

How to obtain a basic MRTG report page

This document describes how to obtain statistics of basic elements such as CPU, memory, session, and interfaces by using SNMP

What is the Multi Router Traffic Grapher?

“The Multi Router Traffic Grapher (MRTG) is a tool to monitor the traffic load on network links. The MRTG generates HTML pages containing graphical images that provide a live visual representation of this traffic. For an example, see <http://www.ee.ethz.ch/stats/mrtg/>.

MRTG is based on Perl and C, and runs on UNIX and Windows NT. MRTG is successfully used on many sites around the net.” (From MRTG web site)

To use MRTG with your FortiGate unit, you need to configure the FortiGate unit and the MRTG.

Configuring the FortiGate to allow SNMP polling

You must first configure the FortiGate unit to allow SNMP polling. There are three steps to enabling SNMP polling:

- Enable the SNMP agent
- Create a new Community
- Activate SNMP on the interface.

Enable the SNMP agent

To configure the FortiGate unit

1. Go to **System > Config > SNMP v1/v2c**.
2. Select Enable for the SNMP Agent.
3. Enter a Description, Location and Contact information.
4. Select Apply.

Figure 1: Enabling the SNMP Agent



Creating a new Community

To create a new Community

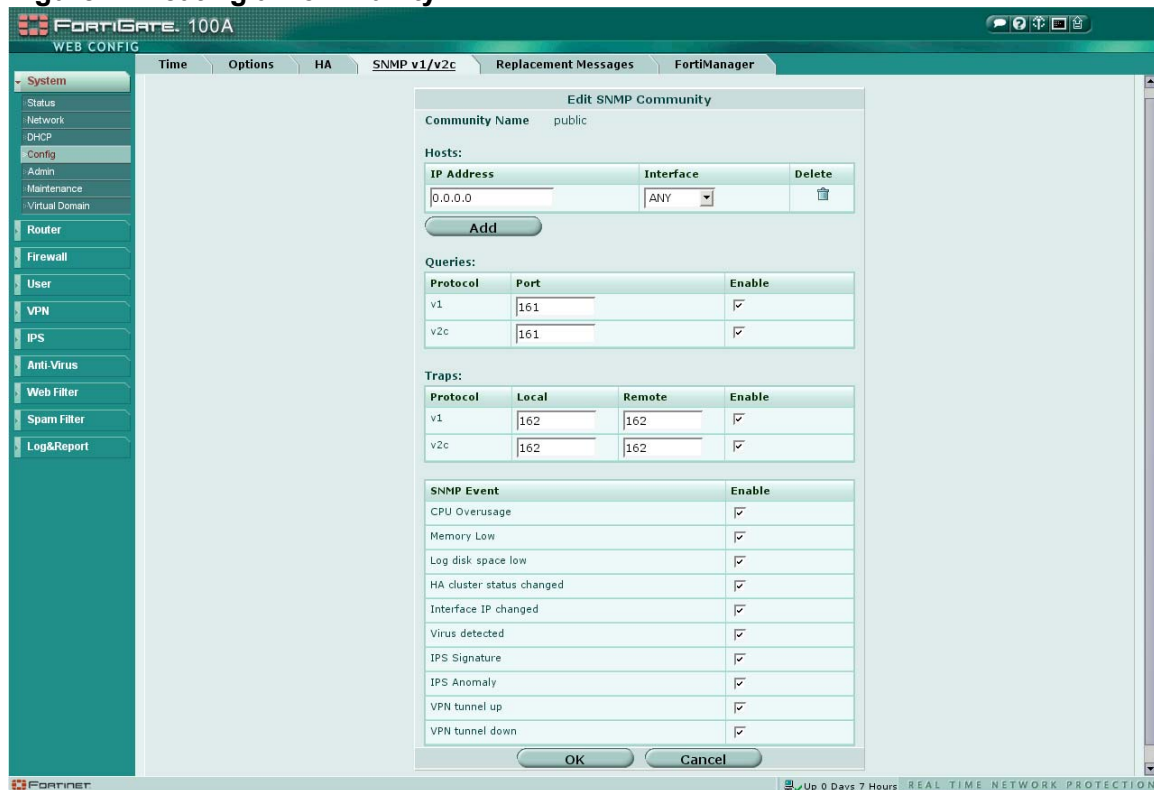
1. Go to **System > Config > SNMP v1/v2c**.
2. Select Create New.
3. Enter a Community Name.

Leave the remainder of the settings as the default.

To make a secure community, specify IP addresses that will be allowed to pool the FortiGate unit with SNMP. You can also define which interface the IP addresses will be allowed to communicate with the FortiGate unit.

4. To do this, enter the IP addresses, select the Interface and select Add.
5. Select OK.

Figure2: Creating a Community



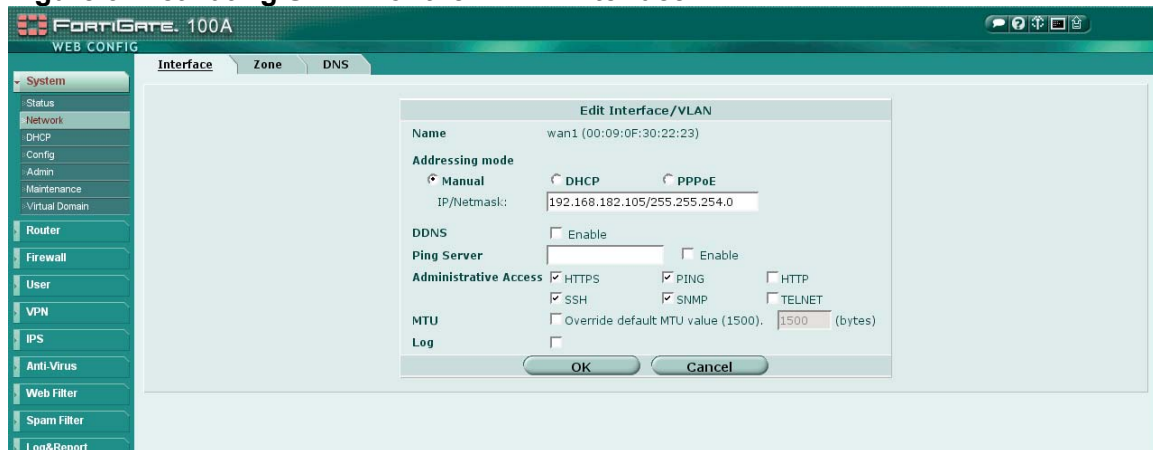
Activating SNMP on the Interface

If SNMP is allowed from only one Interface, you need to enable SNMP for the interface.

To activate SNMP

1. Go to **System > Network > Interface**.
2. For the interface allowing SNMP traffic, select Edit.
3. Select SNMP for Administrative Access.
4. Select OK.

Figure 3: Activating SNMP for the WAN1 interface.



Configuring MRTG on a Linux server

Prerequisite

You need a web server configured with SNMP installed:

- apt-get install snmp
- apt-get install apache

Configuring MRTG

To generate the configuration file, you need to have the OIDs of the standard and Fortinet proprietary Management Information Base(MIB).

The standard MIB is the same for all devices. You must download the Fortinet MIB from Fortinet image site under your support area (/v2.80/MIB/fortinet2.80.mib).

Configuring MRTG involves the following steps:

- Create web folders
- Create the mrtg.cfg configuration file
- Create the index.html file
- Start MRTG

Create web folders

In the directroy /var/www/ create a directory called mrtg.

In the /var/www/mrtg directory create two subdirectories:

MIB copy the fortinet2.80.mib MIB to this directory

index the report files are stored in this directory

Creation of the mrtg.cfg file

In the /etc directory create the file called mrtg.cfg with a text editor.

For example, `nanao mrtg.cfg` or `vi mrtg.cfg`

The first part is the basic information:

```
### Global Config Options
```

```
# Directories
```

```
WorkDir: /var/www/mrtg/index
```

```
LoadMIBs: /var/www/mrtg/MIB/fortinet.2.80.mib
```

```
### Global Defaults
```

```
EnableIPv6: no
```

If are using IPv6 you may want to enable this setting.

```
WriteExpires: Yes
```

```
Language: english
```

Specify your language.

```
#Extension[_]: php
```

Specify if your web site is using php rather than html.

```
RunAsDaemon:Yes
```

Run the MRTG as a daemon.

```
Interval:5
```

Record information every 5 minutes (min time).

```
Title[^]: Analysis for
```

```
Colours[_]: Green#00eb0c,Blue#1000ff,Red#ff0000,Violet#ff00ff
```

```
Background[_]: #ffffff
```

Start with the interfaces configuration. You can either configure the interface manually or use a command.

For the manual configuration of the interfaces, run the following command from a shell:

```
snmpwalk -v2c -c public 192.168.182.105 .1.3.6.1.2.1.2.2.1
```

It will print all the values for the interfaces. At the beginning of the output, you will have something similar to the following:

```
IF-MIB::ifDescr.1 = STRING: internal
IF-MIB::ifDescr.2 = STRING: wan1
IF-MIB::ifDescr.3 = STRING: wan2
IF-MIB::ifDescr.4 = STRING: dmz1
IF-MIB::ifDescr.5 = STRING: dmz2
```

The output will be different in functionality depending on your FortiGate unit. The following shows you that for a FortiGate 100A. The Internal interface has index1, the wan1 interface has index2 These indexes will be used for the configuration of each interface.

The following is an example of two declarations of interfaces in the mrtg.cfg file:

```
# Network Interface: Internal
Target[int]: .1.3.6.1.2.1.2.2.1.10.1&.1.3.6.1.2.1.2.2.1.16.1:public@192.168.182.105
Title[int]: Internal
PageTop[int]: <h1>Internal interface</h1>
Options[int]: growright,nopercent,integer
MaxBytes[int]: 125000000
LegendI[int]: In:
LegendO[int]: Out:

# Network Interface: Wan1
Target[wan1]: .1.3.6.1.2.1.2.2.1.10.2&.1.3.6.1.2.1.2.2.1.16.2:public@192.168.182.105
Title[wan1]: Wan1
PageTop[wan1]: <h1>Wan1 interface</h1>
Options[wan1]: growright,nopercent,integer
MaxBytes[wan1]: 125000000
LegendI[wan1]: In:
LegendO[wan1]: Out:
```

As you can see the index are used for the interfaces. You can also use a simple target for interfaces:

```
# Network Interface: Internal
Target[int]: 1:public@192.168.182.105
Title[int]: Internal
PageTop[int]: <h1>Internal interface</h1>
Options[int]: growright,nopercent,integer
MaxBytes[int]: 125000000
LegendI[int]: In:
LegendO[int]: Out:

# Network Interface: Wan1
Target[wan1]: 2:public@192.168.182.105
Title[wan1]: Wan1
PageTop[wan1]: <h1>Wan1 interface</h1>
Options[wan1]: growright,nopercent,integer
MaxBytes[wan1]: 125000000
LegendI[wan1]: In:
LegendO[wan1]: Out:
```

That is the manual declaration of the interfaces. You can also use cfmaker to generate the interfaces configuration. You will have to add the OIDs (Objects Identifier) in addition to the interfaces. The command is:

```
cfmaker community@<ip_of_the_fortigate> --ifdesc=name --ifref=name --output=mrtg.cfg
```

After creating the interfaces you want to monitor, you can add the CPU, memory and active sessions on the FortiGate unit. The following are the configuration lines you need to add to the mrtg.cfg file:

```
#Monitoring active sessions
Target[tcps]: .1.3.6.1.4.1.12356.1.10.0&.1.3.6.1.4.1.12356.1.10.0:public@192.168.182.105
Title[tcps]: Active Sessions
```

```

PageTop[tcps]: <h1>Active Sessions</h1>
Options[tcps]: gauge, growright, nopercent
MaxBytes[tcps]: 1000000
YLegend[tcps]: Sessions
ShortLegend[tcps]: sess
LegendI[tcps]: Sessions
LegendO[tcps]: Sessions
Legend1[tcps]: Active Sessions
Legend2[tcps]: Active Sessions

#Memory

Target[fnSysMemUsage.0]: .1.3.6.1.4.1.12356.1.9.0&.1.3.6.1.4.1.12356.1.9.0:public@192.168.182.105
Title[fnSysMemUsage.0]: Memory Usage
PageTop[fnSysMemUsage.0]: <H1>Memory Usage</H1>
Options[fnSysMemUsage.0]: gauge, growright, nopercent
MaxBytes[fnSysMemUsage.0]: 100
YLegend[fnSysMemUsage.0]: Memory
ShortLegend[fnSysMemUsage.0]: %
LegendI[fnSysMemUsage.0]: Memory usage
LegendO[fnSysMemUsage.0]: Memory usage
Legend1[fnSysMemUsage.0]: Physical Memory Used
Legend2[fnSysMemUsage.0]: Physical Memory Used

# cpu

Target[FGTcpu]: .1.3.6.1.4.1.12356.1.8.0&.1.3.6.1.4.1.12356.1.8.0:public@192.168.182.105
Title[FGTcpu]: Processor Usage
PageTop[FGTcpu]: <h1>Procesor Usage</h1>
Options[FGTcpu]: gauge, growright, nopercent
MaxBytes[FGTcpu]: 100
YLegend[FGTcpu]: pourcent
ShortLegend[FGTcpu]: %
LegendI[FGTcpu]: CPU usage
LegendO[FGTcpu]: CPU usage
Legend1[FGTcpu]: Total CPU Used
Legend2[FGTcpu]: Total CPU Used

```

After all these entries you can save the mrtg.cfg file and exit the editor.

Creating the index.html file

In the directory /var/www/mrtg/index, type the following command to create the index.html file:

```
indexmaker /etc/mrtg.cfg --output=index.html
```

Or

```
indexmaker /etc/mrtg.cfg --output=index.php
```

Starting MRTG

To launch MRTG type the following command:

```
mrtg /etc/mrtg.cfg &
```

MRGT configuration file

This section shows the entire MRTG configuration file for your reference.

```

### Global Config Options

# Directories
WorkDir: /var/www/mrtg/index
LoadMIBs: /var/www/mrtg/MIB/fortinet.2.80.mib

### Global Defaults

```

EnableIPv6: no
WriteExpires: Yes
Language: english
#Extension[_]: php

RunAsDaemon: Yes
Interval: 5

Title[^]: Analysis for
Colours[_]: Green#00eb0c,Blue#1000ff,Red#ff0000,Violet#ff00ff
Background[_]: #ffffff

Network Interface: Internal
Target[int]: 1:public@192.168.182.105
Title[int]: Internal
PageTop[int]: <h1>Internal interface</h1>
Options[int]: growright,nopercent,integer
MaxBytes[int]: 125000000
LegendI[int]: In:
LegendO[int]: Out:

Network Interface: Wan1
Target[wan1]: 2:public@192.168.182.105
Title[wan1]: Wan1
PageTop[wan1]: <h1>Wan1 interface</h1>
Options[wan1]: growright,nopercent,integer
MaxBytes[wan1]: 125000000
LegendI[wan1]: In:
LegendO[wan1]: Out:

Network Interface: Wan2
Target[wan2]: 3:public@192.168.182.105
Title[wan2]: Wan2
PageTop[wan2]: <h1>Wan2 interface</h1>
Options[wan2]: growright,nopercent,integer
MaxBytes[wan2]: 125000000
LegendI[wan2]: In:
LegendO[wan2]: Out:

Network Interface: Dmz1
Target[dmz1]: 4:public@192.168.182.105
Title[dmz1]: Dmz1
PageTop[dmz1]: <h1>Dmz1 interface</h1>
Options[dmz1]: growright,nopercent,integer
MaxBytes[dmz1]: 125000000
LegendI[dmz1]: In:
LegendO[dmz1]: Out:

Network Interface: Dmz2
Target[dmz2]: 5:public@192.168.182.105
Title[dmz2]: Dmz2
PageTop[dmz2]: <h1>Dmz2 interface</h1>
Options[dmz2]: growright,nopercent,integer
MaxBytes[dmz2]: 125000000
LegendI[dmz2]: In:
LegendO[dmz2]: Out:

#Monitoring active sessions
Target[tcps]: .1.3.6.1.4.1.12356.1.10.0&.1.3.6.1.4.1.12356.1.10.0:public@192.168.182.105
Title[tcps]: Active Sessions
PageTop[tcps]: <h1>Active Sessions</h1>
Options[tcps]: gauge, growright, nopercent
MaxBytes[tcps]: 1000000
YLegend[tcps]: Sessions
ShortLegend[tcps]: sess
LegendI[tcps]: Sessions
LegendO[tcps]: Sessions
Legend1[tcps]: Active Sessions
Legend2[tcps]: Active Sessions

#Memory
Target[fnSysMemUsage.0]:1.3.6.1.4.1.12356.1.9.0&.1.3.6.1.4.1.12356.1.9.0:public@192.168.182.105


```

Title[fnSysMemUsage.0]: Memory Usage
PageTop[fnSysMemUsage.0]: <h1>Memory Usage</h1>
Options[fnSysMemUsage.0]: gauge, growright, nopercnt
MaxBytes[fnSysMemUsage.0]: 100
YLegend[fnSysMemUsage.0]: Memory
ShortLegend[fnSysMemUsage.0]: %
LegendI[fnSysMemUsage.0]: Memory usage
LegendO[fnSysMemUsage.0]: Memory usage
Legend1[fnSysMemUsage.0]: Physical Memory Used
Legend2[fnSysMemUsage.0]: Physical Memory Used

```

```

# cpu
Target[FGTcpu]: .1.3.6.1.4.1.12356.1.8.0&.1.3.6.1.4.1.12356.1.8.0:public@192.168.182.105
Title[FGTcpu]: Processor Usage
PageTop[FGTcpu]: <h1>Processor Usage</h1>
Options[FGTcpu]: gauge, growright, nopercnt
MaxBytes[FGTcpu]: 100
YLegend[FGTcpu]: pourcent
ShortLegend[FGTcpu]: %
LegendI[FGTcpu]: CPU usage
LegendO[FGTcpu]: CPU usage
Legend1[FGTcpu]: Total CPU Used
Legend2[FGTcpu]: Total CPU Used

```

Sample index page

Figure 4: Sample MRTG index page showing SNMP information

