

Preliminary Report

**A Temporary Mobile Data Service
Degradation on 22 January 2014**

INTRODUCTION

This is a report by Hutchison Telephone Company Limited to the Office of the Communications Authority on an incident relating to a temporary mobile data service degradation which occurred on 22 January 2014.

NAME OF OPERATOR

Hutchison Telephone Company Limited (“HTCL”)

DESCRIPTION OF INCIDENT

Preliminary investigation indicated the incident was very likely triggered by malfunction of a network switch device. The datapath system in HTCL follows highly resilient design rules. The system comes with capabilities of equipment failover within a single site as well as failover across two sites. Similar design is commonly used by other service providers in Hong Kong. The vendor of the network switch device is now conducting the root cause analysis. According to the vendor, this was a very rare case and the analysis is complex and will take long time to complete.

DATE AND TIME OF ONSET OF THE INCIDENT

As confirmed by call test, it was found that the service started to degrade at around 22:00, 22 January 2014.

TYPES AND ESTIMATED NUMBER OF CUSTOMERS AFFECTED

The incident affected the following types of internet traffic:

- 1) Some of the handset might fail to access internet after switching off and on
- 2) Some of the internet traffic which requires domain name resolution, such as web browsing and email, were affected.
- 3) Some of the internet traffic was unstable, which caused by one of the suspected core switches.

It is estimated that the total number of affected customers was less than 200,000.

AFFECTED AREAS

Various locations in Hong Kong

DETAILS OF THE INCIDENT

Time Tasks Description

Time	Task Description
22 Jan 2014	
21:53	Operation Centre received alarms on data path core switches and Accounting Server.
21:55	Operation Centre escalated to 2 nd tier network support team for investigation, then shared the alarm information with them.
22:00	As confirmed by call test, it was found that the service started to degrade
22:05	2 nd tier network support team couldn't remote access the core switch and arranged network engineer on site support
22:20	Accounting Server was confirmed to be working normally.
22:45	Network support team arrived on site and found that the faulty data switch had no response on console
22:52	Network Operation Centre received enquiry from OFCA and reported to OFCA that the case was under investigation.
23:00	The suspected core switch was switched over and service started to resume.
23:30	It was found high loading on Accounting Server and the application was restarted manually to relieve the loading.
23:38	The remedial action was completed
23 Jan 2014	
00:30	The service was totally resumed

ROOT CAUSE ANALYSIS

One of the data switches was found faulty in the course of troubleshooting. The faulty hardware was the supervisor module of Core Switch. Preliminary investigation indicated the incident was very likely triggered by malfunction of this device. Please also see "Description of Incident" above.

REMEDIAL ACTION TAKEN

The suspected core switch was switched over at 23:00, and the degraded service started to resume. The remedial action was completed at 23:38. The service was totally resumed at 00:30.

COMMUNICATIONS WITH THE PUBLIC

At about 00:30 (23 January, 2014), a statement (in both Chinese and English) was emailed to internal and frontline staff for handling media, customer and public enquiries. The statement made it clear that the incident had only affected the data service of HTCL. It also included information on time of onset of the incident, time of service resumption and apologies to the public.

HTCL communicated with customers, the media and the general public via the following channels immediately after service degradation had been identified.

- 1) Facebook and 3HK Website: The holding statement was posted on HTCL's official Facebook and its website at www.three.com.hk as a pop-up at 00:50 and 00:55 on 23 January 2014 respectively.
- 2) Customer hotline: The holding statement was posted on the hotline's Interactive Voice Response System ("IVRS") as a pop up voice message at 02:15 on 23 January 2014. HTCL pulled together all necessary manpower at the call centre to cope with the surge in customer enquiries. Replies to customer enquiries were based on the holding statement after it was released.
- 3) Email: For corporate customers with pre-arrangement on outage notification, an email to update incident status was sent.
- 4) Media: The statement was sent to the media to inform the press on the investigation and findings of the incident at about 00:52 (23 January). HTCL had been calling the media to follow up with further enquiries.

IMPROVEMENT MEASURES

While our vendor is investigating the root cause of failure of the core switch and the long term solution, we immediately formulated and implemented a set of interim preventive measures including the following:

- 1) Vendor has been requested to perform health checking on all similar data switches to ensure all hardware is under good condition.
- 2) Vendor should review the current alarm detection mechanism to make sure alarm can be fired promptly for the event.