

Detailed response on TRAI Consultation Paper (No. 11/2008)
on
“Issues Related to Internet Telephony”
by
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1. Introduction

- 1.1 The Internet seems to be ubiquitous inasmuch that it seems almost as necessary as a telephone or electricity and yet, we have large swathes of geographies and social strata for whom it still remains largely not yet available and even if available; it remains inaccessible or unusable. Reasons range from affordability, power supply, content in local languages and of local relevance, functional & IT literacy and so on.
- 1.2 However, the key issue remains that of contextual relevance and ease of use. The challenge is to find a sweet spot of value proposition and offering where more and more people proactively seek out broadband access and are motivated to start using it. After all, even in our country where people demand and often get also, free water & electricity it is difficult to find availability of free cable TV service. Even families living without access to potable drinking water and other basic necessities do *pay* for the cable TV service out of their own volition!
- 1.3 All the same, one grapples with the need to have a killer application even as we chug along on the broadband wagon with a pathetic figure of 4 million broadband subscribers at the end of April 2008 against the target of 9 million for 2007 and at the current rate of growth, it seems almost impossible to achieve the 2010 target of 20 million broadband subscribers.
- 1.4 One of the most vexatious and yet one of the most useful application on the Internet and especially relevant for the masses is the Internet telephony. Thanks to the flexibility of the IP technology and in an era of extremely high long distance tariffs, geeks reckoned that voice signals can be digitized and sent through packets over the Internet, even if it entailed jagged and inconsistent experience. Soon after, people began developing gateways between PSTN and IP so that the signals of one network could be converted to the other and vice versa.

- 1.5 Owing to such genesis, unfortunately, Internet telephony continues to be considered and discussed in the context of alternate routing of long-distance telephone calls that presumably is offered at tariffs lower than those charged for long-distance telephone calls. However, in this era of migration towards Next Generation Network (NGN), one needs to look beyond mere alternate routing of phone calls and rather, consider 'Unified Communications' as the bedrock of convergent communication and its most obvious manifestation.

2. Evolution of the Internet & Internet Telephony in India

- 2.1 One does appreciate that the Authority has recognized that though (unrestricted) Internet telephony has been permitted w.e.f. 1st January 2006 to the Unified Access Service Licensees (UASL) and there have been numerous reports about its ever-increasing popularity in India just like elsewhere. It is pertinent to probe why this service is not yet being offered by any of the UASL licensees who have been expressly permitted to offer the same. All the same, rather than just looking at facilitating interconnection with PSTN in India for a certain set of licensees, it would be apt to look at the wider canvas of Internet telephony from the customers' perspective.
- 2.2 For this, we would have to go back into the history and examine the context to garner better understanding. Key landmarks of the policy & market evolution in this context are tabulated in the **Annexure-A**. Putting all that along with the other changes in the Indian telecom sector - including but not limited to, those pertaining to IUC (Interconnection Usage Charge) and USO (Universal Service Obligation), the following can be inferred:
 - 2.2.1 VoIP is not only good for subscribers but also for the service providers - including the so-called facility-based ones as they are increasingly investing in IP networks as well as migrating from TDM networks to IP.
 - 2.2.2 Moreover, one observes that the mandate for green-field physical infrastructure is no longer the norm in the licensing framework as also in view of the market realities as infrastructure (passive & active) sharing is the way to go. Entry fees for NLD & ILD licenses have also come down significantly.
 - 2.2.3 In 2002, when Internet telephony was opened, albeit in a restricted manner, disbursements from the USO fund had not yet begun and perhaps there was some justification in restricting the interconnection with the PSTN in India. However, with a well-endowed USO Fund such protectionism is no longer required.

As it is, the fixed line subscription base is almost static across the country and hardly any investment is being put in the rural areas to increase fixed line subscriber base.

- 2.2.4 It is worth examining whether India's unique and admittedly innovative model of Internet telephony unfolded in 2002 is a good role model for other countries (at similar stage of development); Let us assume that another country 'X' adopts India's model verbatim; If a subscriber from the country X calls India from an IP device, it is legal in that country but its termination may be illegal in India. Similarly, a call to X from India using an IP device is legal in India but its termination on PSTN in country 'X' would be illegal! Obviously, such a policy would be good for neither of the country.
- 2.2.5 In 2002, the telecom operators (including all the 3 incumbent monopoly operators, viz. BSNL, MTNL & VSNL) had rushed to offer Internet telephony SOON AFTER standalone service providers started such offering.
- 2.2.6 Almost two and half years have passed since 1st January 2006 and yet not a single access provider has begun offering Internet telephony with interconnection to PSTN within India despite numerous reports about its huge demand. Obviously, this is a classic scenario of market failure and a fitting case for the regulator to intervene by catalyzing and sustaining effective competition.
- 2.2.7 Presence of multiple operators, higher volumes, higher tele-density, reduction in entry & (recurring) license fees, investment in advanced transmission (Fiber optics) & switching technology - all these have helped the continuous decline since 2002 in international call tariffs from India. However, the decline would not have been so steep but for the proxy competition from Internet telephony, even if it was severely restricted in the way it was used and provided.
- 2.2.8 Growth of Internet and particularly of broadband remains tardy for the want of simple, cost-effective killer application that can overcome the challenges related to the acquisition cost of the access device and the trinity of language, literacy & IT-savvy. ***Internet telephony sans restrictions can be that killer application for which people would be motivated to proactively obtain and use Internet & broadband and subsequently, leap forward to other innovative usages.***
- 2.2.9 As the Access Deficit Charge (ADC) on a per minute basis is now applicable only for incoming ILD calls and that too, has a defined sunset one needs to look at Internet telephony beyond just the context of arbitrage.

2.2.10 Today, Internet Telephony is actually much more than just carriage of voice calls on an IP backbone and hence, while considering the issues at hand, the Authority should look beyond mere interconnection scenarios and rather, look at enhanced feature-set that state-of-the-art scenarios made possible through 'unified communications' for which Internet telephony is the bedrock.

3. Regulatory Objectives

- 3.1 If one looks at the regulatory objectives in a holistic manner, the following are the key objectives:
- 3.1.1 **Simulating the market:** catalyze competition where it does not exist
 - 3.1.2 **Stimulating the market:** spurring the growth of market and thereby motivating entrepreneurs to invest and innovate
 - 3.1.3 **Fulfillment of Policy Objectives:** World-class affordable telecom services to all the citizens of the country by leveraging the convergence as set forth in the NTP 1999 and the 20 million Broadband subscribers by 2010 as set forth in the Broadband Policy 2004.
 - 3.1.4 **Foster sustained competition and protect consumer interest:** Ensure widest choice to consumers and protect consumers from unreasonable tariffs and business practices
- 3.2 By facilitating and implementing interconnection with PSTN in India for Internet telephony, all the 4 regulatory objectives mentioned at 3.1 hereinabove would be met.

4. Internet Telephony in the context of Call Centers / BPOs

- 4.1 BPO industry in India is a result of entrepreneurial zeal and forward-looking ICT policy framework and everyone agrees that starting with National Telecom Policy 1994 (NTP 1994) the telecom infrastructure as well as policy & regulatory framework have become more and more supportive of this business that grew from almost nothing 15 years back to the extent that India is regarded as the undisputed leader in the global BPO market.

- 4.2 However, unfortunately due to a complex web of outdated yet operative restrictions regarding interconnection of multi-location facilities with the PSTN within India has resulted in a very slow growth of domestic BPO despite huge potential. Similarly, by continued restrictions regarding interconnection and sharing of infrastructure between domestic and international BPOs (even when operated by the same entity) we are using the infrastructure in a sub-optimal fashion and are becoming less competitive with countries such as Philippines where sharing of infrastructure between domestic and international BPOs is rather encouraged.

5. Comments on the content of the Consultation Paper

5.1 We appreciate that the instant paper is well-researched and does say that the need of the hour is to have a regulatory framework that fosters innovation, investment and affordable access. In this context, it would not be out of order to bring the following to the kind attention of the Authority:

5.1.1 Currently, owning an IP device and therefore, an Internet subscription is a pre-requisite for a subscriber in India to avail of Internet telephony service. Most of the common masses of the country cannot afford the same and would be rather, better served through a device that can have the familiar telephone numbers.

5.1.2 While number of people with friends, families and business associates abroad is large, it is a fact that most Indian citizens do not have need to speak to someone abroad. However, the *irony (para 1.3.5) is that while an auto manufacturer in Mumbai might call to his business associate in Detroit for as low as INR 1 per minute using Internet telephony an auto driver in Mumbai may have to shell out INR 2.75 per minute to speak to his family in a different state within India! Such inverted tariff outcome serves against the interest of the majority of the Indian citizenry.*

5.1.3 There is an *urgent need to correct this unreasonable, unequitable, unsustainable and exclusionary scenario resulting into a non-level playing field between the common masses and the elites* and ought not to be continued and that too, in the name of universal service obligation!

5.1.4 In para 2.2.1.3 (a) it is mentioned that for phone to phone telephony using IP network, (only) managed IP network is used. Actually, many service providers worldwide offer phone to phone telephony wherein at least some part of the call traverses over the Internet.

5.1.5 In order to move towards NGN and even to provide world-class telecom infrastructure and services, synchronization across all the disparate telecom networks across the country is a must and this is an area worth separate analysis by the Authority. However, its crucial nature and importance cannot be over-emphasized.

6. Comments on the Issues raised in the Consultation Paper

We make specific suggestions regarding the issues raised in the consultation paper hereinbelow:

6.1 Regulatory Burden

6.1. Essentially, at the client ends, Internet telephony can be of 4 different types depending upon the classical notions of origination & termination and the table below suggests suitable regulatory framework for the same:

Origination	Termination	Regulatory Obligations
IP device	IP device	None
IP device	E.164 (PSTN numbers)	Light-touch; interconnection with PSTN within India would be subject to those overseas
E.164 (PSTN numbers)	IP device	Light-touch; Though ENUM has been referred in the Consultation Paper, mapping of E.164 numbers to IP addresses is a reality even otherwise
E.164 (PSTN numbers)	E.164 (PSTN numbers)	Similar to those on regular telephony; This is essentially an alternate to regular telephony. While service providers must strive to promote important social goals, like access to emergency services, privacy and data security, but regulatory mandates should be kept to a minimum at this early stage to allow flexibility as services emerge.

TRAI and the government should ensure that all the Internet based applications - including those enabling Internet telephony (such as IP to IP), should not be subjected to unnecessary regulatory burden. We appreciate that the instant TRAI consultation paper (2.2.1.1 on page # 15) as well as TRAI recommendations dated 10 May 2007 (para 3.5 on page # 29-30 therein) on growth of Internet & Broadband in India already recognize that this type of service is already permissible since April 2002.

6.2 Interconnection

- 6.2.1 Ensuring that subscribers of Internet telephony can talk to and fro with their PSTN counterparts is essential for helping unleash the technologies full potential.
- 6.2.2 Therefore, unrestricted interconnection with the E.164 telecom system within India at all feasible locations should be facilitated and encouraged. Origination & Termination charges should be in line with the prevailing IUC regime whereas carriage should be left to the market forces, subject to the prevailing ceiling.
- 6.2.3 Rather than limiting the POI either at origination or terminations locations only, TRAI should instead of pre-determining the same should keep it flexible, so as to allow for optimal and cost effective utilization of respective service provider networks.
- 6.2.4 Moreover, the Internet telephony service providers should have the flexibility to use managed and/or (the so-called public) Internet as they deem fit for carriage of a call across locations as they deem fit.
- 6.2.5 Such an approach can help link Indian businesses with new business opportunities, get rid of the current inefficiencies that limit BPOs, and allow broadband consumers to more easily stay in touch with far flung family members who use the PSTN.

6.3 Numbering & Address Space

- 6.3.1 Assigning E.164 numbers to the Internet telephony devices would be extremely useful measure for a large number of people due to the familiarity and hence, much desired. Again, telephone numbers that are not restricted to particular SDCA, would be useful for subscribers roaming from one location to another. Geographic numbers, should be eligible to be allocated to service providers and be used by end users outside of the traditional telephone zones or other boundaries. Several countries have realized the benefit of geographic numbers for Internet telephony.
- 6.3.2 As it is, the National Numbering Plan 2003 needs urgent review and revision as the Authority has noted elsewhere. However, the fact is that there are spare and not allotted numbering series that can be assigned for Internet telephony thereby giving a very simple and uncomplicated way of conveying to subscribers about the differentiation. However, only enabling a separate telephone number range instead of allowing the use of existing numbers could have the effect of slowing Internet telephony adoption and preventing Indian businesses and consumers from utilizing services that act as a replacement for an existing service - thus thwarting the benefits of competition and the ability to switch between technologies.

6.3.3 In addition, despite the ongoing efforts by TRAI and TEC, there is still no clear roadmap for NGN in India. While migration to NGN is inevitable, the country and its common masses should not be restrained from benefits of Internet Telephony through the accustomed E.164 numbering system.

6.4 Tariffs

6.4.1 Tariffs for Internet telephony should be under forbearance just like the Authority has wisely done all along for the Internet telephony since April 2002. Many legacy phone regulations - such as tariffing, do not make sense in a competitive marketplace with many providers offering similar services.

6.5 Quality of Service (QoS)

6.5.1 The restricted Internet Telephony, permitted since April 2002, became popular and continues to thrive without any QoS mandate. However, the very success of internet telephony can be attributed to the lack of mandate itself which allows enormous flexibility and wide choice to service providers and consumers across varying tariff-quality-volume-destination matrices.

6.5.2 Hence, there is no need to mandate QoS for provisioning of Internet Telephony terminating at PSTN/E.164 within country, when such QoS has not been necessitated for similar termination to PSTN abroad over the past 6 years plus.

6.6 Emergency Number Access

6.6.1 One recognizes that there are important social policy obligations like emergency access that can be achieved for types of phone services that substitute for the traditional telephone in a home. However, globally access to Emergency numbers through Internet Telephony is not yet a mature function to the same level as possible in the TDM/PSTN system. Considerable progress is being made through sincere endeavors in this direction. Hence, clear and upfront communication from Internet telephony service providers to subscribers regarding any limitations about access to the correct emergency numbers should be mandated to enable subscribers make a conscious choice.

6.6.2 In many countries, policymakers are also coming to recognize that Internet-enabled communications often offer inherent advantages in an emergency. However, application of emergency access rules to web sites, click-to-dial services, 1-way PSTN-out interconnected voice services, and other Internet telephony services that are not a replacement for traditional home/business phone services could actually harm public safety, stifle innovations critical to people with disabilities, stall competition, and limit access to innovative and evolving communication options where there is no expectation of placing an emergency call.

6.6.3 Therefore, emergency calling obligations should not be imposed on non-replacement telephony services simply because they allow calls to PSTN telephone numbers. There is no consumer expectation that these types of non-replacement services will permit emergency calling, and thus no risk that a consumer would rely on this service to make an emergency call, or use the service to replace their existing emergency service capable telephone service.

6.7 Interoperability

6.7.1 PSTN and IP networks already inter-operate through a multitude of standards and protocols. However, the concern of the Authority to ensure seamless implementation of future services and applications is appreciated and one believes that the same will be duly taken care of while developing and implementing the NGN framework for the country.

6.8 Lawful Interception & Monitoring

6.8.1 All messages of unified communication (including but not limited to the Internet telephony communication) traverses through and over the telecom infrastructure of licensed operators of different types and each such license agreement already contains the requisite norms for lawful interception & monitoring.

6.8.2 Placing similar burden on Internet telephony service providers is unnecessary and redundant. Such burden only increases the cost of the service provisioning and increases additional complexity.

6.9 Level-Playing Field

6.9.1 Every time the regulator wants to do something in the consumer interest, some vested interest or the other is bound to raise the issue of level-playing field and urge the regulator against forward-looking enablement. Even during 2001-2002 consultation and implementation of Internet telephony several operators (including the incumbent) had repeatedly opposed competition but once it was opened up, they too rushed to offer the same service.

6.9.2 International Telecommunications Union (ITU) in its “Future of Voice” report¹ puts it this way:

“Attempts to block or suppress a truly disruptive technology like VoIP are both myopic and futile. Productivity gains and socio-economic progress from

¹ Future of Voice, ITU, Regulatory Trends: New Enabling Environment, January 12, 2007.

adopting technologies like VoIP can be large and countries that attempt to suppress VoIP risk losing their economic competitiveness.²

It is no coincidence that VoIP is lightly regulated, if at all, in countries where PSTNs are either privately owned (although subject to public regulation) or are privatised and subject to market competition, but remains subject to restrictions in countries where it poses revenue threats to government-owned or supported PSTNs.

The loss of dynamic efficiency entailed by protecting incumbent PSTNs from the VoIP threat can place a burden on a country's socio-economic development. In particular, given a propensity to adopt mobile telephony as a leapfrogging communication technology, developing countries stand to gain significantly more by promoting converged mobile VoIP (and other broadband) services.”

7. Conclusion:

We appreciate this opportunity to comment, and urge TRAI to eliminate the restriction on originating/terminating Internet telephony calls to the PSTN in India and ensure that Internet based applications provided on the Internet continue to thrive and advocate and foster competition and facilitate unbridled interconnection with the PSTN in India.

² ITU Footnote reads: “It is perhaps no coincidence that the countries that rank higher on the Global Competitiveness Index (“CGI”) are developed economies that have embraced enabling Internet-based technologies like VoIP. The GCI is composed of nine “pillars”, at least one of which — technological readiness — is likely to be a direct correlate of VoIP use and others — infrastructure, business sophistication, and innovation — are likely to be at least indirect influences. See World Economic Forum (2006).”

Evolution of the Internet & Internet Telephony in India

Dateline	Description	Remarks
15 August 1995	(then) Public sector monopoly International Long Distance Operator VSNL begins offering Internet service to the Indian public	Under the terms & conditions, any type of telephony on the Internet restricted
15 January 1998	Government announces guidelines for Internet services	Real time applications like voice on the Internet not allowed
11 February 1998	(Then quasi-judicial) TRAI stays the Internet guidelines announced on 15 January 1998	This was prior to the amendment in the TRAI Act in 2000 that led to setting up of a separate Telecom Dispute Settlement & Appellate Tribunal
22 May 1998	Prime Minister sets up a Task Force for Information Technology & Software Development	Mandate was to provide specific actionable recommendations
25 July 1998	First set of 108 recommendations of the IT Task Force notified through a special resolution of the Planning Commission	The very first recommendation refers to provision of the Internet access by private parties; <i>no reference to any restrictions on Internet telephony</i>
6 November 1998	New guidelines for ISP licenses announced	The scope of services excludes 'telephony on Internet' though the phrase itself undefined
March 1999	New Telecom Policy 1999 (NTP 1999) announced; Availability of affordable and effective communications for the citizens at its core through convergence of IT, media and telecom	Internet telephony to be continued to be disallowed; government to keep a watch on the developments and review from time to time
2001	TRAI recommendations on competition in International Long Distance Operators (ILDO)	Competition to begin w.e.f. 1st April 2002

20 July 2001	Government seeks recommendations from TRAI on introduction of Internet telephony in India	Letter includes <i>inter alia</i> recommendation by an internal group within the government that all licensed access & long distance operators (only) be permitted to offer Internet telephony and ISPs be excluded
23 November 2001	TRAI releases consultation paper on Internet telephony	Telecom operators (including the incumbent operators) with ILD, NLD and access licenses oppose opening of Internet telephony to other licensees
20 February 2002	TRAI recommends opening of Internet Telephony as an Internet application service w.e.f. 1 st April 2002 to coincide with the competition in ILDO without any interconnection with E.164 numbering system in India with a view to ensure non-disturbance of USO obligation by Basic (Fixed Line) operators; also recommends that (hitherto disallowed) VoIP be allowed to be used by access and long distance operators in their own networks	Internet telephony permitted in the following ways: (i) from PC in India to PC in India and abroad (ii) SIP/H.323 device in India to similar devices in India and abroad (iii) PC in India to phones abroad
21 February 2002	DoT invites comments on TRAI recommendations about Internet Telephony vide a press note	Till date a unique case when government of India invited comments on TRAI recommendation from public at large; expectedly, incumbent telecom operators opposed
21 March 2002	DoT announces guidelines for opening of Internet telephony w.e.f. 1 st April 2002	
1 April 2002	DoT starts permission to offer Internet telephony; "PC to phones abroad" tariffs significantly lower tariffs than the ILD tariffs	Soon after, several access and long distance operators) begin similar services through their respective ISP <i>avatars</i>

29 April 2004	TRAI makes recommendations for Broadband growth	
14 October 2004	Government announces Broadband Policy, 2004	Target for Broadband subscribers: 3 million by 2005, 9 million by 2007, 20 million by 2010
10 November 2005	DoT issues new policy measures for telecom services, including <i>inter alia</i> : <ul style="list-style-type: none"> • Entry fees slashed to INR 25 million each for NLD & ILD licenses from the erstwhile levels of INR 1 billion & 250 billion respectively • rollout norms for NLD & ILD licenses significantly eased • Scope of UASL license expanded to include Internet, broadband and (unrestricted) 'Internet telephony' 	These amendments came into force w.e.f. 1 January 2006 Almost all access licensees (UASL, CMTS, Basic) also acquired NLD & ILD licenses and till date, Internet telephony entailing interconnection with Indian PSTN remains unavailable due to obvious lack of competition from a different set of service providers
24 August 2007	DoT amends Internet license and does away with the need to seek separate permission to offer Internet telephony; Unified Messaging Service (UMS) included within the Internet license	Rather than just SIP or H.323 only, any standard-based IP device permitted in India for Internet telephony; interconnection with Indian PSTN continues to be disallowed
9 April 2008	With respect to UASL & CMTS license, DoT defined 'Internet telephony' as: <i>“Internet Telephony” Means “Transfer of message(s) including voice signal(s) through public Internet”</i>	As this document is presumably not in the public domain, it is difficult to comment on the same except that TRAI has also noted that the phrase 'public Internet' remains undefined
30 April 2008	Broadband Subscriber base at 4 million	Target for end 2007 end was 9 million