

ASSIGNMENT 4

CS342 - Networks Lab

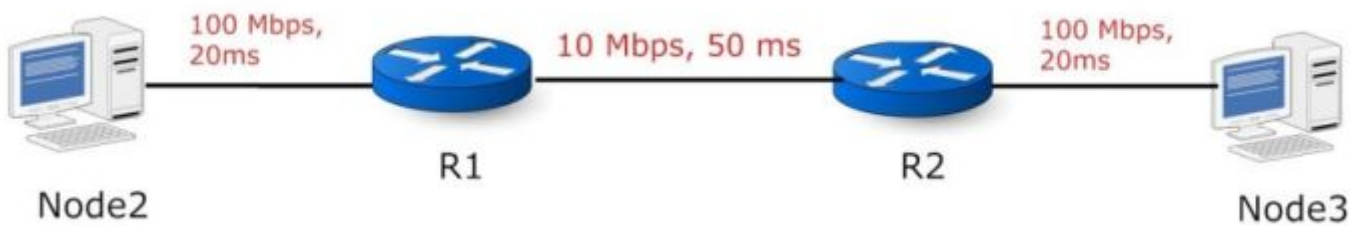
Group-12 Members

Nishchay Manwani 180101051

Vaibhav Kumar Singh 180101086

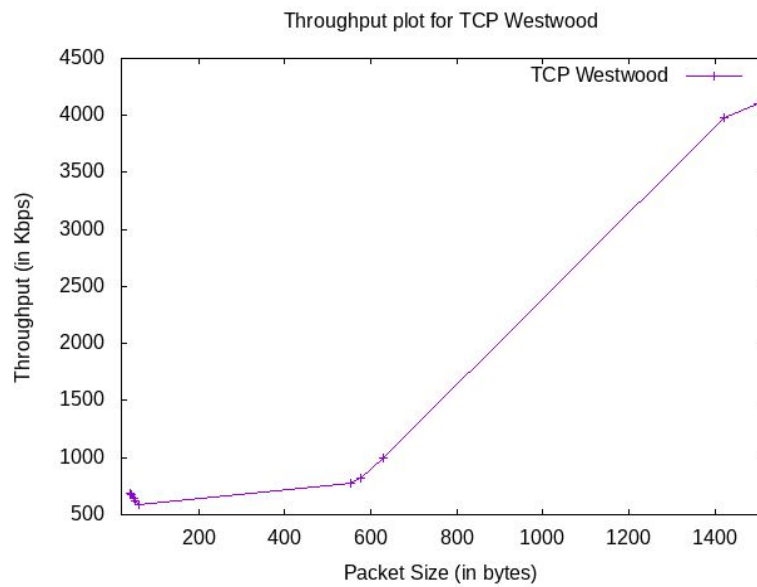
Application #2 Wired Connection

Network Topology



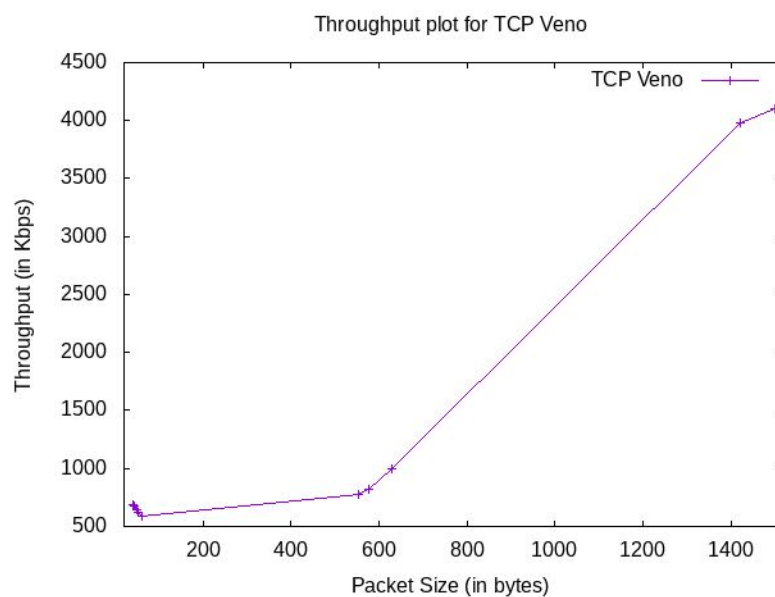
TCP Westwood

Packet Size (in Bytes)	Throughput (in Kbps)
40	685.326238
44	672.964202
48	645.949406
52	623.030789
60	586.382205
552	777.778792
576	825.608671
628	996.375489
1420	3983.404142
1500	4107.099461



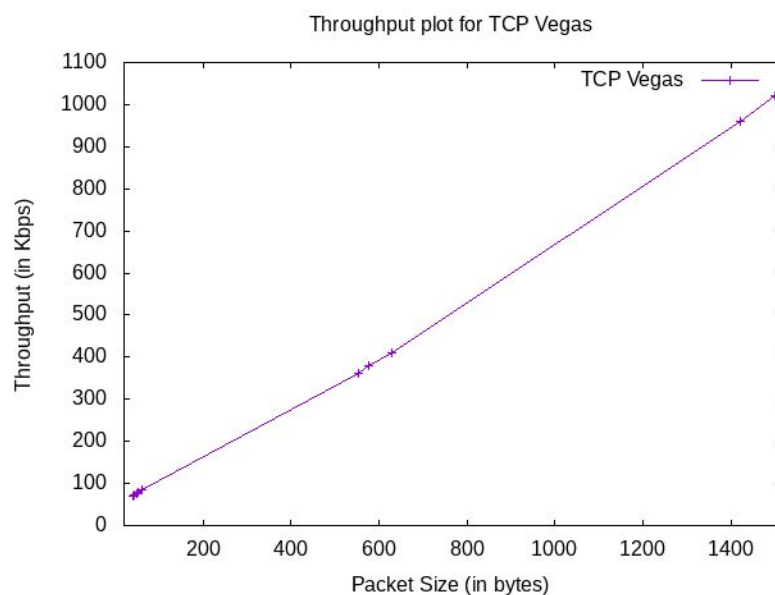
TCP Veno

Packet Size (in Bytes)	Throughput (in Kbps)
40	685.326238
44	672.964202
48	645.949406
52	623.030789
60	586.382205
552	777.778792
576	825.608671
628	996.375489
1420	3983.404142
1500	4107.099461



TCP Vegas

Packet Size (in Bytes)	Throughput (in Kbps)
40	69.711266
44	72.738394
48	75.765372
52	78.792200
60	84.845408
552	360.884055
576	378.776610
628	408.786748
1420	961.387436
1500	1020.841328

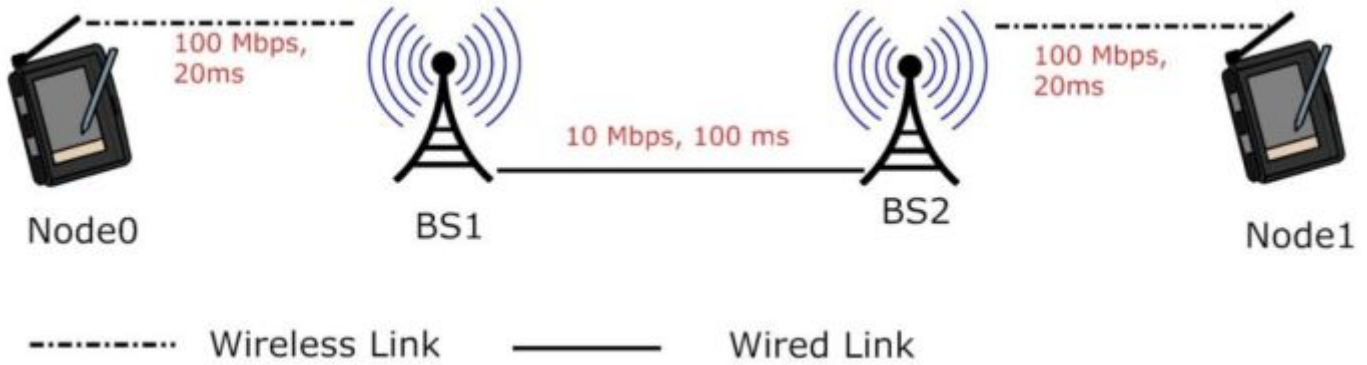


Conclusions

- ❑ In general, throughput increases with increase in packet size for all the TCP agents.
- ❑ TCP Westwood and TCP Veno have a similar throughput which is greater than the throughput of TCP Vegas.
- ❑ Since there is only 1 connection throughout the course of the experiment, the value of Jain's Fairness Index is 1 for all the TCP agents.

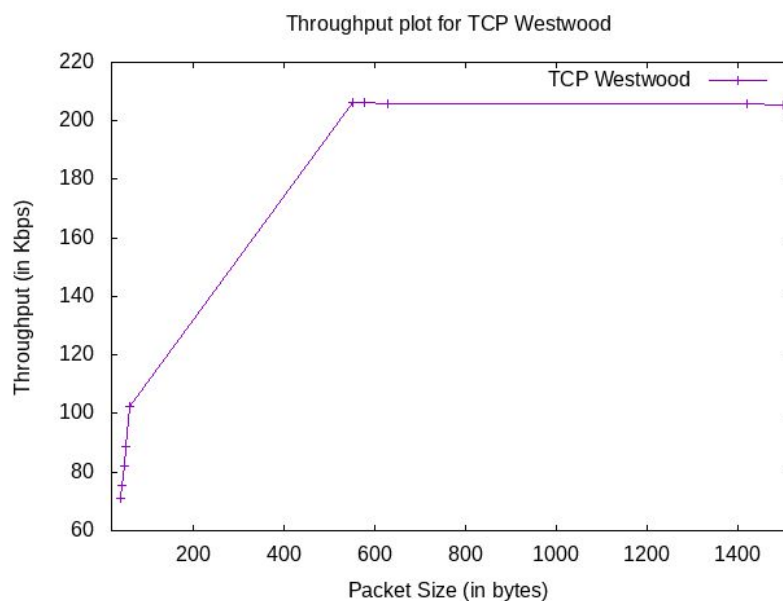
Wireless Connection

Network Topology



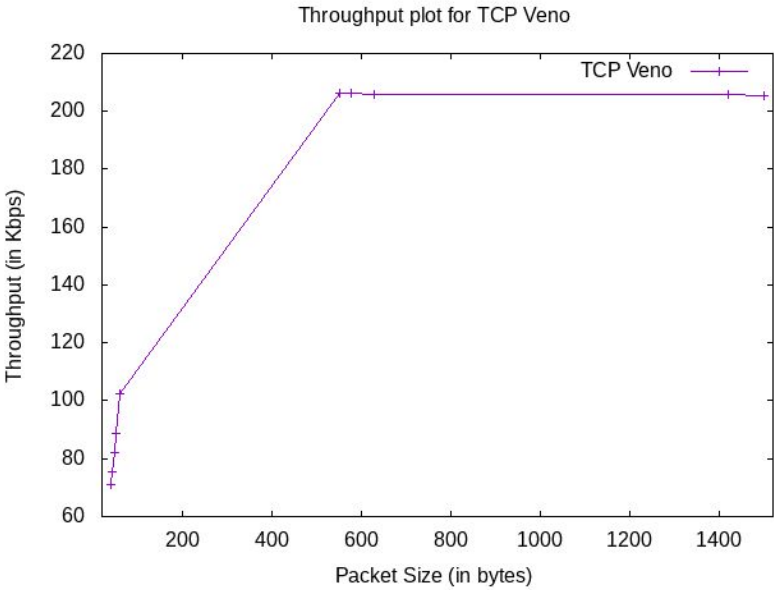
TCP Westwood

Packet Size (in Bytes)	Throughput (in Kbps)
40	71.009718
44	75.275627
48	82.086484
52	88.897525
60	102.278656
552	206.470975
576	206.276573
628	205.975483
1420	205.792150
1500	205.563019



TCP Veno

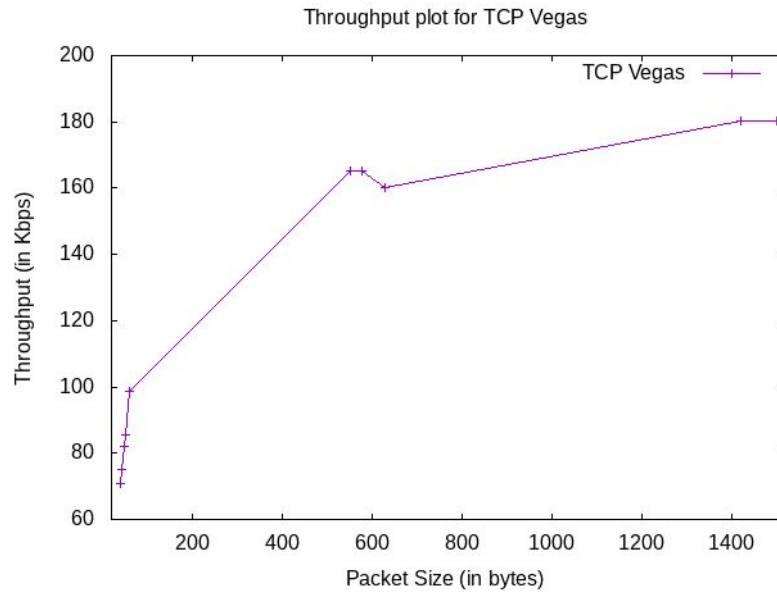
Packet Size (in Bytes)	Throughput (in Kbps)
40	71.009718
44	75.275627
48	82.086484
52	88.897525
60	102.278656
552	206.470975
576	206.276573
628	205.975483
1420	205.792150
1500	205.563019



TCP Vegas

Packet Size (in Bytes)	Throughput (in Kbps)
40	71.009718
44	75.229040
48	82.036981
52	85.678708
60	98.566763
552	165.341990

576	165.195812
628	160.190950
1420	180.326605
1500	180.115012



Conclusions

- ❑ In general, throughput increases with increase in packet size for all the TCP agents.
- ❑ TCP Westwood and TCP Veno have a similar throughput which is greater than the throughput of TCP Vegas.
- ❑ Since there is only 1 connection throughout the course of the experiment, the value of Jain's Fairness Index is 1 for all the TCP agents.

Jain's Fairness Index

$$\mathcal{J}(x_1, x_2, \dots, x_n) = \frac{(\sum_{i=1}^n x_i)^2}{n \cdot \sum_{i=1}^n x_i^2} = \frac{\overline{\mathbf{x}}^2}{\overline{\mathbf{x}^2}} = \frac{1}{1 + \widehat{c_v}^2}$$

In all of the cases, the value of Jain's Fairness Index comes out to be 1. The reason being that there is only 1 connection throughout the course of the experiment. The plot of Packet Size vs Jain's Fairness Index is given below.

