INTEGRATION OF WIMAX AND WIFI NETWORK AS BACKHAUL IN A DISASTER EMERGENCY COMMUNICATION

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Abstract

Natural disasters may damage the infrastructures, including telecommunication infrastructures. An information exchange during disaster recovery is very needed, especially to deliver the information about number of victims, damage area, etc. Furthermore, the availability of emergency telecommunication network during the disaster recovery is very important.

One of the technologies that can be an alternative for emergency telecommunication network is WiMAX Technology which can be used as a backhaul link. In this final project, the integration of WiMAX Technology with WLAN Access Points to provide emergency communication network is proposed. Additionally, VoIP service is also implemented on the system to examine the capability of such system.

The performance of proposed system is examined in terms of throughput, delay, jitter and packet loss in different scenarios. The throughput and delay parameter are measured based on ITU-T G.114. Through the experimental analysis, the system performance can meet minimum requirements, such as minimum data rate of 64 kbps for G.711 and maximum delay of 150ms. Meanwhile, the measured packet loss parameter is also met the standards which has minimum requirement under 1%. This packet loss measurement is conducted when the background load of 0 Mbps and 1 Mbps are applied in all scenarios.

To validate the measured system performance, the quality of service is also examined by using E-Model which is then converted to MOS. Recommended MOS value is greater than 3 can be met by scenario 1, 2 and 3 at the time of the traffic load 0 Mbps and 1 Mbps. While in scenario 4 can be met on the traffic load 0 Mbps, 1 Mbps and 2 Mbps.

Keywords : disaster, integration, communication, WiFi, WiMAX.
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