iperf3 Network throughput tester

CONCEPTS

iperf3 needs a server at one end and a client at the other; it measures the path between them, not either machine alone. Test only networks and hosts you are authorised to use.

Server iperf3 -s, port 5201
↓ control
Client iperf3 -c host
↓ data streams
Interval reports every 1 s
↓ summary
Sender / receiver final totals

Default direction is client to server. -R reverses it, so the client receives; --bidir does both at once. Open TCP and UDP port 5201 in any firewall in between.

SERVER

iperf3 -s
Listen for tests (port 5201)

iperf3 -s -p *<port>*
Listen on another port

iperf3 -s -1
Serve one client, then exit

iperf3 -s -D
Run as a background daemon

iperf3 -s -D --logfile *<file>*
Daemon that logs to a file

iperf3 -s -B *<addr>*
Bind to one local address

RUNNING A TEST

iperf3 -c *<host>*
Run a TCP test

iperf3 -c *<host>* **-p** *<port>*
Connect to another port

iperf3 -c *<host>* **-t** *<sec>*
Set duration (default 10 s)

iperf3 -c *<host>* **-n** *<bytes>*
Send a fixed amount, e.g. 2G

iperf3 -c *<host>* **-O** *<sec>*
Skip the first seconds in stats

iperf3 -c *<host>* **-4 / -6**
Force IPv4 or IPv6

RUNNING A TEST (cont.)

iperf3 -c *<host>* **-B** *<addr>*
Bind to a local address

DIRECTION & STREAMS

iperf3 -c *<host>* **-R**
Reverse: server sends to client

iperf3 -c *<host>* **--bidir**
Send and receive at the same time

iperf3 -c *<host>* **-P** *<n>*
Run n parallel streams

iperf3 -c *<host>* **-P** *<n>* **-R**
Parallel streams, reversed

UDP & BITRATE

iperf3 -c *<host>* **-u**
Run a UDP test (1 Mbit/s default)

iperf3 -c *<host>* **-u -b** *<rate>*
UDP at a target rate, e.g. 100M

iperf3 -c *<host>* **-u -b 0**
UDP as fast as possible

iperf3 -c *<host>* **-b** *<rate>*
Cap a TCP test's rate

iperf3 -c *<host>* **-u -l** *<bytes>*
Set the datagram size

iperf3 -c *<host>* **-u -R**
UDP loss and jitter, download

TUNING

iperf3 -c *<host>* **-w** *<size>*
Set socket buffer or window

iperf3 -c *<host>* **-M** *<mss>*
Set TCP maximum segment size

iperf3 -c *<host>* **-N**
Disable Nagle's algorithm

iperf3 -c *<host>* **-C** *<algo>*
Pick a congestion control (e.g. bbr)

iperf3 -c *<host>* **-l** *<size>*
Set the read/write buffer length

OUTPUT

iperf3 -c *<host>* **-J**
Output as JSON

iperf3 -c *<host>* **-i** *<sec>*
Report interval (0 turns it off)

OUTPUT (cont.)

iperf3 -c *<host>* **-f** *<unit>*
Units: k, m, g, t (bits) or K, M, G, T (bytes)

iperf3 -c *<host>* **-V**
More detailed output

iperf3 -c *<host>* **--get-server-output**
Also print the server's view

iperf3 -c *<host>* **--logfile** *<file>*
Write output to a file

READING RESULTS

Output columns

Column	Meaning
`Transfer`	Data moved in the interval
`Bitrate`	Throughput in that interval
`Retr`	TCP retransmits (sender)
`Cwnd`	Congestion window (sender)
`Jitter`	UDP delay variation
`Lost/Total`	UDP datagrams lost / sent

Many Retr values point to loss or congestion on the path. For UDP, loss at a low rate means a real problem; loss only near the link rate means you just filled it. Read the receiver line for the true figure.

A single run is a sample. Repeat it, vary -P and -R, and compare TCP with UDP before blaming the network, since CPU, NIC offloads and Wi-Fi can all limit the result.

AUTHENTICATION & VERSION

iperf3 -v
Show the version

iperf3 -h
Show the help synopsis

RECIPES

Quick two-way throughput check

```
# on the server
iperf3 -s
# on the client
iperf3 -c <host> -P 4 -O 3
iperf3 -c <host> -P 4 -O 3 -R
```