

TK5105 1543 M33 2006 raf
No: 38238

BORANG PENGESAHAN STATUS TESIS

JUDUL: SMART ROUTER CONFIGURATION SYSTEM (TELNET)

SESI PENGAJIAN: SEMESTER 1 (2006/2007)

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Smart router configuration (TELNET) / Mahyuni Mohd
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SMART ROUTER CONFIGURATION (TELNET)

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**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

DECLARATION

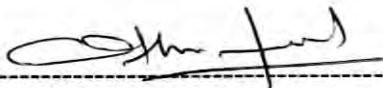
I hereby declare that this project report entitled

SMART ROUTER CONFIGURATION (SRC)

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



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ACKNOWLEDGEMENTS

Alhamdulillah with time and health given by Allah almighty, I have used this opportunity to complete my work in the time given to me.

I would like to thank my beloved parents who have been giving me support and motivation throughout my project. Not forget, thank you to all my friends especially all my housemates for giving and sharing a lot of things in order to complete this project.

Also I would like to thank Mr. Othman Mohd, my *Projek Sarjana Muda* (PSM) supervisor for giving assistance and guidance throughout my progress to complete this project. I appreciate his help and all knowledge he had shared in helping me completing this *PSM* including spending a lot of time to make a consultation with me.

Finally, I would like to thank you all people that had given and sharing some information needed for my project analysis and review.

Thank you all.

ABSTRACT

This project papers is about Smart Router Configuration (SRC) System for Cisco Router configuration. This document describe about all stages taken during the system development. Smart Router Configuration (SRC) System was developing to enhance and provide an easy way for user to configure router compared to current system used. This SRC System will configure Router using TCP connection (TELNET). A current system available is the HyperTerminal are not very systematic and take a lot of time to configure a router. By developing this enhance system, developer plan to make the router configuration become easy and consume less time to configure a router. This system reduces the usage of complex command-line and help user with easy configuration. This system is created especially for the beginner of router's user. This system will help user to configure router easily compared to the command line configuration. This system cover router's basic configuration. Using this interactive and effective system, user can configure router easily without consume much time n remember a lot of command-line and at the same time you can configure router at your own room without going to the router itself. The router configurations become more fun!

ABSTRAK

Projek ini adalah mengenai Sistem Smart Router Configuration (SRC) untuk mengkonfigurasi Cisco Router. Dokument ini ditulis untuk menerangkan mengenai semua peringkat yang diambil semasa pembangunan system ini. Sistem SRC ini dibina adalah untuk menambah baik system yang sedia ada dengan membina system yang memudahkan pengkonfigurasian router. Sistem ini mengkonfigurasi router dengan menggunakan hubungan TCP (TELNET). Sistem sedia ada iaitu Hyperterminal tidak mesra pengguna dan memerlukan konfigurasi router secara command line. Oleh itu, pengguna memerlukan masa yang lama untuk mengkonfigurasi router dengan menggunakan hyperterminal kerana pengguna terpaksa menaip satu demi satu command line untuk mengkonfigurasi router. System SRC dibangunkan untuk mengatasi masalah system yang lama disamping SRC mengaplikasi antara muka yang menarik (GUI). Sistem SRC dirancang untuk menjadikan konfigurasi router dengan lebih mudah, cepat dan efektif. Sistem, ini mengurangkan penggunaan command line yang kompleks dan menjanjikan konfigurasi router dengan mudah. Sistem ini dibina terutama untuk pengguna yang baru menggunakan router dan tidak biasa dengan pengkonfigurasian router. Malah system ini boleh digunakan untuk mengkonfigurasi router di bilik anda! Pengguna tidak perlu pergi berhampiran router untuk mengkonfigurasi, dengan system ini, pengguna boleh mengkonfigurasi pada jarak jauh kerana system ini menggunakan hubungan TCP. Selamat mencuba.

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LIST OF ABBREVIATION

| ABBREVIATION | WORD/DESCRIPTION |
|---------------------|--|
| SRC | Smart Router Configuration |
| GUI | Graphic User Interface |
| CLI | Command Line Interface |
| ERD | Entity Relationship Diagram |
| LAN | Local Area Network |
| DFD | Data Flow Diagram |
| SCM | Software Configuration Management |
| SDES | Software Development Environment Setup |

CHAPTER 1

INTRODUCTION

1.1 Project Background

Router is a device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs or WANs or a LAN and its ISP's network. Routers are located at gateways, the places where two or more networks connected, for home and business computer users who have high-speed Internet connections such as cable, satellite, or DSL, a router can act as a hardware firewall. The router itself has two functions; routing and switching. Commercially manufactured routers are easy to install, reasonably priced, and available for hard-wired or wireless networks. Looking for the important usage of the router, The **Smart Router Configuration (SRC)** System designed to help user to configure a router in an effective way. The SRC System is a system that uses to help and facilitate user to configure router even for the user that had no experience in configuring the Router. This SRC System is created mainly for the people who have no experience configuring the Cisco router but this SRC System also can be use by all level knowledge of user in configuring Cisco's router. How the SRC can help user to configure router?

There are some functions that are designed in the SRC System in order to help user during the router's configuration. The main two functions of the SRC System are to implement Graphic User Interface (GUI) in the router configuration system and reduce the usage of the command line as use in the HyperTerminal, Command Line Interface (CLI).

The first function of the SRC System is the interactive Graphic User Interface (GUI). The GUI is use to guide user during the router configuration. The GUI can help user to understand how to configure the router and guide user until the end of the configuration. GUI also can free the user from learning complex command languages. On the other hand, many users find that they work more effectively with a GUI compared to the complex command like the configuration in the HyperTerminal, especially if they do not familiar with the command line language.

The second function of the SRC System, user is not involved with the router configuration command line such as *interface serial 0, clock rate* and etc. This system will reduce the usage of command line configuration. The usage of Button will replace the usage of the command line. Buttons will help user to configure router by giving the choice to user to make decision on what they want to do with their network, at the same time user also can configure the router easily and only take not much time compared to the existence system. Using this system, user do not have to remember all the command-line, they just have to choose what they want to configure using the Button on the interface of this system.

All the functions will make the router configuration become more effective and easier compared to the existence system. These functions will add in the SRC System in order to help user to overcome the existence system problem to configure router. The problems of the existence system will describe later in this chapter.

1.2 Problem Statements

The main purpose of developing this SRC System is to enhance the existing system; the existence system is referring to the HyperTerminal. There are some problems occur with the existence system. The main problems with the existence system are the complex command-line uses to configure the router, the complicated and inconsequential configuration, not user-friendly interface, no guidance especially for the beginners and take plenty of time to configure.

1.2.1 The complex command-line that uses to configure the router.

According to the existence system, user has to remember the complex command-line to configure router. User need to know the command-line before configuring the router, that's mean only the experience user can manage to configure the router successfully. For the beginner, they might face problem to configure the router because there are no experience and at the same time they don't know about command-line that use to configure the router.

1.2.2 The complicated and inconsequential configuration.

The existence router configuration is inconsequential configuration and complicated to configure. User especially the beginner might have problems during the router configuration if they are using the existence system because the configuration involved a lot of complex command-line and the configuration is inconsequential configuration and complicated.

1.2.3 Not user-friendly interface.

The CLI interface of the existence system is not user-friendly. This factor will prevent beginner user to understand how to configure the router because the user might have problem; where to start the configuration, what to do next and etc. That why the interface plays important role to guide user during the configuration.

1.2.4 Take plenty of time to configure.

The configuration using the existence system will take plenty of time to configure because the system involves a lot of complex command. User has to type the command-line one by one to configure the router.

1.3 Objective

Looking for the some weakness of the current configuration, there are some objective that planned for the enhance system in order to improve the way to configure the router. By the end of this project, it is expected that it achieve objective as below.

- a. To build a user-friendly interfaces in order to give user understanding on how to configure the router and guide user during the configuration because the user might have problem like where to start the configuration, what to do next and etc.

- b. To reduce the usage of complex command-line because the complex command line are hard to remember and apply especially to the beginner. The button usage will replace the complex command-line in the configuration.
- c. To help user with easy configuration and step-by-step configuration because there are no step-by-step configurations in the existence system that can guide user especially to the beginner.
- d. To make configuration easier and faster compared to the existence system.

1.4 Scopes

The SRC System was developed to give user new way to configure router. Using this enhance system, user no longer use the complex command line to configure router. The router configuration will be easier than the current system. The system was developed especially to the beginner of the router user because the SRC System reduces the usage of the command-line and this system make the router configuration become simple and effective.

Basically, the SRC System are connects computer to router, the system play as a translator or a medium between computer and router during the configuration. The Cisco Router 2600 series and console cable are use for this system. This system also uses Microsoft Visual Basic 6.0 to build this system. The router configurations that cover in this system is the basic configuration such as configuring router's hostname, password, clock rate, line console and some more router configuration.

Table 1.1 : Hardware, Software, Configuration Information

| | |
|----------------------|--|
| HARDWARE (DEVICE) | <ul style="list-style-type: none">• Cisco Router 2600 series• UTP Cable (cross cable)• Workstation |
| SOFTWARE | <ul style="list-style-type: none">• Microsoft Visual Basic 6.0 Programming Language |
| CONFIGURATION | <ul style="list-style-type: none">• Telnet Basic Configuration |

1.5 Project Significance

The SRC System is created specifically for beginners to make a router configuration. This system is also suitable for technicians and all Router user in order to make configuration become faster and easier.

This system really gives convenience to user because of their interactive GUI and this system also reduces the usage of coding. User can easily configure router using this system at the same time make the configuration faster than the existence system.

Table: 1.2 The differences between The Existence System and The SRC System.

| No | The Existence System | The Smart Router Configuration System |
|----|-------------------------------|---|
| 1. | A lot of complex command-line | Buttons will help users to configure router by giving them choice to make decision on what they want to do with their network and at the same time it reduce the usage of command-line. |

| | | |
|----|---|---|
| 2. | Not user-friendly interface | User friendly interface |
| 3. | The complicated and inconsequential configuration | Easy configuration and guide with step-by-step configuration. |
| 4. | No guidance especially for the beginner user. | The interactive GUI will help users to understand on how to configure the router and guide them until the end of the configuration. |
| 5. | Consume much time to configure. | The router configuration is easier and faster compared to existence system. |
| 6. | Total down time much longer | Total down time will be much shorter because process configuration much easier and doesn't consume much time to configure. |

1.6 CONCLUSION

The SRC System is expected will be use especially by the beginner of the router user. This system will help user to configure router effectively. This system also uses the GUI as a platform to help user to configure router by using button to reduce the command line for router configuration.

As a conclusion, this first chapter describes the project background of the SRC System. Besides, we also know that problems occur with the existence router configuration system can be avoid by implementing this SRC System to make work become more effectives. The objectives, project scopes, project significant also covered in this chapter. The main factor for the development of the **Smart Router Configuration System (SRC)** is to help router's user to configure the router in effective and easy way. The literature review and project methodology will be described on the next chapter.

CHAPTER 11

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

The literature review is one of the least understood parts of a research project. A literature review is a summary of previous research on a topic. . While, the methodology is a to provide a standard method and guidelines to ensure the project is produced in a discipline, well-managed and consistent manner that promotes the delivery of quality products and results of the project. In this chapter, developer will cover about the Fact and Finding of the relevant articles based on the SRC System, Project Requirement, the project schedule and mile stone. The Fact and Finding elements discuss about the articles that support the development of the SRC system. These articles also prove that developer can built the SRC System using the Microsoft Visual Basic. The Project Requirement covers about the hardware and software requirement to develop the system.

The SRC System will develop followed by the project methodology. In order hand, to make sure this project successfully done, the project will develop using the Waterfall model of methodology. This method will guide the developer to develop the SRC project according to the five phases that have in the Waterfall Model. Using the

Project schedule (Gantt chart) and mile stone, developer can manage their progress project development systematically because the Project Schedule will guide developer to do all the tasks during a period of time and make sure the project completed during the time given.

2.2 Fact And Finding

The fact and finding is the article, book or what people say about certain thing. Below is some of the fact and finding about the project.

2.2.1 Why Router 2006 Series

The Cisco 2600 series of modular, multi-service access routers, with over 70 network modules and interfaces, offers versatility and expandability ideal for branch office connectivity. In addition, Cisco 2600 series routers provide flexible LAN and WAN configurations, multiple security options and a range of high performance processors. By using the Cisco 2600 series router, companies can consolidate the functions of multiple separate devices into a single, compact package that can be managed remotely.

Cisco System, Inc. today announced the Cisco 2620 and 2621 modular access routers, adding 10/100 Fast Ethernet and Virtual LAN (VLAN) capabilities to the company's popular 2600 series multi-service solutions that deliver cost-effective data