Hong Kong Broadband Network Limited

Preliminary Report on Service Degradation on Saturday 8 June 2019

1. **Introduction**

   This preliminary report is submitted by Hong Kong Broadband Network Limited ("HKBN") pursuant to its Unified Carrier Licence.

   The report summarizes the service degradation incidents on 8 June 2019, remedial action, root cause and communications with customers as well as OFCA.

2. **Incident Descriptions**

   The incidents occurred at around 02:21 (the "1st Incident") and 13:11 (the "2nd Incident") on Saturday 8 June 2019 when all the route processors kept resetting one by one in a pair of routers installed at HKBN's Central Offices (i.e. [✂   ]) with redundancy and resilience design. Affected customers experienced IP telephony service disconnection and intermittent connection to the Internet. HKBN NOC engineers performed trouble-shooting at once and notified Customer Services Department of the incidents for swift response to customer enquiries.

   Services were resumed at 06:51 and 13:50 respectively on the same day after the route processors became stable and safeguarding measures were implemented to the network.

3. **Services and Customers Affected**

   Fixed broadband service and IP telephony service were affected.

   Below is an estimation of the numbers of affected customers:-

	1st Incident	2nd Incident
Fixed broadband service customers	[✂]	[✂]
IP telephony service customers	[✂]	[✂]

4. **Event Log on 8 June 2019 on Incident and Recovery Action**

   1st **Incident**

Time	Event
02:21	NOC engineers observed multiple ping monitor fail records.
02:50	NOC engineers finished testing and confirmed service impacts.
03:05	NOC engineers escalated the case to senior management and vendor of the affected router ("Vendor") for investigation.
03:15	NOC senior engineers onsite joined the investigation.
03:33	Vendor onsite support joined the investigation.
03:46	NOC engineers performed hardware reset on the router at [✄].
04:10	NOC engineers performed hardware reset on the router at [✄].
04:38	Vendor R&D team conducted logging analysis.
05:50	The router at [✄] was stabilized after modifying some configuration which might trigger the router software instability as per Vendor's advice.
06:51	The router at [✄] was also stabilized after deploying the same measures as [✄]. The services were resumed.

   2nd **Incident**

Time	Event
13:11	The services became unstable again.
13:15	Vendor R&D team checked the error logs of the router at [✄].
13:50	The router at [✄] was shut down. The services were resumed.

5. **Remedial Action**

   NOC engineers and Vendor support diagnosed that the incidents were caused by the fact that master/slave main control board switchovers by the AS-Path attribute processed was too long to handle. Services were resumed to normal after applying as-path-limit command for discarding the abnormal AS-Path announcement.

6. **Root Cause**

   The incidents were caused by the switchovers of all main control boards arisen from an abnormally long AS-PATH received from upstream.

7. **Communications with Customers on 8 June 2019**

   ▪ HKBN deployed more manpower to the Customer Services hotline to handle customer enquiries.

- 08:08 - HKBN put up announcement on its Facebook to inform customers of the incidents and service resumption.

- 17:34 - HKBN put up an announcement about the incident on hkbn.net website to inform customers of the incident and service resumption.

- 18:12 – HKBN put up an announcement on its corporate services landing page to inform customers of the incident and service resumption.

8. Communications with OFCA on 8 June 2019

- 08:24 – Telephone call was made to OFCA and notified OFCA that Internet access and IP telephony services were affected, and services were already resumed at 06:51.

- 14:09 – Informed OFCA of the 2nd incident and the relevant services were resumed at 13:50.

- 17:07 – Updated OFCA that NOC has rectified the problem and network was returned to normal and HKBN would keep close monitoring.

9. Conclusion

HKBN regrets the incidents that have caused service impacts to its valued customers and concerns to OFCA. HKBN will work with the Vendor R&D team closely on the root cause for the improvement and preventive plan.

Submitted by Hong Kong Broadband Network Limited.
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