

# Pathtest Utility

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# What is it?

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- Throughput generation tool
- Runs in memory
- Like iperf, it runs at the command prompt (administrator mode)
  
- Go get it at: <http://www.testmypath.com/download.html>

PathTest (TM) v.4.6.0 build 4639

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Usage:

```
pathtest [-s] [[-c] <host>[:port]] [-b bps[K|M]] [--bidi]
          [--control-port number] [--dscp value] [-h] [-i seconds] [--icmp]
          [--inbound] [-p number] [--packet-size bytes [K|M]]
          [--packets number [K|M|G]] [-t seconds] [--tcp] [--unidi] [-V]
          [-w bytes[K|M]]
```

Option	Description
-c	Run in client mode and connect to <host>.
-b or --bandwidth	Bandwidth in bits/sec to send at. Zero (0) will send at maximum possible speed.
--bidi	Do a bidirectional traffic load simultaneously.
--dscp	DSCP QoS value
-i, --interval	Number of seconds between periodic capacity reports.
--icmp	Use ICMP protocol for testing.
--inbound	Perform load test from server to client.
-p, --port	Requests that the server open a specified port for the load test, if available.
--packet-size	Packet size to use for load data. '0' (zero) automatic assigns the Maximum Transmission Unit (MTU) of the outgoing interface.
--packets	Duration of the load test in packets. Overrides the test time parameter.
-t, --time	Duration in seconds of the load test.
--tcp	Use TCP protocol for testing.
--unidi	Do an outbound unidirectional test followed by an inbound unidirectional test.
-w, --window	Attempts to set the window size (socket buffer size). Zero (0)

# Server Options



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Option	Description
-s, --server	Run in server mode.
--control-port	Port number to listen on when acting as a server. This facilitates connections for control/results information exchange between client and server.

# Basic Operation



Application default;

- Protocol: UDP
- Port Number: 3236
- Bandwidth Used: Maximum
- Direction: From client to server (upload)
- DSCP or QOS: Not set
- IP MTU: System Maximum
- Tx/Rx Window or Buffer size: 365 KB

Example:

Server Side  
`pathtest -s`

Client Side  
`Pathtest -c ipaddress`

- To test the various pathstest parameters, I will be using the following setup;
  - Client:
    - Wireshark loaded on a Windows 7 Home Premium laptop
  - Server:
    - Wireshark loaded on another Windows 7 Home Premium laptop
- The captures will be taken from the same client PC, taps, so mirror ports are not required

# Application Observations



- Server listens on TCP port 3236 and uses this port as a sort of administrative port to run the requested tests.
- Protocol used for this setup function is HTTP based and uses POST command to send test parameters from the client to the server.
- The application uses the following HTTP Agent information:
  - HTTP User-Agent: ANI\_NetTest/4.6.0.4639
- The start of the test uses test.php to send test parameters
- The end of the test uses results.php to report test results

Microsoft (host 10.44.10.107) [The Tehnology Firm] [Wireshark 1.6.3 (SVN Rev 39702 from /trunk-1.6)]

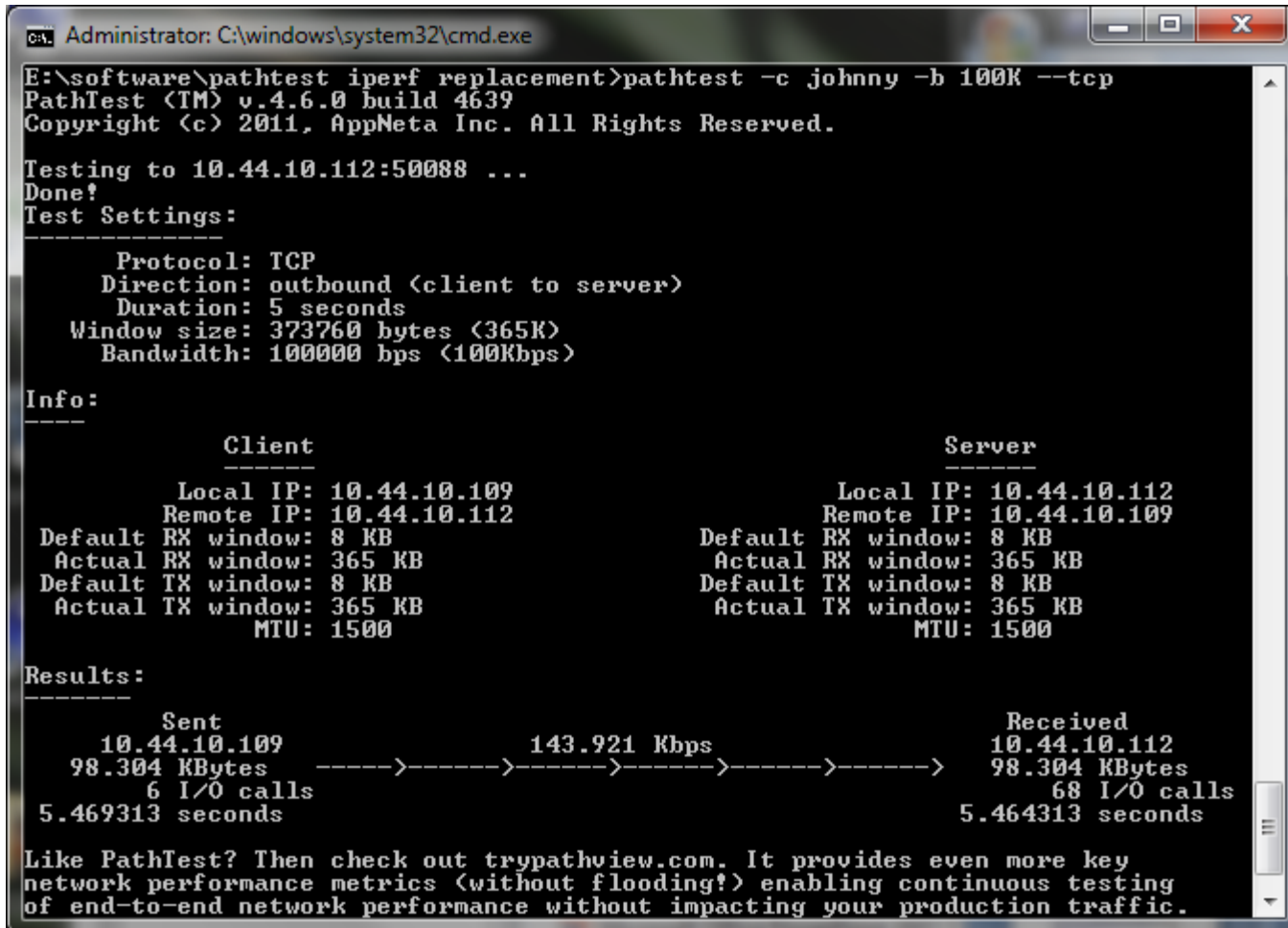
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: tcp.stream eq 1 Expression... Clear Apply

No.	Time	Source	Destination	Protocol	Length	Info
2	0.008174	10.44.10.101	10.44.10.107	TCP	66	50719 > 3236 [SYN] Seq=0 win=8192 Len=0 MSS=1460 ws=256
3	0.071971	10.44.10.107	10.44.10.101	TCP	66	3236 > 50719 [SYN, ACK] Seq=0 Ack=1 win=8192 Len=0 MSS=1
4	0.072110	10.44.10.101	10.44.10.107	TCP	54	50719 > 3236 [ACK] Seq=1 Ack=1 win=17408 Len=0
5	0.101397	10.44.10.101	10.44.10.107	HTTP	510	POST /nettest/test.php HTTP/1.1 (application/x-www-form
6	0.170235	10.44.10.107	10.44.10.101	HTTP	522	HTTP/1.1 200 OK (application/x-www-form-urlencoded)
149	0.370312	10.44.10.101	10.44.10.107	TCP	54	50719 > 3236 [ACK] seq=457 Ack=469 win=16896 Len=0
275	0.560280	10.44.10.107	10.44.10.101	HTTP	522	[TCP Retransmission] HTTP/1.1 200 OK (application/x-www
276	0.560295	10.44.10.101	10.44.10.107	TCP	66	[TCP Dup ACK 149#1] 50719 > 3236 [ACK] Seq=457 Ack=469 v
4638	5.544884	10.44.10.101	10.44.10.107	HTTP	793	POST /nettest/results.php HTTP/1.1 (application/x-www-f
4639	5.711577	10.44.10.107	10.44.10.101	HTTP	746	HTTP/1.1 200 OK (application/x-www-form-urlencoded)
4640	5.848252	10.44.10.101	10.44.10.107	TCP	54	50719 > 3236 [FIN, ACK] Seq=1196 Ack=1161 win=16128 Len=
4641	5.973094	10.44.10.107	10.44.10.101	TCP	54	3236 > 50719 [ACK] Seq=1161 Ack=1197 win=16640 Len=0
4642	5.973098	10.44.10.107	10.44.10.101	TCP	54	3236 > 50719 [FIN, ACK] Seq=1161 Ack=1197 win=16640 Len=
4643	5.973220	10.44.10.101	10.44.10.107	TCP	54	50719 > 3236 [ACK] seq=1197 Ack=1162 win=16128 Len=0

# -b or -bandwidth

- Can be used in ICMP, TCP or UDP mode
- Use G for Giga, M for Million or K for Kilo



```
Administrator: C:\windows\system32\cmd.exe
E:\software\pathtest iperf replacement>pathtest -c johnny -b 100K --tcp
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Testing to 10.44.10.112:50088 ...
Done!
Test Settings:
-----
Protocol: TCP
Direction: outbound (client to server)
Duration: 5 seconds
Window size: 373760 bytes (365K)
Bandwidth: 100000 bps (100Kbps)

Info:
-----
Client                               Server
-----
Local IP: 10.44.10.109                Local IP: 10.44.10.112
Remote IP: 10.44.10.112              Remote IP: 10.44.10.109
Default RX window: 8 KB              Default RX window: 8 KB
Actual RX window: 365 KB             Actual RX window: 365 KB
Default TX window: 8 KB              Default TX window: 8 KB
Actual TX window: 365 KB             Actual TX window: 365 KB
MTU: 1500                             MTU: 1500

Results:
-----
Sent                                     Received
10.44.10.109                             10.44.10.112
98.304 KBytes ----->----->----->----->-----> 98.304 KBytes
6 I/O calls
5.469313 seconds                            68 I/O calls
                                           5.464313 seconds

Like PathTest? Then check out trypathview.com. It provides even more key
network performance metrics (without flooding!) enabling continuous testing
of end-to-end network performance without impacting your production traffic.
```

# Bidirectional --bidi



- Performs an upload and download

```
Administrator: C:\windows\system32\cmd.exe
E:\software\pathtest iperf replacement>pathtest -c johnny --bidi
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Testing to 10.44.10.112:63603 ...
Done!
Test Settings:
-----
      Protocol: UDP
      Direction: bidirectional (outbound and inbound simultaneously)
      Duration: 5 seconds
      Socket buffer: 373760 bytes (365K)

Info:
-----
      Client                               Server
      -----                               -----
      Local IP: 10.44.10.109                Local IP: 10.44.10.112
      Remote IP: 10.44.10.112              Remote IP: 10.44.10.109
      Default RX buffer: 8 KB               Default RX buffer: 8 KB
      Actual RX buffer: 365 KB              Actual RX buffer: 365 KB
      Default TX buffer: 8 KB               Default TX buffer: 8 KB
      Actual TX buffer: 365 KB              Actual TX buffer: 365 KB
      MTU: 1500                             MTU: 1500

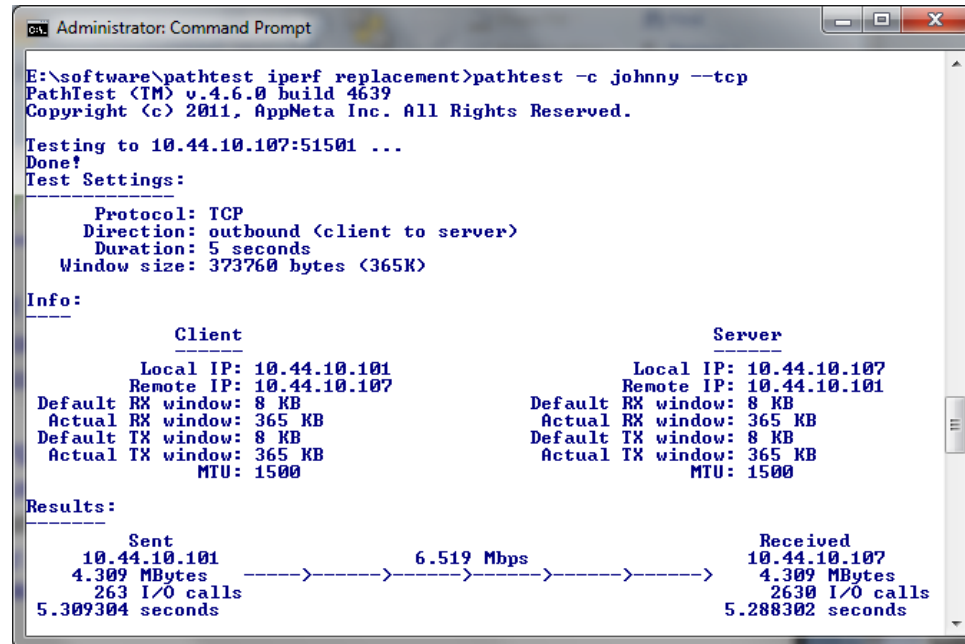
Results:
-----
      Sent                                     Received
      10.44.10.109                             10.44.10.112
      5.321 MBytes -----> 7.824 Mbps -----> 5.317 MBytes
      3547 packets                                     3545 packets
      5.001286 seconds                               5.437311 seconds

      Received                                     Sent
      10.44.10.109                             10.44.10.112
      2.724 MBytes <----- 3.951 Mbps <----- 2.724 MBytes
      1816 packets                                     1816 packets
      5.515315 seconds                               5.003286 seconds

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```

# --tcp option

- TCP : --tcp
  - Use TCP for it test
  - Compare differences between UDP and TCP
  - Test port based access lists or bandwidth shapers
- Results
  - Server was running `pathtest -s` and did NOT require `-tcp` to support a TCP test
  - The port number used is displayed on the client screen
    - Example “*Testing to 10.44.10.107:51500 ...*”
  - *Port number used started at 51500 on my system and seems to increment by 1 (ie the next test was 51501).*



```
Administrator: Command Prompt
E:\software\pathtest iperf replacement>pathtest -c johnny --tcp
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Testing to 10.44.10.107:51501 ...
Done!
Test Settings:
-----
Protocol: TCP
Direction: outbound (client to server)
Duration: 5 seconds
Window size: 373760 bytes (365K)

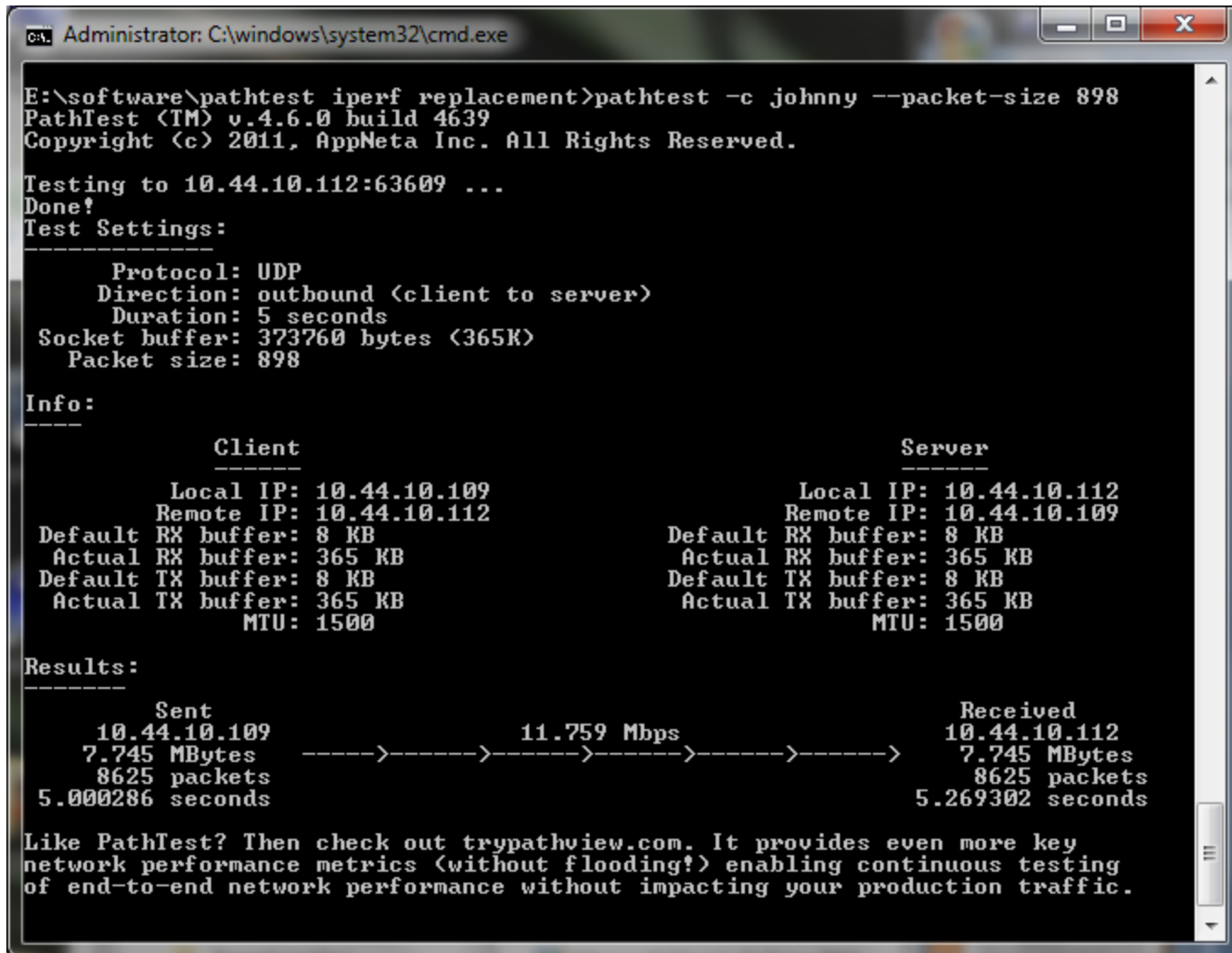
Info:
-----
Client                               Server
-----                               -----
Local IP: 10.44.10.101                Local IP: 10.44.10.107
Remote IP: 10.44.10.107              Remote IP: 10.44.10.101
Default RX window: 8 KB              Default RX window: 8 KB
Actual RX window: 365 KB             Actual RX window: 365 KB
Default TX window: 8 KB              Default TX window: 8 KB
Actual TX window: 365 KB             Actual TX window: 365 KB
MTU: 1500                             MTU: 1500

Results:
-----
Sent                                     Received
10.44.10.101 ----->----->----->----->----->-----> 10.44.10.107
4.309 MBytes                               4.309 MBytes
263 I/O calls                             2630 I/O calls
5.309304 seconds                          5.288302 seconds

6.519 Mbps
```

# --packet-size

- Changes the packet size



```
Administrator: C:\windows\system32\cmd.exe
E:\software\pathstest iperf replacement>pathstest -c johnny --packet-size 898
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Testing to 10.44.10.112:63609 ...
Done!
Test Settings:
-----
      Protocol: UDP
      Direction: outbound (client to server)
      Duration: 5 seconds
      Socket buffer: 373760 bytes (365K)
      Packet size: 898

Info:
-----
      Client                               Server
      -----                               -----
      Local IP: 10.44.10.109                Local IP: 10.44.10.112
      Remote IP: 10.44.10.112              Remote IP: 10.44.10.109
      Default RX buffer: 8 KB               Default RX buffer: 8 KB
      Actual RX buffer: 365 KB              Actual RX buffer: 365 KB
      Default TX buffer: 8 KB               Default TX buffer: 8 KB
      Actual TX buffer: 365 KB              Actual TX buffer: 365 KB
      MTU: 1500                             MTU: 1500

Results:
-----
      Sent                                     Received
      10.44.10.109                             10.44.10.112
      7.745 MBytes                               7.745 MBytes
      8625 packets                               8625 packets
      5.000286 seconds                           5.269302 seconds

      11.759 Mbps

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network performance metrics (without flooding!) enabling continuous testing
of end-to-end network performance without impacting your production traffic.
```



- Port number: --port or -p
  - Test port based access lists or bandwidth shapers

```
Administrator: C:\windows\system32\cmd.exe
E:\software\pathstest iperf replacement>pathstest -c johnny -p 80
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Testing to 10.44.10.112:80 ...
Done!
Test Settings:
-----
Protocol: UDP
Direction: outbound (client to server)
Duration: 5 seconds
Socket buffer: 373760 bytes (365K)

Info:
-----
Client
-----
Local IP: 10.44.10.109
Remote IP: 10.44.10.112
Default RX buffer: 8 KB
Actual RX buffer: 365 KB
Default TX buffer: 8 KB
Actual TX buffer: 365 KB
MTU: 1500

Server
-----
Local IP: 10.44.10.112
Remote IP: 10.44.10.109
Default RX buffer: 8 KB
Actual RX buffer: 365 KB
Default TX buffer: 8 KB
Actual TX buffer: 365 KB
MTU: 1500

Results:
-----
Sent
10.44.10.109
7.341 MBytes
4894 packets
5.000286 seconds

10.928 Mbps

Received
10.44.10.112
7.341 MBytes
4894 packets
5.374308 seconds

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```