Draft WGIG Issue paper on VoIP

This paper is a 'draft working paper' reflecting the preliminary findings of the drafting team. It has been subject to review by all WGIG members, but it does not necessarily present a consensus position nor does it contain agreed language accepted by every member. The purpose of this draft is to provide a basis for the ongoing work of the group. It is therefore not to be seen as a chapter of the final WGIG report, but rather as raw material that will be used when drafting the report. This draft working paper has been published on the WGIG website for public comment, so it will evolve, taking into account input from governments and stakeholders.

1. Issue (what?)

VoIP is a relatively recent technology that allows for telephone calls to be packetized and sent over the Internet. Originally this was only done between users who had the correct software and who were willing to accept the best effort service. Later it was restricted to enterprise environments where the service was guaranteed by the use of proprietary networks. Eventually the enterprise networks were interconnected over private lines and virtual private lines (tunnels across the Internet). Recently operators and service providers have started to deploy VoIP in their public networks (sometimes referred to as IP Telephony).

In deploying VoIP over the Internet various issues have come to the fore, including:
- The need, either due to customer expectation or national regulation, for the operators and service providers to provide PSTN equivalent services. e.g. Emergency dialing, ring tones, lawful intercept etc. (note this may be similar to the discussion on Technology Neutrality, though in the technological discussions a distinction is made between PSTN equivalence and PSTN replacement)
- There is an open question of whether the service, as a telephony service, should be subject to the same, or similar, national and international regulation as the PSTN.
- Some operators introduce latency and other countermeasures into their VoIP traffic flows in order to decrease the level of quality available to users who wish try to use the best effort VoIP, which generally incurs no expense above normal Internet connections charges. I.e. Various operators have a corporate policy of attempting to prevent any VoIP service for which they cannot charge.
- Some national monopolies and/or national regulators take legal, regulatory, and/or technical steps to prohibit VoIP, primarily because of concern over potential loss of revenue coming from PSTN international calls.
- Today, voice revenues are still the "cash cow" of traditional network providers, and new subsidy mechanism adapted to the needs of competitive marketplaces (e.g. universal service funds) are still in place.
- The ITU accounting rate system, which was traditionally used to share revenues resulting from international traffic, assisted developing countries in terms of revenue flows, and therefore was an important source of hard currency that could be invested in network development. Under traditional Internet arrangements, which involve the lease of full circuits to connect with the Internet backbone, monies tend to flow the other way, towards developed countries. As a result of these factors, traditional infrastructure providers in developed and developing countries alike - which still bear important "public good" obligations that their

competitors do not – face a tremendous challenge in adapting their business models to the new marketplace, and in generating the revenue streams required to develop national infrastructure and extend access to it.

Other issues of concern include:
- There is a need for technical standardization to ensure smooth interconnection between VoIP network and existing PSTN and between VoIP networks of different operators.
- VoIP, based on Internet technology, is possibly exposed to the danger of cyber attack such as distributed denial of services that are not generally present in the PSTN. VoIP may also be susceptible to SPAM, which while similar to unwanted calls on the PSTN, would require different control mechanisms.
- VoIP could develop different cost structure depending on different business models from legacy telephone system. The charging structure and method is the major concern of operators and service providers as are the rules for settlement between operators.
- As service providers offer a wide-range of services with varying bandwidth and network technology, Quality of Services (QoS) also varies among service providers. However, there is no common understanding for quality of VoIP services, no standard accepted method for insuring QoS between operators and neither objective evaluation criteria nor reliable reporting mechanisms.

2. Attribution to category / ies

- Access for all
  - In its best effort mode of operation, VoIP provides an inexpensive telephony media to the public.
    - One strength of VOIP is that it can drive down substantially the cost of long-distance and international phone calls. Some studies suggest that the benefit of lower telecommunications is greatest among the least developed.
    - This is often hindered by operators for profit reasons and/or by governments or regulators for reasons of revenue
    - High international PSTN tariffs can be viewed as an excise tax on international telecommunications and some countries don't wish to lose that source of revenue
- Stable and Secure functioning of the Internet
  - The introduction of latency into best effort VoIP data flows
  - In some cases providers of gateway services, which connect the PSTN to the network, misuse ITU based telephony numbering allocations

3. SWOT Analysis

This area is still very much in flux with a great disparity in the way the issue is being approached.
- Many national regulation entities are looking at the issue in terms of technology neutrality, i.e. a voice call is the same whether it is over legacy telecommunications infrastructure or over the public Internet.
- Many business entities are arguing for no national or international regulation.
- There is the issue of potential revenue reduction for countries and/or monopoly operators and/or state-owned operators is of concern in many developing countries

- There will be tremendous competition for the resources world wide.
  - Traditional arrangements for providing developing countries with the technical and human resources they needed to build and maintain their network infrastructures - which involved a combination of assistance from equipment vendors and service providers, along with a small technical assistance programme provided by the ITU – are not currently in place for VoIP.
  - The emergence of IP networks supporting PSTN equivalent VoIP requires fundamentally new and different technical and human capacities. What governance arrangements are needed - in the private sector, in the public sector, and cooperatively - to provide these?

4. Actors (who, with whom?)

- ITU
- National regulators

5. Forums (where?)
(a) who participates
(b) nature of forum

The issue is being discussed at various levels:
- Industry fora
  - OECD
  - APEC
  - CITEL
- International standards
  - ITU, IETF, SIP Forum, MultiService Forum
- National regulators
- National Governments/Regulators including:
  - EMEA:
    - Austria, Denmark, France, Germany, Ireland, Malta, Spain, South Africa,
    - UK
    - Asia Pacific:
    - Australia, Hong Kong, Japan, Philippines, Singapore, South Korea
  - CALA:
  - Canada, Chile, Colombia, Dominican Rep
  - European Commission

6. Governance mechanisms (how?)
(a) objectives of the rules system
(b) content of principles, norms and rules

In terms of international governance opportunities, these are unclear.
- On one hand there is reason for VoIP to be treated consistently across the Internet.
- Forcing VoIP to be regulated in the same manner as the PSTN certainly has cost implications and might be impractical in some cases since the IP-based networks cannot necessarily be controlled in the same manner as other technologies

One aim of governance of VOIP may be to balance the interests of the consumer and business to have lower telecommunication costs while not being too disruptive to the current regulatory framework and legacy system.

Governance in this issue may be either controlling governance in that regulation would be established that controlled the way VoIP was deployed, or enabling governance in the sense of International guidelines for cooperation and guidance for national regulators.

As well as challenging established financing mechanism and arrangements for building technical and human capacity, the emergence of VoIP raises tremendous challenges for policy-makers and regulators in all countries, but particularly in developing countries. Adapting existing arrangements for helping to build this capacity, through information sharing, education and training, and by providing expert advice and assistance, is a very significant challenge.

There are also governance concerns from an administrative perspective, e.g.
- Who is responsible for maintaining the ENUM database and for making sure that it is supported properly in the DNS.

7. Adequacy measured against criteria / benchmarks set out in Declaration of Principles:
    (a) multilateral
    (b) transparent
    (c) democratic
    (d) capacity to address Internet governance in a coordinated manner
    (e) multi-stakeholder approach
    (f) other

This Remains to be determined.

8. Additional comments