

UNIVERSITI TEKNOLOGI MARA

**HIERARCHICAL QOS ADMISSION
CONTROL MECHANISM FOR IEEE
802.16J MOBILE MULTIHOP RELAY
WIMAX NETWORK**

ROHAIZA YUSOFF

Thesis submitted in fulfilment
of the requirements for the degree of
Master of Science

Faculty of Electrical Engineering

May 2014

AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulations of UniversitiTeknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree of qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, UniversitiTeknologi MARA, regulating the conduct of my study and research.

Name of Student : RohaizaYusoff

Student's ID No. : 2009764847

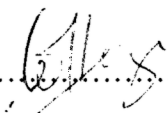
Programme : Master in Electrical Engineering (EE780)

Faculty : Faculty of Electrical Engineering

Thesis Title : Hierarchical QoS Admission Control Mechanism for IEEE

802.16j Mobile Multihop Relay WiMAX Network

Signature of Student

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Date

: May, 2014

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ABSTRACT

With the advancement in telecommunication technology, Mobile Multi-hop Relay (MMR) Worldwide Interoperability for Microwave Access (WiMAX) network was introduced to meet the increase in user demand. Scheduling is one of the most crucial factors which influenced the quality of service(QoS) in WiMAX network. This research is focused on the admission control coupled with Round Robin scheduler to avoid overwhelming the limited radio resources due to many connections. The simulation study was done using Network Simulator version 2 (NS2) attached with National Chiao Tung University network simulator (NCTUns) module package with hierarchical QoS priority mechanism. The results show that the proposed admission control mechanism is able to decrease the radio resources wastage about 35%. Different mobile station densities were deployed to observe on the system capability. The knowledge on the handover behaviour for WiMAX network is essential in network management and planning in order to achieve optimum system throughput. In this research the analysis of handover behaviour is performed for several transparent relay configurations in IEEE 802.16j MMR WiMAX network. The simulation was performed using NCTUns tools and adopted the hard handover mechanism for three different relay network topologies with varying mobile station speeds. The results show the handover for intra network is faster than the inter network, by selecting appropriate relay deployment the system throughput can be increased up to 14.39%.

ACKNOWLEDGMENT

Alhamdulillah, all praise to Allah The Almighty for His blessing in completing the whole research work. I would like to express my deepest gratitude to my supervisor, Professor Dr.MohdDani B. Baba and my co-supervisor Ir. Muhammad Ibrahim for their non-stop guidance and support towards the accomplishment of this research. May all their effort will get Allah blessing. Not to forget, special thanks to Mrs DarmawatyMohd Ali for her advices in this work.

I would also like to thank my big family especially to Mummy, Along and family, Abang and family, Chieq and family and of course to my dearest husband Mr KhairilAzri. Not to forget, to all fellow friends thanks for the moral support and motivation along the research journey. Without them, this work would be tougher and incomplete.

Many thanks also to Ministry of Higher Education (MOHE), Malaysia for supporting the study by providing the research grant under the reference number 600-RMI/ST/FRGS 5/3/Fst and 600-RMI/ST/DANA 5/3/Dst through Research Management Institute (RMI), University Technology MARA, Malaysia.

Thank you all.