

ABSTRACT

Worldwide Interoperability for Microwave Access (WiMAX) and Wideband Code Division Multiple Access/Universal Mobile Telecommunication System (WCDMA/UMTS) which is the new generation of GSM (*Global System for Mobile communication*) become an alternative in providing the future Broadband Wireless Access (BWA). WiMAX has very high data rate but it is quite limited in Access Network because of the infrastructure of WiMAX itself is still rarely, so it is only support for user mobility for small coverage area. In the other hand WCDMA/UMTS has high enough data rate and also WCDMA/UMTS access network architecture is provided in almost of every angle of region so it is highly support for user mobility.

Base of those reasons above, there were an idea to combine the two technologies so they can take the benefit of each other. WiMAX can support the higher data rate of WCDMA/UMTS and WCDMA/UMTS can allow WiMAX user to have higher mobility support. Now, MIP is the most capable technology to realize this planning. MIP allow user to change the IP address or point of attachment without restarting the communication which is go on.

This project is use WiMAX-WCDMA/UMTS roaming scenario that HA (Home Agent) as the MIP server is provided by WCDMA/UMTS network as a home network (network which is user do registration and get IP address for the first time). The research method is in downlink direction, where CN (Correspondent Node) sending packet data to MN (Mobile Node) in UMTS network, MN makes a handover toward mobile WiMAX network. The evaluation and analysis of the scenario is done by protocol description, where as could be explained the packet transportation on the layer-layer protocol of WCDMA/UMTS and mobile WiMAX network. It is also explained the MIPv6 process when handled the data communication and handover.

The evaluation of intersystem roaming shows that in the beginning of communication is not optimal, this is because the MN must do CoA (Care of Address) addressing Binding Update-Acknowledge with the HA and BU-BA with the CN. The roaming will working optimal when the CN is able to communicate directly with the MN in the foreign network without interception of HA. That is after MN do BU-BA with the CN.

RADIUS protocol take control on Authentication, Authorization and Accounting process between WiMAX's and UMTS's AAA server. MIPv6 header change the destination address on header IPv6 that is MN CoA with MN HoA when the packet is arrive to MN CoA, so the IP address changing is hidden from the upper layer.

Key words : WiMAX, UMTS, Intersystem Roaming, Mobile IPv6