ABSTRACT

UMA (Unlicensed Mobile Access) is a technology of MDO (Mobile Data Offload) standard that was introduced in September 2004 , and approved by the 3GPP Release 6 with the name GAN (Generic Access Network) . Utilizing UMA technology , namely the non - 3GPP WLAN IEEE 802.11 standard to reduce the overload of traffic and blank spot on the existing network such as 3G or 4G . In mobile communications , overload traffic is a problem that arises due to capacity or network resources are no longer able to accommodate the needs of the user traffic .

In this final project , has made planning of integration between 3G network (UMTS / HSDPA) with WLAN 802.11n outdoor at frequency of 5.8 GHz and bandwidth 20 MHz in terms of RF (Radio Frequency) using the method of coverage and capacity planning , as well as considering the conditions of each of the existing traffic area in Dense Urban , Urban , Suburban and Rural at Bandung city . So we get the first phase planning (2013) started to do the integration in Dense Urban area, the second phase (2014) began in Urban and in third phase (2015) started to do the integration Suburban area .

The results of this final study , indicate that the network performance of each phase of planning in terms of coverage by the signal level is good , because more than 80 % coverage of WLAN 801.11n outdoor in Bandung has a signal level above - 90dBm and more than 80% of users that trying to offload successfully connected or offload success rate more than 80% . Beside that, with this integration can increase 3G connection success rate above 75% than before integration. In terms of network throughput, phase I in Dense Urban areas increased to 442.2%(137.08 Mbps) 3G or 4 times. Phase II , in Dense Urban area increased to 797.5 % (309.02 Mbps) 3G or 8 times. In Urban areas increased to 520.2 % (184.46 Mbps) 3G or 6 times. Phase III , in Dense Urban area increased to 557.48% (300.6 Mbps) 3G or 6 times. Urban areas increased to 334.1 % (207.85 Mbps) 3G or 4 times before integration. Suburban areas increased to 309.3 % (151.36 Mbps) 3G or 4 times.

Keywords : 3G (UMTS / HSDPA) , UMA / GAN , WLAN 802.11n outdoor , offload , coverage by the signal level , throughput .