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Advisor (NSL)
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New Delhi – 110002

Sub: TCL Response to TRAI Consultation Paper on "Delivering Broadband Quickly: What do we need to do?"

Dear Sir,

Kindly find attached herewith Tata Communications Ltd. comments on the TRAI Consultation Paper on "Delivering Broadband Quickly: What do we need to do?".

It is requested that the same may kindly be taken on record.

With kind regards,

For Tata Communications Ltd.

(Praveen Sharma)
Authorized Signatory

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TCL Response to TRAI Consultation Paper

On

Delivering Broadband Quickly:

What do we need to do?

I. Introduction

TCL welcomes this suo-motu initiative taken by TRAI for consulting all the stakeholders on various issues hampering the broadband proliferation in the country. We are happy to note that critical role that Broadband service plays economic and sociological development of the Country has been duly recognized in the Consultation Paper. We believe that all citizens of India should have access to broadband services including the attendant transformative opportunities/benefits.

The Consultation Paper is in line with NTP 2012 which has laid lot of emphasis on broadband proliferation which is recounted below:

Preamble

"5. Notwithstanding the economic progress over the last decade, the digital divide in the country continues to be significant. On the one hand, expansion of telecommunications in the rural areas has been slower than urban areas, with the former accounting for only 34% of the total connections. On the other, the ability of the poorer sections of the society, both in rural and urban areas, to benefit from technology needs to be enhanced. NTP-2012 has the vision Broadband on Demand and envisages leveraging telecom infrastructure to enable all citizens and businesses, both in rural and urban areas, to participate in the Internet and web economy thereby ensuring equitable and inclusive development across the nation. It provides the enabling framework for enhancing India's competitiveness in all spheres of the economy. NTP-2012 envisages support to platform neutral services in e-governance and mgovernance in key social sectors such as health, education and agriculture that are at present limited to a few organizations in isolated pockets. This will expand the footprint of these services and thus foster an atmosphere of participative democracy delivery model that is truly citizen-centric. "

"III. OBJECTIVES

3. Provide affordable and reliable broadband-on-demand by the year 2015 and to achieve 175 million broadband connections by the year 2017 and 600 million by the year 2020 at minimum 2 Mbps download speed and making available higher speeds of at least 100 Mbps on demand.

5. Provide high speed and high quality broadband access to all village panchayat through a combination of technologies by the year 2014 and progressively to all villages and habitations by 2020."

"IV. STRATEGIES

1. BROADBAND, RURAL TELEPHONY AND UNIVERSAL SERVICE OBLIGATION FUND (USOF)

1.1. To develop an eco-system for broadband in close coordination with all stakeholders, including Ministries/ Government Departments/ Agencies to ensure availability of media for last mile access, aggregation layer, core network of adequate capacity, affordable equipment including user devices, terminals and Customer Premise Equipment and an environment for development of relevant applications. Formulate policies to promote competition by encouraging service providers, whether large or small, to provide value added services under equitable and non-discriminatory conditions.

1.2. To recognize telecom, including broadband connectivity as a basic necessity like education and health and work towards 'Right to Broadband'.

1.3. To lay special emphasis on providing reliable and affordable broadband access to rural and remote areas by appropriate combination of optical fibre, wireless, VSAT and other technologies. Optical fibre network will be initially laid up to the village panchayat level by funding from the Universal Service Obligation Fund (USOF). Extension of optical fibre connectivity from village panchayats to be taken up progressively to all villages and habitations. Access to this Optical Fibre Network will be open, non-discriminatory and technology neutral.

1.4. Provide appropriate incentives for rural rollout.

1.5. To revise the existing broadband download speed of 256 Kbps to 512 Kbps and subsequently to 2 Mbps by 2015 and higher of at least indent
100 Mbps thereafter."

Further Policy statement of the Government has recently come out in form of its official press release dated 20.08.2014 which states that as per vision of the new Central Government a blueprint for the Digital India program, which envisages all government services be delivered electronically by 2018 has been approved. It also seeks to provide unique identities to all citizens. The program aims to "bring public accountability through mandated delivery of government services electronically" and provide a "unique ID and e-Pramaan, based on authentic and standards-based interoperable and integrated government applications and data bases". Digital India would provide "high-speed internet as a core utility" down to the Gram Panchayat level and a "cradle-to-grave digital identity — unique, lifelong, online and authenticable", the unique IDs would facilitate identification, authentication and delivery of benefits. Digital India, which promises to transform India into a connected knowledge economy offering world class services at the click of a mouse, will be implemented in a phased manner by 2019 at an estimated cost of about Rs 1,13,000 crore, including ongoing enabling projects run by telecom and electronics and IT departments. The Government has set the agenda with detailed plans for "Digital India" being among the top priorities:

a. Broadband as digital infrastructure as a utility to every citizen
b. Financial inclusion - mobile phone and bank account, make financial transactions electronic & cashless
c. e/m-Governance – on demand services in real time on online and mobile platform,
d. Digital empowerment of citizens - all documents, certificates available on cloud.

Although both the current national telecom policy NTP 2012 as well as the step of the Government in approving Digital India program lays significant amount of emphasis on broadband highways and internet access program we believe that this Consultation Process by the esteemed expert body TRAI and its outcome in form of TRAI recommendations including ratification of the same by the Government would go a long way in promoting proliferation of broadband in the Country.

Before responding on various questions raised in the Consultation Paper we would like to draw the kind attention of the Authority on various important issues which are hampering growth of broadband services in the country.

II. Important Issues for Broadband proliferation

Before responding on various questions raised in the Consultation Paper we would like to draw the kind attention of the Authority on various important issues which are hampering growth of broadband services in the country. Presently there are about 350 ISP licenses under different categories out of which around 150 are operational as against 8 Pan Indian access providers and 2 regional access providers. At the end of March, 2014, there were around 60.87 Million Broadband subscribers majority of which are urban based and from enterprise segment. The Consultation Paper notes that 97% of the market share is owned by top ten service providers with remaining providing a dismal 3% contribution. It is not for the reason of willingness that market share of vast majority of ISPs is only 3% but there are many factors which are hampering the contribution of the ISPs in the proliferation of broadband some of which are dealt below.

II.1 Issue of affordability of broadband services –Imposition of LF on internet services

It may be recalled that when internet services were opened up for participation by the private sector in the year 1995 by way of Policy decision by the Government it was decided not to levy any license fee on the ISPs and entry fee was also kept nominal. It is our view that in so far as imposition of license fee is concerned the rationale for decision of no imposition of license fee on ISPs taken in the year 1995 still holds good particularly for the reason of affordability of the broadband services.. It would therefore be in the fitness of the things that no license fee should be levied on pure internet services in the old ISP licenses and the recommendations dated 01.05.2014 need to be reviewed. Even in respect of the new UL-ISP license where the definition of GR and AGR is being reviewed and examined by the Authority, the revenues from pure internet services should be excluded as a pass through charge for the purpose of computation of license fee.

It may be noted that pure internet services including broadband services can be provided under old BSO, CMSP or UASL license or under old ISP licenses and in the new licensing regime these can be provided under UL-AS license or under UL-ISP license. Those service providers who have been providing pure internet services under any of the old or new access service license have been paying license fee on the pure internet services as they were utilizing the network created under those access licenses. Thus the same access network was used to derive and provide access services as well as pure internet services. In case of ISP or UL-ISP licenses they are providing pure internet services from a network created under the ISP license. The pure internet services is being provided by the access providers is based on a micro cellular network using technologies such as GSM, CDMA, 3G WCDMA and BWA (LTE) whereas standalone ISPs provide pure internet services based on last mile created by them using Wireline network including fibre and administratively allocated spectrum. Thus the nature of the underlined network and cost based through which pure internet services is provided by the access provider and ISPs are different and there is no case for ensuring any level playing field between these two categories of service providers. In our view if the TSPs providing internet services under old ISP license and new UL-ISP license are exempted from imposition of LF it would not be a discriminatory step vis-à-vis UL-

AS licensees as both are not similarly situated. Moreover the upfront capital cost of creating a wireline/OF network is also much higher than wireless network apart from having higher OPEX.

We need to encourage participation of more and more ISPs in proliferation of broadband services and there are niche and stand-alone ISPs who are ideally placed and endeavoring to take the broadband to rural and remote areas. The Government recognized this need and has taken the first step to create much needed backbone infrastructure through NOFN project. A lot more facilitation is required through conducive policies as well as special incentives to attract the much needed investment in this segment. We believe that levy of license fee on pure internet services would adversely impact the broadband proliferation which can be done by the stand alone ISPs.

Levy of LF will be considered as a barrier for ISPs of India when we compare the same with rest of the world;

Most mature regulatory regimes have abolished virtually all entry fees, annual charges, license fees etc. for provision of internet and broadband services. Thus:

- 26 member countries of the European Union have abolished all entry fees, license fees etc. to provide any telecommunications services including internet and broadband services except the payment for spectrum. There is no formality beyond registration.

- US, Canada, Australia similarly impose no barriers on provision of internet and broadband services by companies willing to enter into commercial arrangements

- Singapore, South Africa, Brazil, Sri Lanka specify criteria for ISPs which are less financially burdensome than in India.

As on date the levy of revenue share license fee on pure internet services would result in a very small revenue whereas exempting the pure internet services revenues as a pass through charge will result in galvanizing the ISPs and UL-ISPs in providing the broadband services with a renewed vigor.

We would therefore request that considering the present financial position of ISP segment, low level of penetration of internet services and affordability of Internet services, the revenue from pure internet /broadband services should not be considered as a part of adjusted gross revenue (AGR) both for the new UL-ISP license as well as for the old service specific ISP licenses.

II.2 Broadband Supply Chain –Problem of last mile access

While the Consultation Paper raises issues in respect of all components of broadband supply chain, last mile or the local access is one of the costliest and most problematic areas for most of the ISPs using wireline or wireless access network.

II.2.1 Issues pertaining to Wireline last mile network:

While the OF based wireline access network has a higher CAPEX and OPEX ,with increasing economic progression bandwidth requirements would continue to increase necessitating progression to wireline access for high speed applications. While Optical Fiber Cable (OFC) has near unlimited bandwidth capability, deploying OFC has its limitations of high cost and operational management some of these costs are man-made and can be eliminated by taking concrete Policy decisions.

Cost and Process for obtaining Right of Way (RoW)

Very high ROW charges are being levied by most municipal corporations in India which makes laying and building OFC routes very expensive. Telecommunications Services Providers (TSPs) can be motivated to move towards OFC by lowering ROW charges being levied by various municipalities. Moreover, the current mechanism for charging RoW fee varies across the country by state and municipal limits. In the absence of a centralized authority coordinating across various municipal corporations and government bodies, TSPs today are subject to disparate ROW rules across the country. An applicant has to seek approvals from multiple authorities and utilities to get RoW permissions, viz. Fire, Traffic Police, Sewerage, Electricity, et al and the process is tardy.

a) The government must mandate lowering cost of laying and maintaining fiber, mandatorily marking it to input costs of road-digging, reinstatement and any other relevant applicable cost.

b) It is recommended to introduce a single-window process for applying and seeking RoW permissions, preferably through an online portal. Doing so would lend uniformity, speed, transparency and accountability to the process.

c) The charges should be kept low for proliferation of Broadband in the country and should be kept as uniform one time charges. Recurring charges applicable should not be applicable on RoW permissions.

d) All building owners – Commercial, Industrial, Residential and societies; may be obligated to provide rights to lay fiber on their land without any charges for such rights. The service providers may be obligated to restore the fiber trenches.

Operational Management

OFCs also have a high cost of operational management. Given rampant infrastructure development across the country, OFCs are subject to frequent cuts. Infrastructure developers and utility providers undertake digging unmindful of the presence of buried OFCs. So as to alleviate the problems faced, following measures are recommended –

a) Introduce a formal obligation and liability on part of infrastructure developers including IP1's ISPs and TSPs. Proactive intimation and sharing of plans of road expansion on an online portal would help TSPs plan better

b) To avoid repeated digging of roads, alignment of road digging activities must be mandated across public authorities, viz. municipal, public works departments and utilities. Doing so can successfully mitigate preventable fiber cuts

c) Trenching should be allowed to be done by Horizontal Directional Drilling (HDD) method. HDD eliminates the problem of digging and relaying road surface, and causes minimal public nuisance

d) Further, while laying road infrastructure, municipal and state authorities must construct a common duct. TSPs could thereafter lay fiber on need basis upon payment of a reasonable compensation

Overhead Fiber as a Viable Media

The permission to install overhead fiber would be another enabler for TSPs. Installation and operational maintenance of overhead fiber is far cheaper than that for buried OFCs. In many parts of the world, laying overhead fiber is encouraged and adequate governing rules and regulations are in place. In line with other successful Aerial mode of fiber deployment in India must be formalized as an operationally viable option with corresponding quality standards laid out. Appropriate RoW application and charging mechanisms must also be specified across geographies. This would be one of the biggest enablers in the provision of OF based broadband services by the ISPs.

II.2.2 Issues pertaining to Wireless last mile network:

Need for more license –exempt spectrum bands

The value of license –exempt spectrum in bridging the digital divide has been demonstrated through community wireless networking projects as well as inexpensive ITES (IT enabled services) operating on unlicensed spectrum that have been created to spread connectivity to digitally-marginalized areas. As demonstrated by numerous case studies, such networks administer e-learning, e-commerce, telemedicine, e-agriculture, and many other initiatives that lead to equitable social and economic growth, making unlicensed spectrum a "public good".

The International Telecommunication Union (ITU), European Union telecom regulatory bodies, as well as leading state telecom policy makers and regulators such as the FCC (U.S. Federal Communications Commission) and OFCOM (UK Office of Communications) have recognized that the optimal use of radio spectrum is dependent on flexible spectrum management policies and the multi-time sharing of this precious resource.

Of late, the relevance of license –exempt spectrum is being recognized by policy makers in India as well. This is evident from the National Telecom Policy 2012 recognizes the need to reserve more frequencies for unlicensed use. However, the country is still behind when compared to unlicensed spectrum availability in the U.S. and UK which have already integrated innovative spectrum management techniques in their telecom policies. These policies aim to create a flexible, market-driven approach to spectrum regulation and management through integrating spectrum sharing techniques and meeting the industry demand for unlicensed spectrum. India needs to follow suit in order to provide connectivity to remote/rural regions and encourage further innovation in the telecom domain. Therefore, additional frequencies should be freed up for unlicensed use according to demands from community groups, industry bodies, and experts in the field, in line with international best practices. One of the reasons for this request is that the existing 50 MHz of licence-exempt spectrum in the 5.8 GHz band has become choked up as many ISPs switch to providing services using these unlicensed frequencies. The situation is the same in the case of the 2.4 GHz band, which has become overloaded due to the unavailability of more unlicensed spectrum.

The bands which could be considered for de-licensing are 2.483-2.5 Ghz, 2.7-2.9 Ghz apart from E and V band which have recommended for light regulation by TRAI in its latest recommendations on Microwave and Backhaul spectrum. Frequencies in the 5.15 GHz-5.35 GHz bands, as well as 5.725-5.775 GHz bands are unlicensed for indoor use only. These bands should be unlicensed for outdoor use as well in order to facilitate the creation of wider wireless communication networks and the use of innovative technologies. Making available license exempt spectrum for provision of wireless access would enable the investment and services from the ISP community in a big way. This would give a strong impetus to the proliferation of broadband services in the country.

Rationalizing charges for administratively allocated spectrum in 3.3 Ghz-3.4 Ghz

A significant number of ISPs have been using the administratively allocated spectrum in the band 3.3 Ghz-3.4 GHz for provision of last mil access and broadband services since 2005-0 onwards on the basis on Annual Royalty Charges per BTS which was worked out as per MCW formula. However with effect from 01 April 2012 the Annual Royalty charges per BTS have been revised to almost 3 times making the provision of services using the spectrum financially unviable in majority of the cases. This has led to major roll back of last mile access network which was created by various charges. These annual royalty charges need to be reviewed and rationalized in line with recommendations of TRAI on E band. This issue needs to be examined in detail and appropriate recommendations made so that optimal utilization of this band can take place which in turn would help the ISPs in proliferating the broadband services in India.

III TCL RESPONSE TO VARIOUS QUESTIONS

Q.1. What immediate measures are required to promote wireline technologies in access networks? What is the cost per line for various wireline technologies and how can this cost be minimised? Please reply separately for each technology.

A. In addition to the issues raised under para II.2.1, measures required to promote wireline technologies and rollout are as under :

a) The government must mandate lowering cost of laying and maintaining fiber, mandatorily marking it to input costs of road-digging, reinstatement and any other relevant applicable cost.

b) It is recommended to introduce a single-window process for applying and seeking RoW permissions, preferably through an online portal. Doing so would lend uniformity, speed, transparency and accountability to the process.

c) The charges should be kept low for proliferation of Broadband in the country and should be kept as uniform one time charges. Recurring charges applicable should not be applicable on RoW permissions.

d) All building owners – Commercial, Industrial, Residential and societies; may be obligated to provide rights to lay fiber on their land without any charges for such rights. The service providers may be obligated to restore the fiber trenches.

e) Custom Duty, Excise and other taxes like Octroi for equipments and optical fiber used for developing fiber access networks to be zero for next 5 years.

f) Optical Fiber networks to be given the status of essential services by including this into essential services maintenance act.
   i. Awarding fiber-based internet service providers "critical infrastructure" status
   ii. Making local, state, and central Government agencies sensitive to the optical fiber access networks to avoid service disruptions
   iii. Sabotage of optical fiber networks to be made a punishable offense

iv. Private bodies, Local, State, and Central Government agencies should be made to re-lay the critical fiber infrastructure that is destroyed by them in civil works.

B. High cost of FTTH (Fiber To The Home)/FTTB (Fiber To The Building)– FTTH/FTTB can enable mass deployment of wireline network reaching multiple homes and commercial establishments and making them broadband ready. However, due to lack of an ecosystem, the cost to connect through FTTH or FTTB is inordinately high compared to traditional deployment. We believe that costs estimated in the CP are under-estimation by a large margin and costs need to be reduced as per recommendations on RoW issue as well as Operational issues.

Q2. What are the impediments to the deployment of wireless technologies in the access network? How can these deployments be made faster? Please reply separately for each technology.

We would like to draw your attention to Section II.2.2 of the Authority wherein we have raised the issue of making available more license exempt spectrum bands and rationalization of charges for administratively allocated spectrum. Additionally we would like to submit as follows:

1. Presently, the operators are required to obtain 'wireless operating license' and 'import license' before rolling out their sites and network, which raises administrative challenges and delay in getting the licenses. This also has a significant negative impact on network planning and rollout capabilities of telecom operators. It is critical that administrative bottlenecks and outdated processes such as 'import license' and 'wireless operating license', which are hindering the network planning and growth of telecom infrastructure, should be reviewed.

2. While in the past the SACFA approval process has been simplified, there continue to remain bottlenecks. Different organizations within the SACFA secretariat ask for a separate set of documents from the operators for each clearance. Moreover, there is a scope to expedite SACFA approvals. A single-window process of application and timely approvals by SACFA would facilitate the process.

3. There is a need to harmonize site approvals / rights of way procedures so as to lower the costs and expedite the process. Otherwise such operational bottlenecks truly hinder the effective implementation of broadband. On RoW, a coordinated effort must be initiated on the part of central and state governments. RoW permissions should be provided on priority and a time limit needs to be fixed. The issue is dealt in detail in response to Q 11 of this Paper.

4. The process for SACFA clearances in de-licensed bands should be simplified and notified and cleared for a faster take up of Internet leased Lines in various parts of the country. It is believed that WPC has stopped issuing any SACFA clearances for de-licensed bands and in a manner discouraging ISPs for using this band to provide connectivity to their subscribers. This in fact is a retrograde step which denies access to users where this medium serves as an alternative last mile where RoW permissions take too long.

Q3. The recommendations of the Authority on Microwave backhaul have been recently released. Are there any other issues which need to be addressed to ensure availability of sufficient Microwave backhaul capacity for the growth of broadband in the country?

1. We appreciate the recommendations of the Authority on Microwave Access and Microwave Backhaul.

2. Microwave backbone may be a good and cost effective solution to provide broadband in rural areas / villages where we have small number of homes and businesses and solves the issues of Quick initial rollout, cost effective rollout and feasible for deployment in areas where reach ability is difficult due to terrain.

3. In respect of E-Band and V-Band spectrum we believe that making these bands license exempt would go a long way in promoting broadband proliferation in the Country..

Q4. The pricing of Domestic Leased Circuits (DLC) have been reviewed in July 2014. Apart from pricing, are there any other issues which can improve availability of DLC?

1. It is submitted that the Infrastructure pricing should not be regulated by the Authority. It should continue under forbearance.

2. The DLC market is very competitive and the further need to regulate these charges will become an impediment in expanding the network further at such low tariffs in India.

3. The DLC tariff regulation does not adequately address the super normal and high charges that service providers have to pay for Right of Way and equipment, hence the same should be forborne to increase price competition. It is pertinent to mention that DLC is to be provided more out of the spare capacity of an operator's network however, we now need a market where operators are incentivized to roll out networks for managed leased and dedicated leased circuits alone.

Q5. What are the specific reasons that ISPs are proactively not connecting with NIXI? What measures are required so that all ISPs are connected to the NIXI?

1. The purpose of NIXI is a neutral Internet exchange for peering ISPs among themselves, so as to route the domestic traffic within the country for better quality of service, reduced latency and reduced bandwidth charges for ISPs.

2. Further NIXI is not the only point where ISP exchange the Traffic. ISPs can also exchange traffic with each other by way of having Bilateral Private Peering with other ISPs and or Internet Transit from other ISPs. This is already happening among most of the ISPs

3. The purpose of NIXI is not to compete with other ISPs but supplement the connectivity of the ISPs who do not have direct connectivity. NIXI does not replace the direct connectivity between the operators.

4. Thus the aim of NIXI cannot be for direct connectivity between the ISPs, its aim is to keep domestic traffic within India by interconnecting ISPs who were not directly connected. Thus, there is no need for all the ISPs to connect to NIXI as they are already exchanging traffic among themselves through Bilateral Private Peering or Internet Transit Service. For an ISP to

get connected with NIXI or not is a commercial decision to be taken by that ISP in view of cheaper alternatives available in respect of connecting /peering with other Tier I ISPs. There is no need to intervene and ISPs should be allowed to exercise their commercial choice as is the global practice.

5. Connectivity to NiXi cannot serve the end purpose of broadband growth in the country. NiXi is a facility for the ISPs, however, it's the ISPs that have to reach out to content on the one end and the subscriber at the other to make the eco-system viable for a sustainable growth of Internet and Broadband Services in India.

Q6. Would the hosting of content within the country help in reduction of the cost of broadband to a subscriber? If yes, what measures are required to encourage content service providers to host content in the data centre situated within India?

1. Price of Internet BW in Wholesale and Enterprise segment have fallen drastically over the past 3-5 years due to intense competition. The same has also been reflected in the broadband packages to consumers also. Many ISPs are providing higher BW usage or higher BW speeds, unlimited plans etc at the same Price packages or lower.

2. At the same time many ISPs and other application providers have now started providing hosting services and content delivery services with in India. Further many of the popular content sites and OTT players are already being hosted/cached/mirrored in India in various ISPs / other application providers network. This has reduced the percentage of international traffic for the past 3-3 years. Also the international internet bandwidth cost has been a very small portion of ISP business and may not account for more than 10% of the total cost for provision of broadband service.

3. Though the international traffic percentage pattern has reduced over the past 3-5years but it can be further improved by creating and promoting domestic and regional language content & applications, e-governance and by creating an environment for roll out of high speed last mile broadband infrastructure to increase the Broadband penetration which will also provide platform for promoting the band width hungry applications like Video (on Demand and Live), Cloud Computing etc.

4. Further, since there has been increase in Data Centre Costs due to increase in real estate costs and power costs, Govt needs to take following measures to encourage hosting of content in India Data Centers. Encourage Internet Service Providers and Data Centre Providers to build cost effective Data Centre and Hosting Service by Providing:

   a. Availability of power supply at subsidized rates

   b. Provide land and or leased options on subsidized cost

   c. Giving tax holidays

   d. Reduction in Levies and duties on the equipments used in IDCs.

5. Other steps as follows shall be promoted:

   a. Take steps for making available the local content as well as applications relevant to the local population.
   b. Increase the awareness about the local content and applications and the benefits arising out of the same by use of Broadband.
   c. Involve local NGOs in the awareness building programmes.
   d. Provide ICT literacy to the local population for effective use of Broadband based applications and services.
   e. Lower costs of devices and services by reducing taxes, duties and other levy on them.
   f. Promoting region-specific content applications with the help of NGOs, State, local government bodies for identification of applications; and financial support from the Government and private entrepreneurs (for content and programme development).
   g. Offering tax holiday for a prolonged period for application developers.
   h. Offering applications using local language and/or graphics base.
   i. Offering ready and easy access to application developers making them available, the existing database.
   j. Making e-Governance mandatory

6. There is also another anomaly that exists amongst the licensed and non-licensed hosting operators. At present, the licensed hosting operators have to pay a license fee at 8% of the AGR, however, the unlicensed hosting operators do not have any license fee. There is a need to maintain level playing field amongst the hosting operators. Since, it is a non-license activity, hence no license fee should be paid by the hosting operators.

Q7. Are PSUs ideal choices for implementing the National Optical Fibre Network (NOFN) project?

Q8. Should awarding of EPC turnkey contracts to private sector parties through International Competitive Bidding (ICB) be considered for the NOFN project?

Q9. Are there any ways in which infrastructure development costs can be reduced? Is it possible to piggyback on the existing private sector access networks so as to minimize costs in reaching remote rural locations?

Q10. What can the private sector do to reduce delivery costs? Please provide specific examples.

1. India started with a plan to build the National Optical Fibre Network (NOFN) but the project has struggled to take off due to operational reasons. NOFN needs to be more holistic and comprehensive and hence, is not able to take off properly.

2. The last mile and the core on NOFN project needs focus for the project to be brought to fruition and bring actual benefits.

3. Apart from the last mile it should also provide fiber termination facility e.g, meet me room etc for service providers to connect to the Core and the last mile to provide onward connectivity.

4. The current thrust of the Government is almost entirely on giving the supply push vis-a-vis broadband, creating the demand pull with credible public and private sector partners and more importantly making broadband conveniently accessible, affordable, applicable, acceptable

and advantageous for the rural citizen are equally important, rather more critical for the success of NOFN.

5. Besides laying out the NOFN or similar such project what will be equally important is an accompanying institutional mechanism that will enable cost based, non-discriminatory access to NOFN. The physical access to the network should be enabled through a single window mechanism with stipulated time frames that will ensure increased usage from all operators and higher usage of NOFN.

Q11.What are the major issues in obtaining right of way for laying optical fibre? What are the applicable charges/ constraints imposed by various bodies who grant permission of right of way? In your opinion what is the feasible solution?

&

Q14. What measures are required to reduce the cost and create a proper eco system for deployment of FTTH in the access network?

1. Please see our response in section II.2.1 above. Additionally the key Issues related to RoW are as follows:

   a. **Extortionist One time and Recurring Charges**: We need to recognize the need for broadband across the whole of India replete with the State and Service providers as a functioning society. States need to realize that monopoly charges on Right of Way are the biggest hurdle in the growth of services in the country. And exorbitant levies are very discouraging for service providers to play their role in this eco-system to enable a fully digitized society.
   b. Single Window Clearance: The need of the hour. As of now service providers have to approach multiple agencies for obtaining RoW clearance, leading to delays in network rollout.
   c. RoW must be right of Service Providers and local bodies must be mandated to provide RoW in a time bound fashion.

2. The situation is worsening as many Government authorities and municipalities impose additional levies based on their perception that telecom is a hugely profitable business. This is resulting in the double burden of delays and increased cost of provision that negates attainment of the vision to provide affordable and timely broadband services across India.

3. NTP'12 has recognized the problem and set out an objective to "Address the Right of Way (RoW) issues in setting up of telecom infrastructure". In addition the strategies enunciated in this regard in the policy are as follows:

   a. To review and simplify sectoral policy for Right of Way for laying cable network and installation of towers, etc. for facilitating smooth coordination between the service providers and the State Governments/ local bodies.

4. Some action steps that can back up the above strategy suggestions are:

   a. There is an urgent need for single window RoW permissions and charges, therefore, the Central Government should issue guidelines on RoW under the Section 7 of the Indian Telegraph Act.

b. Supporting trenching activities of USOF through Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)[1] as discussed in TRAI consultation paper on "National Broadband Plan" released on 10th June 2010.

c. Stipulated time frame with accountability for RoW clearances at reasonable charges (which should not be beyond the cost of maintenance and repair of the road) will enable timely implementation of telecom networks. The Central/ State Government / Local bodies I Ministry of Surface Transport etc. should take necessary steps to provide the necessary directives.

Q12. Should the Government consider framing guidelines to mandate compulsory deployment of duct space for fibre/ telecommunications cables and space for telecommunication towers in all major physical infrastructure construction projects such as building or upgrading highways, inner-city metros, railways or sewer networks?

1. There is no doubt that a strong network backbone is critical for the provision of broadband service that is fast, uninterrupted and reliable. Based on projections of future demand, it is essential to augment capacities in existing backhaul and access networks.

2. Hence, it is recommended that Government may consider framing guidelines to mandate compulsory deployment of duct space for fibre/ telecommunications cables and space for telecommunication towers in all major physical infrastructure construction projects such as building or upgrading highways, inner-city metros, railways or sewer networks, Gas or other utility network. There is utmost need of an integrated and holistic planning of all the utility and infrastrucre services. This will reduce the over all cost of making all these facilities available at a much lower cost.

3. To enhance fibre density in the country, the Government should entrust OFC rollout in a PPP mode to potential implementing agencies (such as agencies with a proven track record of meeting target time frames).

4. Some action steps that can back up the Digital India and NTP'12 strategy suggestions are:

   a. During development of a sector/town, all infrastructure agencies such as roads/bridges should have utility ducts provisioned to lay OFC at a later stage. This will avoid unnecessary damage to newly laid roads and utilities.

   b. All buildings/towers should be provisioned with vertical conduits for carrying out last mile building wiring for access media.

   c. Mandate placing ducts, if not optical fibre, with well-defined access mechanisms, on all new road constructions along national highways, as well as inter & intra city roads.

   d. Change building by-laws which currently deem only electricity, water, and fire safety as necessary infrastructure for the issue of a completion certificate. Including mandatory inclusion of either ducts /optical fibre with well-defined access mechanisms in all upcoming office complexes, commercial spaces and residential complexes would have a measurable net positive impact on the goal of constructing national broadband highways.

e. Development authorities should mandate city developers and builders to have properly demarcated sections within buildings and on rooftops for housing broadband infrastructure and antennae. These areas should have uninterrupted power supply for reliable, always-on services.

f. A tower and a common transmission/ equipment room in every panchayat in the village - the rental of tower and room shall fund panchayat running through USOF along with fiber.

g. Incentives to residential societies & RWA for deployment of small cells / WiFi networks.

h. Share existing Fibre backbone infrastructure among all operators to reach up to the block level. To enable the same, the government may consider setting up an SPV under a PPP model under which BSNL, with the largest and most extensive fibre backbone, should transfer the same to the SPV. Other private operators could also be free to pool their infrastructure with the SPV. The SPV would then play the role of NOFA (National Optical Fibre Authority) proposed by TRAI and lease fibre / bandwidth to TSPs at TRAI's prescribed tariffs.

i. Policy for arrangement with the power companies for deploying fiber along the transmission needs.

j. Places where digging is not possible and RoW is not available, there should be proper overhead space for pulling fiber and associated infra.

Q13. What are the impediments to the provision of Broadband by Cable operators? Please suggest measures (including policy changes) to be taken for promoting broadband through the cable network.

1. Cable operators do have a much wider coverage, however, for provisioning of Broadband services, they may need to upgrade their networks.

2. In case, provision of Broadband is to be made through the cable network, then the cable operators will need to acquire the ISP license to do so. For this, they will also have to meet the associated license conditions including rollout, Lawful Interception and Monitoring (LIM), etc. the cable operators cannot act as reseller of bandwidth that they take from the ISPs.

3. It is a fact that the cable TV operators have a wider reach. To promote provisioning of broadband, their reach should be utilized. These cable operators should act as the franchisee of the ISPs and this process should be liberalized. The POP and servers can be located at the cable operators premise. The cable operators can also act as the CAF collection agent for the ISPs, however, the customer would be of the ISP only. There is a need to simplify the KYC and the business model issues related to cable operators as the last mile Broadband access.

Q15. Are there any regulatory issues in providing internet facility through Wi-Fi Hotspots? What are the reasons that installation of Wi-Fi hotspots has not picked up in the country? What type of business model needs to be adopted to create more Wi-Fi hotspots?

1. Stand-alone Wi-Fi networks are a good growth engine for spread of broadband access. However, it is frought with issues of user identity from a national security stand point. These

norms need to be more rational and in line with International countries for this medium to take off.

2. At present in India there are various regulatory challenges due to which it is not feasible/ viable to have Wi-Fi hotspots in the country. Some of these regulatory challenges are listed below:

   a. ROW / Installation of Pole
   b. Open Area for Coverage/ Right Area for coverage
   c. Internal wiring/ cable routing
   d. Power for Equipment
   e. Floor plan for better planning and deployment
   f. Permissions from various agencies
   g. Availability of Backhaul
   h. Physical Security of the infrastructure (in idle time)
   i. Coverage/ speed issues

3. To overcome these challenges and to create more Wi-Fi hotspots, the Government needs to enable the following:

   a. Free RoW needs to be facilitated through a single window clearance.
   b. Assured electricity connections for Wi-Fi hotspots to be provided on priority.
   c. Security for the node and access point equipment is required to be provided locally by the municipal corporation or the market place..
   d. Availability of power and space requirement.
   e. SACFA Clearances should be rationalized and pre-approved for licensed service providers.
   f. To enable Wi-Fi tri band access services the Wi-Fi band of 60 GHz and 80 GHz to be de-licensed for indoor and outdoor applications.
   g. Safety and security of equipment to be ensured at the venue by treating it as public infrastructure.
   h. Access to public infrastructure like electricity poles, telephone poles, utility structures, hoardings etc. need to be easily available for installations.
   i. Market associations & owners to be sensitized to allow usage of outer walls of buildings, roof tops for installation of Wi-Fi Infrastructure.
   j. Rights to the ISPs to monetize the assets in a commercially viable way from the paying consumers and partners to recover the infra investments.
   k. Necessary clearances from relevant ministries/ authorities to be facilitated.

4. There is a need for Innovative business models that need to be worked out to make operator investments viable and attractive in creation, maintenance, marketing, customer support and upgrades of Wi-Fi hotspots.

5. The reseller should be allowed for timely growth. Resellers should be identified /appointed by licensees and recognized /registered by the Government and such resellers should be responsible for CAF (Customer Acquisition Form) collection and storing of the same. Reseller should be allowed for billing the customer and collection of the money on behalf of the licensees.

Q16. What are other spectrum bands which can be unlicensed for usage of Wi-Fi technology or any other technology for provision of broadband?

We would like to invite your kind attention to our submissions in section II.2.1 .Additionally we would like to submit the following :

1. Given the paucity of available fiber in the country and the high cost and time to deploy the optical fiber it is required that existing de-licensed band of 5.825 to 5.875 GHz be deployed as backhaul for Wi-Fi zones by increasing its maximum EIRP from present 36 dBm to 55 dBm.

2. Current de-licensing in India is different from ITU T & Worldwide norms in ISM bands; we should align ourselves with ISM Bands. In 5.8 GHz band only 50 MHz have been de-licensed vs 120 MHz available in all other countries. This will bring in economies of scale.

3. Most of the countries have already unlicensed 60 GHz band and this band has a good device ecosystem, India should also delicense 60 GHz band immediately and make it available for consumers. 60 GHz band is also known as WiGig band (Wi-Fi at 60 GHz) using IEEE 802.11ad protocol. At present dual band WiFi in 2.4 GHz and 5 GHz spectrum bands is deployed for WiFi. Now tri band WiFi chips are available and shortly tri band WiFi routers devices shall be also available in India. 60 GHz Band is already license exempt spectrum band in countries like USA, UK, Australia and Japan.

Q17. How much spectrum will be required in the immediate future and in the long term to meet the target of broadband penetration? What initiatives are required to make available the required spectrum?

No Comments

Q18. Are there any other spectrum bands apart from the ones mentioned in Chapter-2 to be identified for provision of wireless broadband services?

Pl see our response in Section II.2.2.

Q19. What are the measures required to encourage Government agencies to surrender spectrum occupied by them in IMT bands?

No comments

Q20. What should be the time frame for auctioning the spectrum in 700 MHz band?

1. We understand that 700 MHz band is particularly well suited for provisioning of mobile broadband services as it has good propagation characteristics. In India, this band has been identified for IMT services and India has also adopted the APT 700 model for using this band in FDD mode.

2. However, there are two aspects which need to be considered before this band is put up for auction.

   a. Any consideration of this band will be futile unless this band can be vacated and made available to meet the immediate spectrum requirements of the industry. It is essential that this band is first made available for mobile industry and then auctioned, otherwise, the operators for the fear of losing it later will buy this spectrum in the auction and will then have to wait for a very long time for its actual allocation.

b. Secondly, the operators will only be able to use this spectrum efficiently once the eco-system for this band is developed globally. As per GSA report, at present only 7 operators have commercially launched LTE services using APT700 (700 MHz) spectrum, all of them using the internationally harmonized FDD band plan configuration known as 3GPP band 28.

3. Both the above factors are out of the actual control of the operators, however, they have to suffer on these accounts. An example of the latter already exists in India, where the operators are unable to launch the services on the BWA spectrum (2.3 GHz). This is primarily on account of delay in development of the requisite device and network ecosystem, a prime factor which is predominantly out of the control of the TSPs.

4. Given the above critical issues, it is suggested that the Government should examine auctioning of this band only after two years. At present it is more critical to make available the spectrum in other bands including 800, 900, 1800 and 2100 and that too in contiguous form so as to make them usable for broadband services.

Q21. Do you agree with the demand side issues discussed in Chapter 5 and Chapter 6? How these issues can be addressed? Please also indicate any other demand side issues which are not covered in the CP.

We tend to agree with the demand side issues discussed in Chapter 5 and 6 of the CP.We feel that following issues are very important to fuel the demand.

- Digital Content Availability: Government supported initiatives including mandating of m-governance for all Government Departments and other funding.
- Digital Content in Local Languages: Much has been said for this in the past decade however, International Content Providers are the predominant providers of some local content whereas scores of education content, medical content, land records, passport services etc need to now be made available in various local languages in India to proliferate the need for Broadband across India.
- Reduce security norms for users and the requirement of too many documents to gain access to broadband resources. Simplify these procedures.
- The last but not the least, create an experience of broadband for users, we need to create several public points of access for a growth in the users all across. Post Offices, Railway Stations, Bus Depots, Libraries are such points that should provide Broadband access.
- We suggest that benefit programmes such as creating a school net and university net is most important in the short run to ensure that all schools and universities have access to Broadband.
- Make other components of the ecosystem like CPEs, PCs, etc more affordable.
- Increasing eLitracy.

Q22. Please give your comments on any related matter, not covered above.

For urban India, broadband offers the convenience of rich multimedia services, with streaming audio and video, high data transfer rates, faster video/data downloads, new services & other entertainment related services and personalized services, where content can be pushed to users.

Substantial benefits of broadband for rural subscribers are much more in the form of e-health care, e-education, e-governance, e-mandi's etc. which will reduce the information gap faced by rural India compared with their urban counterparts. However, rural access and content needs to be self-sustaining rather than a subsidized model of growth.

It is pertinent to mention that while broadband in rural India is a formidable challenge, an even bigger problem is the lack of broadband in key Tier 1 & 2 cities where there already is an existing demand. Thus, our focus should be make broadband viable in Tier 1 & 2 cities in the interim that a sustainable plan also is put underway for Rural India.

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