

ABSTRACT

WLAN is an internet network technology that is very effective in its implementation. The standard that is usually used is WiFi (Wireless Fidelity) which allows users to access the internet over a wide distance. At SMK Muhammadiyah Prambanan Sleman, the internet network plays an important role in the teaching and learning process and the school administration process. However, the WLAN network at SMK Muhammadiyah Prambanan Sleman has not been able to cover the entire school area and the access speed at several school locations is very slow.

So that in this final project, optimization of WLAN networks is made by adding Access Point devices in accordance with the Link Budget and its propagation model as well as information security that can be accessed by students and must also manage it in online game access. With the Packet Filtering and Sechedule Task methods on the Mikrotik router, it is hoped that it can limit students to online games during the teaching and learning process. In working on this final project using several supporting software such as InSSIDer, Radiowave Propagation Simulator (RPS) and Winbox. InSSIDer software is used to measure signal reception in existing conditions and after optimization. The calculation of the coverage area used is using the COST 231 Multiwall Indoor propagation model where the attenuation in the building material for the school building is taken into account so that the calculation results are real. Radiowave Propagation Simulator (RPS) software is used to simulate the coverage area and the average signal strength received by the user to be used as a reference in the implementation of the network implementation. The Winbox software is used for setting some of the requirements that are expected on the router.

Based on simulation analysis of the WLAN network simulation at SMK Muhammadiyah Prambanan Sleman, the number of access points used to cover school areas that do not have internet access is 10 access points with a maximum cell radius of the access point is 17m. The average received signal is -44.58 dBm and 100% of the school area is covered with a signal greater than -80 dBm. The preparation of PUBG and Mobile Legends games cannot be accessed during teaching and learning hours, namely 07:00-15:00.

Key words : Coverage area,WLAN,WiFi,Link Budget,Packet Filtering, Sechedule Task, Mikrotik