



TELECOM REGULATORY AUTHORITY OF INDIA

Recommendations

On

**Review of Internet Services**

May 10, 2007

Mahanagar Doorsanchar Bhavan

Jawahar Lal Nehru Marg

New Delhi-110002

## Table of content

	PREFACE	3
1	INTRODUCTION	6
2	SCOPE OF ISP LICENSE	18
3	GREY MARKET OPERATIONS	28
4	REVAMPING AND RESTRUCTURING OF INTERNET SERVICES	39
5	RECOMMENDATIONS	85
Annexure I	Letter of DoT	93
Annexure II	Comments of Stakeholders	95
Annexure III	Reporting Format	102
Annexure IV	International Scenario	104
Annexure V	Amended Terms and Conditions of License	114
Annexure VI	Abbreviations	125

## **Preface**

1. Department of Telecommunications (DoT) has requested the Telecom Regulatory Authority of India (TRAI) for recommendations on Internet Service Provider (ISP) license. The communication from DoT has further conveyed that the review should address the issue of a large number of ISP licenses and limited viability issues, illegal or grey market activities and level playing field vis-à-vis other telecom service providers.
2. ISP sector was opened to private operators in 1998 with a view to encouraging growth of Internet and increase Internet penetration. A supportive policy regime with light regulatory approach was adopted with no license fee, no entry fee, very liberal roll out obligations and no cap on number of Internet service providers in a license area. It was hoped that soft regulatory approach would encourage private participation, bring in competition and fuel the growth of Internet.
3. The policy encouraged private participation and more than 700 licenses were issued within first 3 years of opening the sector to private participation. But the expected growth could not be achieved. Today 389 ISPs are licensed and only 135 are operational. Top 20 ISPs cater to 98 % of total Internet subscribers. The presence of significant number of players did not bring effective competition.
4. The march of technology has an impact on the present licensing framework, i.e. access service providers (UASL and CMTS), long distance providers (NLD/ILD), and Internet service providers. The blurring boundaries between types of services permitted

under various licenses have to be carefully factored while formulating policy. Today ISP is in a position to provide Internet telephony service that is traditionally a part of access service. Since regulatory levies in terms of entry fee, license fee and other taxes are specific to different telecom service licenses, the issue of level playing field among the service providers is critical and deserves fresh look.

5. The Authority has accordingly considered issues like grey market operations, provision of various services under ISP license, steps to facilitate technological ingenuity and issues relating to level playing field vis a vis other telecom service providers while finalizing recommendations on Internet services. The Authority supports liberal licensing framework for ISPs to boost Internet penetration but is also committed to provide framework which would curb grey market operations. The Authority is equally conscious of the fact that many standalone ISPs have limited resources but are catering to the requirement of niche markets.
6. The urgency of an expanded and unambiguous scope of ISP license, unrestricted Internet services including Internet telephony, uniform rate of license fee is widely felt as it will give ISPs better growth prospects and ensure level playing field among various service providers. The Authority is sanguine that recommendations will help to curb grey market operations, stabilize legal services and boost the scale of operation thus encouraging serious players to provide Internet services without putting undue financial burden.

7. It is hoped that DoT will impart serious consideration to the recommendations and will act without any loss of time.

**(Nripendra Misra)**  
**Chairman**

# **CHAPTER-1**

## **Introduction**

### **1.1 Background**

1.1.1 Telecom Regulatory Authority of India (herein after referred as The Authority) received a reference (Annex-I) from Department of Telecommunications (DoT) requesting for recommendations on Internet services. It was stated in the communication that department is contemplating to review the policy of Internet services to address the issues of large number of ISP licenses, grey market operations, level playing field vis-à-vis other telecom service providers for an effective and regulated ISP license.

1.1.2 Internet Service in India was launched on 15<sup>th</sup> August 1995 by Videsh Sanchar Nigam Limited (VSNL), an erstwhile Public Sector Undertaking (PSU) of Department of Telecommunications (DoT). During the first three years of VSNL's operation, the Internet subscriber base grew slowly. By the end of March 1998, it had barely reached 140,000 subscribers.

1.1.3 The Internet was at the developmental stage and no major applications/services were available through Internet at that point of time. It was mainly accessed using Dial-up connectivity and the main usage was browsing the Internet and e-mail.

### **1.2 Development of Internet in India:**

1.2.1 In order to ensure rapid expansion of the Internet Services in the Country, DoT took various initiative as detailed below:

**Table-1 : Initiatives by DoT for expansion of the Internet Services**

15 <sup>th</sup> Jan 1998	<ul style="list-style-type: none"> <li>➤ DoT announced guidelines for ISP license. Sale of forms for ISP licenses started w.e.f 18<sup>th</sup> Feb 1998.</li> <li>➤ A fixed license fee proposed per annum.</li> <li>➤ ISPs can not setup International gateway.</li> <li>➤ ISPs can not setup last mile.</li> <li>➤ ISPs permitted to only provide well defined services like e-mail, Archies etc. Real time services were not permitted.</li> </ul>
16 <sup>th</sup> Jan 1998	TRAI received representations on the guidelines issued by DoT for ISP license
17 <sup>th</sup> Feb 1998	TRAI stayed ISP guidelines
22 May 1998	Hon'ble Prime Minister constituted IT task force.
25 <sup>th</sup> July 1998	108 recommendations of IT task force were gazetted. ISPs license at Rs 1/- per annum was one of the recommendations.
6 <sup>th</sup> Nov 1998	A new definition of Internet services as existing today was adopted.
Nov 1998	ISP licenses were issued to private operators
11 <sup>th</sup> May 2001	TRAI sent recommendations on Unified Messaging Service (UMS)
16 <sup>th</sup> July 2001	DoT issued Notification for Voice mail/Audiotex/UMS license making ISP license a pre-requisite for operation of such service
1 <sup>st</sup> April 2002	Internet Telephony permitted to ISPs with certain restrictions.
Jan 2004	Reduction in PBG of ISPs who have rolled out

		Internet services.
April 2004		ISPs permitted to lay under ground cable in last mile.
Oct 2004		Broadband policy announced.
Dec 2004		ISP license with permission to provide VPN services introduced.
Jan 2005		Frequency band 2.4 GHz to 2.485 GHz delicensed for outdoor usages with low power equipment.
Jan 2005		Frequency band 5.150 GHz to 5.350 GHz and 5.725 GHz to 5.875 GHz delicensed for indoor/ in-campus usages with low power equipment.
Dec 2005		Entry fee for NLD /ILD license was reduced to 2.5 Crores each. License fee was also reduced to 6% of AGR.
Dec 2005		ISPs dis-allowed to provide VPN services. In case ISPs want to provide VPN services, they were required to migrate to NLD/ ILD license.
March 2006		Unified Access Service Providers (UASPs) and Cellular Mobile Service Providers (CMSPs) permitted to provide Internet telephony and broadband.
March 2006		ISPs with Internet telephony required to pay license fee of 6% of AGR and financial bank guarantee of Rs 20 lakh, Rs 2 Lakh and Rs 50 thousand for category 'A', category 'B' and Category 'C' license respectively.
May 2006		Permitted use of special characters such as *, #, \$, from subscriber terminal for provisioning of intra-network value added services or



		accessing/provisioning of high speed data services.
Jan 2007		Frequency band of 5.825 GHz to 5.875 GHz delicensed for outdoor use with low power access systems including radio local area networks.

1.2.2 DoT opened Internet segment for provisioning of Internet Services by Private sector in November 1998. The entry conditions for new ISPs were liberal and the sector was lightly regulated so as to ensure expansion of this crucial information dissemination service as fast as possible.

- There was no entry fee, no license fee, no restriction on number of service providers in a license area and liberal roll-out obligations to bring in as many players as possible.
- ISPs were permitted to determine their own tariffs
- ISPs were permitted to setup their own International Internet Gateways.
- ISPs with 74% foreign equity are permitted to set up International Gateway but ISPs with 100% foreign equity are not allowed to set up International Gateway.

DoT envisaged three Categories of ISP licenses based on area of operation – Category ‘A’ for all-India operations; Category ‘B’ for any of the 20 Territorial Telecom Circles (Generally analogous to States) or to any of four Metro Telephone Districts of Delhi, Mumbai, Kolkata & Chennai and any of the four major telephone districts of Ahmedabad, Bangalore, Hyderabad & Pune. These districts including four metros are not covered under respective territorial circles as far as provision of Internet services under category ‘B’ ISP license is concerned. Category

'C' licensee for any Secondary Switching Area (SSA) of DoT with geographical boundaries as on 01.04.1998. ISPs are required to submit performance bank guarantee (PBG) as per their proposed service area of operation i.e. Rs. 2 Crore for each Category 'A' Service Area, Rs. 20 lakh for each Category 'B' Service Area and Rs. 3 Lakh for each Category 'C' Service Area while applying for license.

- 1.2.3 The liberal & supportive DoT policy encouraged entry of large number of private players, which resulted not only in lower Internet tariffs but also led to the surge in the subscribers growth in initial years of opening of Internet sector to private service providers. The subscriber base grew more than 200 percent per year, from 0.28 millions in March 1999 to 3.04 millions by March 2001. However, from April 2001 onwards, the growth momentum declined to just 7% till end of March 2003. The growth rate to an extent increased with the launch of high speed "always on" Internet Services in 2002, but picked up only after launch of broadband services in 2005. It is important to note that growth in 1999 was due to dialup subscribers. However in 2005 it was due to broadband subscribers. Figure-1 shows the annual growth of Internet Subscribers base, which includes broadband subscribers also.

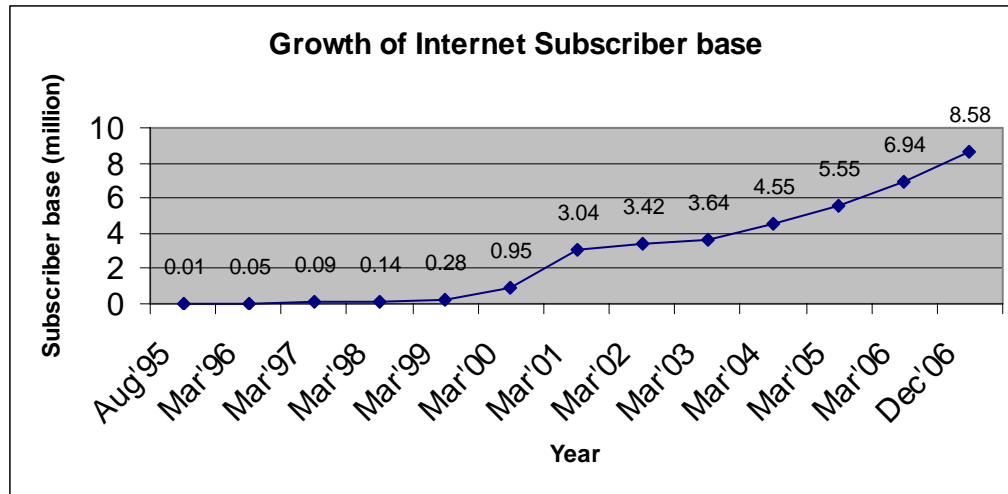


Fig 1: Growth of Internet Subscriber base

1.2.4 ISPs were also allowed to offer Internet Telephony Services with effect from April 1, 2002. Existing ISPs were permitted to offer Internet telephony services only after signing the amended ISP license called Internet Telephony Service Provider (ITSP) license. Internet telephony was permitted only in limited way as there were restrictions on the type of the technology and devices which can be used. Initially provisioning of Internet telephony service did not envisage any financial implications (no additional entry fee and license fee). However, w.e.f. 1st January 2006, DoT has imposed a license fee of 6% of AGR earned from Internet telephony by ISPs offering Internet telephony services.

1.2.5 DoT has issued 128 Internet telephony service Provider (ITSP) licenses, but only 32 ITSPs have reported the commencement of Internet telephony services. The technologies permitted under present license to provide Internet telephony are not entirely user friendly and require knowledge of Personal Computer (PC) as a pre-requisite. As a result Internet telephony using such restrictive devices did not become popular in India. The subsequent technological developments brought in user friendly

devices/ adapters to make Internet telephony calls which were not permitted as per the license conditions. It has contributed to grey market operations.

- 1.2.6 A significant development almost at the same time was evolution of technologies for provision of high speed Internet. The Authority forwarded its recommendations on 'Broadband India: Recommendations on Accelerating Growth of Internet and Broadband Penetration' in April 2004 and based on these recommendations, DoT announced 'Broadband Policy in October, 2004'.
- 1.2.7 After the announcement of Broadband Policy, the service providers started offering broadband services. Initially the tariff of broadband service was high. The Authority closely monitored the developments in the market and initiated steps to bring down broadband charges by regulating input costs. The tariffs for broadband declined with these initiatives and now a broadband connection is available at appx. Rs. 250/- a month.
- 1.2.8 The Broadband Policy announced by DoT has defined the Broadband as " An 'always-on' data connection that is able to support interactive services including Internet access and has the capability of the minimum download speed of 256 Kilo bits per second (Kbps) to an individual subscriber from the Point of Presence (PoP) of the service provider intending to provide Broadband service where multiple such individual Broadband connections are aggregated and the subscriber is able to access these interactive services including the Internet through this POP". The interactive services exclude any service for which a specifically separate license is required, for example, real-time

voice transmission, except to the extent that it is presently permitted under ISP license with Internet Telephony. Based on this definition the estimated growth for Broadband and Internet subscribers in the country was envisaged as indicated in Table 2 given below:-

**Table-2: Target for Broadband and Internet subscribers as per broadband Policy**

<b>Year Ending</b>	<b>Internet Subscribers (Including BB subscribers)</b>	<b>Broadband Subscribers</b>
2005	6 million	3 million
2007	18 million	9 million
2010	40 million	20 million

The number of Internet subscribers includes broadband subscribers also.

1.2.9 With start of ‘always on high-speed Internet access (below 256 Kbps)’ and ‘Broadband Internet access’ (more than or equal to 256 Kbps) Internet growth increased and maintained an annual average growth of 20-25% (Ref Fig-2). It is important to note that from March 2005, Internet subscriber growth is mainly due to provision of broadband services. Such growth was steep in 2005 but has settled around 20% from June 2006. The growth of Internet subscribers on an average is less than 7% from March 2006.

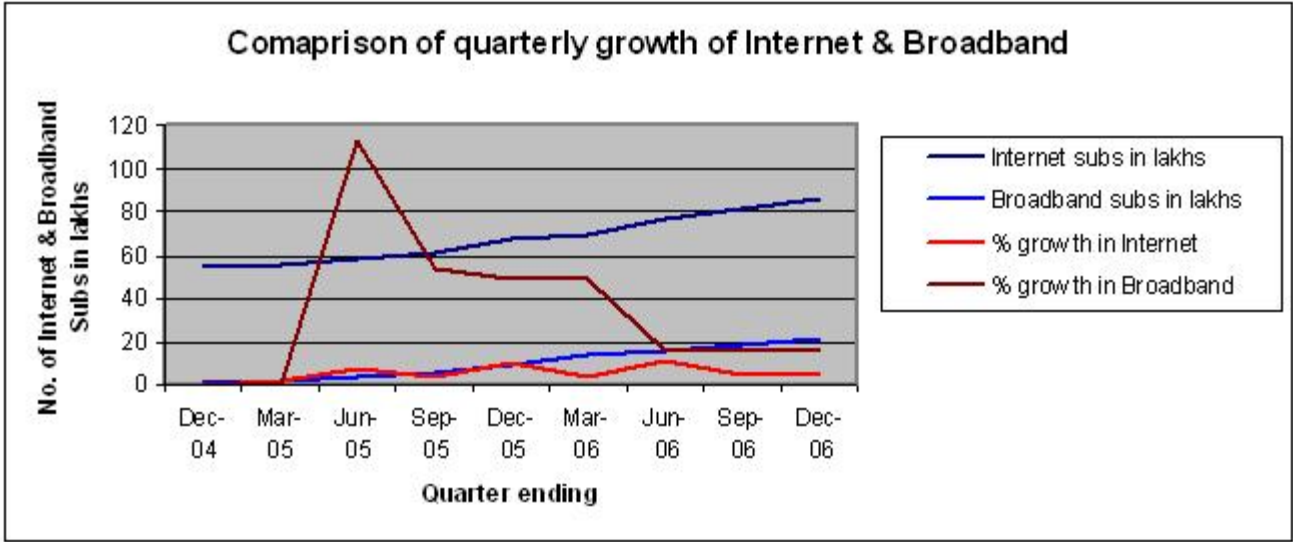


Fig 2: Growth of Internet and Broadband

1.2.10 It is interesting to note that since most of the broadband connections are being provided by PSUs namely Bharat Sanchar Nigam Limited (BSNL) and Mahanagar Telephone Nigam Limited (MTNL). The market share of PSUs have continuously increased from Jan 2005 onwards and is more than 64% by Dec 2006, indicating a significant presence in the market (refer Fig 3).

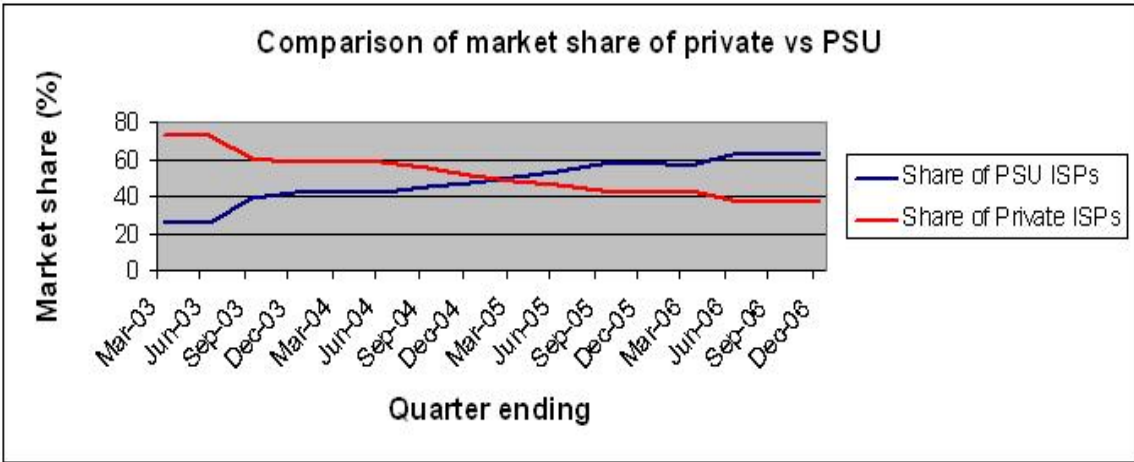


Fig 3: Market share of PSU and Private ISPs

1.2.11 As on 31<sup>st</sup> December 2005, the total Internet subscribers in the country were 6.5 million including 1.2 million broadband subscribers. Thus, the target for Internet subscribers as envisaged for 2005 in broadband policy was achieved whereas broadband subscriber growth target could not be achieved. Similarly on 31<sup>st</sup> December 2006 the total Internet subscribers in the country were 8.55 million whereas the Broadband subscribers were around 1.82 million. The achievement of Internet and broadband subscriber targets for December 2007 appears to be an uphill task.

1.2.12 There was lack of clarity on type of services permitted under existing ISP License. Since 1999, ISPs were offering skeleton virtual private network (VPN) services using ATM and frame relay. NLD service providers raised the issue that VPN service is in their license domain and ISPs can not offer these services, but ISPs claimed that they were entitled to provide IP-VPN services. The Licensor determined that existing ISP License did not entitle ISPs to offer VPN services. In order to facilitate ISPs to provide VPN services, the department imposed an entry fee as well as license fee on those ISPs who wanted to provide VPN services. The entry and license fee details are given below (Refer Table 3):

**Table-3: Entry fee and License fee to provide VPN services**

<b>ISP Category</b>	<b>Entry Fee (Non-refundable)</b>	<b>License Fee (Annual)</b>
<b>A-category</b>	<b>Rs. 10 crores</b>	<b>8% of AGR</b>
<b>B-category</b>	<b>Rs. 2 crores</b>	<b>8% of AGR</b>
<b>C-category</b>	<b>Rs. 1 crores</b>	<b>8% of AGR</b>

1.2.13 The new framework permitted ISP Licensees (both without Internet Telephony and with Internet Telephony) with enabling provision for providing VPN services. Some of the ISPs deposited requisite entry fee for provision of VPN services. At the same time some other ISPs through their association approached Telecom Dispute Settlement and Appellate Tribunal (TDSAT) against amendment in licenses for imposition of entry fee and license fee for providing VPN services. Hon'ble TDSAT decided on 3<sup>rd</sup> May, 2005 that DoT ought to seek recommendations of TRAI on limited issue of entry fee and license fee, to be charged from ISPs with VPN service. The matter was referred to TRAI by DoT and TRAI finalized its recommendations and prescribed following entry fee and license fee:

**Entry Fee**

- |                           |                     |
|---------------------------|---------------------|
| - For Layer-2 VPN Service | <b>Rs. 30 Lakhs</b> |
| - For Layer-3 VPN Service | <b>NIL</b>          |

**Annual License Fee**

**NIL**

1.2.14 Licensor disallowed ISPs to offer any type of VPN services in December, 2005 and decided that VPN services could only be offered by National Long Distance (NLD) and International Long Distance (ILD) Operators. The entry fee for these NLD and ILD Licensees were reduced to Rs. 2.5 Crores (each for NLD and ILD) from Rs. 100 Crores and Rs. 25 Cores respectively. The License fee on NLD and ILD was also reduced to 6% from 15%. It was also decided that all the ISPs who want to provide IP-VPN services would have to migrate to NLD/ILD license. This further restricted the scope of ISP license.



- 1.2.15 In order to address various issues raised in the DoT reference and to boost Internet penetration, the Authority released a Consultation Paper titled 'Review of Internet Services' on 27th December 2006. An Open House Discussion (OHD) was held in Delhi on 8th February 2007 to seek the views of various stakeholders.
- 1.2.16 The Authority deliberated on various issues emanating from the written submissions of the stakeholders, Open House Discussions (OHD) and International practices. The Comments of stakeholders have been compiled and are given at annexure 'II'. The recommendations have been structured in chapters two to five. Chapter 2 on "Scope of ISP Licenses" deals with various services under ISP license. Chapter 3 on "Grey market Operations" analyze various causes of grey market operations and remedial measures. Chapter 4 on "Revamping and restructuring of Internet Services" deals with issues like entry fee, license fee, Performance Bank Guarantee, roll out obligations, enabling provisions to use IPv6 addressing scheme etc. Chapter 5 is compilation of recommendations to revamp ISP sector.

## **CHAPTER-2**

### **SCOPE OF ISP LICENSE**

#### **2.1 Background**

- 2.1.1 Internet service license was envisaged to provide access to Internet, browse Internet content and download information. The most popular method of Internet access used when ISP licenses were framed in 1998 was dialup. Internet was at a developing stage and it was mostly used for surfing the net and for sending and receiving e-mails.
- 2.1.2 The advancement of technology brought about a number of new applications using Internet platform, Internet telephony being one of the most popular ones. Traditional telecom service providers opposed introduction of Internet telephony ( Refers to Voice Over Internet Protocol (VOIP) in unmanaged environment); however did not pursue the matter at that time as there was huge difference in voice quality of calls made using Internet compared with voice quality on switched network. The quality of the voice calls over Internet has improved with the technological advancement but has not become popular in the country due to number of reasons like requirement of Personal Computers (PC) to make such calls, good knowledge to operate PC, low bandwidth Internet connectivity resulting in voice cracking and restriction imposed in the license etc.
- 2.1.3 The development of Digital Subscriber Loop (DSL) provided another breakthrough in method of providing Internet. Broadband policy 2004 defined broadband for the first time. Incumbent operators setup their broadband network using DSL

technology and started offering broadband services using existing copper loop from January, 2005.

2.1.4 Next important development was provision of IP VPN services. The increased popularity of IP platform encouraged many corporate to deploy their own VPN and ISPs started providing IP VPN services. As discussed in Chapter I, DOT decided that VPN services can only be provided under NLD/ILD licenses and ISPs will be required to migrate to NLD/ILD license to offer VPN services.

2.1.5 It was evident that due to non-clarity of provision of services under Internet Service License has major impact on other telecom service licenses like Basic Service Operator (BSO) License, Cellular Mobile Telephone Service Provider (CMTS) License, Unified Access Service License (UASL), NLD and ILD license. Therefore defining the scope of ISP license and maintaining level playing field among the operators permitted to provide similar services was prime agenda for the Authority.

2.1.6 The present ISP license defines scope of license as:

(a) ISP without Internet Telephony License

SERVICES OR SERVICE means all types of Internet Access/content services except telephony on Internet.

(b) ISP with Internet Telephony License (ITSP)

SERVICES OR SERVICE means Internet Access/content service including Internet telephony as mentioned in Clause 1.14 of Schedule 'C' of ITSP license.

As per Clause 1.14 of Schedule 'C' of ITSP license:

- i) “Clause 1.14.1:  
Internet Telephony is a service to process and carry voice signals offered through public Internet by the use of Personal Computers (PC) or IP based Customer Premises Equipment (CPE) connecting the following:-
  - a) PC to PC ; within or outside India
  - b) PC in India to Telephone outside India
  - c) IP based H.323/SIP Terminals connected directly to ISP nodes to similar Terminals; within or outside India”
  
- ii) “Clause 1.14.2:  
Internet Telephony is a different service in its scope, nature and kind from real time voice service as offered by other licensed operators like BSO, CMSO, NLDO, ILDO and PMRTS.”
  
- iii) “Clause 1.14.3:  
Except whatever is described in conditions 1.14.1 and 1.14.2 herein above, no other form of Internet Telephony is permitted.”
  
- iv) “Clause 1.14.4:  
Addressing scheme for Internet Telephony shall only conform to IP Addressing Scheme of Internet Assigned Numbers Authority (IANA) exclusive of National Numbering Scheme/plan applicable to subscribers of Basic/Cellular Telephone Service.”

2.1.7 The scope of the ISP license needs to be well defined to ensure clarity and check misuse of any provisions due to blurring

boundaries between various services permitted under different licenses.

**2.2 Internet Access**

2.2.1 The term Internet access has been stated in the ISP license, but its scope has not been elaborated. When the ISP license was initially framed, the technological options to access Internet were very limited. Dial up was one of the most popular method to provide Internet access during that period. Though leased lines were also used to provide Internet access but cost of such leased lines was prohibitively high and therefore such leased lines were used mostly by big industrial houses and corporates.

2.2.2 Since then significant technological advancements have lead to new dynamism. Now Internet access can be provided by variety of ways like dialup, leased line, Optical fiber, DSL, Wireless, Cable TV, Cat 5 cable, Satellite, DTH and technologies like 2G, 3G and CDMA. As of now 47.91 % subscriber use dialup mode, 20.09% subscribers use DSL connections and just 1.81% subscribers use cable modem to access Internet. This trend is quite different from International trend where 64% subscribers use DSL and 24% subscribers use cable modem to access Internet. Fig-4 indicates Internet access using various technologies:

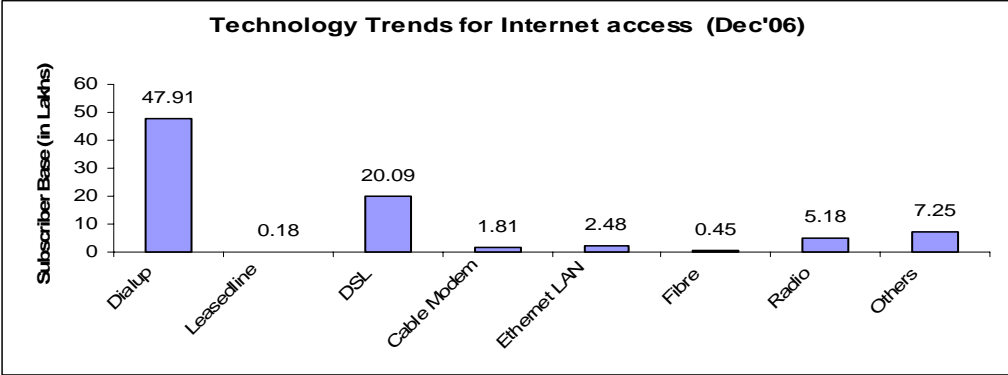


Fig-4: Technological Trend for Internet access

2.2.3 Fig-4 brings out that dial up technology has major share of subscribers. But the growth in average minutes of usages (MoU) per subscriber has declined over the time (Refer Fig-5). It is interesting to note that Minutes of Usages (MoU) was highest (400) around 2003 when Internet growth was highest and market was competitive. The decline started from June 2004 and was very sharp after launch of broadband in 2005. The trend is partly due to migration of dialup customers to always on broadband network and partly due to high dialup access charges to connect to Internet. The Authority is concerned about high dialup access charges. Wherever in Urban as well as Rural areas, broadband services are available the subscribers have option to shift to broadband which gives cheaper Internet access. Wherever broadband services are not available, the high charge of dial-up Internet access is one of the impediments towards growth of Internet services. However the issues relating to cost of various mode for Internet access are not discussed as they are beyond the scope of DoT reference.

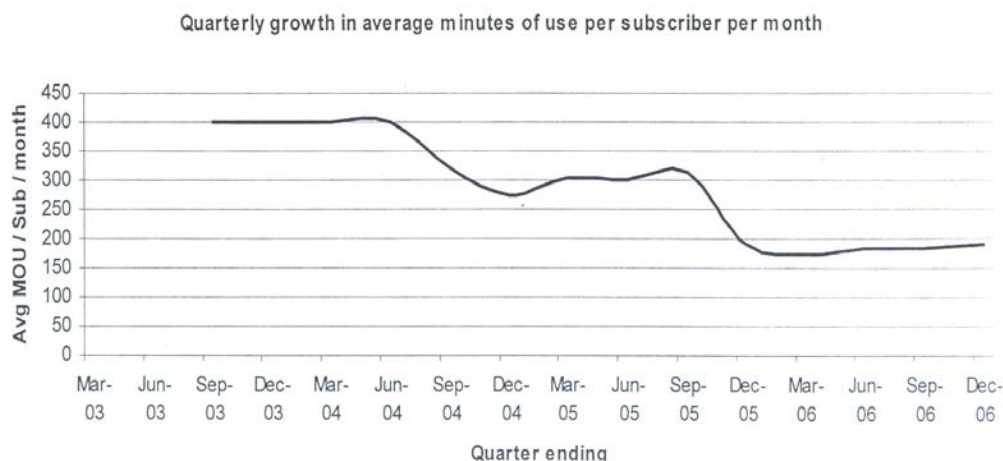


Fig-5: Average minutes of use of Dialup access

- 2.2.4 There were also some doubts regarding use of cable TV network for providing Internet and broadband. It is a valid technology for Internet access and any cable operator having valid ISP license can provide Internet and Broadband services in its area of operation as per the ISP license conditions.
- 2.2.5 The need of the hour is to permit all technologically feasible available options to get Internet access. The Authority in March, 2004 had already recommended to DOT that ISPs should be permitted to use any media (including fiber, radio, and Copper cable) for establishing their own last mile access to their customers to provide an impetus to the growth of Internet access. All options available to provide Internet access have to be explored to ensure faster penetration of Internet. This was accepted by DoT.
- 2.2.6 To impart an unrestricted and latest technological usage, Internet access for scope of ISP license may be adopted as **“Use**

**of any Device/ technology / methodology to provide access to Internet unless explicitly prohibited.”**

## 2.3 **Internet Content**

2.3.1 The term Internet content has been stated in the ISP license but scope has not been elaborated. The development of Internet was at nascent stage when ISP license was framed and limited services were available on Internet platform. The Internet was used to browse websites hosted on Internet. Today Internet has emerged as one of the most powerful platform to provide various services and content. The provision of similar services under different license raises issues of level playing field. Therefore clarity in scope of the license is necessary before issue of level playing field is taken up.

2.3.2 Today, apart from Internet browsing, there are applications like Internet telephony, IPTV, Voice chatting, Server based Video conferencing, gaming, Layer 2 VPN, Layer 3 VPN, E-mail etc. Many more applications are being developed and would be available through Internet. The licensing framework in telecom field is well defined. UASL and CMTS licenses provide access, NLD and ILD licenses provide long distance services and ISP & ITSP licenses provide Internet services. The advancement of Internet Protocol (IP) technology and its capabilities has to be viewed under broader umbrella of licensing framework and not in isolation. The scope of services in any particular license has to be defined accordingly.

2.3.3 Since ISP license is envisaged to provide Internet services, the unambiguous identity of services under ISP license is necessary. Present ITSP licenses permit access to all contents



available on Internet, Internet telephony with certain restrictions as discussed in Para 2.1.6, Web hosting and Web colocation etc. However, provision of close user group services like IPVPN are not permitted.

2.3.4 **Web hosting by certain foreign companies within Indian domain who have significant market share in global market should form part of our developmental agenda and necessary policies to encourage such web hosting need to be evolved.** Perhaps active interaction with such companies at the level of DoT would help. This subject is not being discussed in detail as this does not form part of DoT reference. However in the recommendation given by the Authority on the “Improvement in the effectiveness of National Internet Exchange of India (NIXI)” the measures relating to termination of domestic traffic would also help and such companies will be looking for the opportunities for hosting web sites in India.

2.3.5 Strong views were expressed to permit IPTV under ambit of ISP license as it has potential to drive market, easy to provide using ISP backbone and can encourage Internet penetration. The Authority has deliberated the issues earlier also. Provision of IP TV service requires minimum 2 Mbps dedicated bandwidth for acceptable quality transmission. The present penetration of broadband with such high speed connectivity is limited. The business model for IPTV world over has also not been established though very strong claims are made. Moreover there are certain regulatory issues relating to its implementation in our country. Clause 4A of Cable Television Network (Regulations) Act 1995 defines requirement of the addressable system. Similarly clause 9 of same act defines use of standard

equipment for cable television networks. The IPTV setup appears to be covered under ambit of “Cable Television Network” definition under the act but does not conform to the definition of addressable system. Similarly no standards have been specifically defined for IPTV equipment by Bureau of Indian Standards (BIS) at present. The Act also requires that all such operators have to be registered as cable operators. In view of these grey areas, the Authority has already flagged these issues to the government and awaiting appropriate action. The decision regarding permitting IPTV service has to be taken in totality when situation becomes clear.

- 2.3.6 In view of above analysis Internet content in context of ISP license is **“All content available without any access restriction on Internet and include web hosting, web co-location but does not include service provider configured closed user group.”** In view of this IP-VPN and IPTV services as discussed above are not permitted.

## **2.4 Recommendations**

**The Authority recommends,**

- (i) **Scope of Internet Access and Internet Content may be adopted in Internet service license to bring clarity as under:-** (Refer clause 2.2.6 & 2.3.6)

a) **Internet Access**

**“Use of any Device/ technology / methodology to provide access to Internet unless explicitly prohibited.”**

**b) Internet Content**

**“All content available without any access restriction on Internet and include web hosting, web co-location but do not include service providers’ configured closed user group services”**

**In view of this IP-VPN and IPTV services are not permitted.**

- (ii) Active interaction of DoT with foreign companies who have significant market share in global market to encourage Web hosting in India. Such initiatives should form part of our developmental agenda and necessary policies to encourage such web hosting need to be evolved. (Refer clause 2.3.4)**

## **CHAPTER-3**

### **GREY MARKET OPERATIONS**

- 3.1 Internet telephony is voice over Internet protocol (VoIP) in unmanaged environment. It is a two-way voice communication through the public Internet network. The voice quality of such calls are now comparable with that of switched telephony network while cost is low. Therefore Internet telephony has become a viable option to provide affordable communication services. It is due to this reason Internet telephony technology has registered phenomenal growth worldwide.
- 3.2 As per the existing license conditions, UASL and CMTS are permitted to provide Internet telephony. Internet Telephony Service Providers (ITSPs) are authorized to offer restricted Internet telephony services as per para 2.1.6, but are not permitted to have connectivity with PSTN and PLMN. ITSPs pay 6% of their adjusted gross revenue earned from provisioning of Internet telephony service to the DoT as license fee. In addition ITSPs also submit a Financial Bank Guarantee of Rs 20 lakh, Rs 2 lakh and Rs 50 Thousand (for category A, B and C ISPs respectively) to licensor.
- 3.3 DoT has issued 128 ITSP licenses but only 32 are reported to be operational. TRAI collects information of MoU of Internet telephony from all ITSPs (Refer Fig-6).

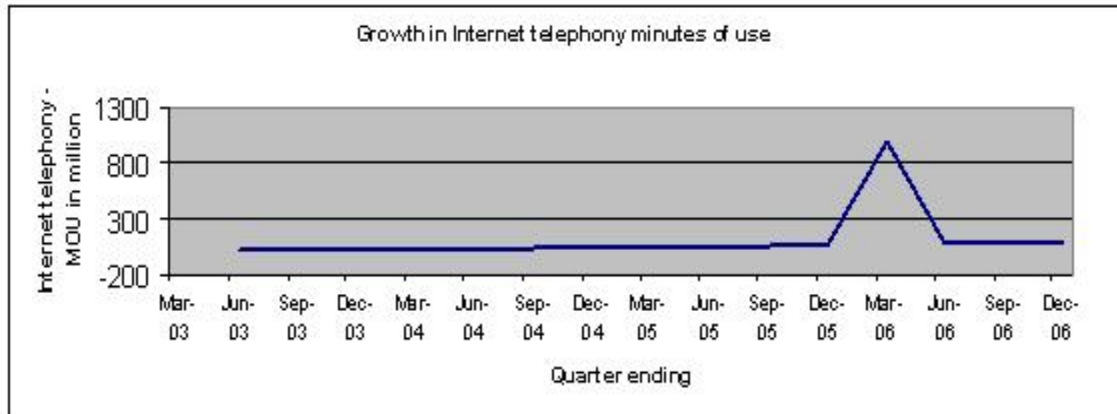


Fig-6: Growth of Internet telephony minutes of use

Figure-6 indicates abnormal peak in March 2006 due to aberration in reporting by one of the ISP.

3.4 Some entities located abroad are offering unauthorized Internet telephony services in our country for making calls to and from abroad on Public Switched Telephone Network (PSTN) and Public Land Mobile Network (PLMN). Most of these unlicensed companies are neither registered nor licensed to provide such services in India. These companies offer services through their websites or by selling IP access devices like adaptors to the Internet subscribers in India for making Internet Telephony calls to PSTN and PLMN abroad. **The licensing, legal and technological issues arising from such services need to be urgently addressed by DoT.**

3.5 Some companies are also providing Software through their websites that enables the user to have free chat with anyone using the similar software anywhere in the world while logged on to the server of such service providers. Software can be downloaded free of charge from their website. Such voice chatting is basically a PC to PC communication as shown below

and are permitted as per existing license conditions (Refer Fig 7):



Fig 7: PC to PC communication for Internet telephony

3.6 Such companies also provide calls from/to landlines and mobiles anywhere in the world. To make/receive such calls one needs to purchase some minutes from their website by using Credit card. This is a PC to phone or vice-a-versa communication as shown below (Refer Fig 8):

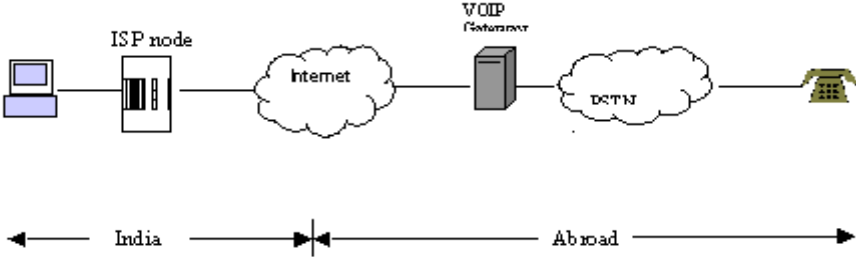


Fig 8: Internet telephony calls from PC to PSTN/ PLMN

Such calls are not permitted as per the existing license conditions.

3.7 The representatives of such companies have stated that subscribers of such services access web server hosted in their country through Internet and purchase such minutes where such services are allowed. Moreover, they are not aware about

the location of such purchaser when transactions take place. These services are web based and can be used from any where to any where in the world; therefore they can not restrict such transactions. Since prevailing laws governing such services in different countries are different, it's the user who should not use these services if such services are not permitted as per the law of the country.

3.8 The Internet telephony call through such unregistered entities using PCs/IP access devices in India to landline or mobile phones abroad and vice versa result in a revenue loss to the government. Such calls can escape the eyes of law enforcement agencies also. Since these companies are neither licensed nor registered in India, it is difficult to regulate such companies under existing telecom licensing framework. The legality of Internet telephony service by such companies' is questionable.

3.9 By escaping regulatory levies such unlicensed foreign entities are able to provide cheaper services to lure the subscribers. The Authority is aware that large number of Indians are availing such services. Stopping access to such services is technically difficult. There is serious revenue implication for the government. DoT may address this development on priority. **One of the possible options could be to ask such companies to register in India, seek permission from DoT and host their website in India.**

3.10 Incidences have also come to notice when subscribers get trapped and do not get proper services even after making payments on the websites of such unauthorized Internet telephony providers. Redressal of subscriber grievances in such cases is not feasible as defaulting entities are not licensed.

3.11 The restrictive provisions of present ITSP license as stated in para 2.1.6 are indirectly responsible for such unlicensed activities.

3.12 Presently, ISP license (with Internet Telephony) permits the use of only H.323 and SIP devices at both ends (India and abroad) for making Internet telephony calls. Detailed provisions of present ITSP license condition regarding Internet telephony are reproduced below:

- i) “Clause 1.14.1  
Internet Telephony is a service to process and carry voice signals offered through public Internet by the use of Personal Computers (PC) or IP based Customer Premises Equipment (CPE) connecting the following:-
  - a) PC to PC ; within or outside India
  - b) PC in India to Telephone outside India
  - c) IP based H.323/SIP Terminals connected directly to ISP nodes to similar Terminals; within or outside India”
- ii) “Clause 1.14.2  
Internet Telephony is a different service in its scope, nature and kind from real time voice service as offered by other licensed operators like BSO, CMSO, NLDO, ILDO and PMRTS.”
- iii) “Clause 1.14.3  
Except whatever is described in conditions 1.14.1 and 1.14.2 herein above, no other form of Internet Telephony is permitted.”



iv) “Clause 1.14.4

Addressing scheme for Internet Telephony shall only conform to IP Addressing Scheme of Internet Assigned Numbers Authority (IANA) exclusive of National Numbering Scheme/plan applicable to subscribers of Basic/Cellular Telephone Service.”

3.13 Permitting only a few devices in existing ISP license for provision of Internet telephony is impractical. It is also detrimental to the growth of Internet telephony in the country. Moreover identification of the terminal being used either in India or abroad is very difficult to monitor.

3.14 For making a call to PSTN or PLMN (Fixed or mobile telephones) abroad, only PC is permitted as per the existing ISP license. The price of PC is not affordable for masses. For using a PC higher skills like knowledge of English, typing etc are required. At the same time it has limited utility for rural population as of now.

3.15 Alternative user-friendly devices, which are similar to PC in functionality for making Internet telephony calls, will be useful for this purpose. With the advancement in the technology, several other IP Access devices are available in the market, which can be used for Internet telephony. The prevalent trends would indicate that individuals prefer to use cheaper and user-friendly devices and services without ascertaining the legality of such usage.

3.16 Many Customer Premises Equipments (CPEs) can be directly connected to broadband and will not require PC to make Internet telephony calls. They are user friendly but have some disadvantages such as (i) Calls originating through such devices pass through the Internet and their monitoring and lawful interception is difficult. (ii) In certain countries, where interconnection of PSTN and PLMN has been permitted with IP networks, such devices can virtually extend their country number in India permitting local call dialing. Though such calls will not pass at any point of time through PSTN / PLMN network of India and remain in Internet, they definitely provide a cheaper alternative to subscribers to make and receive calls. Such calls are permitted in most of the countries. The technological advancements and ingenuity in developing various applications should not be curtailed. Therefore the Authority is of the view that use of such devices may also be permitted in India.

3.17 Non-availability of cheaper and user-friendly devices in the legal market for Internet telephony is one of the main reasons for rise in the grey market operations. Most of the unauthorized providers are providing Internet telephony services using cheaper and user-friendly devices and adapters. The Authority is also aware that restricting use of such devices is not easy. Therefore facilitating the advantages of technological innovations is the right path.

3.18 During Open House Discussion, it was repeatedly demanded that ISPs should be permitted to employ user

friendly and cheaper devices/protocols such as Media Gateway Control Protocol (MGCP), Simple Gateway Control Protocol (SGCP), and Access Signaling Protocol (ASP) etc. to offer Internet telephony. The Authority is of the view that restrictive provision should be relaxed and ISPs are permitted to provide Internet telephony using affordable and user-friendly devices. It will help in curbing the grey market activities.

3.19 TRAI in its recommendation on “Convergence and Competition in Broadcasting and Telecommunications” has recommended that call termination should be permitted on customer premises equipments (CPEs) using any protocol recommended by ITU/IETF. It is once again reiterated that **all such adaptors which conform to International organizations specification like ITU/IETF be permitted to make Internet telephony calls.**

3.20 Another measure to curb the grey market operations can be by blocking of such websites and imposing restriction on sale of such adaptors for Internet telephony. International experience indicates that blocking has not proved successful due to certain technical constraints. Even the enforcement of ban on sale of such adapters may not be easy. The Authority examined various measures of curbing grey market but observed that these measures have low success rate with heavy enforcement cost. Therefore the environment needs to be created so that market itself rejects such operations on the ground of risk and cost. Consumer awareness about illegal Internet telephony services will also help.

- 3.21 The subscribers of Internet telephony should be educated for availing services of only licensed service providers. In order to generate awareness list of service providers licensed to provide Internet telephony may be made available on website of DoT.
- 3.22 Internet Telephony Calls from abroad are also being illegally terminated on PSTN in India. For this purpose IP PBX can be used to connect Internet on one side and PSTN lines on other side of IP PBX to facilitate termination of Internet telephony calls on PSTN. This arrangement bypasses ILD network and amounts to evasion of long distance termination charges and Access deficit charges (ADC).
- 3.23 A view was expressed during open house deliberations that grey market operations are encouraged due to the arbitrage opportunities between various licences for the same service and also stressed a need to harmonize the license fee, ADC and spectrum charges across ISP, UASL and CMTS licenses.
- 3.24 The Authority through “Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007” has already reduced the per minute ADC on Incoming International Long Distance Calls to Re.1.00 per minute from Rs. 1.60 per minute, removed ADC on out going International long distance calls and also reduced ADC on percentage revenue share to 0.75%

from 1.50% of Adjusted Gross Revenue (AGR) of all service providers.

- 3.25 The Authority expects that the lowering of ADC amount will result in reduction in arbitrage in international incoming calls thereby discouraging ILD grey market operations. In addition, this will also result in level playing field between outgoing international calls made through Internet Telephony and through switched public telephone network, hence boosting growth of traffic minutes through switched telephony, which will result in growth of revenue of telecom service providers. The Authority has already notified that ADC regime would be phased out after March 2008 and there will be no arbitrage on account of ADC. This will limit the size of grey market operations further.

### **3.28 Recommendations**

**The Authority recommends,**

- i) Restrictions on the use of devices/protocol employed to make Internet Telephony calls shall be removed to facilitate use of affordable and user-friendly devices/adapters conforming to International organizations specification like ITU/ IETF.**

(Refer clause 3.19)

- ii) ISPs shall not be permitted to have PSTN/ PLMN connectivity and shall not allocate E.164 numbering.**

(Refer clause 3.19)

**iii) General consumer awareness to use authorized Internet Telephony services only needs to be developed. Print and electronic media will be effective in promoting such awareness.**

## **CHAPTER –4**

### **REVAMPING AND RESTRUCTURING OF INTERNET SERVICES**

#### **4.1 Licensing and Regulatory Framework**

4.1.1 In spite of liberal and highly supportive Regulatory framework already mentioned in para 1.2.2 of chapter one, the growth of Internet subscribers' have not been encouraging. The government has set a target of 18 million Internet and nine million broadband connections by 2007. With the present growth rate, the achievement of the target is a far cry. There is a need to revisit all aspects of Internet service license conditions as also the necessary prerequisites particularly equipments at the consumer premises to address the issue of slow growth rate, practice of grey market, technological advancements like IP v6 and above all level playing field vis-à-vis other telecom service providers.

#### **4.2 Framework of ISP License**

4.2.1 As per the present licensing regime there are three categories of ISP licensees namely:

- (a) Category 'A' ISP license for All India operational area
- (b) Category 'B' ISP license based on telecom circle service area concept. There are at present 20 telecom circles which are almost analogous to States. Additionally there are specified metros/districts which also have a category 'B' license and are not included in the respective telecom circles. They are Delhi, Mumbai, Kolkata, Chennai, Ahmedabad, Bangalore, Hyderabad and Pune,

- (c) Category 'C' ISP license based on Secondary Switching Area (SSA) concept which is more or less coterminous with the geographical boundaries of a district.

4.2.2 There are 389 ISP licensees comprising 63 Category 'A', 121 Category 'B' and 205 Category 'C' licensees. It is understood that approximately 50 applications for granting fresh ISPs license are awaiting decision with DOT. The Quarterly Performance Monitoring Report (PMR) filed by ISPs to the Authority reveals that only 135 Internet Service Providers are functionally active. Of the 135 licensees 40, 54 and 41 belong to Category 'A', Category 'B' and Category 'C' respectively. Table 4 provides in detail the functional statistics of the Internet services in India. It clearly brings out the structural weakness of the majority of ISPs and poses a serious question regarding the functional viability of many ISPs. This issue has been separately addressed in this chapter.

**Table-4: Statistics for Internet service in India at a glance**

Parameters	Unit	Dec-04	Mar-05	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06	Sep-06	Dec-06
No. of ISPs in operation		180	172	168	163	163	153	153	135	135
Market share of PSU ISPs	%	48	51	53	57	58	56.43	62.33	62.98	63.74
Market share of other ISPs	%	52	49	47	43	42	43.57	37.67	37.02	36.26
Total no. of Internet subs	mn	5.45	5.54	5.892	6.125	6.703	6.935	7.71	8.1	8.58
Total no. of Hi-speed subs	mn	0.654	0.696*							
Total No. of	mn	0.049	0.186	0.396	0.61	0.905	1.348	1.557	1.82	2.1



Broadband subs										
No. of leased line subs for Internet	Unit	12195	12204	11547	17112	14364	15596	16195	18876	NA
No. of cyber cafes as subs	unit	9216	8791	9172	9859	8028	7933	8091	NA	NA
Average MOU per dialup subs per month	min	275	305	300	315	189	175	185	185	190
Internet telephony - MOU	mn	43	41.52	39.1	47.31	58.66	996.09	78.38	71.53	88.8
Total international bandwidth for Internet downlink	Gbps	6.3	6.5	8.9	9.7	10.45	12.7	14	16	14
Total international bandwidth for Internet uplink	Gbps	6	6.4	8.8	9.5	10.36	12.5	13	15	13
Revenue of all ISPs during the quarter	Rs. Crs	255	357	540	363	424	492	492	589	798
Monthly ARPU during the quarter	Rs.	167	220	200	190	210	210	210	220	205

\*: From Jan 2005 onwards, all high speed subscribers with data speed 256 Kbps & above have been merged with broadband subscriber figures.

4.2.3 Figure 9 provides the quarter-wise number of operational ISPs in the country. The graph in the figure shows upwardly movement of operational ISPs from March 2000 till December 2003. There has been a gradual decline during 2004-06. The period 2003-06 also saw the introduction of high speed Internet

and broadband. Perhaps many of the ISPs were neither financially nor technologically equipped to meet this demand.

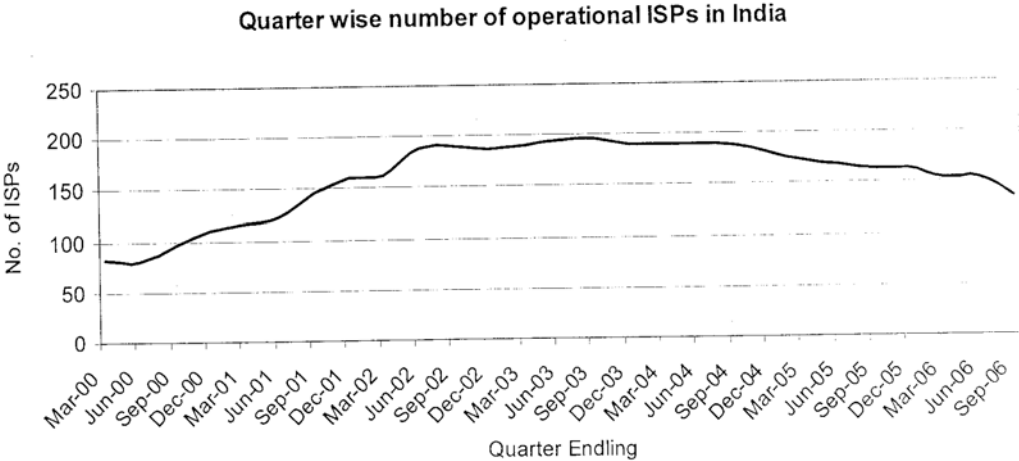


Fig-9: Number of Operational ISPs in India

4.2.4 Figure 10 which provide the Internet Subscriber Base as on December 2006 highlights that 20 ISPs cater for 98 % of subscribers. Thus the contributions of other active ISPs are either limited or negligible. BSNL contributes highest subscriber base (44.42%) followed by MTNL (19.32%). These two companies have a significant presence in broadband connections indicating the close linkage of present day Internet facility with high speed Internet access.

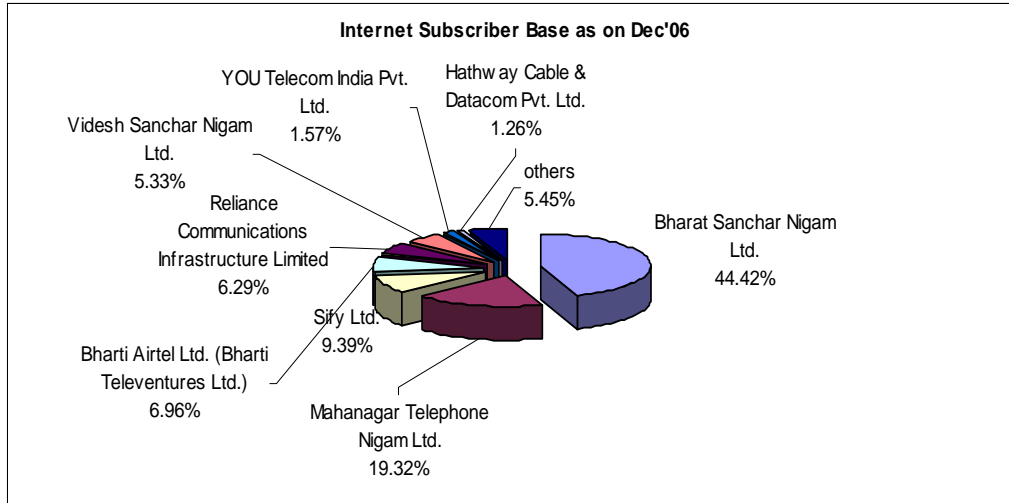


Fig-10: Internet Subscriber base as on Dec 2006

4.2.5 A figure of 254 non functional ISPs is extremely disturbing and raises a question regarding the rationale of existence of these ISPs who are not even submitting PMR Report to TRAI. It is un-refutable conclusion that approximately 254 ISPs have near zero contribution to growth of Internet and are not present in the competition. It is disconcerting to note that 70 ISPs are not even existing at the registered address given at the time of obtaining license. The Herfindahl Hirschman Index (HHI) graph shown in figure 11 confirms decreasing competition with significant decrease in the operational ISPs. HHI Index shows a healthy competition in June 2003 when the operational ISPs were highest. Therefore, the challenge is to revamp and enhance the effective operation of larger number of ISPs thus ultimately benefiting the subscribers.

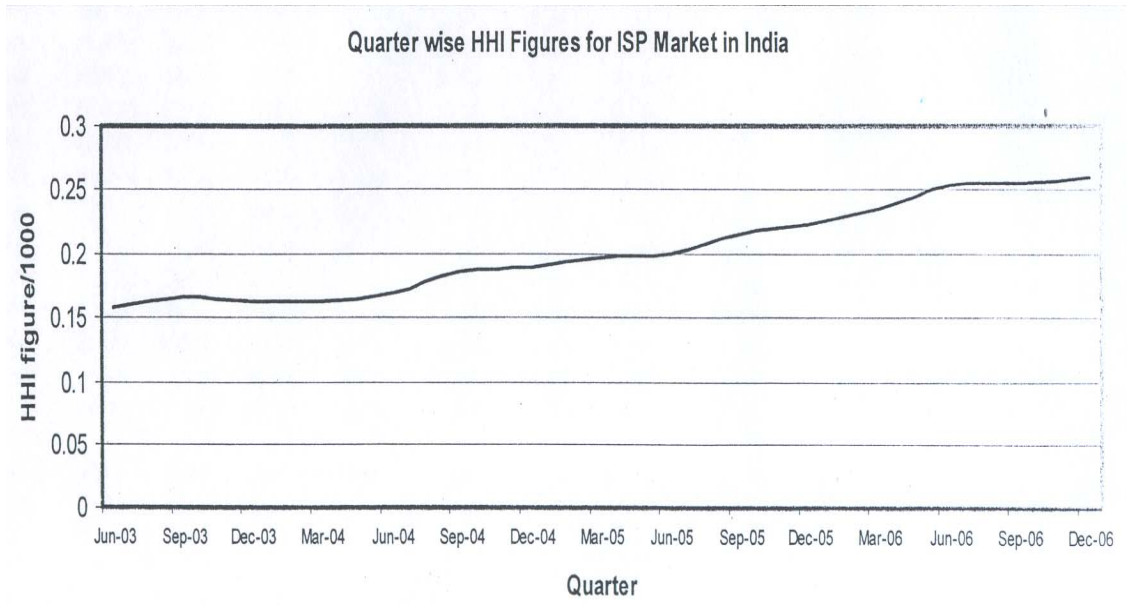


Fig-11: HHI figures for ISP market in India

4.2.6 Analysis of top 20 ISPs indicates that there are 7 integrated service providers, 12 category 'A' ISPs and one category 'B' ISP. Top seven ISPs have more than 90% market share as indicated in Table-5:

**Table-5: Market share of Top seven ISPs (in %)**

	<b>BSNL</b>	<b>MTNL</b>	<b>VSNL</b>	<b>Sify</b>	<b>Data Infosys</b>	<b>Reliance</b>	<b>Bharti</b>	<b>Total Mkt Share</b>
Sep-05	36.93	19.71	8.31	13.97	3.65	5.06	3.15	90.78
Dec-05	38.74	19.59	6.96	13.08	4.65	5.07	4.67	92.76
Mar-06	42.24	14.19	8.02	12.95	3.54	5.18	5.65	91.77
Jun-06	43.07	19.26	6.12	11.83	1.31	1.15	5.73	88.47
Sep-06	43.85	18.98	5.58	10.72	1.58	5.44	6.47	92.62
Dec-06	44.42	19.32	5.33	10.12	1.2	6.29	6.96	93.64

- 4.2.7 Most of these integrated service providers are also providing services like Basic Services, Cellular Mobile Telecom Services, and Unified Access Services in addition to Internet services. They concentrate mostly in metro cities, major districts and urban areas. Though some integrated ISPs are providing Internet services in selected rural areas also but they are basically targeting urban population. In contrast, stand alone ISPs cater for niche market operations to provide Internet services. Since computer penetration and English literacy in rural and far-flung areas is low, the contribution of such ISPs when counted in terms of number of Internet subscribers is low.
- 4.2.8 Many times ISPs also provide leased lines and cyber café which do not reflect the number of persons using it as one lease line is counted as one subscriber of Internet resulting in wrong perception of magnitude of operations of such ISPs (Refer Fig-12 and Fig-13). The growth of lease line have been positive but still below expectations considering phenomenal growth in the corporate sector business and global trends. The number of Cyber Café though showed increase in numbers till Sep 2004 but has been consistently decreasing thereafter. As large number of subscribers use Internet through Cyber café, decrease in growth trends deserves in-depth analysis.

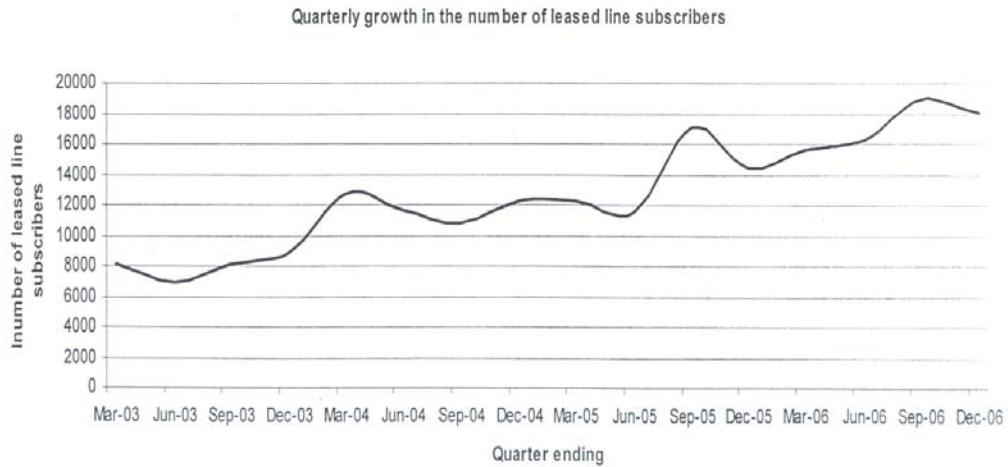
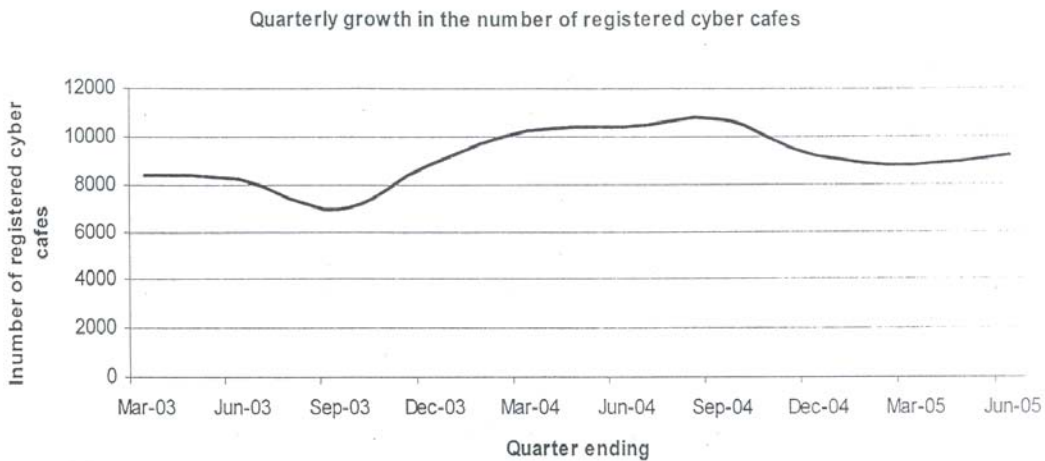


Fig-12: Growth of Internet Leased lines subscribers



TRAI has stopped publishing data on number of cyber cafes after June 2005 .

Fig-13: Growth of registered Cyber cafes

4.2.9 The international experience indicates that Internet segment has been lightly regulated and large number of ISPs are operational to provide Internet services in various countries.

The number of ISPs providing Internet services in some of the countries is indicated below:

a)	US	-	Approx 5000
b)	Australia	-	Approx 500+
c)	UK	-	Approx 686+
d)	Belgium	-	Approx 62+
e)	Pakistan	-	Approx 130+
f)	Bangladesh	-	Approx 200+
g)	Nepal	-	Approx 50+
h)	Hong Kong	-	Approx 188
i)	Taiwan	-	Approx 180
j)	Hungary	-	Approx 71
k)	Indonesia	-	Approx 70+

4.2.10 Considering the size of the country and the fact that approximately 71% of population is rural, the number of Internet service facility is very little particularly in rural areas. This inadequacy is further magnified when the actual operational ISPs are less than 40% of the total ISP licensees. Therefore, the Authority has focussed on the need for a supportive framework of liberal licensing regime encouraging broad base participation. However, stringent measures would be necessary to ensure that these licenses are not misused for grey market. There is a need to evolve viability standards based on a minimum business and also expeditiously eliminate operational and functional disadvantages. These two objectives have been addressed in the recommendations which follow.

4.2.11 It is extremely important to regularly analyse the business data of the operational ISPs to ensure that the licensed ISPs are

contributing to the growth of Internet and engage in legitimate business. A conservative thumb rule estimate of capital cost and maintenance highlights the minimum business/revenue for a company to remain functional and financially viable (Refer table 6):

**Table-6: Estimated cost for setting up an ISP node in Category ‘C’ service area**

<b>A</b>	<b>Fixed Cost</b>	<b>Amount in Rs</b>
1.	Building Rental	Rs 1,50,000/-
2.	Electricity (UPS, DG set etc)	Rs 4,00,000/-
3.	Equipments (Router, server, modems etc.)	Rs 5,00,000/-
4.	Cost of PBG & FBG	Rs 63000/-
	Total Fixed cost	Rs 11,13,000/-
<b>B</b>	<b>Operational Cost</b>	
6.	International bandwidth (upstream) (2 mbps)	Rs 6,00,000/-
7.	PRI for aggregating Dialup traffic	Rs 1,00,000/-
8.	Incidental expenses	Rs 1,00,000/-
	Operational cost per year	Rs 8,00,000/-
	<b>Grand Total</b>	<b>Rs 19,13,000/-</b>

Analysis of Category ‘C’ ISP has been done as there are maximum non operational ISPs in this category. As per analysis, a minimum of 19 Lakhs investment is required (Both Capital and Operational) to run an ISP business in a SSA i.e Category ‘C’. One would atleast aim a return of 12% on investment to remain functional. This would require an yearly turnover of minimum 5.75 Lakhs assuming a high profit of 40%. The investment and expected annual return of Category ‘B’ and Category ‘A’ ISPs would be higher with enlarged operations.



4.2.12 TRAI is receiving quarterly performance monitoring reports (PMRs) from 135 ISPs providing details of subscriber base and revenue earned from Internet services. Fig-14 indicates quarterly growth in ISPs revenue:



Fig-14: Quarterly growth in ISPs revenue

4.2.13 Analysis of the above figure indicates that while total number of Internet subscribers have doubled from approx 4 million in March 2004 to 8.55 million in Dec 2006, the revenue has not increased proportionately. This indicates net decrease in average revenue per unit (ARPU). The ARPU figures for dialup subscribers (Approx 50% of total Internet subscribers) also confirms steep decrease (Refer Fig-15). The dialup subscriber ARPU which was approx Rs 400/- per month in March 2004 has come down to approx Rs 200/- in March 2005. The decrease in ARPU can partly be contributed to the migration of high Internet users to “always on broadband” and availability of cheaper Internet access to the customers but has direct impact on viability of the ISPs especially those who operate in Niche markets.



Fig-15: Quarterly growth in monthly ARPU

- 4.2.14 The depleting ARPU and therefore lower returns on investment require in-depth analysis of functional ISPs for viability and sustainability of their business model category wise:
  
- 4.2.15 Out of 40 functional category ‘A’ ISPs, 10 are having an Internet subscriber base of 150 or less. However, they are earning sizable revenue by providing high capacity leased lines and broadband services (Refer Fig-12 and Fig-16). Analysis further reveals that 80% of their revenue comes from the Internet lease line and 19% comes from other services like web hosting and web co-location.

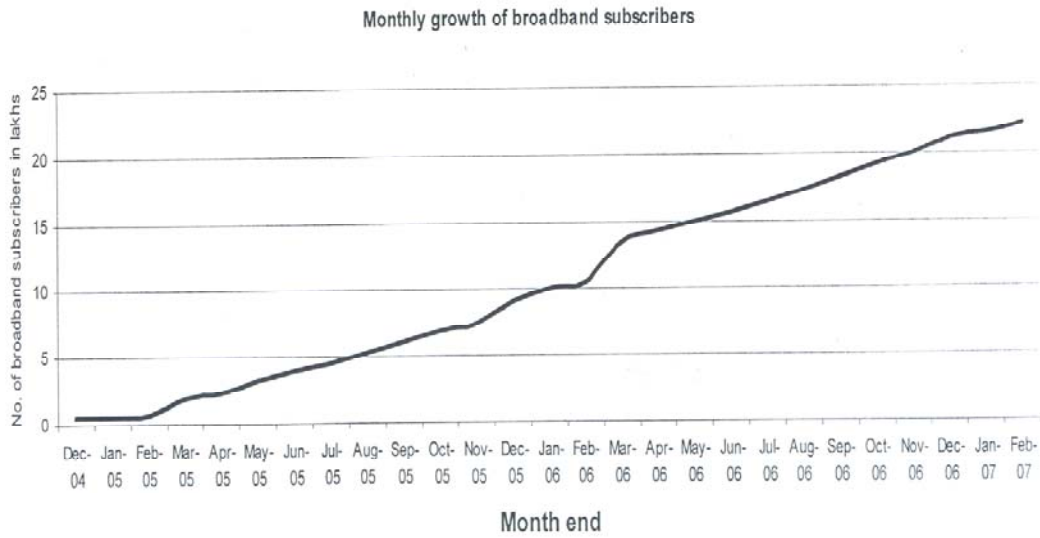


Fig-16: Growth of Broadband Subscribers

4.2.16 Out of 54 functional category ‘B’ ISPs, 14 are having a subscriber base of 100 or less. However, most of them are earning revenue by providing leased lines, broadband and Internet telephony services, which is enough for the viability of their business. A look at revenues earned indicate that 39% of their revenue comes from provision of lease lines and 30% from provisioning of other services like web hosting, and Internet Telephony.

4.2.17 Out of 41 functional category ‘C’ ISPs, 15 are having a subscriber base of 150 or less. While some of these ISPs are providing dialup Internet services along with value added services like web hosting and domain name services, others are providing leased line, and Internet telephony services. In addition some are also operating cyber cafes. Most of these ISPs though indicate sustainable business model still have limited scope of growth. The financial analysis indicates that approx

60% of their revenue comes from web hosting, DNS resolution service, Cyber Café etc and very limited revenue from dialup subscribers. The selected survey also indicated that many category 'C' ISPs use Internet provisioning as one of the business activities while prime business is either questionable or some other non-Internet service activity.

4.2.18 The present status of ISPs operations, their business model, number of subscribers is based on ISPs self declaration. It is extremely important that non functional ISPs are physically investigated to verify their presence, nature of activities and the financial viability. Perhaps one time spot verification should be undertaken without any delay to obtain the real picture. Vigilance Telecom Monitoring (VTM) Wing in DoT is functioning throughout the country. It is recommended that the ISPs are investigated on the spot by this monitoring wing. An objective Inspection format is enclosed at Annexure III which may be required from the monitoring wing after the investigation. This could be submitted both to DOT and the Authority and a final view taken regarding further action against ISPs who are near non functional.

4.2.19 In case survey confirms that many ISPs/ITSPs have not rolled out services and prescribed time to roll out Internet services have already elapsed then strict action against such ISPs have to be initiated. The license conditions also provide that in case services are not rolled out within specified time frame and if licensee fails to perform, the licensor can cancel the license. The relevant Clause 10.1 is reproduced below: -

***“The LICENSOR may, without prejudice to any other remedy for breach of conditions of license, by written notice of 30 days, issued to LICENSEE at its registered office 30 days in advance, terminate this license in whole or part under any of the following circumstances:***

***(a) “If the LICENSEE fails to commission or deliver the SERVICE within the time period (s) specified in the license or in any extension thereof, if granted by the LICENSOR. However, this does not prevent the licensee from commissioning the service even after scheduled date of commissioning, provided the license does not already stand terminated and the Performance Tests are satisfactory”.***

**OR**

***(b) “If the LICENSEE fails to perform any other obligation(s) under the License including remittance of timely payments of License fee due to the LICENSOR and the LICENSEE does not rectify the failure within a notice period of 30 days or during such further period, as the LICENSOR may authorize in writing in this regard”.***

***In the event of such termination of license, the amount equivalent to Performance Bank Guarantee (PBG) shall be recovered by encashing the PBG and money so recovered shall be forfeited. The Licensee***

***shall not be entitled to any damages or compensation for such termination.”***

In view of the existing provisions in license, there is a need to give a final notice as envisaged in the license. If Internet services are not rolled out even after notice period then action has to be initiated by licensor for termination of the license of such ISPs and encashment of PBG. Non-monitoring of the roll out obligations of ISPs gives a wrong signal to the industry and many ISPs may get encouraged not to effectively roll out their services.

4.2.20 In the last six months 17 ISPs licensees have surrendered their license. 14 surrenders are from Category ‘C’ licensees. It is indicative of the fact that Category ‘C’ ISPs have poor prospects of viability with limited scope for growth. The limited option /permission to operate Internet service within SSA is restrictive and does not make business model. The Authority has separately analysed in this chapter and recommended measures for the migration of Category ‘C’ ISPs to Category ‘B’ ISPs thus providing viable business model and better growth prospects.

4.2.21 As per the available data 164 licensees out of 254 non operational ISPs/ITSPs have not fulfilled the license condition inspite of holding license for more than 18-24 months. The category wise breakup of these ISPs is 21 in Category ‘A’, 47 in Category ‘B’ and 96 in Category ‘C’. There is a clear roll out obligation for offering Internet services both for ISPs and ITSPs. As per clause 1.1 of part 2 of schedule C in the existing license

conditions reproduced below it is a necessary prerequisite for continued legitimacy of the license.

**For ITSPs**

**“The LICENSEE shall commission the Applicable Systems within 24 months from the effective date of the license and offer the service on demand to its customers”.**

**For ISPs**

**“The LICENSEE shall commission the Applicable Systems within 18 months from the effective date of the license and offer the service on demand to its customers”.**

As discussed in para 4.2.18 necessary action must follow in all such cases of default.

- 4.2.22 There is another important issue which is contributing to this huge list of non functional ISP license. This relates to determination of surrender or termination of license voluntarily by the licensee. The existing provision regarding termination of the license as per Clause 10.3 which is reproduced below :-

***“If the LICENSEE desires to surrender the license, it shall give an advance notice of 30 days to the Licensor to this effect. If the service is in operation, the licensee shall also intimate its subscribers of consequential withdrawal of service by serving a 15 days notice to them”. The financial liability of the licensee company for termination of the license for convenience shall be as below:-***

**(a) After start of service:- If during the notice period, acceptable level of service is not delivered to the customer, the licensee shall forfeit all claims on the Performance Bank Guarantee which shall be encashed and the amount shall be adjusted towards damages.**

**(b) Before start of service: The licensee can surrender the license by paying surrender charges equivalent to 5% of the Performance Bank Guarantee (PBG) amount i.e. Rs.10 lakhs for category 'A', Rs.1 lakh for category 'B' and Rs.15000 for category 'C' licenses respectively. The PBG shall be returned after termination of the license and ensuring clearance of all dues as per Clause 10.5.4.**

4.2.23 It is evident that any ISP who wishes to surrender the license has to pay surrender charges equivalent to five per cent of performance bank guarantee within permitted period for roll out of Internet services. In case the ISP licensee wishes to surrender the license after completion of rollout period, the condition provides that the licensee shall forfeit all claims on the performance bank guarantee and it shall be adjusted towards damages. It is for this reason also that many ISP licensees have not opted for surrender. The Authority is also recommending separately a levy of minimum license fee annually. It is hoped that many ISP licensees will find it financially advisable to surrender the license rather than start paying minimum annual license fee, if they are not effectively operational. However, there is a strong case to clean up the house and get the non-functional ISPs out of the reckoning. Keeping non functional



ISPs on roll is not serving any purpose. Therefore, **the Authority recommends that all licensees who wish to surrender may be permitted to exit within six month by forfeiting five percent of the performance bank guarantee in case where the licensee has completed the allowed time to roll out Internet services but such services have not been rolled out and 2.5 per cent of the bank guarantee as the surrender charges in cases where the start of the service has not yet been reported and licensee is still within permitted period for roll out of Internet services.** All ISPs who have already started Internet services and want to surrender ISP license may be permitted to do so without any surrender charges provided it gives due notice its subscribers.

- 4.2.24 As discussed in earlier paragraphs Category 'C' licensees are not able to remain financially viable due to restricted business opportunities. The scenario has also changed with the induction of broadband services and emerging technologies using Wi FI and Wi-Max etc. The Authority is of the view that a phased program for migration of Category 'C' ISPs to Category 'B' ISPs will ensure viable business model and better growth prospects. Presently separate Category 'B' ISP licenses are issued for eight metro/Major districts namely Delhi, Mumbai, Kolkota, Chennai, Ahmedabad, Bangalore, Hyderabad and Pune. In order to further improve financial viability, the Authority feels that all these major districts and metro districts may be merged with the respective telecom circles while providing Category 'B' ISP licenses. Existing ISPs have to pay new license fee to get integrated category 'B' telecom circle license including eight major/ metro districts in respective telecom circles. **In this context the Authority recommends the following:**

- (a) All Category 'C' ISPs who seek renewal should be asked to meet the conditions of Category 'B' or Category 'A' and migrate to Category 'B'/'A' license by fulfilling conditions of performance bank guarantee and financial bank guarantee;**
- (b) The remaining Category 'C' ISP licensees should be given three years' period for migration to Category 'A' or category 'B' license. In case they do not migrate then they will be allowed to continue in category 'C' till the validity of existing license. It will not be renewed in Category 'C'.**
- (c) All new ISP licenses shall be approved either for category 'A' or for Category 'B'.**
- (d) The existing eight Metro and major districts ( Delhi, Mumbai, Kolkata, Chennai, Ahemdabad, Bangalore, Hyderabad and Pune) specified as separate category 'B' areas for ISP licenses would be merged with the respective telecom circles while providing ISP licenses. Existing ISPs have to pay new license fee to get integrated category 'B' telecom circle license including eight major/ metro districts in respective telecom circles.**

4.2.25 The Authority was particularly conscious of the evolving technology while making recommendation for reduction of classification to State level and National level category i.e. Category 'B' and Category 'A'. Radio in backhaul and spectrum to access customers to provide wireless broadband is also important for meaningful business model. It will also increase their contribution for better Internet penetration. TRAI in its

recommendation on “**Allocation and Pricing of Spectrum for 3G and Broadband Wireless Access Services**” has envisaged allocation of spectrum for Wireless broadband on telecom circle basis. Migration to category ‘B’ ISP license will also harmonize spectrum allocation process.

### **4.3 Entry Fee**

4.3.1 The present licensing condition prescribes no entry fee for ISPs. This has also contributed to the entry of non serious players. It is also partly encouraging grey market operations. Therefore, the Authority is of the view that a minimum entry fee should be prescribed for ISPs. **It is recommended that a fee of Rs. 20 lakhs for Category ‘A’ ISP license and Rs. 10 lakhs for Category ‘B’ ISP license for entry purpose may be introduced. This will not be applicable to existing ISPs. The Authority considers that it will not adversely effect the growth of Internet penetration.**

### **4.4 Performance Bank Guarantee:**

4.4.1 The present licensing condition prescribe different performance bank guarantee for different categories of license i.e. Rs. 2 crores for Category ‘A’ service area, Rs. 20 lakhs for Category ‘B’ service area and Rs. 3 lakhs for Category ‘C’ service area. Since it has already been deliberated that ISP license would be given either in Category ‘A’ or Category ‘B’, the performance bank guarantee will be Rs 2 Crores for Category ‘A’ and Rs. 20 lakhs for Category ‘B’ license. **All Category ‘C’ ISPs who want to migrate to circle level license will be required to provide additional bank guarantee.** It is worth noting that present license provides reduction of bank guarantee for those ISPs who

have commissioned their Internet services. The performance bank guarantees for category `B' ISPs who have commissioned the service is just Rs.10 lakhs. Hence Category `C' ISPs who has already rolled out services will be required to submit additional bank guarantee of differential amount only.

#### **4.5 Level Playing Field vis-à-vis Other Telecom Operators:**

4.5.1 The present licensing regime envisaged different license for provision of different services like UASL, CMTS, BSO and ISP. The regime also clearly defines services permitted under different licenses. However the technological advancement has blurred the boundaries between various services provided under different licenses. Now Internet is permitted under CMTS and UASL license, BSOs are permitted to provide Broadband and ISPs are permitted to provide Internet telephony services within limited scope of license. Financial regulatory levies under different licensing regime for providing similar services are different, which results in non-level playing field.

4.5.2 The Authority has noted that Internet Telephony Service Providers (ITSPs) pay 6% of AGR on the earnings from Internet telephony services only as License fee. Internet access charges have been exempted from AGR at present. Many integrated service providers who have been permitted to provide Internet access including Internet telephony in their CMTS and UASL licenses have also obtained separate licenses for ISP operations, and are providing Internet services under these licenses. Instances have come to the notice where segregation of revenues earned from various revenue streams of Internet becomes difficult which may give way to accounting jugglery resulting in reduced license fee payments to the government.

Therefore there is a need to stop revenue leakage and prescribe uniform formula for imposing license fee.

**4.5.3** In view of the above analysis, **the Authority recommends a uniform annual license fee equivalent to 6% of AGR on all ISPs including revenues earned from provision of Internet Access, Value Added Services and Broadband in ISP domain. This will ensure level playing field vis-a vis other telecom operators.**

**4.5.4** **Since all ISPs will now pay uniform annual license fee, hence all services as per license are permitted to all ISPs. As such, there is no need to have separate ITSP and ISP license. The Authority recommends single Internet service provider license. The present ITSP license shall be done away with and the new license shall be called Internet service provider license (ISP).**

#### **4.6 Annual License Fee**

4.6.1 The ISPs are being charged a token license fee of Rs.1/- at present. The low license fee was adopted to encourage ISPs to start their operations and to increase the penetration of the Internet. While Internet growth is far below the expected level, DOT has flagged the issue of misuse of the license by the ISPs and their customers.

4.6.2 The observation of DOT indicates that entry of non-serious players to provide Internet services need to be curbed.

4.6.3 Issue of level playing field has already been deliberated above and a uniform annual license fee of 6% of AGR has been envisaged for all ISPs. Since license fee is being charged as percentage of AGR and no detailed roll out obligations for ISPs

have been prescribed, it may happen that some ISPs show no revenues and hence not liable to pay any license fee. This may not curb entry of non serious players in ISP segment. In order to curb such tendencies, **a minimum license fee per year is necessary. While prescribing ceiling for such license fee, the Authority is aware that many ISPs are catering to niche areas and therefore such minimum license fee should not be detrimental to their operation. The financial model has been discussed in para 4.2.10 which indicates minimum turn over of 5.5 lakhs for category 'C' ISPs to remain viable and functional. This justify much higher minimum license fee per year per license area but the Authority favours a minimum token license fee to curb non serious players. Accordingly, the Authority recommends imposition of an annual license fee of 6% of AGR subject to minimum of Rs. 50,000/-, Rs 10,000/- and Rs 5000/- respectively for category 'A', Category 'B' and category 'C' ISP per license area per year. This will ensure operation of Internet service by serious players and would not unduly burden the ISPs.**

#### **4.7 Financial Bank Guarantee:**

- 4.7.1 Internet service provider providing Internet telephony is required to submit a financial bank guarantee valid for one year for an amount of Rs. 20 lakhs, Rs. 2 lakhs and Rs. 50, 000 for Category 'A', Category 'B' and Category 'C' respectively before signing of their license agreement. Subsequently the amount of the financial bank guarantee shall be equivalent to the estimated sum payable equivalent to license fee for two quarters and other dues not otherwise securitized and any additional amount as deemed fit by licensor. The amount of financial

bank guarantee shall be subject to periodic review by the licensor and shall be renewed from time to time till final clearance of dues.

4.7.2 The Authority is aware that only 39 category 'A' ISPs 58 Category 'B' ISPs and 31 category 'C' ISPs have ITSP license and therefore have submitted financial bank guarantee. In order to ensure that ISPs are not unduly burdened to furnish FBG, the Authority recommends to reduce initial amount of FBG to Rs 10 lakhs, Rs 1 lakh and Rs 25000/- for category 'A', Category 'B' and Category 'C' respectively. **This reduction in FBG is only in the initial amount of bank guarantee and no change in the formula to arrive at the FBG amount is envisaged. All existing ISPs (excluding ITSPs who have already submitted FBG) shall submit financial bank guarantee of prescribed amount within three month from the date of such notification.** The amount of financial bank guarantee will be reviewed from time to time as envisaged in existing license. The amount of FBG submitted shall be adjusted (enhanced or reduced as the case may be) in accordance with DoT prescribed procedure.

#### **4.8 Interconnection with ISPs and ITSPs:**

4.8.1 The present license does not allow direct interconnection between ISPs, having Internet telephony and not having Internet telephony. The relevant clause 7.1 and Clause 1.12.8 are reproduced below:

##### **Clause 7.1**

***“Direct interconnectivity between two separately licensed ISPs shall be permitted; however,***

***interconnectivity is not permitted between ISPs who are permitted to offer Internet Telephony Service and the ISPs who are not permitted to offer Internet Telephony services. Authorized public/ Government organizations will be allowed to provide INTERNET Gateway access including international leased circuits directly without going through VSNL Gateways. Private ISPs are allowed to provide such Gateway after obtaining Security clearances for which the Interface of Private ISPs shall only be with the Telecom Authority”.***

**Clause 1.12.8**

***“Interconnectivity is not permitted between ISPs who are permitted to offer Internet Telephony Services and the ISPs who are not permitted to offer Internet Telephony services.”***

- 4.8.2 The present scenario has changed to great extent. TRAI has envisaged that ISPs or their upstream providers would be connected to NIXI for exchange of domestic traffic. Most of the ISPs are already connected to one of the upstream ISPs (VSNL, Reliance, Bharti etc.) for international Internet connectivity. All International Internet bandwidth providers possess ITSP license. In such a scenario implementation of above restrictions on interconnectivity condition is not feasible. Moreover all ISPs are being permitted to provide Internet telephony. Therefore such restrictions become redundant. Further there is no specific mention in the existing ITSP license regarding interconnection of ISPs of same category except in clause 7.1. In



view of this the Authority recommends that the existing condition is modified as given below:

***“Direct interconnectivity between two separately licensed ISPs shall be permitted.”***

***“Authorized public/ Government organizations will be allowed to provide INTERNET Gateway access including international leased circuits. Private ISPs are allowed to provide such Gateway after obtaining Security clearances for which the Interface of Private ISPs shall only be with the Telecom Authority”.***

The provision will enable ISPs to have direct peering and exchange Internet traffic.

#### **4.9 Provision of Internet Telephony:**

4.9.1 At present in ISP license, the Internet telephony is permitted under conditions specified below:-

**“i) Internet Telephony is a service to process and carry voice signals offered through public Internet by the use of Personal Computers (PC) or IP based Customer Premises Equipment (CPE) connecting the following:-**

- a) PC to PC; within or outside India**
- b) PC in India to Telephone outside India**
- c) IP based H.323/SIP Terminals connected directly to ISP nodes to similar Terminals; within or outside India.**

**ii) Internet Telephony is a different service in its scope, nature and kind from real-time voice as offered by other licensed operators like BSO, CMSO, NLDO, ILDO and PMRTS.**

**iii) Except whatever is described in conditions (i) and (ii) above, no other form of Internet Telephony is permitted.**

**iv) Addressing scheme for Internet Telephony shall only conform to IP Addressing Scheme of Internet Assigned Numbers Authority (IANA) exclusive of National Numbering Scheme/plan applicable to subscribers of Basic/Cellular Telephone Service.”**

4.9.2 The present conditions of using Internet telephony are restrictive in nature. The matter has been dealt in detail in Chapter 3 on grey Market Operations. It is envisaged that ISPs shall be permitted to use all devices/ adapters conforming to standards of International agencies like ITU / IETF for providing Internet Telephony. However they would not be permitted to have interconnection with PSTN and PLMN and allot E.164 numbers. TRAI has received request from various Internet service providers to permit Interconnection with PSTN/PLMN and also permit allocation of E.164 numbering to such subscribers. It is advocated that such interconnection will reduce voice call charges in the country by using Internet telephony. Internet telephony is presently permitted to UASL and CMTS also but such services have not been rolled out. The matter was flagged during consultation paper also. UASL and CMTS service providers expressed lack of clarity on various issues like mandatory emergency number dialing, procedure for lawful interception, numbering scheme for such subscribers in

existing national numbering plan etc. They expressed need for similar regulatory levies if ISPs have to be permitted interconnection with PSTN/PLMN.

4.9.3 TRAI has already flagged these issues to DoT. Moreover, TRAI is aware that such issues will become more important once migration to NGN starts. TRAI has already constituted an NGN expert committee (NGN-eCO) having representatives from DoT, Industry, Academician, Original Equipment Manufacturer (OEMs), etc. It is felt that such issues will require different framework of discussion and are not in the scope of present reference.

4.9.4 In view of above, Internet Telephony to PSTN and PLMN within the Country is not permitted under ISP license at present and therefore, any Internet service provider who wants to provide such Internet Telephony within Country needs to migrate to suitable license permitting the same.

4.9.5 Considering above framework the Internet telephony may be permitted as defined below:

**i) Internet Telephony is a service to process and carry voice signals offered through public Internet by the use of Personal Computers (PC) or IP based Customer Premises Equipment (CPE) connecting the following:-**

- a) PC to PC; within or outside India**
- b) PC/Any device/Adapter conforming to standards of any International agencies like ITU or IETF etc in India to PSTN/ PLMN abroad.**
- c) Any device/Adapter conforming to standards of International agencies like ITU, IETF etc**

**connected directly to ISP nodes to similar Terminals; within or outside India.**

- ii) Internet Telephony is a different service in its scope, nature and kind from real time voice as offered by other licensed operators like BSO, CMSO, UASL, NLDO, ILDO and PMRTS.**
- iii) Except whatever is described in conditions (i) and (ii) above, no other form of Internet Telephony is permitted.**
- iv) Addressing scheme for Internet Telephony shall only conform to IP Addressing Scheme of Internet Assigned Numbers Authority (IANA) exclusive of National Numbering Scheme/plan applicable to subscribers of Basic/Cellular Telephone Service.**

#### **4.10 Infrastructure Facilities to ISPs**

4.10.1 The present ISP license permits leasing of infrastructure facilities from other service providers. The relevant clause 1.5 of Schedule-C Part-II is reproduced below:

**“If the LICENSEE has in addition, leased or rented other telecommunication resources from the BSNL/MTNL/VSNL or any other Telecom Service Provider authorized by the Government of India, purely for the purposes of providing the service and networking its geographically dispersed equipment, such resources will be a matter between the ISP and the service provider(s) and will be subject to tariff as fixed by BSNL/ MTNL/ VSNL/ other Telecom Service Provider from time to time”.**

4.10.2 The Authority has noted in past that integrated service providers have discriminated between their own ISP operations and other ISPs while providing the telecom resources. The above clause leaves the scope for discrimination. The Authority feels that this clause needs to be amended to bring in fair and transparent treatment to standalone ISPs. All tariffs for such telecom resources shall be regulated in accordance with tariff orders issued by the Authority from time to time. The modified clause is reproduced below:

**“If the LICENSEE has in addition, leased or rented other telecommunication resources from any other Telecom Service Provider authorized by the Government of India/ Licensor, purely for the purpose of providing the service and networking its geographically dispersed equipment, such resources will be a matter between the ISP and the service provider(s) but shall be bound by any Direction if issued by TRAI.”**

#### **4.11 Tariff for Internet Services:**

4.11.1 The present licensing condition clause 13.1 of schedule ‘C’ of part II permits ISPs to fix their own tariffs. Relevant clause is reproduced below:

***“LICENSEE will be free to fix its own tariff to be charged from subscriber. The tariff shall be left open to be decided by market forces. The licensee company shall intimate the Telecom Authority, the tariff for the service to be charged from its subscribers’ and any changes thereof. However, the TRAI (Telecom Regulatory Authority of India) may***

***review and fix a tariff at any time during the validity of the license which scale of tariff shall be binding on the Licensee”.***

4.11.2 The present telecom market is very dynamic in nature and tariff is one of the tools to bring in competition. The affordability of Internet service is important to ensure growth of Internet and increase penetration in the rural and far-flung areas. Therefore **the Authority feels that flexibility to fix Internet tariffs with innovative tariff plans may be left under forbearance at present.**

#### **4.12 Arbitration of Disputes:**

4.12.1 The present license condition under Clause 11.1 of Part-II, Schedule ‘C’ prescribes procedure for Arbitration of Disputes. Well laid down procedure for redressal of disputes between telecom service providers have been prescribed as per Telecom Regulatory Authority of India Act 1997. This needs to be incorporated in the ISP licensing condition to provide fair deal to all telecom service providers in resolving their disputes. Accordingly, it is proposed that Clause 11.1 may be modified as:

- 1. The LICENSEE shall be bound by the terms and conditions of this Licence Agreement as well as by such orders/directions/regulations of TRAI as per provisions of the TRAI Act, 1997 and instructions as are issued by the Licensor/TRAI.**
- 2. All disputes relating to this Licence will be subject to jurisdiction of Telecom Disputes Settlement and Appellate Tribunal (TDSAT) as per provisions of TRAI**

**Act, 1997 including any amendment or modification thereof.**

**3. THE STATUTORY PROVISIONS AND THE RULES MADE UNDER INDIAN TELEGRAPH ACT 1885 OR INDIAN WIRELESS TELEGRAPHY ACT, 1933 SHALL GOVERN THIS LICENCE AGREEMENT. ANY ORDER PASSED UNDER THESE STATUTES SHALL BE BINDING ON THE LICENSEE.**

**4.13 Penalties for breach of License Conditions:**

4.13.1 Clause 13.8 of Part-II, Schedule 'C' of present licensing condition deals with breach and non fulfillment of any license condition. The existing provisions envisage encashment of the amount of performance bank guarantee and forfeit such amount for default of any of the license conditions. The ISP license is lightly regulated with very limited performance bank guarantee. At times forfeiting the performance bank guarantee may not be a deterrent for ISPs to comply with ISP licensing conditions. Suitable additional penalty provision has to be incorporated so that a strict action can be initiated against defaulting ISPs.

4.13.2 This becomes all the more important especially in view of the fact that DOT itself has flagged the issue of ISPs indulging in grey market operations. The present clause may be modifies as follows:

**“Breach or non-fulfillment of licence conditions may come to the notice of the LICENSOR through complaints or as part of regular monitoring. Wherever considered necessary, LICENSOR will conduct an inquiry to determine whether**

**there has been any breach of the terms and conditions of the licence. The licensee will be given an opportunity of hearing before any action adverse to his interest is taken. The licensor shall decide in each case the penalty to be levied for any breach of the terms and conditions of the license. If the penalty is not discharged or complied with, the LICENSOR has the right to encash in part or in full, the Performance Bank Guarantee as well as Financial Bank Guarantee. In addition, The Licensor may also impose a suitable financial penalty up to Rs. 1 Crore for violation of terms and conditions of licence agreement.”**

#### **4.14 Implementation of IPv6:**

- 4.14.1 TRAI in its recommendation on “Issues related to transition from IPv4 to IPv6” dated 09.01.2006 has already recommended that ISP license should include IP address up to 128 bit or more.

In view of the above it is recommended that definition of IP address in clause 18 of Schedule ‘C’ of Part I of ISP license to be amended as follows:

**“IP Address: Operation of Internet service requires IP address which can have up to 128 bit binary address or higher in future. This address is required for each permanent connection on Internet. Typically, it is required for the ports of the routers, other ISP equipments for the lease line connection and for the user end equipments/ devices”**

#### **4.15 Lawful Interception:**



4.15.1 The present ISP license permits use of customer encryption upto 40 bit key length. The relevant Clause 1.10.2 of Schedule-C of Part-II is reproduced below:

***“Individuals/Groups/Organizations are permitted to use as customer encryption up to 40 bit key length in the RSA algorithms or its equivalent in other algorithms without having to obtain permission. However, if encryption equipments higher than this limit are to be deployed, individuals/ groups/ organizations shall do so with the permission of the Telecom Authority and deposit the decryption key, split into two parts, with the Telecom Authority”.***

**4.15.2** The encryption being implemented by various subscribers is 64 bit and above. Mostly dynamic encryption keys are used based on random generation. Submitting encryption key as prescribed in present ISP licensing condition may not be useful to decrypt the message. In certain cases two level of encryption are also being used with different interlocked keys. **DOT may coordinate these issues with security agencies and workout a suitable framework to ensure lawful interception in emerging scenario.**

4.15.3 One option in this regard can be to mandate all subscribers through service providers to cooperate with security agencies and provide them full support as and when such decryption of encrypted messages is required. Alternatively advance monitoring center has to be developed which can decrypt encryptions done using advance technologies.

**4.16 Provision of International Connectivity to ISPs:**

4.16.1 The present licensing conditions provide ISPs to connect to DOT's Internet Gateway Access Service (DIAS), VSNL Gateway Internet Access Services (GIAS) or a Gateway owned by the public or the government organization for routing international Internet traffic. The relevant clause 1.3 of Part-II of Schedule- 'C' is reproduced below:

***“For the purpose of providing the SERVICE, the LICENSEE shall install his own suitable equipment so as to be compatible with the other service providers’ equipment and connect the same DIAS or GIAS or a Gateway owned by a public/Government organization for routing International Internet Traffic. Private ISPs are also allowed to set up International Gateway after obtaining security clearance/ approval from Authority”.***

4.16.2 The International Long Distance Operators (ILDO) have been permitted to provide international Internet bandwidth. Security monitoring for ILDOs' have been mandated. Therefore, the clause may be suitably modified to permit provision of international Internet connectivity through any of the international long distance provider or international Internet gateway provider as the case may be. The revised clause is reproduced below:

**“For the purpose of providing the SERVICE, the licensee shall install his own suitable equipment so as to be compatible with the other service providers’ equipment and connect the same to a Gateway owned by a licensed Internet gateway provider/ILDO for routing International Internet Traffic. Private ISPs are also allowed to set up**

**International Internet Gateway after obtaining security clearance/approval from Authority. ILDOs and International Internet gateway providers providing International Internet bandwidth to ISPs has to install suitable device/devices for blocking of Uniform Resource Locator (URL).”**

- 4.16.3 Blocking of URL and content filtering are also some of the concerns. The stand alone ISPs many times do not have suitable facilities to do content filtering or URL based blocking. The effectiveness of the blocking of URL and content filtering can be increased to great extent if International Internet bandwidth providers are also mandated to implement content filtering and URL based blocking of Internet sites. DoT will require limited interaction with ISPs as and when required to implement such blocking if such sites are hosted outside Country.
- 4.16.4 The DoT has already mandated URL blocking to ILDO. **Similar modifications for International Internet gateway providers may also be done.**

#### **4.17 Foreign Direct Investment (FDI)**

- 4.17.1 100% FDI cap/equity is permitted for ISP license without an International gateway and up 74% FDI cap /equity for ISP license with International gateway. The Cable TV operators who also have ISP license have FDI cap/equity of 49 % whereas other telecom operators like CMTS, UASL can have FDI cap/equity up to 74%. Non uniform FDI cap/equity is discriminatory and need to be addressed to maintain level playing field.

4.17.2 **The Authority therefore favours a uniform FDI cap /equity of 74% across all telecom licenses. ISPs who have more than 74% FDI cap /equity at present shall be required to bring down their FDI cap/ equity to 74% within two years.**

4.17.3 During Open House deliberations many stakeholders particularly cable TV operators stated that they may be permitted FDI cap/equity up to 74% with the ISP license instead of FDI cap/equity of 49% fixed for the Cable TV operators. The Authority is of the view that upward FDI revision would help in the up gradation of facilities of Cable TV for provision of Internet services. However, it is an inter-ministerial issue and DoT may consult Ministry of Information and Broadcasting in this regard.

#### **4.18 Spectrum charges for backhaul**

4.18.1 The launch of wireless broadband after allocation of appropriate spectrum will be very useful to increase Internet growth. This will require radio channel allocations for purpose of backhaul. The present method of allocation on the basis of RF channel bandwidth, number of the hops and distance is very costly and deterrent for using RF channel as backhaul. Simplified method based on percentage of AGR will be useful if permitted.

4.18.2 DOT has come out with new policy in Nov 2006 for CMTS and UASL service providers for charging of the RF channels for the purpose of backhaul. Different charging slabs based on percentage of adjusted gross revenue (AGR) have been prescribed for using number of carriers (0.15 % of AGR for one carrier to 1.45 % of AGR for using 6 carriers). The charging is not dependent on number of hops for which one carrier is used

i.e service provider can take a carrier for the purpose of backhaul in his licensed area of operation and can use the same RF carrier any number of times. **Similar provisions may also be considered for the ISPs who want to use radio channel in their backhaul. This will encourage use of radio channel in remote and far flung areas and increase Internet penetration.**

- 4.18.3 The percentage of AGR prescribed as RF carrier charges for such backhaul will be in addition to 6% of AGR proposed as annual license fee for provision of various services.

#### **4.19 Unified Messaging Services**

- 4.19.1 Unified Messaging Service (UMS) is the transport of Voice Mail Messages to other locations and subsequent retrieval by the subscriber on a non-real time basis. Such services can be provided under Voice Mail/Audiotex/Unified Messaging Service licence. The service area for the licensee is Short Distance Charging Area (SDCA) on the basis of local dialing. Such licensee must have ISP license also for the areas to be covered by UMS service. There is no Entry Fee as well as no license fee. However a Performance Bank Guarantee of Rs. three Lakhs for each licence is required.
- 4.19.2 Cellular Mobile Telephone Service Providers, Basic Service Providers, Cable Service Providers can provide Voice Mail/Audiotex/Unified Messaging Service as a Value Added Service over their network.

4.19.3 TRAI also forwarded its recommendations on Unified Messaging Services to DoT on 11th May 2001 mentioning that a service provider should have both an ISP license and a Voice Mail Service license to provide this service. The Authority observed that UMS service is basically a store and forward, voice based E-mail service wherein the voice packets are stored and forwarded over the Internet as an attachment to E-mail on a non-real time basis. At the destination these packets are retrieved by the recipient using PSTN dial up access. Therefore, the proposed service is a combination of both Internet Service and Voice Mail Service based on Interactive Voice Response System (IVRS). UMS Service can be offered by leveraging the capabilities of Internet platform and IVRS systems to offer Unified Messaging through Voice-Mail and E-mail.

4.19.4 It is important to note that ISPs are already submitting PBG and FBG for providing Internet services. An additional PBG of Rs 3 Lakhs for provision of UMS services is acting as deterrent for ISPs to provide such services. This service is already permitted to CMTS and UASL as value added service under their respective license. Therefore in view of the level playing field with other service providers **ISPs may also be allowed to provide UMS services as a value added service without any additional PBG and levy.**

#### **4.20 Future Scenario**

4.20.1 The Authority has expanded the scope and removed ambiguity in ISP license, removed restriction on provision of Internet telephony and allowed use of any device to provide Internet telephony conforming to standards of International agencies like

ITU, IETF etc. Level playing field vis-à-vis other telecom operators has also been maintained. The Authority supports liberal licensing framework for ISPs to boost Internet penetration and wants to create an environment to facilitate provision of Internet Telephony services. The Authority is also aware that many of the ISPs have limited resources and therefore any direct financial burden will be detrimental to such ISPs. The recommendations will help to curb grey market operations and encourage serious players to provide Internet services without putting undue financial burden on them.

#### **4.21 Recommendations**

**The Authority recommends,**

- (i) All non operational ISPs be identified and encouraged to roll out services quickly. In case such ISPs are not interested to roll out services, a framework to surrender the license as detailed below may be made available:** (Refer clause 4.2.23)
  - a) All ISPs who have completed the allocated period to roll out Internet services counted from the date of issue of the ISP license and have not yet rolled out their services have option to surrender the license paying 5% of PBG as surrender charge within six months of such notification.**
  - b) All ISPs who have not rolled out services and want to surrender ISP licenses may be permitted to do so within six months form date of such notification by paying 2.5% of PBG as surrender**

**charges provided they have not yet completed allocated period for roll out of services.**

**c) All ISPs who have already started Internet services and want to surrender ISP license will be permitted to do so without any surrender charges provided it gives due notice to its subscribers.**

**(ii) All New ISP licenses shall either be issued for Category 'A' or Category 'B'. Present practice of issuing Category 'C' ISP licenses shall be done away with. All existing Category 'C' ISPs shall be encouraged to migrate to Category 'B' by providing additional PBG and FBG. In case they do not migrate, they will be allowed to continue in Category 'C' till expiry of existing license. It will not be renewed in Category 'C'. The existing eight Metro and major districts ( Delhi, Mumbai, Kolkota, Chennai, Ahemdabad, Bangalore, Hyderabad and Pune) specified as separate category 'B' areas for ISP licenses would be merged with the respective telecom circles while providing ISP licenses. Existing ISPs have to pay new license fee to get integrated category 'B' telecom circle license including eight major/metro districts in respective telecom circles.**

**(Refer clause 4.2.24)**

**(iii) An entry fee of Rs 20 lakhs for Category 'A' ISP and Rs 10 Lakhs for Category 'B' ISP with immediate effect. This will not be applicable to existing ISPs.**

**(Refer clause 4.3.1)**



- (iv) **There will be only one ISP license to provide all services defined under ISP license including Internet telephony. The present provision of separate ITSP license shall be done away with. An annual license fee shall be charged @ 6% of AGR subject to minimum of Rs 50000/-, Rs 10,000/- and Rs 5000/- for category 'A', category 'B' and category 'C' ISPs respectively per year per licensed area. This will provide better growth prospects to ISPs and ensure level playing field vis-à-vis other telecom service providers. (Refer clause 4.5.3, 4.5.4 & 4.6.3)**
- (v) **A financial bank guarantee of Rs 10 lakhs, Rs 1 lakh and Rs 25000/- for category 'A', category 'B' and category 'C' ISPs respectively per licensed area is prescribed, which shall be submitted within three months from the date of such notifications. The amount of bank guarantee will be reviewed from time to time as envisaged in the existing license. (Refer clause 4.7.2)**
- (vi) **The direct connectivity between ISPs shall be permitted. (Refer clause 4.8.2)**
- (vii) **The scope of Internet telephony may be extended and include following: (Refer clause 4.9.5)**
- a) **Internet Telephony is a service to process and carry voice signals offered through public Internet by the use of Personal Computers (PC) or IP based Customer Premises Equipment (CPE) connecting the following:-**

- **PC to PC; within or outside India**
  - **PC/Any device/Adapter conforming to standards of any International agencies like ITU or IETF etc in India to PSTN/ PLMN abroad.**
  - **Any device/Adapter conforming to standards of International agencies like ITU, IETF etc connected directly to ISP nodes to similar Terminals; within India or outside India.**
- b) Internet Telephony is a different service in its scope, nature and kind from real time voice as offered by other licensed operators like BSO, CMSO, UASL, NLDO, ILDO and PMRTS.**
- c) Except whatever is described in conditions (Vii a) and (vii b) above, no other form of Internet Telephony is permitted.**
- d) Addressing scheme for Internet Telephony shall only conform to IP Addressing Scheme of Internet Assigned Numbers Authority (IANA) exclusive of National Numbering Scheme/plan applicable to subscribers of Basic/Cellular Telephone Service.**
- (viii) The clause 1.5 of schedule ‘C’ part II relating to infrastructure facilities needs to be modified to ensure fair treatment to standalone ISPs by integrated ISPs. All tariffs for such telecom resources shall be matter between the ISP and the service provider(s) but shall be bound by any direction, if issued by TRAI. (Refer clause 4.10.2)**

- (ix) **The present ISP licensing condition clause 11.1 of part II, schedule 'C' regarding arbitration of disputes needs to be amended to incorporate procedure for redressal of disputes between telecom service providers as prescribed in Telecom Regulatory Authority of India Act 1997. (Refer clause 4.12.1)**
- (x) **Clause 13.8 of part II of schedule 'C' of ISP license relating to penalty for breach of licensing conditions need to be modified to incorporate provision of penalty up to rupees one crore for violation of terms and conditions of license agreements. The appropriate provisions will help to effectively handle misuse of ISP license and deter tendencies of indulging in unlawful activities. (Refer clause 4.13.2)**
- (xi) **The definition of IP address in clause 18 of part I of schedule 'C' of ISP license may be modified to permit use of up to 128 bit IP address or higher.**  
(Refer clause 4.14.1)
- (xii) **The provision of clause 1.10 of part II, Schedule 'C' of ISP license regarding submission of encryption key needs to be modified keeping in views advancements in technologies. DoT need to work out appropriate framework after discussions with concerned agencies.**  
(Refer clause 4.15.2)
- (xiii) **The provision of clause 1.3 of part II, Schedule 'C' of ISP license provides for connection to International Internet gateway. Since security monitoring has already been mandated to ILDOs and International**

**Internet gateway providers, the clause may be suitably modified. User Request Link (URL) based blocking is already mandated to ILDOs. This may also be mandated to International Internet gateway providers providing International Internet bandwidth.**

(Refer clause 4.16.2 & 4.16.4)

**(xiv) All ISPs shall have maximum FDI cap/ equity of 74% irrespective of whether they setup International Internet gateway or not. ISPs having higher FDI Cap/ equity at present shall be given a time up to two years to bring down FDI Cap/ equity to 74%. (Refer clause 4.17.2)**

**(xv) Modification in present method of charging of RF channels for back haul based on band width, number of hops, etc to user friendly procedure as percentage of AGR. This will encourage RF channel utilization for backhaul boosting Internet penetration.**

(Refer clause 4.18.2)

**(xvi) ISPs may be permitted to provide Unified Messaging Services (UMS) without any additional PBG.**

(Refer clause 4.19.4)

## **CHAPTER 5**

### **RECOMMENDATIONS**

#### **1. SCOPE OF ISP LICENSE**

**The Authority recommends,**

**(i) Scope of Internet Access and Internet Content may be adopted in Internet service license to bring clarity as under:-** (Refer clause 2.2.6 & 2.3.6)

**a) Internet Access**

**“Use of any Device/ technology / methodology to provide access to Internet unless explicitly prohibited.”**

**b) Internet Content**

**“All content available without any access restriction on Internet and include web hosting, web co-location but do not include service providers’ configured closed user group services”**

**In view of this IP-VPN and IPTV services are not permitted.**

**(ii) Active interaction of DoT with foreign companies who have significant market share in global market to encourage Web hosting in India. Such initiatives should form part of our developmental agenda and**

**necessary policies to encourage such web hosting need to be evolved.** (Refer clause 2.3.4)

## **2. GREY MARKET OPERATIONS**

**The Authority recommends,**

**i) Restrictions on the use of devices/protocol employed to make Internet Telephony calls shall be removed to facilitate use of affordable and user-friendly devices/adapters conforming to International organizations specification like ITU/ IETF.**

(Refer clause 3.19)

**ii) ISPs shall not be permitted to have PSTN/ PLMN connectivity and shall not allocate E.164 numbering.**

(Refer clause 3.19)

**iii) General consumer awareness to use authorized Internet Telephony services only needs to be developed. Print and electronic media will be effective in promoting such awareness.** (Refer clause 3.21)

## **3. LICENSING AND REGULATORY FRAMEWORK**

**The Authority recommends,**

**i) All non operational ISPs be identified and encouraged to roll out services quickly. In case such ISPs are not interested to roll out services, a framework to surrender the license as detailed below may be made available:**

(Refer clause 4.2.23)

- a) **All ISPs who have completed the allocated period to roll out Internet services counted from the date of issue of the ISP license and have not yet rolled out their services have option to surrender the license paying 5% of PBG as surrender charge within six months of such notification.**
  - b) **All ISPs who have not roll out services and want to surrender ISP licenses may be permitted to do so within six months form date of such notification by paying 2.5% of PBG as surrender charges provided they have not yet completed allocated period for roll out of services.**
  - c) **All ISPs who have already started Internet services and want to surrender ISP license will be permitted to do so without any surrender charges provided it gives due notice to its subscribers.**
- ii) **All New ISP licenses shall either be issued for Category 'A' or Category 'B'. Present practice of issuing Category 'C' ISP licenses shall be done away with. All existing Caterogy 'C' ISPs shall be encouraged to migrate to Category 'B' or Category 'A' by providing additional PBG and FBG. In case they do not migrate, they will be allowed to continue in Category 'C' till expiry of existing license. It will not be renewed in Category 'C'. The existing eight Metro and major districts ( Delhi, Mumbai, Kolkota, Chennai, Ahemdabad, Bangalore, Hyderabad and Pune) specified as separate category 'B' areas for ISP licenses would be merged with the respective telecom circles while providing ISP licenses. Existing ISPs**

**have to pay new license fee to get integrated category 'B' telecom circle license including eight major/metro districts in respective telecom circles.**

(Refer clause 4.2.24)

**iii) An entry fee of Rs 20 lakhs for Category 'A' ISP and Rs 10 Lakhs for Category 'B' ISP with immediate effect. This will not be applicable to existing ISPs.**

(Refer clause 4.3.1)

**iv) There will be only one ISP license to provide all services defined under ISP license including Internet telephony. The present provision of separate ITSP license shall be done away with. An annual license fee shall be charged @ 6% of AGR subject to minimum of Rs 50000/-, Rs 10,000/- and Rs 5000/- for category 'A', category 'B' and category 'C' ISPs respectively per year per licensed area. This will provide better growth prospects to ISPs and ensure level playing field vis-à-vis other telecom service providers. (Refer clause 4.5.3, 4.5.4 & 4.6.3)**

**v) A financial bank guarantee of Rs 10 lakhs, Rs 1 lakh and Rs 25000/- for category 'A', category 'B' and category 'C' ISPs respectively per licensed area is prescribed, which shall be submitted within three months from the date of such notifications. The amount of bank guarantee will be reviewed from time to time as envisaged in the existing license. (Refer clause 4.7.2)**

**vi) The direct connectivity between ISPs shall be permitted.**

(Refer clause 4.8.2)



- vii) The scope of Internet telephony may be extended and include following:** (Refer clause 4.9.5)
- a) Internet Telephony is a service to process and carry voice signals offered through public Internet by the use of Personal Computers (PC) or IP based Customer Premises Equipment (CPE) connecting the following:-**
- **PC to PC; within or outside India**
  - **PC/Any device/Adapter conforming to standards of any International agencies like ITU or IETF etc in India to PSTN/ PLMN abroad.**
  - **Any device/Adapter conforming to standards of International agencies like ITU, IETF etc connected directly to ISP nodes to similar Terminals; within or Outside India.**
- b) Internet Telephony is a different service in its scope, nature and kind from real time voice as offered by other licensed operators like BSO, CMSO, UASL, NLDO, ILDO and PMRTS.**
- c) Except whatever is described in conditions (Vii a) and (vii b) above, no other form of Internet Telephony is permitted.**
- d) Addressing scheme for Internet Telephony shall only conform to IP Addressing Scheme of Internet Assigned Numbers Authority (IANA) exclusive of National Numbering Scheme/plan applicable to subscribers of Basic/Cellular Telephone Service.**

- viii) **The clause 1.5 of Part II of schedule ‘C’ relating to infrastructure facilities needs to be modified to ensure fair treatment to standalone ISPs by integrated ISPs. All tariffs for such telecom resources shall be matter between the ISP and the service provider(s) but shall be bound by any direction, if issued, by TRAI. (Refer clause 4.10.2)**
- ix) **The present ISP licensing condition clause 11.1 of part II, schedule ‘C’ regarding arbitration of disputes needs to be amended to incorporate procedure for redressal of disputes between telecom service providers as prescribed in Telecom Regulatory Authority of India Act 1997. (Refer clause 4.12.1)**
- x) **Clause 13.8 of part II of schedule ‘C’ of ISP license relating to penalty for breach of licensing conditions need to be modified to incorporate provision of penalty up to rupees one crore for violation of terms and conditions of license agreements. The appropriate provisions will help to effectively handle misuse of ISP license and deter tendencies of indulging in unlawful activities. (Refer clause 4.13.2)**
- xi) **The definition of IP address in clause 18 of part I of schedule ‘C’ of ISP license may be modified to permit use of up to 128 bit IP address or higher. (Refer clause 4.14.1)**
- xii) **The provision of clause 1.10 of part II, Schedule ‘C’ of ISP license regarding submission of encryption key**

**needs to be modified keeping in view advancements in technologies. DoT need to work out appropriate framework after discussions with concerned agencies.**

(Refer clause 4.15.2)

- xiii) The provision of clause 1.3 of part II, Schedule 'C' of ISP license provides for connection to International Internet gateway. Since security monitoring has already been mandated to ILDOs and International Internet gateway providers, the clause may be suitably modified. User Request Link (URL) based blocking is already mandated to ILDOs. This may also be mandated to International Internet gateway providers providing International Internet bandwidth.**

(Refer clause 4.16.2 & 4.16.4)

- xiv) All ISPs shall have maximum FDI cap/ equity of 74% irrespective of whether they setup International Internet gateway or not. ISPs having higher FDI Cap/ equity at present shall be given a time up to two years to bring down FDI Cap/ equity to 74%. (Refer clause 4.17.2)**

- xv) Modification in present method of charging of RF channels for back haul based on band width, number of hops, etc to user friendly procedure as percentage of AGR. This will encourage RF channel utilization for backhaul boosting Internet penetration.**

(Refer clause 4.18.2)

**xvi) ISPs may be permitted to provide Unified Messaging Services (UMS) without any additional PBG.**

(Refer clause 4.19.4)

## 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: 17<sup>th</sup> Nov, 2006

To

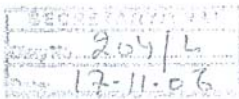
The Secretary,  
Telecom Regulatory Authority of India,  
A-2\14, Safdarjung Enclave,  
Africa Avenue,  
New Delhi : 110 029.

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)

**SUMMARY OF STAKEHOLDERS' COMMENTS**

1. The comments of stakeholders on '**Review of Internet Services**' are summarized into following three categories:
  1. Scope of Internet Services in ISP License
  2. Grey Market Operations
  3. Licensing and Regulatory Framework

**2 SCOPE OF INTERNET SERVICES IN ISP LICENSE**

- 2.1 The stakeholders felt that all services and applications which use TCP/IP( Transmission Control Protocol/Internet Protocol ) and other IP compatible protocols like IPTV, Unrestricted Internet telephony, IP-VPN (Virtual Private Network) services should come under the purview of ISP license. The ISP licensees should be allowed to provide all IP based services protocols under the Umbrella concept of single license. This will encourage competition and will ensure viability of ISPs also.
- 2.2 Stakeholders also felt that the ISP licensing should only be linked with the vanilla bandwidth provisioning whereas all other services based on video & voice applications, www-hosted applications should be freed from licensing.
- 2.3 It was also stressed upon that in a multi-tasking, multi-function, convergent nature of Internet; it would be illogical to consider regulating isolated applications. However, it does not

appear possible to expand the scope of ISP license to cover all services as it will infringe on the rights granted to ILD/NLD/ Access Providers. Therefore, for the ISPs to move up the value chain, there is no option but to obtain one or more licenses as per the services planned to be offered by them. The ISPs, who do not choose to do so, should continue to operate in the limited niche market.

2.4 It was also opined by stakeholders that ISPs should be permitted to offer multiple services to improve their viability. ISPs may be allowed to migrate to Unified Access Service License (UASL) without spectrum. With this ISPs will lay their own access network in their area of operations and can further provide wire-line telephony services. Such a step will also result in increase in wire-line teledensity which otherwise is declining.

2.5 A few stakeholders expressed the view that for uniformity and affordability, the Internet Access Charges should be mandated. They suggested introducing the Flat Rate Internet Access Call Origination (FRIACO), discounted rate for Bulk telephone minutes from access providers. It was also felt that unused capacity of dial-up network freed after the emergence of mobile and broadband Internet services can be made available to smaller ISPs at cheaper and discounted price.

### **3. GREY MARKET OPERATIONS**

3.1 It was felt that the ISPs should be permitted to deploy user friendly and cheaper devices/protocols such as MGCP (Media Gateway Control Protocol), ASP (Access Signaling Protocols) etc. to offer Internet telephony at competitive prices.



- 3.2 Stakeholder commented that since Skype / Google type service providers are not licensed to provide such services in India without having facility for lawful interception, therefore, the vigilance and monitoring efforts are required to be beefed up, as these applications not only bypass the laws and regulations of the land, but also pose a threat to security. As such these services should be blocked.
- 3.3 A few stakeholders felt that the grey market arises due to the arbitrage opportunities between various licenses for the similar type of services. It is felt to harmonize the license fee, ADC and spectrum charges across ISP and UASL/CMTS licenses in order to minimize the arbitrage.
- 3.4 Some of the stakeholders expressed that all the existing & upcoming call centers/ BPOs/ KPOs (Business or Knowledge Processes Outsourcing) should be asked to produce a copy of Bill from their respective ITSPs atleast twice a year. There should be a provision of penalty clauses in ISP licenses for deterring the grey market operations. It was felt that in order to curb grey market operations the licensing authority should enhance their vigilance and monitoring efforts.
- 3.5 Stakeholders also felt that DOT & TRAI websites should be updated regularly for the current list of ITSPs. Subscribers should be educated for availing services from licensed service providers only.
- 3.6 The stakeholders felt that UASL/CMTS are not providing Internet telephony due to various ambiguities in their

respective licenses. They felt that various issues related to numbering, routing & security are to be addressed to provide Internet Telephony services effectively.

#### **4. LICENSING AND REGULATORY FRAMEWORK**

- 4.1 Some stakeholders felt that the number of licensed ISPs, which is 389 at present, is not very huge as compared to International scenario e.g. Hongkong-188 , U.K.-686 plus , Bangladesh-200 plus , Taiwan-120 , Australia-500 plus, USA -5000. Even countries with smaller geographical area like Bangladesh and Hongkong do have sizable number of ISPs. Smaller ISPs cater to niche and specialized services.
- 4.2 Stakeholders commented that the availability of resources to ISPs should be on non-discriminatory, transparent & non-predatory basis.
- 4.3 Custom & excise duty relief for wireless & broadband customer premises equipment (CPE) should be given. It should not require import license and should be free of royalty charges. Preferential treatment to non-facility based service provider over facility based service providers should be on the basis of coverage, bandwidth, ROW (Right of Way), Tax benefits etc.
- 4.4 Views were also expressed that there is no need to redefine the roll out obligations of ISPs. Stakeholders felt that mandating such action through punitive clauses would not be proper. It will act as a deterrent to penetration of Internet and Broadband access. However, some stakeholders felt that roll out obligations should be made mandatory within specified

time frame e.g. 6 months to one year from the date of ISP license.

- 4.5 Stakeholders commented that the license fees for a SSA, circle or All India coverage should be uniformly rationalized to 6% of the AGR.
- 4.6 Stakeholders stated that some additional obligations can be imposed on serious ISPs & simultaneously the scope of the ISP license should be widened to include new Value Added Services (VAS) which may create new revenue streams for serious ISPs and enable them to get a solid foot-hold.
- 4.7 A view was also expressed that ISPs who are no longer willing to stay in the ISP business should be given an easy exit route so that they can surrender their licenses. For this, an appropriate time frame may be stipulated such as 31<sup>st</sup> December 2008, by which ISP licensees may surrender their licenses with very little or no financial penalty.
- 4.8 Unrestricted Internet Telephony should be allowed to ISPs with some percentage of AGR as may be decided by the government. ISPs should be permitted to migrate to UASL (without spectrum).
- 4.9 The stakeholder felt that there is an urgent need to rationalize the spectrum fee regime based on percentage of AGR preferably between 1% to 2% instead of present frequency/HOP /link regime. Further while calculating the AGR the revenue should not be taken from all the revenue streams, instead it should be taken only from those streams, which will use the licensed spectrum. Any other revenue coming from

wire line dial up/ wire line broadband/de-licensed spectrum services should not be included in the AGR.

- 4.10 It was also expressed that spectrum fee should be charged only on the 1<sup>st</sup> BTS established in the designated area. No or minimal charges should be levied on additional BTS. For purpose of spectrum fee, only spot frequencies in LMDS (Local Multipoint Distribution System) should be taken into account and not the HOPS, because for additional HOPS there is no allocation of additional frequency.
- 4.11 All stakeholders opined that migration to IPv6 should be encouraged and suitable amendment in ISP license should be made to accommodate 128 bit IP addressability clause.
- 4.12 Some stakeholders expressed the view that there is no rationale of having large number of non-functional ISPs. They wanted strict compliance of ISP license and also sought withdrawal of license of non-performing ISPs on present conditions.
- 4.13 Stakeholders also felt that existing ISPs who intend to offer unrestricted Internet telephony should be allowed to do so only if, they pay entry and other regulatory fees as paid by UASLs for different circles along with other taxes & levies including introduction of roll out obligations. They also wanted clear regulatory / licensing policy to address the critical issues like Security, Monitoring and Content.
- 4.14 Few stakeholders felt that the present restrictions on the type of terminal equipment for Internet telephony (PC or H.323 or SIP) should be removed and all TEC certified CPE should be allowed to be used. A few stakeholders expressed that removal

of the terminal restrictions would open the world of Internet and it will further boost competition.

4.15 Some stakeholders supported the view that to create “level playing field” amongst operators providing the same services. Under different telecom licenses similar regulatory levies should be prescribed.

4.16 Stakeholders also suggested consolidation of ISP licenses and B & C licenses should be done away with. All these B & C categories licensees should be given enough time to migrate to A category license and more obligations should be imposed on various ISP licensees.

**REPORTING FORMAT**

1. Name of the ISPs and the mailing address
2. Category of the ISP
3. Services offered
  - a. Dialup Internet Access service
  - b. Broadband service
  - c. Lease line
  - d. Internet telephony
  - e. Web hosting
  - f. Web Co-location
  - g. DNS resolution service
  - h. Others (Specify)
4. Details of the subscribers
  - a. Number of Dialup subscribers
  - b. Broadband subscribers link (Capacity wise)
    - i. 256 Kbps
    - ii. 512 Kbps
    - iii. One Mbps
    - iv. Two Mbps
  - c. Lease line subscribers (Capacity wise)
  - d. Internet telephony Subscribers
  - e. Minutes of use (MoU) of Internet telephony in last six months
  - f. Total installed web hosting space
  - g. Web hosting presently done ( In Megabytes)
  - h. Number of DNS resolutions done
  - i. Others (Specify)
5. Revenue details from various streams
  - a. Dialup Internet Access service

- b. Broadband service
  - c. Lease line
  - d. Internet telephony
  - e. Web hosting
  - f. Web Co-location
  - g. DNS resolution service
  - h. Others (Specify)
6. Details of the equipment Installed (Specify)
  7. International Internet BW capacity hired
  8. Modes to access last mile (Radio, Copper, Cable TV network, Fiber, etc)
  9. Number of the persons working with ISPs to support ISP operations.
  10. Any other information considered relevant

**INTERNATIONAL SCENARIO**

**1. Singapore:**

- 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.
- 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.
- 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).
- 1.4 Businesses such as cybercafés, hotels, etc. are allowed to resell Internet access to the public without a license from IDA.
- 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:

- 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.
- 1.7 **Level 3 Services:** Both FBOs and SBOs are permitted to provide such services and are subjected to minimal regulatory requirements.
- 1.8 Service providers will have to ensure that limitations in provisioning of such services are clearly communicated to customers.

## **2. Malaysia:**

- 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.
- 2.2 The reselling of Internet access is not a licensable activity under the Act.
- 2.3 Apart from a liberal policy in terms of licensing new market entrants for Internet (including for Internet 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.

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.

2.5 The regulatory regime also supports a pro-competition regime when it establishes rules on anti-competitive conduct.

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.

2.7 An account holder with a VoIP telephony provider can access services through any Internet telephony device, through PSTN dial-up; broadband; or, cellular.

2.8 There is no regulation for QoS, retail prices and termination / origination prices. However, providers are "encouraged" to provide emergency access.

### **3. Hong Kong:**

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.

- 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.
- 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.
- 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.

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

- PSTN replacement
- ISP telephony

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

3.7 There is less strict regulation for ISP telephony.

#### **4. Japan:**

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;

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).

- 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.

## **5. Europe:**

- 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. UK:**

- 6.1 UK has adopted general authorisation regime on 25<sup>th</sup> 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.
- 6.2 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.

6.3 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.

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

## **7. USA:**

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.

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.

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

## **8. Canada:**

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 TV 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.

8.2 While incumbent carriers and cable TV 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.

- 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-V

<b>Proposed Amendments in License Conditions</b>		
<b>Clause No.</b>	<b>Present License Conditions</b>	<b>Proposed License Conditions</b>
	<b><u>LICENCE AGGREMENT</u></b>	
7.2	In case of any complaint or dispute with regard to the Service from any subscriber of the service, such complaint or dispute shall be a matter between such subscriber of the service and the licensee only. The Government/licensor, BSNL, MTNL, VSNL or any other service provider licensed to provide connectable systems shall not be party to any such complaint/dispute. The licensee shall be responsible to suitably notify the above to all his subscribers of the service before registering a request for and provisioning of the service.	In case of any complaint or dispute with regard to the Service from any subscriber of the service, such complaint or dispute shall be a matter between such subscriber of the service and the licensee only. <b><i>The Government/Licensor shall not be a party to any such complaints/dispute.</i></b> The licensee shall be responsible to suitably notify the <b><i>service parameters</i></b> to all his subscribers of the service before registering a request for and provisioning of the service.
7.3	The Licensee shall be solely responsible for installation, networking and operation of necessary equipment and systems, treatment of subscribers' complaints, issue of bills to its subscribers, collection of the revenue, attending to claims and damages arising out of the services provided by him. The LICENSEE shall make its own arrangements for all infrastructures involved in providing the SERVICE. Further the Licensee shall clearly display and publicise major specifications of subscriber terminal equipment at his premises which are necessary for interworking/interfacing to telephone network.	The Licensee shall be solely responsible for installation, networking and operation of necessary equipment and systems, treatment of subscribers' complaints, issue of bills to its subscribers, collection of the revenue, attending to claims and damages arising out of the services provided by him. The LICENSEE shall make its own arrangements for all infrastructures involved in providing the SERVICE. Further the Licensee shall clearly display and publicise major specifications of subscriber terminal equipment at his premises which are necessary for interworking /interfacing to <b><i>telecom network and it will comply with all QOS guidelines issued by TRAI from time to time.</i></b>
8.1	The licensee shall be responsible to obtain its own IP address and domain name from the competent authorities. In case the IP addresses are taken from the Department of Telecommunications, the same are non-portable and have to be returned to DOT at the termination of connectivity contract.	The licensee shall be responsible to obtain its own IP address and domain name <b><i>from the authorized agencies. IP addresses can be taken from up-stream providers also.</i></b>

13	Individuals or groups of organisations both in private and Government sectors are permitted to deploy, indigenous or imported, encryption equipments for providing secrecy in transmission up to a level of encryption to be specified by Telecom Authority. However, if encryption equipments of levels higher than specified are to be deployed, individuals/groups/organisations shall obtain Government clearance and shall deposit one set of keys with the Telecom Authority.	<i>Submission of encryption key needs to be modified in view advancements in technologies. DoT need to work out appropriate framework after discussions with concerned agencies.</i>
15	The Licence is granted to the LICENSEE on the condition that any change in the Indian Partners or their equity participation should be as stipulated in the Indian Companies Act 1956. The 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.	The Licence is granted to the LICENSEE on the condition that any change in the Indian Partners or their equity participation should be as stipulated in the Indian Companies Act 1956. <i>All ISPs shall have maximum FDI cap/ Equity of 74% irrespective of whether they setup International Internet gateway or not. ISPs having higher FDI cap/ equity at present shall be given a time up to two years to bring down FDI cap/ equity to 74%.</i>
<b>Schedule 'B'</b>		
1.1	<b>QUANTUM OF LICENCE FEE AND SCHEDULE OF PAYMENTS</b>	
(i)	The licence fee is payable by the licensee in consideration for grant of this licence, for the complete duration for which this licence is granted. This has no relation to the actual start/provision of service by the licensee or any mutual obligations between the licensee and any other service provider/BSNL/MTNL/VSNL/Departments of the Central or State Government/local or statutory bodies.	The licence fee is payable by the licensee in consideration for grant of this licence, for the complete duration for which this licence is granted. This has no relation to the actual start/provision of service by the licensee or any mutual obligations <i>between the licensee and any other service provider/Departments of the Central or State Government/local or statutory bodies.</i>
(iii)	With effect from 01.01.2006, annual licence fee annually @ 6% of Adjusted Gross Revenue (AGR), excluding spectrum charges will be applicable in addition to Rupee One per annum. The Licensor reserves the right to modify the above mentioned Licence Fee any time during the currency of this Agreement	<i>There will be only one ISP licence to provide all services defined under ISP license including Internet telephony. The present provision of separate ITSP license shall be done away with. An annual license fee @ 6% of AGR subject to minimum of Rs 50000/- /-, Rs 10,000/- and Rs 5000/- for category 'A', category 'B' and category 'C' respectively per year per licensed area shall be charged from all ISP licensees.</i>

(iii) (a)		<i>An entry fee of Rs 20 Lakhs to category 'A' ISPs and Rs. 10 Lakhs to category 'B' ISPs with immediate effect. This will not be applicable to existing ISPs.</i>
(iv)(b)	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 prescription of Wireless Planning & Coordination Wing. The fee/ royalty for the use of spectrum /possession of wireless telegraphy equipment depends upon various factors such as frequency, hop and link length, area of operation and other related aspects etc. Authorization of frequencies for setting up Microwave links by Licensed Operators and issue of Licenses shall be separately dealt with WPC Wing as per existing rules.	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 prescription of Wireless Planning & Coordination Wing <b>based on AGR</b> . Authorization of frequencies for setting up Microwave links by Licensed Operators and issue of Licenses shall be separately dealt with WPC Wing as per existing rules.
<b>Schedule 'C' Part-I</b>		
<b>Definitions, interpretations and Provisions relating to Conditions</b>		
Unless the context otherwise requires, the following expressions shall have the meaning assigned to them in these conditions:-		
8	DIAS: DOT's Gateway Internet Access Services.	<i>To be deleted</i>
10	DOMAIN NAME: Domain names in India are at present registered by NCST (National Centre for Software Technology), Mumbai, who allot the same to legitimate IP address holder on receipt of a written application.	DOMAIN NAME: Domain names in India are at present registered by <i>NIC</i> , who allot the same to legitimate IP address holder on receipt of a written application.
16	GIAS; VSNL's Gateway Internet Access Services	<i>To be deleted</i>
18	IP ADDRESSES: Operation of Internet Service requires IP addresses which is at present a 32 bit binary address. This address is required for each permanent connection on Internet. Typically, it is required for ports of routers and other ISP equipment and also for leased line connections to be provided to end users.	<i>Operation of Internet Service requires IP addresses which can have up to 128 bits or higher in future. This address is required for each permanent connection on Internet. Typically, it is required for ports of routers and other ISP equipment and also for leased line connections to be provided to end users</i>

34(ii)	Category "B" - Any of the 20 Territorial Telecom Circles, four Metro Telephone Districts of Delhi, Mumbai, Kolkata or Chennai and four major telephone districts of Ahmedabad, Bangalore, Hyderabad or Pune are Category 'B' service areas. The four Metro Telephone Districts (Delhi, Mumbai, Kolkata & Chennai) are not part of any Telecom Circle, whereas the four major Telephone Districts (Ahmedabad, Bangalore, Hyderabad & Pune) are part of respective Telecom Circles.	Category "B" - <i>Any of the 20 Territorial</i> Telecom Circles, four Metro Telephone Districts of Delhi, Mumbai, Kolkata or Chennai and four major telephone districts of Ahmedabad, Bangalore, Hyderabad or Pune are Category 'B' service areas. The four Metro Telephone Districts (Delhi, Mumbai, Kolkata & Chennai) are not part of any Telecom Circle, whereas the four major Telephone Districts (Ahmedabad, Bangalore, Hyderabad & Pune) are part of respective Telecom Circles.
34 (iii)	Category "C" Service Area – Any Secondary Switching Area (SSA) of DOT with geographical boundaries as on 1.4.98, will form a separate category "C" Service Area with the exception that each of the four Metro Telephone Districts of Delhi, Mumbai, Kolkata & Chennai and of four major Telephone Districts of Ahmedabad, Bangalore, Hyderabad & Pune of the DOT with geographical boundaries as on 1.4.98, will form a separate category "B" Service Area.	<ul style="list-style-type: none"> <li>• <i>All Category 'C' ISPs who seek renewal should be asked to meet the conditions of Category 'B' or Category 'A' and migrate to Category 'B'/'A' license by fulfilling conditions of performance bank guarantee and financial bank guarantee;</i></li> <li>• <i>The remaining Category 'C' ISP licensees should be given three years' period for migration to Category 'A' or category 'B' license. In case they do not migrate then they will be allowed to continue in category 'C' till the validity of existing license. It will not be renewed in Category 'C'.</i></li> <li>• <i>All new ISP licenses shall be approved either for category 'A' or for Category 'B'.</i></li> </ul>
35	SERVICES OR SERVICE means Internet Access/content services including Internet telephony as mentioned in Clause 1.14 of Schedule 'C'	<p>SERVICES OR SERVICE means Internet Access/content services including Internet telephony as mentioned in Clause 1.14 of Schedule 'C'</p> <p><i>Scope of Internet Access and Internet Content may be adopted in Internet service license to bring clarity as under:</i></p> <p><i>(i) Internet Access: Use of any Device/ technology / methodology to provide access to Internet unless explicitly prohibited.</i></p> <p><i>(ii) Internet Content: All content available without any access restriction on Internet and include web hosting, web co-location</i></p>

		<i>but do not include service providers' configured closed user group services. In view of this IPVPN and IPTV services are not permitted.</i>
36	SERVICE PROVIDER means the Government and includes a licensee.	<b><i>SERVICE PROVIDER means a licensee.</i></b>
41	TARIFF: Charges payable by a subscriber for the service provided.	TARIFF: Charges payable by a subscriber for the service provided <b><i>as per TRAI's tariff Orders issued from time to time.</i></b>
43A		<b><i>Upstream Provider: ISP who is carrying the traffic to International gateway</i></b>
44	VSNL- means "Videsh Sanchar Nigam Ltd."	<b><i>To be deleted</i></b>
<b><u>SCHEDULE "C" PART II: TERMS AND CONDITIONS</u></b>		
1.2	LICENSEE shall be solely responsible for the installation, networking and operation of necessary equipment and systems, treatment of the subscribers' complaints, issue of bills to its subscribers, attending to claims and damages arising out of his operation. The LICENSEE shall make its own arrangements for all infrastructures involved in providing the SERVICE.	LICENSEE shall be solely responsible for the installation, networking and operation of necessary equipment and systems, treatment of the subscribers' complaints, issue of bills to its subscribers, attending to claims and damages arising out of his operation. The LICENSEE shall make its own arrangements for all infrastructures involved in providing the SERVICE <b><i>and it will comply with all regulations/ directions/ guidelines issued by TRAI from time to time.</i></b>
1.3	For the purpose of providing the SERVICE, the LICENSEE shall install his own suitable equipment so as to be compatible with the other service providers' equipment and connect the same DIAS or GIAS or a Gateway owned by a public/Government organization for routing International Internet Traffic. Private ISPs are also allowed to set up International Gateways after obtaining security clearance/approval from Authority.	For the purpose of providing the SERVICE, the licensee shall install his own suitable equipment so as to be compatible with the other service providers' equipment and connect the same <b><i>to a Gateway owned by a licensed Internet gateway provider/ILDO for routing International Internet Traffic.</i></b> Private ISPs are also allowed to set up International Gateways after obtaining security clearance/approval from Authority. <b><i>ILDOs and International Internet gateway providers providing International Internet bandwidth to ISPs have to install suitable device/devices for blocking of Uniform Resource Locator (URL).</i></b>

1.5	If the LICENSEE has, in addition, leased or rented other telecommunication resources from the BSNL/MTNL/VSNL or any other Telecom Service Provider authorised by the Government of India, purely for the purposes of providing the service and networking its geographically dispersed equipment, such resources will be a matter between the ISP and the service provider(s) and will be subject to tariff as fixed by BSNL/MTNL/VSNL/other Telecom Service Provider from time to time.	If the LICENSEE has, in addition, leased or rented other telecommunication resources from any Telecom Service Provider authorised by the Government of India, purely for the purposes of providing the service and networking its geographically dispersed equipment, such resources will be a matter between the ISP and the service provider(s) <b>but shall be bound by any direction, if issued by TRAI.</b>
1.6	"WARRANTY AS TO QUALITY":- The LICENSEE shall warrant that SERVICES to be provided by him shall be of the acceptable grade, consistent with the established and generally accepted standards.	"WARRANTY AS TO QUALITY":- The LICENSEE shall warrant that SERVICES to be provided by him shall be of the acceptable grade, consistent with the established and generally accepted standards <b>and it will also comply with all regulations/ directions/ guidelines issued by TRAI from time to time.</b>
1.8	The billing disputes or differences, between the LICENSEE and its subscribers will be settled amongst themselves.	The billing disputes or differences, between the LICENSEE and its subscribers will be settled amongst themselves <b>however licensee shall also comply with all regulations/ directions/ guidelines issued by TRAI from time to time.</b>
1.10.1	Individuals/ Groups/ Organisations are permitted to use as customer encryption upto 40 bit key length in the RSA algorithms or its equivalent in other algorithms without having to obtain permission. However, if encryption equipments higher than this limit are to be deployed, individuals/ groups/ organisations shall do so with the permission of the Telecom Authority and deposit the decryption key, split into two parts, with the Telecom Authority..	<b>Submission of encryption key needs to be modified in view advancements in technologies. DoT need to work out appropriate framework after discussions with concerned agencies.</b>
1.10.10	On Security related issues, an Inter-Ministerial Committee shall be set up consisting of the representatives of DOT, Cabinet Secretariat, MHA, MOD, DOE and NIC and representatives from NASSCOM to look into the technical aspects of monitoring of communications in this sector (including Internet) to enable the setting up of the monitoring infrastructure (which, in many	On Security related issues, an Inter-Ministerial Committee shall be set up consisting of the representatives of DOT, Cabinet Secretariat, MHA, MOD, DOE and NIC and representatives from NASSCOM to look into the technical aspects of monitoring of communications in this sector (including Internet) to enable the setting up of the monitoring infrastructure (which, in many

	cases, would have to be funded by the ISPs). Any condition imposed by this Inter-Ministerial Committee during the validity of the licence shall be binding on the licensee.	cases, would have to be funded by the ISPs). Any condition imposed by this Inter-Ministerial Committee <b>or any designated authority</b> during the validity of the licence shall be binding on the licensee.
1.10.11	The Internet nodes on places of security importance (as identified by security agencies from time to time) would be routed through VSNL/BSNL only. Interconnection of these nodes to other nodes within the country directly is not permitted. As on date these areas are Punjab, J&K and North Eastern States, Border areas of Rajasthan, Andaman and Nicobar Island and coastal areas of Gujarat and Tamil Nadu.	The Internet nodes on places of security importance (as identified by security agencies from time to time) would be routed through <b>any authorised gateway provider</b> only. As on date these areas are Punjab, J&K and North Eastern States, Border areas of Rajasthan, Andaman and Nicobar Island and coastal areas of Gujarat and Tamil Nadu.
1.12.8	Interconnectivity is not permitted between ISPs who are permitted to offer Internet Telephony Services and the ISPs who are not permitted to offer Internet Telephony Services.	<b><u>To be deleted</u></b>
1.14.1	Internet Telephony is a service to process and carry voice signals offered through public Internet by use of Personal Computer (PC) or IP based Customer Premises Equipments (CPE) connecting the following :	Internet Telephony is a service to process and carry voice signals offered through public Internet by the use of Personal Computers (PC) or IP based Customer Premises Equipment (CPE) connecting the following:
(a)	PC to PC ; within or outside India	<b><i>No Change</i></b>
(b)	PC in India to Telephone outside India	<b><i>(b) PC/Any device/Adapter confirming to standards of International agencies like ITU, IETF etc in India to PSTN/ PLMN abroad.</i></b>
(c)	<u>IP based H.323/SIP Terminals connected directly to ISP nodes to similar Terminals; within or outside India.</u>	<b><i>(c) Any device/Adapter conforming to standards of International agencies like ITU, IETF etc standards connected directly to ISP nodes to similar Terminals; within or outside India.</i></b>
1.14.2	Internet Telephony is a different service in its scope, nature and kind from realtime voice service as offered by other licensed operators like BSO CMSO, NLDO, ILDO and PMRTS.	Internet Telephony is a different service in its scope, nature and kind from realtime voice service as offered by other licensed operators like BSO, CMSO, <b><i>UASL</i></b> , NLDO, ILDO and PMRTS.
1.14.3	<u>Except whatever is described in conditions 1.14.1 and 1.14.2 above, no other form of Internet Telephony is permitted.</u>	Except whatever is described in conditions 1.14.1 and 1.14.2 above, no other form of Internet Telephony is permitted. <b><i>ISPs shall</i></b>



		<i>not be permitted to have PSTN/PLMN connectivity and shall not allocate E.164 numbering.</i>
7.1	Direct interconnectivity between two separately licensed ISPs shall be permitted. ; however, Interconnectivity is not permitted between ISPs who are permitted to offer Internet Telephony Service and the ISPs who are not permitted to offer Internet Telephony Services. Authorised public/Government organisations will be allowed to provide INTERNET Gateway access including international leased circuits directly without going through VSNL Gateways. Private ISPs are allowed to provide such Gateways after obtaining Security clearances for which the Interface of Private ISPs shall only be with the Telecom Authority.	<i>Direct interconnectivity between two separately licensed ISPs shall be permitted.</i>
7.4	Resources required for interconnecting the licensee's network to the network of upstream Internet access provider (DOT/VSNL etc.) or any other service provider licensed by the Telecom Authority including time frame for provision of the same, will be mutually agreed between the parties concerned. The resources may refer to include but not limited to physical junctions, PCM derived channels, private wires, leased lines, data circuits and other network elements. The licensee shall apply for and obtain the network resources from the concerned parties. The tariff of such network resources is outside the scope of this licence agreement. Licensor will have no obligation to obtain such resources from other parties	Resources required for interconnecting the licensee's network to the network of upstream Internet access provider (DOT/VSNL etc.) or any other service provider licensed by the Telecom Authority including time frame for provision of the same, will be mutually agreed between the parties concerned. The resources may refer to include but not limited to physical junctions, PCM derived channels, private wires, leased lines, data circuits and other network elements. The licensee shall apply for and obtain the network resources from the concerned parties. <i>The tariff of such network resources will be subjected to TRAI guidelines prescribed from time to time.</i> Licensor will have no obligation to obtain such resources from other parties
7.6	QUALITY OF SERVICE: The quality of service (QOS) shall be as prescribed from time to time by TRAI/Licensor; however, at present QOS is not prescribed.	<i>QUALITY OF SERVICE: The quality of service (QOS) shall be as prescribed from time to time by TRAI/Licensor.</i>
<b>CONDITION 11: DISPUTES WITH OTHER PARTIES</b>		

11.1	<p>In the event of any dispute of the LICENSEE with any other service provider or any party other than licensor due to any reason whatsoever, the dispute will be sorted out among themselves and LICENSOR will have no liability in any manner. However, in case of dispute arising with other parties due to non-observance of rules and regulations by the LICENSEE as provided in this licence, the LICENSOR will have full powers to take any action against licensee as is provided in the relevant clauses of this licence. The LICENSEE undertakes to indemnify LICENSOR in respect of any action against LICENSOR for acts of commission or omission on the part of the LICENSEE, its agents and servants.</p>	<p>(i) <i>The LICENSEE shall be bound by the terms and conditions of this Licence Agreement as well as by such orders/directions/regulations of TRAI as per provisions of the TRAI Act, 1997 as amended from time to time and instructions as are issued by the Licensor/TRAI</i></p> <p>(ii) <i>All disputes relating to this Licence will be subject to jurisdiction of Telecom Disputes Settlement and Appellate Tribunal (TDSAT) as per provisions of TRAI Act, 1997 including any amendment or modification thereof. The Statutory provisions and the rules made under Indian Telegraph Act 1885 or Indian Wireless Telegraphy Act, 1933 shall govern this Licence agreement. Any order passed under these statutes shall be binding on the LICENSEE.</i></p> <p>(iii) <i>The Statutory provisions and the rules made under Indian Telegraph Act 1885 or Indian Wireless Telegraphy Act, 1933 shall govern this Licence agreement. Any order passed under these statutes shall be binding on the LICENSEE.</i></p>
13.3	<p>THE COMMUNICATION RESOURCES &amp; OTHER SUPPORT FACILITIES: LICENSEE will have to make its own arrangement for all infrastructure involved in providing the SERVICE. However, the charges for any communication resources required for the purpose of networking and delivery of Internet Traffic to the upstream network access provider, i.e., BSNL/MTNL/VSNL/ or other licensed service provider on the request of the LICENSEE will be at the rates fixed by the BSNL/MTNL/VSNL or other licensed service provider from time to time.</p>	<p>THE COMMUNICATION RESOURCES &amp; OTHER SUPPORT FACILITIES: LICENSEE will have to make its own arrangement for all infrastructure involved in providing the SERVICE. However, the charges for any communication resources required for the purpose of networking and delivery of Internet Traffic to the upstream network access provider or other licensed service provider on the request of the LICENSEE will be at the <i>rates prescribed by TRAI from time to time.</i></p>
13.6	<p>A Performance Bank Guarantee of Rs.2 crores, 20 lakhs and 3 lakhs for category `A` service area, `B` service area and `C` service</p>	<p><i>A Performance Bank Guarantee of Rs.2 crores &amp; 20 lakhs for category `A` service area &amp; `B` service area respectively valid</i></p>

	<p>area respectively valid for 2 years from a scheduled bank in the prescribed form (per Schedule 'D' of the Licence Agreement) shall be submitted for each service area along with the 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.</p>	<p>for 2 years from a scheduled bank in the prescribed form (per Schedule 'D' of the Licence Agreement) shall be submitted for each service area along with the 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 <i>bank guarantee of the reduced amount of Rs.1 Crore, &amp; 10 lakhs for each of the service area for category A&amp; B respectively.</i></p>
13.8	<p>Breach or non-fulfillment of licence conditions may come to the notice of the LICENSOR through complaints or as part of regular monitoring. Wherever considered necessary, LICENSOR will conduct an inquiry to determine whether there has been any breach of the terms and conditions of the licence. The LICENSEE will be given an opportunity of hearing before any action adverse to his interest is taken. The LICENSOR shall decide in each case the penalty to be levied for any breach of the terms and conditions of the Licence. If the penalty is not discharged or complied with, the LICENSOR has the right to encash, in part or in full, the Performance Bank Guarantees.</p>	<p>Breach or non-fulfillment of licence conditions may come to the notice of the LICENSOR through complaints or as part of regular monitoring. Wherever considered necessary, LICENSOR will conduct an inquiry to determine whether there has been any breach of the terms and conditions of the licence. The licensee will be given an opportunity of hearing before any action adverse to his interest is taken. <i>The licensor shall decide in each case the penalty up to Rs. One Crore to be levied for any breach of the terms and conditions of the license.</i> If the penalty is not discharged or complied with, the LICENSOR has the right to encash in part or in full, the Performance Bank Guarantee as well as Financial Bank Guarantee.</p>
13.8(A)	<b>FINANCIAL BANK GUARANTEE (FBG)</b>	
(i)	<p>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</p>	<p>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</p>

	<p>Guarantee, in the prescribed Performa as Annexure-III. 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 Licence 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.</p>	<p>such Bank Guarantee, in the prescribed Performa as Annexure-III. Initially, the financial bank guarantee shall be for an amount of <b>Rs. 10 lakhs, Rs.1 lakh and Rs.25000/-</b> (for Category A, B and C ISPs respectively) which shall be submitted before signing the Licence 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.</p>
13.9	<p>The LICENSEE shall also separately pay charges for network resources provided to the Licensee on licensee's request by the BSNL/MTNL/VSNL/other licensed service providers at rates applicable from time to time.</p>	<p><b><i>The LICENSEE shall also separately pay charges for network resources provided to the Licensee on licensee's request by the other licensed service providers at rates prescribed by TRAI from time to time.</i></b></p>

## Abbreviations

<b>ADC</b>	Access Deficit Charges
<b>ADSL</b>	Asymmetric Digital Subscriber Line
<b>AGR</b>	Adjusted Gross Revenue
<b>ARPU</b>	Average Revenue per User
<b>ASP</b>	Access Signaling Protocol
<b>ATM</b>	Asynchronous Transfer Mode
<b>BPOs/KPOs</b>	Business/Knowledge Processes Outsource
<b>BSNL</b>	Bharat Sanchar Nigam Limited
<b>BSO</b>	Basic Service Operator
<b>CATV</b>	Cable TV
<b>CBD</b>	Central Business District
<b>CMSO</b>	Cellular Mobile Service Operator
<b>CMTS</b>	Cellular Mobile Telecom Services
<b>CPE</b>	Customer Premises Equipment
<b>EC</b>	European Commission
<b>FDI</b>	Foreign Direct Investment
<b>DNS</b>	Domain Name Server
<b>DoT</b>	Department of Telecommunications
<b>DSL</b>	Digital Subscriber Loop
<b>DTH</b>	Direct-To-Home
<b>FCC</b>	Federal Communications Commission
<b>FDI</b>	Foreign Direct Investment
<b>FBO</b>	Facility Based Operators
<b>FRIACO</b>	Flat Rate Internet Access Call Origination
<b>Ghz</b>	Gigahertz
<b>GIAS</b>	Gateway Internet Access Services
<b>IANA</b>	Internet Assigned Numbers Authority
<b>IASP</b>	Internet Access Service Provider
<b>IDA</b>	Infocomm Development Authority
<b>IETF</b>	Internet Engineering Task Force
<b>ILDO</b>	International Long Distance Operator
<b>ILEC</b>	Incumbent Local Exchange Carriers
<b>IP</b>	Internet Protocol
<b>IPTV</b>	Internet Protocol Television
<b>ILDO</b>	International Long Distance Operators
<b>IPv4</b>	Internet Protocol Version 4
<b>IPv6</b>	Internet Protocol Version 6
<b>ISP</b>	Internet Service Provider
<b>ISPAI</b>	Internet Service Providers Association of India
<b>ITSP</b>	Internet Telephony Service Providers
<b>ITU</b>	International Telecommunication Union
<b>IVANS</b>	International Value Added Network Services

<b>Kbps</b>	Kilo bits per second
<b>LMDS</b>	Local Multipoint Distribution System
<b>MCMC</b>	Malaysian Communications and Multimedia Commission
<b>MGCP</b>	Media Gateway Control Protocol
<b>MOU</b>	Minutes of usages
<b>MTNL</b>	Mahanagar Telephone Nigam Limited
<b>NFPs</b>	Network Facility Providers
<b>NIXI</b>	National Internet Exchange of India
<b>NLD</b>	National Long Distance
<b>NLDO</b>	National Long Distance Operator
<b>NSPs</b>	Network Service Providers
<b>OFCOM</b>	Office of Communications
<b>OHD</b>	Open House Discussion
<b>PC</b>	Personal Computer
<b>PBG</b>	Performance Bank Guarantee
<b>PLMN</b>	Public Land Mobile Network
<b>PMR</b>	Performance Monitoring Report
<b>PMRTS</b>	Public Mobile Radio Trunked Services
<b>PNETS</b>	Public Non Exclusive Telecommunication Services
<b>PoP</b>	Point of Presence
<b>PSTN</b>	Public Switched Telephone Network
<b>PSU</b>	Public Sector Undertaking
<b>SBA</b>	Singapore Broadcasting Authority
<b>SBO</b>	Service Based Operators
<b>SDCA</b>	Short Distance Charging Area
<b>SGCP</b>	Simple Gateway Control Protocol
<b>SSA</b>	Secondary Service Area
<b>TA</b>	Telecom Authority
<b>TDSAT</b>	Telecom Dispute Settlement and Appellate Tribunal
<b>TPIA</b>	Third Party Internet Access
<b>TRAI</b>	Telecom Regulatory Authority of India
<b>UASL</b>	Unified Access Service Provider License
<b>UK</b>	United Kingdom
<b>UMS</b>	Unified Messaging Service
<b>URL</b>	Uniform Resource Locator
<b>USA</b>	United States of America
<b>USO</b>	Universal Service Obligation
<b>VAS</b>	Value Added Services
<b>VoIP</b>	Voice over Internet Protocol
<b>VPN</b>	Virtual Private Network
<b>VSNL</b>	Videsh Sanchar Nigam Limited
<b>VTM</b>	Vigilance Telecom Monitoring