Bandwidth Test

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This document applies to MikroTik RouterOS V2.8

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General Information

Summary

The Bandwidth Tester can be used to monitor the throughput only to a remote MikroTik router (either wired or wireless) and thereby help to discover network "bottlenecks".

Specifications

Packages required: *system*
License required: *level1*
Home menu level: */tool*
Standards and Technologies: *TCP (RFC 793)*, *UDP (RFC768)*
Hardware usage: *significant*

Related Documents

• *Package Management*

Description

Protocol Description

The TCP test uses the standard TCP protocol with acknowledgments and follows the TCP algorithm on how many packets to send according to latency, dropped packets, and other features in the TCP algorithm. Please review the TCP protocol for details on its internal speed settings and how

to analyze its behavior. Statistics for throughput are calculated using the entire size of the TCP packet. As acknowledgments are an internal working of TCP, their size and usage of the link are not included in the throughput statistics. Therefore this statistic is not as reliable as the UDP statistic when estimating throughput.

The UDP tester sends 110% or more packets than currently reported as received on the other side of the link. To see the maximum throughput of a link, the packet size should be set for the maximum MTU allowed by the links which is usually 1500 bytes. There is no acknowledgment required by UDP; this implementation means that the closest approximation of the throughput can be seen.

Usage Notes

Caution! Bandwidth Test uses all available bandwidth (by default) and may impact network usability.

Bandwidth Test uses much resources. If you want to test real throughput of a router, you should run bandwidth test through it not from or to it. To do this you need at least 3 routers connected in chain: the Bandwidth Server, the given router and the Bandwidth Client:

Note that if you use UDP protocol then Bandwidth Test counts IP header+UDP header+UDP data. In case if you use TCP then Bandwidth Test counts only TCP data (TCP header and IP header are not included).

Server Configuration

Home menu level: ***/tool bandwidth-server***

Property Description

allocate-udp-ports-from - allocate UDP ports from

authenticate (*yes | no*; default: **yes**) - communicate only with authenticated (by valid username and password) clients

enable (*yes | no*; default: **no**) - enable client connections for bandwidth test

max-sessions - maximal number of bandwidth-test clients

Notes

The list of current connections can be obtained in **session** submenu

Example

Bandwidth Server:

```
[admin@MikroTik] tool bandwidth-server> print
                 enabled: no
            authenticate: yes
   allocate-udp-ports-from: 2000
            max-sessions: 10
[admin@MikroTik] tool>
```

Active sessions:

```
[admin@MikroTik] tool> bandwidth-server session print
  # CLIENT          PROTOCOL DIRECTION USER
  0 35.35.35.1      udp      send      admin
  1 25.25.25.1      udp      send      admin
  2 36.36.36.1      udp      send      admin

[admin@MikroTik] tool>
```

To enable **bandwidth-test** server without client authentication:

```
[admin@MikroTik] tool bandwidth-server> set enabled=yes authenticate=no
[admin@MikroTik] tool bandwidth-server> print
                 enabled: yes
            authenticate: no
   allocate-udp-ports-from: 2000
            max-sessions: 10
[admin@MikroTik] tool>
```

Client Configuration

Command name: */tool bandwidth-test*

Property Description

address (*IP address*) - IP address of destination host

assume-lost-time (*time*; default: **0s**) - assume that connection is lost if Bandwidth Server is not responding for that time

direction (*receive*/*transmit*/*both*; default: **receive**) - the direction of the test

do (*name* | *string*; default: **""**) - script source

duration (*time*; default: **0s**) - duration of the test
  • **0s** - test duration is not limited

interval (*time*: 20ms..5s; default: **1s**) - delay between reports (in seconds)

local-tx-speed (*integer*; default: **0**) - transfer test maximum speed (bits per second)
  • **0** - no speed limitations

password (*text*; default: **""**) - password for the remote user

protocol (*udp* | *tcp*; default: **udp**) - protocol to use

random-data (*yes* | *no*; default: **no**) - if random-data is set to yes, the payload of the bandwidth test packets will have incompressible random data so that links that use data compression will not distort the results (this is CPU intensive and random-data should be set to no for low speed CPUs)

remote-tx-speed (*integer*; default: **0**) - receive test maximum speed (bits per second)
  • **0** - no speed limitations

size - packet size in bytes (only for UDP protocol)

user (*name*; default: **""**) - remote user

Example

To run 15-second long bandwidth-test to the **10.0.0.211** host sending and receiving **1000**-byte UDP packets and using username **admin** to connect

```
[admin@MikroTik] tool> bandwidth-test 10.0.0.211 duration=15s direction=both \
\... size=1000 protocol=udp user=admin
                    status: done testing
                  duration: 15s
                tx-current: 3.62Mbps
        tx-10-second-average: 3.87Mbps
           tx-total-average: 3.53Mbps
                rx-current: 3.33Mbps
        rx-10-second-average: 3.68Mbps
           rx-total-average: 3.49Mbps

[admin@MikroTik] tool>
```