

Consultation Paper No 19/2006

Telecom Regulatory Authority of India

Consultation Paper on “Review of Internet Services”

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PREFACE

Telecom Regulatory Authority of India (TRAI) received a reference from Department of Telecommunication seeking recommendations on Internet Services. The Government is contemplating to review the policy of Internet Services with a view to address large number of ISP licenses, grey market operations, level playing field vis-à-vis other licensed telecom service providers, for an effective, regulated and forward looking ISP license.

It may be recalled that Internet services were launched in India on 15th August 1995. In November 1998 the Government opened up the sector for providing Internet services by private operators. A liberal licensing regime was put in place with a view to increase Internet penetration across the country. Though large number of ISPs (389) have been licensed to operate Internet service today, top 20 ISPs provide Internet services to 98% subscribers. Internet Telephony has been permitted to 128 ISPs, however only 32 of them are presently providing Internet Telephony. The growth of Internet and Broadband is slow and with present growth it is not likely to achieve the target of 18 million Internet subscribers and 9 million Broadband connections by 2007.

Government is concerned with increasing “IP telephony called” grey market. The loss of Government revenue, unlicensed operation by certain operators in violation of law of the land, depleting market share of licensed operators are some of the reasons which necessitates urgent review of policy of Internet services as well as ISP licensing conditions.

Numbers of new services like IP-TV, IP-Telephony etc are becoming popular. The demands of the various content services are likely to increase in coming years. The scope of services under existing ISP license conditions are un

clear. There is need to remove these ambiguities to smoothen roll out of these services while ensuring level playing field vis-a vis other licensed telecom operators.

In order to address these issues pertaining to Internet Services, Authority has decided to release a consultation paper on “**Review of Internet Services**”. The consultation paper discusses in depth present scenario, regulatory environment, emerging trend and emphasize the need to revamp Internet services in India. The consultation paper is available on TRAI’s website: (www.trai.gov.in). The stakeholders are requested to send their comments on the various issues mentioned in the consultation paper by 15th January 2007. In case of any clarification/information, please contact Sh. S. K. Gupta, Advisor (CN), Tel.No.+91-11-23217914, Fax: +91-11-23211998 or email at skgupta@traigov.in or guptask61@gmail.com

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CHAPTER - ONE

INTRODUCTION

- 1.1 Telecom Regulatory Authority of India received a reference (Annex-I) from Department of Telecommunication (DoT) seeking recommendations on Internet services. The Government is contemplating to review the policy of Internet services to address the issue of large number of ISP licenses, grey market operations, level playing field vis-à-vis other telecom service providers for an effective, regulated and controlled ISP license. Since the Government has asked TRAI recommendation in terms of clause 11(1)(a) of TRAI Act 1997 as amended by TRAI amendment act 2000, the recommendations have to be submitted in time bound manner.
- 1.2 Internet Services in India were launched on 15th August 1995 by Videsh Sanchar Nigam Limited (VSNL). During the first three years of VSNL operation, the Internet subscriber base grew slowly. By the end of March 1998, it had barely reached 140,000 subscribers. In November 1998, the Government recognized need for encouraging spread of Internet in the country and opened the sector for provisioning of Internet Services by Private Operators. The License conditions for providing Internet services were liberal with no entry and License fee and allowed unlimited number of players. ISPs could set their own tariffs and even their own International Gateways.
- 1.3 DoT issues three types of licenses for Internet services— Category 'A' for all-India operations; Category 'B' for metros and big circles, and Category 'C' for medium and small cities (SDCAs). ISPs were required to pay performance bank guarantee as per

their service area of operation i.e Rs. 2 Crore for Category 'A' Service Area, Rs. 20 lakh for each Category 'B' Service Area and Rs. 3 Lakh for each Category 'C' Service Area. All these steps were taken to encourage large number of ISPs to start Internet operations and boost Internet penetration.

- 1.4 The supportive Government policy and entry of unlimited private players, opened competition and lowered Internet tariffs which led to the phenomenal surge in the subscriber base growth. The subscriber base grew more than 200 percent per year, from 0.28 millions in March 1998 to 3.04 millions by March 2001. However, from April 2001 onwards, the growth rate started declining and reduced to just 7% at the end of March 2003.

<u>Month/ Year</u>	<u>Subscriber Base (Millions)</u>	<u>% Growth</u>
Aug' 95	0.01	
Mar' 96	0.05	400
Mar' 97	0.09	80
Mar' 98	0.14	56
Mar' 99	0.28	100
Mar' 00	0.95	240
Mar' 01	3.04	220
Mar' 02	3.42	13
Mar' 03	3.64	7
Mar' 04	4.55	25
Mar' 05	5.55	22
Mar' 06	6.94	25
Sept' 06	8.07	16

- 1.5 With the start of always on high speed Internet access (below 256 kbps) and Broadband Internet access (more than 256 kbps), growth rate increased again and maintains an average growth of 20-25% per year.
- 1.6 While slow growth of Internet is the concern of the Government as we are lagging behind the target fixed in national broad band policy. It is noticed that top 20 ISPs contributes to 98 % of Internet subscribers. Up till now large number of licenses has been issued but only 389 licenses are valid and only 135 licensees are operational. The subscriber base of most of small ISPs are either stagnating or declining. The department has also noted that incidences have come to their notice where ISP licenses were misused. This trend suggests the need to revisit Internet services & ISP licensing, a change in existing ISP license regime.
- 1.7 Government is also concerned with increasing Internet telephony called grey market. The loss of Government revenue, unlicensed operation by certain operators in violation of law of the land, depleting market share of licensed operators are some of the reasons which necessitates urgent review of ISP licensing conditions.
- 1.8 We may recall that, ISPs were allowed to offer Internet telephony Services with effect from April 1, 2002. Only existing ISPs were permitted to offer Internet telephony services after signing the amended ISP license however number of restrictions were imposed on the type of the technology, devices which can be used. Initially there were no financial implications (no entry fee and a token license fee of Rs 1/-) on

- ISPs for providing Internet telephony services. However, w.e.f. 1st January 2006, DoT has imposed a revenue share on ISPs offering Internet telephony services @ 6% of AGR earned from Internet telephony.
- 1.9 The technologies permitted under present licenses to provide Internet telephony are not user friendly and require knowledge of PC as a pre-requisite. As a result Internet telephony did not become popular in India. The user friendly devices brought in by technological advancements made Internet telephony very popular now. Increased popularity of new devices has given rise to grey market as uses of these devices are not permitted under present ISP license. The Authority had noted these developments and recommended to DOT to remove these restrictions to popularize Internet telephony.
- 1.10 DoT has issued 128 ISP licenses for provision of Internet telephony, out of which just 32 have reported the commencement of their services.
- 1.11 In February 2006, DoT permitted Unified Access Service Providers (UASPs) and Cellular Mobile Service Providers (CMSPs) to provide unrestricted Internet telephony (i.e National and international without any restriction) and Internet access. However, none of these service providers have reported commencement of the Internet telephony services.
- 1.12 It is evident that Internet growth did not pickup even with large number of service providers to offer Internet services. The dialup access charges did not reduce in spite of reduction of national and international band width charges. Though several new value

added services are available over Internet with the rapid advancement in the technology, existing ISPs licensing terms and conditions are not clear about provisioning of such services.

1.13 There are number of clauses in ISP licenses which are either not relevant or require modifications to cater for the latest technological development and to encourage Internet penetration. The review of some other clauses has been necessitated on account of amendments in the licenses for other telecom services. The Authority has also received several representations regarding relevance of some clauses in existing ISP license conditions in changed environment. The innovation in technology and increasing stability of IP services changed the total environment in which initial licenses were issued and Internet services were launched.

1.14 Considering all the above aspect, there is a strong case to review the terms and conditions of existing ISP licenses. The authority has released this consultation paper to seek the views of stake holders on various issues. This document discusses in detail the present licensing conditions, the need for change, present scenario and likely impact of emerging trends on licensing conditions.

1.16 QUESTIONS FOR CONSULTATION

Q1. At present, there are 389 licensed ISPs out of which only 135 are offering Internet services. Top 20 ISPs cater to 98% Internet subscriber base. In your view, is there a rational for such a large number of ISPs who are neither contributing to

the growth of Internet nor bringing in competition in the sector? Suggest appropriate measures to revamp the Internet service sector.

CHAPTER - TWO

PRESENT SCENARIO

- 2.1 ISP License is one of the most liberal Licenses, wherein no License Fee has been levied on the ISPs till 31st October 2003. Thereafter, a token license fee of Rs.1/- per annum is payable w.e.f. 1st November 2003. There is no restriction on the number of Service Providers in all the three categories of service areas i.e. 'A', 'B', 'C'. At present, there are 389 ISP licensees and out of these only about 135 ISPs are operational.
- 2.2 At the end of September 2006, there are about 8.00 million Internet subscribers. 98% of these subscribers are catered by top 20 ISPs while the remaining 115 ISPs cater to only 2% subscribers. Similarly, out of 128 ISP licensees permitted to provide Internet telephony, only 32 have started the service. At the end of September 2006, out of total reported 72 millions minutes of usage (MOU) of Internet telephony, 10 ISPs account for 95 % minutes of usage. This indicates that only few licensees have contributed to the Internet services. The quarterly Indian Telecom Services Performance Indicator Report published by TRAI shows majority of the ISPs having very few subscribers.
- 2.3 The stand alone ISPs can only provide plain Internet access services like dialup Internet, Internet lease line, or broadband. Approximately 60% of the total Internet subscribers still use dialup Internet access. Internet subscribers access ISP's node using network of access providers. Users pay only Internet access charges to ISPs. Charges for network access go to access provider directly. The minutes of the uses pattern of most

- of the Internet dialup users are low as the bulk users of Internet services are migrating to Broadband services.
- 2.4 The broadband charges for Internet are comparatively low. As such, any subscriber having higher Internet usage pattern prefers to migrate to broadband. ISPs generally do not have last mile access. They have to lay their own network to provide broadband. The cost of laying such networks is high and is not viable to small ISPs.
 - 2.5 ISPs as of now have limited penetration. Though they are allowed to establish their own last mile including Radio, Optical fiber and underground copper cable; it requires huge investment. The right of way is another issue associated with it. There is no adequate return on investment.
 - 2.6 The technological changes have impacted the business model of ISPs. The rapid technological development has led to emergence of new value added services like IP TV, IP-VPN etc over Internet. The definition of service in existing ISP licenses is unclear. The present regime require separate permission for provision of IP-VPN, Internet telephony etc. As a result ISPs are required to migrate to separate license like ISP (Including Internet telephony), ISP with VPN etc for providing these value added services.
 - 2.7 The large number of ISPs with limited scope of service under ISP license is affecting the viability of ISP business. The authority is concerned on the business viability of ISPs and seeks comments of stake holders in this regard.

- 2.8 DOT has also flagged the issue of misuse of ISP licenses for providing illegal services by some of the ISPs. Complicated business model further intensify the need for in-depth discussion on need and role of such a large number of ISP licensees especially considering their limited subscriber base and virtually no contribution to Internet growth or to increase competition.
- 2.9 The wireless broadband spectrum is available for limited service providers. TRAI has recently given recommendation for allocation of spectrum for wireless broadband. As per the recommendation, Government has been requested to allocate 200 Mhz of spectrum in 3.2 to 3.4 Ghz band to facilitate wireless operation of 12 ISPs in a circle. One slot has been reserved to be allocated to smaller ISPs on city basis with intention to give boost to broadband penetration in smaller cities/ rural areas.
- 2.10 An in depth study on viability of such a large number of ISPs in present environment is required especially considering limited availability of spectrum, high Capex requirements to build the networks, low rate of returns for providing dialup Internet service which will further decline with the increase of broadband connections.
- 2.11 Internet telephony is fast picking up however standalone ISPs are not permitted to provide Phone-to-Phone Internet telephony in the country. The licensing clause reads as “ **Internet telephony is a service to process and carry voice signals offered through public Internet by use of personal computers (PC) or IP based customer premises equipment (CPE) connecting the following: -**

- (a) PC to PC : With in or outside India**
- (b) PC in India to telephone outside**
- (c) IP based H 323/ SIP terminal connected directly to ISP node to similar terminals within or outside India.”**

The limited permission for use of devices is inhibiting the growth of Internet telephony in the country, as consumers are not able to experience the benefits of unrestricted Internet telephony.

2.12 ISP license (with Internet telephony) permits the use of only H.323 and SIP devices for making Internet telephony calls that too to the similar devices. With the advancement in the technology, several other IP Access devices are available in the market, which can be used for Internet telephony. Present device definition in existing ISP license for provision of Internet telephony is restrictive and detrimental for the growth of Internet telephony in the country.

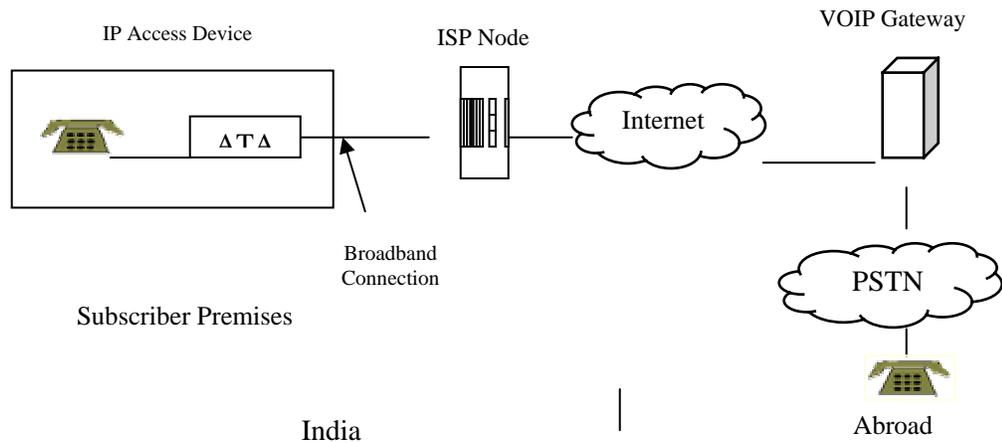
2.13 For making a call to telephones abroad, only PC is permitted in the existing ISP license, which is financially out of the bounds for the masses. Using a PC for Internet telephony requires higher skills like knowledge of English, typing etc. Alternative low priced user-friendly devices will be preferred option. TRAI has already recommended to DOT the option of other IP based devices for Internet telephony. TRAI in its recommendation dated 20 March 2006 on issues relating to convergence and competition in broadcasting and telecommunication has recommended that all CPEs using protocol recommended by ITU /IETF be permitted. A letter was also sent to DOT as recently as Sep 2006.

2.14 Presently only Universal access service licensee (UASL) and Cellular mobile telephone service (CMTS) licensees are permitted to provide unrestricted end-to-end Internet telephony (IP based internet telephony within country or abroad without any restriction on type of device to be used) services over PSTN network. None of these have reported the start of the service. All these service providers are providing voice services using switched technology.

2.15 ISPs who want to offer unrestricted Internet telephony Service is required to switch over to UASL License. The license fee of UASP license for a circle is too high as spectrum is also bundled with this license, and thus not viable for standalone ISPs.

2.16 Grey Market in India

2.16.1 The availability of user friendly technologies capable of providing improved voice quality and restrictions on ISPs to use not so user friendly limited technologies have given rise to grey market in India in a big way. Since cost of using Internet telephony is very low as compared to voice call and provide comparable speech quality, many subscribers are encouraged to use it though it is not legally permitted. There are many user friendly access devices available in the grey market in India and used for making Internet telephony calls illegally to PSTN abroad. Users can connect regular telephone instruments (or fax) over a Broadband Internet connection by using adaptor provided by the foreign companies like Vonage to make and receive calls. The adaptor converts voice into data and send it through Internet to VoIP gateway of these companies for terminating call to PSTN abroad.



2.16.2 This arrangement violates the ISP license condition that permits the use of only IP based H.323/SIP Terminals in India to similar Terminals both in India and abroad, employing IP addressing scheme of 'IANA'. TRAI has already intimated to DoT about such illegal services.

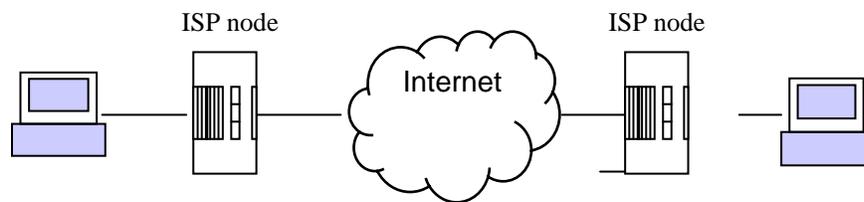
2.16.3 There are reports that Internet telephony Calls from abroad are also being terminated illegally on PSTN in India using various innovative techniques illegally like IP PABX. Though IP PABX can technically be used to connect Internet on one side and PSTN lines on other side to facilitate termination of Internet telephony calls for patching with PSTN network in India to save international termination charges is highly illegal. The authority has no specific information of use of such devices in Indian network. It is a serious matter as such arrangements bypass ILD network for evasion of termination charges and Access deficit charges (ADC).

2.16.4 The possibility of similar misuse by some PCO operators is also not ruled out. Small instruments are available which have facility to connect Internet telephony at one hand and PSTN lines on

other hand. Such instruments also have conferencing facilities. PCO operators can potentially misuse conferencing facility between PSTN lines and Internet telephony to deliver voice calls illegally. In such an arrangement ultimate user does not require any additional equipment. He simply calls PCO operator who connects to International number using Internet telephony. The call expenses are drastically low as compared to normal switched voice call over PSTN.

2.16.5 While subscribers are happy to talk by paying less than tariff rates, many may not even be aware that this is an illegal arrangement. We seek your suggestions as to how such illegal routine can be curbed?

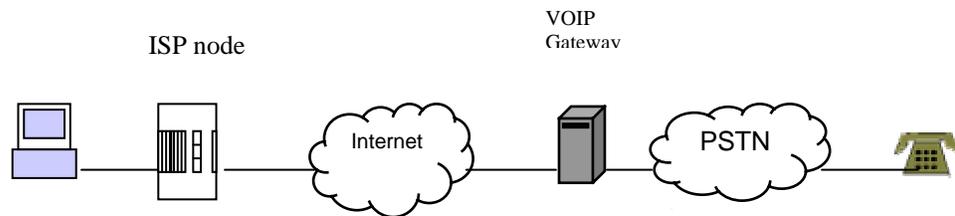
2.16.6 There are web based VoIP services like skype, iChat etc., which are a little piece of software that lets the user to make free calls to anyone using the same software, anywhere in the world. Software can be downloaded free of charge from their website. Provisioning of free calls is basically a PC to PC communication as shown below:-



2.16.7 These softwares can also be used to make call to landlines and mobiles anywhere in the world on nominal payment through credit card. This is a PC to phone communication. One needs to

purchase Credit from their website to avail this facility. Handsets are also available for making such calls, which can be plugged into USB port of PC/laptop.

2.16.8 These websites also allow one to purchase a number that lets one receive calls. This is an extension of numbering/ addressing system of other countries network. It is a matter of serious concern as monitoring of such communications is considerably difficult and can be used for anti-national activities.



2.16.9 Instances have also come to the knowledge of the Authority where subscribers have been cheated by these illegal Internet telephony providers. In spite of the payment of the required amount subscribers could not use Internet telephony at all or at least not equal to payment they have made. There are no contacts details except given on their web site. Mostly such operators do not response to any complaints lodged. Subscribers do not have any other grievance redressal mechanism and have no option but to suffer such financial losses.

2.16.10 As discussed, providers of various illegal Internet telephony services are not licensed in India. They are also not paying any revenue share to Govt resulting in revenue loss. Lawful

interception of such calls is also a challenge and a difficult task.

2.16.11 One method of restricting illegal Internet telephony could be to create consumer awareness about illegal services, as they are the actual victims of such services and this could prove a major deterrent for illegal operators. However the practical experience indicates that persons have tendency to use cheaper and user friendly services even if provided illegally unless they get similar other services legally.

2.16.12 One of the remedies to control the grey market can be by blocking of such websites and imposing restriction on sale of the adaptors to use illegal Internet telephony. However, international experience indicates that blocking has not proved very successful due to certain technical constraints. Even restricting the sale of such adopters may not be an easy task. Though there can be number of other methods to check such illegal IP based Internet telephony calls but all suffer with one limitation or the other and there seems to be no effective mechanism to check these activities..

2.16.13 Further analysis indicates unavailability of cheaper and user-friendly devices for Internet telephony as one of the main reason for alarming increase in the grey market. Present ISP license conditions allow the use of PC only for making calls to phone abroad. This is very restrictive due to un-affordability of PC and cumbersome method of calling. Though UASPs and CMSPs are allowed to provide unrestricted Internet telephony, they have not started the services yet.

2.16.14 While considering to permit unrestricted Internet telephony to ISPs, the issue of level playing field between, UASL, CMTS and ISPs needs to be considered.

2.17 QUESTIONS FOR CONSULTATION

- Q1. Due to limited availability of spectrum for wireless broadband access, and high cost of creating last mile infrastructure, many ISPs are left with only option to provide Internet dialup access services. With increasing penetration of broadband, what efforts are required to ensure viability of such ISPs in changing scenario? Please give suggestions.**
- Q2. At present limited services are permitted under ISP licenses. There is no clarity in terms of some services whether they can be provided under ISP licenses. Do you feel that scope of services which can be provided under ISPs licenses need to be broadened to cover new services and content? Suggest changes you feel necessary in this regard.**
- Q3. UASL/ CMTS licensees have been permitted unrestricted Internet telephony however none of them are offering the service. ISPs (with Internet telephony) can provide Internet telephony with in scope defined in license condition. The user friendly and cheaper devices with good voice quality are increasing Internet telephony grey market. Please suggest how grey market operations can be curbed without depriving users to avail such services?**

Q4. How to address the issue of level playing field amongst the licensees of UASL, CMTS, and ISPs?

CHAPTER - THREE

EMERGING TRENDS

3.1 The fast technological developments are changing the telecom scenario. The increasing availability of optical fiber, reduced latency in IP networks, better speech quality of Internet telephony over Internet clouds and improved quality of service over Internet is encouraging launch of new applications and services. The provisions of various services under Internet Service providers' license have to be looked into keeping in view the changing perspective.

3.2 INTERNET TELEPHONY

3.2.1 The popularity of the Internet telephony is increasing day by day. The good quality of the speech, easy availability, user friendly devices, and very low rates are some of the reasons for its popularity.

3.2.2 Majority of the countries has identified two distinct categories of the Internet telephony providers:-

1. Internet telephony over Internet
2. Internet telephony over managed network

Regulators use these two classes separately. In the India scenario, should it be viewed as separate service and not linked?

3.2.3 It is a fact that most of the regulators in the developed countries have used light regulation for Internet telephony over Internet clouds. The emphasis has only been on ensuring proper information to subscribers on

limitations of Internet telephony over Internet clouds such as not so good quality of speech, call drop, limitation of dialing emergency numbers etc. Only Internet telephony on managed network has been regulated i.e well defined QoS, Lawful interception, compulsory implementation of the emergency number calling, implementation of the well defined numbering scheme etc.

3.2.4 Such categorization was meaningful till few years back when quality of the speech of Internet telephony over Internet clouds was inferior to QoS on managed network. The present scenario has changed. The gap between QoS in two scenarios has blurred. As a result the two categories which were distinct entities few years back are merging. Any regulatory intervention need to take this development into consideration.

3.3 MIGRATION TO NGN:

3.3.1 The next generation networks (NGN) is another topic of discussion. The possibility of separation of network layer from service and application layer has facilitated launch of new services and contents with great ease. The IP back bone works as robust network over which all the services and data rides. The integration of the networks will reduce the Capex and Opex and at the same time facilitate service providers to compete not only on quality or price of the services but also on the variety of services suitable to subscribers.

3.3.2 The service transparent IP back bone is likely to bring fundamental changes in the hierarchy of the networks and the way data flows today. Emphasis is going to change from service based licensing to service neutral licensing, time and distance based charging to flat charging and per call basis interconnect agreements to pipe size interconnect

agreements. Exchange of IP data will be a major concern in that environment. These developments are likely to have major impact on Internet services. This has to be kept in mind while formulating future policies.

3.4 INTRODUCTION TO IPV6

3.4.1 The existing ISP license stipulates that Internet is a global information system that is logically linked together by a globally unique address system, based on Internet Protocol (IP) or its subsequent enhancements/ up -gradations. However, Part I of Schedule C of ISP License stipulates the IP Address as 32 bit binary address only.

3.4.2 The existing version of Internet protocol, IPv4 seems to be lagging behind in catering to the challenges of requirement of larger IP address space, better quality of service, mobility and security.

3.4.3 IPv6, which is next generation Internet protocol, has capacity to expand the available address space on the Internet enormously; using 128 bits vis-à-vis 32 bits of IPv4. It also addresses the issue of QoS as it has capability to provide better QoS. In addition, IPv6 is designed to promote higher flexibility, better functionality and enhanced security & mobility support. Because of these advantages, the service providers are generally inclined to migrate to this newer version of Internet technology.

3.4.4 Since IPv6 address has the length of 128 bits, the existing definition in ISP license which permits 32 bits addressing needs to be amended to facilitate migration to IP V6.

3.4.5 TRAI has already recommended this in its recommendation dated 9th January 2006 on Issues Relating to Transition from IPv4 to IPv6 in India.

3.4.6 TRAI recommendations to the Government on these Issues are summarized below:

- (i) Definition of IP address mentioned in ISP license needs to be amended to enable 128 bits to be used as needed for IPv6 based addressing, in place of 32 bits at present.
- (ii) The usage of IPv6 in the platforms/applications pertaining to e-governance to be mandated, so that head start is taken for IPv6 deployments. The Government should also mandate IPv6 compatibility in its own procurement of IT systems and networks.
- (iii) Workshops and seminars to bring awareness about IPv6 and its benefits for service providers and end-users community should be conducted through Government agencies.
- (iv) Establishment of National Internet Registry (NIR) in the country, within the framework of APNIC, the Regional Internet Registry, utilizing the existing setup of National Internet Exchange of India (NIXI).
- (v) Enlargement of the existing IPv6 test bed of ERNET to make it countrywide and accessible to all interested parties.
- (vi) Up gradation of NIXI as a national test bed for IPv6 & interconnection among its various nodes to provide access to all ISPs. Encouragement to TEC, CDOT, and CDAC to set up the IPv6 test beds through Government's funding.

The ISP licenses must include suitable modification to facilitate migration to IP V6 in a prescribed time frame.

3.5 LAWFUL INTERCEPTION OF INTERNET TELEPHONY

3.5.1 Like any other Public Telephony service, Internet telephony services including other IP based services are also liable to Lawful Interception by national security agencies. A key question in case of Internet telephony providers is the location in the network where it is practical to intercept the call data.

3.5.2 It is possible to Intercept IP to PSTN calls at the gateway or in the terminating telecom operator's network using existing Interception systems. However, it is difficult to intercept IP to IP calls because they do not necessarily pass through the Internet telephony provider's facilities. In a call using SIP, the call setup data does traverse the SIP proxies, but the actual call data does not. Similarly, calls using H.323 may not pass through a gatekeeper, though they can be forced to do so if required.

3.5.3 Another major legal problem for IP to IP calls is the use of strong encryption to encrypt the call by end-users. VoIP client software (such as Skype) already uses 256 bit Advanced Encryption standard (AES). Businesses already rely on it for conducting business over the Internet.

3.5.4 As a result, it will be a challenge to Intercepting authorities to intercept messages using high degree of encryption when IP calls are made. Though brute force decryption is available to the legal authorities, but it takes substantial time and resources. Solution needs to be worked out so that lawful interception can be provided while permitting unrestricted Internet telephony.

3.6 ISSUE OF NET NEUTRALITY:

3.6.1 Network neutrality is the principle that Internet users should be able to access all content they view and all applications they use on the Internet without being discriminated by Internet service provider(s)/ access provider(s). The Internet has operated according to this neutrality principle since its inception. Indeed, it is this neutrality that has allowed many companies (application service providers, content providers etc.) to launch, grow, and innovate. Fundamentally, net neutrality is about equal access to the Internet. In US, Network operators want to charge Internet content providers for enhanced IP services, while Net neutrality proponents say regulations are needed to prevent abuse by the Net's gatekeepers. There have already been instances of Internet providers blocking access to Internet applications that allow you to access your company's network, share files with peers - even send large attachments (like digital photos) in your email. Internet providers are not prohibited from discriminating against the content available using their services; therefore they could legally restrict access to any website or Internet application they choose whenever it suits their bottom-line economic. The broadband carriers want US Congress's permission to determine what content gets to you first and fastest.

3.6.2 The situation may also rise in India as Internet access providers may use their market power to discriminate against competing applications and/or contents.

3.6.3 The issue of net neutrality in the long term can threaten popularity of Public Internet based Internet telephony and similar

other applications as all the intermediate Internet providers may start asking commercial agreements in absence of which they may refuse to carry the content and provide desired quality of service. The future developments are likely to have new applications and contents. The business models of ISPs are concentrated around useful application. In this background views of stake holders are required whether regulatory intervention is needed to ensure net neutrality in India in times to come or it may be left to market forces.

3.7 QUESTIONS FOR CONSULTATION

- Q1. The emerging technological trends have been discussed in chapter 3. Please suggest changes you feel necessary in ISP licenses to keep pace with emerging technical trends?**

CHAPTER – 4

REGULATORY ISSUES

- 4.1 Introduction of new services at affordable cost, bringing in competition and better penetration of services has been the prime concern of the regulators world over. DOT permitted unrestricted number of Internet service providers in each circle with a view to increase penetration of Internet and bring in competition. However in true sense neither Internet growth has picked up nor have the charges for Internet access declined. The unrestricted Internet telephony has been permitted to UASL and CMTS operators however no one has commenced these services till now. ISPs with Internet telephony have been given licenses to provide Internet telephony calls that too with condition of use of specific technology (SIP or H323). Hence even this is not very popular. Development of technology has brought in new adapters and innovative methods to use more user friendly gadgets to make Internet telephony call at much cheaper rates. Since it is not permitted as per the licensing conditions, the increasing popularity of such devices and cheap rates has encouraged development of grey market. These grey market operators are not giving any tax, or revenue share to Government as they are not licensed. This is resulting in loss to Government in terms of taxes and license fee.
- 4.2 The present scenario demands regulatory intervention to increase competition and ensure availability of popular Internet telephony legally. Since UASL and CMTS licensees are still not providing Internet telephony services, one can argue that Internet telephony with much reduced tariff is likely to compete

with UASL/CMTS conventional voice traffic which may badly affect their voice revenue and therefore chances of launching of Internet telephony by UASL and CMTS licensees are low. If this is so, one would be inclined to permit unrestricted Internet telephony services to ISPs by suitable modification of the existing licensing conditions. This is likely to encourage subscribers to use legally available service as it will be available on competing tariff using the user friendly devices.

4.3 The capital deployment by UASL and CMTS licensees is significant in their networks based on Circuit Switched technology and also in installing last mile facilities. It, therefore, needs to be considered carefully whether in case similar Carrier rights are granted to ISPs without the related obligations, the issue of level playing field may arise. It can also be argued that ISPs are not being subjected to any regulation. They are just targeting the high-end rich subscribers and not investing in rural areas. There seems to be a need to critically analyze issues like applicability of taxes; revenue share and Universal service obligation on PSTN operators and ISPs before taking any decision.

4.4 The ISPs providing Internet telephony are just paying @ 6% of AGR earned on provision of value added services (Internet telephony, VPN etc) to Government as revenue share. No revenue share is paid on revenues earned on Internet access. They just pay Rs 1/- per year per license as license fee and do not pay any other taxes which UASL or CMTS is paying. Moreover these ISPs may require interconnection with UASL and CMTS to provide unrestricted Internet telephony services. The non uniform tax burden is likely to disturb level playing field

between ISPs and UASL/ CMTS licensees and may encourage diversion of voice call traffic resulting in big financial hit to UASL/ CMTS licensees. The observance of level playing field is also one of the prime responsibilities of the regulators and therefore the option may be to put similar tax/ Cess/ License fee and licensing burdens on ISPs as are applicable to UASL and CMTS if unrestricted Internet telephony is to be permitted to ISPs.

4.5 ISPs are not permitted to have interconnection with PSTN as per the existing licensing conditions. The provision of unrestricted Internet telephony will require that ISPs must be permitted to have interconnection with PSTN networks. TRAI in its recommendation on unified licensing regime have recommended separating allocation of the spectrum from license charge. Spectrum is scare resource. ISPs, who are interested to migrate to UASL with intention to provide unrestricted Internet telephony services do not require spectrum, hence should be permitted UASL license without spectrum fee.

4.6 Many ISPs may not prefer to have interconnection with PSTN network but may not be able to survive with just plain dialup Internet services. Hence it may be worth considering opening other value added services to ISPs. One way could be that all ISPs may be permitted to offer value added services and pay 6% of AGR on revenues earned from all the service streams to maintain level playing field.

4.7 Foreign Direct Investment (FDI)

4.7.1 As per the present license condition, ISP LICENSEE shall be responsible to ensure that the total foreign equity in the LICENSEE Company does not, at any time, exceed 74% of the total equity, whenever it is likely to set up or has set up International gateways. ISPs that are not inclined to setup International Internet gateway are permitted foreign equity up to 100%. A cable operator who also wants to provide Internet due to synergy of operation and obtains ISP license is permitted to have foreign equity up to 49 % only. Similarly, maximum foreign equity in case of UASL and CMTS is presently 49%, however it can be up to 74 % after obtaining the approval of FIPB.

4.7.2 The different slabs of foreign equity for provisioning of similar type of services are discriminatory. This issue has been taken by stake holders with the Authority earlier also. A rational FDI regime for providing similar services under different license will have to be put in place.

4.8 FINANCIAL GUARANTEE:

4.8.1 Performance Bank Guarantee (PBG) :

4.8.1.1 As per the licensing condition, a Performance Bank Guarantee of Rs.2 crores, Rs.20 lakhs and Rs. 3 lakhs for category 'A', 'B' and 'C' service areas respectively valid for 2 years from a scheduled bank in the prescribed format (As per Schedule 'D' of the License Agreement) shall be submitted for each service area along with application for license, whose validity shall be extended from year to year without any demand from the licensor two months before the date of expiry of bank guarantee. In the event of failure to extend the validity period of Performance Bank Guarantee, it shall be taken as material breach of the

terms and conditions of the license agreement whereupon the Performance Bank Guarantee will be encashed without any further notice to licensee, without prejudice to any other remedy, and the amount so encashed shall be kept as security without accrual of any interest. Provided that the licensee who commissions the service shall furnish/extend the performance bank guarantee of the reduced amount of Rs.1 crore, 10 lakhs and 2 lakhs for each of the service area for category A, B and C respectively.

4.8.1.2 Performance bank guarantee is required to ensure roll out obligations. The amount of bank guarantee is so low that non serious players can enter the market and get off without substantial financial losses. Roll out obligations are vaguely defined at present. Even block of IP address being used, the details of the network, geographical areas being served etc are not mandated as part of compliance for roll out obligations. There seems to be a need to very clearly define roll out obligations and increase the amount of bank guarantee to ensure that only serious players enter the Internet services sector.

4.8.2 FINANCIAL BANK GUARANTEE (FBG):

4.8.2.1 At present, ISPs with Internet telephony have to pay License fee and accordingly these ISPs shall be required to give a Financial Bank Guarantee also. The details regarding FBG are as under:

- (i) The LICENSEE shall submit a Financial Bank Guarantee (FBG), valid for one year, from any Scheduled Bank or Public Financial Institution duly authorized to issue such Bank Guarantee, in the prescribed Performa. Initially, the financial bank guarantee shall be for an amount of Rs. 20 lakh, Rs. 2 lakhs and Rs.50 thousand (for Category A, B and C ISPs respectively) which shall be submitted before signing the

License agreement. Subsequently, the amount of FBG shall be equivalent to the estimated sum payable equivalent to license fee for two quarters and other dues not otherwise securitised and any additional amount as deemed fit by the Licensor. The amount of FBG shall be subject to periodic review by the Licensor and shall be renewed from time to time till final clearance of all dues.

(ii) Initially, the Financial Bank Guarantees shall be valid for a period of one year and shall be renewed from time to time. The LICENSEE, on its own, shall extend the validity period of the Bank Guarantees for similar terms at least one month prior to date of its expiry without any demand or notice from the LICENSOR on year to year basis. Any failure to do so, shall amount to violation of the terms of the LICENSE and entitle the LICENSOR to encash the Bank Guarantees and to convert into a cash security without any reference to the LICENSEE at his risk and cost. No interest or compensation whatsoever shall be payable by the LICENSOR on such encashment.

(iii) Without prejudice to its rights of any other remedy, LICENSOR may encash Bank Guarantee (FBG as well as PBG) in case of any breach in terms & conditions of the LICENSE by the LICENSEE.

4.8.2.2 In case of ISPs with Internet telephony, the Government has performance bank guarantee and financial bank guarantee. There is virtually no entry fee for ISPs which is very high in case of the UASL/ CMTS licensees. The total bank guarantee with Government for category 'A' , Category 'B', and category 'C' ISPs will respectively be 1 crore 20 lakhs (1Crores PBG +20 Lakhs FBG), 12 Lakhs (10 lakhs PBG+ 2 Lakh FBG), and 2 lakhs 50 thousand (2 Lakhs PBG + 50 Thousand FBG). Needless to say that in case of misconduct of the ISPs, the maximum financial penalty by way of encashment of bank guarantee

is limited to an amount as indicated above for different categories of ISPs. DOT has indicated incidences of non serious ISPs indulging in grey market operations and expressed the need to regulate them. In above back ground and to regulate and control ISPs, there seems to be a need to discuss the issue whether enhanced bank guarantees can regulate various category of ISPs. Valuable suggestions of the stake holders in the matter are solicited.

4.8.3 License Fee and Schedule of Payments:

4.8.3.1 Initially no license fee was imposed on ISPs. The earlier clause pertaining to license fee says that the Telecom Authority (DoT) has decided to waive the License Fee for a period up to 31.10.2003 and a nominal license fee of One Rupee per annum will become payable from 01.11.2003; however, the Telecom Authority reserves the right to review license fee including Universal Service Obligation (USO) levy anytime during the validity of the license, which shall be binding on the licensee. DOT has flagged the issue of large number of ISP licenses and misuse of these licenses by some such licensees. In present scenario, top 20 ISPs are effectively serving 98% subscribers. Such low entry fee encourages non-serious ISP players to obtain ISP licenses. Telecom is a serious business market and there is an urgent need to regulate the industry. Rationalization of ISP license fee is an urgent need. Stake holders are requested to give their suggestion in this regard.

4.9 RADIO SPECTRUM CHARGES:

4.9.1 As per the ISP license condition, the LICENSEE shall pay spectrum charges, if applicable, in addition to the License Fees.

4.9.2 Further royalty for the use of spectrum for point to point links and other access links shall be separately payable as per the details and on

prescription of Wireless Planning & Coordination Wing. The fee/royalty for the use of spectrum /possession of wireless equipment depends upon various factors such as frequency, hop and link length, area of operation and other related aspects etc.

4.9.3 ISPs have raised this issue earlier also that such spectrum charges are very high and many a times becomes uneconomical. More over calculation and monitoring of such conditions also becomes very difficult. It is important to mention that in licenses like UASL/ CMTS, the spectrum charges are taken as percentage of AGR and not on the link basis. TRAI in its recommendation for allocation of spectrum for wireless broadband have suggested changing over to spectrum fee based on percentage of AGR.

4.9.4 Views of the stake holders are required if spectrum charging mechanism of ISPs be changed from link based charging to percentage of the AGR as discussed above? Kindly give suggestions.

4.10 **'ADJUSTED GROSS REVENUE'**

4.10.1 The Gross Revenue shall be inclusive of Internet access service, Internet content service, Internet telephony service, installation charges, late fees, sale proceeds of terminal equipments, revenue on account of interest, dividend, value added services, supplementary services, revenue from permissible sharing of infrastructure and any other miscellaneous revenue, without any set-off for related item of expense, etc.

4.10.2 In present licensing policy, for the purpose of arriving at the "Adjusted Gross Revenue (AGR)" for ISPs following shall be excluded from the Gross Revenue to arrive at the AGR:

- (i) Charges from Internet access, Internet content and Internet access related installation charges.
- (ii) Service Tax on provision of service and Sales Tax actually paid to the Government if gross revenue had included as component of Sales Tax and Service Tax.

4.10.3 In March 2006, Department of Telecommunication (DoT) issued an amendment and those ISPs with Internet telephony License are now required to pay license fee @ 6% of their AGR w.e.f. 1st Jan. 2006 in addition to Rupee One per annum as license fee excluding spectrum charges fee.

4.10.4 Since Internet content, Internet access and installation charges are not included in AGR for calculation of license fee, a tendency is being noticed to show reduced earnings on account of Internet telephony and indicate higher earnings of Internet access and Internet content to compensate for the reduced earnings quoted for Internet telephony. This revenue adjustment between different services is resulting in to loss to Government on account of revenue share from ISPs as it is based on revenue earned from provisioning of Internet telephony service.

4.10.5 UASL/CMTS licensees are also permitted to offer Internet services including unrestricted Internet telephony. In their case the revenue collected from provisioning of the Internet services is also accounted in AGR for the calculation of the license fee. This is discriminatory as compared with ISPs. In order to take advantage of this provision, UASL/CMTS operators who actually have permission to offer all Internet services including Internet telephony have also obtained separate ISP licenses.

4.10.6 Such loopholes need to be plugged and uniform policy has to be made to maintain level playing field. Views of the stake holders are required in this regard.

4.11 Policy alternatives for Internet services

4.11.1 The previous paragraphs have discussed in detail various issues relating to the provision of Internet services, issue of level playing field vis a vis other telecom service providers, grey market operations and slow growth of Internet services.

4.11.2 There can be different policy alternatives to achieve the required results. One can argue the need to encourage ISPs who want to provide unrestricted Internet telephony to migrate to UASL. It is also argued that many top ISPs either themselves have UASL/ CMTS licenses or their parent companies have UASL/ CMTS licenses. So, likelihood of big ISPs to migrate to UASL will be very high.

4.11.3 TRAI has already recommended separation of spectrum charges from UASL licensing charges. Streamlining UASL licensing charges will encourage ISPs to migrate to UASL. The common license to provide all the value added services like Internet telephony, IP TV, IP VPN will encourage ISPs to launch innovative application and encourage competition. The problems of interconnection with UASL/ CMTS, provision of E 164 numbering scheme, emergency number dialing, and lawful interception will get solved to great extent as in case of UASL in present situation.

4.11.4 One can say that though encouragement to migrate to UASL may be an alternative to few selected ISPs but majority can not afford such migrations. So how their viability can be ensured in this competitive market? There is a great demand of value added services by subscribers and hence this needs to be encouraged. This favours that all ISPs, who do not want to migrate to UASL licenses, be permitted to provide all value added services except unrestricted Internet telephony. A uniform revenue share of 6% of AGR earned from all the service streams is imposed to ensure level playing field.

4.11.5 DOT has also flagged the issue of likely misuse of ISP licenses by many existing ISPs. The explicit definition of roll out obligations may be one of the alternatives to curb misuse of the license. Compliance and operations may be periodically monitored.

4.11.6 This approach may facilitate new services and application, maintain level playing field, and increase competition. A progressive approach will be necessary so that ISPs can play more vibrant role as reflected below compared to what they are playing today: -

		Present Scenario		Possible Future Scenario	
		ISPs without Internet telephony	ISPs with Internet telephony	ISPs willing to migrate to UASL	Plain ISPs
Unrestricted	Internet	x	x	✓	x
telephony					

Internet telephony (Only using SIP/ H323)	x	✓	✓	✓
Internet telephony using any device	x	x	✓	✓
Allocation of subscriber numbers (E 164)	x	x	✓	x
IP TV	?	?	✓	✓
IP VPN	x	x	✓	✓
MPLS VPN	x	x	✓	✓
Application Based services	?	?	✓	✓

4.11.7 Views of stakeholders in this regard will be vital to decide future course of action as the approach discussed above, may require modifications in certain clauses of the ISP licensing conditions.

4.12 QUESTIONS FOR CONSULTATION

Q1. The service roll out obligations under ISP license is very general and can be misused by non-serious players. Do you feel the need to redefine roll out obligations so that growth of Internet can be boosted both in urban and rural areas? Give suggestions.

Q2. Do you feel that ISPs who want to provide unrestricted Internet telephony and other value added services be permitted to migrate to UASL without spectrum charges? Will

- it boost Internet telephony in India? What should be the entry conditions? Give suggestions.
- Q3. UASL/ CMTS licensees pay higher regulatory levies as compared to ISPs for provision of similar services. Do you feel that similar levies be imposed on ISPs also to maintain level playing field? Give suggestions.**
- Q4. Virtually there is no license fee for ISPs at present. The amount of performance bank guarantee (PBG) and financial bank guarantee (FBG) submitted by ISPs is low. Do you feel the need to rationalize the license fee, PBG, FBG to regulate the Internet services?**
- Q5. At present ISPs are paying radio spectrum charges based on frequency, hops, link length etc. This methodology results in high cost to ISPs prohibiting use of spectrum for Internet services. Do you feel that there is a need to migrate to spectrum fee regime based on percentage of AGR earned from all the revenue streams? Give suggestions?**
- Q6. The consultation paper has discussed some strategic paths to boost Internet telephony, bring in level playing field vis a vis other operators, and regulate the Internet services. Do you agree with the approach? Please give your suggestion regarding future direction keeping in view the changing scenario.**

CHAPTER FIVE

QUESTIONS FOR CONSULTATION

- Q1. At present, there are 389 licensed ISPs out of which only 135 are offering Internet services. Top 20 ISPs cater to 98% Internet subscriber base. In your view, is there a rational for such a large number of ISPs who are neither contributing to the growth of Internet nor bringing in competition in the sector? Suggest appropriate measures to revamp the Internet service sector.
- Q2. Due to limited availability of spectrum for wireless broadband access, and high cost of creating last mile infrastructure, many ISPs are left with only option to provide Internet dialup access services. With increasing penetration of broadband, what efforts are required to ensure viability of such ISPs in changing scenario? Please give suggestions.
- Q3. At present limited services are permitted under ISP licenses. There is no clarity in terms of some services whether they can be provided under ISP licenses. Do you feel that scope of services which can be provided under ISPs licenses need to be broadened to cover new services and content? Suggest changes you feel necessary in this regard.
- Q4. UASL/ CMTS licensees have been permitted unrestricted Internet telephony however none of them are offering the service. ISPs (with Internet telephony) can provide Internet telephony with in scope defined in license condition. The user friendly and cheaper devices with good voice quality are increasing Internet telephony

- grey market. Please suggest how grey market operations can be curbed without depriving users to avail such services?
- Q5. How to address the issue of level playing field amongst the licensees of UASL, CMTS and ISPs?
- Q6. The emerging technological trends have been discussed in chapter 3. Please suggest changes you feel necessary in ISP licenses to keep pace with emerging technical trends?
- Q7. The service roll out obligations under ISP license is very general and can be misused by non-serious players. Do you feel the need to redefine roll out obligations so that growth of Internet can be boosted both in urban and rural areas? Give suggestions.
- Q8. Do you feel that ISPs who want to provide unrestricted Internet telephony and other value added services be permitted to migrate to UASL without spectrum charges? Will it boost Internet telephony in India? What should be the entry conditions? Give suggestions.
- Q9. UASL/ CMTS licensees pay higher regulatory levies as compared to ISPs for provision of similar services. Do you feel that similar levies be imposed on ISPs also to maintain level playing field? Give suggestions.
- Q10. Virtually there is no license fee for ISPs at present. The amount of performance bank guarantee (PBG) and financial bank guarantee (FBG) submitted by ISPs is low. Do you feel the need

to rationalize the license fee, PBG, FBG to regulate the Internet services?

Q11. At present ISPs are paying radio spectrum charges based on frequency, hops, link length etc. This methodology results in high cost to ISPs prohibiting use of spectrum for Internet services. Do you feel that there is a need to migrate to spectrum fee regime based on percentage of AGR earned from all the revenue streams? Give suggestions?

Q12. The consultation paper has discussed some strategic paths to boost Internet telephony, bring in level playing field vis a vis other operators, and regulate the Internet services. Do you agree with the approach? Please give your suggestion regarding future direction keeping in view the changing scenario.

CHAPTER – SIX

INTERNATIONAL SCENARIO

6.1 Singapore:

6.1.1 ISP services fall under the Service Based Operator (SBO) Individual License category. The Internet Access Service Provider (IASP) license permits the establishment, installation and maintenance of a public Internet access facility for the provision of public Internet access services.

6.1.2 IASPs are required to meet minimum quality of service standards that correspond to 99.5% network availability and 95% dial-up system availability. Dial-up service applications have to be processed within 3 days.

6.1.3 The Singapore Broadcasting Authority (SBA) regulates Internet content. There is an automatic licensing framework and no approval from SBA is necessary. ISPs, however, are required to register with the SBA upon being granted a license by the Infocomm Development Authority (IDA).

6.1.4 Businesses such as cybercafes, hotels, etc. are allowed to resell Internet access to the public without a license from IDA.

6.1.5 Singapore has adopted Liberal regulation for VoIP services. IDA released guidelines for VoIP services in June 2005. Both Facility Based Operators (FBOs) and Service Based Operators (SBOs) were allowed to provide VoIP services. Two categories of VoIP services have been defined:

6.1.6 **Level 6 services:** These are defined as PSTN equivalent service. Only FBOs are permitted to provide such services and are required to provide QoS, interconnection, emergency access, number portability.

6.1.7 **Level 3 Services:** Both FBOs and SBOs are permitted to provide such services and are subjected to minimal regulatory requirements.

6.1.8 Service providers will have to ensure that limitations in provisioning of such services are clearly communicated to customers.

6.2 Malaysia:

6.2.1 ISP services fall under the Application Service Provider (ASP) Class License category. Interested applicants are only required to register under a Class License category to provide Internet access service.

6.2.2 The reselling of Internet access is not a licensable activity under the Act.

6.2.3 Apart from a liberal policy in terms of licensing new market entrants for Internet (including for IP telephony), the regulatory regime further supports the provision of Internet access through facilitating (in some cases mandating) the provision of network facilities and network services to ensure end-to-end connectivity. This is facilitated through the introduction of Commission Determination on Access List, which mandates the

- provision of network facilities and network services by an access provider to an access seeker in order to ensure end-to-end connectivity.
- 6.2.4 By virtue of the Access List, as access seekers, IASPs (on its own) can seek access from access providers (NFPs / NSPs) using Internet Access Call Origination service. Similarly, IASPs (partnering NFPs/NSPs) can seek Fixed Network Termination Service from other NFPs/NSPs.
- 6.2.5 The regulatory regime also supports a pro-competition regime when it establishes rules on anti-competitive conduct.
- 6.2.6 Malaysia has also adopted Light regulation for encouraging to VoIP services. MCMC guidelines on telephony over IP were released in July 2005. VoIP is defined as fixed service under service access prefix 0154, but 'nomadic' services are also allowed.
- 6.2.7 An account holder with a VoIP telephony provider can access services through any IP telephony device, through PSTN dial-up; broadband; or, cellular.
- 6.2.8 There is no regulation for QoS, retail prices and termination / origination prices. However, providers are "encouraged" to provide emergency access.

6.3 Hong Kong:

- 6.3.1 In Hong Kong Internet Access Services is a type of International Value-Added Network Services (IVANS) and is provided under

the Public Non-Exclusive Telecommunications Service (PNETS) License.

- 6.3.2 For the provision of public telecommunications services using the transmission facilities provided by licensed carriers or establishing or maintaining transmission facilities, which does not cross public streets or unleased Government land (i.e. confined within the boundary of a building or property), the operator needs to apply for a PNETS license.
- 6.3.3 Generally, there is no restriction on the number of licenses granted for the PNETS license and the Telecom Authority (TA) is prepared to consider new applications at any time. The PNETS license shall be valid for such period as determined and published by the TA at the time of the issue of the PNETS license. At present, the PNETS license is valid for one year and may, at the discretion of the TA, be renewed on an annual basis. The PNETS licensee shall pay the fees applicable to PNETS license as determined and published by the TA from time to time. At present, the annual license fee for the PNETS license is \$750 and shall be payable on the issue or renewal of the license.
- 6.3.4 Access to IVANS by subscribers in Hong Kong may be made via the public switched telephone network, public switched data networks, public telex network and/or dedicated circuits. For access using the public switched telephone network, an IVANS service provider has to pay the interconnection charges to the network provider for the use of the network. For access using public switched data networks or the public telex network, an IVANS service provider and/or its subscribers have to pay the

normal charges applicable to all users of the networks. For access using dedicated circuits, an IVANS service provider and/or its subscribers have to pay the normal flat-rate charges for the circuits concerned.

6.3.5 Hong Kong introduced the Two-tier licensing system for VoIP in June 2005.

- PSTN replacement
- ISP telephony

6.3.6 VoIP providers targeting PSTN replacement need to provide emergency access, directory inquiry services, back-up power.

6.3.7 There is less strict regulation for ISP telephony.

6.4 Japan:

6.4.1 Japan's licensing regime was based on whether a service provider owns its facilities (Type I) or leases facilities (Type II) to provide services. Such a regime made it difficult for a new entrant carrier to offer end-user services by using a combination of its own infrastructure and leased facilities from other providers. Under the system, a Type I carrier is authorized to lease services from other Type I carriers to serve subscribers within its approved "operational areas."

Type I operators were large telephone companies and were responsible for providing basic infrastructure indispensable to people's lives and overall socio-economic activities. They were therefore subjected to more stringent regulations. On the other

hand, Type II operators, not installing circuit facilities, were small value-added service providers with less direct influence on socioeconomic activities. But, this market situation had changed. While a lot of Most of the Type I operators were small operators such as CATV, W-LAN and CBD (central business district) access operators, large-scale Type II operators such as Internet, IP-telephony, and ADSL service providers had emerged. These operators compete in the same market. If an operator had its own circuit facilities, though the business scale is small, it was recognized as Type I and was subjected to more stringent regulation. Corresponding to the market changes, the regulatory framework was amended in July 2003 based on the distinction between Type I and Type II businesses. The summary of revision is:

- (i) Abolition of the distinction between Type I and Type II telecommunications business;
- (ii) Abolition of permission system for market entry with regard to Type I telecommunications business;
- (iii) Abolition of permission system for suspension and discontinuance of business with regard to Type I telecommunications business;
- (iv) Abolition of tariff regulations for non-dominant operators;

6.4.2 Japan is the only country, which has adopted QoS based controls for VoIP services. Three levels of call quality have been defined based on the resultant value of Transmission Rating Factor (R-value).

6.4.3 Numbers with 050 prefix are issued only for top call quality services. For VoIP services taking numbering scheme providers are required to provide

emergency access, directory services etc., but in return, full number portability is allowed.

6.5 Europe:

6.5.1 European Commission (EC) strongly promotes Industry self-regulation for Internet and VoIP services. However, Individual national regulators under EC are free to follow own set of regulation. The prime concern of EC is that VoIP operators clearly inform subscribers about the limitations of the services

6.6 UK:

6.6.1 UK has adopted general authorisation regime on 25th July 2003 ending the licensing regime. The regime is based on five EU directives covering interconnection and access, data protection, universal service, authorisation of electronic communication networks and services and common regulatory framework. Under this regime the requirement to obtain a license prior to operating a telecommunications system was replaced by a general authorisation to provide electronic communications networks and services that will apply to all providers of networks and services.

6.6.2 In UK VoIP services are subjected to Industry self-regulation. OFCOM released a Consultation Paper on Regulation of VoIP in February 2006. Operators need to make subscribers aware of VoIP limitations.

6.6.3 Emergency access is desirable but not essential at this stage. Special VoIP numbering scheme with prefix '056'/ '055' is adopted and both Geographical and non-geographical numbers are allocated. However, number portability is not mandated yet.

6.6.4 OFCOM also issued guidelines for consumers on buying & using VoIP services.

6.7 USA:

6.7.1 In US, ISPs do not require license or authorization. Instead, e-mail, data and Internet services are treated as “information services,” and ISPs are permitted to operate unfettered in a competitive and free market, subject only, with a few limited exceptions, to general business laws.

6.7.2 The main concerns in US about VoIP services are Emergency service and wiretapping. FCC released a series of orders covering these issues. Two clear classes of VoIP have been defined :

- (i) PC originated (e.g. Skype), which is not subject to regulation.
- (ii) PSTN replacement (e.g. Vonage), for which emergency access and wiretapping are mandatory.

6.7.6 To ensure compliance, two-stage process of subscriber acknowledgements and technical implementations is adopted. In addition; Telcos are not allowed to block 3rd party IP telephony.

6.8 Canada:

6.8.1 There are four principal groups of market participants providing retail Internet access and transport services in Canada:

- Incumbent Local Exchange Carrier's (ILECs), who own the majority of the copper twisted pair access links to homes and businesses. These entities provide Internet access mainly by

dial-up, DSL, fibre and satellite, although some fixed wireless is utilized in certain places.

- Cable companies, who own the coaxial-based television distribution networks into homes and businesses. These companies mainly provide access by cable modem, or by fibre.
- Competitive facilities-based telecommunications services providers, which provide service via dial-up, DSL, fibre, fixed wireless or satellite. An increasing trend in this group is the presence of ISPs who utilize unlicensed wireless in rural areas.
- Non facilities-based ISPs such as AOL Canada, Cybersurf Inc., Inter.net Canada and Uniserve focus primarily on the provision of Internet access services. These companies tend to utilize the wholesale DSL data services of ILECs and third party Internet access (TPIA) over cable.

6.8.2 While incumbent carriers and cable companies account for the majority of the Internet access market, there are also hundreds of other independent ISPs operating across the country today. These companies provide business and residential subscribers with Internet access services, as well as web hosting, e-commerce and other services. Most independent ISPs provide service on a local basis, although some service providers, such as AOL Canada, provide service on a national basis.

6.8.3 In Canada VoIP is treated just like any other telephony services. VoIP services are required regulatory price approvals like traditional voice services in order to prevent incumbents from competing effectively with new VoIP only players. VoIP operators are also required to provide same level of emergency access as incumbents.

Annexure I

Government of India
Ministry of Communications & IT
Department of Telecom
(DS Cell)

Sanchar Bhavan, 20, Ashoka Road, New Delhi – 110 001

No.820-01/2006-LR

Dated: 17th Nov, 2006

To

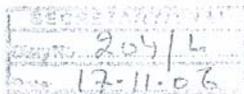
The Secretary,
Telecom Regulatory Authority of India,
A-2\14, Safdarjung Enclave,
Africa Avenue,
New Delhi : 110 029.

Subject: Recommendations on Internet Services

There are 389 ISP licensees, out of which 128 are permitted for Internet Telephony. With large number of ISPs the basic objective of promotional licenses for Internet service to percolate the Internet service has been fully achieved. However, a number of small and non-serious players have entered the ISP arena and as a result, there are a large number of cases wherein it has been detected that the ISPs and their customers have indulged in the grey market operations.

2. Further, all access service providers have been permitted to offer Internet service along with Internet Telephony of all forms including interconnection with PSTN. Recent advances in the IP technology, specially VoIP have brought out revolutionary changes in the Internet telephony nowadays which has become very attractive and competing with the switched telephony. This has created a number of issues with regard to level playing field vis-à-vis other telecom service providers

3. Therefore, the Government is contemplating to review the policy of Internet services with a need to address the issues of a large number of ISP licences, grey market operations, level playing field vis-à-vis other telecom service providers for an effective, regulated and controlled ISP licence.



4. TRAI is requested to furnish their recommendations in terms of clause 11(1)(a) of TRAI Act 1997 as amended by TRAI Amendment Act, 2000 on the issue of ISP licence (without Internet Telephony) as well as ISP licence with Internet Telephony.


~~(H.K. Gupta)~~ 17.11.06

Deputy Director General(DS)