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شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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بالرسالة صفحات لم ترد بالأصل

Cairo University
Institute of Statistical Studies & Research

Performance Evaluation of Proposed Routing Techniques for Internet

Thesis Submitted

By

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For the Master Degree of Computer science

Under supervision of

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Faculty of Computers and Information

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APPROVAL SHEET

Performance Evaluation of Proposed Routing Techniques for Internet

Master Thesis

Submitted By
Mohamed Abdellatif Abdelaziz Zahran

This Thesis is for the Master Degree in Computer Science and Information, Department of Computer Science and Information, Institute of Statistical Studies and Research, Cairo University, Has Been Approved By:

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STATEMENT

I certify that this work has not been accepted or submitted in candidature for any other degree.

Any portion of this thesis for which I am indebted to other sources are mentioned and explicit references are given.

Mohamed Abdellatif Abdelaziz Zahran

Date: 9/3/2002

ABSTRACT

The objective of this research has two folds:
The first one is to build a general simulation model to evaluate and measure the performance of the computer network algorithms. The second one is to evaluate the performance of a new internet routing algorithm in comparison with another one.

The idea of this algorithm depends mainly on the short time periodic update period for the routing database at closed routers in one area. The routing vector which carries the update information is short. It has only data about each link-state(up/or down) & its current bit rate and the traffic load for each destination. The update period time between border routers in the different areas depends mainly only the traffic load exchange between them. If the load is relatively high we choose short time period update and viceversa. Aperiodic update is done on time if sudden exchange is happened in the link-state or the traffic load not only between closed routers in one area but also between borders ones.

A comprehensive survay for current switching and routing techniques are presented. This survey has covered in brief details circuit switching, packet switching using datagram & virtual circuit, frame relay, and the asynchronous transfer mode with its main features. This is besides the internet routing survey which covered routing types in WAN and its comparison evaluation. Internet routing survey has detailed Routing Information Protocol (RIP), its different versions, flooding as the simplest

multicast routing algorithm, spanning trees, and reverse-path forwarding techniques.

The new proposed internet routing scheme has been designed and evaluated by simulation in Pascal programming language. A comparison evaluation of the proposed scheme with (RIP) scheme is presented. The measured network performance parameters are delay, throughput, and lost packets.

Simulation results have shown that the measured delay of proposed scheme is better than RIP scheme by 13% and the throughput is increased by 20%. The number of lost packets is decreased by 18% in the proposed one.

CONTENTS

ABBREVIATIONS

AAL	ATM Adaptive Layer
ATM	Asynchronous Transfer Mode
BGP-4	Border Gateway Protocol
BSD	Barkeley System Distribution
CIDR	Classless InterDomain Routing
CLP	Cell Loss Priority
CAR	Centralized Adaptive Routing
CBR	Constant Bit Rate.
DAR	Distributed Adaptive Routing
DLSRP	Dynamic Link State Routing Protocol
DNS	Domain Name System
DLCI	Data Link Connection Identifier
EGP	Exterior Gateway Protocol
GFC	Generic Flow Control
IAR	Isolated Adaptive Routing
IGP	Interior Gateway Protocol
IMP	Interface Message Processor
IP	Internet Protocol
ISDN	Integrated Service Digital Network
ISO	International Standards Organization
LAN	Local Area Network
MBONE	Multicast internet protocol virtual internet BackbONE
MTBF	Mean Time Between Failure
NNI	Network Node Interface

OSPF	Open Shortest Path First
OSI	Open System International
PTT	Public Telephone and Telegraph
PT	Payload Type
PVC	Permanent Virtual Circuits
RPF	Reverse-Path Forwarding
SVC	Switched Virtual Circuit
TCP/IP	Transmission Control Protocol/Internet Protocol
TOS	Type Of Service
UNI	User Network Interface
VBR	Variable Bit Rate
VC	Virtual Channel
VP	Virtual Path.
VPI	Virtual Path Identifier
WAN	Wide Area Network