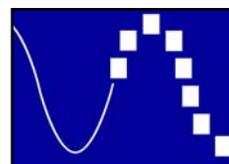


TRAI Consultation paper on Issues related to Internet Telephony

(Consultation Paper No. 11/2008)



The VON Coalition
The VON Coalition Europe

The VON Coalition¹ and the VON Coalition Europe² welcome the opportunity to jointly share their views on the TRAI Consultation Paper on Issues related to Internet Telephony (Consultation Paper No. 11/2008) as an important opportunity to advance policies that will enable consumers and businesses in India to enjoy the full promise and potential of Internet communications.

The Coalitions strongly support endeavors to fully open India's VoIP and Internet Telephony services market.

Background:

Around the globe, Internet enabled communications are transforming the way people communicate. With the right legal and regulatory framework, VoIP-led innovation has immense potential to extend the power of Internet communications to new corners and applications. Consumers throughout India will be able to use VoIP to do things never before thought possible, businesses may increase efficiency and productivity and transform the way they operate, government can provide better citizen services and broadband enabled communications can help economies to become engines for innovation and spur the creation of higher-paying knowledge economy jobs.

Unlike traditional TDM telephony, Internet-enabled communications are an entirely new genre of communications products and services. They represent a broad range of different types of technologies that sometimes substitute for traditional wireline communications but more often than not are something entirely different. VoIP applications can often be accessed from a web site or downloaded as software like

¹ The Voice on the Net or VON Coalition consists of leading VoIP companies, on the cutting edge of developing and delivering voice innovations over Internet. The coalition, which includes AT&T, BT Americas, CallSmart, Cisco, CommPartners, Covad, EarthLink, Google, iBasis, i3 Voice and Data, Intel, Microsoft, New Global Telecom, PointOne, Pulver.com, Skype, T-Mobile USA, USA Datanet, and Yahoo! works to advance regulatory policies that enable Americans to take advantage of the full promise and potential of VoIP. The Coalition believes that with the right public policies, Internet based voice advances can make talking more affordable, businesses more productive, jobs more plentiful, the Internet more valuable, and consumers more safe and secure. <http://www.von.org>

² The Voice on the Net (VON) Coalition Europe was launched in December 2007 by six leading Internet communications and technology companies – iBasis, Intel, Google, Microsoft, Rebtel, Skype and Voxbone – to create an authoritative voice for the Internet-enabled communications industry in Europe.

other Internet based applications and this is already permitted in India since April 2002 as the consultation paper records. Voice can now be integrated into a variety of software applications and web sites. Today's VoIP services aren't simply a means to having a conversation; they're portals to a world of information that enriches the communications experience and add new dimensions to the idea of 'conversation'. Taken together, the benefits of Internet voice communication include cost savings for consumers, advanced features unavailable with traditional circuit-switched telephony, significantly increased competition, increased infrastructure investment in state-of-the-art technologies, accelerated broadband deployment, increased flexibility in access for persons with disabilities, and increased worker productivity.

Around the globe, forward-thinking countries that have sought to maximize the benefits of VoIP through liberalization and the opening of markets and are now enjoying vast benefits. India too, through this consultation, can use this opportunity to further open the door to new consumer opportunity, boost broadband benefits, and extend Internet opportunity to more businesses and consumers. With the right policy framework, TRAI can spur new competition and opportunity - allowing consumers and businesses to communicate more affordably, more productively, and in entirely new ways not possible with legacy communication systems.

VoIP is a needed broadband driver

Internet is transforming almost everything around us --- from the way people work to the way they learn and interact with others. As a recent United Nations report found, broadband Internet access is now becoming as vital for success as access to water and electricity. Yet in countries like India, there are large swathes of geographies and social strata for which it still remains largely unavailable and even if available; remains inaccessible or unusable. It leaves people behind in an online world full of new opportunities.

However, the inability to maximize the use of a broadband connection for phone calls within India can impede important public policy goals such as those in the Broadband Policy 2004. While the subscriber base has grown from almost nil to 4 million at the end of April 2008, it is not even half of the target of 9 million for 2007 end and at the current rate of growth, the target of 20 million by 2010 is a challenging task. It is now becoming clear that VoIP may be the long awaited "killer application" for driving broadband subscribership. In other areas of the world, consumers are often flocking to broadband in order to take advantage of the many benefits of emerging VoIP technologies that integrate communication through and with the Internet.

However, the current limits imposed on VoIP in India, are severely limiting the ability to deliver lower prices and new innovative services to Indians. For example, volumes of Internet telephony from computers and other IP devices in India to phones abroad has tapered and at times, even, registered negative growth.

In addition, although forward looking policies have enabled a competitive wireless market, there are signs that VoIP regulatory hurdles are now hurting India's prospects for taking advantage of fixed-mobile-convergence.³

The VON Coalitions appreciate that the Authority has recognized that Internet telephony has been permitted w.e.f. 1st January 2006 to the Unified Access Service Licensees (UASL) and that there are numerous reports about its ever-increasing popularity in India just like elsewhere. However, it is critical to ask why this service is not yet being offered by any of the UASL licensees who have been expressly permitted to offer it. To answer this question, rather than just looking at facilitating interconnection with the PSTN in India for a certain set of licensees, it would be more appropriate to look more comprehensively at the wider canvas of Internet telephony from the customers' perspective - and explore ways to help enable consumers and businesses to take full advantage of the power and potential of Internet based communications by ensuring the availability of all forms of PSTN connected services.

By examining the history and context of past decisions, it is possible to garner a better understanding of the current landscape and reach some conclusions about the best approaches going forward for achieving these goals. Key landmarks of the policy & market evolution in this context are chronicled in a tabular form in Annexure-A. By combining this historical context together with changes in technology and 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:

1. VoIP is not only good for subscribers but also for the service providers - including the so-called facility-based operators as they are increasingly investing in IP networks as well as migrating from TDM networks to IP.
2. 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 and at the same time, USO fund itself is disbursing

³ http://www.ilocus.com/ui_dataFiles/news13October06.htm

funds for providing wireless services through advanced technologies and sharing of infrastructure in far-flung, rural and remote areas all over India.

3. It is also 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 Internet telephony 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 scenario serves neither country well.
4. Presence of multiple operators, higher volumes, higher tele-density, reduction in entry & (recurring) license fees, investment in advanced transmission (Fiber optics) & switching technology Tariff - 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.
5. 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.
6. 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 point of arbitrage.
7. Today, Internet Telephony is actually much more than just carriage of voice calls on an IP backbone. 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' and other technologies for which VoIP is the bedrock.

Regulatory Objectives

From a more holistic perspective, there are key objectives the Authority should be striving to achieve:

1. **Simulating of the market:** catalyzing competition where it does not exist
2. **Spurring innovation:** spurring the growth of market and thereby motivating entrepreneurs to invest and innovate

3. **Fulfillment of Policy Objectives:** World-class affordable telecom services to all the citizens of the country by leveraging the convergence (NTP 1999) and achieving the targets of 20 million broadband subscribers (Broadband Policy 2004)
4. **Foster sustained competition and protect consumer interest:** Ensure widest choice to consumers and protect consumers from unreasonable tariffs and business practices

We believe that by facilitating and implementing interconnection with Indian PSTN for Internet telephony, all these objectives would be achieved.

Internet Telephony in the context of Call Centers / BPOs

The BPO industry in India is a result of entrepreneurial zeal and forward-looking ICT policy framework. 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.

By facilitating interconnection between Indian PSTN and IP networks, Indian BPO industry would become much more competitive and people within India would also be served with similar type of quality as India provides overseas.

Business Demand for Internet Telephony

The regulatory framework impacts where companies decide to locate and invest. According to Infonetics Research, the number one reason that companies are deploying VoIP around the world (as compared to costs, flexibility, features, and convergence which all rank high) is that it can be used across multiple locations. Businesses adoption of VoIP is surging:

- More than 75 percent of large US businesses have deployed VoIP somewhere within their networks⁴
- Businesses are achieving cost savings of as much as 60%.⁵

⁴ More than 75 percent of large US businesses have deployed VoIP somewhere within their networks, according to Heavy Reading, which tracks technology deployments. That figure is projected to climb to almost 90 percent. What's more, nearly 75 percent of companies that embrace VoIP are extremely satisfied with it, according to Gartner analysts. Source: Heavy Reading -- http://www.realttime-unifiedcommunications.com/articles_and_news/2006/04/voip_and_universities.htm

⁵See VoIP is transforming Business Communication: Lowering costs, boosting productivity, increasing mobility, and enhancing competitiveness, at <http://www.vonplus.org/benefits/Benefits%20webpage/Enterprise.pdf>

- Businesses are achieving an estimated 15% to 20% increase in personal productivity through smarter communication ⁶
- Two-thirds of companies using VoIP say it is giving their companies a competitive edge ⁷
- Companies are tapping into remote and mobile workforce. ⁸

While other countries are taking advantage of the opportunities that VoIP enables, the lack of PSTN connectivity for multi-national businesses using VoIP to communicate has become a major barrier to investment and opportunity in India. These restrictions make it harder for India to become the back office for other businesses located around the globe.

Comments on the content of the Consultation Paper

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:

1. While the 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 at all and definitely not as much as they do someone within India. 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.
2. There is an urgent need to correct this unreasonable, unequitable and non-level playing field that excludes common masses from availing benefits of technological innovation, especially when it is supported in the name of USO!
3. 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 do offer phone to phone telephony wherein at least some part of the call traverses over the 'Internet'.

⁶ The Yankee Group estimates that integrating different work and communication modes can improve information worker productivity by 15-20%. See <http://www.avaya.co.uk/emea/en-us/resource/assets/brochures/uc%20family%20brochure%20uc3377.pdf>

⁷ Sage Research survey, see: http://www.lightreading.com/document.asp?doc_id=28585

⁸ See: <http://www.vonplus.org/benefits/Benefits%20webpage/Telecommuters.pdf>

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 advise 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.

Around the globe, incumbent phone providers initially oppose opening markets to VoIP competition, often raising a number of ill-founded concerns⁹. However once markets are opened for VoIP and competition ensues, incumbents quickly embrace VoIP, its many benefits, and over time become its champion. For example, in the United Kingdom, the incumbent British Telecom (BT) itself is investing in an all IP next generation network (21 CN), converting all voice calls to VoIP, and has set a 5 year deadline to switch off their PSTN service entirely.¹⁰ In the Netherlands, the incumbent phone company KPN plans to unplug its analog phone network entirely by 2010 - relying entirely on VoIP to serve its customers.¹¹

In the United States, after VoIP services became popular, the two largest incumbent phone companies, Verizon and AT&T not only began offering their own competitive VoIP services, but are also upgrading their broadband networks to provide triple play (broadband, video and Voice) over one unified network. In addition, the two companies have become two of the largest VoIP providers to business customers. According to Telegeography, 34 percent of all French households subscribe to VoIP - one of the highest penetration rates in the world. Incumbent phone provider France Telecom has emerged as by far the largest consumer VoIP provider in Europe, while incumbent phone providers BT, Telecom Italia, and KPN all rank among the top ten European VoIP operators in their own respective countries. The lesson is clear, when VoIP (in whatever form) is liberalized, traditional telephone companies do not vanish

⁹ ITU's Trends in Telecommunication Reform 2007, describes it this way: "*In many countries, incumbents have resisted offering VoIP services to protect their lucrative long-distance and international call revenues. In the process they have tried to convince regulators and policy-makers to ban or restrict other service providers from doing so. Today, however, the number of countries in which VoIP has been legalized is greater than the number of countries where it is banned.... Today, a growing number of countries have or are about to legalize VoIP,*"

¹⁰ See http://www.isp-planet.com/cplanet/tech/2006/prime_letter_060803_british_telecom.html Total cost of the overhaul is estimated at £10 billion. http://www.infoworld.com/article/06/11/28/HNbtallipnetwork_1.html?source=rss&url=http://www.infoworld.com/article/06/11/28/HNbtallipnetwork_1.html and http://www.druid.dk/uploads/tx_picturedb/dw2006-1695.pdf

¹¹ As reported by the German Press Agency.

away. Yes they face new competition as they will in India. But once competition comes calling, incumbents are forced to invest, innovate, and compete - not only on price but on features. In every case, the winners of this newfound competition are consumers and businesses.

Though late entrant in the Internet access business, Indian incumbent operators BSNL & MTNL quickly gained the top two slots in the Internet service providers within India and it would not be surprising when very quickly these very service providers along with other leading and emerging operators may become leading providers of Internet telephony within India besides of course, many others as well. The International Telecommunications Union (ITU) in its "Future of Voice" report¹² put 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 adopting technologies like VoIP can be large and countries that attempt to suppress VoIP risk losing their economic competitiveness."¹³

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."

Comments on the Issues raised in the Consultation Paper

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

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

¹³ ITU Footnote reads: "It is perhaps no coincidence that the countries that rank higher on the Global Competitiveness Index ("GCI") 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)."

Regulatory Burden

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:

Scenario	Origination	Termination	Regulatory Obligations
A	IP	IP	None
B	IP	E.164	Light-touch; interconnection with PSTN within India would be subject to those overseas
C	E.164	IP	Light-touch; Though ENUM has been referred, this is a reality even otherwise
D	E.164	E.164	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.

Interconnection

Ensuring that subscribers of Internet telephony can talk to and fro with their PSTN counterparts is essential for helping unleash the technologies full potential. Therefore, unrestricted interconnection with the E.164 telecom system within India at all feasible locations should be facilitated and encouraged. 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.

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.

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.

Numbering & Address Space

Numbers, including 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, including on a trans-national basis. VON supports the view that geographical numbers are most suitable to open up VoIP services to the mass consumers as consumers are highly familiar with those types of numbers. Other countries have come to realize that use of geographic numbers, even when those numbers are used with services that could be taken by an Indian family while on vacation in another country or region and still be reached - can have enormous benefits.

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 VoIP 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.

QoS

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.

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.

Emergency Number Access

The VON Coalitions 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.

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 VoIP 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.

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.

Interoperability

PSTN and IP networks already inter-operate through myriad standards and protocols. However, the concern of the Authority to ensure seamless implementation of future services and applications is appreciated. However we believe that the market place already has incentives to ensure interoperability on its own and that it would be ill-advised to force specific VoIP standards for interoperability purposes. Doing so may limit consumer choices and features going forward while not advancing interoperability beyond what is already happening in the marketplace.

Enabling Internet Based Opportunity.

TRAI should ensure that Internet based applications provided globally over the Internet are exempted from domestic regulation. VoIP represents a broad range of different types of technologies that sometimes substitute for traditional wireline communications but often are something entirely different. VoIP applications can often be accessed from a web site or downloaded as software like other Internet based applications, or integrated into social networking web sites.

In these cases, the software makers or web site host makes these offerings available globally and may not even have the ability to know that the service has been downloaded or is being used from India as increasingly, these are peer to peer services. These downloadable services and integrated web sites often serve as an adjunct to other forms of communication and not as a substitute for traditional wireline communication. For these reasons, Internet applications and software like VoIP should not be subject to any licensing or other form of domestic regulation. Instead, these VoIP applications are better treated like any other unregulated website or software download.

We appreciate that the Indian policymakers and the regulator have recognized utility of such applications and 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.

Conclusion:

The VON Coalitions appreciate this opportunity to comment, and urges TRAI to eliminate the restriction on originating/terminating VoIP calls to the PSTN, promptly grant UASL license applications, ensure that Internet based applications provided globally over the Internet are exempted from domestic regulation, and continue to adopt policies that enhance competition by enabling other categories of service providers to offer VoIP services that directly interconnect to the PSTN. By further opening its market to VoIP, consumers throughout India will be able to use VoIP to do things never thought possible, businesses may increase efficiency and productivity and transform the way they operate, and broadband enabled communications can help economies to become engines for innovation and the creation of higher-paying Information Age jobs.

Internet Telephony in India: Chronological Evolution

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
1998	Delhi High Court grants interim stay against VSNL blocking access to certain websites offering Internet Telephony	VSNL was the sole ISP at the time in the country
15 January 1998	Government announces guidelines for Internet licensing	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 ISPs; no reference to any restrictions on Internet telephony
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,	Internet telephony to be continued to be disallowed; government to keep a watch on the developments and review from time to time

	media and telecom	
Dateline	Description	Remarks
2001	TRAI recommendations on competition in International Long Distance Operators (ILDO)	Competition to begin w.e.f. 1 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
20 July 2001-23 November 2001	Department of Telecommunications (DoT) clarification to TRAI	recommendations contained in its letter dated 20 July 2001 did not represent the views of the government on the issue
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 (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	DoT invites comments on TRAI recommendations about Internet	Till date a unique case when government of India invited comments on TRAI

2002	Telephony vide a press note	recommendation from public at large; expectedly, incumbent telecom operators opposed
Dateline	Description	Remarks
21 March 2002	DoT announces guidelines for opening of Internet telephony w.e.f. 1 st April 2002	
1 April 2002	DoT issues begins issuing licenses to offer Internet telephony; services begin for PC to phones abroad with significantly lower tariffs than the ILD tariffs	Within 2 weeks, several telecom licensees (access and long distance operators) themselves began offering Internet telephony (PC to phones abroad) through their respective ISP avatars competing with the standalone ISPs
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> : 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	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
Dateline	Description	Remarks
9 April 2008	With respect to UASL & CMTS license, DoT defined 'Internet telephony' as: "Internet Telephony" Means "Transfer of message(s) including voice signal(s) through public Internet"	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
12 May 2008	TRAI issues the instant consultation paper on 'Internet Telephony'	