

## 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 .