

BORANG PENGESAHAN STATUS TESIS^

JUDUL: BANDWIDTH AND DELAY ANALYSIS IN PUTRI SPECIALIST HOSPITAL

SESI PENGAJIAN: 2006

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Bandwidth and delay analysis in Putri Specialist Hospital,
Johor Bahru / Muzliana Muzafar.

**BANDWIDTH AND DELAY ANALYSIS IN PUTRI SPECIALIST HOSPITAL,
JOHOR BAHRU**

MUZLIANA BINTI MUZAFAR

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

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2006**

DECLARATION

I hereby declare that this project report entitled
**NETWORK ANALYSIS IN PUTRI SPECIALIST HOSPITAL,
JOHOR BAHRU**

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 parents, Muzafar Bin Haji Othman and
Wan Zuriana Binti Mohd Yusoff Merican.

To my sister and brothers, Muzalinda, Mohd Zulfitri and Mohd Zulfaizal.

To Mr Sharul Nizam and Mr Izad, for their steadfast support.

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Thank you.

ABSTRACT

Today networks are the talk of the town. Network is very important for every organization as custodian of company's data, information and programs stored on computer systems to make sure the data and information keep in safe and free from computer viruses. Network analysis looks inside the network communications to identify excessive broadcasts, unanswered requests, slow response times, poorly-written applications, network design, bandwidth and how many workstations involve in the organization. For this analysis, it will describe about the bandwidth utilization and delay or network latency that happen in this hospital. The network diagram will be map and model using OPNET Modeler simulator. Delay and bandwidth is the problem that occurs in the organization. Using this simulator, some suggestion to improve the network performance can be made. After the enhancement, the better performance will be getting as the result. The result that is expected as the output is will be better than the existing scenario.

ABSTRAK

Rangkaian merupakan komunikasi yang penting untuk sesebuah organisasi sebagai tempat untuk menyimpan maklumat, informasi dan data kepada program-program yang digunakan di dalam komputer. Ini untuk memastikan segala maklumat tersebut disimpan dengan selamat supaya tidak dijangkiti virus. Rangkaian maklumat ini akan membincangkan mengenai penghantaran data, perjalanan masa sesuatu maklumat, aplikasi, gambarajah rangkaian, penyiaran maklumat, kelajuan, jalur lebar dan pangkalan yang digunakan dalam sesebuah organisasi. Dalam analisis ini, ia akan menerangkan mengenai penggunaan saiz dan juga penangguhan untuk penghantaran data yang berlaku di hospital tersebut. Lakaran rangkaian akan di petakan menggunakan simulasi Opnet. Penangguhan data dan penggunaan saiz adalah masalah yang berlaku di organisasi tersebut. Dengan menggunakan simulasi Opnet ini, beberapa penyelesaian atau cadangan untuk memperbaiki keadaan akan didapatkan sebagai keputusan daripada simulasi tersebut. Selepas penambahbaikan yang dilakukan, keputusan yang lebih baik akan diterima. Keputusan yang dijangkakan akan menjadi keputusan yang lebih baik daripada keputusan keadaan sebenar.

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LIST OF ABBREVIATIONS

ABBREVIATIONS	FULL TERMS
R & D	Research and Development
VLAN	Virtual Local Area Network
FTP	File Transfer Protocol
OPNET	Optimized Network Engineering Tools
LAN	Local Area Network
WAN	Wide Area Network
WWW	World Wide Web
NETWARS	Network Warfare Simulation
IIS	Internet Information Service

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CHAPTER I

INTRODUCTION

1.1 Project Background

Today networks are the talk of the town. Network is very important for every organization as custodian of company's data, information and programs stored on computer systems to make sure the data and information keep in safe and free from computer viruses. Beside that, it also to maintain central control of IT budgets and purchases besides to carryout the software Research & Development and Software Implementation Management, ensure an uninterrupted computer services to the users and to give support on software application, hardware and operating system or system software support.

Network analysis looks inside the network communications to identify excessive broadcasts, unanswered requests, slow response times, poorly-written applications, network design, bandwidth and how many workstations involve in the organization. There are numerous network problems that do not generate any error messages so network analysis is a fundamental step for anyone who is troubleshooting, optimizing or securing a network.

For this project, all the analysis will be done in Putri Specialist Hospital, Johor Bahru as the prototype for this research. This company has 5 levels. All the departments in each level have the network connection to the server room.

The network configured with single subnet, which is Virtual LAN (VLAN) configuration and used Spanning Tree Algorithm to establish a loop free network. The latest network infrastructure solution is a build of Ethernet switches. The network equipment will be interconnected using either 6-core / 12-core outdoor multimode fiber or FTP cables.

There are three types of backbone connections. There is Gigabit Ethernet (1000BaseSx) Backbones using MMF Fiber, labeled as 'GBIC 12 MMF GBIC' or 'GBIC 6 MMF GBIC', Fast Ethernet (100BaseTx) Backbones using MMF Fiber, labeled as 'MAU 6 MMF MAU' and Fast Ethernet (100BaseTx) Backbones using FTP cable.

This project will analyze all the data to be tested using OPNET Modeler Simulation. OPNET provides the largest, most comprehensive library of open source, discrete event simulation models for the information technology industry. This analysis will be done through the network diagram from Putri Specialist Hospital. The complete network diagram must be detail to implement it into simulation software. Besides that, this project will analyze the network performance in the organization environment and find all the solution to improve the network performance.

With this student can analyze many data from the company especially its network bandwidth, network diagram, network application, network performance, how does the traffic look like, how many workstation involve and the network problems that are currently occur.