CS342: Networks Lab

Assignment – 4

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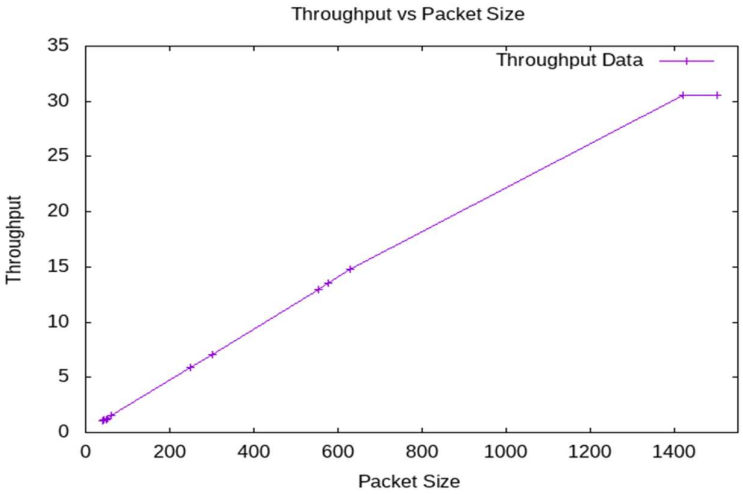
Application #2

Wired TCP:

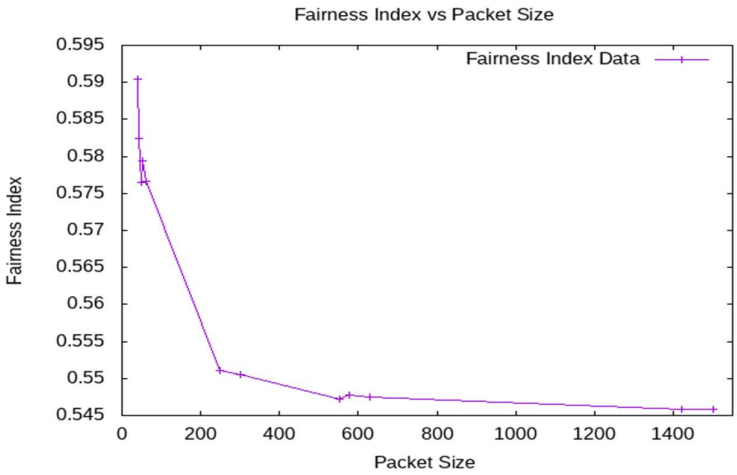
a) Throughput vs Packet size:

throughput	Packet size
40	1.02849
44	1.12054
48	1.202
52	1.3047
60	1.49945
250	5.92056
300	7.08738
552	12.9621
576	13.5358
628	14.7539
1420	30.575
1500	30.5465



b) Fairness index vs packet size:

40	0.590428
44	0.582498
48	0.57655
52	0.579436
60	0.576561
250	0.551018
300	0.550465
552	0.547247
576	0.547729
628	0.54755
1420	0.545793
1500	0.545837



Conclusion

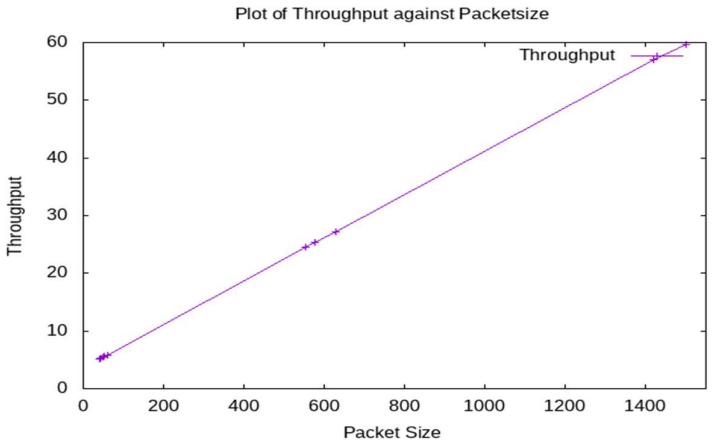
In general, throughput increases with increase in packet size for all the TCP agents.

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 TCP:

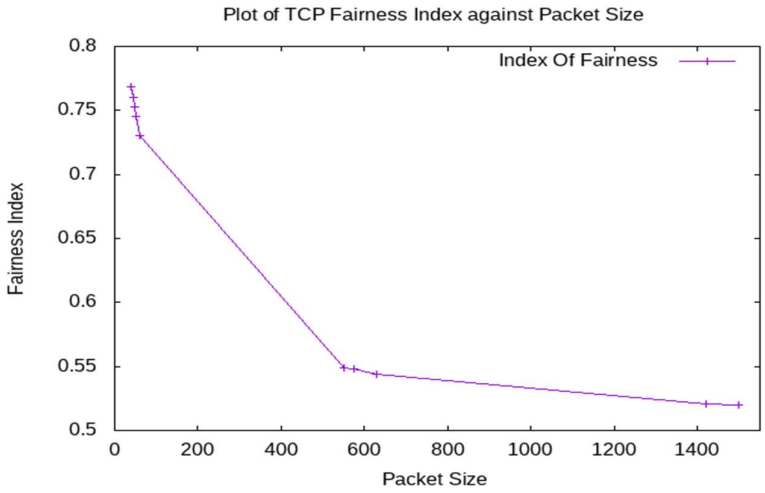
a) Throughput vs Packet size:

40	5.11014
44	5.2915
48	5.41927
52	5.57351
60	5.86009
552	24.4639
576	25.3252
628	27.2633
1420	56.9658
1500	59.6267



b) Fairness index vs packet size:

40	0.768203
44	0.760125
48	0.752639
52	0.745692
60	0.730718
552	0.549224
576	0.547819
628	0.543996
1420	0.520618
1500	0.51957



Conclusion

In general, throughput increases with increase in packet size for all the TCP agents.

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Jain's Fairness Index

$$\mathcal{J}(x_1, x_2, \ldots, x_n) = \frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n \cdot \sum_{i=1}^{n} {x_i}^2} = \frac{\overline{\mathbf{x}}^2}{\overline{\mathbf{x}^2}} = \frac{1}{1 + \widehat{c_\mathrm{v}}^2}$$

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.