

Challenges of Growing Internet Connectivity in India

Brajesh Jain

Vice President, ISP Association of India

Member NRONC

Feb 27, 2017



Vibrant Broadband – A definition

- In India, Broadband is defined as 512Kbps.
- As per NTP 2012 “To revise the existing Broadband download speed of 256 Kbps to 512 Kbps and subsequently to 2 Mbps by 2015 and higher speed of at least 100 Mbps thereafter”



Vibrant Broadband – Usage

- Browsing: 2.5MB per minute ; 150MB per hour
- Facebook: 2MB per minute ; 120MB per hour
- Skype Voice: 360KB per minute ; 22MB per hour
- Online Gaming: 1.5MB/minute ; 90MB per hour
- Video Low quality, 1.5 Mbps, 0.3 GB/hour
- Video Standard Definition , 4 to 6 Mbps, 0.7 GB/hour
- Video High Definition, 10 to12 Mbps, 3 GB/hour, 1920*1080p
- Video Ultra HD 4K, 25 Mbps, 7 GB/hour, 3840*2160
- Video Super high Vision 8K, ~100Mbps, 30 GB/hour, 7680*4320



Vibrant Broadband - the Need

- Vibrant Broadband Networks : **Scarcity to Abundance**
 - Provide **consistent** quality of service at an affordable price
 - High speeds (100Mbps per customer scalable to 1Gbps per customer) at user level
 - Each user's experience is independent of the usage by other users in the neighborhood
 - Future Proof : ever increasing need of speed
- OFC networks are a must
 - Capacity can be increased by upgrading equipment
 - Future Proof : ever increasing need of speed
 - Reduces load on Spectrum, being used at Fixed locations



National Telecom Policy – 2012: Objective

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.***



Segment wise Broadband Subscriber base

Segment	Broadband Subscribers (in million)	
	As on 31 st December 2016	
Wired subscribers		18.14
Mobile devices users (Phones and dongles)		217.36
Fixed Wireless subscribers (Wi-Fi, Wi-Max, Point-to-Point Radio & VSAT)		0.59
Total (source TRAI)		236.09



Internet in India now

- Optical Fiber is being rolled out at a rapid pace both in Access and Backhaul
 - Access network is now capable of 1Gbps for every home/Business passed
 - Speed offered is 100 Mbps at a price point of Rs10 (USD 15 Cents) per GByte and even lower
- 4G is now progressing fast and the preferred technology for current and future rollouts
 - Access speed is now over 10 Mbps at a price point of Rs 30 (USD 45 Cents) per Gbyte. Price is moving lower.
 - With a defined upper limit per day, an operator has announced Rs10 (USD 15 Cents) per GByte April 2017 onwards. And Voice Free.



Increasing Internet consumption via Apps and Streaming Video

- Beyond YouTube now there are Hotstar, Voot, Sony Liv, Ozee, Netflix, Primevideo etc
- Reality shows, Catchup TV
- Serials Tailor made
- Content in Regional languages e.g. Marathi, Telugu, Tamil
- Digital music ; Gaana.com, Wynk , Applemusic etc
- Multiple Audio/video messaging applications



Content availability

- Content ; 40% or so within India, though growing.
 - Half within Region
 - Half in other regions
- ~ 60% International
- Content has to be close to end user for Low RTD, Low Jitter (fluctuations) and thus enabling Higher available bandwidth and better Experience
- Economical Local Hosting would encourage
 - Local compilation, creation of content and in multiple languages.
 - Such Content would be focused to be more relevant to User needs.
 - This would lead to proliferation of large no. of entrepreneurs and potential for large no of jobs
- Security concerns addressed in a more effective way as objectionable content can be removed at the source itself rather than hundreds of ISPs blocking the same.



Internet Exchanges in India

- Traffic exchanged at NIXI today is approx. 1% or so of total traffic. There are Private exchanges now.
- NIXI basic charter is : Local Hosted content at one location needs to be available to all users in India without need of packet leaving Indian shores
- It is desirable that NIXI Exchanges and other Private exchanges are interconnected to achieve lowest packet travel distance (time)



Challenges

- Present internet connectivity covers a large area of Urban and Semi Urban.
- Next Billion would come from Semi Urban and Rural with useful apps and transactions
- Need for development of relevant and useful content and bottlenecks
 - Urban
 - Need for high speed to improve quality of experience
 - Semi Urban
 - There is requirement of extensive training to use Applications and Browsing
 - To Instill Trust and Reliability for protection against frauds
 - Transparency in charges for services
 - Due compensation of loss due to use of internet financial transaction
 - Need to develop content in multiple languages
- Rural
 - Access is poor. Though Government is extending fiber Connectivity through rollout of extensive Optical fiber closer to the villages
 - Need to extending over Wifi etc from the fiber nodes
 - There is need for good quality Audio and Video as text would take time to develop



International Cooperation

- Coordination and Cooperation among countries to enhance trust, security and reliability of Internet
- Present internet service is spread beyond sovereign control
- There is dilemma of privacy and protection to its citizens through monitoring and controls affecting openness of internet.
- Need for international processes to enable addressing of concerns of problem/trouble from other countries
 - e.g. If in a country, it is seen that unintended/insecure/attack like DDoS is showing source of another country. It should be possible to raise and resolve such issues. Today these are mostly being resolved Business to Business. But for unequal business situations, there is need for help from the Government
 - Lack of such resolution process has risk of a Country taking unilateral action affecting open global internet
 - For names and addresses such processes formal and informal have evolved making open global internet possible today
 - There is now an need to work on international cooperation and control process for mitigating threats through global internet. And very quickly. Any breach has the risk of Fragmenting Global Open Internet



International Cooperation

Here is a need for

- Cooperation SIG to work on framework facilitating International Cooperation and Control process.
- Just a thought. Every country sets up an organization to receive complaints/problems and resolve within some norms and timeframe. Independent international bodies keep track of resolution or other wise.
- RIRs are in a good position to create such framework.



Thank You

- India is now moving forward towards
 - Vibrant ecosystem for growth of high-speed wireline and optical fiber networks and 4G networks enabling :
 - Digital India initiative
 - Make In India initiative
 - Various development initiatives of the Government
 - And, bring Internet in India among top ten countries of the world

