

SNMP Monitoring Examples

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Application Examples

Summary

This manual describes a configuration examples of MRTG which is a third-party tool to monitor the router remotely via SMTP.

Description

As a prerequisite for this manual, MRTG should be installed on your computer and SNMP feature should be enabled on the router you want to collect information from.

Initial Router Configuration

- First of all you need to enable SNMP feature on the router:

```
[admin@MikroTik snmp> set enabled=yes contact=admin@mt.lv location=Riga
[admin@MikroTik] snmp> pri
  enabled: yes
  contact: admin@mt.lv
  location: Riga
```

- An SNMP community name should be assigned to the router:

```
[admin@MikroTik] snmp community> add name=communa \
\... address=192.168.0.0/24 read-access=yes
[admin@MikroTik] snmp community> print
# NAME                ADDRESS                READ-ACCESS
0 public              0.0.0.0/0             no
1 communa             192.168.0.0/24       yes
```

Communa is a community name and **192.168.0.0/24** is a network from which this name is accessible.

CPU Load Monitoring

- To see CPU load average OID values, you should issue the following command:

```
[admin@MikroTik] system resource> print oid
      uptime: .1.3.6.1.2.1.1.3.0
total-hdd-space: .1.3.6.1.2.1.25.2.3.1.5.1
used-hdd-space: .1.3.6.1.2.1.25.2.3.1.6.1
total-memory: .1.3.6.1.2.1.25.2.3.1.5.2
used-memory: .1.3.6.1.2.1.25.2.3.1.6.2
cpu-load: .1.3.6.1.2.1.25.3.3.1.2.1
```

The last entry is exactly what we need to monitor CPU load.

- You have to write the following configuration file for MRTG using obtained OID values:

```
EnableIPv6: no
HtmlDir: /home/mrtg/html/
ImageDir: /home/mrtg/html/images/
LogDir: /home/mrtg/html/logs/

#####
# System: Main gateway
# Description: router
# Contact: admin@mt.lv
# Location: Riga
#####

### 10.7.0.3 CPU load ###

Target[10.7.0.3_cpu]: 1.3.6.1.2.1.25.3.3.1.2.1&1.3.6.1.2.1.25.3.3.1.2.1:communa \
...\ @10.7.0.3:
AbsMax[10.7.0.3_cpu]: 100
MaxBytes[10.7.0.3_cpu]: 100
Title[10.7.0.3_cpu]: 10.7.0.3 CPU load
PageTop[10.7.0.3_cpu]: <H1>10.7.0.3 CPU load</H1>
Options[10.7.0.3_cpu]: gauge,growright,nopercent, noo
YLegend[10.7.0.3_cpu]: CPU load
ShortLegend[10.7.0.3_cpu]: %
LegendI[10.7.0.3_cpu]: CPU load (percentage)
```

- The resulting MRTG page will look like this:

[CPU load](#)

In the example above, MRTG will place its result files in the **/home/mrtg/html** directory, not in your default Apache HTML documents directory.

Simple Queues Monitoring

- To see queue simple OID values, you should issue the following command on your MikroTik router:

```
[admin@MikroTik] queue simple> print oid
Flags: X - disabled, I - invalid, D - dynamic
0 name=.1.3.6.1.4.1.14988.1.1.2.1.1.2.5
  bytes-in=.1.3.6.1.4.1.14988.1.1.2.1.1.8.5
  bytes-out=.1.3.6.1.4.1.14988.1.1.2.1.1.9.5
  packets-in=.1.3.6.1.4.1.14988.1.1.2.1.1.10.5
  packets-out=.1.3.6.1.4.1.14988.1.1.2.1.1.11.5

1 name=.1.3.6.1.4.1.14988.1.1.2.1.1.2.6
  bytes-in=.1.3.6.1.4.1.14988.1.1.2.1.1.8.6
  bytes-out=.1.3.6.1.4.1.14988.1.1.2.1.1.9.6
  packets-in=.1.3.6.1.4.1.14988.1.1.2.1.1.10.6
  packets-out=.1.3.6.1.4.1.14988.1.1.2.1.1.11.6

2 name=.1.3.6.1.4.1.14988.1.1.2.1.1.2.7
  bytes-in=.1.3.6.1.4.1.14988.1.1.2.1.1.8.7
  bytes-out=.1.3.6.1.4.1.14988.1.1.2.1.1.9.7
  packets-in=.1.3.6.1.4.1.14988.1.1.2.1.1.10.7
  packets-out=.1.3.6.1.4.1.14988.1.1.2.1.1.11.7

3 name=.1.3.6.1.4.1.14988.1.1.2.1.1.2.10
  bytes-in=.1.3.6.1.4.1.14988.1.1.2.1.1.8.10
```

```
bytes-out=.1.3.6.1.4.1.14988.1.1.2.1.1.9.10
packets-in=.1.3.6.1.4.1.14988.1.1.2.1.1.10.10
packets-out=.1.3.6.1.4.1.14988.1.1.2.1.1.11.10
```

For the purpose of this tutorial you should use **bytes-in** and **bytes-out** OID values.

- Corresponding MRTG configuration file will look like this one:

```
EnableIPv6: no
HtmlDir: /home/mrtg/html/
ImageDir: /home/mrtg/html/images/
LogDir: /home/mrtg/html/logs/
Options[_]: bits,growright

#####
# System: 10.7.0.3
# Description: router
# Contact: admin@mt.lv
# Location: Riga
#####

### PMI queue simple for diamed_download ###

Target[10.7.0.3_0]:1.3.6.1.4.1.14988.1.1.2.1.1.8.5&1.3.6.1.4.1.14988. \
\... 1.1.2.1.1.9.5:communa@10.7.0.3:
MaxBytes[10.7.0.3_0]: 64000
Title[10.7.0.3_0]: diamed
PageTop[10.7.0.3_0]: <H1>diamed</H1>
<TABLE>
  <TR><TD>System:</TD>      <TD>PMI 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD>diamed</TD></TR>
</TABLE>

### PMI queue simple for fsa ###

Target[10.7.0.3_2]:1.3.6.1.4.1.14988.1.1.2.1.1.8.7&1.3.6.1.4.1.14988. \
\... 1.1.2.1.1.9.7:communa@10.7.0.3:
MaxBytes[10.7.0.3_2]: 64000
Title[10.7.0.3_2]: fsa
PageTop[10.7.0.3_2]: <H1>fsa</H1>
<TABLE>
  <TR><TD>System:</TD>      <TD>PMI 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD>fsa</TD></TR>
</TABLE>

### PMI queue simple for lifetime ###

Target[10.7.0.3_4]:1.3.6.1.4.1.14988.1.1.2.1.1.8.13&1.3.6.1.4.1.14988. \
\... 1.1.2.1.1.9.13:communa@10.7.0.3:
MaxBytes[10.7.0.3_4]: 187500
Title[10.7.0.3_4]: fsa
PageTop[10.7.0.3_4]: <H1>fsa</H1>
<TABLE>
  <TR><TD>System:</TD>      <TD>PMI 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD>lifetime</TD></TR>
</TABLE>

### PMI queue simple for mklit ###

Target[10.7.0.3_5]:1.3.6.1.4.1.14988.1.1.2.1.1.8.14&1.3.6.1.4.1.14988. \
\... 1.1.2.1.1.9.14:communa@10.7.0.3:
MaxBytes[10.7.0.3_5]: 64000
Title[10.7.0.3_5]: mklit
PageTop[10.7.0.3_5]: <H1>mklit</H1>
<TABLE>
  <TR><TD>System:</TD>      <TD>PMI 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD>mklit</TD></TR>
</TABLE>
```

- The resulting MRTG page will look like this:

[Queue simple](#)

Tree Queue Monitoring

- To see queue tree OID values, you should issue the following command on your MikroTik router:

```
[admin@MikroTik] queue tree> print oid
Flags: X - disabled, I - invalid, D - dynamic
0   name=.1.3.6.1.4.1.14988.1.1.2.2.1.2.16777230 \
\... flow=.1.3.6.1.4.1.14988.1.1.2.2.1.3.16777230 \
\... bytes=.1.3.6.1.4.1.14988.1.1.2.2.1.5.16777230
    packets=.1.3.6.1.4.1.14988.1.1.2.2.1.6.16777230

1   name=.1.3.6.1.4.1.14988.1.1.2.2.1.2.16777231 \
\... flow=.1.3.6.1.4.1.14988.1.1.2.2.1.3.16777231 \
\... bytes=.1.3.6.1.4.1.14988.1.1.2.2.1.5.16777231
    packets=.1.3.6.1.4.1.14988.1.1.2.2.1.6.16777231

2   name=.1.3.6.1.4.1.14988.1.1.2.2.1.2.16777243 \
\... flow=.1.3.6.1.4.1.14988.1.1.2.2.1.3.16777243 \
\... bytes=.1.3.6.1.4.1.14988.1.1.2.2.1.5.16777243
    packets=.1.3.6.1.4.1.14988.1.1.2.2.1.6.16777243

3   name=.1.3.6.1.4.1.14988.1.1.2.2.1.2.16777244 \
\... flow=.1.3.6.1.4.1.14988.1.1.2.2.1.3.16777244 \
\... bytes=.1.3.6.1.4.1.14988.1.1.2.2.1.5.16777244
    packets=.1.3.6.1.4.1.14988.1.1.2.2.1.6.16777244
```

For the purpose of this tutorial you should use **flow** OID values.

- Corresponding MRTG configuration file will look like this one:

```
HtmlDir: /home/mrtg/html/
ImageDir: /home/mrtg/html/images/
LogDir: /home/mrtg/html/logs/
Options[_]: bits,growright

#####
# System: Main gateway
# Description: router
# Contact: admin@mt.lv
# Location: Riga
#####

### PMI queue tree for TG_VoIP_IN ###

Target[10.7.0.3_0q]:1.3.6.1.4.1.14988.1.1.2.2.1.5.16777230&1.3.6.1.4.1.14988. \
\... 1.1.2.2.1.5.16777230:communa@10.7.0.3:
MaxBytes[10.7.0.3_0q]: 100000
Title[10.7.0.3_0q]: TG_VoIP_IN
PageTop[10.7.0.3_0q]: <H1> TG_VoIP_IN </H1>
<TABLE>
  <TR><TD>System:</TD>      <TD> 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD> TG_VoIP_IN </TD></TR>
</TABLE>

### PMI queue tree for TG_in ###

Target[10.7.0.3_1q]:1.3.6.1.4.1.14988.1.1.2.2.1.5.16777231&1.3.6.1.4.1.14988. \
\... 1.1.2.2.1.5.16777231:communa@10.7.0.3:
MaxBytes[10.7.0.3_1q]: 100000
Title[10.7.0.3_1q]: TG_in
PageTop[10.7.0.3_1q]: <H1>TG_in</H1>
<TABLE>
  <TR><TD>System:</TD>      <TD> 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD>TG_in</TD></TR>
</TABLE>

### PMI queue tree for TG_in ###

Target[10.7.0.3_2q]:1.3.6.1.4.1.14988.1.1.2.2.1.5.16777243&1.3.6.1.4.1.14988. \
\... 1.1.2.2.1.5.16777243:communa@10.7.0.3:
```

```
MaxBytes[10.7.0.3_2q]: 100000
Title[10.7.0.3_2q]: TG_in
PageTop[10.7.0.3_2q]: <H1>TG_in</H1>
<TABLE>
  <TR><TD>System:</TD>      <TD> 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD>TG_in</TD></TR>
</TABLE>

### PMI queue tree for TG_OUT ###

Target[10.7.0.3_3q]:1.3.6.1.4.1.14988.1.1.2.2.1.5.16777244&1.3.6.1.4.1.14988. \
\... 1.1.2.2.1.5.16777244:communa@10.7.0.3:
MaxBytes[10.7.0.3_3q]: 100000
Title[10.7.0.3_3q]: TG_OUT
PageTop[10.7.0.3_3q]: <H1>TG_OUT</H1>
<TABLE>
  <TR><TD>System:</TD>      <TD> 10.7.0.3 </TD></TR>
  <TR><TD>Description:</TD><TD>TG_OUT</TD></TR>
</TABLE>
```

- The resulting MRTG page will look like this:
[Queue Tree](#)