Least Congested Channel Recommendation for Uncoordinated Access Point

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***Abstract*—When Telekom Malaysia Berhad (TM) introduces the Wi-Fi residential gateway to its broadband customers, it faces issues related to Wi-Fi signal strength that caused degraded Wi-Fi network performance. The convenience of wireless connectivity has increased the usage of wireless devices such as mobile phones, smart TVs, tablets, wireless speakers and CCTV. The problem with wireless residential gateway arises when there are multiple access points nearby which uses the same channel or overlapping channel which caused signal interferences. Even when the signal strength is high, interference from other nearby access points which uses the same channel or overlapping channel can still cause signal interference. When an access point is using channel that is congested; channels that are used by other access points or channels that overlap with other channels that is used by other access points, network performance in terms of data transmission is degraded. In this paper, we propose a new mechanism to find the best channel in a congested channel environment. The scheme can run on client devices such as wireless laptops, tablets and mobile phones. Once the scheme has suggested the least congested channel, the TM customer will be able to switch to that channel—thus reducing signal interference and improving network performance. Results from tests show that our algorithm to find the least congested channel performed better than auto-channel selection implemented by 10 different residential gateway models provided by TM to the customer.**

***Keyword*—Least congested channel, adjacent-channel, co-channel, received signal strength indicator, Wi-Fi.**

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