**Comments by LIRNE*asia* on the Consultation Paper for the Amendment to the Standards of Quality of Service for Wireless Data Services Regulations 2012**

**Submitted to the Telecom Regulatory Agency of India on 5th May 2014**



LIRNE*asia* appreciates the opportunity to offer comments on the draft regulation and trusts that its research based comments will contribute to the improvement of the text. Please note the recommendations below are for GSM and not for other wireless technologies cited in the consultation paper.

LIRNE*asia* is a regional information and communication technology (ICT) policy and regulation think tank active across the Asia Pacific. It has commented on numerous TRAI consultations and its Chair & CEO, Professor Rohan Samarajiva, is frequent participant in telecom policy and regulatory events in New Delhi. Annex 1 contains the organizational profile.

**Preamble**

In wireline and fixed wireless networks, there is a static relation between the number of users and the exchange/base station, and this relationship is within the control of the service provider. In contrast, in cellular networks, the number of users served by a Base Transceiver Station (BTS) is not under the control of the operator, nor is it under the control of any user. Therefore, the load on a BTS can vary within a very short span of time, resulting in variation on QoSE. Based on operator configurations, such occurrences may cause the cell to dynamically resize (the cell breathing phenomenon in 3G networks) thereby affecting changes to the user experience, including, in some cases, disruption of service.

LIRNE*asia*[1] research carried out in March 2014 (and on multiple occasions prior) indicate that user experience of broadband rarely matches advertised promises.

**Recommendations on prescribing benchmarks for minimum download speed and mandating the service provider to inform minimum download speeds to customers along with each tariff plan**

In a prior response to the draft 'Standards of Quality of Service for Wireless Data Services Regulations 2012' it was noted that there was no mention of speeds advertised by service providers. Often it is the theoretical maximum that is advertised, which is misleading to consumers because it is not achieved always. These speeds are usually qualified with the term '*up to*' (e.g. up to 7.2 Mbps). In recent research carried out by LIRNE*asia* it was evident that service providers were advertising a lot more than what was delivered (Figure 1), in some instances approximately 80-90 percent more than the actual.

It is recommended that service providers measure and publish *typical* download speeds. It should be published for mobile data services accessed via a mobile handset and USB dongle. To do this, service providers should run diagnostics in a way that anomalies such as peak and off-peak traffic variations are normalized. Therefore, it is important that typical speeds are advertised after having carried out tests over multiple time slots and over multiple days of the week including week days and weekends.

[1] LIRNE*asia*. (2014, March). Broadband Quality of Service Experience Indicators. http://lirneasia.net/wp-content/uploads/2010/10/BB-QoSE-Report-Final.pdf

Also critical are the various network domains: i.e., content hosted within ISP, within country but on a different ISP server, and the international. LIRNEasia has been conducting research[2] on broadband QoS as experienced by the user since 2007. This has included analysis of performance over these multiple domains. The general trend has been better results when a service within the country is accessed relative to performance when a server hosted abroad is accessed.[3] To avoid misleading information being published, it ought to be mandated that *typical download speeds* are measured while accessing an *international server*.



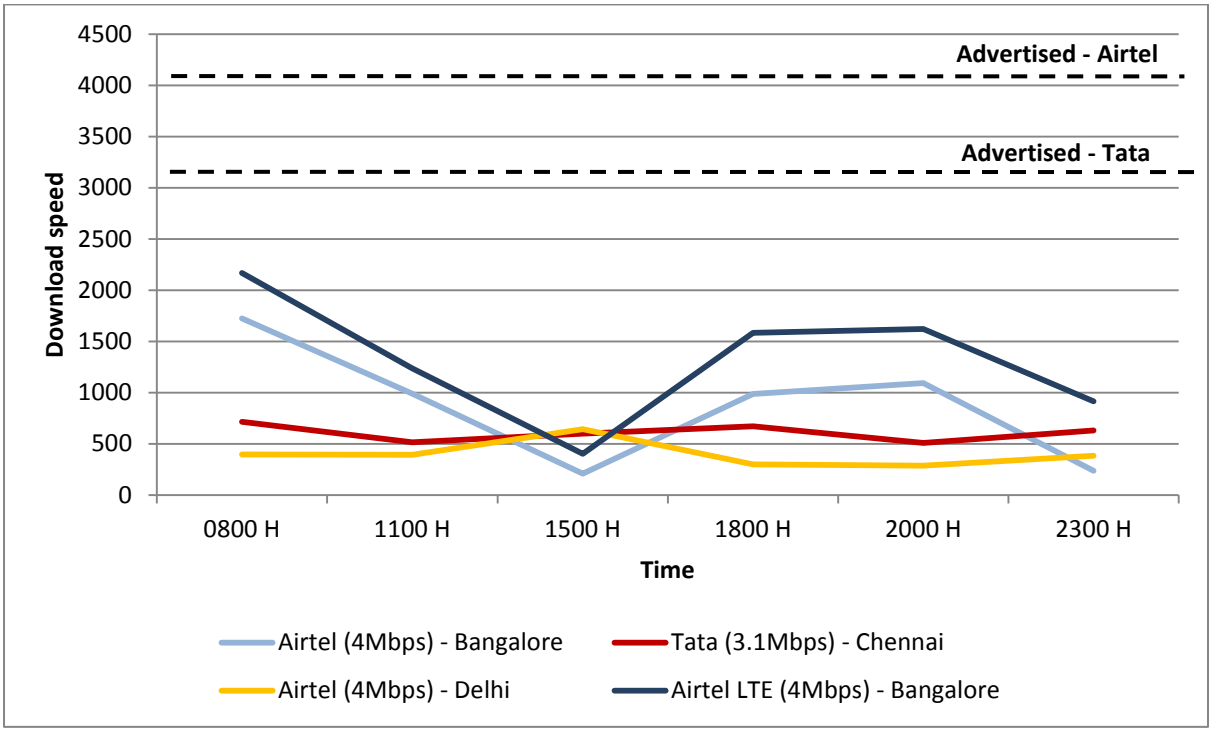



**Figure 1: Download speeds achieved vs. advertised, international, LIRNEasia 2014**

When defining the minimum download speed it is also important to ensure that the speeds reported by the various service providers are comparable. In order to do this a common test methodology should be followed. The file size used plays a role. Based on LIRNE*asia*'s experience it is highly recommended that a file size is specified (generally a large file) and the same is used across all service providers. When the same standards are followed the results will be comparable and will help consumers make informed decisions when purchasing new connections.

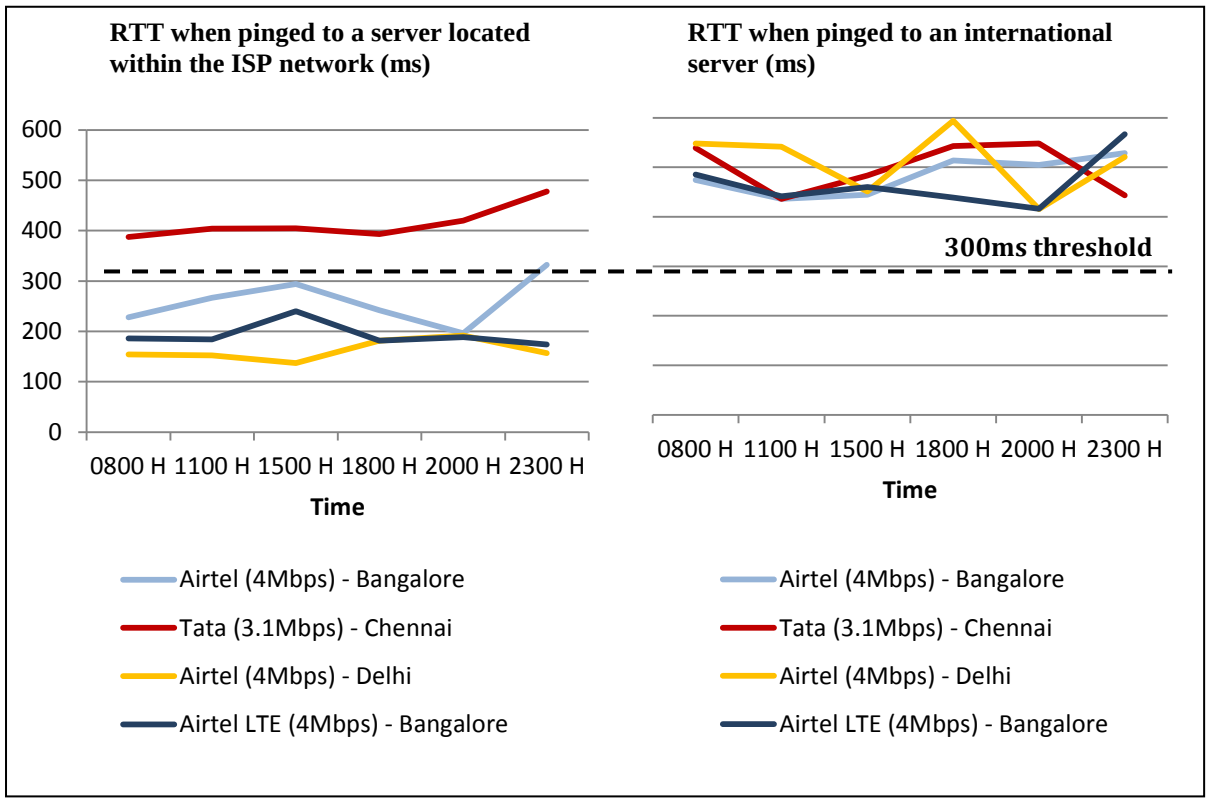
[2] LIRNE*asia*. (2014, March). Broadband Quality of Service Experience Indicators. http://lirneasia.net/wp-content/uploads/2010/10/BB-QoSE-Report-Final.pdf and http://lirneasia.net/projects/ict-indicators/

[3] However, there have been exceptions when the results have been the opposite, hinting of bandwidth limitations when accessing some servers in-country.

**On the importance and relevance of Latency**



Download speed is an important metric when downloading bandwidth intensive media such as music and video. The majority of users however access the Internet to browse websites. For browsing, latency is the more critical metric. Latency or round trip time (RTT) is the measure of how long a packet takes to reach the destination server and return to the client. So the less time it takes the faster the web page will load (in other words, the lower the RTT the better). Figure 2 illustrates the RTT achieved during the March 2014 research carried out by LIRNEasia. 300 ms is the threshold recommended by the IDA (Singapore) for RTT to an international server, while 50 ms is their threshold for the local domain. The figure also helps reiterate the importance of carrying out multiple domain diagnostics.



**Annex 1: Organizational profile**



LIRNEasia is a regional information and communication technology (ICT) policy and regulation think tank active across the Asia Pacific. Its mission is "to improve the lives of the people of the emerging Asia Pacific by facilitating their use of ICTs and related infrastructures; by catalyzing the reform of laws, policies and regulations to enable those uses through the conduct of policy relevant research, training and advocacy with emphasis on building in-situ expertise". The core focus is on conducting in-depth research and analysis of key policy issues, disseminating that research and analysis to policymakers, regulators, managers of the relevant firms, other stakeholders and the media. Capacity building is a core element of our mission. We have a strong record of accomplishment in conducting policy relevant and successful training programs for a range of stakeholders, not limited to government, in several countries.

LIRNEasia is incorporated as a company limited by guarantee under the Sri Lanka Companies Act. It has been in operation since September 2004, with an annual budget in the range of USD one million for the past four years, of which about a quarter is spent on India. It has established a reputation as an independent and effective think tank with several significant achievements, such as contributing through timely and targeted dissemination of evidence towards the lowering of leased line prices in Indonesia in 2007, the removal of regressive elements of a mobile-only tax in Sri Lanka also in that year, the reform of universal service policies in India and the improvement of quality-of-service regulation in India and Bangladesh.

In 2007, LIRNEasia in collaboration with IIT Madras designed a subscriber oriented diagnostic methodology (the 'AshokaTissa' methodology[4]) to test the quality of service experience (QoSE) of the end user. In order to normalize anomalies in the network, the methodology suggests the tests are carried out at six time slots per day (08:00, 11:00, 15:00, 18:00, 20:00, 23:00) on multiple days covering both weekdays and weekends. The parameters measured are download and upload speeds (Kbps), latency or Round Trip Time (RTT, ms), jitter (ms), packet loss (%) and network availability (%). In the initial stages diagnostics were run only in Sri Lanka and India but since 2010 the test base has increased significantly to cities[5] in South and Southeast Asia.

LIRNEasia has a network of researchers spread across South and Southeast Asia. We are also formally connected to research networks in Africa (Research ICT Africa), Latin America (DIRSI) and Europe (European universities of LIRNE.NET), and as such provide geographically comprehensive research coverage on ICT and telecom policies. More information on the organization including fully downloadable annual reports is available at http://lirneasia.net/about/.

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[4] http://www.lirneasia.net/wp-content/uploads/2008/03/broadband-quality-test-plan1.pdf

[5] Colombo - Sri Lanka; Chennai, Mumbai, Bangalore, New Delhi - India; Dhaka - Bangladesh; Karachi - Pakistan; Male - Maldives; Thimphu - Bhutan; Kathmandu - Nepal; Chiang Mai, Bangkok - Thailand; Jakarta - Indonesia; Manila – Philippines.