

BORANG PENGESAHAN STATUS TESIS*

JUDUL : TOOL FOR A NETWORK MONITOR

SESI PENGAJIAN: 2007/2008

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CATATAN: * Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM).
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TOOL FOR A NETWORK MONITOR

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**This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Software Development)**

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2008

DECLARATION

I hereby declare that this project report entitled

TOOL FOR A NETWORK MONITOR

Is written by me and is my own effort and that no part has been
plagiarized without citations.

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DEDICATION

To my beloved parent and siblings.

To my supportive friends.

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First of all, all praises to Allah the Almighty for His bless and guidance to me throughout the Projek Sarjana Muda II (PSM II). For all His knowledge that revealed to me, I am thankful.

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ABSTRACT

The main purpose of developing the network monitoring system is to ease the lab technician's job in monitoring the network performance. This tool can help technicians early detect the network whether is up or down by location. The approach used in this project is OOAD and the methodology is based on RUP model. Development tool used for this project is VB.Net 2005. The expected result from this project is to help technician increase their alertness in monitoring network performance.

ABSTRAK

Tujuan utama pembangunan network monitor ini adalah untuk memudahkan juruteknik makmal melakukan kerja dalam pemantauan status rangkaian. Sistem ini dapat membantu juruteknik mengesan keadaan rangkaian itu sama ada dalam keadaan baik atau tidak. Pendekatan berorientasikan objek digunakan bagi aplikasi ini. Rational Unified Process dipilih bagi membangunkan aplikasi ini berdasarkan kebolehan pendekatan tersebut dalam kaedah pembangunan sistem berorientasikan objek. Perkakasan yang digunakan seperti VB.Net 2005 Hasil daripada pembangunan projek ini, diharapkan ia dapat membantu juruteknik meningkatkan tahap kepekaan terhadap pemantauan rangkaian.

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LIST OF ABBREVIATION**PSM****Projek Sarjana Muda**

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CHAPTER I

INTRODUCTION

1.1 Project Background

Today, computer security is a very important concern for a network administrator. Several companies all around the world rely on a computer network to obtain information back and forth between those who need it. In University Technical Malaysia Malacca (UTeM) especially, still use the manual way is used to trace the network whether is available or is not.

To monitor the network computer traffic is difficult and hard to ensure the network monitor is in a good condition. This is due to lack of manpower. For example 'Technician' to monitor this problem. The main purpose of developing the tool is to help technician to monitor the network status through computer screen. Without the tool, users have to call helpdesk for a technician to investigate their network problem. By using the tool, the problem can over come through monitoring the computer screen.

The tool will be developing specially used for UTeM via Faculty Information Technology and Communication (FTMK) technician. The tool will implement at the FTMK laboratory. The title of is "A Tool of Monitor Network". These tools will be developing using a Java language.

1.2 Problem Statements

i. **Hardly to monitor the status of the network**

By using this manual process, it is difficult to user to inform the problem to technician.

ii. **Take a long time to solve a problem**

Reported the problem through manual process can take a long time because one technician arranges many laboratories. In order, to solve the problem, technician must follow the procedure.

iii. **Limited technician's work performance in term of networking**

Technician found it is difficult to perform in order to solve networking problem.

1.3 Objectives

The Objective of this project:

- i. To design a systematic network monitor tool application uses at the laboratory.
- ii. To increase time management of technician's job
- iii. To increase performance of technician's job.

Scopes

The scope of the project is divided into three categories which are data, user and functionality.

1.4.1 Technician

- i. Technician – person who will use the tool to monitor network status in the laboratory.

1.4.2 Functionality

This tool includes a lot of functions which help to improve the process of monitoring network. The tool help technician to monitoring network with quickly some of the other functionality is:-

- **Scan network by location**
Technician can choose to view the status of the network by location
- **Monitor network**
Network monitor tool is developed to monitor network status at the laboratory especially in UTeM.

1.4.3 Where Tool Is Implemented

This system implement at the laboratory at Industry Campus (UTeM).

1.4.4 Specific platform

Network Monitor Tool is going to be developing on Windows platform by using VB.Net 2005 language and Microsoft Access database.

1.5 Project Significance

The project will give many benefits to the technician and staff. These system help technician to monitor network status without user concern. Technician can also detect the network down and can go directly to repair the problem.

These systems also show the benefit and the tool contribution the technician. The Network Monitor tool can help the technician to speed up their job efficiently.

This project might be a good start in approaching a new systematic method of monitoring network with consistency.

1.6 Expected Result

As usual, developing the system will produce result. For the Network Monitor tool as an application to monitoring networking, the first output to be produce are the list the entire computer in the laboratory. For the available computer, the green signal will appear. The signal will present as the good condition about the networking and computer. The red alert will be appearing if the networking between the server and client is down. The technician who monitoring the networking using this application will be noticed about the condition of connection between server and client.

1.7 Conclusion

From this chapter, the tool is to develop a simple desktop tool application network monitor that can be used to monitor network based on open industry especially for UTeM. Currently, a user want to report a network problem to the technician, the application is quite complicated. User must all a technician, talk with a technician, and tell about the problem. With this tool, user will not notice the network failure because if the network has a problem, a technician already knows about the problem.

For the next chapter, it contains literature review of several journal related with network monitor tool and methodology that will be use to develop the tool.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

In this chapter, discussion will be focus on important part which is call Literature Review and Project Methodology. For the first section; literature review, it will discuss and review about approach and related research, reference and other findings about this system. Besides, it also states other approaches that will be used in this project after comparison with previous approaches. In project methodology section, selected approach or methodology will be described the activities that may do in every stage. Then it will explain several terms or keywords that being used in the project to being develop.

This chapter also explains the methodology to be used in the project development. The methodology consists of several phases as guidelines that are to be achieved. The project requirements such as software and hardware, for the project development are determined. The project milestone from the start until the delivery phases are also will be brief and list in this chapter. The milestone and Gantt chart is important as a guideline to ensure the project can be finish according to the schedule and plan.

2.2 Fact and Findings

Fact is a statement or assertion of verified information about something that is the case or has happened while finding is the act of determining the properties of something, usually by research or calculation. For this project, fact and finding is important to determine the domain of the project. All the fact and finding will be support by a review of the existing system and technique that related and already be used by the others. The research refers to Faculty of Information Technology and Communication and of the end user like a technician.

A network consists of two or more computers that are linked in order to share resources (such as printers and CD-ROMs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams. The three basic types of networks include:

- Local Area Network (LAN)

A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building. It is rare for LAN computers to be more than a mile apart. In a typical LAN configuration, one computer is designated as the file server. It stores all of the software that controls the network, as well as the software that can be shared by the computers attached to the network. Computers connected to the file server are called workstations. The workstations can be less powerful than the file server, and they may have additional software on their hard drives. On most LANs, cables are used to connect the network interface cards in each computer.

- Wide Area Network (WAN)

Wide Area Networks (WANs) connect larger geographic areas, such as Florida, the United States, or the world. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of network. Using a WAN, schools in Florida can communicate with places like Tokyo in a matter of minutes, without paying enormous phone bills. A WAN is complicated. It uses multiplexers to connect local and metropolitan networks to global communications networks like the Internet. To users, however, a WAN will not appear to be much different than a LAN or a MAN.

- Metropolitan Area Network (MAN)

Metropolitan Area Network, a data network designed for a town or city. In terms of geographic breadth, MANs are larger than local-area networks (LANs), but smaller than wide-area networks (WANs). MANs are usually characterized by very high-speed connections using fiber optical cable or other digital media. [NO 1]

From other article have done read tell, the name TCP/IP refers to a suite of data communication protocols. The name is misleading because TCP and IP are only two of dozens of protocols that compose the suite. Its name comes from two of the more important protocols in the suite: the Transmission Control Protocol (TCP) and the Internet Protocol (IP). TCP/IP originated out of the investigative research into networking protocols that the Department of Defense (DoD) initiated in 1969. In 1968, the DoD Advanced Research Projects Agency (ARPA) began researching the network technology that is now called packet switching.

TCP is a connection-oriented protocol that is responsible for reliable communication between two end processes. The unit of data transferred is called a stream, which is simply a sequence of bytes. Being connection-oriented means that before actually transmitting data, you must open the connection between the two end points. The data can be transferred in full duplex (send and receive on a single connection). When the transfer is done, you have to close the connection to free system resources. Both ends know when the session is opened (begin) and is closed

(end). The data transfer cannot take place before both ends have agreed upon the connection. The connection can be closed by either side; the other is notified. Provision is made to close gracefully or just abort the connection

UDP stands for User Datagram Protocol. It provides a connectionless host-to-host communication path. UDP has minimal overhead each packet on the network is composed of a small header and user data. It is called a UDP datagram. UDP preserves datagram boundaries between the sender and the receiver. It means that the receiver socket will receive an `OnDataAvailable` event for each datagram sent and the `Receive` method will return a complete datagram for each call. If the buffer is too small, the datagram will be truncated. If the buffer is too large, only one datagram is returned, the remaining buffer space is not touched. UDP is connectionless. It means that a datagram can be sent at any moment without prior advertising, negotiation or preparation. Just send the datagram and hope the receiver is able to handle it. UDP is an unreliable protocol. There is absolutely no guarantee that the datagram will be delivered to the destination host. But to be honest, the failure rate is very low on the Internet and nearly null on a LAN unless the bandwidth is full. [NO 2]

Apart from some notable exceptions, most traffic monitoring tools use two types of approaches:

- (a) Keeping traffic statistics such as packet sizes and interarrivals, flow counts, and byte volumes.
- (b) Analyzing packet content.

This article is propose to use the Network monitoring using Traffic Dispersion Graphs (TDGs) as a way to monitor, analyze, and visualize network traffic. TDGs model the social behavior of hosts (“who talks to whom”), where the edges can be defined to represent different interactions (e.g. the exchange of a certain number or type of packets). With the introduction of TDGs, we are able to harness a wealth of tools and graph modeling techniques from a diverse set of disciplines. A