THE INTERNET PROTOCOL TRANSIT AND PEERING LANDSCAPE IN SINGAPORE

Submission by StarHub Ltd to the Info-communications Development Authority of Singapore

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1. StarHub Ltd ("**StarHub**") thanks the Info-communications Development Authority of Singapore (the "**Authority**") for the opportunity to comment on its review of the IP transit and Peering landscape in Singapore. StarHub's responses to the questions in the Authority's consultation paper are set-out below.

Question a:
The findings from the IDA study on the current market conditions in the Singapore Internet services market.

2. StarHub agrees with the Authority's study, which we believe is logical and balanced. We believe that it is important to provide further insights, from a StarHub perspective, on the current market conditions in Singapore.

3. As background, StarHub does peer locally with a variety of parties in Singapore (including content providers, foreign operators and other local companies). This peering takes place at multiple locations in Singapore (including at the Singapore Internet Exchange). As evidenced by the term, peering is a meeting between "peers", who exchange traffic on a mutually beneficial basis. StarHub is therefore always open to peer with other parties, where there is a commercial incentive to do so.

4. StarHub also purchases and sells IP transit services in the market. In terms of IP transit sales, we compete against a wide variety of players in the market, ranging from niche smaller players to tier one operators. Given the dynamic nature of Internet traffic, we do not foresee any situation where an operator (including any retail service provider ("**RSP**")) would be solely reliant on StarHub's IP transit services.

5. In terms of pricing, we have observed a significant decline in IP transit prices in recent years. We believe that intense competition will continue to exert downward pressure on IP transit prices. Nonetheless, we note that the pricing for IP transit services is highly dependent on volume. Larger players in the Internet space with larger volumes of traffic, will be able to purchase IP transit at a lower unit cost than smaller players. This is a fact of the IP transit market.

<u>Hong Kong Experience</u>

6. The study also makes several references to the situation in Hong Kong. Based on StarHub's own experience, we note that the market in Singapore is very similar to that in Hong Kong. It would be incorrect to state that either: (a) "all peering in Hong Kong takes place in the Hong Kong Internet Exchange"; or that (b) all peering in Hong Kong is free of charge".

7. Like Singapore, there are multiple locations within Hong Kong where peering takes place (not just at the Hong Kong Internet Exchange). IP transit (including local IP

transit) is also sold by multiple players in the market. We do note that there is more local content being generated in Hong Kong, and this provides certain players with additional bargaining power in their sale of IP transit services.

Question b:
Whether the current condition for IP Transit and Peering have resulted in any negative impact on competition, or if it has hindered the ability of ISPs, ICPs or CDNs to offer services?

8. StarHub has not observed any negative impact on competition in the market as a result of the current IP transit and peering conditions. In particular, as noted by the Authority's study, the downstream retail broadband market has been increasingly competitive since the introduction of the Next-Gen NBN in 2009. Since then, a large number of retail service providers ("**RSPs**") have entered the market. There is clear evidence that there are minimal barriers to entry into the retail broadband services market.

9. The competitiveness of the retail broadband market has been publicly acknowledged, with one RSP noting that "*local broadband prices have fallen by some 90%*", and that "[i]*n 2012, broadband connectivity cost 50 cents per Mbps. In 2013, that fell to 35cents. Last year, it was five cents. In 2013, the International Telecommunications Union ranked Singapore 14th globally for fixed broadband affordability. Today the country is ranked third*".[1]

Question c:
Whether the quality of ISPs' service offerings is negatively affected by today's IP Transit and Peering landscape?

10. We agree with the Authority's study, which indicates that the vast majority of local traffic is routed locally. In StarHub's experience, given the competitive pricing of IP transit services in Singapore, and the wide number of choices available in the market, there is very little reason why an RSP would choose to trombone traffic overseas before returning it to Singapore. To further improve their customers' service experience, RSPs also have the option of caching traffic on their own servers.

11. StarHub therefore does not believe that the quality of RSP's service offerings has been negatively impacted by today's market landscape. We note that this would be borne out by the statistics collected by the Authority's own National Internet Measurement Infrastructure tests.

[1] These quotes were attributed to MyRepublic in an article in The Edge on 23-March 2015 entitled "*ViewQwest, MyRepublic disrupt industry with new business models*".

Question d:
Whether the cost of IP Transit as a proportion of other operating costs has fallen, or has increased significantly for Operators?

12. As highlighted above, the charges for IP transit have fallen significantly over the past few years. In fact, one RSP has publicly noted that "*the cost of bandwidth is really a very small component in terms of the total cost of delivery*".[2]

13. An integral cost is also the local access charge involved in connecting to the IP transit provider's point of presence. On StarHub's part, we setup IP hubs in several carrier-neutral locations in Singapore. This makes it easier for parties to connect into StarHub's network (if they choose to do so directly).

14. Nonetheless, there is a real cost involved in providing IP transit services (including capacity and co-location costs), and this will continue to be reflected in overall IP transit prices. However, as shown by the Authority's study, IP transit services in Singapore are competitive within the region, and this is one of the factors which contribute to the low retail broadband pricing available in the market today.

Question e:
Whether there are other factors that IDA should consider in assessing the local IP Transit and Peering landscape?

15. We have reviewed the international landscape, and are unaware of any country that has mandated free peering of local traffic. In fact, we are aware of several recent cases where overseas regulators had reviewed the market, and chosen not to impose any regulatory measures. For example:

- In 2010, the Polish regulator had proposed to regulate IP peering traffic exchange with the incumbent broadband provider. However, this decision was overturned by the European Commission, which found that broadband providers in Poland were not restricted to taking IP transit services only from the incumbent, and that they could take services from other transit service providers;[3] and

- In 2014, the French courts ruled that the incumbent broadband provider did not abuse its dominant position by requiring payment in exchange for access to its network. Specifically, the French courts ruled that: (1) direct peering was not a

[2] This quote was attributed to ViewQwest in an article in The Edge on 23-March 2015 entitled "*ViewQwest, MyRepublic disrupt industry with new business models*". ViewQwest further noted that: "[t]*oday, international bandwidth costs are around US$2.50 ($3.48) per MB. Within the US, it is as low as 70 US cents. And because we've built our network up to Los Angeles and New York, we're able to buy bandwidth at much lower prices over there. And as we get more customers, our economies of scale improve*".

[3] See link: http://europa.eu/rapid/press-release_IP-10-240_en.htm?locale=en.

commercial bottleneck for access to the incumbent's customers; and (2) Internet peering and transit should be governed by individual negotiations.[4]

16. As evidenced above, even in countries where dominant retail broadband providers exist, regulators have found no compelling evidence to intervene in the IP transit and peering markets. Given that there is no dominant retail broadband provider in Singapore, there is even less reason for regulatory intervention.

Question f:
What are the possible areas in the local IP Transit and Peering landscape that would require regulatory intervention, and why?

17. StarHub believes that that the IP transit and peering market is dynamic and competitive. The number of parties we have chosen to peer with locally has increased over time, and we believe that this number will continue to increase going forward. Rather than regulation, we believe that peering must be driven by market forces.

18. We would therefore strongly disagree with any regulatory intervention in the local IP transit or peering markets. As highlighted above, the evidence clearly shows that these markets are competitive. Any move to regulate peering would create a significant disincentive for parties to source for and obtain more premium content within their networks, as such content would inevitably have to be shared, free of charge with all other local players. Such an outcome would be detrimental to Singapore's long-term position as a regional hub for telecommunications and content.

19. In fact, StarHub is a clear example of a player which had successfully entered the broadband market without regulated peering. StarHub grew from a zero market base in 2000, to one of the largest broadband providers on Singapore today. Given that the broadband market has become even more competitive since 2000, we strongly believe that there is even less reason for regulatory intervention at this stage.

20. Rather than regulatory intervention, we agree with the Authority's position that it should continue to promote Singapore's position as an important ICT hub in Asia, and in doing so, enhance Singapore's attractiveness to global and regional players. This will better serve the market and improve the service offerings to customers in Singapore.

[4] See link: http://www.lexology.com/library/detail.aspx?g=60a55d5b-6b61-45ad-9240-6d3b414ffbc0.