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## **Gentay Review of Trai Issues for VoIP Consultation**

Please note that all views portrayed below are those of an OTT/VoIP provider.

Please also note that for the purpose of clarity, we do not feel there is or should be a separate classification of 'VoIP' and 'Internet Telephony' (as outlined in the consultation paper), as the actual difference between these terms is based on the access layer and has nothing to do with VoIP itself.

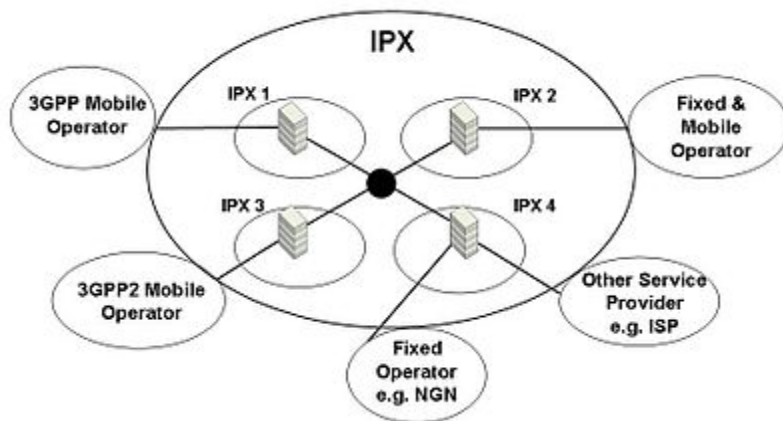
- 1) What should be the additional entry fee, Performance Bank Guarantee (PBG) and Financial Bank Guarantee (FBG) for Internet Service Providers if they are also allowed to provide unrestricted Internet Telephony?**

No comment.

- 2) Point of Interconnection for Circuit switched Network for various types of calls is well defined. Should same be continued for Internet Telephony calls or is there a need to change Point of Interconnection for Internet Telephony calls?**

In many countries, there is a well-defined standard for interconnects for VoIP services labelled as IPX:

“**IP exchange** or (**IPX**) is a telecommunications interconnection model for the exchange of IP based traffic between customers of separate mobile and fixed operators as well as other types of service provider (such as ISP), via IP based Network-to-Network Interface. IPX is developed by the [GSM Association](#).”<sup>1</sup>



Example offerings:

<http://ibasis.com/voice-data-services/premium-voice-over-ipx/>

<https://bics.com/content/ipx-voice>

<http://www.telenorglobal.com/solutions/ipx/>

<https://www.telstraglobal.com/products/global-voice-services/ipx>

IPX Services allow for end to end QoS and real-time monitoring which can provide an equal service to traditional PSTN/PLMN services.

IPX also allows the use of HD Codecs (Codecs that allow for greater than 4KHz bandwidth) for improved audio/voice quality and clarity compared to PSTN/PLMN.

We believe that any \*Access Provider/ISP/OTT and/or licensee should be required to interconnect with other \*Access Providers/ISP/Licensee's through a predefined and carrier neutral point of exchange. These connections can be both Direct and/or indirect, but should allow for uncongested access to pass traffic to each other's network, both for Direct VoIP to VoIP as well as VoIP to PSTN/PLMN Termination.

[1] [https://en.wikipedia.org/wiki/IP\\_exchange](https://en.wikipedia.org/wiki/IP_exchange)

\*: Access Provider can be any ISP/Mobile Operator/Provider which provides internet or network access to subscribers. (Both Mobile and Fixed)

**3) Whether accessing of telecom services of the TSP by the subscriber through public Internet (internet access of any other TSP) can be construed as extension of fixed line or mobile services of the TSP? Please provide full justification in support of your answer.**

VoIP Services should be considered an extension of fixed line or mobile services, not only for the TSP but for OTT/3<sup>rd</sup> Party Providers as well. All users have already paid for the access layer and VoIP can be considered Over the Top even if provided directly by the TSP.

Users should be able to register and possibly receive calls to their usual number whilst roaming and abroad using VoIP.

An example can be found in the U.S and Europe, where users register on OTT and even TSP provided applications with their mobile phone number and are able to make and receive calls (including terminated) from this number.

Examples of this include WhatsApp, Viber, nanu and many other OTT apps. Google Voice, Viber and nanu allow for terminated calls as well.

Our justification, and in relation to our above comments is that users can already distinguish the Access Layer and OTT Technologies. Users understand that WhatsApp/Viber/nanu do not provide the internet access but simply services on top. The users already pay TSP's in the form of fixed line broadband or mobile internet services (which are charged based on bandwidth consumed already).

#### **4) Whether present ceiling of transit charge needs to be reviewed or it can be continued at the same level? In case it is to be reviewed, please provide cost details and method to calculate transit charge.**

For VoIP to VoIP Calling, there should be no charge as the user's (on both sides) are already paying their respective TSP/ISP/Provider for Internet/Network Access.

For VoIP to PSTN/PLMN, we feel the current ceiling can actually be lowered, as many times and in the case of "area" dominance, many users will be paying the same TSP for both Access Layer Technology (Fixed Line/Mobile Data) as well as the OTT who may be paying the TSP for PSTN/PLMN Termination on the same network. The regulated charges of 15 Paisa per minute, can stay the same, but in many cases there will be no need for carriage charges as many OTT/Carrier's and Providers will already be connected via IPX where there is no carriage cost. Carriage charges should only be applied if the Terminated Number is not on the TSP Network where the OTT/TSP is terminating – and even in this scenario should be fixed and not based on distance.

For PSTN/PLMN to VoIP, we believe this should be left to Market Dynamics.

#### **5) What should be the termination charge when call is terminating into Internet telephony network?**

We believe this should be left to Market Dynamics.

**6) What should be the termination charge for the calls originated from Internet Telephony Network and terminated into the wireline and Wireless Network?**

As per our answer to Q4, we believe the current transit charge of 15 Paisa per minute is sufficient, and Carriage should be defined as to whether IPX Connectivity is in place and whether the terminated party is on a separate TSP compared to the TSP requesting termination.

**7) How to ensure that users of International Internet Telephony calls pay applicable International termination charges?**

This is dependent on whether the call is international and terminating in India or Terminating internationally.

Due to the nature of VoIP and its ability to function irrelevant of the Access Layer, this should be left to Market Dynamics and not predefined charges.

**8) Should an Internet telephony subscriber be able to initiate or receive calls from outside the SDCA, or service area, or the country through the public Internet thus providing limited or full mobility to such subscriber?**

Yes, this would match similar services in the US/Europe/Australia etc...

However, we believe that the OTT/TSP/VoIP Provider should have their own network, where they can have full control of the network infrastructure, such as performing traffic engineering, bandwidth management and congestion avoidance, and will be required to connect directly to applicable IPX's and Service Providers/Carriers with their own AS Number to ensure reliable and consistent quality of service over long distance communication mediums (such as international roaming).

**9) Should the last mile for an Internet telephony subscriber be the public Internet irrespective of where the subscriber is currently located as long as the PSTN leg abides by all the interconnection rules and regulations concerning NLDO and ILDO?**

The access later of the subscriber should not affect their ability to use the VoIP service provided.

However, we believe that the OTT/TSP/VoIP Provider should have their own network, where they can have full control of the network infrastructure, such as performing traffic engineering, bandwidth management and congestion avoidance, and will be required to connect directly to the IPX with their own AS Number.

We believe that current NLDO/ILDO regulations are also outdated, and should be brought up to date with US/Europe where the entire country (or in the case of Europe, the entire continent) is seen and established as a single service area.

**10) What should be the framework for allocation of numbering resource for Internet Telephony services?**

This should be left to Market Dynamics, for providers wishing to offer an alternative to fixed line services, they should be allocated a number space. This can also be extended to Mobile Services as well.

For Most mobile VoIP services, the user should be allowed to register and should be accessible via their Mobile Number both on the VoIP Network and Domestic PLMN.

**11) Whether Number portability should be allowed for Internet Telephony numbers? If yes, what should be the framework?**

Only between Internet Telephony providers. This should follow a similar framework to current Number Portability.

**12) Is it possible to provide location information to the police station when the subscriber is making Internet Telephony call to Emergency number? If yes, how?**

Emergency Calls should not be allowed via Internet Telephony, as users can “spoof” location or turn off mobile location services.

**13) In case it is not possible to provide Emergency services through Internet Telephony, whether informing limitation of Internet Telephony calls in advance to the consumers will be sufficient?**

Yes, users should be informed in the terms and conditions and usage policy that Emergency Services are not available via Internet Telephony.

**14) Is there a need to prescribe QoS parameters for Internet telephony at present? If yes, what parameter has to be prescribed? Please give your suggestions with justifications.**

For all licensed VoIP Providers, there should be a strict VoIP and RTP prioritisation requirement, this can be related to VoIP/OTT Provider Network Congestion and Connectivity, as well as a minimum MOS (Mean Opinion Score) across a percentage of calls. Please note that all these factors are also reliant on the Access Provider/TSP/ISP ensuring reliable access.