

Bandwidth Test

Summary

```
Sub-menu: /tool
Packages required: system
```

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

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.



- Up to RouterOS version 6.44beta39 Bandwidth Test used only single CPU core and reached its limits when core was 100% loaded.
- Bandwidth Test uses all available bandwidth (by default) and may impact network usability.



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

Bandwidth Test Server

```
Sub-menu: /tool bandwidth-server
```

Property	Description
allocate-udp-ports-from (<i>integer 1000..64000</i> ; Default: 2000)	Beginning of UDP port range
authenticate (<i>yes / no</i> ; Default: yes)	Communicate only with authenticated clients
enabled (<i>yes / no</i> ; Default: yes)	Defines whether bandwidth server is enabled or not
max-sessions (<i>integer 1..1000</i> ; Default: 100)	Maximal simultaneous test count

Example

Bandwidth Server:

```
[admin@MikroTik] /tool bandwidth-server> print
        enabled: yes
        authenticate: yes
allocate-udp-ports-from: 2000
        max-sessions: 100
[admin@MikroTik] /tool bandwidth-server>
```

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 bandwidth-server session>
```

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: 100
[admin@MikroTik] /tool bandwidth-server>
```

Bandwidth Test Client

Sub-menu: /tool bandwidth-test

Property	Description
address (<i>IP address / IPv6 prefix[%interface]; Default:</i>)	IP address of host
: receive)	Direction of data flow
duration (<i>time; Default:</i>)	Duration of the test
interval (<i>time: 20ms..5s ; Default: 1s</i>)	Delay between reports (in seconds)
local-tx-speed (<i>integer 0..4294967295; Default:</i>)	Transfer test maximum speed (bits per second)
local-udp-tx-size (<i>integer: 28..64000</i>)	Local transmit packet size in bytes
password (<i>string; Default:</i> "")	Password for the remote user
protocol (<i>udp / tcp; Default: udp</i>)	Protocol to use
random-data (<i>yes / no; Default: no</i>)	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 (<i>integer</i> 0..4294967295; Default:)	Receive test maximum speed (bits per second)
remote-udp-tx-size (<i>integer</i> : 28..64000)	Remote transmit packet size in bytes
connection-count (<i>integer</i> 1..100; Default: 20)	Number of TCP connections to use
user (<i>string</i> ; Default: "")	Remote user

Example

To run 15-second long bandwidth-test to the **10.0.0.32** host sending and receiving **1000**-byte UDP packets and using username **admin** to connect:

```
[admin@MikroTik] /tool> bandwidth-test 10.0.0.32 duration=15s \
\... direction=both local-udp-tx-size=1000 protocol=udp \
\... remote-udp-tx-size=1000 user=admin
      status: done testing
      duration: 15s
      tx-current: 272.8Mbps
tx-10-second-average: 200.3Mbps
      tx-total-average: 139.5Mbps
      rx-current: 169.6Mbps
rx-10-second-average: 164.8Mbps
      rx-total-average: 117.0Mbps
      lost-packets: 373
      random-data: no
      direction: both
      tx-size: 1000
      rx-size: 1000
[admin@MikroTik] /tool>
```

Link-local IPv6 example:

```
[admin@MikroTik] > /tool bandwidth-test fe80::34:23ff:fe6a:570c%local
      status: running
      duration: 5s
      rx-current: 23.9Mbps
rx-10-second-average: 15.1Mbps
      rx-total-average: 15.1Mbps
      lost-packets: 0
      random-data: no
      direction: receive
      rx-size: 1500
```