A MOBILE APPLICATION FOR NETWORK MONITORING BASED ON A NAGIOS SYSTEM

BY

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Declaration

I KAJEKE ANDREW do hereby declare that this Project Report is original and has not been submitted for any other degree award to any other University before.

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Approval

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Dedication

I hereby dedicate this report to my father Mr. Gitabani Enos, my mother Mrs. Kabasinguzi Stella, all my family members Woyanka Kenneth, Wodamba Pius, Gidoyi Joseph, Kagrye Monica, Nagudi Flavia and all my regular Monitor friends who have guided and supported me throughout my education and for providing me with everything I need.

List of Acronyms

NB-ITMS   Nagios Based Enhanced IT Management system

NIC   Network Interface Card

LAN   Local Area Network

WAN   Wide Area Network

MAN   Metropolitan Area Network

CLI   Command Line Interface

SRB   Storage Resource Broker

iRODS   Integrated Rule-Oriented Data System

DARB   Digital Archives Remote-Backup

TELDAP   Taiwan e-Learning and Digital Archives Program

NRPE   Nagios Remote Plugin Executor

SNMP   Simple Network Management Protocol

FTP   File Transfer Protocol

Abstract

This is a network monitoring mobile application based on a Nagios network monitoring system. Its main aim is to monitor the existing network by providing access to the status of your infrastructure from anywhere, enable problem investigation and resolution from remote locations, and allows you to schedule downtime and acknowledge problems directly from your smartphone.

Through this system, network administrators are able to perform their work or services at any location away from their offices to reduce the current problem of high costs incurred on monitoring a network infrastructure on a 24-hour daily basis, non-reliability, non-availability and other problem.

The network devices are accessible remotely in a secure place away from the actual physical workplace where they are prone to various types of damages. From this remote location, network administrator is able to monitor, troubleshoot, and schedule downtime.

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Nagios is a sentinel service that concentrates on monitoring network failures and reporting their existence to selected destinations. It has been designed for the Linux operating system, but it is possible to install Nagios on most other UNIX variants. The sentinel has been developed as an open source project and released under the GNU General Public License version 2.
The development started in 1999 and continues to present day as of writing, the current version is 2.7. It is considered quite mature for use in production environments. Several books have been written about the application[1].

Network security and performance management are the major responsibilities of network administrators[2]. These are managed by use of different network monitoring tools developed in different platforms. However, administrators who use Nagios servers as their main network monitoring system or tool require full attendance at their workplace so has to be able to perform the networking duties. Most organizations or companies like telecommunication companies, television stations have complex and sensitive networks which require constant monitoring. This makes such companies to cost much time and money on monitoring their servers and also making administrators become easily overworked and stressed.

If a network monitoring mobile application based on a Nagios server is developed and deployed, it helps organizations to cut their costs on server monitoring and administrators are able to perform their networking duties at any time in any location without being ties at workplaces

1.2 PROBLEM STATEMENT

Most organizations have complex and sensitive networks which require constant monitoring. Such organizations cannot afford to have teir severs down even for five minutes. This results into loss of money and time. Therefore, organizations that use the Nagios servers as their monitoring system have to incur high costs in terms of monitoring on a 24-hour daily basis. This is because the network administrators need facilitation and allowances for overworking them.

In order to prevent insecurity of the organization's or company's resources in the absence of the administrators, a mobile application system is necessary. This mobile application is based on a Nagios server running on a smartphone or a tablet. The administrators shall now monitor and troubleshoot their network at any time in any location. The application will also help companies to reduce on costs of monitoring their network resources.

1.3 OBJECTIVES

1.3.1 Main Objective

To develop a network monitoring mobile application based on Nagios server.

1.3.2 Specific Objectives

i) To review the existing literature on how to identify the different tools, techniques and analyze the requirements needed to develop the system.

ii) To develop a mobile application.

iii) To configure a Nagios server on a Linux operating system.

iv) To link the mobile application with the Nagios server for communication between them.

v) To test and validate the system.

1.4 JUSTIFICATION/SIGNIFICANCE

Big organizations or companies like telecommunication companies, television stations have complex and sensitive networks which require constant monitoring. This makes such companies to cost much resources and money on monitoring their servers and also making administrators become easily overworked and stressed.

If a network monitoring mobile application based on a Nagios server is developed and deployed, it helps organizations to cut their costs on server monitoring and administrators be able to perform their networking duties at any time and at any place without being tied at workplaces.

1.5 SCOPE

1.5.1 Technical Scope

The project focuses on monitoring network services, servers like DHCP, Mail, FTP, Printer and so many others, notifying administrators for any fault or new connections and troubleshooting servers if there is any failure on a remote network using a mobile application based on a Nagios monitoring tool.

1.5.2 Geographical Scope

The mobile application was developed for network administrators using Nagios as their main network monitoring system in the organizations or companies.

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