

Case Reference	R/E/I/102
Title	Service Difficulty – SingTel’s Mio Voice Service Incident (“ Service Difficulty Incident ”)
Case Opened	7 June 2012
Case Closed	31 January 2013
Complainant	IDA initiated this proceeding pursuant to the Code of Practice for Telecommunication Service Resiliency (“ Code ”)
Respondent	Singapore Telecommunications Ltd (“ SingTel ”)
Case Summary	<p>On 7 June 2012, a Service Difficulty Incident occurred in SingTel’s fixed line network, which caused some SingTel end users to experience disruptions to their fixed line telephone (mio Voice) services. At least 500 subscriber lines were affected. The Service Difficulty Incident lasted for a total duration of 22 hours and 23 minutes, including the time taken to re-enable the mio Voice service on the affected residential gateways (“RGs”) for end-users.</p> <p>At approximately 4.30pm on 7 June 2012, there was a power interruption which affected a data communication switch in the western node. This caused the Domain Name Service (“DNS”) connection between this node and its mate node in the east to fail, which resulted in both the DNS nominating themselves as the “master” DNS, instead of one (1) DNS being on “stand-by” mode. For the avoidance of doubt, it is possible for both DNS to be on “master” mode, and this in itself did not cause the service disruption.</p> <p>The power was restored at 4.35pm and the connections recovered at 4.37pm which automatically corrected the “master”/“stand-by” relationship of the DNS. However, during this two-minute window, there were changes in the states of the DNS interface and DNS application. When the IP router in the eastern zone queried for the DNS IP address, both DNS replied. Due to the proximity of the eastern DNS to the eastern IP router, its reply arrived first but was subsequently overwritten by the reply from the western DNS. As a result, the eastern IP router continued routing DNS queries to the western DNS even though it had reverted to “stand-by” mode following the power restoration, and ceased responding to DNS queries. This continued until 4.57pm when the eastern IP router received the correct DNS IP address from the eastern DNS.</p> <p>Although all connections and routing had been normalised at</p>

	<p>4.57pm, mio Voice end-users using a particular RG model continued to experience service difficulties as the RG would stop trying to resend DNS queries to the router after three (3) failed attempts, and the mio Voice service would be disabled. For these end users, the mio Voice service could be restored by re-enabling the service in the RG, or by rebooting the RG.</p> <p>To minimise the impact of the Service Difficulty Incident, SingTel wrote a new software script to remotely re-enable the mio Voice service on the RG for these end users. SingTel also activated an IVR message on its hotline to advise end users to reboot their RGs if they experienced service difficulties.</p> <p>Following the Service Difficulty Incident, SingTel carried out a firmware upgrade for the affected RG model to remove the feature which disables the mio Voice services after three (3) failed attempts. SingTel also replaced the single power module at the western node with a dual power module LAN switch.</p>
<p>IDA's Determination</p>	<p>SingTel would be in breach of the Code for any service difficulty incident that exceeds one hour and affects an aggregate of 500 or more local fixed line telephone subscriber lines. It would not be a breach of the Code if SingTel can establish to the satisfaction of IDA that the occurrence of the Service Difficulty Incident was not within its control and occasioned through no fault on its part.</p> <p>In this case, IDA considered the RGs as being within SingTel's control as SingTel had prescribed the RGs to its end users for the provision of its mio Voice service, and SingTel therefore had the ability to set and test the parameters/configurations required for service provisioning/maintenance. In addition, SingTel was able to carry out remote firmware upgrades after the Service Difficulty Incident, and was able to develop a script to remotely re-enable the mio Voice service during the Service Difficulty Incident. Therefore, the fact that it was the customer premises equipment that prolonged the service difficulty does not automatically mean that the occurrence of the incident was beyond the licensee's control and occasioned through no fault on its part. Nonetheless, IDA is mindful of the potential limitations faced by licensees where service difficulties are caused by customer premises equipment, in particular those equipment that are not issued by the licensees but are purchased by the end users themselves from third parties.</p> <p>Notwithstanding the above, IDA notes that SingTel had designed its mio Voice network with full geographical</p>

redundancy, and had put in place reasonable power redundancy, in the form of the UPS and commercial power supply.

IDA further notes SingTel's explanation that it had required its vendor to ensure that the RGs comply with the relevant technical standards, which SingTel had verified through its own independent testing on key specified parameters. On this point, as each licensee's network design and systems are unique, IDA would expect each licensee to ensure that adequate and/or additional testing is carried out to ensure compatibility and resiliency of the equipment based on their network design and system characteristics. Nonetheless, IDA accepts SingTel's explanation that it was not aware that a certain RG model would stop trying to resend DNS queries to the router after three failed attempts, which prolonged the service recovery. The relevant technical standard also does not specify the DNS retry mechanism. In the premises, IDA is satisfied that SingTel had taken reasonable measures to ensure that the RGs complied with the relevant technical standards prior to deploying them in its network.

Finally, IDA considered SingTel's actions to write and activate the script positively for this Service Difficulty Incident, as it demonstrates pro-active steps taken by SingTel to assist end users to minimise the effects of the service disruption and to expedite its resolution.

In view of the above, IDA determined that SingTel was not in breach of the Code for this Service Difficulty Incident.