



Part 20

-

MRTG on your Pi



Version: 2016-05-13

IMPORTANT: Before starting with this, make sure you have installed and up and running the Apache server and the SNMP service.

Installing MRTG on your PI

Installing MRTG is just as simple as typing the following line into your console:

```
sudo apt -y install mrtg
```

During the installation you were asked if you want only the root user to have access to the mrtg config file (/etc/mrtg.cfg). If you agreed with this, you have to enter the following commands as root (not sudo!). To enter root context simply type

```
su
```

into your console and enter the appropriate password.

Configure MRTG

Auto-creating a configuration file for a device can be done using `cfgmaker` provided in MRTG installation

```
sudo cfgmaker public@192.168.0.1 >> /etc/mrtg.cfg
```

where `public` is the SNMP read community string and `192.168.0.1` is the ip address of my ISP router.

With the configuration file created correctly there's only one other thing you have to do and that's to use the `indexmaker` utility to create the summary home page. You have to re-run this command every time you make certain changes to the /etc/mrtg.cfg configuration file.

But first we have to make the directory where MRTG stores its files

```
sudo mkdir /var/www/mrtg
sudo indexmaker /etc/mrtg.cfg > /var/www/mrtg/index.html
```

Note:

- verify upfront SNMP is enable on your ISP router.
- We have appended the MRTG setting to the existing MRTG configuration file using `>>`.

Configure Apache2

You only need to change the file `/etc/apache2/sites-available/000-default.conf` and change `DocumentRoot` to `/var/www/mrtg` instead of `/var/www/html`

```
sudo nano /etc/apache2/sites-available/000-default.conf
```

and change

```
...
ServerAdmin webmaster@localhost
DocumentRoot /var/www/mrtg
...
```

When you have finished press [Ctrl] + X. This will ask if you want to save the modified files. Press 'Y' and then hit [Return] to save the file with the same name.

Make mrtg to run as a daemon

Edit the `/etc/mrtg.cfg` and add the line `RunAsDaemon: Yes`

```
sudo nano /etc/mrtg.cfg

#####
# Multi Router Traffic Grapher -- Sample Configuration File
#####

# Global configuration
WorkDir: /var/www/mrtg
WriteExpires: Yes
RunAsDaemon: Yes
```

When you have finished press [Ctrl] + X. This will ask if you want to save the modified files. Press 'Y' and then hit [Return] to save the file with the same name.

Next you want to run MRTG at startup. Therefore create a file eg: `mrtg` within the `/etc/init.d` directory

```
sudo nano /etc/init.d/mrtg
```

and insert the following content

```
#!/bin/sh
### BEGIN INIT INFO
# Provides:          mrtg
# Required-Start:    $local_fs
# Required-Stop:
# Default-Start:     2 3 4 5
# Default-Stop:      0 1 6
# Short-Description: Start daemon at boot time
# Description:       Enable service provided by daemon.
### END INIT INFO
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin
# full path + name to mrtg application
DAEMON="/usr/bin/mrtg"
# path to CFG file
PATHCFG="/etc"
# path where logging needs to go
PATHLOG="/etc/log"
PARAM="--daemon --user=root --logging $PATHLOG/mrtg.log $PATHCFG/mrtg.cfg"
# script name
NAME="mrtg.sh"
# human readable description
DESC="Multi Router Traffic Grapher Daemon"

test -f $DAEMON || exit 0

set -e

case "$1" in
  start)
    # check if there was no instance running based on mrtg.pid
    # if so kill it
    if [ -e "$PATHCFG/mrtg.pid" ]
    then
      killall -9 mrtg
      if [ -e "$PATHCFG/mrtg.pid" ]
      then
        rm "$PATHCFG/mrtg.pid"
      fi
    fi
    # delete log file
    if [ -e "$PATHLOG/mrtg.log" ]
    then
      rm "$PATHLOG/mrtg.log"
```

```

        fi
        echo -n "Starting $DESC: "
        env LANG=C $DAEMON $PARAM
    ;;
stop)
    echo -n "Stopping $DESC: "
    killall -9 mrtg
    if [ -e "$PATHCFG/mrtg.pid" ]
    then
        rm "$PATHCFG/mrtg.pid"
    fi
    echo "Killed."
    ;;
restart)
    echo -n "Stopping $DESC: "
    killall -9 mrtg
    echo "Killed."
    if [ -e "$PATHCFG/mrtg.pid" ]
    then
        rm "$PATHCFG/mrtg.pid"
    fi
    sleep 1
    if [ -e "$PATHLOG/mrtg.log" ]
    then
        rm "$PATHLOG/mrtg.log"
    fi
    echo -n "Starting $DESC: "
    env LANG=C $DAEMON $PARAM
    ;;
*)
    N=/etc/init.d/$NAME
    echo "Usage: $N {start|stop|restart}" >&2
    exit 1
    ;;
esac

exit 0

```

When you have finished press [Ctrl] + X. This will ask if you want to save the modified files. Press 'Y' and then hit [Return] to save the file with the same name.

Make it executable

```
sudo chmod +x /etc/init.d/mrtg
```

then make sure it will be executed at startup:

```
cd /etc/init.d
sudo update-rc.d mrtg defaults
```

Now reboot.

```
sudo reboot
```

To check, if it was started type:

```
sudo ps -aux | grep mrtg
```

You should see this or something similar, containing phrases

```

root      801  0.3  1.6 16320 14628 ?        Ss   20:00   0:00 /usr/bin/perl -w /usr/bin/mrtg
root      979  0.0  0.2  4280  1844 pts/0    S+   20:00   0:00 grep mrtg

```

Testing the installation

Wait for at least 10 to 15 minutes as MRTG only checks every 5 minutes and you want to have some data.

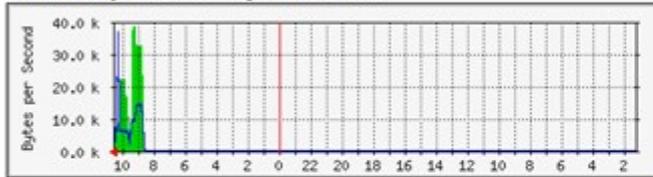
Take a look at your summary home page. If your system's IP address is 192.168.0.100 then you'd type in the following in the address bar of a browser running on a system on the same network:

<http://192.168.0.100/mrtg/>

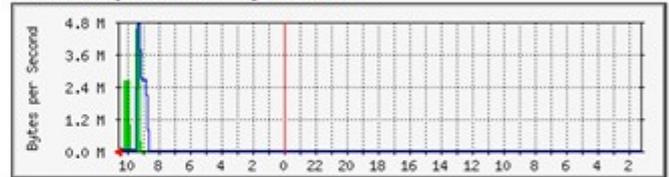
You should see something similar to this

MRTG Index Page

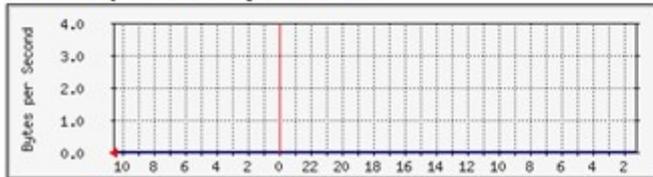
Traffic Analysis for 103 -- SpeedTouch 5x6



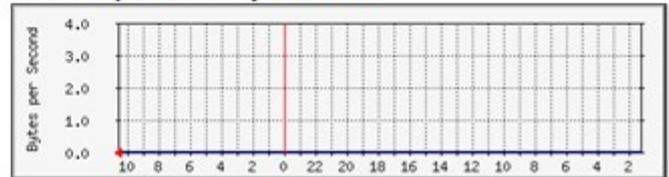
Traffic Analysis for 205 -- SpeedTouch 5x6



Traffic Analysis for 501 -- SpeedTouch 5x6



Traffic Analysis for 502 -- SpeedTouch 5x6



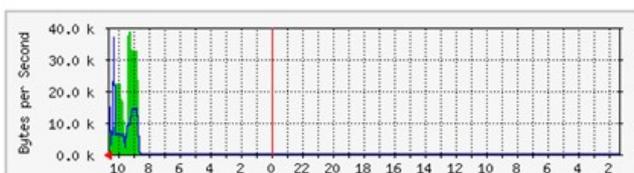
Your summary home page should come up with a graph for each target entry in the configuration file. If a graph looks like there's no data on it, click on it and check the statistics to see if any traffic is being seen. You can also check the timestamp of the "The statistics were last updated..." value.

Traffic Analysis for 103 -- SpeedTouch 5x6

System: SpeedTouch 5x6 in Customer Premises
Maintainer: Service Provider
Description: IP:-LocalNetwork-ETHERNET-THOMSON-SpeedTouch-5x6-7.4.4.7
ifType: ethernetCsmacd (6)
ifName: IP: LocalNetwork
Max Speed: 12.5 MBytes/s
Ip: 10.0.0.138 (speedtouch.lan)

The statistics were last updated **Sunday, 23 June 2013 at 10:42**,
at which time 'SpeedTouch 5x6' had been up for **47 days, 13:57:47**.

'Daily' Graph (5 Minute Average)



	Max	Average	Current
In	38.7 kB/s (0.3%)	21.0 kB/s (0.2%)	12.4 kB/s (0.1%)
Out	36.6 kB/s (0.3%)	9823.0 B/s (0.1%)	18.6 kB/s (0.1%)

Adding more sensors

To add more sensors to your configuration, just use the following commands: (if not already, you have to enter the root context before – use **su** to do this.)

```
cfgmaker public@192.168.0.100 >> /etc/mrtg.cfg
indexmaker /etc/mrtg.cfg > /var/www/mrtg/index.html
```

where `public` is SNMP read community string of the device to be monitored, `192.168.0.100` is the IP address of the monitored device.

To enforce instant checking of the new sensors type

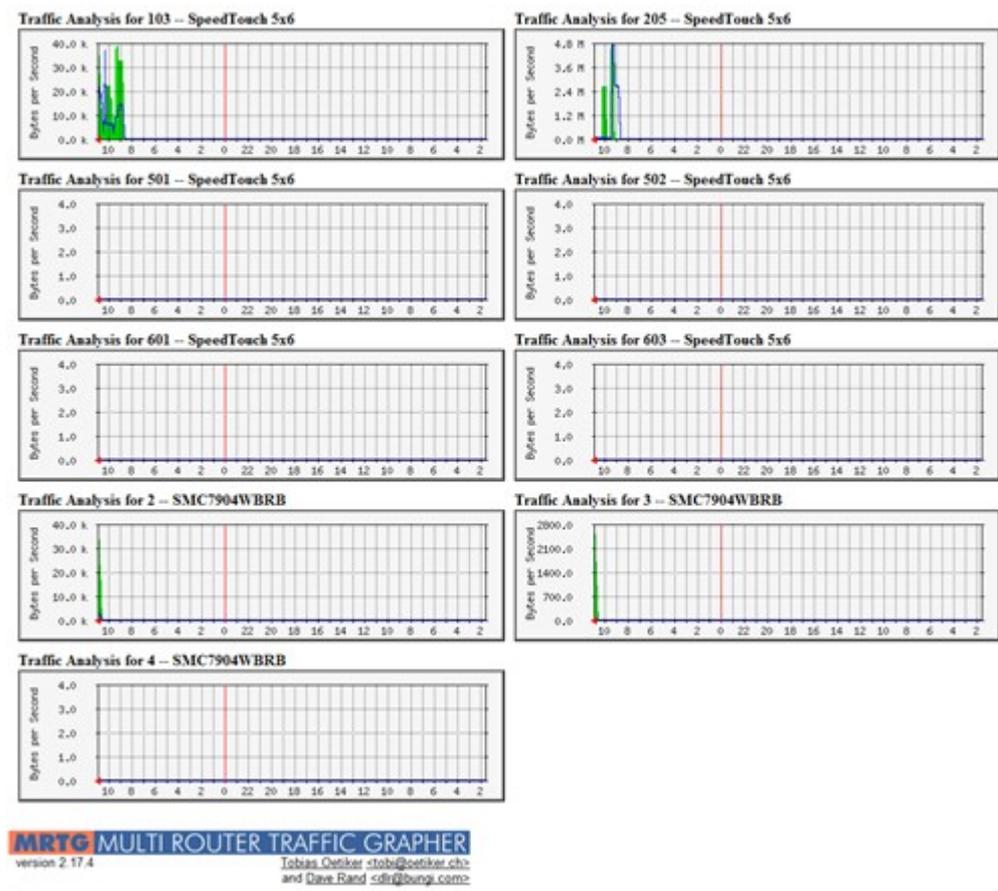
```
/etc/init.d/mrtg restart
```

to restart the mrtg daemon. Check the mrtg webpage, it everything's ok.

Remove unused sensors from mrtg.cfg

As you may notice, the mrtg webpages shows more sensors, than you want to monitor. This is because of every network device has many interfaces (some of it are even virtual) and mainly only a few of it are used. So the challenge now is to remove the unused interfaces from our `/etc/mrtg.cfg` to clean up our web overview. To see which sensors are getting data from your network devices, you should let mrtg some time to collect data (about an hour or so). After a little waiting time my pages shows up the following:

MRTG Index Page

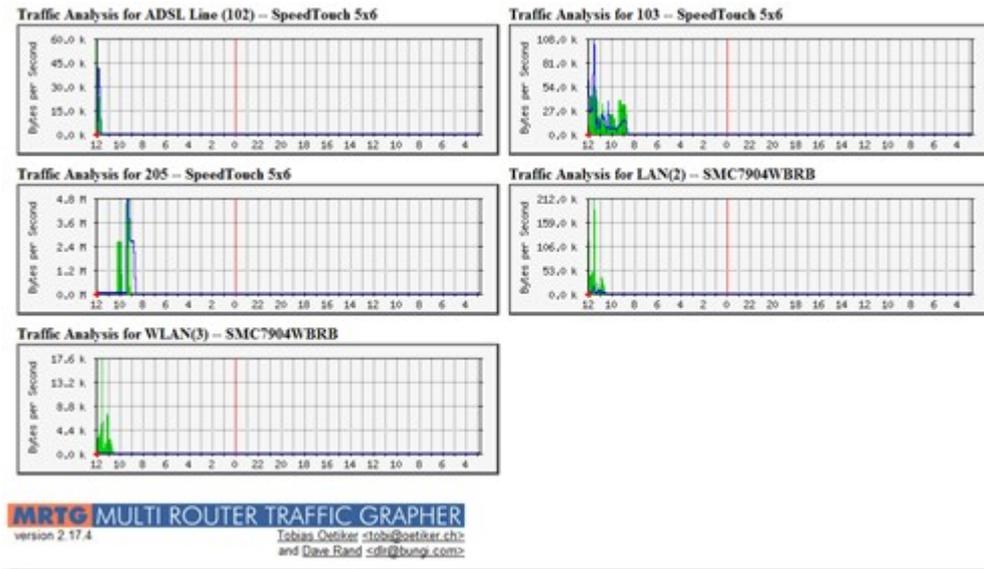


You can see clearly, that the interfaces 501, 502, 601, 603 and 4 are not receiving any data. So we want to remove them from our configuration.

```
su
nano /etc/mrtg.cfg
```

Simply comment out (#) the appropriate lines for the interfaces you don't want to see. You can even uncomment lines to show interfaces, mrtg didn't want to show, because some values are missing/invalid. The output can look like this:

MRTG Index Page



Customize the MRTG webpages

You can customize the MRTG webpages (change colors, fonts, sizes etc) by editing the `/etc/mrtg.cfg` file. For all configuration options and possibilities in the `mrtg.cfg` file I must refer to the MRTG documentation website <http://oss.oetiker.ch/mrtg/doc/> or <http://oss.oetiker.ch/mrtg/doc/mrtg-reference.en.html>. This is not part of this topic

Sources:

- <http://oss.oetiker.ch/mrtg/doc/mrtg-unix-guide.en.html>
- <http://www.debianadmin.com/mrtg-installation-and-configuration-in-debian-based-distributions-2.html>
- <http://www.debianhelp.co.uk/mrtg.htm>

Cleanup packages

When you install a package, `apt-get` retrieves the needed files from the hosts listed in `/etc/apt/sources.list`, stores them in a local repository (`/var/cache/apt/archives/`), and then proceeds with installation.

In time the local repository can grow and occupy a lot of disk space. Fortunately, `apt-get` provides tools for managing its local repository: `apt-get`'s `clean` and `autoclean` methods.

`apt-get clean` removes everything except lock files from `/var/cache/apt/archives/` and `/var/cache/apt/archives/partial/`. Thus, if you need to reinstall a package `apt-get` should retrieve it again.

`apt-get autoclean` removes only package files that can no longer be downloaded.

```
sudo apt -y clean
sudo apt -y autoremove
```