Topics In Networks

Assignment 2 report

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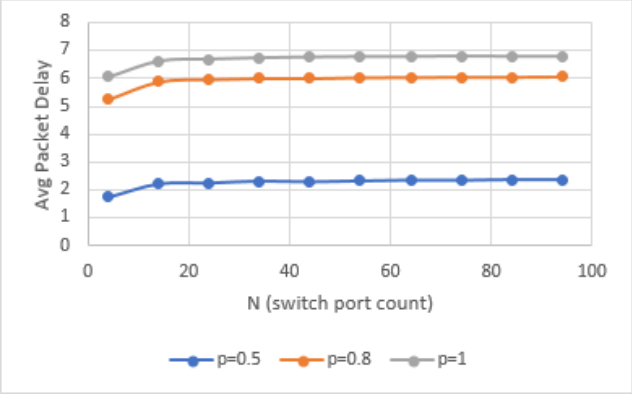
In this report we have done performance comparison of the scheduling schemes INQ, KOUQ and ISLIP. We analysed these schemes by tuning values of some parameters used in these algorithms like number of ports, buffer size, etc. And the results are further exposed with the help of graph.

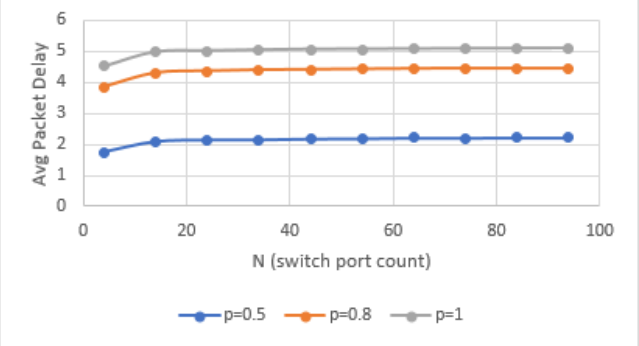
INQ Analysis (Link Utilization, Packet Delay)

Packet Delay

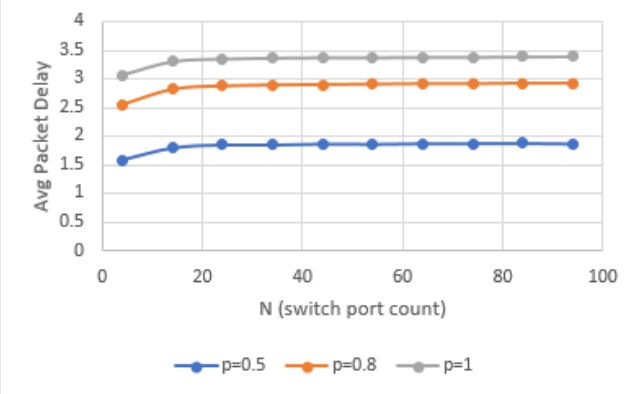
i. *B = 4, T = 10000*



ii. *B = 3, T = 10000*



iii. *B = 2, T = 10000*



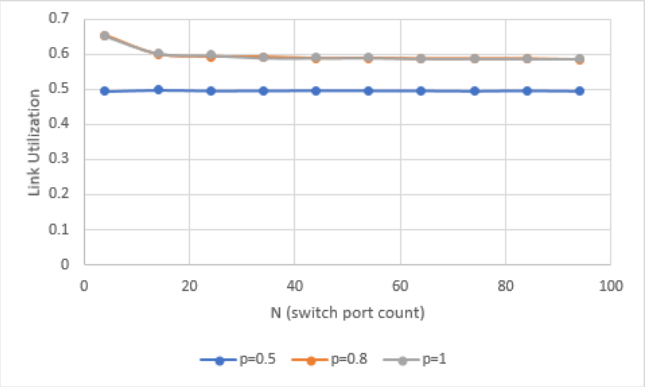
Analysis:

1. For different buffer size, packet delay is almost constant. But for a smaller number of ports, packet delay increases then stabilizes for the greater number of ports.

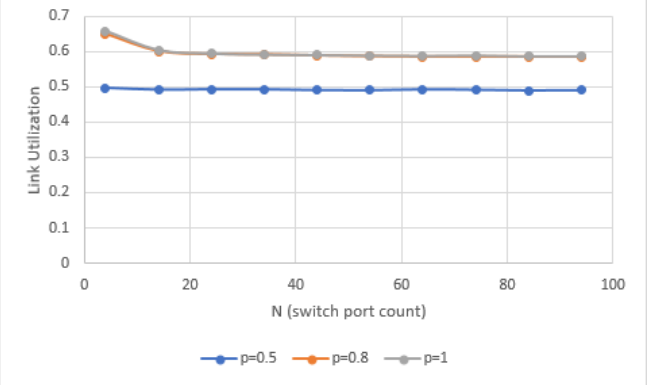
2. For high packet generation probability, large average packet delay is encountered..

Link Utilization

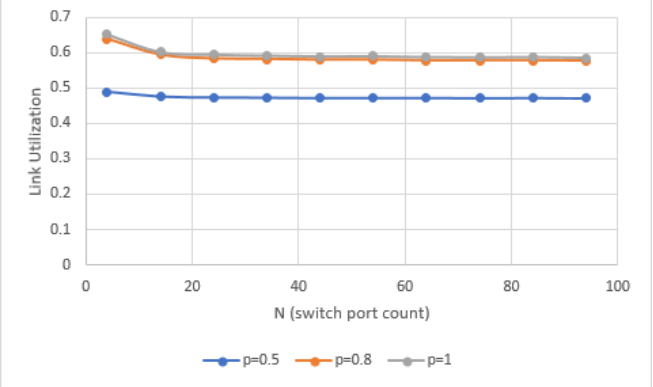
i. *B = 4, T = 10000*



ii. *B = 3, T = 10000*



iii. *B = 2, T = 10000*



Analysis:

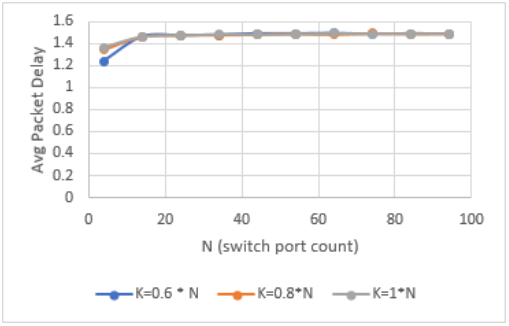
1. For different buffer size, for lesser switch count link utilization is getting decreased and then remains constant.

2. For high packet generation probability, large average packet delay is encountered.

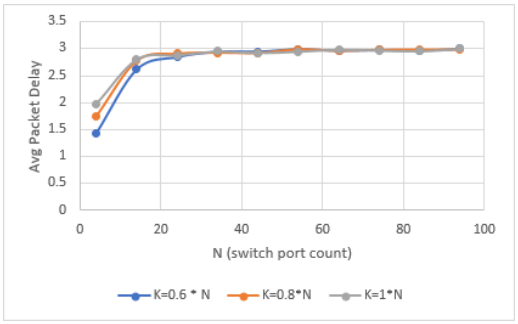
KOUQ Analysis (Link Utilization, Packet Delay)

Packet Delay

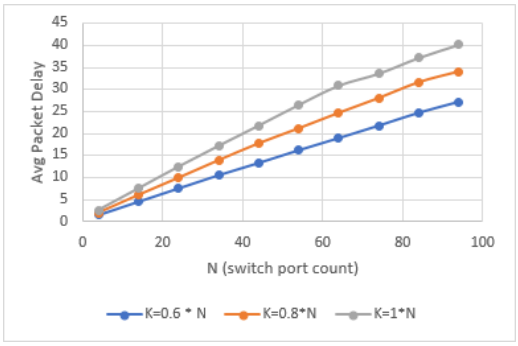
i. *p = 0.5, B = 4, T = 10000*



ii. *p = 0.8, B = 4, T = 10000*



iii. *p = 1, B = 4, T = 10000*



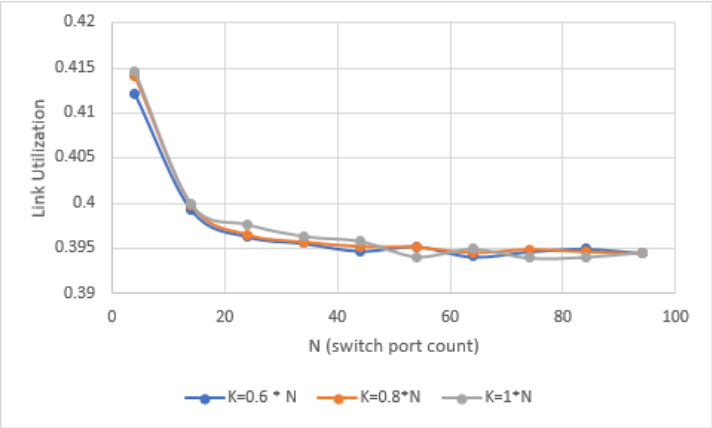
Analysis:

1. Initially lesser K value has less average packet delay but as switch port count increases for different K values, packet delay stabilizes for the lesser packet generation probability.

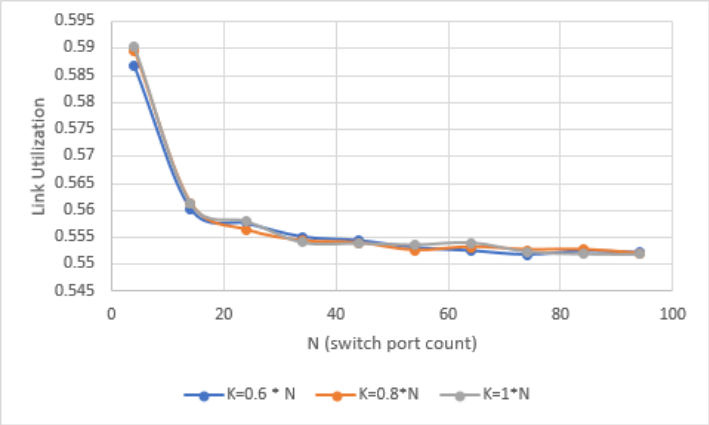
2. For maximum packet generation probability, behaviour of packet delay become linear.

Link Utilization

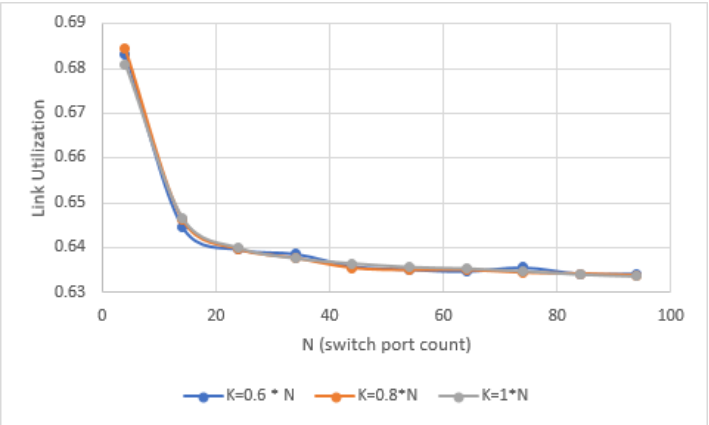
i. *p = 0.5, B = 4, T = 10000*



ii. *p = 0.8, B = 4, T = 10000*



iii. *p = 1, B = 4, T = 10000*



Analysis:

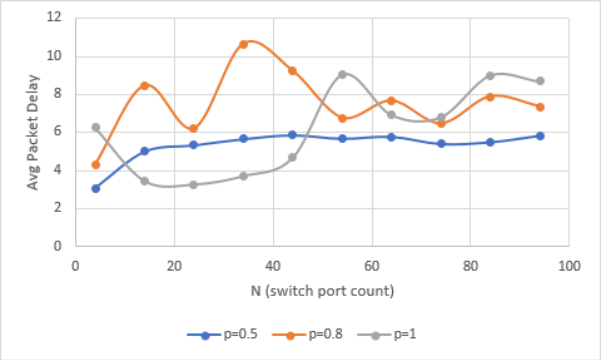
1. For different packet generation probability, packet utilization is almost same. In most of the cases larger knockout has higher link utilization.

2. As number of switch port increases, link utilization is getting reduced and finally stabilizes at lower value.

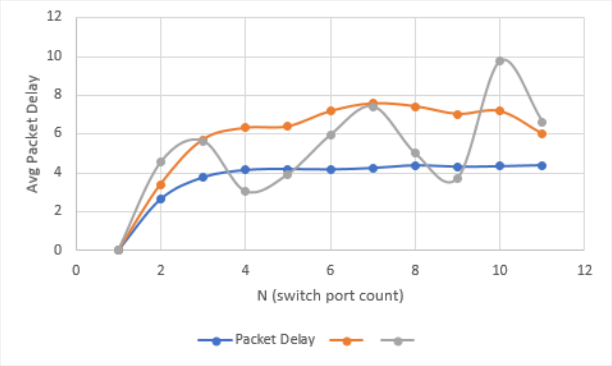
ISLIP Analysis (Link Utilization, Packet Delay)

Packet Delay

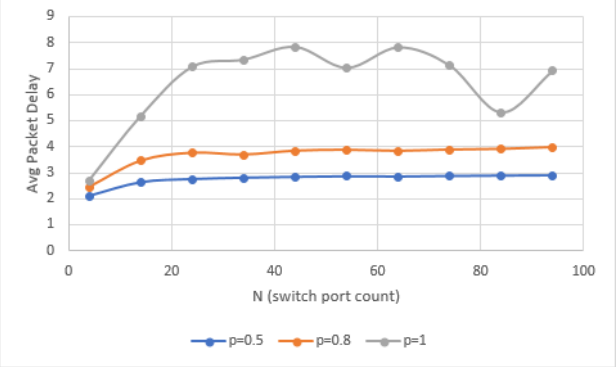
i. *B = 4, T = 10000*



ii. *B = 3, T = 10000*



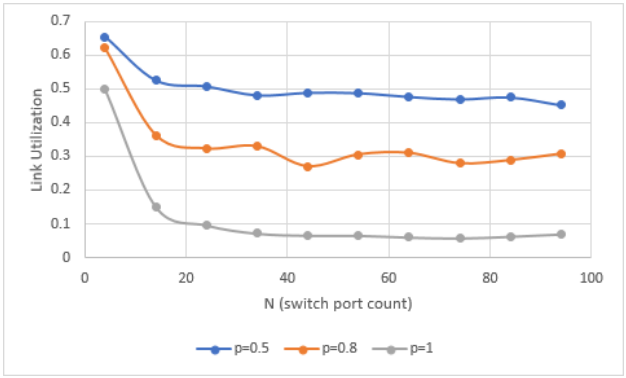
iii. *B = 2, T = 10000*



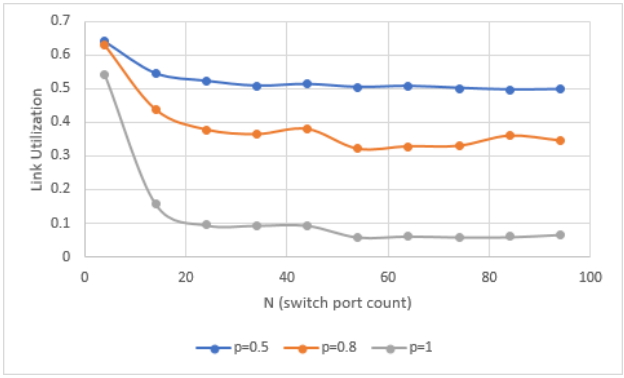
The above graph shows totally experimental data over packet delay variation in ISLIP with change in buffer size and number of ports. One things which we have noticed here is if we reduce the probability value p from 1, then we can get some reasonable result. Else if p=1, then graph will totally depend upon randomness of data.

Link Utilization

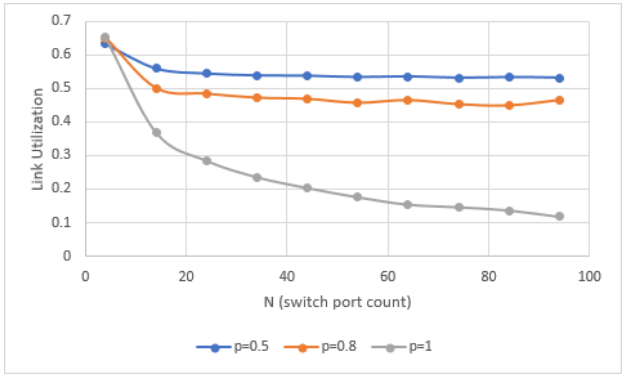
i. *B = 4, T = 10000*



ii. *B = 3, T = 10000*



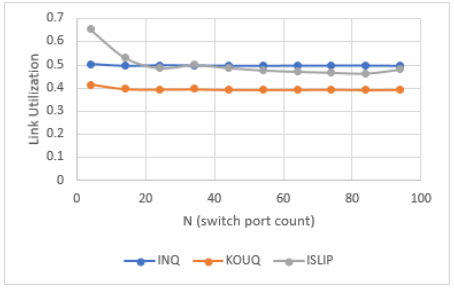
iii. *B = 2, T = 10000*



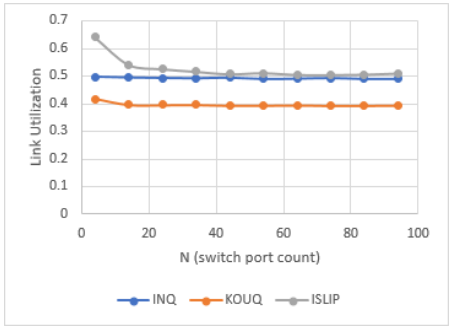
Link utilization increases with decrease in value of p from 1 to 0.5. This is because, we experience lesser drops throughout. Hence increase in utilization of network.

Link Utilization (Overall)

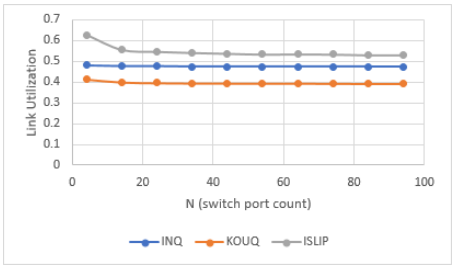
i. *B = 4, T = 10000, p = 0.5, K = 4*



ii. *B = 3, T = 10000, p = 0.5, K = 4*



iii. *B = 2, T = 10000, p = 0.5, K = 4*



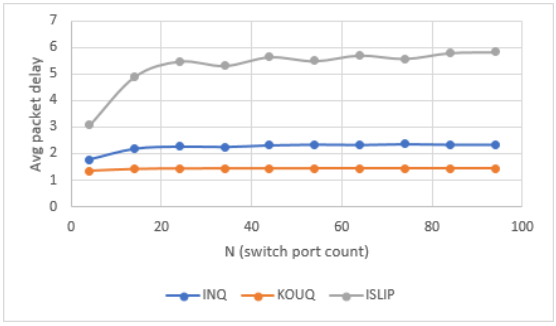
Analysis:

1. It is observed that greater link utilization is achieved in case of ISLIP scheduling as compared to KOUQ and INQ for different buffer size.

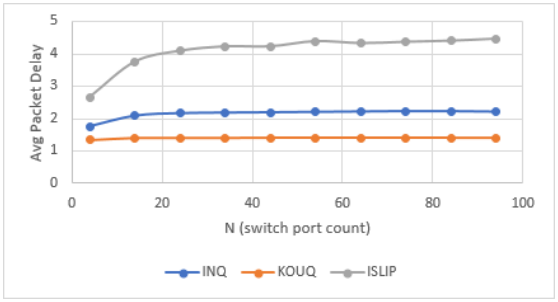
2. Behaviour of Link Utilization is almost same i.e. initially for a smaller number of switch ports it has high utilization and remains constant after decrease in utilization.

Packet Delay (Overall)

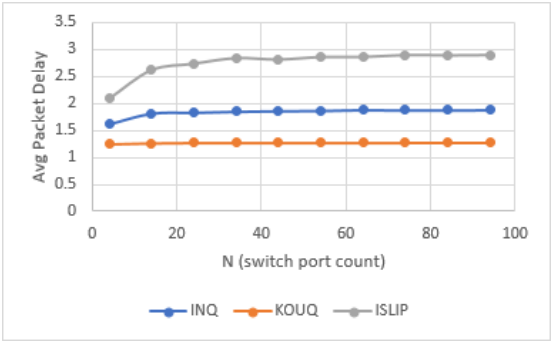
i. *B = 4, T = 10000, p = 0.5, K = 4*



ii. *B = 3, T = 10000, p = 0.5, K = 3*



iii. *B = 2, T = 10000, p = 0.5, K = 2*



Analysis:

1. It is found that ISLIP has greater average packet delay as compared to other scheduling schemes.

2. Initially delay is increasing for smaller switch port count then stabilizes.

Conclusion :

1. After analysis of all the queue scheduling, it is observed that ISLIP has link utilization as compared to remaining two scheduling. But in case of INQ and KOUQ, we found that INQ has higher link utilization.

2. In case of Average Packet Delay, we concluded that ISLIP > INQ > KOUQ follows the order.