Case Reference	R/E/I/095
Title	Service Difficulty – M1's Mobile Service Disruption on 18 May 2011 ("**Service Difficulty Incident**")
Case Opened	18 May 2011
Case Closed	10 November 2011
Complainant	IDA initiated this proceeding pursuant to the Code of Practice for Telecommunication Service Resiliency ("**Service Resiliency Code**")
Respondent	M1 Limited ("**M1**")
Case Summary	On 18 May 2011, a service difficulty incident occurred in M1's network which caused a number of M1's mobile users to experience difficulty in making and receiving calls, and in accessing short message service, multimedia messaging service and mobile data services. Based on IDA's investigation, IDA found that the Service Difficulty Incident lasted for a total of 12 hours, from 7.30am to 7.30pm. According to M1's estimate, about 44,400 subscribers in the western region of Singapore were affected. M1 reported that due to the unique nature of the service incident, no alarms were triggered. IDA's investigation revealed that the Service Difficulty Incident was caused by a hardware fault in one of the hardware cards for the Signalling Relay Function[1] ("**SRF**") used for number portability. This resulted in signalling link congestion in the Signalling Link Sets[2] at one of M1's Home Location Registers[3] ("**HLRs**"), which prevented successful authentication of some end users. As a consequence, affected end users were not able to access their mobile services and experienced intermittent connections and/or lost signals in the western part of Singapore.

[1] The SRF system is the routing function required to send routing inquiry for determining whether the subscriber has ported out of the operator's network, based on the subscriber's identifier or telephone number. The SRF system is necessary to implement Mobile Number Portability and all signaling access to Home Location Registers and Mobile Switching Centres that involves mobile numbers would need to be routed via the SRF system. The SRF system is used worldwide to implement Number Portability based on All-Call-Query (as opposed to Indirect Routing where calls for ported numbers are still routed to a Donor network).

[2] The Signalling Link Sets is a set of signalling channels that connects to the same adjacent Signalling Point in the SRF system and provides a level of redundancy and load sharing between two signalling nodes.

[3] The HLR is a central database that contains details of each subscriber who is authorized to use the operator's GSM core network. The HLR stores details of every SIM card (i.e., the IMSI which is a unique identifier of each SIM card) issued by the operator. The HLR manages the mobility of subscribers by means of updating their position in administrative areas called 'location areas'. The action of a user of moving from one location area to another is followed by the HLR with a location area update procedure.

	As there was no alarm indicating that the hardware card in the SRF was faulty, M1 had focused the service restoration activities at the key network elements (e.g., Mobile Switching Centre[4] ("**MSC**")) that handles and processes customer's mobile services. M1 further undertook steps to alleviate the traffic load M1's on the HLR, which allowed M1 to eventually trace the cause of the Service Difficulty Incident to a hardware fault in the SRF. M1 replaced the faulty hardware and all services were restored by 7.30pm.
IDA's Determination	M1 would be in breach of the Service Resiliency Code for any service difficulty that exceeds a duration of one hour and affects an aggregate of 5% or more of its base stations. It would not be a breach of the Service Resiliency Code if M1 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. In this case, IDA found that the Service Difficulty Incident was caused by a failure of the hardware card and that the hardware fault was not within M1's control and not occasioned through any fault on M1's part. However, while IDA accepted that M1 was not responsible for the cause of the Service Difficulty Incident, IDA determined that there was undue delay by M1 in the restoration of the services. In this instance, IDA found that M1 had failed to put in place an effective contingency plan to ensure that the faults in its SRF could be detected, attended to and resolved as expeditiously as possible. As such, IDA was not satisfied that M1 had resolved the Service Difficulty Incident expeditiously or had put in an effective contingency plan to ensure that the Service Difficulty Incident could be detected and resolved early. In view of the above, IDA therefore determined that M1 was in breach of the Service Resiliency Code. In determining the appropriate amount of financial penalty to be imposed on M1, IDA took into account all relevant facts, including the following mitigating factors such as precautionary measures to prevent the recurrence of similar service difficulties and M1's efforts to compensate end users. Taking into consideration all of the above, IDA imposed a financial penalty of **S$300,000** on M1 for its contravention of the Service Resiliency Code. On 24 November 2011, M1 submitted an appeal to the Minister for

[4] The MSC is responsible for routing voice calls and short messaging service between end users' handsets and the mobile network.

	Information, Communications and the Arts on IDA's decision. On 15 June 2012, the Minister issued his decision to uphold IDA's decision.