UNIVERSITI TEKNOLOGI MARA

EFFICIENT ROUTING PROTOCOL AND TOPOLOGY IN BLUETOOTH NETWORK USING NS-2

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ABSTRACT

Bluetooth is a wireless ad-hoc network. It has three classes which covers up to 100m range. It has some limitation especially in range, number of nodes, routing protocol and topology. There are a few routing protocol that can be use in Bluetooth network such as Ad-hoc On Demand Vector (AODV), Dynamic Source Routing (DSR) and Destination Sequenced Distance Vector (DSDV). These routing protocols gives different performance in different topology and distance. Different topology are used to optimize number of device connects at a time with mesh and ring topology with DSR, AODV and DSDV routing protocol. The purpose of this project is to determine the maximum range of the Bluetooth with different topology with good performance. Furthermore, it is to identify which topology gives high performance based on parameters throughput, end-to-end delay and packet delivery ratio with DSR, DSDV and AODV routing protocol. The method used in this project is using Network Simulator 2 patched with UCBT. The result shows that DSDV routing protocol is more stable compare to DSR and AODV in ring topology. However, if one of the nodes are broken, it will affects the performance. While in mesh topology, when one of the nodes are broken, and the route are changed, the performance will have minimal change. Meanwhile, the maximum range are best at 50 meters and number of nodes gives better performance as long as it is less than 15 nodes.

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CHAPTER 1

INTRODUCTION

The chapter 1 of Introduction defines the necessary elements such as objectives, research questions, problem statements and scope of the study as the fundamentals of the research.

1.1 BACKGROUND OF PROJECT

Bluetooth is one of the wireless technology that falls under wireless personal area network (WPAN) category. The Bluetooth operates by transmitting data with low power radio waves on frequency of 2.45 GHz. The frequency band are used for industrial, scientific and medical devices (ISM). This wireless technology uses name 'Bluetooth' which originally came from King of Denmark Harald 'Bluetooth' Gormsson in 985 century. The figure 1.1 shows the symbol for Bluetooth.

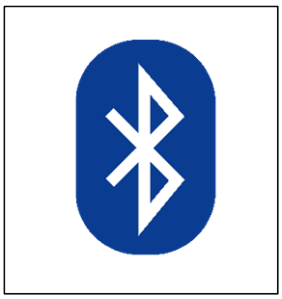

Figure 1.1: Bluetooth symbol

Bluetooth was first found in 1998 and formed a Special Interest Group (SIG) with five companies in the group. The first version of Bluetooth is BT 2.0, then it adopted in 2004 with an enhanced data rate (EDR). In 2009, they adopted core specification 3.0 which the speed is much higher. Table 1.1 shows the classes of Bluetooth with the range covered and maximum power consumption.