

**PERFORMANCE ANALYSIS OF PACKETS SCHEDULING WITH  
PREEMPTIVE**

**Project report presented in the partial fulfillment for the award of the  
Bachelor of Electrical Engineering (Hons)  
UNIVERSITI TEKNOLOGI MARA**



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## **ACKNOWLEDGEMENT**

Alhamdulillah to Allah SWT the Beneficent, the Merciful, with the deepest sense of gratitude of the Almighty who has given the strength and ability to complete this project as it is today.

First and foremost, I would like to express my sincere appreciation to my project supervisor Puan Darmawaty Bt Mohd Ali for her valuable advice and instructions in my final year project. I never know which way to go without her enormous assistance.

Secondly, I would like to dedicate my love and thank towards my family for their encouragement and moral support throughout the years. You are the source of my strength and inspiration.

My thanks also go to all of lectures in Faculty of Electrical Engineering, UiTM for their contribution of precious ideas, support, and their willingness in sharing knowledge towards the completion of this thesis.

Finally I also would like to say thank you to my friends for their support and helped me in completing this project. Thank you and may Allah bless all of you.

## **ABSTRACT**

In today's high-speed packet networks that support various applications with different service requirements, congestion control is an important issue. One of the methods for preventing congestion is packet scheduling [10]. Packet scheduling in network can provide guaranteed performance in terms of delay, delay jitter, packet loss, overflow and throughput.

The main objective of this thesis is to implement a model for the packet scheduling mechanism, perform a simulation based performance analysis, and compare it to three commonly used scheduling mechanisms: WFQ, Custom Queuing, and Priority Queuing.

We implement a scheduler model and incorporate it into the IP layer output queues using OPNET 10.5 simulation tool. We measure the performance of the algorithms in terms of delay time, size of packet and overflow from different traffic flows during various time periods. We also simulate a network running several Internet applications: VoIP, FTP, video conferencing and we observe the impact of scheduling algorithms on the performance of these applications. Our simulation results indicate comparison of Priority Queuing, WFQ and Custom Queuing in internet application in terms of delay time, size of packet and overflow. .

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# CHAPTER 1

## INTRODUCTION

The development of communication networks enables users to transfer information in the form of voice, video, electronic mail, and computer files. The following networks illustrate the evolution steps of communication networks:

- Telephone networks
- Computer networks
- Cable television networks, and
- Wireless networks.

This chapter will introduce about the research. In this chapter also review the background and benefit. The problem statement, objective of the scope and how the thesis organization is all explained in this chapter.

### 1.1 Thesis overview

In ten years, the Internet has grown exponentially and has reached almost 3,000,000 hosts. There is a huge demand for integrating voice and data into same network. Currently most confidential information is maintained in a packet but some application are not sensitive to delay of transmitted information.

Today, the rapid evolution of networks has brought up the issue of ever increasing demand for performance analysis and simultaneous support for different types of services in the same telecommunication network. Thus, QoS has become a key factor in the deployment of today's networks and services. In general, QoS means providing consistent and predictable data or packet delivery service in order to satisfy different application requirements [10].

Packets scheduling such as First In First Out (FIFO), Weighted Fair Queuing (WFQ), Priority Queuing (PQ) and others also can be implement queuing techniques govern