TESIS^APPROVAL STATUS FORM

JUDUL: Switch Port Monitoring Tool

SESI PENGAJIAN: 2005/2006

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^Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

SWITCH PORT MONITORING TOOL

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2006

ADMISSION

I admitted that this project title name of

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STUDENT : _____ Date : 25/4/2006

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DEDICATION

Specially dedicated to my beloved and caring parents.
Mr Mustapha b Awang and Mrs Halimah bt Yakub

For my lectures and supervisor, Ms Zurina bt Sa'aya at Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM)

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Thank you.....

ABSTRACT

The main goal of this project is to design for fulfilling a condition set to qualify a Bachelor of Information Technology and Communication. The concept of Switch Port Monitoring Tool the same like current system that related with monitoring switch port. The tool is developed to help KUTKM's network administrator to manage and monitor the switch port. Switch Port Monitoring Tool provides three main aspects; monitor status of switch port, monitor utilization port and traffic and get alert when packets is discard and dropped.The objectives and scopes of this tool is to help network admin in KUTKM to monitor the switch port... The methodology during develop this utility is referred to the waterfall method that one of the SDLC. This method is use because it has a suitable phase that match with the PSM timeline and the system requirement to be developed. The software requirement is to develop on Microsoft VB. Each student must complete PSM 1 before continuing with PSM 2. Students must give out the purpose project in this report as set the idea how to develop the real project in PSM 2. In PSM 2, students will develop a real project such as was proposed in PSM 1 The success in PSM 1 will bring towards to success in PSM 2.

ABSTRAK

Matlamat utama projek ini adalah untuk memenuhi syarat kelayakan bagi pengijazahan kursus Ijazah Sarjana Muda Teknologi Maklumat dan Komunikasi (Rangkaian Komputer) (BITC). Konsep yang diperkenalkan dalam Switch Port Monitoring Tool adalah sama seperti konsep pemantauan port switch yang ada pada masa kini. Teknik ini dibangunkan untuk membantu pentadbir rangkaian KUTKM untuk menguruskan dan memantau aktiviti yang dilakukan oleh port switch. Switch Port Monitoring Tool ini menyediakan tiga aspek utama, iaitu, pemantauan status port switch, pemantauan port utilization (jalur lebar) port switch dan juga mengesan sebarng kerosakan pada port switch. . Objektif dan skop terhadap Switch Port Monitoring Tool adalah untuk memudahkan pentadbir rangkaian menguruskan dan memantau port switch di mana switch menjadi satu perkakasan yang penting dalam pelbagai rangkaian.. Kaedah kajian semasa membangun kemudahan ini merujuk kepada kaedah Model air terjun yang digunakan didalam SDLC. Kaedah ini dipratikkan kerana mempunyai fasa yang bersesuaian dan serasi dengan garis panduan yang telah ditetapkan di dalam PSM dan keperluan pembangunan sistem. Untuk membangunkan sistem ini, Perisian Microsoft VB digunakan bagi tujuan pembangunan sistem. Setiap pelajar dikehendaki mengambil PSM 1 sebelum lulus untuk menyambung PSM 2. Pelajar juga hendaklah menyertakan sebab utama pemilihan projek di dalam laporan yang hendak diserahkan kepada pihak fakulti, dimana laporan ini mewakili idea para pelajar terhadap projek yang sebenar didalam PSM 2. Kejayaan dalam PSM 1 adalah amat penting di mana ia akan menjadi tunjang kepada kejayaan dalam PSM 2 nanti.

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LIST OF ABBREVIATIONS

PSM	-	Projek Sarjana Muda
KUTKM	-	Kolej Universiti Teknikal Kebangsaan Malaysia
VLAN	-	Virtual Local Area Network
SDLC	-	System Development Life Cycle
LAN	-	Local Area network
WAN	-	Wide Area Network
DFD	-	Data Flow Diagram
SPAN	-	Switch Port Analyzer
NIC	-	Network Interface Card
UTP	-	Unshield Twisted Pair
SPMT	-	Switch Port Monitoring Tool
UT	-	Unit Testing
VB	-	Visual Basic
HTTP	-	Hyper Text Transfer Protocol

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CHAPTER I

INTRODUCTION

1.1 Project Background

Switch Port Monitoring Tool is developed to help network administrator in KUTKM to manage and monitor the switch port. Any problems in the switch affect a large proportion of the LAN users. Implementing a proactive switch port monitoring tool helps LAN users or KUTKM's network administrator to detect problems early and avoid potential problems especially on the switch port. For this project, it used Graphical User Interface (GUI) to monitor switch port and converted Hiperterminal platform. Today, there are many method to monitor switch port. Example, Switch port Analyzer (SPAN) and Mirroring Port. Although many method is developed, but still have the problem with switch port. Switch port monitoring tool will monitor the functionality of switch and detect any problem on port of switch. This application will automatically turn as server when it connected to switch. Switch port monitoring tool is focused for monitoring switch port as it can monitor status of the port whether in active, disable, shutdown, and inactive. When the status is detected after monitoring, all descriptions about the error port will appear such as number of port, name, status,VLAN, duplex, speed and type of

switch. Besides, this tool also manages actively monitors switch ports and quickly notifies users whenever a switch port or the switch goes down

In existing switch monitoring system, it monitor all characteristic in switch performance and functionality. But in project that will developed future, it just focus for monitoring switch port. If only one characteristic is monitored, the system is more stable because it not involved any outside source. The switch port monitoring tool will used by IT organization especially a big company that use witch as their connection.

1.2 Problem Statements

As we know, there are problem in current system. The functionality for each port on switch is important. If one port is damaged, it should be affect the network. Before making this project, the problem statements in current system must be taken seriously. Below are the problem statements for Switch Port Monitoring Tool:

a) **Buffer overflow and packets dropping**

For mirroring port tool, although this tool is economical and easy to use, however multiple ports mirrored to one port can cause buffer overflow and dropped packet. If packets dropped in network connection, switch cannot function properly.

Propose Solution - Switch Port Monitoring Tool will monitor switch port one by one and if packet dropping or discard, this tool will get check all errors for this problem

b) **There are no best solution to detect port is busy or not**

Another problem in current system is no best solution, to know port is busy or not. It is important to know port is busy or not because port easy to made collision and maybe cause switch port performance degradation.

Propose Solution - Switch Port Monitoring Tool will detect the port busy or not via identify the utilization and traffic of each port

c) **User interface is not user friendly**

User interface in currently switch port monitoring tools is not user friendly. User friendly interface is important to users because it might be help user to manage and monitor switch port easily.

Propose Solution - User Interface in this tool is user friendly and help network administrator to manage and monitor the switch port and easier for them to understand this tool

1.3 Objectives

The objectives for this project are:

a) To enhance switch port monitoring tool by converting hiperterminal to graphical user interface.

b) To deliver essential services for monitoring status of switch port whether in active, disable, shutdown, and inactive. When the status is detected after monitoring, all descriptions about the error port will appear such as number of port, name, status , speed and type of switch.

c) To provide capabilities for monitoring port utilization and traffic by monitor packet, example monitor unicast and non unicast packet with threshold alert.

1.4 Scopes

Scopes of this project are:

a) **Monitor status of switch port.**

Switch port monitoring tool can monitor and detect status of switch port. Via IP address or MAC address, users can know status of switch port whether active,

inactive, disable, enable or shutdown. When the status is detected after monitoring, all descriptions about the error port will appear such as number of port, name, speed and type of switch.

b) **Port Utilization and Traffic**

This function define this switch port monitoring tool can detect port utilization and traffic. This tool can identify highly utilized and under utilized ports. For example, this tool can detect the statistic of port and show error percentages for each port via using IP address.

c) **View Graphically Traffic**

This Switch Port Monitoring Tool will view graph for each port when this tool is start monitor. It shows graph of error percentage, utilization and status functionality of switch port.

d) **User**

Switch Port Monitoring Tool will be used by Network Administrator and must enter correct user name and password to access this tool.

e) **Software and Hardware Requirement**

To develop Switch Port Monitoring Tool, Visual Basic will be used as a programming and important hardware is switch. Others hardware like personal computers and network requirement.

1.5 Project Significance

When this project finished, it may give benefits for LAN users especially for network administrator to monitor switch port. The significance of Switch Port Monitoring Tool is it can detect the status of switch port. When users know status of switch port, it easier for user to manage the switch port. Other significance is Switch Port Monitoring Tool provides port utilization and traffic. So, it means user can identify

highly or under utilization. Status of port utilization is important because if port has highly utilization, it can cause damage for the switch. Besides, user also can know error of each port by viewing the graph. It is important to user configure and manage the switch. Other function in Switch Port Monitoring Tool, get alert when packets discard or packets dropped. It important to give early warning for network admin to detect any problem on switch port. It also give the chances for network admin to take early action and always responsible in managing and monitoring the switch port. The switch monitoring activity maybe through IP address or MAC address.

1.6 Expected Output.

The expected output for this project is one tool will monitor and detect any problem on switch port. Switch port monitoring tool will function on monitor status of switch port whether in active, disable, shutdown, and inactive. When the status is detected after monitoring, all descriptions about the error port will appear such as number of port, name, status,VLAN, duplex, speed and type of switch. It also monitor port utilization and traffic, identify highly utilized and under-utilized ports and get alerted when a port start discarding packets. This tool also show the graph of the traffic for each port switch.

1.7 Conclusion

For conclusion, chapter 1 discuss about project background, problem statement, objectives, scopes, project significant and expected output for the project. Chapter 1 is important because in this chapter, the characteristic and overview for the project will be described as detailed as possible. After this, the project continues with chapter 2: Literature Review and Project Methodology

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Literature Review is the important method for developers before they develop their system. This activity involved searching, collecting, analyzing and drawing conclusion form all debates and issues raised in relevant body of literature. Example, for this project, Switch Port Monitoring Tool. the related project with past projects and make research from them to make comparison between past projects and the future project. There are many ways to conduct literature review such as from journal, books, technical reports, proceeding references, anonymous reference, internet and E-book.

Project Methodology is defined how you are going to do to complete the project. It is a way to use all available technique, tools and approaches used to achieve predetermined objectives. It is important for developers to demonstrate a awareness of methodological tools available an understanding of which suitable for the projects.

2.2 Fact and Finding

To get more information to develop my project, I made some researches form internet to compare my future project with past projects. Below are the researches and the facts about the project: