ABSTRACT

The growth rate of population common rapidly, so that cause in everywhere to become residence. The demand of telecommunication is increased too, allow the growth of population. The heterogeneous of distribution population make a different traffic demand in every place. UMTS is one of Third Generation Communication System which has data rates up to 2Mbps.

Generally, placement Base Transceiver Station only consider to wide of coverage, doesn't determine the traffic demand in every place. With genetic algorithm, both wide of coverage and serve the demand traffic are determined by this algorithm. The result of genetic algorithm, the blank spot area can be minimized and located in the suburban area.

Yogyakarta city up to 2014, It needs 4 urban cell which has radius of cell 1,371084 km and 2 suburban cell which has radius of cell 1,834215 km to cover traffic demand. Placement BTS with genetic algorithm approach to cover the traffic demand and has a widest coverage area. Combination of several parameter in genetic algorithm, such us: representation, population size, probability of cross over, probability of mutation, and maximum of generation. This system can serve 97.12 percent of traffic demand.

Keywords : *UMTS, genetic algorithm*