

NETWORK DIAGNOSTIC TOOLS

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icmp
3 IPv4/ICMP 192.168.0.103 > vux.netsolhost.com.: EchoRequest id 27686, seq 81, len: 56
1 IPv4/ICMP vux.netsolhost.com. > 192.168.0.103: EchoReply id 27686, seq 81, len: 56
3 IPv4/ICMP 192.168.0.103 > vux.netsolhost.com.: EchoRequest id 27686, seq 82, len: 56
8 IPv4/ICMP vux.netsolhost.com. > 192.168.0.103: EchoReply id 27686, seq 82, len: 56
tcp and port 443
2 IPv4/TCP ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) > 192.168.0.103:49341 [P.], 1
2 IPv4/TCP 192.168.0.103:49341 > ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) [P.], 1
6 IPv4/TCP ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) > 192.168.0.103:49341 [P.], 1
6 IPv4/TCP 192.168.0.103:49341 > ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) [P.], 1
3 IPv4/TCP ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) > 192.168.0.103:49341 [P.], 1
4 IPv4/TCP 192.168.0.103:49341 > ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) [P.], 1
1 IPv4/TCP ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) > 192.168.0.103:49341 [P.], 1
2 IPv4/TCP 192.168.0.103:49341 > ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) [P.], 1
9 IPv4/TCP 192.168.0.103:49336 > ec2-52-91-138-213.compute-1.amazonaws.com.:443(https) [P.], 1
5 IPv4/TCP ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) > 192.168.0.103:49341 [P.], 1
6 IPv4/TCP 192.168.0.103:49341 > ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) [P.], 1
5 IPv4/TCP ec2-52-91-138-213.compute-1.amazonaws.com.:443(https) > 192.168.0.103:49336 [P.], 1
6 IPv4/TCP 192.168.0.103:49336 > ec2-52-91-138-213.compute-1.amazonaws.com.:443(https) [P.], 1
8 IPv4/TCP 192.168.0.103:49345 > ec2-54-85-80-215.compute-1.amazonaws.com.:443(https) [P.], 1
7 IPv4/TCP ec2-54-85-80-215.compute-1.amazonaws.com.:443(https) > 192.168.0.103:49345 [P.], 1
8 IPv4/TCP 192.168.0.103:49345 > ec2-54-85-80-215.compute-1.amazonaws.com.:443(https) [P.], 1
-c 5
3 IPv4/ICMP 192.168.0.103 > vux.netsolhost.com.: EchoRequest id 27686, seq 94, len: 56
8 IPv4/ICMP vux.netsolhost.com. > 192.168.0.103: EchoReply id 27686, seq 94, len: 56
6 IPv4/TCP 192.168.0.103:49345 > ec2-54-85-80-215.compute-1.amazonaws.com.:443(https) [P.], 1
6 IPv4/TCP 192.168.0.103:49341 > ec2-54-172-38-248.compute-1.amazonaws.com.:443(https) [P.], 1
7 IPv4/TCP 192.168.0.103:49336 > ec2-52-91-138-213.compute-1.amazonaws.com.:443(https) [P.], 1
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TEAM:

DEEPANSHU (190050032)

DHAKNE AJAY SOPAN (190050033)

NITIN KUMAR (190050073)

(i)

DEEPANSHU's REPORT:

IPv4 address: **192.168.0.115**

IPv6 address: **fe80::fe3b:2b5c:82ce:ef58**

MAC address: **dc:f5:05:98:be:83**

MTU: **1500 octets**

TX packets **116208 bytes 14110030** (13.4 MB)

NITIN's REPORT:

IPv4 address: **192.168.0.103**

IPv6 address: **fe80::f801:b6b:1084:40db**

MAC address: **dc:fb:48:16:b2:28**

MTU: **1500 octets**

TX packets **66536 bytes 12433483** (12.4 MB)

AJAY's REPORT:

IPv4 address: **192.168.1.204**

IPv6 address: **fe80::f676:9407:5020:bda2**

MAC address: **8C:C6:81:2A:0E:68**

MTU: **1500 octets**

TX packets **26017 bytes 4761033** (4.7 MB)

BITs used for IPv4 addresses: **32 BITs**

BITs used for IPv6 addresses: **128 BITs**

BITs used for MAC addresses: **48 BITs**

MTU stands for **maximum transmission unit**

MTU is typically expressed in **octets**(eight-bit bytes) .

(ii)

www.google.com

Deepanshu's report

Mahendergarh, Haryana, India

11 hops max

RTT min/avg/max = 8.001/35.476/108.254 ms

Ajay's Report

Pune, Maharashtra, India

13 hops

RTT min/avg/max = 5.983/22.391/124.644/34.530 ms

Nitin's Repot

Neemrana, Rajasthan, India

7 hops

RTT min/avg/max = 9.096/14.321/50.634 ms

- 1) Milan, Lombardia, Italy
9 hops
RTT min/avg/max = 4.474/4.513/4.535 ms

- 2) Tokyo, Kanto, Japan
9 hops
RTT min/avg/max = 1.357/1.387/1.411 ms

- 3) Madrid, Spain
5 hops
RTT min/avg/max = 7.252/7.278/7.326 ms

- 4) Paris, ÎLe-de-France, France
15 hops
RTT min/avg/max = 8.879/8.898/8.937 ms

- 5) London, England, United Kingdom
7 hops
RTT min/avg/max = 7.033/7.007/7.016 ms

www.cnn.com

Deepanshu's Report

Mahendergarh, Haryana, India

8 hops

RTT min/avg/max/mdev = 51.849/106.749/184.766/46.780 ms

Ajay's Report

Pune, Maharashtra, India

7 hops

RTT min/avg/max/mdev = 0.596/1.717/10.052/1.741 ms

Nitin's Report

Neemrana, Rajasthan, India

3 hops

RTT min/avg/max/mdev = 8.581/10.404/14.644/1.856 ms

- 1) Milan, Lombardia, Italy
4 hops
RTT min/avg/max = 6.613/6.673/6.740 ms

- 2) Tokyo, Kanto, Japan
3 hops
RTT min/avg/max = 1.785/1.798/1.807 ms

- 3) Madrid, Spain
1 hop
RTT min/avg/max = 6.352/6.381/6.439 ms

- 4) Paris, ÎLe-de-France, France
5 hops
RTT min/avg/max = 1.396/1.798/1.807 ms

- 5) London, England, United Kingdom
1 hop
RTT min/avg/max = 1.214/1.267/1.342 ms

www.iitd.ac.in

Deepanshu's Report

Mahendergarh, Haryana, India

15 hops

RTT min/avg/max/mdev = 9.168/33.265/96.655/30.963 ms

Ajay's Report

Pune, Maharashtra, India

7 Hops

RTT min/avg/max/mdev = 33.253/42.251/148.378/22.850 ms

Nitin's Report

Neemrana, Rajasthan, India

9 hops

RTT min/avg/max/mdev = 11.147/14.482/34.862/6.037 ms

1) Milan, Lombardia, Italy

8 hops

RTT min/avg/max = 165.607/165.948/166.456 ms

2) Tokyo, Kanto, Japan

11 hops

RTT min/avg/max = 159.683/160.045/160.304 ms

3) Madrid, Spain

7 hops

RTT min/avg/max = 181.350/181.403/181.483 ms

4) Paris, ÎLe-de-France, France

13 hops

RTT min/avg/max = 216.264/216.330/216.395 ms

5) London, England, United Kingdom

13 hops

RTT min/avg/max = 293.813/293.956/294.132 ms

(iii)

- 1) Server: www.google.com

Continent: North America

37 packets transmitted, 37 received, 0% packet loss, time 36097ms

RTT: min/avg/max/mdev = 0.695/3.022/15.795/3.387 ms

- 2) Server: www.reddit.com

Continent : Europe

37 packets transmitted, 37 received, 0% packet loss, time 36049ms

RTT: min/avg/max/mdev = 0.711/4.234/10.939/3.171 ms

- 3) Server: www.uidai.gov.in

Continent : Asia

54 packets transmitted, 54 received, 0% packet loss, time 53235ms

RTT : min/avg/max/mdev = 0.723/4.700/97.783/15.522 ms

- 4) Server: www.argentina.gob.ar

Continent : South America

38 packets transmitted, 38 received, 0% packet loss, time 37053ms

RTT : min/avg/max/mdev = 64.990/72.159/102.089/6.707 ms

5) Server:www.gov.za

Continent : Africa

45 packets transmitted, 44 received, 2.2222% packet loss, time 44041ms

RTT min/avg/max/mdev = 307.806/335.530/497.415/50.325 ms

6) Server:www.australia.gov.au

Continent : Australia

29 packets transmitted, 29 received, 0% packet loss, time 28027ms

RTT: min/avg/max/mdev = 6.372/14.276/62.965/14.474 ms

7) Server:www.usa.gov

Continent : North America

30 packets transmitted, 27 received, 10% packet loss, time 29092ms

RTT :min/avg/max/mdev = 7.233/8.448/10.799/0.820 ms

Comments:

- 1) RTT for the servers which are at a longer distance from user is high.Example average RTT for server in india (www.uidai.gov.in) is 11.405 which is lesser than servers located in africa ,australia,africa,south america.

- 2) Average RTT for servers like www.google.com and www.reddit.com is lesser than that of server in India.Despite the fact that server in india(www.uidai.gov.in) is closer to us is may be because processing capacity and number of request being handled at a time are higher for www.google.com and www.reddit.com servers than that of www.uidai.gov.in server.

(iv)

1st SERVER : iperf.scottlinux.com

TCP:

iperf.scottlinux.com

[4] local 192.168.1.5

port 48684

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Retr
[4]	0.00-10.00 sec	19.7 MBytes	16.5 Mbits/sec	0 sender
[4]	0.00-10.00 sec	16.9 MBytes	14.2 Mbits/sec	receiver

UDP:**iperf.scottlinux.com [1M]**

[4] local 192.168.1.5

port 40502

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10sec	1.20MBytes	1.00Mbits/sec	5870858.937ms	0/152 (0%)
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[4] Sent 152 datagrams

iperf.scottlinux.com [2M]

[4] local 192.168.1.5

port 45164

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10 sec	2.38MBytes	1.99Mbits/sec	364.361ms	0/303 (0%)
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[4] Sent 303 datagrams

iperf.scottlinux.com [4M]

[4] local 192.168.1.5

port 38115

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10 sec	4.73 MBytes	3.97 Mbits/sec	4.926 ms	0/605 (0%)
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[4] Sent 605 datagrams

iperf.scottlinux.com [8M]

[4] local 192.168.1.5

port 38645

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10 sec	9.48 MBytes	7.96 Mbits/sec	4.939 ms	0/1213 (0%)
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[4] Sent 1213 datagrams

iperf.scottlinux.com [16M]

[4] local 192.168.1.5

port 40916

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10sec	18.8 MBytes	15.7 Mbits/sec	1.415 ms	0/2394 (0%)
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[4] Sent 2394 datagrams

iperf.scottlinux.com [32M]

[4] local 192.168.1.5

port 33457

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10 sec	37.8 MBytes	31.7 Mbits/sec	1.217 ms	0/4843 (0%)
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[4] Sent 4843 datagrams

iperf.scottlinux.com [64M]

[4] local 192.168.1.5

port 34221

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10sec	64.2 MBytes	53.9 Mbits/sec	0.871 ms	0/8219 (0%)
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[4] Sent 8219 datagrams

iperf.scottlinux.com [128M]

[4] local 192.168.1.5

port 49733

connected to 45.33.39.39

port 5201

[ID]	Interval	Transfer	Bandwidth	Jitter	Lost/Total Datagrams
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[4]	0-10sec	65.6 MBytes	55.0 Mbits/sec	1.055 ms	0/8396 (0%)
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[4] Sent 8396 datagrams

Here we see the Avg. Bandwidth for **64M** comes out to be **53.9Mbps** and for **128M** also it remains around that (**55.0Mbps**). So our '**X**' here will be **64M**.

We see here clearly that Bandwidth of UDP is higher than TCP. This is because its non-existent acknowledge packet (ACK) that permits a continuous packet stream, instead of **TCP** that acknowledges a set of packets, calculated by using the **TCP** window size and round-trip time (RTT).

2nd SERVER: Iperf.biznetnetworks.com**TCP****iperf.biznetnetworks.com**

[4] local 192.168.1.5

port 37798

connected to 117.102.109.186

port 5201

	[ID]	Interval	Transfer	Bandwidth	Retr
	[4]	0.00-10.00 sec	16.7 MBytes	14.0 Mbits/sec	0 sender
	[4]	0.00-10.00 sec	13.5 MBytes	11.3 Mbits/sec	receiver

UDP

lperf.biznetnetworks.com [1M]

[5] local 192.168.1.204

port 59374

connected to 117.102.109.186

port 5201

[ID]	Interval	Transfer	Bitrate	Retr	
[5]	0.00-10.00sec	7.95 MBytes	6.67 Mb/s	180	sender
[5]	0.00-10.00sec	6.75 MBytes	5.66 Mb/s		receiver

lperf.biznetnetworks.com [2M]

[5] local 192.168.1.204

port 59378

connected to 117.102.109.186

port 5201

[ID]	Interval	Transfer	Bitrate	Retr	
[5]	0.00-10.00 sec	8.04 MBytes	6.75 Mb/s	201	sender

[5] 0.00-10.00 sec 7.01 MBytes 5.88 Mbits/sec receiver

lperf.biznetnetworks.com [4M]

[5] local 192.168.1.204

port 59392

connected to 117.102.109.186

port 5201

	[ID]	Interval	Transfer	Bitrate	Retr	
[5]	0.00-10.00	sec	8.46 MBytes	7.09 Mbits/sec	214	sender
[5]	0.00-10.00	sec	6.87 MBytes	5.76 Mbits/sec		receiver

lperf.biznetnetworks.com [8M]

[5] local 192.168.1.204

port 59416

connected to 117.102.109.186

port 5201

	[ID]	Interval	Transfer	Bitrate	Retr	
[5]	0.00-10.00	sec	6.76 MBytes	5.67 Mbits/sec	29	sender
[5]	0.00-10.00	sec	6.20 MBytes	5.20 Mbits/sec		receiver

lperf.biznetnetworks.com [16M]

[5] local 192.168.1.204

port 59420

connected to 117.102.109.186

port 5201

[ID]	Interval	Transfer	Bitrate	Retr	
[5]	0.00-10.00 sec	7.95 MBytes	6.67 Mbits/sec	200	sender
[5]	0.00-10.00 sec	6.95 MBytes	5.83 Mbits/sec		receiver

Here we see the Avg. Bandwidth for **8M** comes out to be **5.67Mbps** and for **16M** also it remains around that (**6.67Mbps**). So our '**X**' here will be **8M**.

We see here clearly that the Bandwidth of UDP is almost the same as that of TCP.

BONUS:

TCP:

Server:

(Done from android device as a server)

192.168.1.203, TCP port 5001

[3] local 192.168.1.204 port 53906 (user)

connected with 192.168.1.203 port 5001(server)

[ID]	Interval	Transfer	Bandwidth
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[3]	0.0-10.0 sec	27.2 MBytes	22.8 Mbits/sec
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UDP:

192.168.1.203, UDP port 5001 **[1M]**

[ID]	Interval	Transfer	Bandwidth
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[3]	0.0-10.0 sec	12.9 KBytes	10.6 Kbits/sec
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192.168.1.203, UDP port 5001 **[2M]**

[ID]	Interval	Transfer	Bandwidth
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[3]	0.0-10.0 sec	14.4 KBytes	11.8 Kbits/sec
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192.168.1.203, UDP port 5001 **[4M]**

[ID]	Interval	Transfer	Bandwidth
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[3]	0.0-10.0 sec	14.4 KBytes	11.8 Kbits/sec
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192.168.1.203, UDP port 5001 **[8M]**

[ID]	Interval	Transfer	Bandwidth
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[3] 0.0-10.0 sec 14.4 KBytes 11.8 Kbits/sec

192.168.1.203, UDP port 5001 **[16M]**

[ID]	Interval	Transfer	Bandwidth
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[3]	0.0-10.0 sec	14.4 KBytes	11.8 Kbits/sec
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Clearly bandwidth for UDP is lesser than that of TCP.

As we can see the Avg. Bandwidth for **16M** comes out to be **11.8 Kbits/sec**

and for **32M** also it remains around that (11.8 Kbits/sec)

SO X=16M in this case.

