Web Based Cable Connectivity Monitoring System for Sri Lanka Telecom PLC

K. G. Gunasekara

MSCIT/08/10025

Dissertation submitted to the Faculty of Information Technology,
University of Moratuwa, Sri Lanka
for the partial fulfillment of the requirements of the
Post Graduate / Master of Science in Information Technology.
October 2008

Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

K. G. Gunasekara Signature:

Date: 30/11/2011

Supervised by

Dr. Gamini Wijayarathna Signature:

Date: 30/11/2011

Acknowledgement

It is my pleasure to extend my thanks to those who immensely contributed for successful completion of my project. Special thanks go to the staff of Sri Lanka Telecom.

First, I would like to thank Dr. Gamini wijayarathna my project supervisor for directions, necessary guidance and kind advice given to me by devoting his valuable time during the period of the project undertaken.

My grateful thanks should goes to the staff of OSP Maintenance Sections, OSP Network Management Section & Integrated Network Operations Center (My present work place) in Sri Lanka Telecom who helped me in several ways to achieve this target successfully.

Finally, I take this opportunity to express my sincere thanks to my wife & parents who always behind me by encouraging and giving corporation.

K.G. Gunasekara
07/02/2011

Abstract

Web Based Cable Connectivity Monitoring System was the title of the project chosen to develop for Sri Lanka Telecom PLC in my partial fulfillment of the requirement of the degree of M.sc in Information Technology of the University of Moratuwa.

Sri Lanka Telecom is the owner of the largest copper network in Sri Lanka which spans all over the island. Variety of services such as PSTN Voice Calls, ADSL Broadband Connections, IP-TV connections, Leased Line Connections uses this copper network as the communication media. So it is important to keep a track of this copper network, especially trunk cables which contain large number of wire pairs in order to provide uninterrupted and satisfactory service to subscribers. Currently there is no online monitoring system for this. SLT was seeking for a proper system to monitoring disconnected or damaged cables for last few years because it is so important to identify those disconnected cables as soon as possible and rectify them. Also Sri Lanka Telecom has to take rapid reactions to avoid stealing of these expensive cables.

Therefore, under this project, monitoring trunk cable disconnections from a remote location by using an embedded system which contains RabbitCore RCM 4010 microprocessor module and SNMP technology was proposed. This unit will send disconnected cable information with its position or segment using SNMP trap messages through Ethernet to SNMP trap detection unit which will be in a central location. And this will acknowledge the authorized persons in few seconds via email. This system also reduces the number of points have to be checked and makes easy to locate the fault. This system will detect, display & record cable disconnections with other features such as fault localization & security.

This will reduce time taken to report cable faults and rectify them which will make a direct impact on customer satisfaction. And also will increase revenue of Sri Lanka Telecom by effectively using manpower.

Table of Contents

List of Figures

List of Tables

Abbreviations

AC	Alternative Current
CCC	Cross Connection Cabinet
CCT	Cross Connection Terminal
DC	Direct Current
DP	Distribution Point
MDF	Main Distribution Frame
MIB	Management Information Base
OH	Overhead
OID	Object ID
OPMC	Outside Plant Maintenance Center
OSP	Outside Plant
OSS	Operational Support System
PIL	Protection, Isolation and LED Panel
RSU	Remote Switching Unit
RTO	Regional Telecommunication Office
RTOM	Regional Telecommunication Office Manager
SLT	Sri Lanka Telecom
SNMP	Simple Network Management Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
UG	Under Ground