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***Analysis of Performance of Differentiated Service
for Multimedia Traffic***

تحليل أداء الخدمة المتباينة للمرور الوسائط المتعددة

**Thesis Submitted in Fulfillment For The
Degree Of MSC In Electronic Engineering
(Communication)**

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سورة لقمان: الآية ٢٠

Dedication

I dedicate this little effort to my:

Parents

Brothers... . .

Teachers... . .

Colleagues... . .

And everybody that seeks knowledge

Acknowledgement

I would like to express my gratitude to the following individuals who contributed to the eventual success of this work.

- To my supervisor, Dr. Rashid A. Saeed for supporting and guiding
- To my family, I would like to express sincere appreciation for never-ending inspiration and, above all, for their sometimes tried patience to handle this research.
- To all my colleagues around me for their support in doing simulation.

Abstract

Quality of Service (QoS) techniques are applied in IP networks to utilize available network resources in the most efficient manner to minimize delays and delay variations (jitters) in network traffic having multiple type of services. Multimedia services may include voice, video and database. Researchers have done considerable work on queuing disciplines to analyze and improve QoS performance in wired and wireless IP networks.

This research highlights QoS analysis in a wired IP network with more realistic enterprise modeling. Three different applications are used i.e. FTP, Voice over IP (VoIP) and Video Conferencing (VC).

Three major queuing disciplines are evaluated i.e. 'FIFO Queuing' 'Priority Queuing' and 'Weighted Fair Queuing' for packet identification. The simulation results show that WFQ has an edge over PQ in terms of queuing delays and jitter experienced by low priority services. For high priority traffic dependency of 'Traffic Drop' and 'Packet Delay Variation' on selected buffer sizes is simulated and discussed to evaluate QoS deeper.

المستخلص

يتم تطبيق تقنيات جودة الخدمة (QoS) في شبكات IP للاستفادة من موارد الشبكة المتوفرة بالطريقة الأكثر فعالية للحد من التأخير والاختلافات (التوتر) في حركة مرور شبكة ذات انواع متعددة من الخدمات. ويمكن أن تشمل خدمات الوسائط المتعددة الصوت والفيديو والبيانات. وقام باحثون بعمل كبير في تخصص الاصطفاف لتحليل وتحسين أداء جودة الخدمة في شبكات IP السلكية واللاسلكية. هذا البحث يسلط الضوء على تحليل جودة الخدمة في شبكة IP السلكية مع نمذجة أكثر واقعية، وتستخدم ثلاثة تطبيقات مختلفة مثل بروتوكول نقل الملفات، الصوت عبر بروتوكول الإنترنت (VoIP) ومؤتمرات الفيديو (VC).

يتم تقييم ثلاثة تخصصات رئيسية للاصطفاف "FIFO في قائمة الانتظار" الأولوية في قائمة الانتظار " و "قائمة انتظار معرض مرجح" لتحديد الحزمة. وتبين نتائج المحاكاة أن WFQ لديه ميزة على PQ من حيث التأخير والتوتر التي يعاني منها الخدمات ذات الأولوية المنخفضة. المشكلة التي تم حلها في هذه الدراسة هي تقديم مستويات جوده خدمه لاي شبكه بكفاءه عاليه لتصنيف مرور بيانات لاولويات متعدده ووضع اعلي اولويه مرور بيانات في صفوف لأخذ افضل خدمه وبقيه الاولويات يجب ان تعامل بناء علي اتفاقيه مستويات الخدمه والتي يتم الاتفاق عليها بين الزبون ومقدم الخدمه.

Table of Contents

Subject	Page No.
الآية	I
Dedication	II
Acknowledgement	III
Abstract	IV
المستخلص	V
Abbreviation	1
Chapter One	
1.1 Introduction	3
1.2 Literature Review	4
1.3 Problem statement:	5
1.4 Methodology	5
1.5 Aims and objectives	5
1.6 Thesis layout	6
Chapter two	
2.1 Quality of Service Definition	7
2.2 The Need for Quality of Service	7
2.3 Providing Network QoS	9
2.4 QoS degradation reasons	9
2.5 SLA specifications for QoS	11
2.6 Quality of Serves Techniques	11
2.7 Congestion Management Techniques	12
2.8 Classification, Admission, and Tagging	13
2.9 MAC-Layer Prioritization	14
2.10 IP Type of Service (IP ToS)	15
2.11 IETF QoS Solutions	15
2.12 Policies and Policy Protocols	16
Chapter three	
3.1 Queuing delay and packet lost	18
3.2 Congestion Management	19
3.2.1 FIFO Queuing	20
3.2.2 Priority Queuing	20
3.2.3 Round Robin Queuing	21
3.2.4 Weighted Fair Queuing	21
3.3 Differentiated Services Model	23
3.4 Differentiated services architectural mode	24
3.5 Differentiated Services Domain	26
3.6 Traffic Classification and Conditioning	26
3.6.1 Classifiers	26
3.6.2 Traffic Conditioners	27
3.7 Marking at Layer 3	28
3.8 Per-hop Behaviors	30

3.8.1 Assured Forwarding (AF) PHB	30
3.8.2 Expedited Forwarding	31
3.9 Components of a Diffserv router	32
3.10 Diffserv Functions at Ingress and Egress	34
3.11 Related Work:	35
3.12 Algorithm	36
Chapter four	
4.1 Simulation Tool & Statistics (OPNET)	38
4.2 Network Model & Configuration	38
4.3 Simulation Results & Analysis	40
4.3.1 Configure Application	41
4.3.2 Graphical Analysis	41
Chapter Five	
Conclusion	48
Recommendations	48
References	49

List of Figures

Figure 2-1 Internet usage by world regions	7
Figure 3-1 Queuing Delay and packet loss	18

Figure 3-2 Dependence of average queuing delay on traffic density	19
Figure 3-3 FIFO Queuing	20
Figure 3-4 Priority Queuing	20
Figure 3-5 Weighted Fair Queuing	22
Figure 3-6 Differentiated Services model	25
Figure 3-7 A logical Representation of a Traffic Classifier	27
Figure 3-8 IP packet	29
Figure 3-9 TOS byte in the IP header	30
Figure 3-10 Major functional blocks in a Diffserv router	32
Figure 3.11 Diffserv interface between A and B	34
Figure 3-12 Traffic Flow through the IPQoS Implementation of the Diffserv Model	36
Figure 4-1 Network Topology for Simulation	39
Figure 4-2 IP traffic dropped (packets/sec)	42
Figure 4-3 Voice Traffic Send (packet/sec)	43
Figure 4-4 Voice Traffic Received (packet/sec)	43
Figure 4-5 Voice Packet end to end Delay	44
Figure 4-6 Video conferencing Packet end to end Delay	45
Figure 4-7 Video conferencing Traffic Send (packets/sec)	45
Figure 4-8 Video conferencing Traffic Received (packets/sec)	46
Figure 4-9 Queuing delay	46

List of Tables

Table 3-1 ToS Bits and Their Corresponding Decimal Values and Definitions	29
Table 3-2 lists the classes and their associated AF values.	31
Table 4-1 some statistics to test the performance of the applications	40
Table 4-2 Configure Application	41