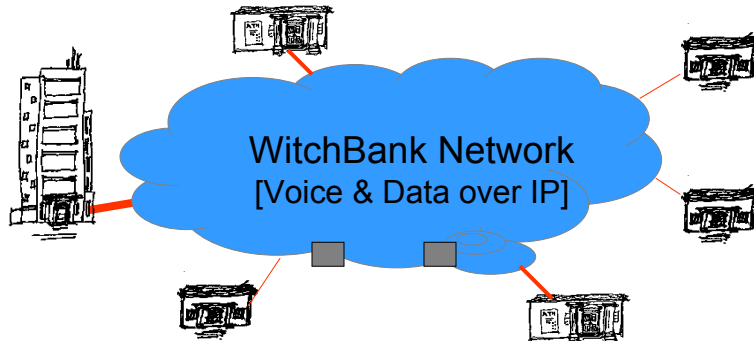
The diagram shows a central blue cloud labeled "WitchBank Network [Voice & Data over IP]". It is connected to several icons: a tall building, a building with a sign, a building with a sign, a building with a sign, and a building with a sign. The ACIF logo is in the top right corner.

- **Traditionally, businesses have had two separate networks, for voice and data**
- **Current practice uses a single network to carry voice and data**

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Corporate Networks

ACIF

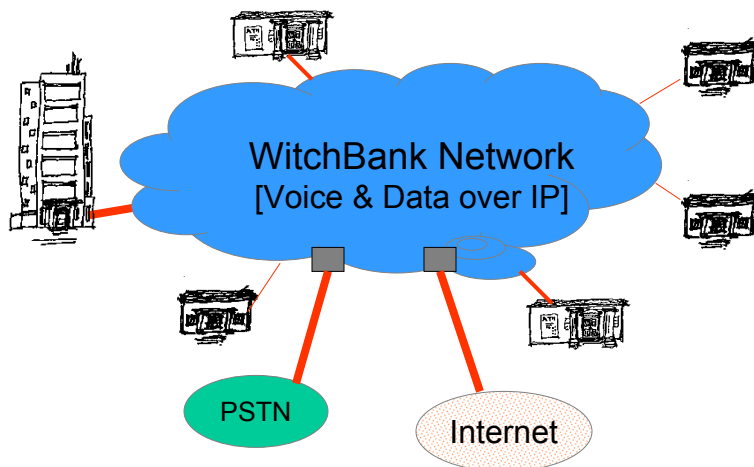


- Individual IP networks can be designed to support QoS for carriage of different services.
- Telephony (voice) can be carried very satisfactorily over these networks.

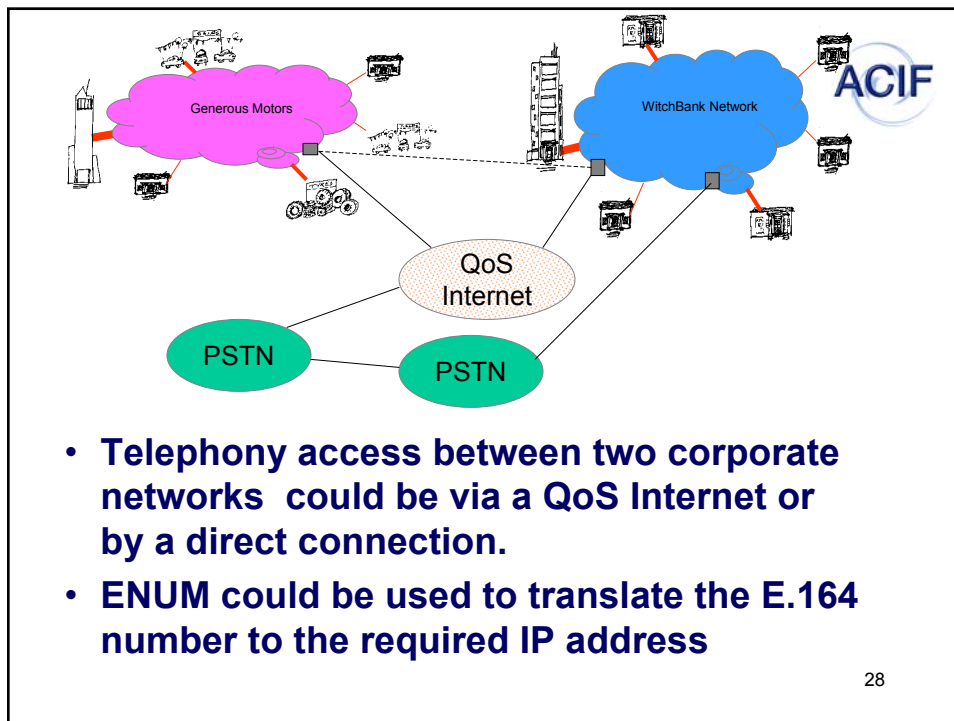
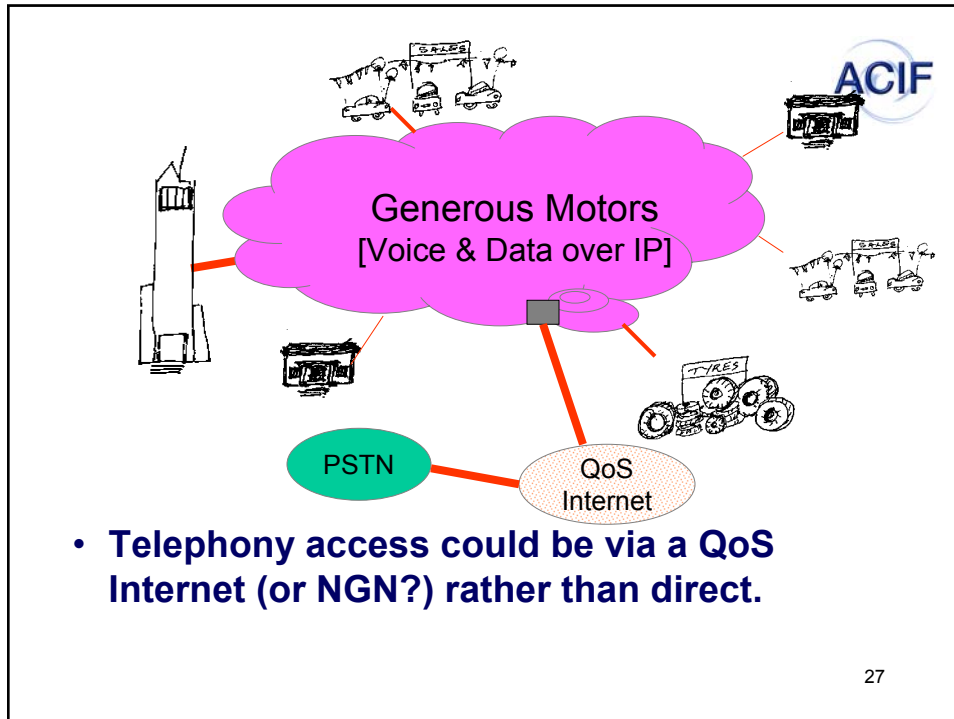
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Network Access

ACIF



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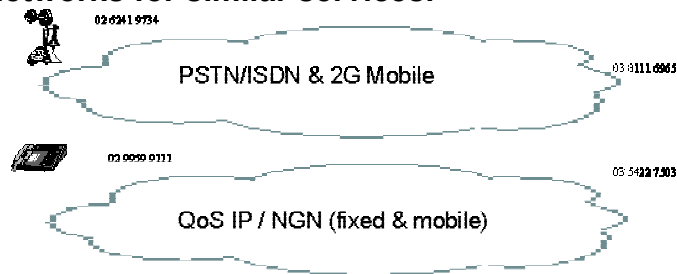
The Issues are not New

- To the best of our knowledge, there is work going on in many of the PSOs on related matters
 - In TTC (Japan) on VoIP and IP Telephony;
 - Similar work in TTA (Korea);
 - Work on VoIP in ATIS/T1 and TIA
 - As part of NGN work in ETSI and ITU-T; and
 - In ACIF's NGN Project (covered by the following slides from GSC8)

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GSC8 - Numbering, Naming and Addressing

- Future networks are likely to be based on Internet Protocols. If the “Telco View” evolution path is followed, we see that considerable work is needed on numbering naming and addressing as part of interworking arrangements across networks for similar services.

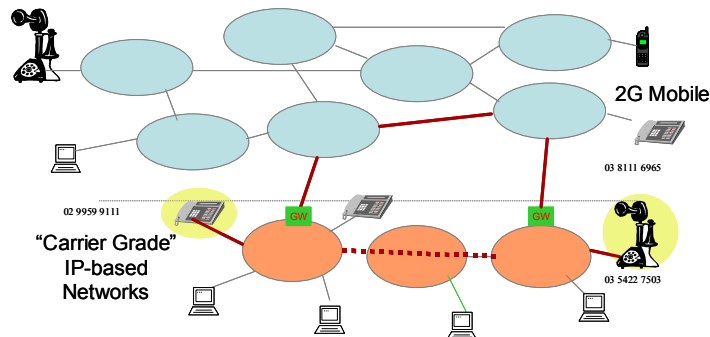


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GSC8



- A call from one telephony terminal to another on the NGN is also likely to be made by the user dialling the E.164 number of the wanted terminal.
- How is this to be routed? Based on what information?



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GSC8- Further Work Needed



We believe work is needed at the international, regional and national level on interworking and associated numbering, naming and addressing, taking into account

- The current E.164 numbering arrangements
- Current requirements for services such as number portability, and the techniques used to implement them
- The need to be able to route calls to provide maximum functionality (for example, for NGN to NGN calls to remain within the NGN)
- Available tools such as the IETF ENUM protocol (already specified for use in the 3GPPs)

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GSC8 Policy and Regulatory Implications



- Policy setting and regulation is not the job of standards bodies. However, policies must be set based on the technical reality of the services and underlying networks that can be supplied economically. For this reason the policy makers and regulators have had an active involvement in the ACIF NGN Project, with a special *Policy and Regulatory Group*.
- Is any similar approach being carried out internationally?
- How can the PSOs involved in the GSC help the policy setting process nationally, regionally and globally?

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Related Policy Work



- There has been considerable work since GSC8. We are aware of
 - Work by the FCC (including a NPRM);
 - Work by the European Union, and individual European countries such as Finland and the United Kingdom
 - Work in Korea; and
 - Substantial agreed policy in Japan as well as work in Australia.

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Key Concerns

- These services will be telephony-like, but they will not be the telephone service that we know (and are regulated to provide).
 - The telephone network plays an important role in many areas in our society, especially including access to emergency services and security (supporting law enforcement)
- “It looks like a duck, it quacks like a duck, it must be a duck!”

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A Damaged Duck?

- Broadband IP telephony falls well short of regulatory requirements, for
 - Availability
 - Quality
 - Emergency access
- Service is often offered over standard telephone headsets, but is not telephony as we know it



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But there are benefits

- **Such a service works most of the time, and provides a good method of adding a second telephone service.**
- **IP carriage allows much cheaper call rates, particularly for long-distance calls**
- **The service allows innovative service delivery by service providers other than the traditional telco(s).**

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We need to share Information

- **These transitional arrangements are taking place now, and will set precedents for the longer-term voice plus multimedia NGN we are standardising**
- **Much is happening, all with a big potential impact on NGN**
- **We should work on this at Seoul, and before GSC10.**

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Special Note

- Since this contribution was produced, I have seen Contribution GSC9_Joint_008 by TSACC, covering the same ground much more elegantly.
- I agree with all the points made, and would only add that I think we already have a place for this work in the GTSC Resolution.

