

ABSTRACT

Stable and consistent Wi-Fi network quality is essential to support customer comfort, especially in the hospitality industry. Homestay X, which collaborates with the RedDoorz platform, experienced problems related to limited Wi-Fi signal coverage, resulting in many complaints from customers, especially in rooms located on the upper floors and at the rear of the homestay. Based on the Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) standard, which sets quality of service (QoS) parameters for Homestay X, during periods of high network traffic, the QoS for throughput was categorized as adequate, packet loss and jitter were categorized as good, while delay was categorized as very good according to TIPHON standards. Additionally, the results of the heatmap survey using the NetSpot application indicate that signal quality in some areas of Homestay X is still suboptimal, with a high signal-to-interference ratio (SIR), where many points are below the standard (SIR below 30 dB) for a reliable wireless network. The study employed the Network Development Life Cycle (NDLC) method in the analysis, design, and simulation prototyping stages. Based on the analysis results, the proposed new network topology involves adding devices such as routers, switches, and access points (APs). The final outcome of this study is the proposed WLAN network topology, which includes the placement of new AP devices, channel planning, and the implementation of user bandwidth management using a RADIUS server. With these optimizations, the Wi-Fi network at Homestay X, based on simulation results, can meet the needs of visitors according to the demographic profile of Homestay X Reddorz Partner customers.

Keywords— WLAN, network optimization, NDLC, SIR (Signal to Interference Ratio), network parameters