

Case Reference	R/E/I/126
Title	Singtel's Service Difficulty Incident on 17 November 2015 (" Incident ")
Case Opened	17 November 2015
Case Closed	20 December 2016
Complainant	IMDA initiated this proceeding pursuant to the Code of Practice for Telecommunication Service Resiliency 2008
Respondent	Singapore Telecommunications Ltd (" Singtel ")
Case Summary	<p>On 17 November 2015, there was a disruption to Singtel's Home Digital Line ("HDL") services, which affected 7,394 subscribers in Ang Mo Kio for 5 hours and 10 minutes, from 0820hrs to 1330hrs. The affected subscribers were not able to make or receive calls.</p> <p>The Incident was triggered during a planned upgrade by Singtel of its Optical Line Terminals ("OLTs"), where a LAN switch connected to its Dynamic Host Configuration Protocol ("DHCP") servers for HDL services, activated a DHCP protection mechanism to cap a surge in DHCP traffic following the upgrade of multiple OLTs.</p>
IMDA's Determination	<p>IMDA's investigation revealed that Singtel had been upgrading its OLTs in batches since October 2015, and increasing the number of OLTs being upgraded in a progressive manner. On 17 November 2015, Singtel had increased the upgrade to 20 OLTs in a single upgrading exercise. This caused a surge in DHCP requests which triggered the DHCP protection mechanism at the LAN switch to limit the surge to 80 DHCP requests per second.</p> <p>While IMDA notes that Singtel had taken care to upgrade its OLTs in a progressive manner, and had not encountered difficulties in its earlier exercises, Singtel should nevertheless have been more careful when deciding to more than double the number of OLTs to be upgraded at the same time, by putting in place more safeguard measures for the anticipated surge in DHCP requests, and monitoring the network closely to detect any service disruption after the upgrading exercise. In particular, in anticipation of the surge in DHCP requests, Singtel should have reviewed and updated the DHCP protection limit setting on its LAN switch, which had not been revised since 2013.</p> <p>Accordingly, Singtel had not established to the satisfaction of IMDA that the Incident was not within Singtel's control and had occasioned through no fault on its part. While Singtel maintains that the issue was with the LAN switch's rate limiting, IMDA views that the Incident could have been prevented if Singtel had taken prompt measures to either manage the number of OLTs to be upgraded or reviewed the DHCP protection level of its LAN switch, before performing the OLT upgrades.</p> <p>Nevertheless, IMDA noted Singtel had since taken measures to prevent a recurrence of the Incidents, such as: a) reviewing and revising the overall design of its HDL system; b) balancing the DHCP traffic using two geo-redundant routers; c) replacing existing Session Border</p>

	<p>Controllers ("SBC") with high capacity SBC; and d) monitoring the number of SIP registrations on a daily basis.</p> <p>Therefore, taking all factors into consideration, IMDA decided to impose a financial penalty of \$150,000 on Singtel for the Incident.</p>
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