**Assignment 1**

**Task 2:**

**140MB is my download speed.**

**Task 3b:**

**Without -R flag**

For P = 1, 5.43 Mbits/sec

For P = 2, 5.63 Mbits/sec

For P = 3, 5.72 Mbits/sec

For P = 4, 5.56 Mbits/sec

For P = 5, 5.80 Mbits/sec

**The maximum bit rate sent is 5.80 Mbits/sec and it is for P = 5.**

**With R flag:**

For P = 1, 114 Mbits/sec

For P = 2, 115 Mbits/sec

For P = 3, 111 Mbits/sec

For P = 4, 117 Mbits/sec

For P = 5, 117 Mbits/sec

**The maximum value is 117 Mbits/sec, and it is constant for P = 4 and P = 5.**

**Therefore, the maximum value is 117 Mbits/sec.**

**Logs:**

**Without R flag:**

**P = 1**

dakshamarutinagre@Dakshas-MacBook-Pro ~ % **iperf3 -p 5001 -P 1 -c iu-stor01.crest.iu.edu**

Connecting to host iu-stor01.crest.iu.edu, port 5001

[ 7] local 10.0.0.58 port 50612 connected to 156.56.5.143 port 5001

[ ID] Interval Transfer Bitrate

[ 7] 0.00-1.00 sec 701 KBytes 5.72 Mbits/sec

[ 7] 1.00-2.00 sec 394 KBytes 3.24 Mbits/sec

[ 7] 2.00-3.00 sec 713 KBytes 5.83 Mbits/sec

[ 7] 3.00-4.00 sec 710 KBytes 5.82 Mbits/sec

[ 7] 4.00-5.00 sec 758 KBytes 6.22 Mbits/sec

[ 7] 5.00-6.00 sec 717 KBytes 5.87 Mbits/sec

[ 7] 6.00-7.01 sec 677 KBytes 5.52 Mbits/sec

[ 7] 7.01-8.00 sec 672 KBytes 5.52 Mbits/sec

[ 7] 8.00-9.00 sec 720 KBytes 5.90 Mbits/sec

[ 7] 9.00-10.00 sec 699 KBytes 5.72 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ ID] Interval Transfer Bitrate

[ 7] 0.00-10.00 sec 6.60 MBytes 5.54 Mbits/sec sender

[ 7] 0.00-10.01 sec 6.48 MBytes 5.43 Mbits/sec receiver

iperf Done.

dakshamarutinagre@Dakshas-MacBook-Pro ~ %

**Maximum value:**

dakshamarutinagre@Dakshas-MacBook-Pro ~ % **iperf3 -p 5001 -P 5 -c iu-stor01.crest.iu.edu**

Connecting to host iu-stor01.crest.iu.edu, port 5001

[ 7] local 10.0.0.58 port 50664 connected to 156.56.5.143 port 5001

[ 9] local 10.0.0.58 port 50665 connected to 156.56.5.143 port 5001

[ 11] local 10.0.0.58 port 50666 connected to 156.56.5.143 port 5001

[ 13] local 10.0.0.58 port 50667 connected to 156.56.5.143 port 5001

[ 15] local 10.0.0.58 port 50668 connected to 156.56.5.143 port 5001

[ ID] Interval Transfer Bitrate

[ 7] 0.00-1.00 sec 261 KBytes 2.14 Mbits/sec

[ 9] 0.00-1.00 sec 304 KBytes 2.49 Mbits/sec

[ 11] 0.00-1.00 sec 186 KBytes 1.52 Mbits/sec

[ 13] 0.00-1.00 sec 178 KBytes 1.46 Mbits/sec

[ 15] 0.00-1.00 sec 194 KBytes 1.59 Mbits/sec

[SUM] 0.00-1.00 sec 1.10 MBytes 9.20 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 1.00-2.00 sec 383 KBytes 3.14 Mbits/sec

[ 9] 1.00-2.00 sec 104 KBytes 848 Kbits/sec

[ 11] 1.00-2.00 sec 90.5 KBytes 741 Kbits/sec

[ 13] 1.00-2.00 sec 118 KBytes 967 Kbits/sec

[ 15] 1.00-2.00 sec 90.5 KBytes 741 Kbits/sec

[SUM] 1.00-2.00 sec 786 KBytes 6.43 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 2.00-3.00 sec 264 KBytes 2.17 Mbits/sec

[ 9] 2.00-3.00 sec 45.2 KBytes 371 Kbits/sec

[ 11] 2.00-3.00 sec 214 KBytes 1.75 Mbits/sec

[ 13] 2.00-3.00 sec 151 KBytes 1.24 Mbits/sec

[ 15] 2.00-3.00 sec 90.5 KBytes 742 Kbits/sec

[SUM] 2.00-3.00 sec 765 KBytes 6.27 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 3.00-4.00 sec 112 KBytes 915 Kbits/sec

[ 9] 3.00-4.00 sec 249 KBytes 2.04 Mbits/sec

[ 11] 3.00-4.00 sec 109 KBytes 892 Kbits/sec

[ 13] 3.00-4.00 sec 133 KBytes 1.09 Mbits/sec

[ 15] 3.00-4.00 sec 113 KBytes 927 Kbits/sec

[SUM] 3.00-4.00 sec 716 KBytes 5.86 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 4.00-5.00 sec 280 KBytes 2.29 Mbits/sec

[ 9] 4.00-5.00 sec 170 KBytes 1.39 Mbits/sec

[ 11] 4.00-5.00 sec 89.1 KBytes 730 Kbits/sec

[ 13] 4.00-5.00 sec 89.1 KBytes 730 Kbits/sec

[ 15] 4.00-5.00 sec 87.7 KBytes 719 Kbits/sec

[SUM] 4.00-5.00 sec 716 KBytes 5.86 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 5.00-6.00 sec 260 KBytes 2.13 Mbits/sec

[ 9] 5.00-6.00 sec 144 KBytes 1.18 Mbits/sec

[ 11] 5.00-6.00 sec 103 KBytes 845 Kbits/sec

[ 13] 5.00-6.00 sec 150 KBytes 1.23 Mbits/sec

[ 15] 5.00-6.00 sec 48.1 KBytes 394 Kbits/sec

[SUM] 5.00-6.00 sec 706 KBytes 5.78 Mbits/sec

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[ 7] 6.00-7.00 sec 130 KBytes 1.06 Mbits/sec

[ 9] 6.00-7.00 sec 103 KBytes 844 Kbits/sec

[ 11] 6.00-7.00 sec 143 KBytes 1.17 Mbits/sec

[ 13] 6.00-7.00 sec 165 KBytes 1.35 Mbits/sec

[ 15] 6.00-7.00 sec 187 KBytes 1.53 Mbits/sec

[SUM] 6.00-7.00 sec 728 KBytes 5.96 Mbits/sec

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[ 7] 7.00-8.00 sec 144 KBytes 1.18 Mbits/sec

[ 9] 7.00-8.00 sec 147 KBytes 1.20 Mbits/sec

[ 11] 7.00-8.00 sec 96.2 KBytes 788 Kbits/sec

[ 13] 7.00-8.00 sec 178 KBytes 1.46 Mbits/sec

[ 15] 7.00-8.00 sec 157 KBytes 1.29 Mbits/sec

[SUM] 7.00-8.00 sec 723 KBytes 5.92 Mbits/sec

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[ 7] 8.00-9.00 sec 140 KBytes 1.15 Mbits/sec

[ 9] 8.00-9.00 sec 182 KBytes 1.50 Mbits/sec

[ 11] 8.00-9.00 sec 119 KBytes 974 Kbits/sec

[ 13] 8.00-9.00 sec 134 KBytes 1.10 Mbits/sec

[ 15] 8.00-9.00 sec 137 KBytes 1.13 Mbits/sec

[SUM] 8.00-9.00 sec 713 KBytes 5.85 Mbits/sec

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[ 7] 9.00-10.00 sec 136 KBytes 1.11 Mbits/sec

[ 9] 9.00-10.00 sec 69.3 KBytes 568 Kbits/sec

[ 11] 9.00-10.00 sec 164 KBytes 1.34 Mbits/sec

[ 13] 9.00-10.00 sec 69.3 KBytes 568 Kbits/sec

[ 15] 9.00-10.00 sec 307 KBytes 2.51 Mbits/sec

[SUM] 9.00-10.00 sec 745 KBytes 6.11 Mbits/sec

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[ ID] Interval Transfer Bitrate

[ 7] 0.00-10.00 sec 2.06 MBytes 1.73 Mbits/sec sender

[ 7] 0.00-10.01 sec 1.94 MBytes 1.62 Mbits/sec receiver

[ 9] 0.00-10.00 sec 1.48 MBytes 1.24 Mbits/sec sender

[ 9] 0.00-10.01 sec 1.36 MBytes 1.14 Mbits/sec receiver

[ 11] 0.00-10.00 sec 1.28 MBytes 1.08 Mbits/sec sender

[ 11] 0.00-10.01 sec 1.16 MBytes 971 Kbits/sec receiver

[ 13] 0.00-10.00 sec 1.33 MBytes 1.12 Mbits/sec sender

[ 13] 0.00-10.01 sec 1.22 MBytes 1.02 Mbits/sec receiver

[ 15] 0.00-10.00 sec 1.38 MBytes 1.16 Mbits/sec sender

[ 15] 0.00-10.01 sec 1.25 MBytes 1.05 Mbits/sec receiver

[SUM] 0.00-10.00 sec 7.54 MBytes 6.32 Mbits/sec sender

[SUM] 0.00-10.01 sec 6.92 MBytes 5.80 Mbits/sec receiver

iperf Done.

dakshamarutinagre@Dakshas-MacBook-Pro ~ %

**With R flag:**

**For P = 1**

dakshamarutinagre@Dakshas-MacBook-Pro ~ % **iperf3 -p 5001 -R -P 1 -c iu-stor01.crest.iu.edu**

Connecting to host iu-stor01.crest.iu.edu, port 5001

Reverse mode, remote host iu-stor01.crest.iu.edu is sending

[ 7] local 10.0.0.58 port 51221 connected to 156.56.5.143 port 5001

[ ID] Interval Transfer Bitrate

[ 7] 0.00-1.00 sec 13.4 MBytes 112 Mbits/sec

[ 7] 1.00-2.00 sec 14.4 MBytes 121 Mbits/sec

[ 7] 2.00-3.00 sec 12.5 MBytes 105 Mbits/sec

[ 7] 3.00-4.00 sec 14.2 MBytes 119 Mbits/sec

[ 7] 4.00-5.00 sec 13.5 MBytes 113 Mbits/sec

[ 7] 5.00-6.00 sec 13.4 MBytes 112 Mbits/sec

[ 7] 6.00-7.00 sec 14.2 MBytes 119 Mbits/sec

[ 7] 7.00-8.00 sec 14.2 MBytes 119 Mbits/sec

[ 7] 8.00-9.00 sec 14.2 MBytes 119 Mbits/sec

[ 7] 9.00-10.00 sec 12.1 MBytes 102 Mbits/sec

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[ ID] Interval Transfer Bitrate Retr

[ 7] 0.00-10.02 sec 153 MBytes 128 Mbits/sec 112 sender

[ 7] 0.00-10.00 sec 136 MBytes 114 Mbits/sec receiver

iperf Done.

dakshamarutinagre@Dakshas-MacBook-Pro ~ %

**Maximum value:**

dakshamarutinagre@Dakshas-MacBook-Pro ~ % **iperf3 -p 5001 -R -P 5 -c iu-stor01.crest.iu.edu**

Connecting to host iu-stor01.crest.iu.edu, port 5001

Reverse mode, remote host iu-stor01.crest.iu.edu is sending

[ 7] local 10.0.0.58 port 51246 connected to 156.56.5.143 port 5001

[ 9] local 10.0.0.58 port 51247 connected to 156.56.5.143 port 5001

[ 11] local 10.0.0.58 port 51248 connected to 156.56.5.143 port 5001

[ 13] local 10.0.0.58 port 51249 connected to 156.56.5.143 port 5001

[ 15] local 10.0.0.58 port 51250 connected to 156.56.5.143 port 5001

[ ID] Interval Transfer Bitrate

[ 7] 0.00-1.00 sec 3.92 MBytes 32.9 Mbits/sec

[ 9] 0.00-1.00 sec 2.97 MBytes 24.9 Mbits/sec

[ 11] 0.00-1.00 sec 2.51 MBytes 21.0 Mbits/sec

[ 13] 0.00-1.00 sec 2.10 MBytes 17.6 Mbits/sec

[ 15] 0.00-1.00 sec 2.36 MBytes 19.8 Mbits/sec

[SUM] 0.00-1.00 sec 13.9 MBytes 116 Mbits/sec

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[ 7] 1.00-2.00 sec 3.39 MBytes 28.4 Mbits/sec

[ 9] 1.00-2.00 sec 3.42 MBytes 28.7 Mbits/sec

[ 11] 1.00-2.00 sec 2.50 MBytes 21.0 Mbits/sec

[ 13] 1.00-2.00 sec 2.23 MBytes 18.7 Mbits/sec

[ 15] 1.00-2.00 sec 2.65 MBytes 22.2 Mbits/sec

[SUM] 1.00-2.00 sec 14.2 MBytes 119 Mbits/sec

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[ 7] 2.00-3.00 sec 2.06 MBytes 17.2 Mbits/sec

[ 9] 2.00-3.00 sec 3.51 MBytes 29.4 Mbits/sec

[ 11] 2.00-3.00 sec 1.93 MBytes 16.2 Mbits/sec

[ 13] 2.00-3.00 sec 2.02 MBytes 16.9 Mbits/sec

[ 15] 2.00-3.00 sec 1.07 MBytes 8.98 Mbits/sec

[SUM] 2.00-3.00 sec 10.6 MBytes 88.8 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 3.00-4.00 sec 3.95 MBytes 33.1 Mbits/sec

[ 9] 3.00-4.00 sec 2.04 MBytes 17.1 Mbits/sec

[ 11] 3.00-4.00 sec 3.36 MBytes 28.2 Mbits/sec

[ 13] 3.00-4.00 sec 4.72 MBytes 39.6 Mbits/sec

[ 15] 3.00-4.00 sec 3.54 MBytes 29.6 Mbits/sec

[SUM] 3.00-4.00 sec 17.6 MBytes 148 Mbits/sec

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[ 7] 4.00-5.00 sec 2.05 MBytes 17.2 Mbits/sec

[ 9] 4.00-5.00 sec 3.31 MBytes 27.8 Mbits/sec

[ 11] 4.00-5.00 sec 2.65 MBytes 22.2 Mbits/sec

[ 13] 4.00-5.00 sec 3.23 MBytes 27.1 Mbits/sec

[ 15] 4.00-5.00 sec 2.96 MBytes 24.9 Mbits/sec

[SUM] 4.00-5.00 sec 14.2 MBytes 119 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 5.00-6.00 sec 2.18 MBytes 18.3 Mbits/sec

[ 9] 5.00-6.00 sec 2.68 MBytes 22.5 Mbits/sec

[ 11] 5.00-6.00 sec 2.15 MBytes 18.0 Mbits/sec

[ 13] 5.00-6.00 sec 2.24 MBytes 18.8 Mbits/sec

[ 15] 5.00-6.00 sec 2.53 MBytes 21.2 Mbits/sec

[SUM] 5.00-6.00 sec 11.8 MBytes 98.8 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 6.00-7.00 sec 2.82 MBytes 23.7 Mbits/sec

[ 9] 6.00-7.00 sec 4.11 MBytes 34.5 Mbits/sec

[ 11] 6.00-7.00 sec 2.81 MBytes 23.6 Mbits/sec

[ 13] 6.00-7.00 sec 2.78 MBytes 23.3 Mbits/sec

[ 15] 6.00-7.00 sec 3.99 MBytes 33.4 Mbits/sec

[SUM] 6.00-7.00 sec 16.5 MBytes 139 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 7.00-8.00 sec 1.30 MBytes 10.9 Mbits/sec

[ 9] 7.00-8.00 sec 3.89 MBytes 32.7 Mbits/sec

[ 11] 7.00-8.00 sec 1.30 MBytes 10.9 Mbits/sec

[ 13] 7.00-8.00 sec 3.28 MBytes 27.5 Mbits/sec

[ 15] 7.00-8.00 sec 3.40 MBytes 28.5 Mbits/sec

[SUM] 7.00-8.00 sec 13.2 MBytes 111 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 8.00-9.00 sec 1.92 MBytes 16.1 Mbits/sec

[ 9] 8.00-9.00 sec 2.72 MBytes 22.8 Mbits/sec

[ 11] 8.00-9.00 sec 1.89 MBytes 15.9 Mbits/sec

[ 13] 8.00-9.00 sec 3.93 MBytes 33.0 Mbits/sec

[ 15] 8.00-9.00 sec 2.82 MBytes 23.7 Mbits/sec

[SUM] 8.00-9.00 sec 13.3 MBytes 111 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ 7] 9.00-10.00 sec 2.03 MBytes 17.0 Mbits/sec

[ 9] 9.00-10.00 sec 3.53 MBytes 29.6 Mbits/sec

[ 11] 9.00-10.00 sec 2.01 MBytes 16.9 Mbits/sec

[ 13] 9.00-10.00 sec 3.28 MBytes 27.5 Mbits/sec

[ 15] 9.00-10.00 sec 3.34 MBytes 28.0 Mbits/sec

[SUM] 9.00-10.00 sec 14.2 MBytes 119 Mbits/sec

- - - - - - - - - - - - - - - - - - - - - - - - -

[ ID] Interval Transfer Bitrate Retr

[ 7] 0.00-10.01 sec 41.5 MBytes 34.8 Mbits/sec 71 sender

[ 7] 0.00-10.00 sec 25.6 MBytes 21.5 Mbits/sec receiver

[ 9] 0.00-10.01 sec 48.3 MBytes 40.5 Mbits/sec 23 sender

[ 9] 0.00-10.00 sec 32.2 MBytes 27.0 Mbits/sec receiver

[ 11] 0.00-10.01 sec 39.6 MBytes 33.2 Mbits/sec 34 sender

[ 11] 0.00-10.00 sec 23.1 MBytes 19.4 Mbits/sec receiver

[ 13] 0.00-10.01 sec 46.1 MBytes 38.6 Mbits/sec 15 sender

[ 13] 0.00-10.00 sec 29.8 MBytes 25.0 Mbits/sec receiver

[ 15] 0.00-10.01 sec 43.3 MBytes 36.3 Mbits/sec 43 sender

[ 15] 0.00-10.00 sec 28.7 MBytes 24.0 Mbits/sec receiver

[SUM] 0.00-10.01 sec 219 MBytes 183 Mbits/sec 186 sender

[SUM] 0.00-10.00 sec 139 MBytes 117 Mbits/sec receiver

iperf Done.

dakshamarutinagre@Dakshas-MacBook-Pro ~ %

**Task 4**

Traceroute to iu-stor01.crest.iu.edu

dakshamarutinagre@Dakshas-MacBook-Pro ~ % **traceroute -I iu-stor01.crest.iu.edu**

traceroute to iu-stor01.crest.iu.edu (156.56.5.143), 64 hops max, 72 byte packets

1 10.0.0.1 (10.0.0.1) 4.637 ms 3.897 ms 3.826 ms

2 96.120.112.113 (96.120.112.113) 10.303 ms 11.460 ms 13.324 ms

3 96.110.168.9 (96.110.168.9) 11.689 ms 12.701 ms 14.563 ms

4 96.108.120.74 (96.108.120.74) 13.612 ms 11.962 ms 11.861 ms

5 50.226.227.250 (50.226.227.250) 14.519 ms 11.015 ms 12.158 ms

6 ae-10.0.cr3.bldc.net.uits.iu.edu (134.68.3.59) 21.545 ms 13.067 ms 12.547 ms

7 vlan-576.mgmt-sw.bldc.testlab.grnoc.iu.edu (156.56.249.74) 11.067 ms 14.307 ms 14.926 ms

8 iu-stor01.crest.iu.edu (156.56.5.143) 10.660 ms 11.271 ms 11.672 ms

dakshamarutinagre@Dakshas-MacBook-Pro ~ %