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JUDUL: Graphical User Interface for 3COM 4200 Switch Configuration (GSC)

SESI PENGAJIAN: 2005/2006

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GRAPHICAL USER INTERFACE FOR 3COM 4200 SWITCH CONFIGURATION (GSC)

FARAH ASYIKIN BINTI ZAINAL

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

FACULTY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2006

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DECLARATION

I hereby declare that this project report entitled

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DEDICATION

Specially dedicated to
My beloved family members who have
encouraged, guided and inspired me throughout my journey of education
my friends, and my colleagues.

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ACKNOWLEDGEMENT

In the name of Allah the Almighty and most Merciful

First and foremost, I would like to praise upon Allah for letting me complete my Projek Sarjana Muda (PSM) project on time and with success. Next, I would like to express my gratitude to my supervisor for PSM, En Othman Mohd, for helping and guiding me to understand the details for report writing and also the development of my project. I would also like to thank my beloved family for giving me support at all times.

Last but not least, I would like to convey my special thanks to all my friends and everyone involved for helping and giving me advice and cooperation throughout my project.

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ABSTRACT

Graphical User Interface For 3COM 4200 Switch Configuration (GSC) is a system that is developed to enhance the current systems available for configuring a switch. By referring to its name, this system is designed with GUI that is preparing the user to configure a switch with a more user friendly approach. If before this terminal emulation programs like HyperTerminal is the main platform for switch configuration for experts, now with GSC, even novice users can learn switch configuration without much hassle. Using GUI gives much more advantage when compared to using command lines in the configuration purpose. Not to mention, the interfaces are more user-friendly, thus saves time to configure a switch. GSC provides straight forward approach that does not require users to memorize long commands and attend to many steps involved as was in the CLI method before. Instead, GSC eases the configuration process by providing GUI interfaces such as buttons, dropdown lists and inserting input in text boxes. GSC will enable more users to understand switch configuration process easier because it is more user-friendly and it does not take up too much time.

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ABSTRAK

Konfigurasi menggunakan antaramuka grafik bagi suis 3COM 4200 (GSC) adalah sebuah sistem yang dibangunkan untuk menambahbaik sistem-sistem sedia ada untuk konfigurasi suis. Dengan merujuk kepada namanya, sistem ini direka dengan antaramuka grafik *(Graphical User Interface)* yang akan menyediakan pengguna cara konfigurasi yang lebih mesra pengguna. Jika sebelum ini, program-program emulasi terminal seperti *HyperTerminal* lebih gemar digunakan sebagai medan utama bagi pakar-pakar yang sudah biasa konfigurasi suis, kini dengan GSC, pengguna yang baru juga mampu menjalani konfigurasi suis dengan mudah. Ini kerana, dengan menggunakan GSC, terdapat kelebihan melaksanakan konfigurasi suis berbanding menggunakan cara konvensional iaitu menggunakan *Command Line Interface (CLI).* Menggunakan antaramuka grafik bukan sahaja membuatkan antaramuka sistem lebih mesra pengguna, malah ia menjimatkan masa untuk proses pengkofigurasian. GSC menyediakan pendekatan yang terang dan jelas yang tidak memerlukan pengguna menaip sintaks yang panjang atau perlu melalui langkah-langkah konfigurasi yang banyak seperti yang wujud dalam sistem-sistem sebelum ini yang menggunakan pendekatan menaip sintaks. Sebaliknya, GSC memudahkan konfigurasi dengan menyediakan antaramuka grafik seperti butang dan memasukkan input ke dalam petak-petak disediakan di antaramuka. GSC akan menggalakkan ramai pengguna untuk memahami konfigurasi suis dengan lebih mudah kerana ia lebih mesra pengguna dan tidak mengambil masa yang lama untuk proses konfigurasi.

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LIST OF ABBREVIATIONS

CLI	-	Command Line Interface
GSC	-	Graphical User Interface for 3COM 4200 Switch Configuration
IP	-	Internet Protocol
IT	-	Information Technology
KUTKM	-	Kolej Universiti Teknikal Kebangsaan Malaysia
LAN	-	Local Area Network
MAN	-	Metropolitan Area Network
NIC	-	Network Interface Card
GB	-	Giga Byte
GHz	-	Giga Hertz
GUI	-	Graphical User Interface
PC	-	Personal Computer
PSM I	-	Projek Sarjana Muda I
PSM II	-	Projek Sarjana Muda II
RAM	-	Random Access Memory
SDLC	-	Software Development Life Cycle
URL	-	Uniform Resource Locator
VLAN	-	Virtual Local Area Network
WAN	-	Wide Area Network
WWW	-	World Wide Web

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LIST OF ATTACHMENTS

ATTACHMENT	TITLE
Appendix A	Project schedule and milestones
Appendix B	Questionnaires
Appendix C	Version Control Procedure for GSC

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CHAPTER I

INTRODUCTION

1.1 Project Background

Computer networking is one of the major fields in the world of Information Technology (IT). Not only that it provides connectivity to wired network, it also connects users all over the world wirelessly with all the latest technology evolving. Among the devices used to connect between networks are routers, switches and hubs. A switch is used to connect workstations and servers in the network. It is often used to replace network hubs. In industries that involves a lot of communication or if the traffic in the network involves more than a few ports, using a switch can yield a significant improvement in the performance of the network.

In this project, an enhanced system is developed known as Graphical User Interface for 3COM 4200 Switch Configuration (GSC). The name of the system implies that the system going to be built is a system that will allow a switch to be configured using Graphical User Interface (GUI). GUI is known for it's capability to feature a user-friendly interface and allowing the user to replace several command lines being typed with just a mouse click on the buttons of the interface. With GSC,

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the network administrator can manage configuration of a switch without having to remember all command lines. GSC is more efficient and comprehensive, and it does not consume a lot of time to configure a switch as it was compared to when configuring it using command lines entered via a terminal emulation software like the HyperTerminal.

1.2 Problem Statements

For larger industries that have bigger networks, it is extremely crucial to configure the switch wisely within a limited time in order to guarantee the connection with workstations or servers are fully operational and information flow is well distributed within the network.

However, even though switches are becoming widely used, the method of configuring it does not change much. With the current method, using Command Line Interface (CLI), two problems arise:

i. The process is time consuming. User needs to enter commands, line by line, usually using a program such as the HyperTerminal. This is time consuming especially if it involves long command lines that are rarely used, making it crucial for the user to memorize them instead.

ii. There are a lot of steps involved for configuring the switch. If the user forgets the command lines, then it takes more time for the user to search for the command lines needed, or even worse, the process for configuring a switch might be delayed, therefore affecting the time constraint that is valuable every minute for the company.

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1.3 Objectives

Upon completing GSC, it is expected that the following objectives will be achieved:

i. **To be able to perform basic switch configuration functions using the GUI method.**

The basic switch configuration functions are Getting Started, Bridge (VLAN), Protocol (Basic Configuration, Initialize Configuration, Interface and Ping), System (Control, Inventory and Summary), and Logout.

ii. **To minimize configuration steps by providing interface that has all functions and features combined in one interface.**

The interface of the system will have an output screen with configuration buttons next to it. All functions and features are put into one interface and all changes can be viewed on the output screen itself.

iii. **To make use of the CLI method and turn it into a graphical user interface.**

Graphical user interface will make it easier for the user to configure the switch without having to remember the command lines. All the buttons for the commands necessary to be keyed in at that point will appear in sequence allowing the user to just follow the configuration process step by step.

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1.4 Scopes

A scope is the boundary of the system resources created that can be used. For example, what the GSC system can do or to whom it can be used. The scopes involved for this project are as below:

i. System Functional

The system functional configured for the switch using GSC are specified only to these modules: Getting Started, Bridge (VLAN), Protocol (Basic Configuration, Initialize Configuration, Interface and Ping), System (Control, Inventory, and Summary) and Logout.

ii. Network Device

GSC is going to be developed based on the 3COM 4200 switch. All the researches, testing and project implementation are focused on the 3COM 4200 switch. The connection between the 3COM switch and the computer is via the null cable connected to the workstation's COM1 port and the switch itself.

iii. Size of Project

GSC is intended for Network Administrators. But it can also be used for teaching students on how to configure a switch for their education purposes.

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iv. Platform

GSC will be developed using Windows as the operating system platform, recommended on Windows Server 2003 and will be developed using Visual Basic 6.0 programming language. The network domain will be the LAN existing in Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM).

v. Size of Project

Basically, GSC is a system that connects a computer to a switch. It is much more similar to HyperTerminal but it is in a GUI form. Buttons are provided in the interface and all of the processes to configure the switch are via the buttons. Thus, the size of the project is limited to all the hardware required for configuring a switch in a LAN.

1.5 Project Significance

Currently, there are several ways to configure a switch; connecting to the console port or using Telnet application which accesses the command lines, Simple Network Management Protocol (SNMP) which is for management using network management systems, and Hyper Text Transfer Protocol (HTTP) which is the use of web based management. Each method used has its own advantages and disadvantages.

Example disadvantages are; when the switch configuration is done by accessing command lines via console port or Telnet application, users need to know

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