

UNIVERSITI TEKNOLOGI MARA

**GREEN TECHNOLOGY: ENERGY EFFICIENCY
IN WIRELESS LOCAL AREA NETWORK**

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ABSTRACT

Green technology is the application of the environmental science to conserve the natural environment and resources, and to limit the negative impacts of human contribution. Energy efficient networks are major study topic, and the networking community is increasingly concern in environment and offering its care on approaches to save energy in the todays networks. The networks will require built-in energy efficiency capabilities. One of the greenest approaches to obtain energy efficiency is based on the initiation of network resources on demand, thus avoiding to always power on all the resources that are necessary to serve users during peak traffic periods. In response to the problem, this thesis will going to prove the reduction of power consumption by adopting resource on demand strategies in mid-size WLANs environment through green node and process model development and save 20 - 30% of power consumption.

Keywords: energy efficiency, energy, wireless networking, green

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CHAPTER 1

INTRODUCTION

1.1 Background

The number of wireless accesses to the Internet is growing at a rate close to 100% a year, much faster than the number of wired accesses, so that some forecasts predict that in the future the majority of accesses to the Internet will be wireless. Today, the most common technology for wireless Internet access is third Generation (3G) cellular networks and recently promoted to 4G. Not to leave behind is the IEEE 802.11 WLANs family (Wireless Local Area Networks), commonly termed Wi-Fi (wireless fidelity) continuously enhanced and now already endorsed the N-standard. From the attention of a large fraction of idle WLAN resources, resulted in significant energy losses. Thousands of WLANs worldwide collectively compound this problem, while raising serious concerns about the energy losses that will occur in the future.

1.2 Problem Statement

The mainstream of the access points (APs) normally stay idle, which means they attend no users in the network. In detail, merely a small segment of APs are utilized throughout the day, and even fewer during nights and weekends. In this thesis, the study is going to show that not only the common of the APs stay idle at any instant, they remain idle for lengthy time and resulted more energy used. I believe the study is to be the representative of the usage of thousands of WLANs deployed worldwide.