27 Dec 2010

Ms Aileen CHIA
Deputy Director-General (Telecoms and Post)
Infocomm Development Authority of Singapore ("IDA")
Via Fax: 6211-2116 and Email: IDA_Consultation@ida.gov.sg

Dear Ms Chia,

RESPONSE TO THE CONSULATATION PAPER ON NET NEUTRALITY ("NN")

1. **Declaration of Interest**. SuperInternet ACCESS Pte Ltd ("SuperInternet") is an SBO(I) licensee and has been providing Internet Access and associated services since 2000. In 2005 SuperInternet commenced an IP Telephony Service based on the Level 3 phone numbers and currently offers a converged voice and data service[1]. Earlier this year, SuperInternet commenced offering services on the Next Generation Nationwide Broadband Network ("NGNBN") as a Retail Service Provider ("RSP"). Our interest in this proceeding lies primarily in how the regulation of NN affects our provisioning of existing and future services.

2. **Premise of Congestion**. International IP Transit pricing today for 1Gbps out of Singapore is approximately US$20/Mbps/mth[2]. Furthermore, trunk link[3] pricing works out to S$4.10/Mbps/mth[4]. With consumer pricing for "100Mbps" services at a level far below $3,110/mth[5], it is undeniable that there is oversubscription and therefore potential, if not actual, congestion in all networks. It therefore remains to be considered what measures ought to be allowable for management of this congestion.

3. **Artificial Constructions**. In the regulation of NN, it is does not follow that proscribing blocking will not result in an unfair preference for another Application[6]. Given that there is a premise of congestion, the prioritization of any Application ahead of others will result in the non-prioritized Applications not having available bandwidth and therefore effectively blocked to the extent that packets will be dropped[7] at times of congestion. We submit that this would be analogous to regulating pricing by stipulating that the declared List Price of an item must be available to all and sundry but at the same time allowing for discretionary discounts to be offered with narrowly constructed criteria. Notwithstanding the lacuna which allows for this, it is our contention that such a regime effectively allows for arbitrary pricing in spite of apparent proscription against it. Therefore, in the case of NN, it is submitted that prioritization and blocking must be considered together rather than as separate actions. Furthermore, it should not be permissible for a licensee to issue equivocal statements claiming that no blocking is imposed when in fact some Applications are prioritized because this results in other Applications being subject to high packet loss at network congestion points.

4. **Presentation Normalization**. Network management in some form or other must and will be executed by all licensees. It is therefore SuperInternet's opinion that regulatory effort would be best spent in developing a normalized form of information presentation as it relates to NN. If a normalized information matrix is enforced by regulation, the market can then make informed decisions as to which licensee from which to obtain services. Normalization of information presentation is furthermore typically well within the ambit of the powers frequently exercised by regulators in all sectors and it is submitted that the enforcement of normalized information presentation ought not to be repugnant to any save those which seek to maintain their positions through obfuscating the truth.

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[1] With the advent of the NGNBN, this converged service now includes Video in addition to voice and data. Video is particularly susceptible to network bandwidth management and this is another area of interest which drives our comments herein.
[2] Hard data is available upon request on the basis of a confidential cover.
[3] PB-EVC and QP-EVPL as defined in the NC ICO.
[4] $6,000/mth for 10Gbps QP-EVPL + $875/mth for 250Mbps CoS-D PB-EVC = $0.60 + $3.50 = $4.10
[5] 100Mbps of IP Transit + 100Mbps of Trunk capacity = US$2,000 + SGD$410 = $3,110 (based on USD rate of 1.35). Even taking into consideration some peering agreements and the fact that not all users utilize the subscribed bandwidth at the same time, it remains implausible that no congestion occurs at all for consumer based services retailing at $50/mth to $200/mth for "100Mbps".
[6] The term "Application" is used in this Response to collectively refer to a Layer 7 application or a site on the web offering a service or a particular IP address or autonomous system as appropriate to the specific context and in relation to the Application being the subject of network management.
[7] When an Application is subject to high packet loss, the practical usability is usually dismal.

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5.   **Nebulous Terminology**. In view of the above point relating to normalization of information presentation, SuperInternet seeks to bring to the fore specifically some terminology already being used today which have not been clearly defined:

   a.   **Local / International**. SuperInternet submits that "local" as it relates to bandwidth and IP transit cannot and does not practically mean any IP end-node physically located within the geographical island of Singapore. Factors affecting IP transit include peering arrangements, paid or otherwise, and therefore routing paths to and from the source and target nodes. As IDA would already be aware, IP traffic between nodes in Singapore connected to certain licensees traverse Hong Kong IX before returning to Singapore. Quare however whether in spite of so doing, the said bandwidth is nevertheless achievable, then does this not qualify as bandwidth to local a local node notwithstanding the traversal beyond Singapore to HKIX. An alternate framing of this issue would be to consider if stated local bandwidth means the amount of bandwidth available for local transit or the amount of bandwidth available to reach the end node regardless of path. This must be considered in relation to the current unfortunate fact that the cost of connecting locally to the incumbents is far higher than the cost of connecting indirectly to them by sending packets internationally and back. Consider also the highly plausible impending scenario where a new entrant, owing to the exorbitant cost of local connectivity via the incumbents, decides to connect only to global Tier 1 IP transit providers. This new entrant will still be completely reachable via IP from other nodes in Singapore connected to the incumbents but packets traverse the internet outside of Singapore before returning here. If the amount of bandwidth nevertheless available is provided, is this to be described as local or international bandwidth. Quare also if latency is to be introduced as a metric, then is it the responsibility of the source or the target to ensure an optimal path. As long as local peering is not the subject of regulation, it is submitted that the terminology "local" and "international" cannot properly be defined in the context of IP transit and reachability.

   b.   **Bandwidth "up to"**. As evident from the numerous articles in the press and posts on various discussion forums, bandwidth claims of "up to X Mbps" are unhelpful in allowing would-be subscribers make a decision as to the quality of the service offered. Instead, typical bandwidth achievable on a sustained basis should be cited with a prescribed methodology for arriving at the given values.

   c.   **Less than 90% of Capacity**. While IDA has stipulated that certain upstream trunks remain at less than 90% utilization, there is no measurement as to the packet loss occurring at that link. SuperInternet brings it to the attention of IDA that the introduction of network management devices before the measured links allows for any operator to show a less than 90% capacity usage with impunity.

6.   **Upstream Conformance and End-to-End Packet Handling**. NN as it relates to regulation of licensees can and must only relate to that licensee itself. Yet the end-to-end user experience for any Application is dependent on the network management policies of all the autonomous systems ("AS") traversed along the way. This conundrum makes for a challenging regulatory environment especially with the added consideration that an inappropriately defined metric may inadvertently imply non-existent extraterritorial jurisdiction. Specifically, a licensee cannot in fact guarantee the packet delivery and therefore bandwidth from end-to-end of any Application other than that which resides completely within its own AS. At most, a licensee can commit to delivering a packet to the first hop beyond its AS.

7.   **Summary Proposal and Conclusion**. Further to the points raised above, it is therefore SuperInternet's submission that NN is best handled not in a don't ask don't tell manner but rather the contrary. That is, a normalized information table showing network management policies and their results as related to the licensee's network should be developed and then enforced as part of the regulatory regime but the said regime should not otherwise dictate the network management policies of any licensee.

8.   For clarification on the issue raised, I can be contacted via any of the means listed in the address line below. Thank you.

Regards,

Benjamin T.P. Tan
Managing Director
SuperInternet ACCESS Pte Ltd