

Bandwidth Test

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This document applies to V3.0

Table of Contents

[Table of Contents](#)

[General Information](#)

[Summary](#)

[Specifications](#)

[Description](#)

[Server Configuration](#)

[Property Description](#)

[Notes](#)

[Example](#)

[Client Configuration](#)

[Property Description](#)

[Example](#)

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*

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 data stream. 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: yes
      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

(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

local-udp-tx-size (*integer*: 40..64000) - local transmit packet size in bytes

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 stream 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

remote-udp-tx-size (*integer*: 40..64000) - remote transmit packet size in bytes

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>
```