Probe based Operations

Assignment 1 – Applied Network Management, ET2536

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***Abstract*— This document is a report which describes the steps to be executed in order to install and configure Multi Router Traffic Grapher (MRTG). It also describes the comparison between MRTG and the Network Monitoring tool developed as a task for the assignment 1 for the course Applied Network Management (ET2536).**

I. INTRODUCTION

The Multi Router Traffic Grapher (MRTG) is a tool used to monitor traffic load on network links. MRTG generates HTML pages containing PNG images which provide a LIVE visual representation of this traffic. MRTG works on most UNIX platforms and Windows NT. MRTG is written in Perl and comes with full source. It uses a highly portable SNMP implementation written entirely in Perl. The router interfaces can be identified by IP address, description and Ethernet address in addition to the normal interface number. MRTG has built-in hooks for using RRDtool. In addition to a detailed daily view, MRTG also creates visual representations of the traffic seen during the last seven days, the last five weeks and the last twelve months. The traffic is displayed in terms of Bytes per Second for both the incoming as well as outgoing stream for each interface.

In this course, we develop a tool which is similar to MRTG and compare the results of the developed tool with that of MRTG.

II. INSTALLATION & CONFIGURATION OF MRTG

The following steps were followed to install and configure MRTG in Ubuntu 14.04 LTS operating system:

1. sudo apt-get install mrtg
2. sudo mkdir /etc/mrtg && sudo mv /etc/mrtg.cfg /etc/mrtg
3. sudo cfgmaker –output=/etc/mrtg/mrtg.cfg COMMUNITY@IP.
4. sudo indexmaker —output /var/www/mrtg/index.html /etc/mrtg/mrtg.cfg
5. sudo env LANG=C /usr/bin/mrtg /etc/mrtg/filename.cfg

In your .cfg file include RunAsDaemom:Yes and Interval:5 in global defaults section. The mrtg process will run in the background and probe the devices every 5 minutes.

Now, view in the browser with the URL as localhost/mrtg/. Make sure that "WorkDir: /var/www/html/mrtg" (under Debian) is uncommented.

III. TOOL

A tool working similar to MRTG was developed as per the requirement for assignment 1. This tool uses SNMP for retrieving bitrate and RRDtool to store and update the bitrate. The source code for the backend part was written entirely in Perl. CPAN modules are available to interface with SNMP and RRD through Perl scripting. SNMP & Object Identifiers were used to filter the interfaces for the devices whose credentials were stored in a MySQL database as done by MRTG. RRDtool was used to store the ifInOctets and ifOutOctet values for each filtered interface. MySQL database was used to store the device information and the interfaces that were filtered. The data stored in MySQL was used to display the device credentials in web dashboard. The front end was developed using PHP and HTML.

IV. COMPARISON BETWEEN MRTG & TOOL

The interfaces filtered by MRTG and the tool developed for each device were exactly the same. The traffic observed by MRTG and tool are not exactly the same, there are slight variations and can be seen in the screenshots given below for a device provided at the laboratory of the university with the IP – 192.168.184.33 Port – 1161 and Community – public. Figure 1 shows the graph for interface 1 produced by the developed tool. Figure 2 shows the graph for interface 1 produced by MRTG.

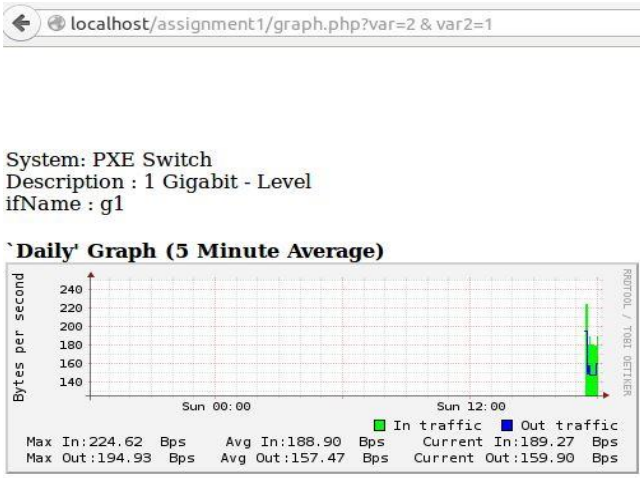

Fig. 1 Statistics for interface 1 produced by the tool developed

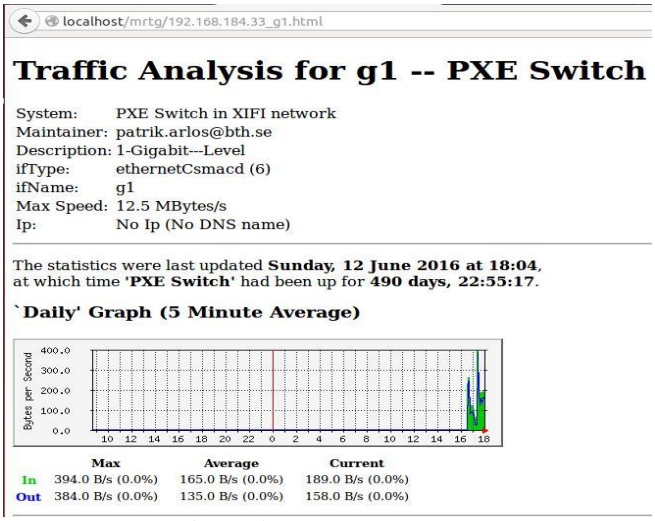

Fig. 2 Statistics for interface 1 produced by the MRTG