A Comparison of Performance Between TFRC and UDP over a Mobile IP Network

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A Comparison of Performance Between TFRC and UDP over a Mobile IP Network

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By

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(801965)

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Abstract

In this project we will study three performance metrics (packet loss, packet delay and jitter) of two different transport layer protocols over a Mobile IP Network. The researcher will be implementing TFRC and UDP in the Mobile IP Network, to identify which protocols could support mobility. Network Simulation NS-2 was proposed for implementing previous items and to present and interpret the results.
Acknowledgments

First, I would like to express my appreciation to Allah, the Most Merciful and, the Most Compassionate who has granted me the ability and willingness to start and complete this study. I do pray to His Greatness to inspire and enable me to continue the work for the benefits of humanity.

I dedicate this humble work to my father and mother; the spring of loyalty, affection, and dedication. They raised me on the principles of virtue, to my dear brothers and sisters; who spared no effort helping me during my school years.

I dedicate this work also for my uncles, my grandfather and my grandmother’s souls.

Moreover, my special thanks to my supervisor Khuzairi bin Mohd Zaini for all the advice, encouragement and supervision.

And my appreciation to all my friends who supported me.
TABLE OF CONTENTS

Permission To Use...................................................................................................................... i
Abstract .................................................................................................................................. ii
Aknowledgments ....................................................................................................................... iii
Table of Contents ....................................................................................................................... iv
List of Figures ........................................................................................................................ vii
List Of Tables ........................................................................................................................ v
List of Abbreviations ................................................................................................................. ix

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION .............................................................................................................. 1
1.2 BACKGROUND .................................................................................................................. 1
1.3 Problem statement ............................................................................................................ 4
1.4 Research Question .......................................................................................................... 5
1.5 Research objectives ......................................................................................................... 5
1.6 Scope of the study ............................................................................................................ 5
1.7 Significance of the study ................................................................................................. 6
1.8 Summary ....................................................................................................................... 6

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION ............................................................................................................. 7
2.2 MOBILE IP NETWORK .................................................................................................. 7
   2.2.1 Devices required for a mobile IP ............................................................................. 8
2.3 WIRELESS NETWORK ................................................................................................. 11
   2.3.1 Wireless network and networking benefits .......................................................... 11
2.4 MULTIMEDIA STREAMING ......................................................................................... 13
   2.4.1 Types of Streaming .......................................................................................... 13
2.5 USER DATAGRAM PROTOCOL (UDP) .................................................................... 15
2.6 TFRC ............................................................................................................................ 17
2.6.1 Challenges of TFRC in a Wireless Environment ..........................................18
2.7 RELATED WORK .........................................................................................19
  2.7.1 Performance of UDP over IP-Based Wire Lines and Wireless Networks ..........19
    2.7.1.1 Throughput/Packet failure ...............................................................20
    2.7.1.2 Throughput/Bandwidth .................................................................21
  2.7.2 Jitter Ratio-Based TFRC Scheme in Wireless-Wired Hybrid Network ..........22
  2.7.3 Analysis of Mobile IP for NS-2 ..............................................................25
2.8 PERFORMANCE METRICS ............................................................................28
  2.8.1 Packet loss ..........................................................................................28
  2.8.2 Delay ..................................................................................................29
  2.8.3 Jitter ..................................................................................................30
2.9 SUMMARY ..................................................................................................30

CHAPTER 3
METHODOLOGY

3.1 INTRODUCTION .......................................................................................31
3.2 SIMULATION DESCRIPTIO ........................................................................31
3.3 RESEARCH METHODOLOGY ....................................................................32
  3.3.1 Pre-software stage .............................................................................33
  3.3.2 Software stage ...................................................................................35
3.4 Network simulator 2 (ns-2) .......................................................................36
3.5 Summary ..................................................................................................38

CHAPTER 4
SIMULATION RESULTS

4.1 INTRODUCTION .......................................................................................39
4.2 SIMULATION SCENARIO ............................................................................39
4.3 SIMULATION EXECUTION .........................................................................40
4.4 PERFORMANCE METRICS RESULT ANALYSIS ....................................43
  4.4.1 Packet Loss .......................................................................................44
  4.4.2 Delay: ...............................................................................................46
  4.4.3 Jitter ..................................................................................................47
4.5 ITU RECOMMENDATION ..........................................................................49
CHAPTER 5
CONCLUSIONS AND RECOMMENDED FURTHER STUDY

5.1 INTRODUCTION ..........................................................51
5.2 DISCUSSION of FINDINGS .............................................. 51
5.3 LIMITATIONS ............................................................. 53
5.4 CONTRIBUTION .......................................................... 53
5.5 FUTURE WORK ........................................................... 54
REFERENCES ................................................................................ 55
List of Figures

Figure 1.1: Wireless Home Network ................................................................................... 2
Figure 2.1: Mobile IP ........................................................................................................... 8
Figure 2.2: Mobile IP devices ............................................................................................ 10
Figure 2.3: UDP Header .................................................................................................... 16
Figure 2.4: A form of Two LANs having a Wireless Link................................................ 20
Figure 2.5: Throughput adjacent to Packet Drop over Wired and Wireless Network ....... 21
Figure 2.6: Throughput next to Bandwidth over Wired and Wireless network................. 22
Figure 2.7: WAN+WLAN+3G cellular system ..................................................................... 23
Figure 2.8: Wired-wireless hybrid network topology with N flows ..................................... 24
Figure 2.9: Contrast of TCP and TFRC-Jr in wireless-wired network with different wireless connection error rates ........................................................................................... 25
Figure 2.10: Handover scenario ......................................................................................... 27
Figure 3.1: Simulation steps .............................................................................................. 33
Figure 3.2: Experiment Topology ....................................................................................... 34
Figure 3.3: The duality of ns .............................................................................................. 37
Figure 3.4: The basic simulator objects in NS and their interconnections ........................ 37
Figure 4.1: Simulation scenario ......................................................................................... 40
Figure 4.2: Simulation execution ....................................................................................... 41
Figure 4.3: Sum of numbers of send TFRC packets .......................................................... 42
Figure 4.4: Sum of numbers of UDP send packets ............................................................ 43
Figure 4.5: Sum of drop packets for TFRC session ........................................................... 44
Figure 4.6: Sum of drop packets for UDP session ............................................................. 45
Figure 4.7: Delay of TFRC session. .................................................................................. 46
Figure 4.8: Delay of UDP session ...................................................................................... 47
Figure 4.9: Jitter of TFRC session. .................................................................................... 48
Figure 4.10: Jitter of UDP session. .................................................................................... 49
List of Tables

Table 4.1: ITU Performance Metrics Recommendation..............................................50
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>APs</td>
<td>Access Points</td>
</tr>
<tr>
<td>BS</td>
<td>Base Station</td>
</tr>
<tr>
<td>CBR</td>
<td>Constant Bit Rate</td>
</tr>
<tr>
<td>CD</td>
<td>Compact Disk</td>
</tr>
<tr>
<td>CoA</td>
<td>Care of Address</td>
</tr>
<tr>
<td>DES</td>
<td>Discrete Event-based Simulation</td>
</tr>
<tr>
<td>DRM</td>
<td>Digital Rights Management</td>
</tr>
<tr>
<td>DVRs</td>
<td>Digital Video Recorders</td>
</tr>
<tr>
<td>FA</td>
<td>Foreign Agent</td>
</tr>
<tr>
<td>HA</td>
<td>Home Agent</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hyper Text Transfer Protocol</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol</td>
</tr>
<tr>
<td>ISP</td>
<td>Internet Service Provider</td>
</tr>
<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>MH</td>
<td>Mobile Host</td>
</tr>
<tr>
<td>NAM</td>
<td>Network Animator</td>
</tr>
<tr>
<td>Ns-2</td>
<td>Network Simulator 2</td>
</tr>
<tr>
<td>OTCL</td>
<td>Object-oriented Tool Command Language</td>
</tr>
<tr>
<td>PC</td>
<td>Personal Computer</td>
</tr>
<tr>
<td>PLR</td>
<td>Packet Loss Ratio</td>
</tr>
<tr>
<td>RH</td>
<td>Remote Host</td>
</tr>
<tr>
<td>RTSP</td>
<td>Real Time Streaming Protocol</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>RTP</td>
<td>Real-time Transport Protocol</td>
</tr>
<tr>
<td>TCP</td>
<td>Transmission Control Protocol</td>
</tr>
<tr>
<td>TCP/IP</td>
<td>Transmission Control Protocol over Internet Protocol</td>
</tr>
<tr>
<td>TFRC</td>
<td>TCP Friendly Rate Protocol</td>
</tr>
<tr>
<td>UDP</td>
<td>User Datagram Protocol</td>
</tr>
<tr>
<td>UDP/IP</td>
<td>User Datagram Protocol over Internet Protocol</td>
</tr>
<tr>
<td>VOIP</td>
<td>Voice Over IP</td>
</tr>
<tr>
<td>WAN</td>
<td>Wide Area Network</td>
</tr>
<tr>
<td>WLAN</td>
<td>Wireless Local Area Network</td>
</tr>
<tr>
<td>3G</td>
<td>Third Generation</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

1.1  INTRODUCTION

This chapter provides an overview of the entire study. It contains a general overview for each section through this report structure. In Section 1.2 we present the background of this study, in Section 1.3 the problem statement, then in Section 1.4 the research question, followed by the objectives in Section 1.5, the scope and significance of the study in Section 1.6 and 1.7. Finally, in Section 1.8 we end this chapter with a small summary.

1.2  BACKGROUND

Recently the number of Internet users and Internet access are increasing over the world. Looking at the Internet, the world stats website has shown the number of Internet users in the world has grown by 1,668,870,408 persons as of June 30, 2009; this represents a 24.7 % yearly increase with regard to the number of estimated users that existed one year ago at year end 2008 [1].

According to [2] and [3], a Wireless Local Area Network (WLAN) connects two or more computers or devices (nodes) without using wires; it uses electronic waves such as radio wave technology to enable communication between devices
The contents of the thesis is for internal user only
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communication service - IP packet transfer and availability performance 