ENHANCEMENT QUALITY OF SERVICE AT ADTECBP LAN USING TRAFFIC POLICING

WAN MUHAMMAD HAZWAN BIN AHMAD AZAMUD-DIN

MASTER OF COMPUTER SCIENCE
(INTERNETWORKING TECHNOLOGY)

2016

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Faculty of Information and Communication Technology

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WAN MUHAMMAD HAZWAN BIN AHMAD AZAMUD-DIN

A project submitted
in fulfillment of the requirements for the degree of Master of Computer Science
(Internetworking Technology)

Faculty of Information and Communication Technology

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2016

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DEDICATION

Alhamdulillah

To my beloved wife and dearest daughter

Hasfazila binti Simin

To my beloved Mother and Father

Shahrifah Hafizah Syed Abd Rahman and Ahmad Azamud-din Aman

To my beloved Supervisors

To my beloved brothers

To my beloved friends

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DECLARATION

I declare that this project entitled “Enhancement Quality Of Service at ADTECBP LAN using Traffic Policing” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature : ……..

Name : ……..

Date : ……..……

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APPROVAL

I hereby declare that I have read this project and in my opinion this project is sufficient in term of scope and quality for the award of Master of Computer Science (Internetworking Technology).

Signature	:	……..
Supervisor Name	:	Dr. Zul Azri bin Muhamad Noh
Date	:	……..……

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ABSTRACT

Mainly, an Internet service provider (ISP) provides best-effort service to all customers that subscribe to it and Quality of Service (QoS) is only given by provider if it being request. While traffic become congested, initial setting of configuration doesn't resolve this issue. Current trending on network nowadays with convergence of data, voice and video it is important for network to administrator to classify the traffic by using QoS mechanism. In applying differentiated QoS, router will classify and remarked the traffic to utilize the network. Regarding the Service Level Agreement (SLA), classification the traffic will make router to use more resources. Outcome from the result is very important by implementing these methods by using for network system administration, network engineer and others. In order study effectiveness by applying QoS on network, appropriate methodology need to be applied. Objective for this setup is to categorize network performance metrics such as throughput, jitter and packet loss based on multiple traffic accessing the router. Remarking and classify traffic will make router will do more work. Certain devices, performance become dropped when enabling this method. Another method is by make combination of classification, remarking and apply traffic policing. This method will deteriorate throughput at the egress router. Other than that, jitter and packet loss also will be increased by implementing traffic policing. Jitter, throughput and packet loss will be measured by using network performance tools such as IPERF. Regarding from previous review of literature, ISP or network provider need to concern about their SLA and providing service of network to avoid issue that will be discussed on thesis.

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ABSTRAK

Terutamanya, pembekal perkhidmatan Internet (ISP) menyediakan perkhidmatan usaha terbaik kepada semua pelanggan yang melanggan dan Kualiti Perkhidmatan (QoS) hanya diberikan oleh pembekal jika ia menjadi permintaan. Walaupun trafik menjadi sesak, penetapan awal konfigurasi tidak menyelesaikan isu ini. Perkembangan semasa ke atas rangkaian pada masa kini dengan penumpuan data, suara dan video adalah penting untuk rangkaian kepada pentadbir untuk mengklasifikasikan lalu lintas dengan menggunakan mekanisme QoS. Dalam menggunakan QoS berbeza, router akan mengelaskan dan berkata trafik untuk menggunakan rangkaian. Mengenai Perjanjian Tahap Perkhidmatan (SLA), klasifikasi trafik akan membuat router untuk menggunakan lebih banyak sumber. Hasil daripada keputusan yang sangat penting dengan melaksanakan kaedah ini dengan menggunakan untuk pentadbiran sistem rangkaian, jurutera rangkaian dan lain-lain. Untuk keberkesanan kajian dengan menggunakan QoS pada rangkaian, kaedah yang sesuai perlu digunakan. Objektif untuk projek ini adalah untuk mengkategorikan metrik prestasi rangkaian seperti pemprosesan, ketar dan kehilangan paket berdasarkan pelbagai trafik mengakses router. Penyemakan Semula dan mengelaskan trafik akan membuat router akan melakukan lebih banyak kerja. Peranti tertentu, prestasi menjadi jatuh apabila membolehkan kaedah ini. Kaedah lain adalah dengan make gabungan klasifikasi, mengulas dan memohon kepolisan lalu lintas. Kaedah ini akan merosot pemprosesan di router jalan keluar. Selain daripada itu, ketar dan kehilangan paket juga akan dipertingkatkan dengan melaksanakan kepolisan lalu lintas. Ketar, pemprosesan dan kehilangan paket akan diukur dengan menggunakan alat prestasi rangkaian seperti IPERF. Mengenai daripada kajian sebelum sastera, ISP atau pembekal rangkaian perlu kebimbangan mengenai SLA dan perkhidmatan yang menyediakan rangkaian untuk mengelakkan isu yang akan dibincangkan pada tesis.

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LIST OF ABBREVIATION

ACID	Atomic, consistent, isolated, and durable
ADM	Architecture Development Method
ADSL	Asymmetric Digital Subscriber Line
API	Application Programming Interface
ASP	Active Server Page
B2B	Business-to-business
BASE	Basic availability, soft state, and eventual consistency
BPEL	Business Process Execution Language
BPM	Business Process Management
BPMN	Business Process Modelling and Notation
BPR	Business Process Reengineering
BYOD	Bring your own device
CAP	Consistency, Availability, Partition Tolerance
CD	Compact disc
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CGO	Chief Governance Officer
CIO	Chief Information Officer
CMO	Chief Marketing Officer
COA	Cloud-Oriented Architecture
CORBA	Common Object Request Broker Architecture
COTS	Commercial off-the-shelf
CRM	Customer Relationship Management
CSE	Complex Systems Engineering
CSV	Comma-separated value
DCOM	Distributed Component Object Model
DDoS	Distributed denial of service
DMZ	Demilitarized Zone
DNS	Domain Name Service
DoD	Department of Defense
DoDAF	Department of Defense Architecture Framework
EA	Enterprise Architecture or Enterprise Architect
EACOE	Enterprise Architecture Center of Excellence
EAI	Enterprise Application Integration
EII	Enterprise Information Integration
ERP	Enterprise Resource Planning
ESB	Enterprise Service Bus
ETL	Extract, transform, and load

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EULA	End-user license agreement
FTP	File Transfer Protocol
FUD	Fear, uncertainty, and doubt
GIGO	Garbage in, garbage out
GPS	Global Positioning System
GRC	Governance, risk, and compliance
H4x0r	Hacker
HATEOAS	Hypermedia as the engine of application state
HOA	Hypermedia-Oriented Architecture
HQ	Headquarters
HR	Human resources
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
IA	Information Assurance
IaaS	Infrastructure-as-a-Service
IANA	Internet Assigned Numbers Authority
IEEE	Institute of Electrical and Electronics Engineers
IMO	International Micro OraTib
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISBN	International Standard Book Number
IT	Information Technology
JMS	Java Message Service
JSON	JavaScript Object Notation
JSP	Java Server Page
LOB	Line of business
LOIC	Low Orbit Ion Cannon
MDA	Model-Driven Architecture
MIME	Multipurpose Internet Mail Extension
MTV	Music Television
NIST	National Institute for Standards and Technology
OMG	Object Management Group
OOAD	Object-Oriented Analysis and Design
OS	Operating system
PaaS	Platform-as-a-Service
PO	Performance objective
POTS	Plain old telephone service
POX	Plain old XML
QA	Quality Assurance
QoS	Quality of Service
RAM	Random-access memory
REST	Representational State Transfer
RFP	Request for proposal
RMI	Remote Method Invocation
RMM	Richardson Maturity Model
ROA	Resource-Oriented Architecture
RPC	Remote Procedure Call

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SaaS	Software-as-a-Service
SCM	Supply Chain Management
SD	Software development
SI	System Integrator
SIP	Session Initiation Protocol
SLA	Service-Level Agreement
SO	Service Orientation
SOA	Service-Oriented Architecture
SOAP	(Formerly) Simple Object Access Protocol
SPEAR	Semper Paratus: Enterprise Architecture Realization
SQL	Structured Query Language
SSA	Software Security Assurance
TCP/IP	Transmission Control Protocol/Internet Protocol
TOGAF	The Open Group Architecture Framework
TSE	Traditional Systems Engineering
UDDI	Universal Description, Discovery, and Integration
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
URN	Uniform Resource Name
USCG	United States Coast Guard
VM	Virtual Machine
VPC	Virtual Private Cloud
VPN	Virtual Private Network
W3C	World Wide Web Consortium
WADL	Web Application Description Language
WOA	Web-Oriented Architecture
WSDL	Web Services Description Language
XML	eXtensible Markup Language
XSD	XML Schema Definition
Xtr3m H4x0r	Extreme hacker

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Wan Muhammad Hazwan bin Ahmad Azamud-din

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