Response to TRAI consultation paper no. 6 / 2017 - Data Speed Under Wireless Broadband Plans

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Q.1 Is the information on wireless broadband speeds currently being made available to consumers is transparent enough for making informed choices?

Telecom service providers (TSPs) and internet service providers (ISPs) do provide information to their subscribers on data usage and billing. However, the description of Quality of Service (QoS) parameters is very technical and difficult to comprehend for an average consumer. The advertisements by TSPs/ISPs try to convey that their network is of superior quality or that they have widest network coverage. But, none of them advertise a minimum or average data rate for their 3G/4G network. Most TSPs provide information using terms such as "up to" or "unlimited data" subject to certain conditions either network related or subscription related. These descriptions are therefore misleading and do not help consumers while comparing the subscription plans provided by competing TSPs. This leads to confusion and dissatisfaction among wireless broadband consumers.

So, there exists information asymmetry which needs to be reduced by TSPs by providing more information to consumers in a simple manner, so as to empower them to make an informed decision while purchasing or using a broadband service/plan.

Q2) If it is difficult to commit a minimum download speed, then could average speed be specified by the service providers? What should be the parameters for calculating average speed?

Given the diverse nature of India's topography, design of 2G/3G/4G standards, it will be very difficult for TSPs to guarantee a minimum download speed for a wireless broadband consumer at a given time.

However, it is possible to calculate an average download speed across consumers within a given area at different times in a day. TSPs/ISPs would presently be monitoring these data points so as to ensure a certain level of QoS across both the access as well as backhaul networks. So, the TSPs would not have to take additional efforts in this regard. TSPs/ISPs may conduct their own measurements by using Transmission Control Protocol (TCP) connection as specified in the measurement methodology prescribed by the 2012 TRAI Regulations on Wireless Data Service Regulations.

The TSPs can also arrive at the upper and lower levels of data speeds:

a. Upper-Level: TSPs/ISPs with the help their network management systems and network elements measure and monitor data speeds at the core as well as access levels. Since, these data speeds are being measured at the network level, they do not take into consideration the capacity of the server or the capability of the end user device. Such measurements can be averaged across multiple network elements and locations within a telecom circle. The TSPs periodically use such measurements for network planning, capacity augmentation and optimization. So, upper level of data speed across a circle or city can be arrived at by the TSPs/ISPs with little effort.
b. Lower-Level: TSPs/ISPs with the help their network management systems and network elements measure and monitor data speeds for their premium subscribers. Such measurements are typically done during different times of the day, locations as well as applications. These measurements take into consideration server capacity and end user device capability. TSPs/ISPs may measure the data speeds experienced by different consumers by instrumenting the data downloaded during active times of the connection. This information is already collected by them for billing purposes as per the location-specific plans purchased by consumers. These measurements will give a lower level to the speeds offered by the TSP/ISP.

Given the dynamic nature of wireless networks, such upper and lower commitments for data speeds made by the TSP/ISP should not be considered for individual subscribers, but should be averaged across subscribers and across various time zones during the day.

Q3.) What changes can be brought about to the existing framework on wireless broadband tariff plans to encourage better transparency and comparison between plans offered by different service providers?

a. Standardized labels can ensure that providers start giving information about different plans in a uniform manner, using the same terminologies and parameters which helps in comparison between the plans offered by service providers. Labelling will bridge the information gap between consumers and TSPs/ISPs, offer information in a simple and standard format, help educate consumers about the conditions of broadband services and

making services more transparent, encouraging competition for better services among providers, modernisation and consumer welfare.

A way for uniform manner, all the plans can be multiple of 2 i.e. 2Mbps, 4Mbps, 8Mbps, and so on. 2Mbps should be consider as the lowest. Or the other way can be slab system which should be followed by every service provider i.e.

- SLAB 3 High Speed: More than 20 Mbps with the average speed
- SLAB 2 Medium Speed: 10 – 20Mbps with average speed
- SLAB 1 Low Speed: Less than 10 Mbps with average speed

b. The TSPs should provide detailed information of QoS values on data speeds, latency, jitter, etc. in a more easily understandable to users by reducing them to simple star ratings reflective of user experience. We can take example of energy rating of electrical appliances where the star rating is key differentiator for the purchase of goods. Consumer only checks the how many stars printed on the label, they don't think beyond that similarly we can replicate the same for service provider where consumer only sees the stars and chooses the provider.

Q4: Is there a need to include/delete any of the QoS parameters and/or revise any of the benchmarks currently stipulated in the Regulations?

TRAI has already made it mandatory for service providers to declare QoS parameters, but the current declaration is not enough for consumers to evaluate experienced level of QoS as compared to the promised level. . We suggest the addition of a few parameters to current declaration:

1. There should be a ranking system issued by TRAI on a monthly basis, based on the previous month performance and adherence to the promised parameters, of all the internet service providers so that consumers can easily differentiate a most promised service provider from the herd.
2. Instead of using term "up to" or "unlimited" for data speed, there should be provision for the speed range i.e. from the lower limit to the higher limit.

Apart from these following are the parameters which should be included in the QoS report –

- Compliance to the contracted speed (already implemented by ANATEL, Brazil)
- Jitter (already implemented by ANATEL, Brazil)
- Packet losses (already implemented by ANATEL, Brazil)
- Network availability (already implemented by ANATEL, Brazil; PTA, Pakistan; IDA Singapore)
- Link Speed (already implemented by PTA, Pakistan)
- Retainability (already implemented by PTA, Pakistan)
- Bandwidth specification along with speed (already implemented by PTA, Pakistan)
- Contention Ratio (already implemented by PTA, Pakistan)
- Round trip time (already implemented by PTA, Pakistan)

Q5) Should disclosure of average network performance over a period of time or at peak times including through broadband facts/labels be made mandatory?

Yes. The disclosure of network performance will improve customers' awareness about various parameters and also help them to compare the available options and choose the choice that fits their requirements. The information about various parameters like latency, network load, usage, and throughput etc. that determine the network performance is already available with the service providers and they report it to TRAI on a regular basis as well. The disclosure of the network performance brings transparency to the door step of the customer. As many people are unaware of these parameters, making them mandatory to be disclosed on a broadband label will make people more aware of what they are purchasing and how much they are paying for it. The customer has the right to know what he is getting for the amount he/she has been paying.
The disclosure of network performance is in practice in countries like USA, UK etc. Federal Communications Commission (FCC), the telecom regulator of USA has made it mandatory for the service providers to disclose this information on broadband labels as consumers have the right to make informed choices. Ofcom in UK has made Voluntary Code of Practice for Business Broadband Speeds for business broadband services for all technologies. Currently, it is signed by 7 operators. Customers of these operators will know accurate and transparent information of broadband connection during the time of sale. Besides, it gives the customer a freedom to dishonour the contract, if they don't get the promised speed or QoS. Infocomm Development Authority (IDA), the telecom regulator of Singapore also directed the ISPs to provide precise and complete information of the services they claim to provide. As the disclosure of such information is not uncommon and helps in improving transparency, it should be disclosed mandatorily.

Q6: Should standard application/ websites be identified for mandating comparable disclosures about network speeds?
Yes, the TRAI should specify standard applications that measure certain common parameters, so that comparison of the measurements by various apps should not confuse the users. Standardizing application will bring transparency and create trust among the users.
The following existing platforms must necessarily be enabled and utilised for mandating comparable disclosures about network speeds:

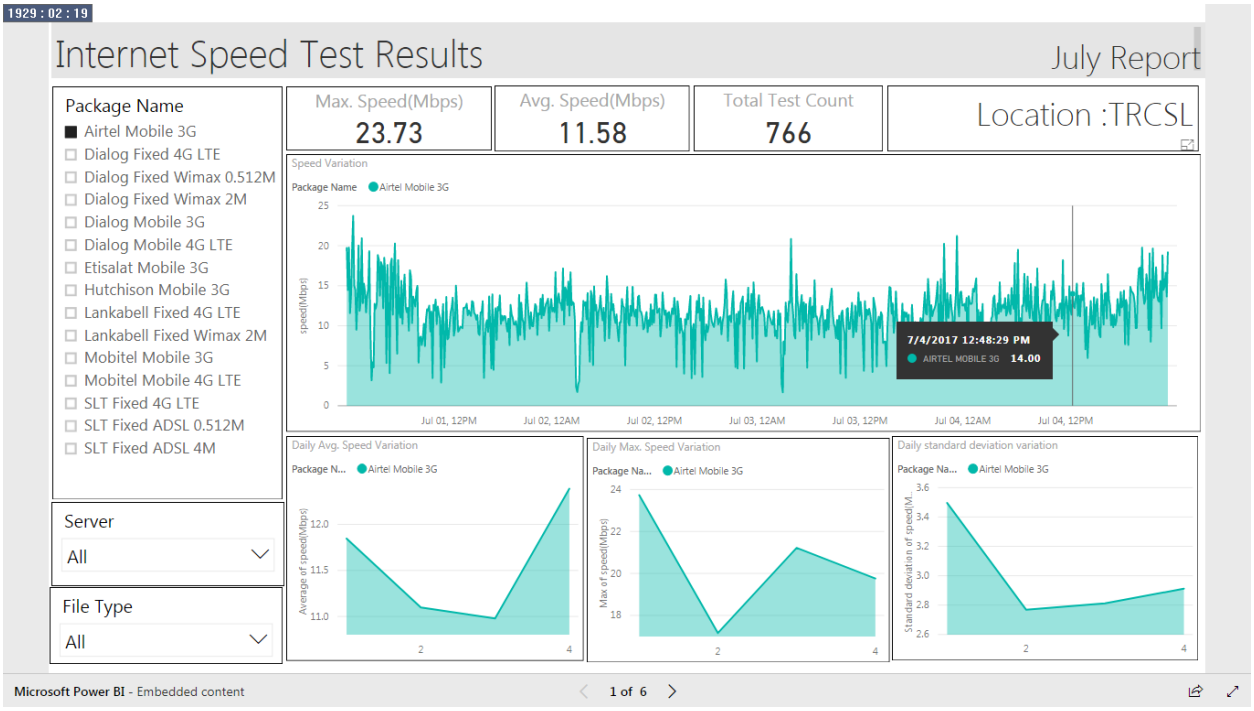
a. TRAI Website

b. TRAI MySpeed Mobile App with the suggested changes.

c. TSP/ISP Website

This will also help TRAI, TSPs/ISPs and Consumer Groups to reach out to consumers and send updates on new regulatory initiatives and changes, building trust in the information source.

One such international example is of Sri Lankan regulator, **TRC** that conducts a speed-test on monthly basis at single undisclosed location. Besides, network is continuously monitored & results are continuously updated on their website http://www.trc.gov.lk/ . They publish maximum speed, average speed for all type of broadband service providers (Figure 1). For some operator, they even compared actual internet speed vis-à-vis advertise speed (Figure 2).



(Figure 1:- July report for Airtel mobile 4G)

(Figure 2:- Comparision of actual internet speed with advertised speed)

Q7: What are the products/technologies that can be used to measure actual end-user experience on mobile broadband networks? At what level should the measurements take place (e.g., on the device, network node)?

Ans: We suggest that QoS should be measured at the device level. Measurement at the network node is not a satisfactory solution as method of measuring QoS as it will differ from that available at the user's end. So, it will not help the user in making an informed decision about the QoS offered by the TSP, which is one of the regulator's aims in coming up with this consultation paper.

Certain parameters to measure actual end-user experience on the device level are:

i. To measure QoS on the device end there should be a specific crowdsourcing app to measure the data throughput, packet loss and latency of various networks. It has been observed that different apps available for speed test consider different parameters such as ping time, download and upload speed etc. These may not be sufficient to understand the overall performance of the network as packet loss, Round Trip Time and latency are not considered in in most of the apps. And so, we suggest that the TRAI MySpeed App be redesigned to incorporate all these parameters and be made available for measurement of actual end-user experience.

ii. Ofcom in UK did a research [1] to help consumers understand the differences in performance between 4G and 3G. One of their testing methodologies was using test applications running on unmodified and unbranded publicly available smartphones and testing at different locations with the help of more than 2,10,000 individuals. Such methods should also be used by TRAI to validate the allocations made by the operators in their report.

As we know that performance can also vary based on user's smartphone, for instance high-end mobile phones support Wi-Fi on 2.4GHz as well as 5GHz, while the latter is mostly not supported by many low end smartphones. Such parameters should be considered while considering the test.

iii. Usage of crowd sourced app should not be restricted to collection and validation of operator's claims on reports but should be made public, provided the data is kept anonimised, so that anyone can have access to the data for analysis. This can improve the competition among the TSP's thus increasing their potential to provide better performance. Presently this data is only available to TRAI for analysis, which should not be the case.

Operators with the help of this data can predict a pattern using analytical tools for drop in packet loss, reduction in download speed etc. This can help operators create a crowd-sourced performance maps, thus increasing their QoS. A study [2] was done on performance predictions using crowd sourced measurement tools. This study showed that Geo-location-based bandwidth prediction using crowd sourced measurement datasets, together with careful download scheduling for mobile clients can be used to minimize download times, reduce energy usage, and improve streaming performance. Such studies can be conducted by network operators to improve the performance of network usage using the data set collected by MySpeed (TRAI) app.

Second scenario for measurement at the node end can also be random checks by an independent third party to validate the claims of the TSP's.

[1] Ofcom, *Measuring mobile broadband performance in the UK 4G and 3G network performance*, 13 November 2014.

[2] Tova Linder, Pontus Persson, Anton Forsberg, Jakob Danielsson, *On Using Crowd-sourced Network Measurements for Performance Prediction*, Niklas Carlsson Linkoping University, Link ¨ oping, SE-58183, Sweden

Q8: Are there any legal, security, privacy or data sensitivity issues with collecting device level data? a) If so, how can these issues be addressed? b) Do these issues create a challenge for the adoption of any measurement tools?

Collection of device level data may lead to loss of privacy as the QoS app would collect personal information in addition to specific information such as TSP/ISP identification and location. Certain net speed apps have been observed to collect data from the device which might not be necessary for QoS analysis. Moreover, certain apps under the garb of Automatic Data Collection collect personal data of the users such as Gallery/ Media, Microphone etc. Apps should also seek permission for the frequency for data collection.

So, we suggest that TRAI recommended apps should mandatorily ask for only two basic permissions namely (a) Location and (b) Operator Information.

We also feel that TRAI My Speed should continue with the option of "sending data to TRAI" being left to the subscriber.

Q9) What measures can be taken to increase awareness among consumers about wireless broadband speeds, availability of various technological tools to monitor them and any potential concerns that may arise in the process?

a. Consumer Outreach Programmes: Trainings, workshops and awareness programmes oriented towards importance, benefits and usage of broadband services, data speeds, broadband labels, various technological apps must be organised for consumers by TSPs/ISPs and TRAI. Operators through SMS/ emails can increase the awareness among the customers related to the speeds of the broadband, availability of the tools to monitor them and potentials concerns related to them. TRAI can keep check of operators sending such awareness messages on regular basis and which can indirectly help the operators by gaining the trust of the customer.

b. Consumer awareness communication by TRAI: The Star Labelling Programme implemented by BEE, as part of the successful 'Jago Grahak Jago' successfully created awareness through use of media. TRAI may launch similar awareness campaigns to build consumer awareness.

Q10) Any other issue related to the matter of Consultation.

NIL