

SNMP Service

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This document applies to V2.9

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General Information

Summary

SNMP is an application layer protocol. It is called simple because it works that way - the management station makes a request, and the managed device (SNMP agent) replies to this request. In SNMPv1 there are three main actions - Get, Set, and Trap. RouterOS supports only Get, which means that you can use this implementation only for network monitoring.

Hosts receive SNMP generated messages on UDP port 161 (except the trap messages, which are received on UDP port 162).

The MikroTik RouterOS supports:

- SNMPv1 only
- Read-only access is provided to the NMS (network management system)
- User defined communities are supported

- Get and GetNext actions
- No Set support
- No Trap support

Specifications

Packages required: *system, ppp (optional)*

License required: *level1*

Home menu level: */snmp*

Standards and Technologies: [SNMP \(RFC 1157\)](#)

Hardware usage: *Not significant*

Related Documents

- [Package Management](#)
- [IP Addresses and ARP](#)

Additional Documents

- <http://www.ietf.org/rfc/rfc1157.txt>
- http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/snmp.htm
- <http://www.david-guerrero.com/papers/snmp/>

SNMP Setup

Home menu level: */snmp*

Description

This section shows you how to enable the SNMP agent on MikroTik RouterOS.

Property Description

enabled (*yes | no*) - whether the SNMP service is enabled

contact (*text*; default: `""`) - contact information for the NMS

location (*text*; default: `""`) - location information for the NMS

Example

To enable the service, specifying some info:

```
[admin@MikroTik] snmp> set contact="admin@riga-2" location="3rd floor" enabled="yes"
[admin@MikroTik] snmp> print
    enabled: yes
    contact: admin@riga-2
    location: 3rd floor
[admin@MikroTik] snmp>
```

SNMP Communities

Home menu level: */snmp community*

Description

The community name is a value in SNMPv1 header. It is like a 'username' for connecting to the SNMP agent. The default community for SNMP is **public**.

Property Description

name (*name*) - community name

address (*IP address/mask*; default: **0.0.0.0/0**) - allow requests only from these addresses

- **0.0.0.0/0** - allow access for any address

read-access (*yes | no*; default: **yes**) - whether the read access is enabled for the community

Example

To view existing communities:

```
[admin@MikroTik] snmp community> print
# NAME                ADDRESS                READ-ACCESS
0 public              0.0.0.0/0             yes
[admin@MikroTik] snmp community>
```

You can disable read access for the community **public**:

```
[admin@MikroTik] snmp community> set 0 read-access=no
[admin@MikroTik] snmp community> print
# NAME                ADDRESS                READ-ACCESS
0 public              0.0.0.0/0             no
[admin@MikroTik] snmp community>
```

To add the community called **communa**, that is only accessible from the **159.148.116.0/24** network:

```
[admin@MikroTik] snmp community> add name=communa address=159.148.116.0/24
[admin@MikroTik] snmp community> print
# NAME                ADDRESS                READ-ACCESS
0 public              0.0.0.0/0             no
1 communa             159.148.116.0/24     no
[admin@MikroTik] snmp community>
```

Available OIDs

Description

OID stands for an object identifier, which is a data type specifying an authoritatively named object. An object identifier is a sequence of integers separated by decimal points. These integers traverse a tree structure, similar to the DNS or a Unix filesystem. There is an unnamed root at the top of the tree where the object identifiers start. All variables in the MIB start with the object identifier 1.3.6.1.2.1. Each node in the tree is also given a textual name. The names of the MIB variables are the numeric object identifiers, all of which begin with 1.3.6.1.2.1. You can use the SNMP protocol to get statistics from the router in these

submenus:

- /interface
- /interface pc
- /interface wavelan
- /interface wireless
- /interface wireless registration-table
- /queue simple
- /queue tree
- /system identity
- /system license
- /system resource

Example

To see available OID values, just type **print oid**. For example, to see available OIDs in **/system resource**:

```
[admin@motors] 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
[admin@motors] system resource>
```

Available MIBs

Description

The Management Information Base, or MIB, is the database of information maintained by the agent that the manager can query. You can download [MikroTik MIB file](#)

MikroTik RouterOS OID: enterprises.14988.1

RFC1493

dot1dBridge.dot1dBase.dot1dBaseBridgeAddress

dot1dBridge.dot1dStp.dot1dStpProtocolSpecification

dot1dBridge.dot1dStp.dot1dStpPriority

dot1dBridge.dot1dTp.dot1dTpFdbTable.dot1dTpFdbEntry.dot1dTpFdbAddress

dot1dBridge.dot1dTp.dot1dTpFdbTable.dot1dTpFdbEntry.dot1dTpFdbPort

dot1dBridge.dot1dTp.dot1dTpFdbTable.dot1dTpFdbEntry.dot1dTpFdbStatus

RFC2863

ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifName
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCInOctets
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCInUcastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCOctets
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCOUcastPkts

RFC1213

interfaces.ifNumber
interfaces.ifTable.ifEntry.ifIndex
interfaces.ifTable.ifEntry.ifDescr
interfaces.ifTable.ifEntry.ifType
interfaces.ifTable.ifEntry.ifMtu
interfaces.ifTable.ifEntry.ifSpeed
interfaces.ifTable.ifEntry.ifPhysAddress
interfaces.ifTable.ifEntry.ifAdminStatus
interfaces.ifTable.ifEntry.ifOperStatus
interfaces.ifTable.ifEntry.ifLastChange
interfaces.ifTable.ifEntry.ifInOctets
interfaces.ifTable.ifEntry.ifInUcastPkts
interfaces.ifTable.ifEntry.ifInNUcastPkts
interfaces.ifTable.ifEntry.ifInDiscards
interfaces.ifTable.ifEntry.ifInErrors
interfaces.ifTable.ifEntry.ifInUnknownProtos
interfaces.ifTable.ifEntry.ifOutOctets
interfaces.ifTable.ifEntry.ifOutUcastPkts
interfaces.ifTable.ifEntry.ifOutNUcastPkts
interfaces.ifTable.ifEntry.ifOutDiscards
interfaces.ifTable.ifEntry.ifOutErrors
interfaces.ifTable.ifEntry.ifOutQLen

RFC2011

ip.ipForwarding

ip.ipDefaultTTL

ip.ipAddrTable.ipAddrEntry.ipAdEntAddr

ip.ipAddrTable.ipAddrEntry.ipAdEntIfIndex

ip.ipAddrTable.ipAddrEntry.ipAdEntNetMask

ip.ipAddrTable.ipAddrEntry.ipAdEntBcastAddr

ip.ipAddrTable.ipAddrEntry.ipAdEntReasmMaxSize

ip.ipNetToMediaTable.ipNetToMediaEntry.ipNetToMediaIfIndex

ip.ipNetToMediaTable.ipNetToMediaEntry.ipNetToMediaPhysAddress

ip.ipNetToMediaTable.ipNetToMediaEntry.ipNetToMediaNetAddress

ip.ipNetToMediaTable.ipNetToMediaEntry.ipNetToMediaType

RFC2096

ip.ipForward.ipCidrRouteNumber

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteDest

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteMask

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteTos

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteNextHop

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteIfIndex

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteType

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteProto

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteAge

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteInfo

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteNextHopAS

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteMetric1

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteMetric2

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteMetric3

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteMetric4

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteMetric5

ip.ipForward.ipCidrRouteTable.ipCidrRouteEntry.ipCidrRouteStatus

Note that obsolete ip.ipRouteTable is also supported

RFC1213

system.sysDescr

system.sysObjectID

system.sysUpTime

system.sysContact

system.sysName

system.sysLocation

system.sysServices

RFC2790

host.hrSystem.hrSystemUptime

host.hrSystem.hrSystemDate

host.hrStorage.hrMemorySize

host.hrStorage.hrStorageTable.hrStorageEntry.hrStorageIndex

host.hrStorage.hrStorageTable.hrStorageEntry.hrStorageType

host.hrStorage.hrStorageTable.hrStorageEntry.hrStorageDescr

host.hrStorage.hrStorageTable.hrStorageEntry.hrStorageAllocationUnits

host.hrStorage.hrStorageTable.hrStorageEntry.hrStorageSize

host.hrStorage.hrStorageTable.hrStorageEntry.hrStorageUsed

CISCO-AAA-SESSION-MIB

Note that this MIB is supported only when **ppp** package is installed. It reports both **ppp** and **hotspot** active users

enterprises.cisco.ciscoMgmt.ciscoAAASessionMIB.casnMIBObjects.casnActive.casnActiveTableEntries

enterprises.cisco.ciscoMgmt.ciscoAAASessionMIB.casnMIBObjects.casnActive.casnActiveTable.casnActiveEntry.casnSess

enterprises.cisco.ciscoMgmt.ciscoAAASessionMIB.casnMIBObjects.casnActive.casnActiveTable.casnActiveEntry.casnUser

enterprises.cisco.ciscoMgmt.ciscoAAASessionMIB.casnMIBObjects.casnActive.casnActiveTable.casnActiveEntry.casnIpAc

RFC2863

ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifInMulticastPkts

ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifInBroadcastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifOutMulticastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifOutBroadcastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCInMulticastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCInBroadcastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCOutMulticastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCOutBroadcastPkts
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHighSpeed

RFC2790

host.hrStorage.hrStorageTable.hrStorageEntry.hrStorageAllocationFailures

Tools for SNMP Data Collection and Analysis

Description

MRTG (Multi Router Traffic Grapher) is the most commonly used SNMP monitor. For further information, see this link: <http://people.ee.ethz.ch/~oetiker/webtools/mrtg/>

An example of using MRTG with MikroTik SNMP

Here is a example configuration file for MRTG to monitor a network interface traffic on Mikrotik RouterOS. This is only an example file.

```
#####  
# Multi Router Traffic Grapher -- Sample Configuration File  
#####  
# This file is for use with mrtg-2.5.4c  
  
# Global configuration  
WorkDir: /var/www/mrtg  
WriteExpires: Yes  
  
RunAsDaemon: Yes  
Interval: 6  
Refresh: 300  
  
#####  
# System: RouterBOARD  
# Description: RouterOS v2.9  
# Contact: support@mikrotik.com  
# Location: Mikrotik main office  
#####  
  
### Interface 'RemOffice'  
  
Target[RouterBOARD]: 1.3.6.1.2.1.2.2.1.10.8&1.3.6.1.2.1.2.2.1.16.8:public@1.1.1.3  
#SetEnv[RouterBOARD]: MRTG_INT_IP="1.1.1.3" MRTG_INT_DESCR="ether1"  
MaxBytes[RouterBOARD]: 1250000  
Title[RouterBOARD]: Traffic Analysis for RouterBOARD(1)  
PageTop[RouterBOARD]: <H1>Traffic Analysis for RouterBOARD(1)</H1>
```

```

<TABLE>
<TR>
  <TD>System:</TD> <TD>RouterBOARD</TD>
</TR>
<TR>
  <TD>Maintainer:</TD> <TD>MicroTik Support</TD>
</TR>
<TR>
  <TD>Description:</TD><TD>An Embedded Board</TD>
</TR>
<TR>
  <TD>ifType:</TD>      <TD>ethernetCSMACD(6)</TD>
</TR>
<TR>
  <TD>ifName:</TD>      <TD>RemOffice</TD>
</TR>
<TR>
  <TD>Max Speed:</TD>  <TD>1250.0 kBytes/s</TD>
</TR>
<TR>
  <TD>IP:</TD>         <TD>10.10.2.1</TD>
</TR>
</TABLE>

```

```
### Queue 'queue1'
```

```

Target[RouterBOARD_queue]:
1.3.6.1.4.1.14988.1.1.2.1.1.8.1&1.3.6.1.4.1.14988.1.1.2.1.1.9.1:public@1.1.1.3
#SetEnv[RouterBOARD_queue]: MRTG_INT_IP="1.1.1.3" MRTG_INT_DESCR="ether1"
MaxBytes[RouterBOARD_queue]: 100000
Title[RouterBOARD_queue]: Traffic Analysis for RouterBOARD(1_1)
PageTop[RouterBOARD_queue]: <H1>Traffic Analysis for RouterBOARD(1_1)</H1>

```

```

<TABLE>
<TR>
  <TD>System:</TD> <TD>RouterBOARD</TD>
</TR>
<TR>
  <TD>Maintainer:</TD> <TD>MicroTik Support</TD>
</TR>
<TR>
  <TD>Description:</TD><TD>An Embedded Board</TD>
</TR>
<TR>
  <TD>ifType:</TD>      <TD>ethernetCSMACD(6)</TD>
</TR>
<TR>
  <TD>ifName:</TD>      <TD>RemOffice</TD>
</TR>
<TR>
  <TD>queueName:</TD>   <TD>queue1</TD>
</TR>
<TR>
  <TD>Max Speed:</TD>  <TD>64.0 kBytes/s</TD>
</TR>
<TR>
  <TD>IP:</TD>         <TD>10.10.2.1</TD>
</TR>
</TABLE>

```

The output page of MRTG (interface part) should look like this: [Example MRTG Output](#)

For more information read the MRTG documentation: [Configuration Reference](#)