

TELXESS

Consulting Services Pvt. Ltd.

Shri S.K. Gupta
Advisor – CN,
Telecom Regulatory Authority of India
New Delhi

Dated: 29th Jan, 2009

Dear Sir,

SUB: Our Response to the Consultation Paper

REF: TRAI CP on Bandwidth Requirement for ISPs, dated 15th January, 2009

Generally, Internet is a network of inter-connected networks and the end to end network infrastructure is not universally considered to be in hands of one entity. Hence delivery of Internet is considered to be a best effort service. Some Indian UASL Service providers, however, have come to control a vast segment of the internet pipe-line.

Considering that various segments (links in the pipeline) determine the end user experience with the content that she/he wishes to access from anywhere, it is possible to monitor key elements of most of those end to end segments/links and best practices benchmarked and implemented to enhance the end user experience, in terms of line speed, average throughput, etc.

For content hosted and available locally, the Service Providers can control the QoS to a very high degree, whereas the same would be difficult in case of content that has to be accessed from outside of India, say from the USA. This is where, improvement in the roundtrip latency and bandwidth utilization can improve the QoS standards of Broadband service. While TRAI has taken all these factors into consideration, we would like to suggest that Network Availability as a measure to be included in the QoS matrix as well.

It must also be noted that 83% of the Internet traffic in India is generated and moved by the integrated Telecom Operators who control the Top 4 leading ISP positions, compared to only 17% by others, including independent ISPs. PSU Integrated Operators alone control nearly 70% of the Internet market.

The integrated operators, under their UASL licenses, along with NLD and ILD services, are allowed to offer all types of Internet services without restrictions, including unrestricted Internet Telephony, VPN, and in the near future, applications like IPTV etc.

Independent ISPs are in turn dependent upon these Integrated Operators, who are incidentally also competitors, for their upstream bandwidth resources, with the resultant constraints of limited scope of services, limitations on bandwidth availability, especially in customer access lines; along with no LLU sharing policy.

Since, the very beginning of Independent regulation coming into practice in India, both the Regulator and the Government have failed to address the issues related to 'fair competition practices' between Integrated Telecom Operators, who control the resources as well as its pricing and availability, and independent standalone ISPs.

The result being that, the market share data already continuously reflects the share of the Integrated Telecom/ISP Operators, skewed completely in their favor, and standalone ISPs only marginally contributing to the Internet market. The setting up of QoS standards and their implementation can be a tool to address some of the issues contributing to this glaring case of regulatory and thus market failure.

Considering the above situation, it must be first accepted that, the onus of meeting the Network Quality, Bandwidth Utilization, Latency and other such parameters and standards have to be on the Integrated Operators, to be followed by them not only for their direct end customers, but foremost for their whole sale customers like the independent ISPs. It goes without saying too, that, while getting the Telco/ISP operators to follow, meet or exceed the benchmarks, TRAI should also ensure that the Integrated operators follow an 'arms length' practice between their Telco operations and ISP operations, in so far as making available bandwidth resources and meeting the QoS benchmarks are concerned. TRAI, should then monitor if any discriminatory practice is evident (and move to correct that), between the Telco's treatment of its own ISP arm and another standalone ISP.

We are happy to make the suggestions and recommendations as follows, for various parameters. We believe that adoption of our recommendations in a holistic can help TRAI to:

- a) Effectively focus on those segments/links where points of failure of QoS benchmarks really are.
- b) Take corrective action and ensure proper enforcement &
- c) Simultaneously address the bias that exists in limiting the standalone ISPs from controlling their own QoS standards.

It may be noted that we have studied methods adopted by various regulators over time and suggested by some others, and finally based our recommendations from the Infocom Development Authority of Singapore, which was possibly the first to set up QoS benchmarks, way back in the year 2000, and we believe are still relevant, fair to all players and enforceable by any Regulator.

We are also suggesting that parameters related to Network Availability, Bandwidth Utilization and Contention Ratio, etc are relevant for specific segments ranging from Individual End Customers to SME and SOHO segments, who by and large, because of cost consideration, subscribe to Shared services, where, these parameters become fluid enough to be twisted, in a manner which over-optimizes the resources (higher contention), and thus compromise on quality service delivery.

Large corporate companies, and possibly a very limited segment of SME's tend to subscribe to dedicated leased lines, and premium internet bandwidth and connectivity, with strict SLAs, and for whom, loading the number of employees is purely an internal company policy matter.

We suggest that TRAI enforces a separate QoS compliance standard for Leased Line circuits provided by the Facility based operators.

We will also like to take this opportunity, to say that, for the recommendations to work successfully, TRAI must, simultaneously float a model SLA agreement between Bandwidth Providers and the ISP (whether at an arms length to it's own operations or with standalone ISPs), incorporating the QoS benchmarks, monitoring and corrective measures and their adherence schedules, with built-in provision for penalties for failure to meet the stated benchmarks.

However, an ISP could be free to offer in the market, stating transparently, 2 types of Services, One that meets the set QoS benchmarks and Second that does not meet the QoS

3. Bandwidth Utilization Should not exceed 80% Average/month

- Highest Bandwidth Utilisation = (peak utilization level @each segment) / total BW available @ segment
- Peak Utilisation should be measured with MRTG 5 minutes Daily Average, for the busy hours every week. Weekly MRTG showing peak utilization of bandwidth, per segment should be kept.
- Bandwidth utilization for each individual link (where multiple links exists) of the ISPs intra network and of the upstream bandwidth provider, up to the IGSP must be measured.
- Weighted average peak Bandwidth utilization figure for each segment (with multiple links) should be provided.
- SLA's between service providers and their upstream stream bandwidth providers should include the required parameter to be monitored and maintained by each party.
- Highest Weekly/Monthly Peak Utilization figures should be put up on the websites of the Service Providers, to ensure transparency to customers.

Note: While TRAI in its' Broadband QoS standards, dated 6th October, 2006 have set the Benchmark for Broadband Service Providers to adhere to 80% bandwidth utilization for peak periods and mandated the Providers to provision more bandwidth, where utilization exceeds 90%, there doesn't seem to exist any dependable means to monitor and implement the benchmark. Hence the recommendation to qualify the measurement techniques and mandating transparency for proper enforcement of the Benchmarks set.

4. Contention Ratio

- A straightjacket approach of defining Contention Ratio, for Home User and Business Users, could be potentially misleading and does not take into account the various overlaps in different market segments. As stated above, Home Users can be individuals, or those running small businesses and enterprises, with differing QoS parameters that fulfill their need.
- The needs and requirements of SoHo and SME segment is also largely determined by the costs attached to Service differentiation that may in turn deliver differing QoS parameters.
- Home sub-segments may opt for low QoS, low bandwidth, high contention ratio services at Low prices, while another Home sub-segment may necessarily opt for High Quality, High bandwidth, Low contention ratio Service, to service his business needs, at a premium, which may however still not be at the level of highest QoS, that can be met by dedicated Leased Line.
- Multiple Options therefore, have to be built in and while laying down the minimum/maximum QoS standards, which turn will reflect the paying capacity of the End-user.
- Hence, there is no reason to limit the services (as done in the CP), to 4 categories and judge the best contention ratio accordingly. For Example, in the Leased Lines category, there are various offers in the market, ranging from shared, low bandwidth leased line to premium leased line circuits, without sharing/contention ratio. In addition there are services on Ethernet lines, Cable, FTTC, etc which will necessitate more detailed QoS standards than the extant CP envisages.
- Recommendations:
 - It is suggested that only in case of Dial-up, a maximum contention limit can be fixed at 50:1, where 1 physical port at ISP end is supported by 2Mbps bandwidth.
 - For Broadband, even though the tendency to build in higher contention ratio can be checked, if effective implementation of NA, BU and RTL parameters is done, it may be prudent to have a max limit of contention ratio for non-leased line customers and for shared leased line

customers. For IPTV and other such specific applications and services, TRAI may provide an addendum separately in the IPTV recommendations, suo-moto to the government.

For Leased Lines (Premium)	Contention ratio from 1:1 for the Category
For Shared Lines	Contention ratio ranging from min 5:1 going Up to max 50:1, in increments of 5:1

- 1 unit to measure at 2Mbps
- Bandwidth SLAs, incorporating various Parameters, to be adhered to, between upstream providers and ISPs, to be made mandatory.
- Pricing to be based and reported on the basis of QoS or non-QoS offerings, along with contention ratio offered, transparently to the end-customer.
- In case of QoS based service, failure to meet them should enable the customer to demand and move to higher QoS service, without extra charge.
- For leased line circuits, TRAI should enforce a separate QoS standard compliance on FBOs, who own the circuits/links (but not applicable to resellers).

We hope that the above recommendations, will enable TRAI to become a more a effective Regulator of Service quality standards, while ensuring that the disparity that exists between Facility based integrated operators and stand alone ISPs, (resulting in higher contention ratio resorted to by some operators) is also addressed along with.

Thanking You

Sincerely
For TELXESS CONSULTING SERVICES (P) LTD.

AMITABH SINGHAL
DIRECTOR

- Response prepared by Amitabh Singhal, Founder and Former President of ISPAI and Founder, Former CEO and Board Member of NIXI

Addendum.

TELXESS
Consulting Services Pvt. Ltd.

Mr. S.K. Gupta

Dated: 1st Feb, 2009

Advisor – CN

Telecom Regulatory Authority of India

New Delhi.

SUB: TRAI CP on ISPs Requirement for Bandwidth

REF: Our earlier submission dated 29/01/2009 – Addendum thereof.

Further to our submission on the CP regarding Bandwidth Requirement for ISPs for Better Connectivity & Improved Service, we would like to re-iterate the Basic Principles behind our response, that we would urge strongly for TRAI to adopt, and consequently, also make certain Disclosure norms, as part of the ISPs Services Offerings (whether QoS compliant or under-compliant) to the public at large, irrespective of the segments served.

The Basic principles that have to be established, to make the chain of QoS exercise well rounded, meaningful and complete in most respects are that:

1. ISPs are only a part of the link in the overall chain-link, in provision and ultimate delivery of Broadband, High Speed or Dialup Internet services.
2. Several factors, effect the uptake and utilisation of Bandwidth (despite being the most visible resource, apart from Latency, Jitter, Contention, etc), by the Service Providers, towards improvement or deterioration of Internet Services Quality. Some of these are; location of content, types of content, hosting and caching techniques, number of hops/links from Servers to End Customers, Protocols, Routing & Transit methods, etc.
3. The Upstream Links/bandwidth norms have to be well established, and thereafter Technology, Quality and Standards of last Mile will determine the final Service QoS.
4. Economic principles that there is an organic co-relation between Costs, Quality and Price are well established.
5. Hence, this exercise by TRAI definitely needs to consider and streamline SLAs between Upstream bandwidth providers and the ISPs, along with Cost implications, therein, simultaneously monitoring and adopting more comprehensive End User Service Quality norms involving various other parameters. Just limiting the CP exercise to determining Latency and Contention factors in isolation will not result in substantial long term benefits in improving the overall QoS standards.
6. We are therefore, attempting to also, recommend, certain (though not entirely exhaustive) Customer Disclosure norms to be made available publicly and periodically. Overtime TRAI will benefit in terms of understanding, mentoring and leading the ISPs towards a more balanced and accountable growth trajectory.

7. In our earlier submission, mentioned was made that 83% of Internet market (by subscriber base) is controlled by 4 integrated telecom operators etc. This is from the TRAI's Performance report ending September 2008. However, the assumption along with, that percentage of internet traffic generated is also similar to the subscriber base figure is purely our own assumption.
8. An Excel Sheet containing the various parameters that should form part of Information to Customer Disclosure Norms is attached. It is only a draft matrix and not in any particularly intended order. However, most information seeking details are to our mind important to sensitize all concerned, from Customers to Service Providers to Regulator regarding the minutiae that can determine QoS and its relationship with market Prices. Further linking this Information to the SLAs between Service Providers at the backend, would complete the Supply Chain Information and reveal the gaps and disparities therein, including those in the Costs vs Price mechanisms and the resources supply mechanisms between different categories and levels of Service Providers.

We hope once again that the submissions are found useful.

Thanking You,
Sincerely

For TELXESS CONSULTING SERVICES (P) LTD
AMITABH SINGHAL
DIRECTOR

Attached: Excel sheet as mentioned at point 8 above

ISPs Service Information Disclosure.

Type of Service

Dial Up Connection Y/N

High speed Connection Y/N

Broadband Y/N

Subscriber Type

User Specifications

Quality Description

Price

Home

Personal
Occupational
Mixed

Dial Up 1:1
Dial Up 1:N Min Max
Av Line Speed Min Max

1. ISF
2. Cu
3. Me
4. Do

Business

Single Loc
Multi Loc
No of Users

Line Type - PSTN/ISDN
High Speed / Broadband 1:1
High Speed 1:N Min Max
Av Line Speed Min Max

* Star

Mixed

No of Users

Av Download Speed Min Max
Av Upload Speed Min Max

Private

Last Mile Type - Wireline/Wireless

Government

Fixed Telephone Line
Fixed Mobile Telephone Line
ISDN

Public Spot

Leased Line: Dedicated/Shared
Ethernet

Educational Instt

Cable Modem
Wireless LAN

Name

Cellular 2.5G - GSM/GPRS/EDGE/?
Cellular 3G - WCDMA/CDMA2000?

Location/s

Satellite - DVB-?

Transport Protocol Used - Specify

IEEE 802.11 a/b/g/
IEEE 802.16 d/e?

Security Protocol Used

802.11 (1999) - WEP
802.11 (2003) - WPA
802.11i (WPA2)
Wired/Wireless VPN

QoS Protocol Used

802.11e (WiF-Multimedia)

IP Protocol Used

IPV4

IPV6 Compliant- Full/Partial

IP Addresses Allocated

Private - Nos

Dedicated - Nos

Dynamic - Min / Max Per Connect/Subs

IP Addresses - ISP owned/subscribed ?

AS Number - ISP Owned/Subscribed ?