Ortel Communications Ltd.

Comments on issues on Internet Telephony

4.1 Whether Internet service provider should be permitted Internet Telephony services to PSTN/PLMN within India? If yes, what are the regulatory impediments? How such regulatory impediments can be addressed?

Yes, ISPs should be allowed to interconnect for wider connectivity and benefit for the masses. Most of the services offered through Internet create an indirect income to the government, and that's the precedence in most of the countries. Government should adopt a light regulatory approach as accepted by most of the countries, keeping in view the growth of broadband and benefits of end users. Beyond merely an alternative means of making long distance and international calls, IP Telephony technology enables a wide range of other services such as Integrated Voice/data (Real Time), integrated voice/data(messaging), Telemetry etc. Indeed, many industry analysts suggest that as international accounting rates and PSTN calling rates come down, these enhanced or "value-added" applications are going to be the main source of revenues for IPTSPs.

The flexibility of IP Telephony can be summed up in the term "XoIP," the optimistic industry acronym for "anything over IP." The basic IP Telephony technology can be extended to create limitless possibilities for the transmission of voice alone, or in combination with any other digitisable information. Drawing regulatory lines between what is voice, what is telecommunications, what is computing, and what is Internet will only continue to get more difficult. Regulators who try to delimit these boundaries will need to have a clear motivation for doing so.

4.2 Whether allowing ISPs to provide Internet Telephony to PSTN/ PLMN within country will raise issues of non-level playing field? If so, how can they be addressed within present regulatory regime?

Voice business opportunity through the world is more inclined towards mobile technology; hence land-line and other dependent voice services like Internet Telephony should not be seen at par with mobile or traditional wire line technology. The business opportunity, because of the technical and functional advantage is not same between mobile / wire line and Internet Telephony services. The issue of level playing field does not arise in this case as well as for the proposed Internet telephony, as each will have it's niche market but together has and will grow the overall market including increased revenue for the Govt.

4.3 ISPs would require interconnection with PSTN/PLMN network for Internet telephony calls to PSTN/PLMN. Kindly suggest Model/ architecture/ Point of Interconnection between ISPs and PSTN/PLMN?

Interconnection should be required at circle level. ISP should be allowed to carry the traffic over Internet or through dedicated links between their POPs and could handover the call to the PSTN/PLMN interconnection partner at a desired location. TRAI should ensure that ISPs should not be denied interconnection by UASL/NLD/ILD operators.

As defined in ITU document
1. **Internet Telephony**: IP Telephony in which the principal transmission network is the public Internet. (Internet Telephony is also commonly referred to as "Voice-over-the-Net" (VON), "Internet Phone," and "Net Telephony" – with appropriate modifications to refer to fax as well, such as "Internet Fax").
2. The link between an IP network and a telephone network is called a **gateway**. This is the point at which voice signals become digitised and packetized, or at which digitised packets are converted back to voice.
3. Gateway operators prefer to locate their equipment in major metropolitan centers, where the largest number of PSTN subscribers can be reached with or can make a local call. If a gateway server must dial a long distance call to terminate an IP call, the cost savings otherwise available can be lost. Terminating gateway operators must generally pay for local access lines to the PSTN, which are frequently the same lines leased by ISPs, so that their dial-up Internet access customers can dial into their Web servers.

   There are many alternate methods are used in various countries. Like USA HFC operators are using HDT interface with PSTN for their telephone subscriber as a seamless integration.
   Hence the interconnection should be used on the principle of Gateway Bridge PSTN and Internet Architecture or seamless integration as used by various other countries**.**

4.4 Please give your comments on any changes that would be required in the existing Interconnection Usage Charge (IUC) regime to enable growth of Internet telephony? Give your suggestions with justification to provide affordable services to common masses?

The VOIP service providers can be brought under the IUC framework with minor modifications. Since IP based networks use common resources for providing not only voice but also data and video services, they enjoy greater economy of scope. The IUC charges for carriage of voice calls by such networks is likely to be less, compared to circuit switched networks, thereby benefiting the customers. Whereas, the carriage charges on fixed network such as NLD/ILD are based on time and distance being circuit switched, on a VOIP network, which is packet switched it will be distance insensitive, as voice packets travel in datagram mode

and do not take a fixed route. They also share common resources. The Usage charges will have to be mainly based on minutes of use (MOU) and packets transported by the network elements such as routers gateways etc. The details of interconnection charges can be settled between network operators involved in call carriage by mutual negotiations,

4.5 What should be the numbering scheme for the Internet telephony provider keeping in view the limited E.164 number availability and likely migration towards Next Generation Networks?

i) We recommend the adoption of IETF/ITU recommended Telephone Number Mapping System i.e. ENUM, which has been designed to facilitate convergence i.e. linking PSTN physically with the Internet, by making the telephone number part of the internet address. It is based on IETF RFC 2196, which is an approved protocol developed jointly by ITU/IETF to implement a Domain Name System (DNS) for storage of ITU-T E164 Numbers and the available services connected to them.

ii) Once the system is implemented, it will enable a seamless interconnection between the Internet or IP based VOIP based Network and Generic Switched Telephone Network (PSTN/PLMN), enabling the subscribers to dial a telephone number from an IP enabled device such as SIP/ H323 Phone or even an ordinary telephone connected to an adaptor to reach the PSTN/PLMN handset, to both originate and receive phone voice calls. It can also be implemented in a managed network. It uses Media Gateways and Soft Switches, the architecture recommended by us in preparas.

iii) ENUM based addressing Infrastructure is now available in the market. One such Addressing and Numbering platform called TITAN, manufactured by Net Numbers and downloaded from their site www.netnumber.com is placed at Annexure. Therefore, there should be no problem in implementing carrier grade ENUM Solutions in VOIP networks. Our country should take a lead in ENUM or equivalent implementation in Asia Pacific region.

4.6 UASL and CMTS operators are allocated number resources and permitted to provide Internet telephony including use of IP devices/Adopters. Whether such devices should be allocated E.164 number resource to receive incoming calls also? If so, whether such number resources should be discretely identifiable across all operators and different than what is allocated to UASL and CMTS to provide fixed and mobile services? Give your suggestions with justifications?

It is now widely possible to originate calls using IP Telephony, but rare to terminate calls on IP networks. Rather, calls are generally terminated on the PSTN, so the called party can only use a terminal device connected to the PSTN.

In order to make dialing an IP phone possible, a global numbering scheme needs to be devised.

1.One approach might be to assign a special country code for IP phones, one that has global coverage, and which could therefore be dialed from anywhere just as one would dial an international call today. Precedent for this exists in the form of E.164 numbers allocated to Universal International Free phone Numbers (UIFN) (800) or Global Mobile Personal Communication Services (GMPCS). Such a global resource would produce a very large number of phone numbers for IP Telephony devices or users, and no special carrier access code would be necessary to call via IP Telephony.

2.Assigning an E.164 code to IP Telephony services may have regulatory advantages as well, as countries which choose to regulate IP Telephony in a particular way could more easily identify this type of traffic.

4.7 If ISPs are allowed to receive Internet telephony calls on IP devices/ Adopters, what numbering resources should they be allocated?

Same as mentioned above 4.6.

4.8 Is it desirable to mandate Emergency number dialling facilities to access emergency numbers using internet telephony if ISPs are permitted to provide Internet telephony to PSTN/PLMN within country? If so, Should option of implementing such emergency Number dialling scheme be left to ISPs providing Internet telephony?

Emergency services rely on what's called the Integrated Public Number Database (IPND) to locate callers based on their phone number. If that number no longer relates to a physical location, emergency calls can be compromised.

With this in mind, the Australian Communications and Media Authority (ACMA) has introduced a new location-independent numbering range and is encouraging IP Telephone service providers to use it. Under the system, any numbers that don't relate to a particular physical location will start with the prefix 0550. This will alert both emergency services and other callers to the fact that they are calling or being called from an IP telephony service.

Similar numbering system should be used for IP telephony for emergency calls.

4.9 Is there any concern and limitation to facilitate lawful interception and monitoring while providing Internet telephony within country? What will you suggest for effective monitoring of IP packets while encouraging Internet telephony?

We fully appreciate the government concern on national security and fully committed to wards this aspect. Monitoring of calls won't be an issue for all calls that are landing on to a PSTN/PLMN service provider. We think that lawful interception and monitoring Internet telephony calls should also be done at operators level besides the central monitoring.

4.10 Is there a need to regulate and mandate interoperability between IP networks and traditional TDM networks while permitting Internet telephony to PSTN/PLMN within country through ISPs? How standardization gap can be reduced to ensure seamless implementation of future services and applications? Please give your suggestions with justifications.

Most telephones are -- and will continue to be for several years to come -- connected to traditional circuit-switched telephone networks. IP Telephony services must be able therefore to accept calls originated on the PSTN, to terminate calls on the PSTN, and do it all seamlessly. Today, the most basic IP voice services accomplish this feat by means of gateways which simply convert and forward calls in one direction or another. Before IP Telephony can be a mass-market alternative to the PSTN, there must be much greater integration between the two. This can be achieved by having a common infrastructure like High-end soft switch which will have both facilities inbuilt in it or HDT interface as used by USA HFC network operator for voice service. .

4.11 Is there a need to mandate QoS to ISPs providing Internet telephony to PSTN/PLMN within country? Please give your suggestions with justifications.

Under current Internet routing conditions, IP voice packets do have a small advantage over email and Web packets, but not much. Internet Telephony packets are not transmitted using the Transmission Control Protocol (TCP), but via another called User Datagram Protocol (UDP).

However, UDP only compensates for the Internet's single service class so much – and not enough to facilitate PSTN-quality phone calls. Research has been underway in the Internet industry for several years on ways to priorities certain packets over others. The Under Guaranteed Service (UGS) and Best effort service ensures quality voices at par with PSTN voice.

Annexure

TITAN Multi-Application Addressing Architecture
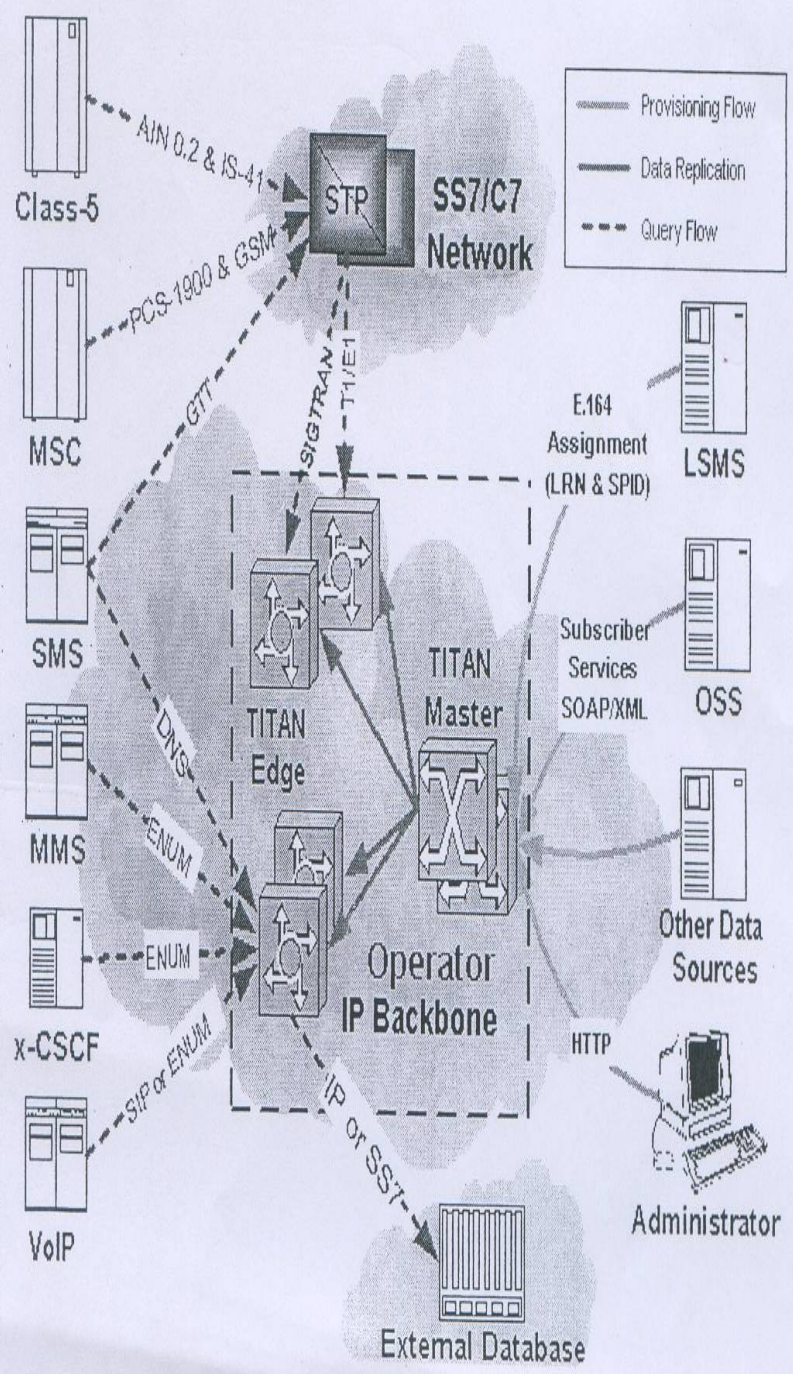
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