UNIVERSITI TEKNOLOGI MARA

EFFICIENT ROUTING PROTOCOL FOR SCATTERNET BLUETOOTH MOBILITY MODEL

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ABSTRACT

Scatternet Bluetooth ad hoc network is an infrastructureless where the nodes forming the temporary network without wired or need for base station. Due to its link instability, the node mobility and the routing topologies frequently changing it becomes one of main issues need to be concerned. This project analyse performance of node mobility models over scatternet Bluetooth routing protocol based throughput, packet delivery fraction, dropped packet, and end-to-end delay by increasing number of nodes density and number of node mobility pause time. Then, determine the suitable node mobility model such as Random WayPoint (RWP), Random Direction Model (RDM), and random Walk Model (RWM) for Ad-hoc On-Demand Distance Vector (AODV), Dynamic Source Routing (DSR), Destination Sequenced Distance Vector (DSDV) Bluetooth routing protocol. In order to determine its performance simulation needs to be done. BonnMotion has been used to create a node mobility model and UCBT (stands for University of Cincinnati-Bluetooth) has been chosen on NS-2 simulator as their ability of simulating performance in scatternet Bluetooth ad hoc network. AODV, DSR, and DSDV routing protocol also has been implemented on the UCBT Bluetooth module. The result showed that AODV and DSDV protocols are the most suitable routing protocol to be applied in RWP, RDM and RWM.

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CHAPTER ONE

INTRODUCTION

Chapter 1 Introduction defined the necessary elements such as objectives, research questions, problem statements and scope as the fundamentals of the research in order for the planning and experimenting the experiments were always on the tracks.

1.0 Background Of Project

Wireless networks can be divided into two types which are infrastructured and infrastructureless network (Jayakumar, G & Gopinath, G, 2008). Infrastructureless also known as ad hoc network (Basagni, Bruno, & Petrioli, 2003; Kamkuemah & Le, 2013; Soni & Khunteta, 2014). Ad hoc came from Latin word which it means "for this or for this only" (Shegokar & Tuteja, 2014). In infrastructured, mobile nodes connect each other with wired backbone and need base station for communication. In infrastructureless network, the connection between mobile nodes without the need for wired backbone and base station. It allows mobile nodes to share a data and also allow mobile nodes act as routers between sources and destination nodes (Kamkuemah & Le, 2013). Example of ad hoc network is Bluetooth. Bluetooth is a standard of IEEE 802.15 wireless technology where it has been deployed into Wireless Personal Area Network. Bluetooth network can change data over limited coverage area such as room and small office environments. Bluetooth technology operates in the unlicensed industrial, scientific, and medical (ISM) radio band at 2.4 GHz. Furthermore Bluetooth technology is a low cost wireless communication as the development was replace for cables between mobile nodes to connect the another mobile nodes such as PC, PDAs, laptops and cellular phones in a room and small office environments. The range to connect two mobile nodes to send data is within 10 until 100 meter (Kamkuemah & Le, 2013; Soni & Khunteta, 2014; Souron et al., 2012).

According to Basagni et al., (2003), when two mobile nodes communicate each other to form one-hop network it called piconets. When piconets interconnected together and it form multi-hop network it called scattenets (Kamkuemah & Le, 2013;Basagni et al., 2003). In the piconets (one-hop network), there are relationship