

**FINAL DECISION OF  
THE COMMUNICATIONS AUTHORITY**

**DISRUPTION OF THE TELECOMMUNICATIONS SERVICES  
OF CSL LIMITED**

<b>Telecommunications Licensee Investigated:</b>	CSL Limited (“CSL”)
<b>Issue:</b>	There was a disruption of the telecommunications services of CSL on 13 May 2013
<b>Relevant Instruments:</b>	General Condition (“GC”) 5.1 of CSL’s Unified Carrier Licence (“UCL”) No. 008
<b>Decision:</b>	No breach of GC 5.1 of CSL’s UCL No. 008
<b>Sanction:</b>	N/A
<b>Case Reference:</b>	LM T 32/13 in OFCA/R/R/134/2 C

**BACKGROUND**

At around 10:10 pm on 13 May 2013, CSL reported to the Office of the Communications Authority (“OFCA”) that there was an outage of its Radio Network Controller (“RNC”)<sup>1</sup> serving the Shatin, Tai Wai, Ma On Shan and Tai Po districts, resulting in disruption of the 2G and 3G mobile services of CSL (including voice services, short message services (“SMS”) and data services) in those districts. OFCA activated the Emergency Response System<sup>2</sup> immediately and kept in close contact with CSL to monitor the situation.

---

<sup>1</sup> RNC is a critical element in the 3G mobile network responsible for controlling the mobile base stations (i.e. radio cell sites). There are a total of [ 8 ] RNCs operating in the 3G mobile network of CSL.

<sup>2</sup> Emergency Reporting System is the communication arrangement for maintaining contacts among OFCA and all the major public telecommunications network service operators when there is a risk of possible network congestion problem or network outage which may affect the general public.

## THE SERVICE DISRUPTION

2. According to CSL, at 10:10 pm on 13 May 2013, its network operations centre (“NOC”) observed that the RNC serving the Shatin, Tai Wai, Ma On Shan and Tai Po districts was not functioning properly. Due to the malfunction of the RNC, CSL’s customers in the Shatin, Tai Wai, Ma On Shan and Tai Po districts were not able to use the 3G mobile services of CSL (including voice services, SMS and data services) for about 110 minutes during the period from 10:10 pm on 13 May 2013 to 00:00 am on 14 May 2013. The failure of the RNC in question also triggered the upsurge of traffic into CSL’s 2G mobile network and resulted in traffic congestion, as customers with 2G/3G dual-mode handsets in the affected districts switched to use CSL’s 2G mobile services during the outage period. According to CSL, around 20 000 customers of CSL (representing about 0.57% of its customer base)<sup>3</sup> were affected. CSL emphasized that its 4G mobile services remained normal during the same period.

## OFCA’S INVESTIGATION

3. OFCA has conducted an investigation into the incident, to –
- (a) examine whether CSL had breached GC 5.1 of its UCL No. 008, which specifies that –  
  

*“5.1 The licensee shall, subject to Schedule 1 to this licence and any special conditions of this licence relating to the provision of the service, at all times during the validity period of this licence operate, maintain and provide a good, efficient and continuous service in a manner satisfactory to the Authority...”*; and
  - (b) review the cause of the incident and the responses of CSL to the incident (including the communication with OFCA, customers and the media, and the efficiency of service restoration etc.) to examine whether there are any areas requiring CSL to make improvements.

---

<sup>3</sup> According to the 2012 Annual Report of Telstra Corporation Limited (i.e. the parent company of CSL), CSL has a total of 3.5 million customers.

4. In the course of OFCA's investigation, CSL submitted to OFCA a preliminary report<sup>4</sup> on 16 May 2013 and a full report<sup>5</sup> on 4 June 2013. OFCA has carefully examined the two reports. As part of the investigation, OFCA has also examined the 17 consumer complaints it received concerning the incident. The complaints were mainly about customers' dissatisfaction of the service disruption and the difficulties in reaching CSL's customer hotline during the disruption period. OFCA has not received any complaint from the media against CSL regarding the incident.

5. OFCA completed its investigation and submitted its findings to the Communications Authority ("CA") on 11 September 2013. Having considered the findings of OFCA, the CA issued its Provisional Decision to CSL on 16 September 2013 and invited CSL to make representations. CSL submitted its representations to OFCA on 30 October 2013.

## **Issues Examined During the Investigation**

### The Cause of the Incident and Adequacy of CSL's Preventive Measures

6. According to CSL, the incident was caused by a software bug which appeared during the performance of software upgrade for the RNC serving the Shatin, Tai Wai, Ma On Shan and Tai Po districts. The problematic software corrupted the system configuration of the RNC in question, rendering it unable to communicate with the mobile base stations connected to it. As a result, CSL's customers located in the Shatin, Tai Wai, Ma On Shan and Tai Po districts were not able to use the 3G mobile services of CSL during the period from 10:10 pm on 13 May 2013 to 00:00 am on 14 May 2013. The incident had also triggered the upsurge of traffic into CSL's 2G mobile network and resulted in traffic congestion in those districts. CSL emphasized that 4G mobile services were not affected, probably due to the relatively low utilization of the 4G mobile networks and the fact that the use of 3G/4G dual-mode handset is not yet very popular for the time being.

---

<sup>4</sup> The preliminary report of CSL may be downloaded from OFCA's website at [http://www.ofca.gov.hk/filemanager/ofca/en/content\\_723/csl\\_report\\_20130516.pdf](http://www.ofca.gov.hk/filemanager/ofca/en/content_723/csl_report_20130516.pdf).

<sup>5</sup> The full report of CSL may be downloaded from OFCA's website at [http://www.ofca.gov.hk/filemanager/ofca/en/content\\_723/csl\\_report\\_20130516\\_full.pdf](http://www.ofca.gov.hk/filemanager/ofca/en/content_723/csl_report_20130516_full.pdf).

7. CSL reported that all of its RNCs were supplied by ZTE Limited (“ZTE”). The RNC which caused service disruption in this incident has been put into service since November 2012. Before it was commissioned, CSL had conducted full functional test and system acceptance test to verify its stability and confirmed that it was compatible with CSL’s networks. CSL also said that it had endeavoured to ensure the stability and reliability of all RNCs after they were put into service. CSL had regular maintenance and health checking arrangements for the RNCs which were equipped with the most up-to-date software.

8. CSL also emphasized that, before the implementation of software upgrade for the RNC in question, it had verified the software upgrade procedures in its testing laboratory and no abnormality was found. ZTE explained that such kind of problem only arose under special circumstances, and confirmed that the software bug discovered in this incident had never been found in Hong Kong or any where else in the world before. To prevent similar incidents from recurring in the future, CSL submitted that –

- (a) ZTE would develop a fix to resolve the software bug, which will be installed in CSL’s network by October 2013; and
- (b) CSL would commission new procedures to control the volume of traffic overflowing to its 2G mobile network, to prevent it from being overloaded in the event of 3G mobile network outage.

#### *OFCA’s Assessment*

9. OFCA recognizes that it is not uncommon for software bugs to exist in a computer programme. As a user of the RNC supplied by ZTE, OFCA considers that CSL has acted reasonably to ensure that the RNC had been fully tested before it was put into service. Besides, CSL has strived to ensure the software of the RNC is up-to-date and there are also regular maintenance and health checking procedures in place to ensure the proper functioning of the RNC. As the RNC (including hardware and software) was supplied by ZTE and CSL is just a user of it, OFCA considers that the service disruption was caused by circumstances beyond CSL’s control.

10. OFCA notes that, to safeguard against the outage of RNC, CSL has made provision for backup arrangement. CSL has a full set of backup files prepared for the RNC systems in advance. The backup files enabled CSL to restore the RNC within a reasonable period of time in this incident.

11. In conclusion, having examined the cause of the incident and the preventive measures taken by CSL, OFCA accepts that the outage of the RNC was due to circumstances beyond CSL's control. OFCA is also satisfied that CSL has taken reasonable preventive measures to ensure the healthiness and stability of its RNC and made provision for backup arrangement (i.e. the maintenance of a full set of backup files for RNC system in advance) to prepare for possible RNC failure.

#### Time and Actions Taken by CSL to Restore Services

12. CSL submitted that, shortly after its NOC had observed that there was an outage of the RNC serving the Shatin, Tai Wai, Ma On Shan and Tai Po districts at 10:10 pm on 13 May 2013, the problem was escalated to its support engineers and vendor for investigation. In response, CSL's support engineers had attempted to restore the RNC by carrying out a hardware and software reset but to no avail. The RNC could not take up traffic as normal.

13. At 10:40 pm (i.e. around 30 minutes after the outage occurred), ZTE's engineers identified the cause of the problem and confirmed that a part of the RNC's system configuration was corrupted. To recover the RNC, at around 10:50 pm, ZTE's engineers started to restore the corrupted system configuration with the backup files, and the problematic RNC restarted gradually. All affected mobile base stations resumed operation at 00:00 am on 14 May 2013.

#### *OFCA's Assessment*

14. OFCA notes that, once CSL was alerted to the malfunction of the RNC, it immediately escalated the matter to its vendor, ZTE, and had been working closely with ZTE to resolve the problem. OFCA also notes that CSL attempted to restore the RNC by rebooting it but was not successful. Once the cause of the problem was identified, CSL took a decisive move to restore the RNC with the backup files and managed to complete the restoration process within a reasonable timeframe. The service disruption

had lasted for around 110 minutes. OFCA notes that CSL was able to recover the RNC within a reasonable timeframe because it had put in place proper procedures for the maintenance of backup files, which enabled CSL to effectively shorten the service restoration time and minimize the impacts on customers.

15. Overall speaking, OFCA considers that CSL has put in place an emergency plan to cater for the failure of RNC, and the time and actions taken by CSL to restore the services are satisfactory.

#### CSL's Communication with OFCA over the Service Disruption

16. According to the "Guidelines for Cable-based External Fixed Telecommunications Network Services Operators and Internet Service Providers for Reporting Network and Service Outages" issued on 19 July 2011 (the "Guidelines"), a network operator is required to report to OFCA in the event of network outage or service outage. The Guidelines also specify that in the event of any degradation of broadband services or failure of critical components affecting 10,000 or more users for more than 45 minutes, the network operator concerned is required to report the outage to OFCA within one hour from the occurrence of the outage if the outage occurs on weekdays between 8:30 am to 1:00 am of the next day.

17. The malfunction of CSL's RNC occurred from 10:10 pm on 13 May 2013 to 00:00 am on 14 May 2013 (a weekday). Pursuant to the Guidelines, CSL should notify OFCA of the outage by 11:10 pm. According to OFCA's records, CSL notified OFCA of the incident at 11:06 pm on 13 May 2013. After the affected services resumed normal at 00:00 am on 14 May 2013, CSL informed OFCA at 00:03 am.

#### *OFCA's Assessment*

18. OFCA notes that CSL has notified OFCA of the incident within the timeframe stipulated in the Guidelines and kept OFCA updated of the progress of its restoration works during the period of service disruption. As CSL has complied with the requirements stipulated in the Guidelines and has been cooperative and responsive to OFCA's enquiries about the service disruption, OFCA considers that the manner in which CSL handled its communication with OFCA throughout the period of service disruption is satisfactory.

## CSL's Communication with Customers and the Media

19. According to CSL, it notified customers of the incident through the following channels –

- (a) once it became aware of the service disruption, CSL immediately notified its frontline staff (i.e. including the retail staff and the hotline staff) of the details of the incident to enable them to answer customer inquiries with updated information;
- (b) at 00:45 am on 14 May 2013, a SMS message was sent to the affected customers who had called the hotline enquiring about the incident to inform them the affected services had resumed normal;
- (c) at 10:00 am on 14 May 2013, a notification was posted at CSL's website. A statement was also issued to the media informing them of the details of the incident; and
- (d) at 11:00 am on 14 May 2013, a message was posted on its customer service page on the Facebook to notify customers of the incident.

### *OFCA's Assessment*

20. OFCA notes that, once CSL became aware of the service disruption, it immediately notified its frontline staff (i.e. including the retail staff and the hotline staff) of the details of the incident to enable them to answer customer inquiries. However, it had not made any notification directly to customers during the period of service disruption. CSL's notifications to customers were made after the service disruption was over by SMS, in CSL's customer service page on the Facebook and on CSL's website respectively.

21. OFCA considers that CSL should notify its customers and the media of the service disruption as early as possible (e.g. around the time when it notified OFCA at 11:06 pm on 13 May 2013) as an early public notification could help alleviate customer concern and grievances. CSL

should consider making improvements in the dissemination of information to customers during the period of service disruption, in addition to the current arrangement of relying on the frontline staff to disseminate the news of service disruption to customers. In this regard, OFCA had received complaints from the public alleging that they had tried to call CSL's hotline during the outage period but could not get through to any CSL staff.

22. Overall speaking, OFCA considers that the arrangement made by CSL in notifying its customers and the media of the service disruption was only marginally satisfactory. CSL is advised to improve its internal procedures to ensure more timely dissemination of information to its customers and the media in the event of service disruption in future.

## **THE CA'S CONSIDERATION AND DECISION**

23. After examining the facts of the case, the assessment of OFCA and the representations of CSL, the CA considers that CSL has –

- (a) taken reasonable preventive measures to ensure the proper operation of the RNC. The service disruption was caused by circumstances beyond the control of CSL;
- (b) taken expeditious actions to identify the cause of the problem and restored the affected service within an acceptable timeframe;
- (c) reported the service disruption to OFCA within the timeframe stipulated in the Guidelines and cooperated with OFCA during the service disruption period; and
- (d) notified its customers and the media of the service disruption in a satisfactory manner albeit marginally, and in this regard, CSL is advised to improve the arrangement to ensure more timely dissemination of information to its customers and the media in the event of service disruption in future.

24. In conclusion, the CA considers that CSL has not breached GC 5.1 of its licence which requires it to provide a good, efficient and continuous service in a manner satisfactory to the CA.

## **IMPROVEMENT MEASURES**

25. Notwithstanding the finding of no breach by CSL of GC 5.1 of its UCL No. 008, the CA considers that CSL should closely monitor the implementation of the improvement plans proposed in paragraph 7(a) and (b) above and ensure timely completion, in order to prevent similar incidents from recurring in the future. In addition, the CA also suggests that CSL should review its internal procedures to ensure more timely dissemination of information to its customers and the media in the event of service disruption.

**The Communications Authority**  
**November 2013**