UNIVERSITI TEKNOLOGI MARA

SIMULATION OF AD HOC NETWORK

ZAHEERA ZAINAL ABIDIN
2006667208

Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science (Computer Networking)

Faculty of Information Technology and Science Quantitative

MAY 2008

ACKNOWLEDGEMENTS

Abstract

Ad hoc network is an instantaneous or spontaneous network which can be achieved without the network infrastructure provided to end user. In IEEE 802.11 LAN, the independent basic service set typically a minimum of two nodes. Nodes are able to communicate directly and usually in the form of pre-planning situation as long as the network is in demand. (IEEE, 1999) The general behavior of 802.11 wireless networks is studied by running the NetStumbler. It provides the information for infrastructure in wireless (BSS) unfortunately, for ad hoc wireless user it cannot produce information except for pre-defined users. The objective of the study is to design a simulation program in ad hoc network in the basic access medium of CDMA/CA protocol comparing with CDMA. The CDMA/CA implementation includes mechanisms such as RTS/CTS, back off and ACK packet during or before data packet is sent. The main goal of the mechanisms is to avoid the hidden nodes during transmissions. In fact, it is designed for providing a better performance in ad hoc environment. The previous simulation was not including the element of GUI in the codes. The contribution of this study was to simulate the program by adding the user input form (user-friendliness) and enhancing the back off mechanisms. The green circle showed that there was an ACK packet has been sent to the nodes which the RTS packet has been sent in previously. The data packet followed after the CTS packet in red line of circle shape, appeared on the graph. It means the CSMA/CA mechanisms have been activated in the simulation programs. It was found that the inclusion of RTS/CTS handshaking greatly improves the performance of the simulated WLAN.

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