

**QUEUE MANAGEMENT PERFORMANCE EVALUATION OF
REM, GRED, AND DropTail ALGORITHMS**

**A project submitted to Dean of Awang Had Salleh Graduate School in
Partial Fulfilment of the requirement for the degree
Master of Science of Information and Communication Technology
Universiti Utara Malaysia**

By

FADI HANI KHUDHUR

2012

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ABSTRACT

As the new user applications and Internet traffic are increased rapidly Rapid growth, the need for developing the Internet infrastructure that guarantee good level of quality of service became necessary. Congestion that is caused by uncontrollable amount of traffic remains as a main problem that threatens the Quality of Service (QoS) on the Internet. Proactive Queue Management Mechanisms employed in the Internet routers help in improving the performance of responsive applications such as TCP applications. The selection of Active queue management mechanism plays an important role that leads to well network performance and utilization. In this project, we performance evaluation for examining the performance of the some of the known queue management mechanisms, namely DropTail, REM, and RED proposed for IP routers to achieve performance among competing sources. The purpose of this performance examination is to identify the key parameters to improve the fairness and link utilization in TCP/IP networks. In addition, this will help obtaining a better understanding of these mechanisms by identifying and clarifying factors that influence their performance in order to improve TCP/IP networks performance overall.

ACKNOWLEDGMENTS

Praise to Allah for his guidance and blessing for give me wisdom in the life, knowledge, strength and perseverance to complete this project. I would like to express my deep and sincere gratitude to my supervisor, Associate Professor Dr. Suhaidi Hassan, Assistant Vice Chancellor and Head of the UUM College of Art and Sciences, to encouragement and motivation during the course of the project.

I would also like to express my thanks to my supervisor Dr.Mohammed M. Kadhum for this constructive advices, invaluable directions, encouragement and motivation during the course of the project. His wide knowledge and his logical way of thinking have been of great value for me.

I would say to the spirit of my father. I was hoping to see me in this day, and I achieved your dream to get the master.

I owe my special thanks to my wife Reem, Which has given me strength and courage and she endured a lot , as well as my kids, Hani and Karam . Without their encouragement it would have been impossible for me to finish this work.

I am always grateful to all members of my family, first my Mother. I am thanking her for every prayer and supplication she made for me and as well for her love and most importantly she is my mother. I also would like to express my very thanks to my brothers Faris and Fawaz, to help me financial support and as well taking care of me while I was student in overseas. I would also like to thanks all my friends are all thanked for their moral support during my research.

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CHAPTER ONE

INTRODUCTION

This project is about evaluating some of the common queue congestion management mechanisms in order to improve the performance of TCP/IP network. The goal of this chapter is to place the project in its context. This chapter provides an introduction to congestion in TCP/IP networks and the role of queue management mechanism in enhancing the network performance in Sections 1.1 and 1.2, respectively. The research problem is presented in Sections 1.3. Sections 1.4, 1.5, and 1.6 of this chapter, respectively, include the research questions, research scope, and objectives of the research presented in this project. The importance of the work done in this project is stated in Section 1.7 while the project organization is presented in Section 1.8 of this chapter.

1.1 INTRODUCTION

A computer network is a collection of resources which has a finite capacity that causes users to compete for the network resources such as buffers, transmission bandwidth and processing time. As stated by Agnew (Agnew, 1988), the limitation of capacity can result in a degradation of performance of the system to the point that the throughput of the system goes to zero. If the network is overloaded, the throughput degradation becomes unavoidable. Networks cannot afford to accept all the traffic that is offered, unless there is a control system. Therefore, there must be regulations which regulate the receipt of traffic from outside and manage the flow inside the network.

Congestion problems can appear when the load on the network is greater than the network capacity. These problems cause large delays in data transmission, frequent buffer overflows, and

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internal user
only

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