

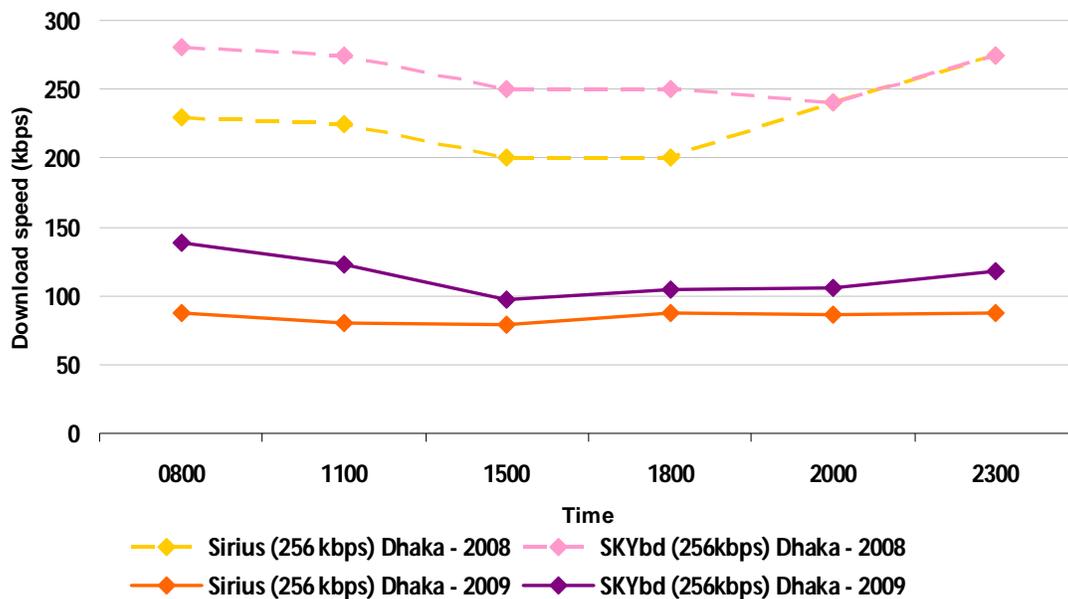
## Response to BTRC Consultation Paper 'Standardization of Quality of Service (QoS) Parameters for Broadband Internet Services' (No. 03/2009)

LIRNEasia, an Asia Pacific think tank on Telecom Policy and Regulation welcomes BTRC's timely intervention.

LIRNEasia's research shows, broadband quality in Dhaka has deteriorated from Sept 2008 to Feb 2009 not only when accessing an international server (Fig. 1) but also within the ISP domain. (Fig. 2) It may reflect the rapid increase in the number of broadband users following the recent drops in prices, but without additional infrastructure development. Establishing standards, therefore, becomes essential ensuring the users receive what they pay for.

In addition, the International Internet Gateway (IIG) and National Internet Gateway (NIG) proposed under International Long Distance Telecommunication Services (ILDTS) policy of 2007 critically change the Internet landscape and hence QoSE in Bangladesh.<sup>1</sup>

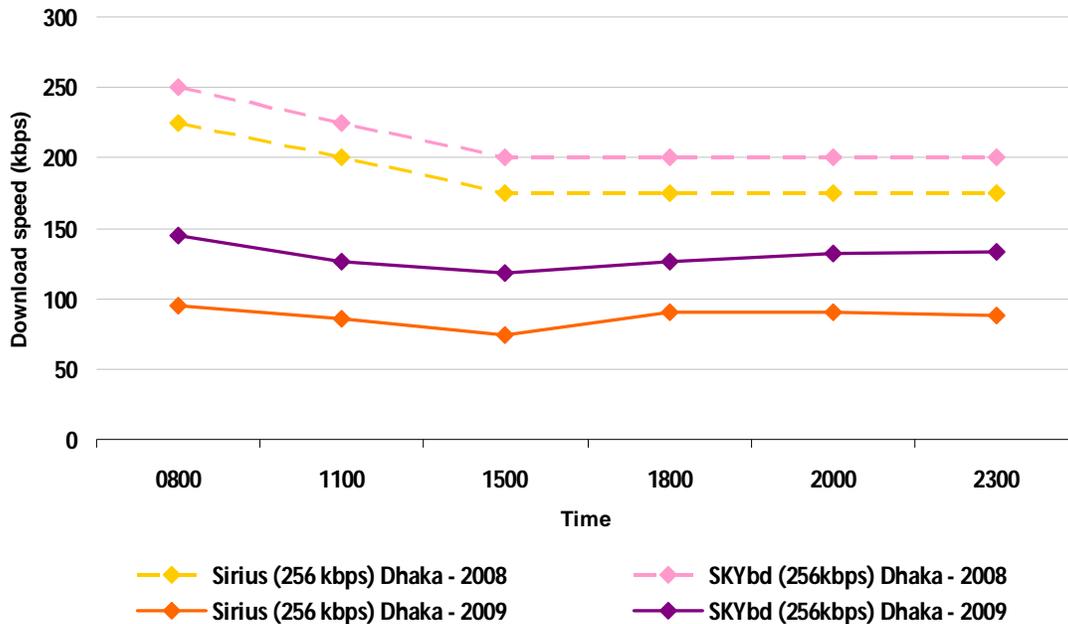
**Figure 1: Dhaka QoS test results for two widely used packages (both advertised for 256 kbps) - Download Speed in International domain (Sept 2008 and Feb 2009)**



Source: LIRNEasia Broadband Test Results 2008/9

<sup>1</sup> LIRNEasia could not confirm the operation of IIG and NIG at the time of tests in Dhaka. Non-operation was assumed. Most statements in this response are valid under general conditions, where there is no intermediate later between the local ISPs and their international/USA counterparts. Introduction of IIG makes a difference. Wherever possible we have tried to take this factor into account.

**Figure 2: Dhaka QoS test results for two widely used packages (both advertised for 256 kbps) - Download Speed in ISP domain (Sept 2008 and Feb 2009)**



Source: LIRNEasia Broadband Test Results 2008/9

LIRNEasia wishes to make the following recommendations based on its broadband research findings in Bangladesh, India and Sri Lanka.

**Recommendation 1: The specified minimum bandwidth requirements must reflect present and near-future aggregate user requirements.**

The Consultation paper defines broadband as above 128 kbps per subscriber. (Paragraph 2, Page 2)

There is no universal agreement. Countries and organisations have their own standards. Among others, Partnership for Measuring ICT for Development defines broadband as an Internet service of at least 256 kbps in one or both directions.<sup>2</sup> The US Federal Communication Commission recently specified the range 768 kbps – 1 Mbps as ‘Basic Broadband’ and anything less is ‘First Generation data’, but this is not finalised.<sup>3</sup> Telecommunication Regulatory Authority in India (TRAI) in January 2008 ruled every broadband provider should maintain a minimum limit of 256 kbps.

<sup>2</sup> Partnership for Measuring ICT for Development *Core list of ICT Indicators* (Revised 2009), at: [http://www.itu.int/ITU-D/ict/partnership/material/CoreICTIndicators\\_e\\_rev2.pdf](http://www.itu.int/ITU-D/ict/partnership/material/CoreICTIndicators_e_rev2.pdf); accessed 18 August 2009. OECD (n.d.) *OECD Broadband Subscriber Criteria*, retrieved August 28, 2009 from [http://www.oecd.org/document/46/0,3343,en\\_2649\\_34225\\_39575598\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/46/0,3343,en_2649_34225_39575598_1_1_1_1,00.html).

<sup>3</sup> <http://blog.broadband.gov/?p=87>, retrieved August 28, 2009.

A user will not experience a noticeable performance difference from dial-up with a speed of 128 kbps. This looks far less ambitious even in present environment and will not certainly be adequate in another few years time. It has to be a more realistic value. Speeds of 8-10 Mbps is the norm in many developed countries. They may be too ambitious given the conditions in Bangladesh, but on the other hand, users should not be the victims of an outdated stipulation.

Taking these developments into account, we recommend the limit should be 256kbps, if not more.

**Recommendation 2: The specified minimum bandwidth requirements should be valid beyond the network segment from user to ISP. (aka 'last mile' or 'first mile')**

The minimum bandwidth limits should apply beyond the operator (ISP) domain, as operators should be responsible for purchasing adequate bandwidth to connect to national/international gateways.

In testing broadband quality in South Asian environments LIRNEasia has observed while the speeds are within 'reasonable' levels from user to operator (access network), they drop significantly when using international links. The visual trace route taken from a widely used software tool (Figure 3) confirms in Dhaka too the bottleneck is in the international link<sup>4</sup> that connect local gateway to outside.

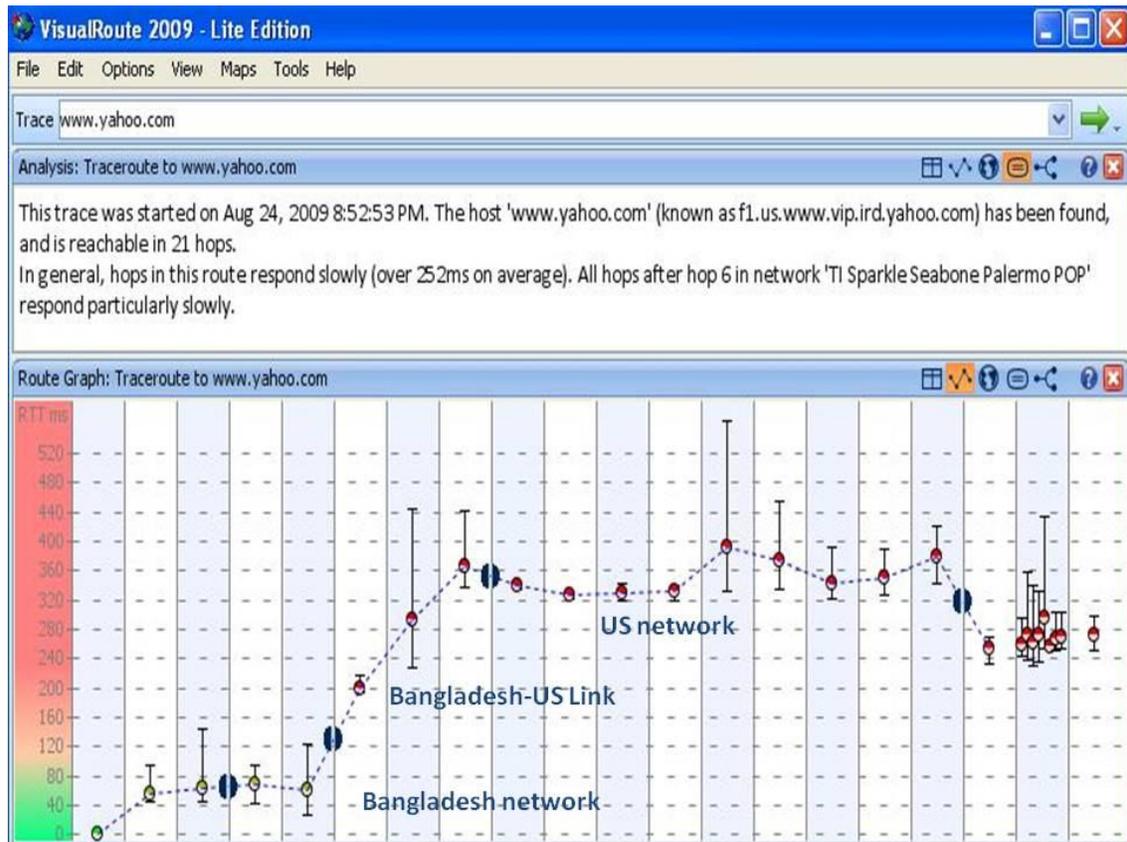
In countries, where ISPs are free to directly link to international gateways they should guarantee the minimum bandwidth at least up to the first overseas entry point by purchasing adequate international bandwidth to meet the current and future demand.

The introduction of IIG in Bangladesh will limit the operator responsibility to IIG. Purchasing adequate bandwidth of international link then will be the responsibility of the IIG operator.

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<sup>4</sup> This assumes non-operation of IIG, but the conclusion will be not too different.

**Figure 3: Visual Trace Route to a USA server ([www.yahoo.com](http://www.yahoo.com)) from Dhaka**



Source: LIRNEasia, 2009

### **Recommendation 3: Operators should be made to maintain regulator specified contention ratios**

The Consultation Paper does not specifically discuss contention ratios, but they are critical in ensuring broadband quality from operator end. They determine how shared the links are. Absence of contention ratio standards may lead operators to increase the number of connections arbitrarily without developing the infrastructure.

We recommend 1:20 contention ratio for business connections and 1:50 for residential.<sup>5</sup> This standard will make the process more meaningful and easy to monitor.<sup>6</sup>

<sup>5</sup> LIRNEasia's recommendations to Telecommunication Regulatory Authority of India (TRAI) were the same but they adopted 1:30 and 1:50. [http://lirneasia.net/wp-content/uploads/2005/03/lirneasia\\_tenet\\_rapid\\_response\\_to\\_trai\\_final1.pdf](http://lirneasia.net/wp-content/uploads/2005/03/lirneasia_tenet_rapid_response_to_trai_final1.pdf) retrieved August 28, 2009.

<sup>6</sup> Similar recommendations will apply for IIG too.

**Recommendation 4 : The bandwidth utilization between the user and the nearest serving ISP node during download shall be more than 75% of the advertised on average.**

The minor changes in wording reflect the need for a higher bandwidth in the 'last mile'. LIRNEasia's broadband testing has shown this not an unreachable target, even under South Asian conditions. Practically the average values are easily determined.

**Recommendation 5: Ideally, the network limits should be 85 ms within the local networks and 300 ms to the first entry point to USA.**

LIRNEasia sees no reason why the limits should be less than specified for the Singapore operators by Infocomm Development Authority of Singapore (IDA). LIRNEasia's research has shown these are achievable limits under South Asian conditions and even by operators using satellite links in their international segments. (Figure 3 is an example)

However, with the introduction of IIG it is not fair to expect only operators to maintain latent below 300 ms to first entry point to US. It should be the responsibility of both parties.

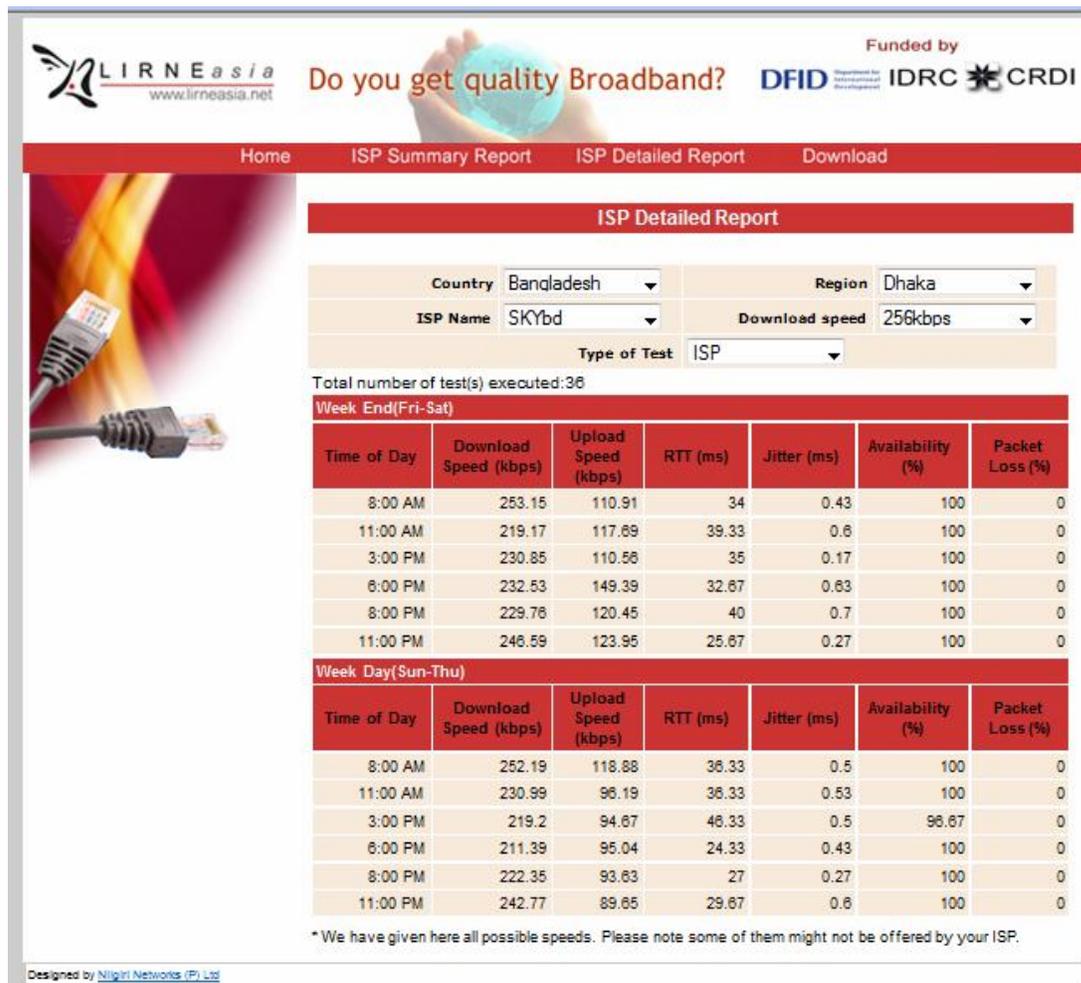
**Recommendation 6: In addition to customer satisfaction surveys, testing at user end should be employed to test broadband quality of each operator/package.**

User surveys, a tool used by certain regulators, measure customer perception. An objective supplementary tool will be quality tests carried out by users.

LIRNEasia and a team from IIT Madras have jointly developed AT-Tester, an open source based software application any user can download from the site [www.broadbandasia.info](http://www.broadbandasia.info) to test the broadband link. The results are uploaded to generate an overall package/operator performance profile. This exercise ensures that a user is empowered with knowledge of the comparative performance of widely available broadband packages in the market.

AT-Tester measures a total of six metrics: Throughput (download and upload speeds), Round Trip Time, Jitter, Packet loss and availability. The testing is conducted for three domain; local, national, and international. The local is defined as the server of the Internet Service Provider (ISP). National is taken to be a website hosted within the geographical boundaries of the country from which the connection is originating from. This is particularly important for countries where a considerable amount of local content is held in servers within the country. The final, international, is taken to by a server such as yahoo.com. Wide participation by users in providing broadband performance information to this database, ensures a complete picture on the performance (a) at different time of the day; (b) on different dates (week days vs. weekends) and (c) on different regions/areas .

Figure 4: Sample test report from broadbandasia.info



LIRNEasia proposes this tool for measuring broadband quality at user end in Bangladesh. Any support necessary in the implementation can be provided on request. Specifically, LIRNEasia can train BTRC officials on the use of this software tool.

**About LIRNEasia** [www.lirneasia.net](http://www.lirneasia.net)

LIRNEasia is a regional think tank involved in Information and Communication Technology (ICT) policy and regulation research and capacity-building across the Asia Pacific. LIRNEasia's program of actionable research seeks to identify the institutional constraints to effective use of ICTs to improve the lives of the people of the Asia Pacific, not simply in abstract terms but in country context, and to work collaboratively with multiple stakeholders to catalyze the changes conducive to greater participation by users and suppliers. LIRNEasia's overall mission of capacity building seeks to contribute to building capacity for evidence-based intervention in the public-policy process by persons attuned to the specific national contexts within which policies are made and implemented.