Performance Modelling of UUM Local Area Network (wired)

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ABSTRACT

Slow network connection in accessing resources is a common complaint on a computer network that has switches as dominant network equipment, when certain nodes are heavily loaded with clients more than their capacity. In this study a simulation model was developed and validated for the University of Utara Malaysia wired Local Area Network. The effect of network parameters such as the processing time and the packet arrival rate on the performance metrics such as throughput, end to end delay and utilization of the servers and switches on the network was investigated. The analysis of the results from the simulations carried out can assist the management of computer centre that manages the network in identifying the bottleneck node on the network and for future network capacity building.

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LIST OF ABBREVIATIONS FOR THE DISTRIBUTION SWITCHES

Switch B1	COMPUTER CENTRE
Switch B2	FSKP/FKBM
Switch B3	FPP/FSK
Switch B4	RACK A PERPUSTAKAN
Switch B5	BENDAHARI
Switch B6	CONVENTION CENTRE
Switch B7	KOLEJ EON
Switch B8	PALAPES
Switch B9	BKP
Switch B10	FWB/FPAU
Switch B11	BUKIT KACHI
Switch B12	KOLEJ B.MUAMALAT
Switch B13	FTM
Switch B14	FACULTY OF ECONOMICS
Switch B15	PPK
Switch S	CORE SWITCH
Switch X	DATACENTER SWITCH 1
Switch Y	DATACENTRE SWITCH 2
Switch Z	SWITCH AT THE DMZ

CHAPTER ONE

INTRODUCTION

Computer networking enables people or devices to communicate with one another. The telephones are networked in the GSM and public telephone systems. Data networks connect several computers, making it possible for them to connect and exchange data. A data network can simply be created by connecting two computers together with a cable.

A voice and data network Local Area Network (LAN) is a collection of individual networks connected by network equipments to function as a single large network known as internetworking. Local Area Network makes it possible for multiple users in a small geographic area to access shared resources, exchange files and messages on a data network. WANs interconnect the LAN to make it possible for geographically dispersed users to share information. It is slower in comparison to a LAN, and usually requires a connection request in order to send data. This is made possible by service providers with a monthly tariff paid (Teare, 2008).

In a computer network that has switches as dominant network equipment, data packets are sent on a shared link via the switches. The switch will have to make a decision on which packet goes first. In a packet switched network a switch could be designed to service packets on a FIFO basis, so as to ensure that packet flows receive a specific share of the link's bandwidth and that the packets are not delayed in the switch for more than a certain length of time. When a network allows such packets flow to request the above treatment, it is said to

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