

Incident Report

**A temporary 3G Mobile Data Service
Degradation on 29 June 2012**

INTRODUCTION

This is a report by Hutchison Telephone Company Limited to the Office of the Communications Authority on an incident relating to a temporary 3G mobile data service degradation occurred on 29 June 2012.

We consider that our extensive telecommunications network infrastructure is of utmost importance in our services to the consumers. We, on a daily basis, strive for continuous improvements in our network infrastructure. This report is part of such extensive and continuous effort. In this report, we cover a number of areas including a description of the incident, issues relating to our customers and urgent remedies immediately undertaken. This report is based on the information available to us to date.

NAME OF OPERATOR

Hutchison Telephone Company Limited (“HTCL”)

DESCRIPTION OF INCIDENT

Commencement of a temporary degradation of 3G mobile data service was found to be caused by a software bug in one of the IP network routing components, which is responsible for, among others, (i) IP assignments of new mobile data connections and (ii) IP-MSISDN mapping to other platforms in our 3G network.

DATE AND TIME OF ONSET OF THE INCIDENT

Around 11:00, 29 June 2012

TYPES AND ESTIMATED NUMBER OF CUSTOMERS AFFECTED

Around 40,000 to 50,000 of our 3G mobile data customers were affected.

AFFECTED AREAS

Various locations in Hong Kong

DETAILS OF THE INCIDENT

Time	Tasks Description
11:05	HTCL's Network Operations Centre ("NOC") detected alarms in one of the IP network routing components, namely "AAA Server". The component is responsible for (i) IP assignments of new mobile data connections and (ii) IP-MSISDN mapping to other platforms in our 3G network. The problem was immediately escalated to our vendor for inspection.
11:05 - 12:45	<ul style="list-style-type: none">• The degradation of our 3G mobile data service became apparent. Our records reveal that whilst our 3G mobile data users who had been using our 3G mobile data service before 11:00 were not affected during the period, only those users who requested a new mobile data session after 11:00 were intermittently experiencing difficulty in accessing our 3G mobile data service.• Support engineers had performed immediate recovery action but the problem still persisted throughout the period.• All other 3G mobile services such as voice and SMS remained unaffected.
12:00	HTCL NOC communicated with OFCA that there was some mobile data service degradation.
12:45	As service degradation in the AAA Server still persisted, HTCL decided to bypass the AAA Server so as to recover the 3G mobile data service first.
13:00	HTCL informed OFCA that there was proven instability of our 3G mobile data service.
13:15 – 13:55	The bypass of AAA Server action was completed. 3G mobile data service started to resume gradually during the period.

ROOT CAUSE ANALYSIS

According to our findings, the temporary service degradation was caused by a bug in the software of the AAA Server, resulting in the reduction of the number of unallocated IP addresses in the IP Pool. As a result, when there was new attempt of IP allocation from 3G mobile data users, no IP address was available for allocation to the users. Thus the request of the relevant 3G mobile data users was rejected if such users hit the affected IP Pool.

REMEDIAL ACTION TAKEN

HTCL, fully and immediately supported by its vendor, promptly started the remedial action at 12:45 on 29-June 2012 to bypass the AAA Server, for the purpose of enabling the 3G GGSN to take up the role to assign IP addresses to the 3G mobile users.

The action was completed at 13:15 and the degraded service started to improve gradually. Mobile data service resumed normal at 13:55.

COMMUNICATIONS WITH THE PUBLIC

Three holding statements, in both Chinese and English, were prepared and emailed to internal and frontline staff for handling media, customer and public enquiries.

At about 13:30, the first holding statement giving initial information on the incident, such as time of onset of the incident and affected services, was sent.

At about 14:30, the second holding statement on service resumption at 14:00 and apologies to the public was sent.

At about 19:00, the third holding statement giving details on the number of customer enquiries and complaints received were sent. To counter the misleading information on some discussion forums, the statement also made it clear that the incident had only affected the 3G mobile data service of HTCL. Its 2G and 4G mobile data service remained normal.

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 first and second holding statements were posted on HTCL's official Facebook and its website at www.three.com.hk as a pop-up at 14:00 and 15:00 respectively.

- 2) Retail outlets: Frontline staff posted a special notice, based on HTCL's second holding statement on service resumption, at prominent areas in all 3Shops to help inform and update customers.
- 3) Customer hotline: HTCL pulled together all manpower at the call centre to cope with the surge in customer enquiries. Replies to customer enquiries were based on the three holding statements.
- 4) SMS: A text message was sent to corporate customers who called respective sales representatives for enquiries on the incident in the initial stage. An email, containing the second holding statement on service resumption, was sent to update affected corporate customers.
- 5) Media: The three holding statements were sent to the media to update the press on the latest development of the incident. During the incident and after 19:00, HTCL had been calling the media to follow up with further enquiries.

IMPROVEMENT MEASURES

We strongly demanded our vendor to provide a permanent fix for the identified software problem as soon as possible, but in any event within a period of four weeks after the incident. We also immediately formulated and implement a set of interim preventive measures including the following:

- 1) Recovery procedure has been prepared to clean up the cached IP address in case problem occurs.
- 2) Special procedures are also ready to monitor the number of cached IP address online.
- 3) Vendor shall provide 7x24 special and intensive support in respect of the AAA Server and will apply corrective actions if an unusual increase in the number of cached IP addresses is detected in the future.