

# Remote Network Monitoring System (RNMS)

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*Dedicated to my father Naser Al-Hasanat, my mother, my brothers,  
my sisters, and to you my beloved wife ...*

## ABSTRACT

Nowadays, computer networks become very complex. Thousands of nodes distributed in various places. Within this complexity, it has become impossible task to monitor large networks by human effort only. Thus, there are urgent needs to find convenient solutions to help networks managers in managing and monitoring their networks.

This study presents a monitoring system, named Remote Network Monitoring System (RNMS). The proposed system empowered the networks mangers to remotely monitor their network's computers. Therefore, a web-based monitoring system has been designed using UML models, and then the system has been developed using ASP.Net with VB.Net scripts. The proposed system is based on SNMP (Simple Network Management Protocol). The SNMP provides efficacious means to access the remote agent's MIB's (Management Information Base) objects. Furthermore, this study has evaluated and tested the RNMS using the verification test (unit, integration, and system testing), and the validation test (user acceptance test) based on TAM (Technology Acceptance Model).

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## List of Abbreviations

<b>RNMS</b>	Remote Network Management System
<b>SNMP</b>	Simple Network Management Protocol
<b>MIB</b>	Management Information Base
<b>MIB-II</b>	Management Information Base II
<b>FCAPS</b>	Fault, Configuration, Accounting, Performance, and Security
<b>NMS</b>	Network Management Station
<b>UUM</b>	University Utara Malaysia
<b>LAN</b>	Local Area Network
<b>WAN</b>	wide Area Network
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol
<b>IETF</b>	Internet Engineering Task Force
<b>RMON</b>	Remote Monitoring
<b>RFC</b>	Request for Comments
<b>SNMPv1</b>	Simple Network Management Protocol Version1
<b>SNMPv2</b>	Simple Network Management Protocol Version2
<b>SNMPv3</b>	Simple Network Management Protocol Version3
<b>UDP</b>	User Datagram Protocol
<b>IP</b>	Internet Protocol
<b>OSI</b>	Open System Interconnection
<b>OID</b>	Object Identifier
<b>CPU</b>	Central Processing Unit
<b>MAC</b>	Media Access Control address
<b>UML</b>	Unified Modeling Language
<b>TAM</b>	Technology Acceptance Model
<b>PU</b>	Preserved Usefulness
<b>PEU</b>	Preserved Ease of Use
<b>SPSS</b>	Statistical Package for the Social Sciences

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Introduction

This chapter provides a quick glance about the study; the background of the study, problem statement, objectives, expected contribution, scope of the study, research framework, and structure of thesis.

#### 1.2 Background

In today's complex networked environments, where a network can range in size from a few nodes to thousands of nodes the way in how you monitor and manage your network devices is very important issue. This growing networks environment has to be managed in an effective way to derive the maximum benefit out of it. Network management comes for this reason it trades with controlling and monitoring the network devices in order to ensure its undisturbed and efficient operation.

The contents of  
the thesis is for  
internal user  
only

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