JAVA-BASED NS2 NETWORK ANALYZER

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ABSTRACT

The performance of the network may not be as good as the one estimated before the installation. Hence, installing the computer networks in the different peripherals is cost effective when we need to change of the peripherals. Therefore, it is always better to have a simulation of the network rather than the actual establishment. As such, there are many simulators. NS-2 is one of the most popular open source network simulators that widely used in research community, which generates trace file during the simulation experiment. The trace file contains all network events that can be used to calculate network performance. After simulation, the researchers spend much time for analyzing the trace file using traditional scrip tools such as awk or pel to accumulate the result.

This project presents Java-Based NS-2 network analyzer (JDNA) as a tool for extracting, analyzing and plotting trace files for the network simulation environment of NS-2. This analyzer enables researcher to analyze and visualize NS-2 trace file quickly and efficiently. It has the ability to visualize more than one trace file simultaneously as well as support all NS-2 trace format. In addition, this project can be a useful guideline to other network researchers or programmers to analyze their networks and to understand how to calculate network performance metrics.

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Praise belongs to God

The first, without a first before him, the last, without a last him

Beholder's eyes fall short seeing him.

Describer's imaginations are unable to depict him.

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"شكرا لثقتكم بي ودعائكم لي ودعمكم اللا محدود"

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LIST OF ABBREVIATIONS

NS-2	Network Simulator
TCL	Tool Command Language
OTCL	Object extension of TCL
JDNA	Java-Based NS-2 network analyzer
GUI	Graphical user interface
OPNET	Optimized Network Engineering Tool
OMNET++	Optical Micro-Networks. OMNET, Operation and Maintenance New Equipment Training
TCP	Transmission Control Protocol
ACK	Acknowledgment
CBR	Constant Bit Rate
NAM	Network Animator
IP	Internet Protocol
r	Receive
e	Error
d	Drop
f	Forward
+	Enqueue
-	Dequeue
ASCII	American Standard Code for Information Interchange
DCR	Dynamic Source Routing

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Simulation is one of the important performances study techniques [1]. Simulation enables user to simulate natural system and gives an overview of the features and specifications of the natural system. It provides the ability to use different variable to predict the behavior of the system [2].

In all cases, the idea is that, the simulation is an alternative realization that approximates the system, and in all cases the purpose of the simulation is to analyze and understand the system's behavior under various alternative actions or decisions [3]. This field is narrower than real system and has the ability to identify more specific requirements that could be applied in the real system [33]. For example, the researchers may focus on the performance and the validity of the network and present the result before applying these features on the real system. Moreover, networking technologies reduce the time and the cost of using the natural system.

Nowadays, network simulators are being used by the researchers in different fields such as in academic education or in engineering field [4]. The developers can design and simulate a new system to get the performance by analyzing their system by network simulation. In addition it can be used to evaluate the effect of the different parameters and to study the specific behavior of the system. Generally, simulation of the network includes a wide variety of network technologies and protocols .It helps to

The contents of the thesis is for internal user only

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