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Shri. S.K. Gupta
Secretary
Telecom Regulatory Authority of India (TRAI)
Jawaharlal Nehru Marg (Old Minto Road)
New Delhi: 110 002

Subject: Cisco's response to the consultation on "Roadmap to Promote Broadband Connectivity and Enhanced Broadband speed"

Dear Sir,

We hope you are doing well and are safe!

At the outset, we would like to thank your esteemed office to consult the industry on 'Roadmap to Promote Broadband Connectivity and Enhanced Broadband speed'. India's telecom journey has been littered with opportunities and challenges in the last decade. Despite the Covid-19 pandemic, the telecom industry has demonstrated resilience and its criticality in smooth functioning of other sectors.

The key lesson from the Covid-19 pandemic is the increased focus on last mile connectivity for citizens to stay connected, conduct businesses, obtain education, seek medical consultation, et al. It has given Indian an opportunity to revisit its various platforms to provide internet connectivity – fibre, wifi, cellular data, with increased speeds that will match the current requirements of work from anywhere, online education, telemedicine and entertainment.

We would like to share our responses on this critical consultation with your esteemed office for your consideration. Please find enclosed our responses in Annexure A.

Please feel free to reach out to any further information you may require.

Best Regards

A handwritten signature in blue ink, appearing to be "MK", with a horizontal line underneath.

Harish Krishnan



Cisco response to TRAI Consultation on Roadmap to Promote Broadband Connectivity and Enhanced Broadband speed

October 16, 2020

Q.1: Should the existing definition of broadband be reviewed? If yes, then what should be the alternate approach to define broadband? Should the definition of broadband be:

a. Common or separate for fixed and mobile broadband?

Cisco response: It is recommended that there be separate definitions for both fixed and mobile broadband, given the differences owing to speed, latency, bandwidth, and portability.

b. Dependent or independent of speed and/or technology?

Cisco response: To uphold the sanctity of user experience, which is the primary goal for a broadband service, it is recommended that the definition is independent of technology. Underline technologies for broadband may vary – copper wire, cable, fibre, cellular, wireless, etc. If the user experience is seamless, it does not matter the technology used to provide the broadband service. One of the design characteristics of 5G is for the user connection to easily switch between different types of technology. Therefore, the definition of broadband (mobile or fixed line) should be independent of technology.

As far as speed is concerned, the current circumstances have paved the way for increased data consumption, giving rise to demands of increased needs. For example, in a household of 4-5 members, there are working professionals, students attending school/colleges through online classes, streaming on OTT platforms and online gaming for leisure. If there are at least two end points on video conferencing, there is a need for a higher requirement. Therefore, it is recommended that the fixed line broadband speed be at least 25 Mbps throughput.

c. Based on download as well as upload threshold speed, or threshold download speed alone is sufficient?

Cisco response: As mentioned above, the requirements today are increasingly for scenarios like Work-From-Home, online schooling, telemedicine, etc, which are here to stay. All these scenarios require strong connections for interactive videoconferencing. Unlike online streaming of entertainment or browsing, such scenarios require an equally strong upload speed as well. Further, as mentioned in the previous response, there are instances of multiple users (working professionals and students) on video end points in the same premises. Outside the home scenario, there will continue to be requirements for video conferencing based remote governance or telemedicine, making it a way of life.

Therefore, it is recommended that both download and upload speeds must be considered.

d. Based on actual speed delivered, or on capability of the underlying medium and technology to deliver the defined threshold speed, as is being done presently?



Cisco response: Based on the above considerations, we propose the definitions to be as the following:

Fixed broadband:

“Broadband is a wired data connection that is able to support interactive services including Internet access with a threshold speed (both download and upload) of at least 25 Mbps throughput to an individual subscriber from his/her residence to major data centres/ points of interconnect of the service provider intending to provide Broadband service.”

Mobile broadband:

“Mobile broadband is a wireless data connection that can provide Internet access with a threshold speed of a minimum of 5 Mbps throughput for both upload and download, for a stationary user through a mobile device accessing a network.”

Q.2: If you believe that the existing definition of broadband should not be reviewed, then also justify your comments.

Cisco response: Based on the above-mentioned considerations – increased work from home, online gaming, streaming on OTT platforms, online education, telemedicine, digital payments, *et al*, it is recommended that the definition of broadband should be reviewed with a view to increase the speed threshold, and be technology agnostic.

Q.3: Depending on the speed, is there a need to define different categories of broadband? If yes, then kindly suggest the categories along with the reasons and justifications for the same. If no, then also justify your comments.

Cisco response: Given the sharp increase in the number of users sharing broadband capacities, there is a need to define the category of broadband based on different contention ratios or as symmetric (upload/ download) or asymmetric connections depending on requirements.

Similarly, it is essential to recognize that more users are accessing the Internet at the same time, thus raising the average demand. For services such as streaming video, this becomes an essential factor as we cannot afford to have troughs. It may be fine if the consumer is just browsing. Keeping this in mind, it is essential to categorize broadband in terms of oversubscription as well.

Q.4: Is there a need to introduce the speed measurement program in the country? If yes, please elaborate the methodology to be implemented for measuring the speed of a customer’s broadband connection. Please reply with respect to fixed line and mobile broadband separately.

Cisco response: Speed measurement currently is done to the closest servers, which only determines the access speed, where there is very little congestion. Congestion occurs at the points of interconnect with other ISPs, and further burdened by ISPs with significant oversubscription. This leads to a good access speed but much lower throughput. Speed measurement should be changed to reflect the actual Data throughput and not only access speeds. This requires that speed tests be done for major



data center locations within the country or identified speed test servers close to the international exit locations.

Q.21: Even though mobile broadband services are easily available and accessible, what could be the probable reasons that approximately 40% of total mobile subscribers do not access data services? Kindly suggest the policy and regulatory measures, which could facilitate increase in mobile broadband penetration.

Cisco response: Although there are reports that state that at 227 million Internet users, rural India has 10% more users than urban India, it is still at an abysmal rate given that approximately 40% of total mobile subscribers do not access data services. Some of the probable reasons could be the following:

1. The divide between feature phones vs smart phones

Although feature phones can access Internet, they have very limited capabilities compared to smart phones, thus limiting usage. Although there are more than 300 million smartphones in India¹, there are close to 400 million feature phones in the country². A recent report by McKinsey has predicted that the smartphone penetration in India is expected to double to 650-700 million by 2023³. The feature phones are still relevant to certain user segments, including users in the rural parts of the country. The low adoption of smartphones can be attributed to both cost and inertia. While data usage costs may have been brought down, the cost of either smart feature phones or entry level smartphones could still be a prohibitive factor for increased adoption.

2. Digital Literacy

In non-commercial scenarios, Internet usage is limited to news, entertainment, and social media. For reasons related to literacy rate or age factors, the digital literacy among rural users is low. They do not have the adequate skills to fully use the Internet to its full potential and leverage the associated economic and social benefits.

3. Limited (yet growing) avenues for engagement

Apart from news, media and entertainment, government services, digital banking, and education, platforms are gradually shifting towards vernacular or speech-based services. There is a need for such voice-led services for the section of the society that is not literate.

In light of the above, the following policy measures may be adopted:

1. Empower domestic and global handset manufacturers to develop smart feature phones or entry level smartphones – these could be through tax cuts, incentivization, demand generation, etc.
2. Easier financing of purchase of smart feature phones or smart phones to improve access

¹ <https://economictimes.indiatimes.com/tech/internet/internet-users-in-india-to-rise-by-40-smartphones-to-double-by-2023-mckinsey/articleshow/69040395.cms?from=mdr>

² <https://www.livemint.com/technology/tech-news/why-feature-phones-still-sell-in-the-smartphone-age-11572534277600.html>

³ <https://economictimes.indiatimes.com/tech/internet/internet-users-in-india-to-rise-by-40-smartphones-to-double-by-2023-mckinsey/articleshow/69040395.cms?from=mdr>



3. Introduce ICT into school and college curriculum, incentivize not-for-profit organizations to support digital inclusion in education
4. Invest in infrastructure to avoid patchy connectivity
5. Increase adoption of IoT solutions. For example:
 - a. Adoption of IoT in agriculture could push many farmers to purchase smartphones and use Internet
 - b. Engagement with local Asha workers/Anganwadi workers on mobile with reminders, consultation, engagement, etc.
6. Aggressive implementation of the 'Pradhan Mantri Gramin Digital Saksharta Abhiyan' (PMDISHA)

Q.22: Even though fixed broadband services are more reliable and capable of delivering higher speeds, why its subscription rate is so poor in India?

Cisco response:

Infrastructure:

Fixed broadband is ideal in an environment where there is higher density of population. In rural areas, while there may be high population areas, there are significant distances between dwellings. Therefore, fixed line connections in a densely populated urban areas augurs well for service providers than dispersed populations in rural areas, given that fixed connections require significant investment and time to rollout in laying the physical infrastructure.

Asset utilization:

The stagnating Indian market growth of the laptops, notebooks, desktop PCs may have seen an uplift due to the lockdown, but it still does not measure up to global standards. Fixed line broadband serves its purpose, from a cost benefit perspective, if there are multiple assets using Internet. However, in towns and rural areas, given the low penetration of laptops and assets being limited to mobile phones, there is limited benefit to the consumer to install fixed broadband services if they have to bear the significant cost of installation.

Cost factor

India has the lowest cost of data in the world. With low cost data and decent speeds bridging the gap in Internet penetration in the country, fixed broadband may not be deemed necessary, especially in the rural areas. In comparison to fixed broadband, mobile broadband also offers the unique proposition of pay per use, lowering down the costs further.

Mobility

The biggest benefit of mobile broadband in the country is mobility. For a large population who travel long distances for work and have limited stay at one place, preferably homes, it is cost ineffective to use fixed line broadband.

Q.25: When many developing countries are using FWA technology for provisioning of fixed broadband, why this technology has not become popular in India? Please suggest the policy and regulatory measures that could facilitate the use of FWA technology for delivery of fixed broadband services in India.



Cisco response: Fixed wireless access (FWA), which is provided over the Line of Sight, is critical to providing Internet to rural areas, given there are no underground cables, and be installed more quicker and provide lower latency. FWA is also a great 5G use case.

However, given the number of high rises in urban areas, there are only so many antennas that can be set up. Therefore, FWAs becomes a challenge as the costs involved become higher. For a high density, high-rise, an underground cable connection works better.

Further, while FWA makes sense in the hinterland, the availability of 4G Internet over mobile broadband has limited the market for FWA. The significant performance boost expected with 5G would however improve the business case for FWA.

Q.27: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to contention ratio, latency, and bandwidth utilisation in the core network? If yes, please suggest the details. If no, then specify the reasons and other ways to increase the performance of the core networks.

Cisco response: There is a need for a regulatory intervention on mandating certain checks. A majority of speed tests, conducted manually by the user, only connect to the nearby servers and displays the results of the server with the lowest result, i.e. the one that took the shortest time to respond. Therefore, the actual throughput speed is not calculated and not shared with the user on a real-time basis. As there are no Service-Level-Agreements between the user and the service provider, it is recommended that the service provider at least publishes a report on self-declarations sharing details pertaining to contention ration, latency, bandwidth utilization in its core network.

Q.28: Should it be mandated for TSPs and ISPs to declare, actual contention ratio, latency, and bandwidth utilization achieved in their core networks during the previous month, while to their customers while communicating with them or offering tariff plans? If no, state the reasons.

Cisco response: Yes, similar response as the previous question.

Q.30: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to RAN user plane congestion? What should be such checks? If yes, then suggest the details, including the parameters and their values. If no, then specify the reasons and other ways to increase performance of RANs.

Customers using fixed broadband do not choose the connection basis the technology used. Therefore, they are not concerned with RAN user plane congestion and there is no need for such checks and balances. What is important however, is for the consumer to have a view of the speeds he/she receives for the plan they choose. For this, certain parameters must be identified to be incorporated in Service Level Agreements.



Q.32: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to consumer devices? If yes, then please suggest such checks. If no, then please state the reasons.

Q.33: To improve the consumer experience, should minimum standards for consumer devices available in the open market be specified? Will any such policy or regulatory intervention have potential of affecting affordability or accessibility or both for consumers? Please justify your comments.

Cisco response: For the above questions (**Q.32 & Q.33**), it is recommended that there should be no regulatory intervention or standards in consumer devices. This would lead to unnecessary compliance requirements, further impacting the cost of the devices. As the government is keen to improve access and affordability, this move would be in direct contradiction.
