

ABSTRACT

WiMAX technology (Worldwide Interoperability for Microwave Access) is Broadband Wireless Access (BWA) technology for broadband communications which have high access data rate and wide coverage. For implementation of wireless technology are need telecommunication infrastructure, in this case, are WiMAX base station for signal transmitter and receiver. Nowadays, the problems of network planning are government's regulation is stricter about number of base station tower which have license to build in an area. Beside that increasing number of base station which is built by GSM and CDMA operators have impact decreasing of blank area. So operators demanded to plan telecommunication infrastructure as optimal as a chance.

Geographic Information System are information system which is based on computer that is used to input, save, control, connect, data processing, analyze and resulting data based on geographic. Geographic data and non-geographic data are integrated by Geographic Information System. Based on this definition, Geographic Information System is match to support a decision about location and quantity planning of WiMAX base station to be done quickly and exactly.

Planning system which explain in this research include calculate quantity of base station, location planning of base station, and visualization area which is cover by base station. On calculation of number of base station calculate based on two approaches. There are coverage area approach and capacity approach and then chosen by number of base station which result lager. From the calculation of number of base station then determine location.

The output from this Geographic Information System are number of base station which is must to built in based on region, location of base station based on coordinate, and coverage area. From the simulation which have been done, number of base station which must to built in Cibeunying region for 2010 period to 2014 period are one to Bandung Wetan region, Sumur Bandung region and Cicadap region, two for Cibeunying Kaler region, Cibeunying Kidul region, and three for Coblong region.

Key words: *WiMAX, quantity of base station, location of base station, coverage area, Geographic Information System*