Consultation Paper No.: 12/2014; dated 24th September 2014

Consultation Paper on Delivering Broadband Quickly: What do we need to do?

## Comments by Citycom Networks Private Limited

**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.**

**Comments:**

A. To revise the existing broadband download speed of 512 Kbps to 2 Mbps by 2015 and higher speeds of 20-50 Mbps thereafter

B. Measures required to promote wireline technologies and rollout
   a. Standardisation and simplification of the Right of Way (ROW) Charges and process of issuing ROW for rolling out Optical Fiber Networks.
   b. Mandating the Builders / Commercial Building Owners and Resident Welfare Associations to allow Service Providers to deploy Optical Fiber wireline networks at zero cost or a nominal management charges with no arbitrary charging.
   c. 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.
   d. 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.
   e. Basically, all support and efforts to be provided for developing optical fiber access networks to buildings, offices and homes
   f. In order to encourage faster broadband adaption and lower capital cost for accessing subscribers, a standard process and rules for laying overhead fiber should be laid down by Central Government that can be adopted by State Governments and civic bodies. In order to compensate the Electricity distribution companies as well as telecom companies who have invested in poles, a pole tax may be allowed to be charged which should be substantially lower than current ROW charges for underground ducts.
   g. All Local Municipal Corporations, should be asked to include Universal Internet Acess in their City Development Plans, and building plans should be passed only after high-capacity Fibre Optic provision is including in the plans

C. Cost per Line for Fiber to the Building
   a. Cost per subscriber will vary from city to city and area to area and the cost mentioned in the TRAI consultation paper is highly underestimated. The suggested reforms in the RoW issue should be undertaken for provision of cost-effective fibre based broadband services.

**Q.2. 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.**

**Comments:**

A. Impediments in the deployment of wireless technologies in the access network
   a. Inconsistent and insufficient data speeds of wireless technologies are the biggest impediment to have wireless solutions to be used for building data access networks.
   b. Wireless will require very large deployment of sites to build a complete access network catering to large Indian Urban population and this will result in high interference of signals, it enhances harmful radiation and the deployment of many wireless towers is also deteriorating the urban aesthetics.
   c. High cost of delivery with inconsistent experience will make it difficult if not impossible for wireless networks to be a good access solution. However wireless can be a good solution to provide coverage in 600,000 villages of India. For 5,000 Urban areas optical fiber is the right access technology.

**Q.3. 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?**

**Comments:**

A. Impediments in the deployment of wireless microwave backhaul as a backbone to broadband networks
   a. Limitation of microwave backhaul to carry large traffic will not be a solution to enhance the growth of high speed and consistent broadband services in Urban India catering to high population and high density areas. Optical fiber backhaul will be a cost effective, reliable and more scalable backhaul network as compared to Microwave.
   b. 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.

c. In respect of E-Band ( 71to76Ghz and 81to86 Ghz) and V-Band (57to64Ghz) spectrum we believe that making these bands license exempt would go a long way in promoting broadband proliferation in the Country.

**Q.4. 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?**

**Comments:**

A. Even after the revision of the DLC prices as per the prevailing TRAI recommendations, the revised recommendations in July 2014 are still way above the currently operating prices.
B. When revised DLC price recommendations are higher than the actual operating prices, it is the PSU companies such as BSNL, PGCIL, and RailTel that end up losing private business of ISPs because these companies continue to charge prices as per the TRAI price list while the actual market prices for high capacity links is way lower. Thereby PSU companies' infrastructure is lying underutilized and thus preventing competitive forces to establish economical fair market price and resulting in higher costs for ISPs.
C. Also the arbitrary charges levied by the large networks as one ptime or capex charges makes it difficult if not impossible to make any business economics for the ISPs.
D. Currently there is no pass through adjustment provided for the AGR calculation on DLC or NLD revenues. We recommend that the AGR should be re-defined and given the pass through benefit to avoid double levy.
E. Optical fiber passive and active networks created by service providers and IP1 registered companies should be sharable across all license services providers.

**Q.5. 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?**

**Comments:**

Interconnection of domestic content creators at NIXI

A. The requisite benefit of cost and quality is not available for the ISPs to connect to NIXI as very little traffic is catered through NIXI whereas the connectivity cost is high and remains a challenge.
B. Inconsistency of traffic available through NIXI also routinely disturb ISP
C. We recommend that all licensed service providers should be mandated to connect to NIXI and ensure that all the traffic for content hosted in India is served through NIXI.
D. Content creators should be allowed to host at NIXI location with access through cross connect to all ISPs. Basically this should enable in accessing the content hosted at one location by all the users in the Country.
E. NIXI infrastructure should facilitate POPs of NLDs at its location for easy and economical connection to other NIXI locations to ISPs. Basically an environment such

that, a single connection with NIXI should enable easy and affordable access to other NIXI nodes. This would enable access of the Content to all users in the country through a single hosting location.

F. All entities holding an Autonomous Number (ASN), should now be allowed to connected to the Internet Exchange Points.

G. NIXI should adopt an open door policy wherein Mobile service providers, social networks, content Providers, broadcasters, webhosts, voip proiders, etc. also should be allowed to interconnect and peer with other Service Providers.

H. With the evolution of Internet, peering should be opened to all the above from anywhere around the globe through remote connectivity. A diverse peering community needs to be built up and not just restricted. This will attract players of all types to use NIXI more comprehensively.

I. Apart from public Internet peering, NIXI must develop and expand its portfolio to include services such as private peering, CUG peering, mobile data peering, etc. (IX's such AIM-IX provide such services already and have over 600 members connected to it).

J. NIXI, needs to become a robust market place for peering and traffic exchange, for it to become attractive for service providers to connect to.

K. Legacy practices such as X-Y settlement, initially introduced during the monopoly era, more than a decade back, wherein the traffic requester pays to the requested party, needs to be scrapped. It is an impediment in the current scenario, to the working of NIXI as an efficient IX platform.

**Q.6. 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?**

**Comments:**

A. Yes, the hosting of content within India will greatly reduce the cost of broadband to the subscriber and increase the quality of service.
   a. Quality of Service is greatly increased because with content hosted in India the time taken by the network to fetch the requested content from the data center to the consumer is much faster in comparison to the time taken by the network to fetch content that is hosted abroad (shorter distance between the user and the content vs. longer distance between the user and the content)
   b. The cost of delivering content to the consumer that is hosted within India is lower because the distance travelled by the data is lower in comparison to fetching data from longer distances (such as Singapore, London, New York, Hong Kong, LA, Amsterdam)

B. Hosting of content within India would provide greater protection to the Indian Sovereign, citizens, and businesses data against tapping by unauthorized entities.

C. Creation of Data Center Parks on the lines of industrial parks, SEZs, etc.

D. Government needs to encourage companies to build Data Center Parks in India by providing them land, infrastructure, and, power
E. Data Centers Parks should ideally be located in cooler environments such as hill stations for lower power consumption.
    a. Locations with surplus/renewable power availability are an added advantage.
F. Using natural cool air for dissipating heat generated by the machines reduces the electricity consumption of Data Centers.
G. All NLD service providers, especially, Government PSUs and NOFN, should be encouraged to build high-availability and high optical fiber capacity connectivity to these Data Centers Parks.
H. Building "internet-scale" Data Centers Parks in such locations will encourage national and international companies to build massive data centers to service South Asian consumers from within India.
I. The above will also create construction and knowledge jobs in hill station locations.
J. Creation of such Data Center Parks will provide a strong infrastructure for web, software, services, and various other startup companies.
K. These Data Center Parks will also support Government Digital India Initiative
L. Government needs to take the following measures to encourage the content service providers to host content in data centres situated within India:
    a. Availability of power supply at subsidized rates.
    b. Reduction in levies and duties.
    c. Affordable rent
M. These measures would not only encourage domestic hosting in India but would also help India in exporting these hosting services.
N. There is also another anomaly that exists amongst the licensed and non-licensed hosting operators. At present, the licensed ISPs providing hosting service have to pay a license fee on the hosting service revenue at 8% of the AGR. However, the unlicensed hosting operators do not pay 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 payable on the hosting service revenue by the ISPs.

**Q.7. Are PSUs ideal choices for implementing the National Optical Fibre Network (NOFN) project?**

**Comments:**

Considering the vast scope of NOFN rollout, the Government should include all available resources, including PSUs and private sector, for rollout of the network.

**Q.8. Should awarding of EPC turnkey contracts to private sector parties through International Competitive Bidding (ICB) be considered for the NOFN project?**

**Comments:**

NOFN work should be awarded through open bidding and should be open to any public or private sector Indian company. ICB should not be considered for the NOFN project since it is Government of India funded project.

**Q.9. 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?**

**Comments:**

Infrastructure development costs can be reduced by sharing of infrastructure. Yes, it is possible and desirable to piggyback on the existing underutilized private sector access networks so as to minimize costs in reaching remote sector locations.

**Q.10. What can the private sector do to reduce delivery costs? Please provide specific examples.**

**Comments:**

Private sector should share the access networks - both intracity and intercity network as part of NOFN - where all service providers can connect to NOFN POD's in all cities and all services providers to declare the networks and connected buildings to NOFN for sharing by other service providers

**Q.11. 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?**

**Comments:**

The pricing across municipalities is arbitrary and is decided at individual considerations of these bodies without taking into account the economics of broadband business. None of these bodies have standardized and transparent process for issuance of ROW.

The municipalities should focus on ensuring that the service providers laying the optical fiber infrastructure do proper restoration work. The municipalities should reduce the ROW charges and define detailed guidelines for restoration work. The municipalities should also audit the optical fiber laying work done by the service providers and their contractors. The municipalities should also publish in public domain the quarterly audit results with ratings of the optical fiber laying work done by service providers and contractors. The service providers and contractors should be held responsible for the work done upto a period of 3 months from the completion date.

Municipal Corporations should now be encouraged to create and implement their own local Universal Internet Access policies and programs as part of City development plans. Their involvement in implementing and ensuring that Internet/broadband becomes available ubiquitously is necessary to make them sensitive to the need of developing Internet infrastructure.

Competition amongst municipal corporations to meet Universal Internet Access targets will help them to plan an overlay connectivity infrastructure and work towards implementing and offering the same to Service providers at reasonable terms.

**Q.12. 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?**

**Comments:**

A. Yes the Government should very quickly and actively frame 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
B. The Government should also mandate power distribution companies, inter-city and intra-city, to create clear marked areas on electricity utility poles.
C. Power Distribution Companies (Discoms) to build own high-capacity optical fiber network and offer it to the service providers at transparent TRAI regulated prices for leasing optical fiber.
    a. Discom deployed and managed high fiber count (500+strands) OFC network will be easier to maintain for the Discoms than letting multiple operators hang their cables on utility poles.
D. NHAI should be mandated to create a high-capacity (500+ fiber strand) NLD network along the highway and make the same available to service providers on an annual lease or IRU basis on cost plus model.
E. 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.
F. Further, while laying road infrastructure, municipal and state authorities must construct a common large size duct specifically for Telecom Service Providers with capacity to lay multiple HDPE ducts upon payment of a reasonable cost based compensation.
G. Overhead OFC: The permission to install overhead fiber would be another enabler for ISPs 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.

**Q.13. 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.**

**Comments:**

A. Deployment of Hub/Cat5 cable in last-mile is resulting in non-scalable, sub-quality, and deficient service. This technical architecture has the potential of one subscriber (computer) corrupting/broadcasting to the entire entire network. This poor quality network architecture leads to wastage of resources.
B. Service should be only by licensed Internet service providers.
C. There should be policy of registration of resellers who should have defined responsibility of customer identification.

**Q.14. What measures are required to reduce the cost and create a proper eco system for deployment of FTTH in the access network?**

**Comments:**

A. Standardisation and simplification of the Right of Way (ROW) Charges and process of issuing ROW for rolling out Optical Fiber Networks.
B. Mandating the Builders and Resident Welfare Associations to allow Service Providers to deploy Optical Fiber wireline networks at zero cost or a nominal management charges with no arbitrary charging.
C. 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.
D. Government should take proactive actions to curb illegal sales of internet services by local cable operators (companies without any reseller agreements with ISPs or without ISP licenses)
E. Government should ensure that all licensed service providers have equal right and opportunity to lay overhead or underground network to serve customers and that no single licensed/unlicensed service provider has local-level monopoly.
F. Builders/Real Estate Developers/RWAs to provide free of cost access to buildings to connect customers and along with provisioning of 300-500 sq. ft. of space for "telecom/server room" for placing telecom equipment in the building/campus.

G. Optical Fiber networks to be given the status of essential services by including this into essential services maintenance act.
   a. Awarding fiber-based internet service providers “essential infrastructure” status
   b. Making local, state, and central Government agencies sensitive to the optical fiber access networks to avoid service disruptions
   c. Sabotage of optical fiber networks to be made a punishable offense
   d. 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.

**Q.15. 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?**

**Comments:**

A. Providing the last mile connectivity in an office or home or even in a public area through Wi-Fi does not imply that the Broadband provisioning technology is Wi-Fi. The underlying technology will be either the Licensed Wireless Access technologies or the Wired Access like Optical fiber/DSL/CATV etc. Therefore for TRAI to consider Wi-Fi as a separate Broadband Access technology is out of place.
B. Globally, WiFi is deployed by owners/managers of shops/stores/restaurants/malls/etc. WiFi helps attract consumers/customers to these establishements and leads to higher footfall and revenue.
C. Present authentication mechanism of SMS based authentication should be suffice and any customer identification responsibility by way of CCTV should be that of these establishments. The authentication platforms should be deployed by them.
D. Present regulation of authentication by SMS does not work for foreign mobile numbers. Service providers should not block SMS to foreign mobile numbers.
E. Backhaul to the government sponsored/encouraged hotspots should be subsidized by the Government.

**Q.16. What are other spectrum bands which can be unlicensed for usage of Wi-Fi technology or any other technology for provision of broadband?**

**Comments:**

Existing unlicensed spectrum in 2.4GHz & 5.8 GHz should be enhanced by 200 MHz to accommodate expanding requirements of Wi-Fi in urban and rural areas.

**Q.17. 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?**

**Comments:**

Optical Fiber is the right technology for increase of broadband penetration at the desired speeds of 2 Mbps and going upto 50 Mbps or higher.

**Q.18. Are there any other spectrum bands apart from the ones mentioned in Chapter-2 to be identified for provision of wireless broadband services?**

**Comments:**

No comments

**Q.19. What are the measures required to encourage Government agencies to surrender spectrum occupied by them in IMT bands?**

**Comments:**

No Comment.

**Q.20. What should be the time frame for auctioning the spectrum in 700 MHz band?**

**Comments:**

No Comment

**Q.21. 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.**

**Comments:**

A. Yes there is need for awareness, education about using internet, its benefits and precautions while using Internet for the Internet Users. There is need for a central department for consistent and continued training and education.
B. CSR should include creation of trained manpower for Internet and Broadband for widespread education.
C. There should be useful locally relevant content, hosted in India to be made available.
D. Digital Content Availability: Government supported initiatives including mandating of m-governance for all Government Departments and other funding.
E. Digital Content in Local Languages: Much has been said for this in the past decade however, International Content Providers are the predominant providers of content.

Local content with 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.

**Q.22. Please give your comments on any related matter, not covered above.**

**Comments:**

**A. Access Facilitation Charges**

a. Access Facilitation Charges (AFC) at Cable Landing Station continue to be uncertain. The Government should resolve the stay order from the Court expeditiously and ensure that CLS Access Facilitation Charges are known for better planning.

**B. Government Failure to crackdown illegal and unlicensed internet service providers**

A. There is widespread proliferation of various types of companies, such as dedicated server hosting providers, shared hosting companies, datacenter colocation service providers, hotels, Local Cable Operators, selling internet bandwidth without ISP license.
B. Government has failed to crackdown on the above activity.
C. However, licensed internet service providers continue to bear exorbitant regulatory and security compliance costs and levies.
D. This also leads to revenue loss for the Government of India and increases the security risks to the Indian citizens
E. **Recommendation:** Proactive monitoring and crackdown of companies providing unlicensed internet services illegally under various "bundling" garbs and outright sale on their website as "Data Transfer", such as Hotels, Motels, Hospitals, Web Hosting companies, Dedicated Server Hosting companies, Cloud Hosting companies, etc.

**C. VOIP**

A. There is a strong requirement of quality wired voice communication from consumers (both businesses and homes).
B. Voice is the "Killer Application" that will further drive broadband growth
C. It is not surprising that over 85% of the broadband customer base is with service providers that also provide wired voice! Bundling wired voice with broadband helped the UASLs to achieve such large percentage of present base.
D. For targeted growth, more players are needed and ISPs naturally fit the bill
E. Restricting ISPs from provinding full VOIP services has only encouraged foreign Over-The-Top applications such as Viber, Skype, Vonage to prosper at the cost of loss of revenue to the exchequer and compromise national security
F. Regulatory policy of restricting termination of VOIP calls onto PSTN networks greatly reduces the value proposition of ISPs to homes and businesses.

G. This restriction greatly reduces the ability of ISPs to generate more revenue streams on the expensive wired networks and thereby prolonging return on capital
H. This restriction greatly reduces the wired voice competition in the market
I. This restriction limits ISPs from providing innovative bundled VOIP services to homes and businesses. VoIP also enables use of Broadband by users not having English knowledge.
J. This restriction has reduced voice-led innovation in the Indian economy
    i. there are no Indian voice communication apps in the Indian economy
    ii. there are no HD voice service providers
K. While VOIP is allowed between IP to IP devices, this is a very niche requirement in the vast voice market and reduces the ability of the ISPs to provide a significant bundled value proposition to the consumers
L. **Recommendation:** The Government should allow full VOIP calling for ISPs without any additional entry cost/bank guarantee.

**D. Unified License**

A. While government created Unified License and provided a migration path to the ISPs, Government also burdened the ISPs with an exorbitant Entry Fee, Performance Bank Guarantee, and Financial Bank Guarantee, thereby making preempting any new wired voice service providers by making the business case financially unviable.
B. Furthermore, the only reason for ISPs to migrate to a UL (national or circle-specific) was to provide full wired-voice service to their existing home and business customers.
C. It is worthwhile to note that not a single new wired-voice service provider has started operations in India over the last 10 years.
D. Only the Cellular Mobile Service Providers (CMSP) have ventured into providing wired-voice communication services to businesses on PRIs.
E. Since the CMSPs already have a UNIFIED ACCESS SERVICE LICENSE (UASL), the only realistic potential newcomers to the new UNIFIED LICENSE were the ISPs to provide wired-voice services to their home and business broadband consumers without any entry fee/bank guarnatee.
F. **Recommendation:** The Government should remove the financial costs of acquiring the Unified License – ISP (including) and make the same financially viable for ISPs.

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