Using MRTG to monitor UCSM Bandwidth Consumption
Steve McQuerry
UCS – Technical Marketing Engineer

Abstract: The purpose of this document is to describe to users the steps required to use Multi Router Traffic Grapher (MRTG) to monitor the historical Bandwidth on Network and FC Uplinks, Connections to the IOM, and Server NICs. The goal is to provide basic information for setup and configuration. The document assumes a basic knowledge of the MRTG tool and it use.
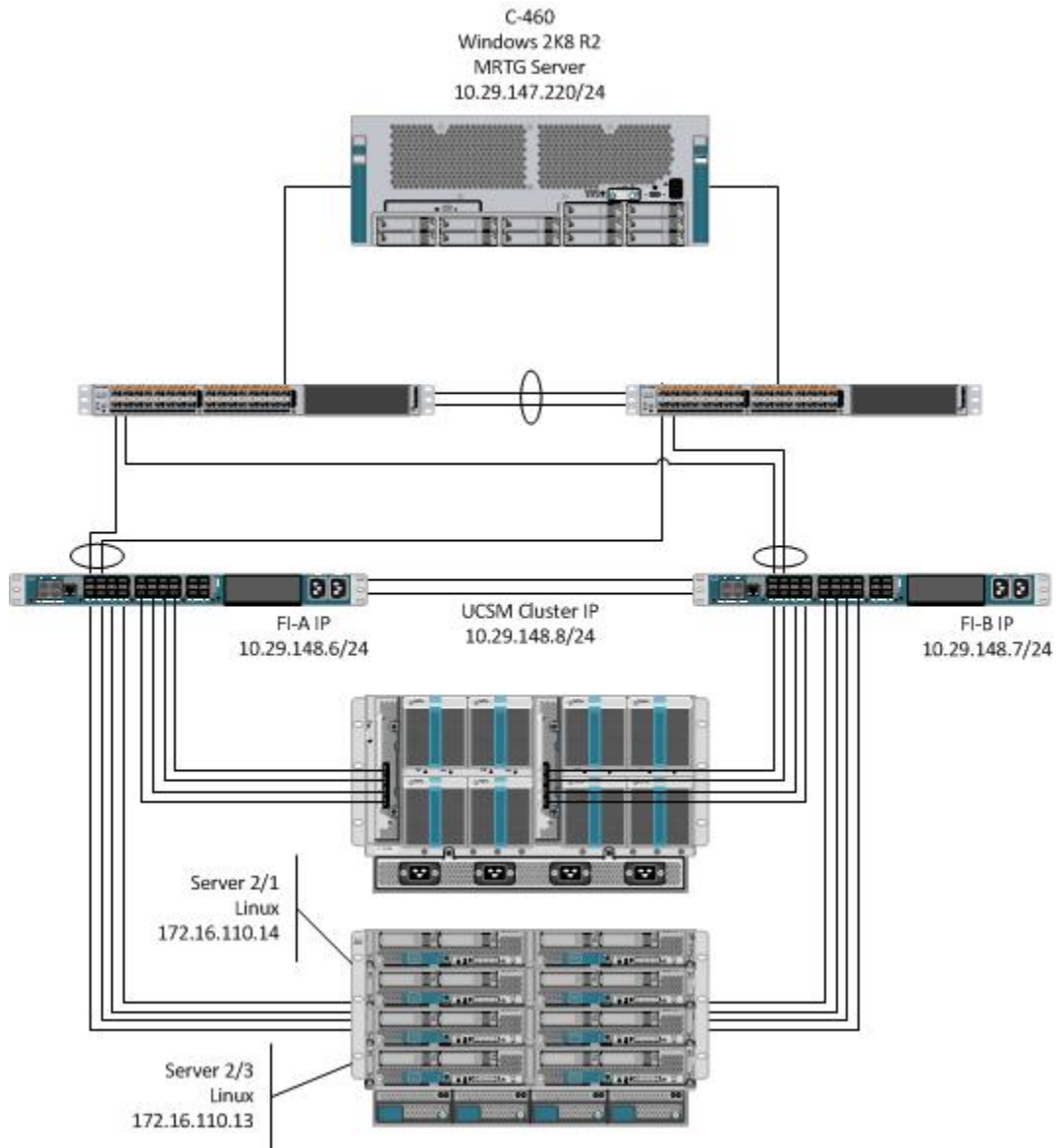
Overview: Multi Router Traffic Grapher (MRTG) is a free software tool that uses SNMP to monitor devices and draw graphs to show the traffic trends of the individual interfaces. (http://oss.oetiker.ch/mrtg/index.en.html)

The tool was developed by Tobias Oetiker and written in Perl and will run on Unix, Linux, Windows, and Netware servers. MRTG will produce html pages with daily, weekly, monthly, and yearly graphs of input and output for each interface on the system. It is very useful for identifying utilization trends. Using MRTG with UCSM allows users to see BW utilization for server, chassis, and fabric interconnect links for both FC and Ethernet interfaces.

This document describes the configuration requirements of UCSM as well as the initial setup of MRTG on a Windows server.   The scope of this paper is limited to SNMP v2.

Please forward any comments or suggestions regarding this document to: smcquerr@cisco.com.

Lab Diagram: The following shows the topology of the lab used to develop this document. The general networking requirement for use of MRTG is a server with SNMP connectivity to the IP address of each FI in the Unified Computing System.

C-460
Windows 2K8 R2
MRTG Server
10.29.147.220/24

FI-A IP
10.29.148.6/24

UCSM Cluster IP
10.29.148.8/24

FI-B IP
10.29.148.7/24

Server 2/1
Linux
172.16.110.14

Server 2/3
Linux
172.16.110.13

UCSM Configuration requirements

To use MRTG with UCSM you will need to enable SNMP and configure a community username.

Navigate to the Admin tab in UCSM and select Communication Management from the filter drop down then select Communication Services
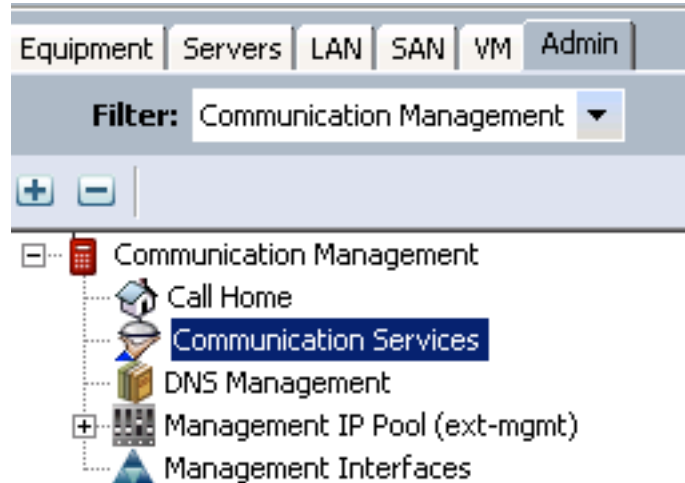
In the Communications Services tab click the enable for the Admin State to enable SNMP and enter a community string and the contact and location (if desired) and click save changes.
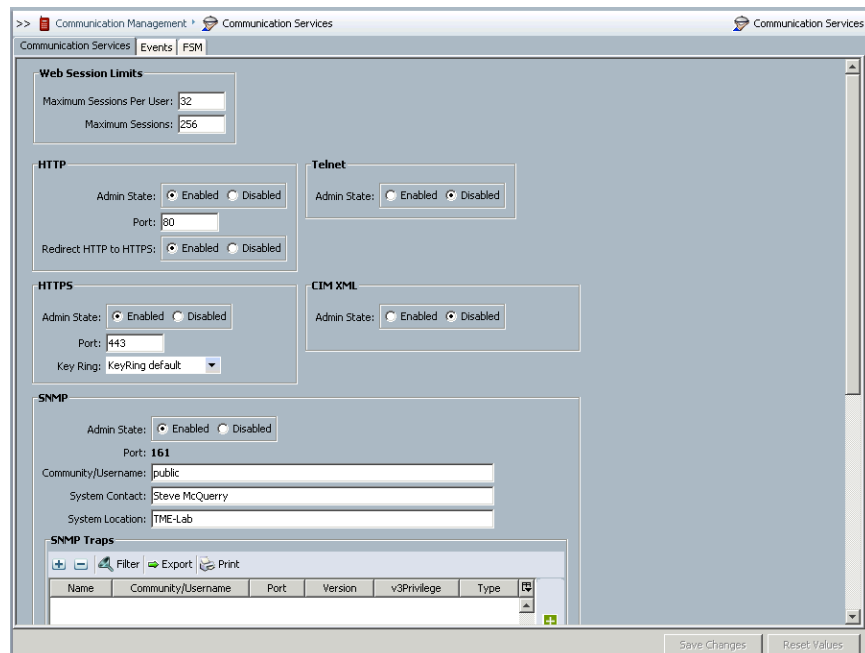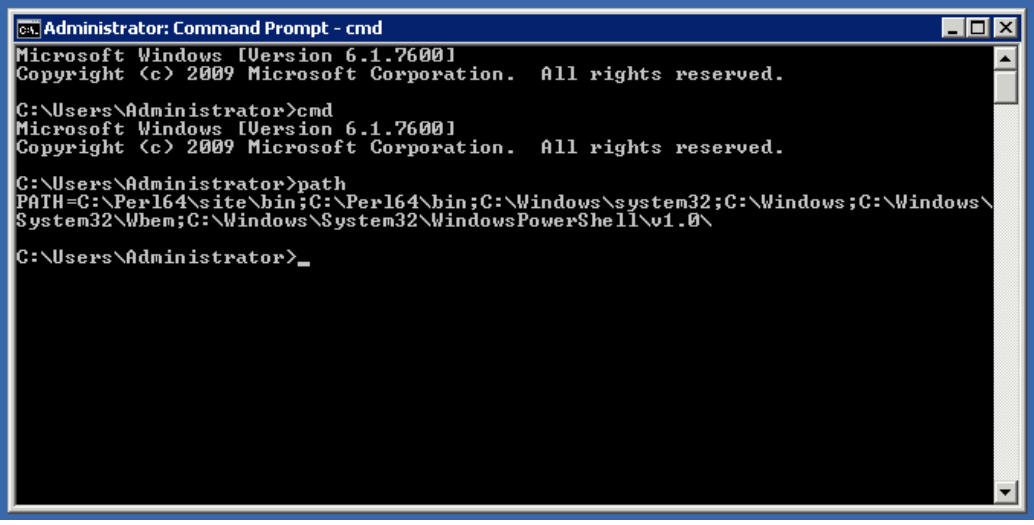
MRTG Installation and Configuration (Windows)

Next you will need to install MRTG on the server that will be used to monitor the FIs. First you will need to make sure that you have a copy of Perl available on your machine. For this setup I used ActivePerl Community Edition from Active State:

http://www.activestate.com/store/activeperl/downloads/

Install ActivePerl with the default settings. After the installation is complete open a command prompt and verify that the Perl directory is part of the system path by typing in the command path.

Next you will need to download and extract MRTG. MRTG for Windows can be downloaded from the following location:

http://oss.oetiker.ch/mrtg/pub/mrtg-2.17.3.zip

Extract the contents of the zip file into the root directory of your c: drive.
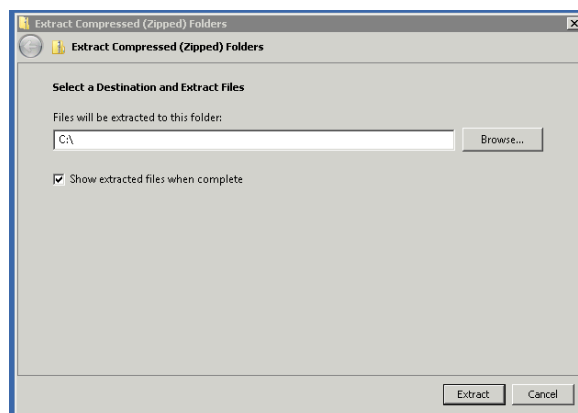
Open a command prompt and navigate to directory c:\mrtg-2.17.3\bin\.
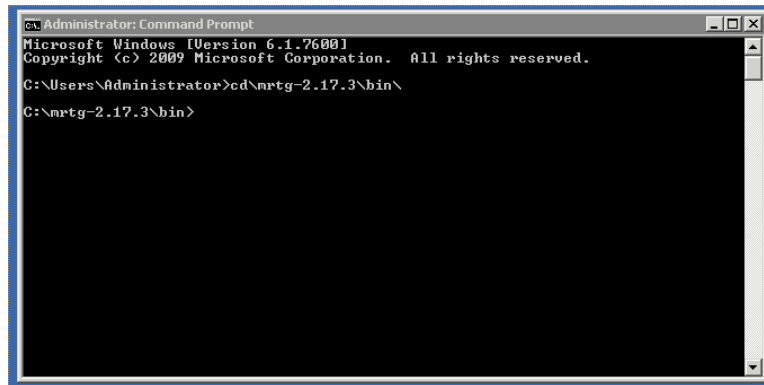
MRTG needs a configuration file specific for the systems you will be monitoring. The next step is to create that file. Before you do this you will need to know the IP address of each FI in the system (NOT the CLUSTER ADDRESS). This is located in Admin Tab, filter for Communications Management and select Management Interfaces in UCSM.
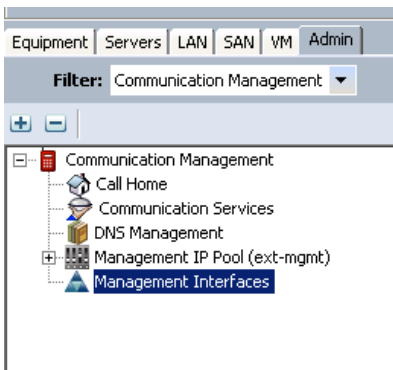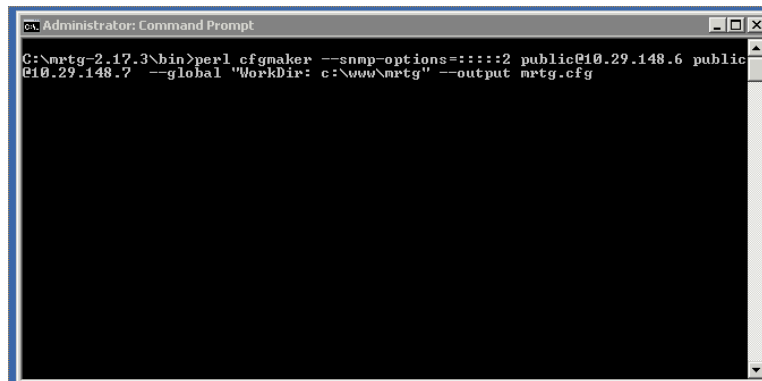

The addresses will be listed for Fabric Interconnect A and Fabric Interconnect B.
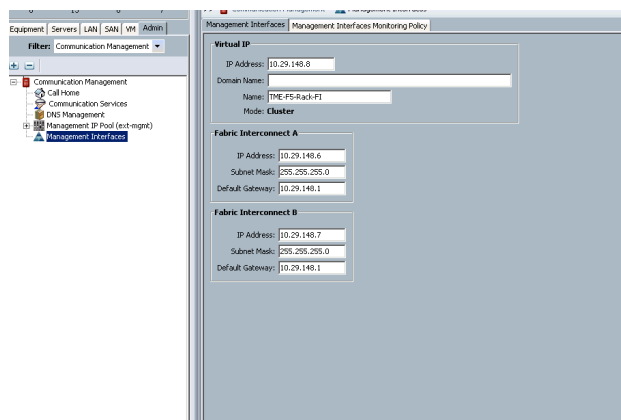
In the directory c:\mrtg-2.17.3\bin\ you are going to run a perl script to create a
configuration file. Issue the following command to create the config file: Where
public = the community setting from UCSM and the IP addresses are the unique
addresses for each FI in the system.

```
perl cfgmaker --snmp-options=:::::2 public@10.29.148.6 public@10.29.148.7  --
global "WorkDir: c:\www\mrtg" --output mrtg.cfg
```


NOTE: Make sure that the –snmp-options=:::::2 option is set before the system IP
addresses or the BW will not be reported properly for the FI.

After the output is completed launch notepad on your windows machine and open
the file c:\mrtg-2.17.3\bin\mrtg.cfg. You should notice information from your
system in this file.

By default MRTG reports data in bytes for each interface. To change that to bits for
all of the interfaces we are going to remove the comment tag (#) from the line
"Options[_]: growright, bits" in the config file.

MRGT only gathers data when the perl script is run. So in order to keep the script running continuously we are going to add the Option: "RunAsDaemon: yes" at the end of this file. Once you have made these changes save and close the file.
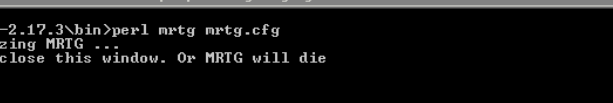

 Finally you will need to create the directory c:\www\mrtg. This is where mrtg will generate the HTML viewable graphs for your system.

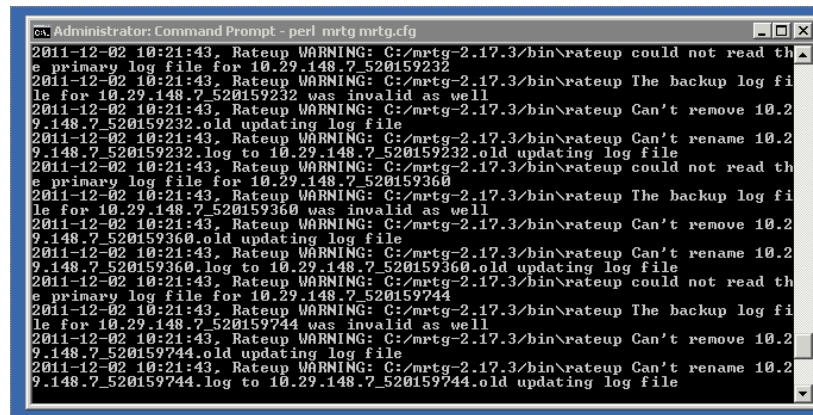
To run MRTG go to the command window and navigate to the directory c:\mrtg-2.17.3\bin\ and issue the command:

```
perl mrtg mrtg.cfg
```

In addition to the message about not closing the window or MRTG will die, you will also see a lot of output regarding missing files. This is normal the first two times the script executes because it has not yet created the files.


In a production environment running MRTG in a command window like this without the ability to restart would not be advised. For information on how to make this a persistent process or to run as a service consult the MRTG website for the Windows Install Guide. (http://oss.oetiker.ch/mrtg/doc/mrtg-nt-guide.en.html)

Viewing Output

By Default the MRTG script will run every 5 minutes and use the data it gathers from the device to build web pages that will be stored in the working directory. These pages contain the historical graphical information for the interfaces. To view these pages open the directory C:\www\mrtg in windows explorer.
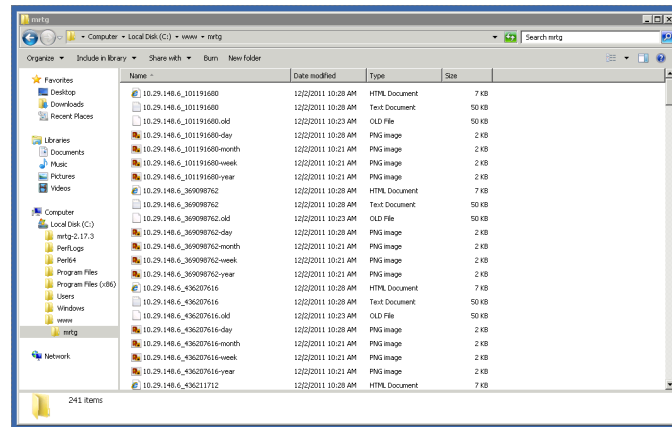

Double click on one of the html pages to see the graphical information for your system.
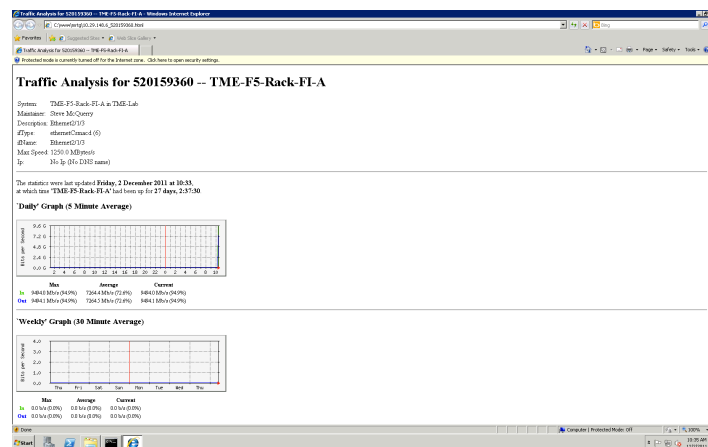
There are a few items of note. First the web pages are built based on numbers that identify the interfaces from the config file.

For more user friendly names in the web page modify the config file for each interface. The following shows a more customized file on a MRTG server that has been monitoring the FI for 2 days.
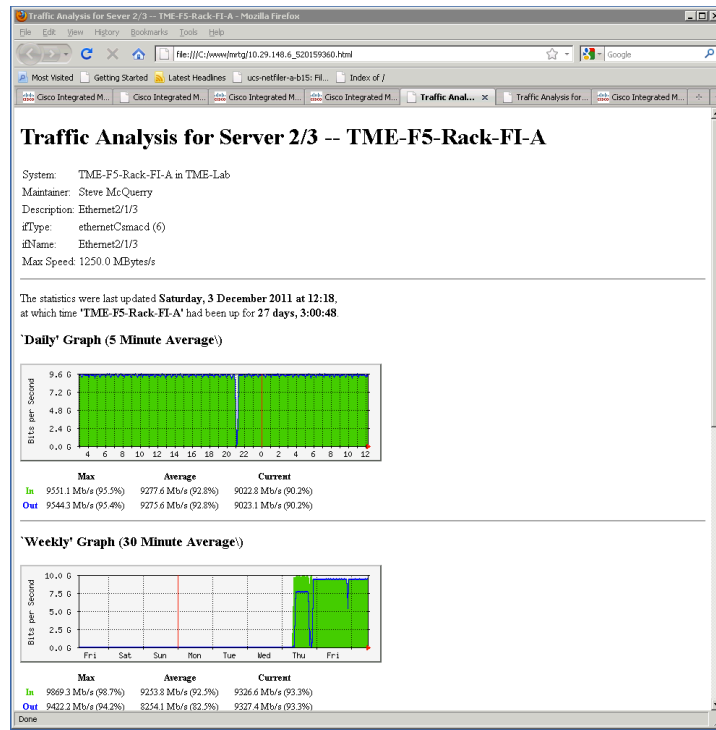
There are also many other tips for configuring and using MRTG available at the website.

In practice MRTG should be run as a service on a web server with a web page that links to each of the HTML files with user recognizable names. It is highly recommended that users spend some time understanding the tool and how they wish to deploy it in their environment.