

Preface:

Driven by strong adoption of data consumption on handheld devices, the total mobile services market revenue in India stands at a figure of **266mn wireless internet subscribers** on April 30, 2017 which is a 3% monthly growth witnessed between March- April 2017 (*Source: TRAI's Telecom subscription report 2017*)

This all signifies a leap frog jump the telecom sector has witnessed in India. The report also discusses the unrealized potential. The data traffic per Smartphone user in India will grow to 11 GB per month by 2022 while the total mobile data traffic in India is expected to grow at a CAGR of around 40 percent, reaching almost 8 Exabytes of data per month compared to around 1 EB of data consumption by the end of 2016.

Q1: Is the information on wireless broadband speeds currently being made available to consumers is transparent enough for making informed choices?

The consultation paper refers information asymmetry in the disclosures of the mobile broadband plans as one of the market failures. There has been a flux of the free offers offered by the various service providers these days in the wake of stiff competition after the entry of a new operator in the market.

Some of the FREE call+ data bundled offers fail to disclose the entire plan or the limit of the calls or data usage per day.

As per our views, even the customary mobile internet top ups do not disclose complete information about the wireless broadband speed to the subscribers before opting that particular service.

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?

Owing to the various factors as pointed in the Consultation paper like variable number of concurrent users, distance of a user from the Base Transceiver station/NodeB/eNodeB, peak time event or the type of application (video, text, etc.) being accessed; a minimal download speed will be difficult to commit by an operator.

However, similar to the case of US Broadband label which offers a typical speed for 2G/3G/4G services, operator should specify

- Peak download speed,
- Average download Speed,
- Minimum download speed in the network i.e. the worst performing speed

averaged over a time frame of per say 1 month. This label can also be published on TRAI's subscription report to rate operators' performance in their respective network technology (2G/3G/4G) with other service providers.

The information may vary in different service areas or regions (Like Delhi, densely populated areas) which could be left as per the precedence of the service provider.

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 clear plan structure which can be easily understood by customers should be marketed by service providers. It could explicit information about the validity, amount of data offered and “typical speed” of the internet service opted.

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?

There are certain network performance metrics which are used to evaluate network performance.

1. Network Latency Indicators

- **Connection Time:** The connection time is a good indicator of the network latency as these packets are handled in priority by the system and by server clients. The impact of these system should normally be negligible.
- **Round Trip Time:** The acknowledgment mechanism can also help measure the round trip network latency from your point of capture (which can be located on the client side, in the middle or on the server side) to either the client or the server. The round trip time is measured as the time interval between a packet containing payload and its corresponding acknowledgment packet.

2. Packet Loss Indicators

- **Retransmission Rates:** This metric corresponds to the number of retransmitted packets compared to the number of initial packets sent. This rate is clear indicator of packet loss.
- **Retransmission Delay:** This metric corresponds to the time interval between the initial packet sent and the first acknowledged retransmission.

3. Throughput Indicators

- **Throughput:** The throughput itself corresponds to the quantity of data sent back and forth. Counting the bytes sent from the client to the server and vice versa is enough to evaluate the throughput.
- **Data Transfer Time:** This metric corresponds to the time required to transfer the request from the client to the server or the response from the server to the client. This value has a strong impact on the overall response time experienced by each user.

It depends on:

- The volume of data corresponding to the request and the response.
- The quality of the transmission
- Latency
- Packet loss / Retransmission rate
- the ability of the systems to transfer and receive data

4. Server Processing Time

Server Response Time: This metric corresponds the time interval between the last packet of the request and the first packet of the response. It is representative of the server processing time for each TCP transaction.

While there are QoS regulations already laid out by the regulator, no penalties have been provisioned in case of breach of the mandates in regulations. Therefore, to make the service providers efficient and accountable, it is crucial to insert penalty clauses for the breaches.

One of the modes of penalizing recommendation could be a relative performance listing published by the regulator in telecom reports.

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, disclosing the network performance would act as a better tool for customer to choose the broadband plan. This would help any user to make an "informed choice" based on Cost Price of the plan and the network performance.

Q6: Should standard application/ websites be identified for mandating comparable disclosures about network speeds?

Various Network performance applications and websites like Ookla, etc. exist even today which releases reports on the basis of the quanta of data received from network tests done by Indian Subscribers.

However, we would suggest for opting for government based (TRAI based) applications like “**TRAI MySpeed**” or **TRAI analytics portal** for releasing comparable disclosures about the network speed. A consolidated portal displaying the broadband performance gives a better view to the customer about the relative speeds offered by TSPs and hence helps in making an informed choice in future. Data latched on to TRAI based server helps the Regulator to assess the network performance of various TSPs and also localizes improves the authenticity of the reports disclosed.

- The current application interface/UI should be improved. There should also be quality improvements in the same.
- There should be a nationwide campaigning and the publicity of the application as most of the citizens are not aware of it at present.

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)?

Measurement on the network end would not give a clear picture about the individual user experience which would again depend on various factors like number of active users latched, distance between the user and BTS, etc.

Thus, it would be only beneficial to measure the user experience on the device.

1. One of the common tools is the Speed Test Services over Internet that provides free analysis of Internet access performance metrics, such as connection data rate and latency.

e.g. Considering one OTT (Over The Top) service like YouTube; it could render great KPI but the video’s quality could be awful due to too much rebuffering or a higher buffering time. This could be because of the very high packet loss or some issues in the service. Hence, connection reliability also requires statistics on packet loss and packet retransmission.

2. Another way to test an Internet connection is to install a bandwidth monitor utility. This software will continuously monitor the bandwidth and will report the connection speed average by day, month, or year.
3. An example, is the Italian Authority that created their own dedicated project to test any network connection. Collected logs and measured values can be used as evidence in cases where the user wishes to exercise the right of withdrawal, compared to contractual promises of Internet access speed is not maintained by the ISP/Service provider.

The AGCOM (Italian Regulator) project servers in fact, are positioned to the NAP (Neutral Access Point), the physical interchange points between different network operators. The particular location of these devices ensures that the exchange of data, real object of the measure, only transits through the network operator's liability and not on other networks. The measure is based on an exchange of packets between a client, it consists of users' DEVICE, and a server located in the NAP neighbor. On the basis of this transmission are measured established KPI. Each user will point the measurement server next to its NAP. The location of measurement points based on these criteria, together with a series of guarantees on the conduct of the tests, makes the certified measurement. This measure with Ne.Me.Sys. (Network Measurement System) lasts for a maximum of 3 days and not only 10 secs unlike any other third-party Customer Experience Management(CEM) tools. This should make us think about differences between a Professional Dedicated Service and a Commercial one.

4. Recently in Feb 2017 Akamai Technologies, Inc. announced availability of the Company's Mobile Performance Analytics. The Performance Analytics is offering unprecedented visibility into the customer experience which is intended to help ensure subscriber satisfaction and ultimately brand loyalty. Instead of extrapolating the impact of Quality of Service (QoS) network measures such as jitter, packet loss, and latency, or they relied on small sample sizes of drive by testing or synthetic monitoring. No traditional approach truly reflects the actual user experience or CX on the operator's network and as important, operators will see analysis of their own data as opposed to data derived from a secondary source:
 - Collection of billions of data points across thousands of web sites and hundreds of video services to measure the actual consumer experience based on QoE – not QoS – data.
 - A combination of Akamai's RUM data and media analytics data is then customized for use by MNOs to provide a unique view into network performance which help establishes the Key Performance Indicators (KPIs) that are more relevant to user experience.

- The ability to measure and analyze the effect on subscriber experience related to network upgrades or other initiatives intended to improve network performance.

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?

No comments

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?

Referring to our response in Question 6, digital empowered people should have knowledge and herewith to employ tools for network speed measurement, undergo comparative analysis between diff operators. TRAI Myspeed App and QoS Portal developed by TRAI are perfect example for the same.

- More advertisements specially over digital platform by employing social media, etc. must be undertaken by the govt to educate the customers. This would increase awareness among people consuming social media services like Facebook and Twitter.
- Presence of a broadband label as discussed in the Consultation Paper will simply result in further awareness.
- The results/disclosures from the MySpeed App or any standardized software tool will itself be employed by service providers to prove their network quality to consumers
- TRAI itself can launch public awareness campaigns in its Consumer Outreach Programs(COPs) to educate less digitally empowered customers.