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# Elce 304 Computer Networks
# Lab1

## Introduction to Riverbed Modeler (OPNET)

**Id:** 201682446

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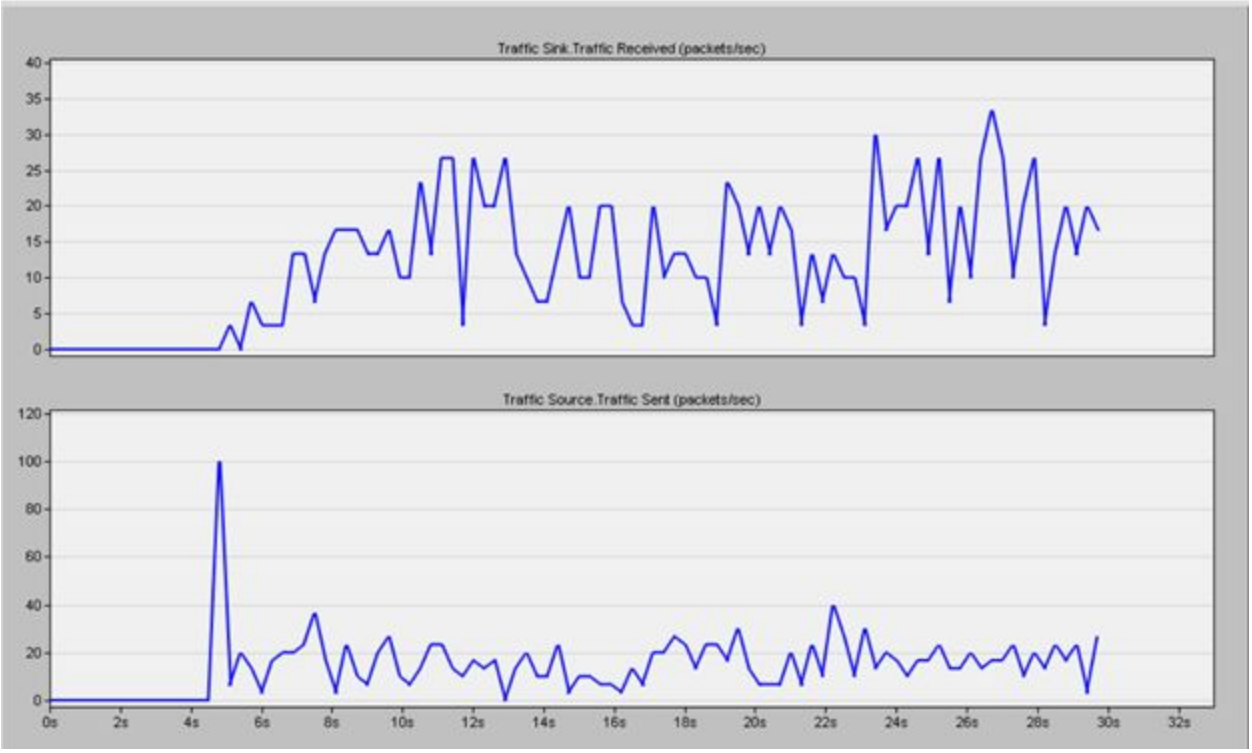
## Introduction

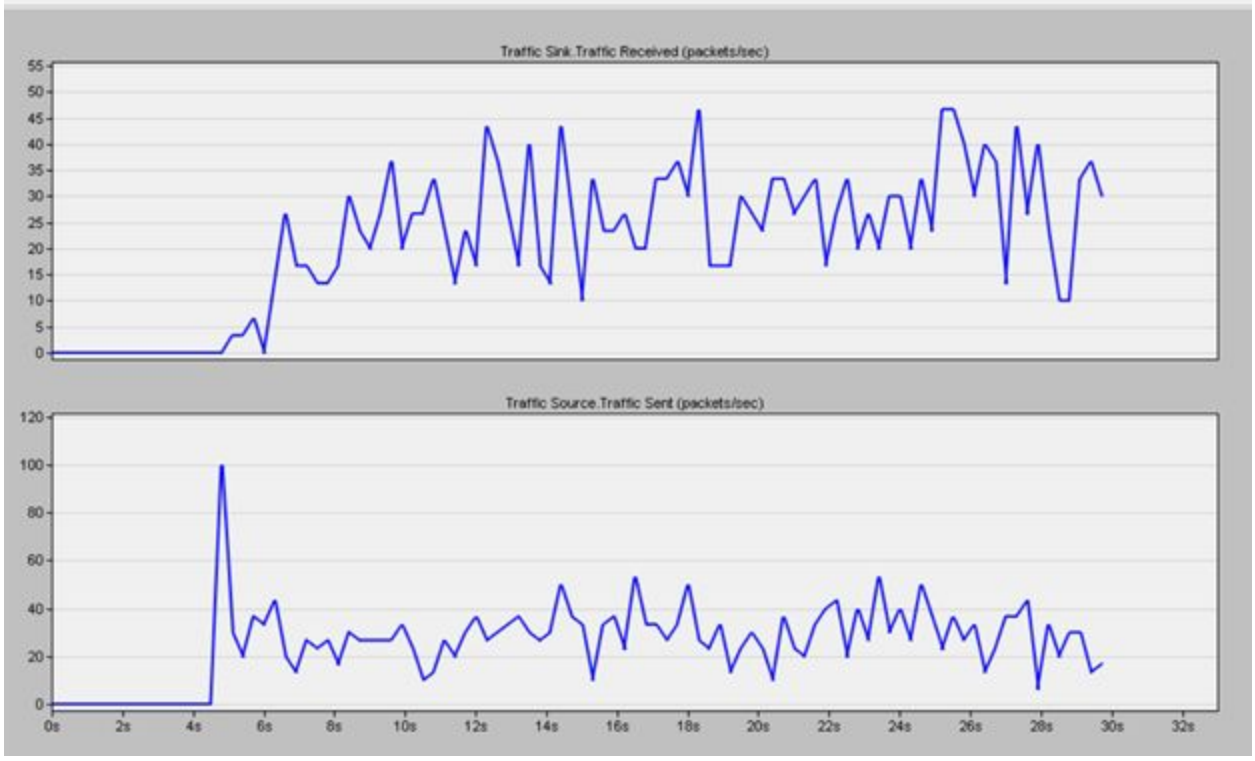
In this laboratory work, it was explained the principle work of Riverbed Modeler. The role was to build an Ethernet network specification and track its performance after the recognition with the basics of the project.

The Ethernet is a multi-access network designed to allow several nodes to transmit and receive information over a common connection.It is an example of local area network infrastructure from the Carrie sense multiple access (CSMA) with collision detect (CD).

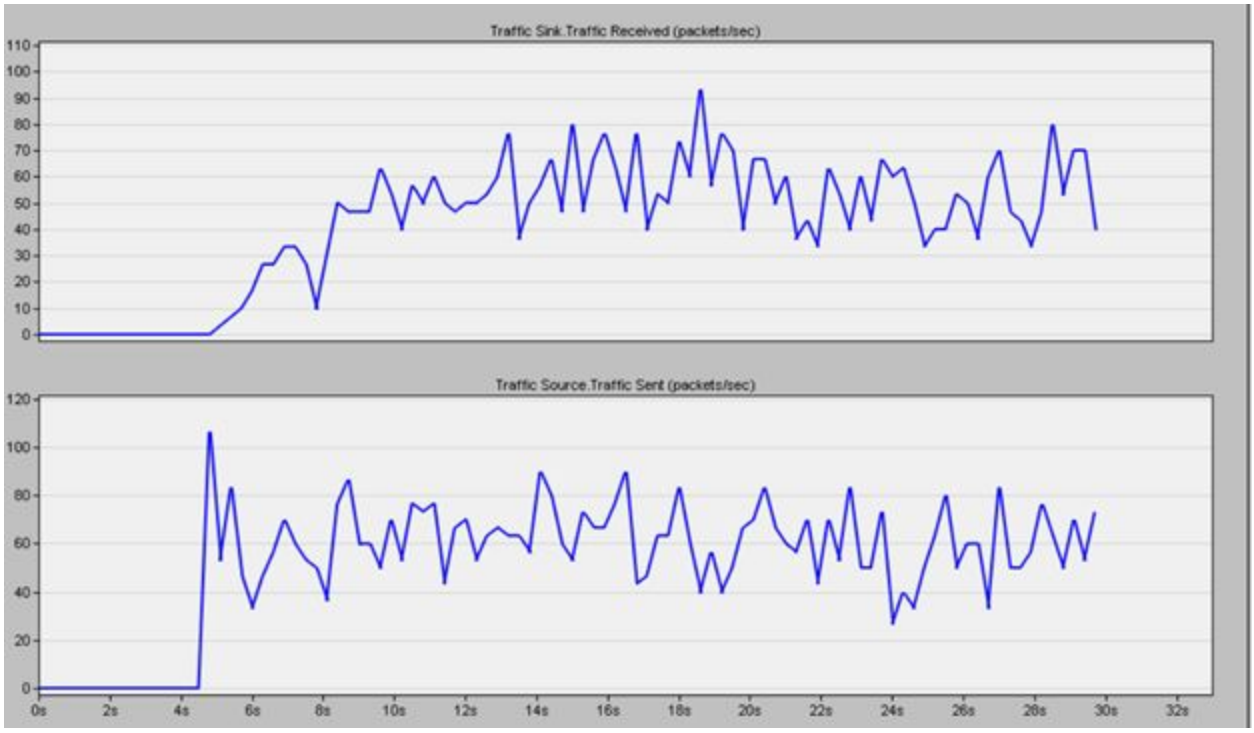
1) In order to answer this question it was created 10 graphs with different exponential value:



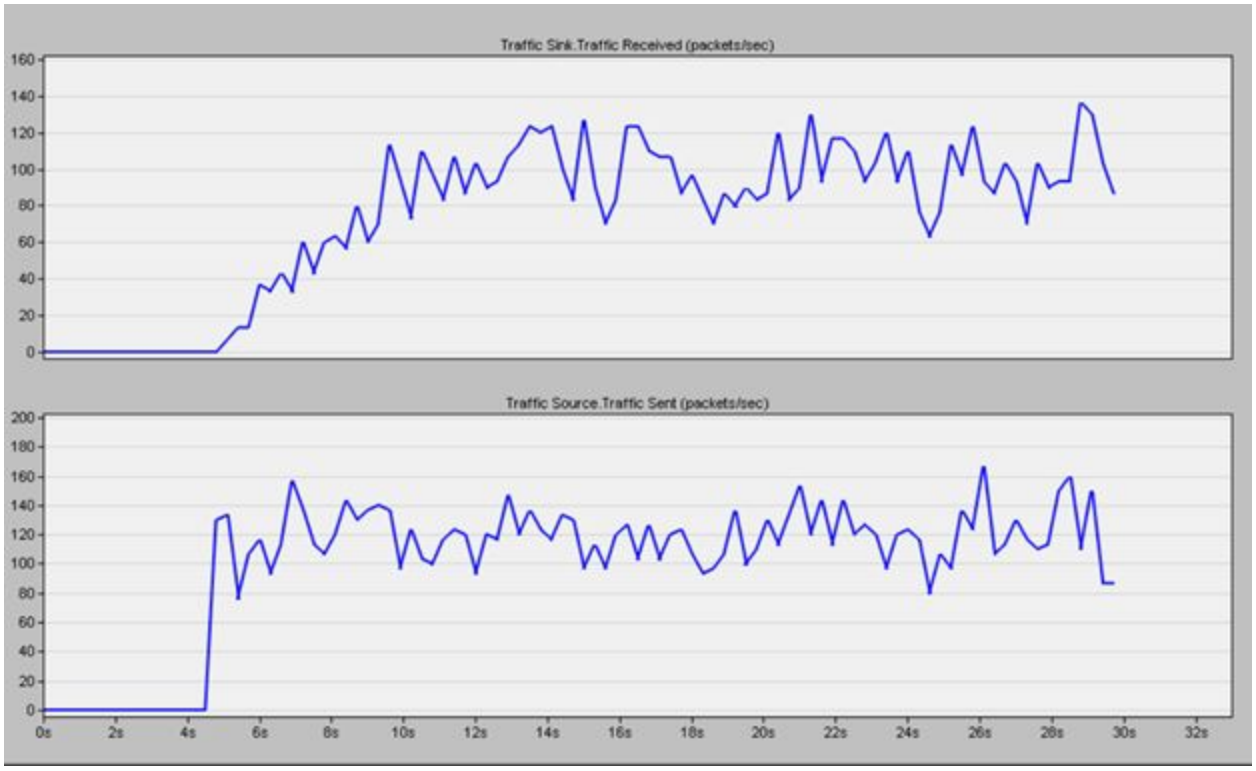

Exponential (2)



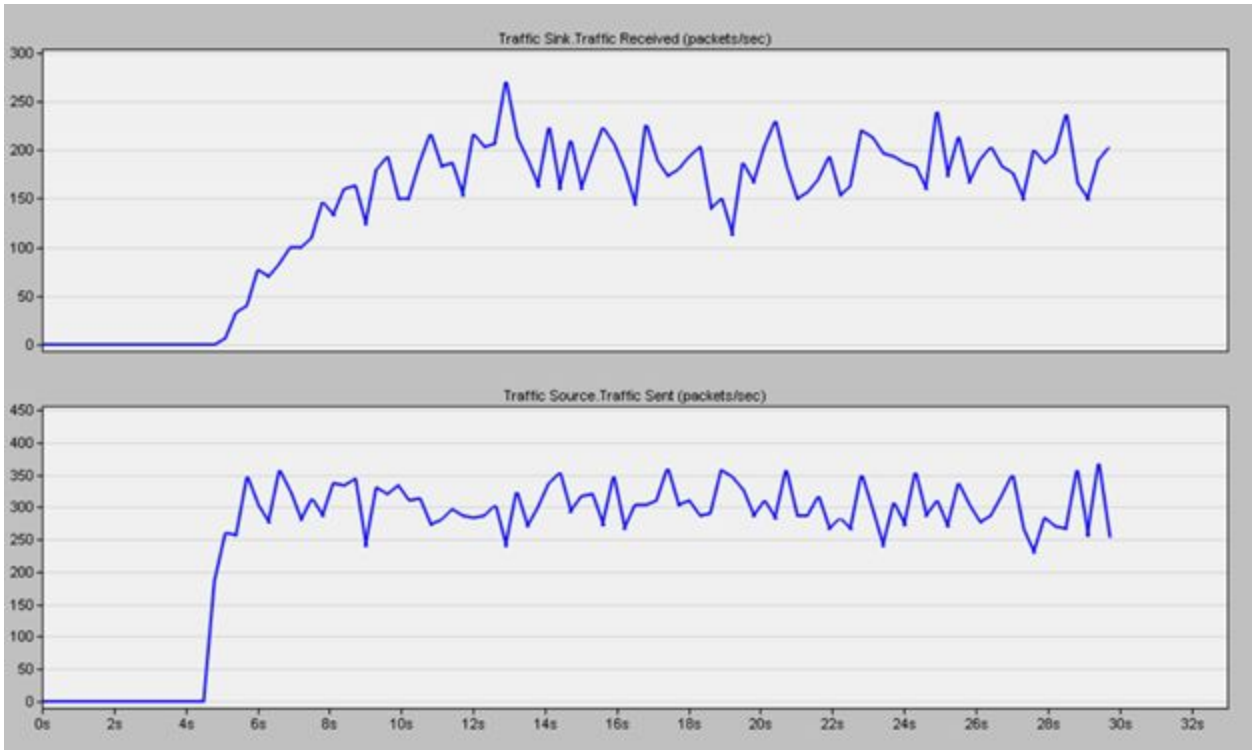

Exponential(1)



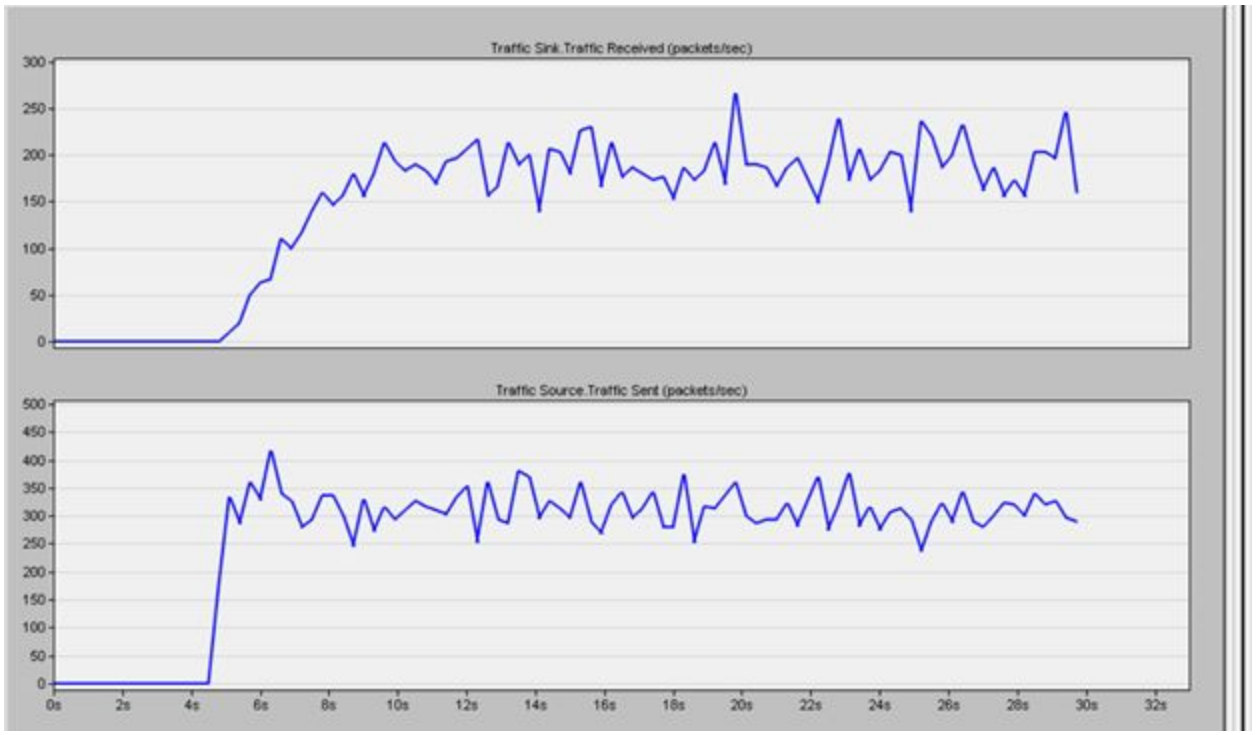
Exponential(0.5)



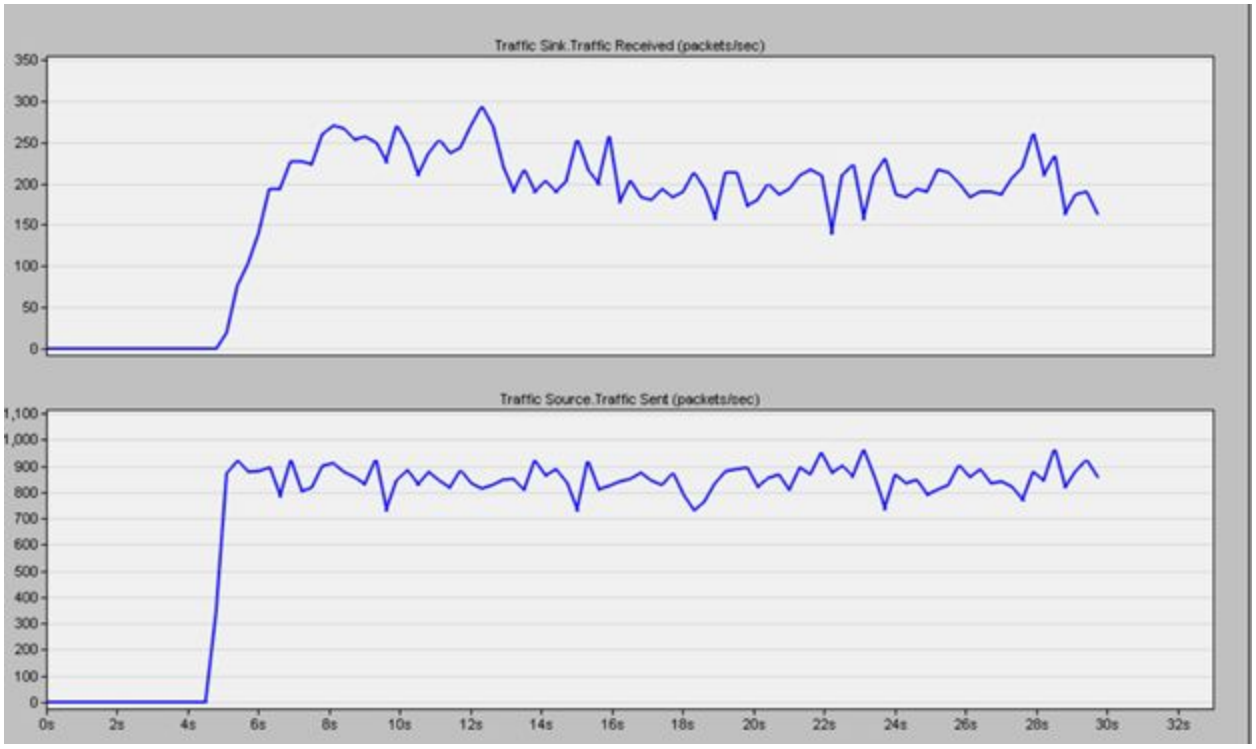

Exponential(0.025)



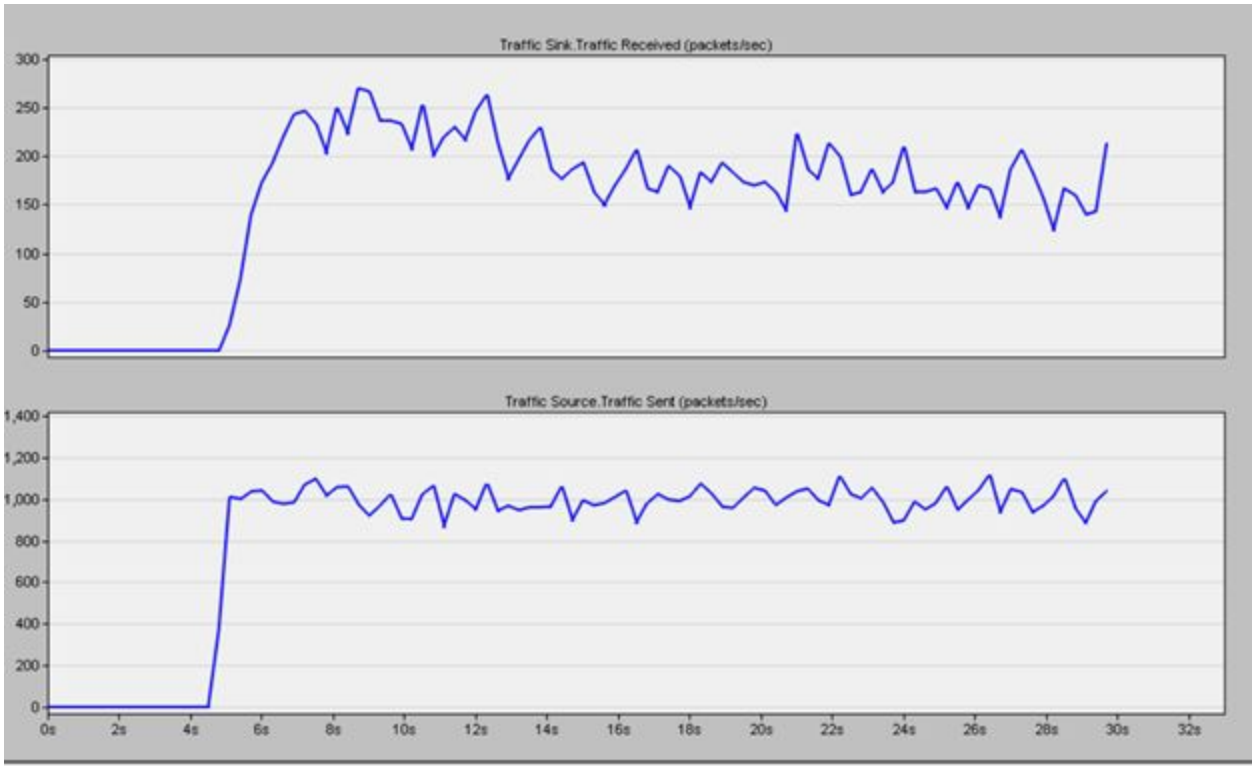

Exponential(0.1)



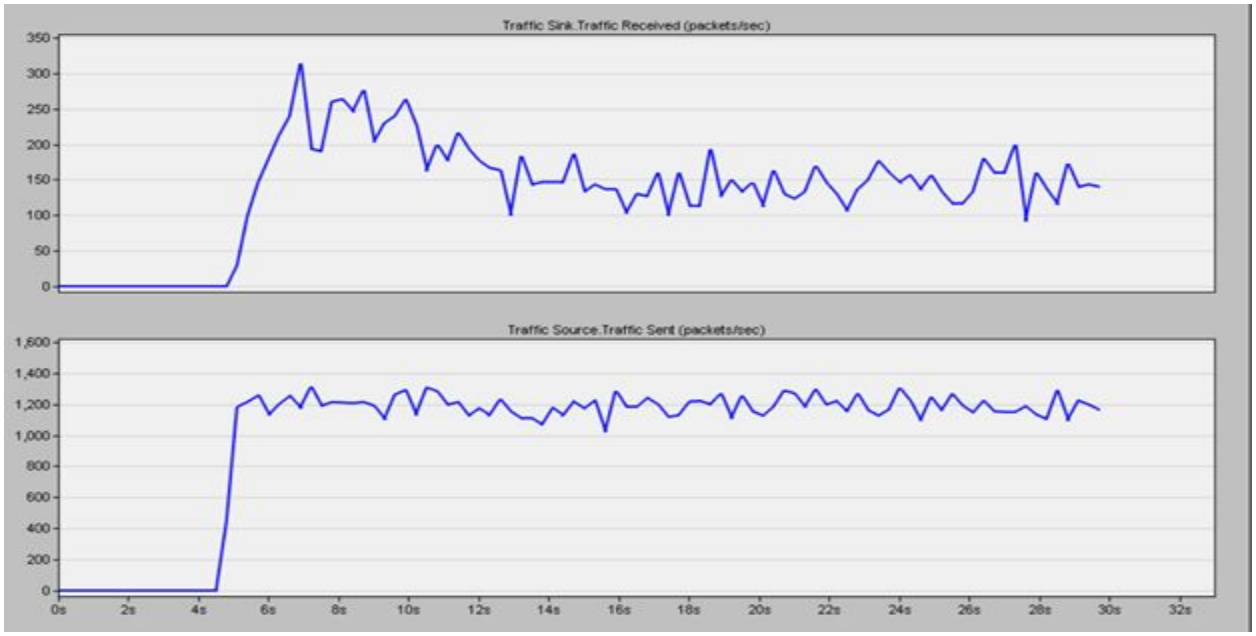
Exponential(0.05)



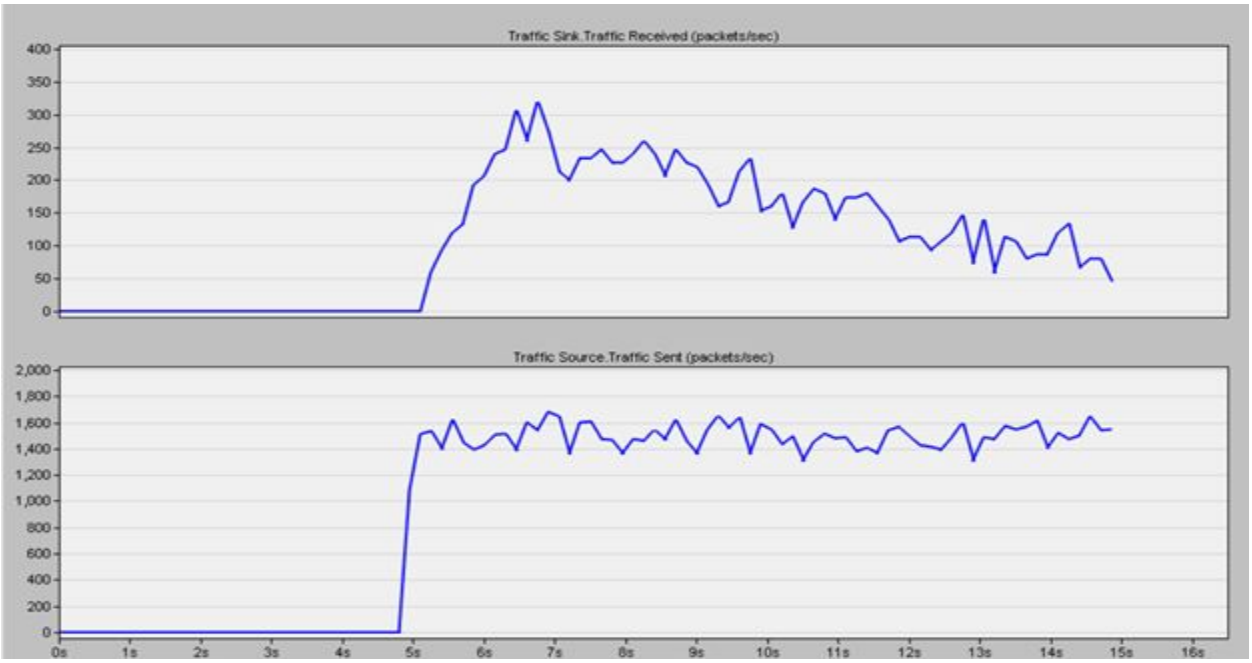

Exponential(0.035)




Exponential(0.03)

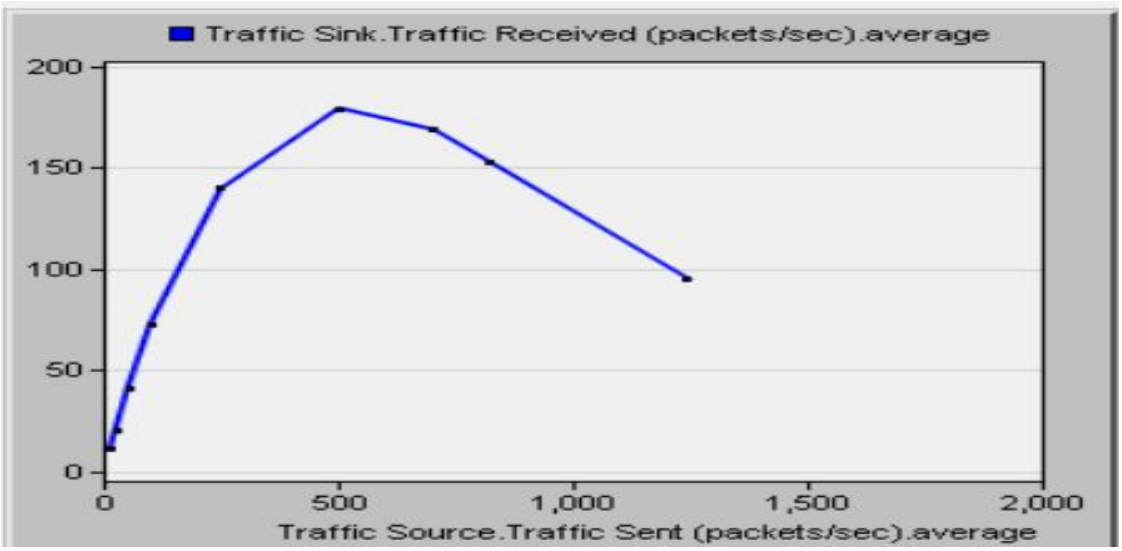



Exponential(0.025)



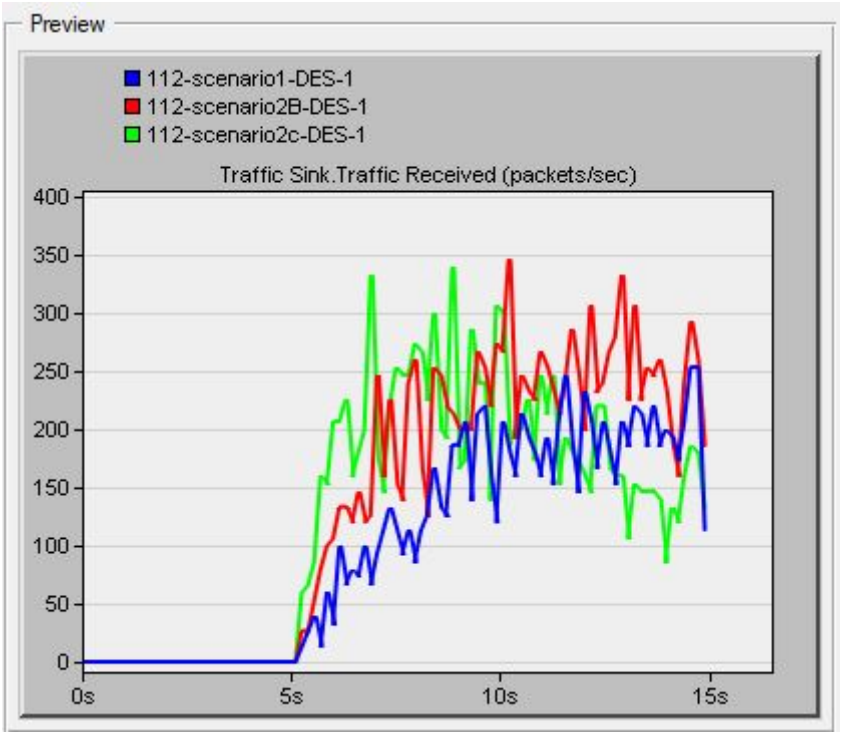

Exponential(0.02)

In the end all scenarios integrated in one graphs and used only scalar value

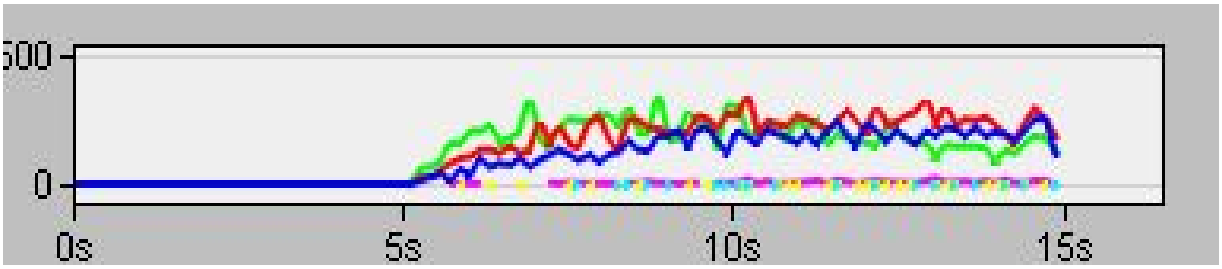


According to the resulting graph the Traffic Received (Throughput) max is reached when the Traffic Sent (load) reaches approximately 500 packets / sec. This happens because of the fact that the network gets overwhelmed as the received packets / sec exceed the value near 500. Thus, even if the load continues to increase, the output declines after it hits the height at 500.

2)




Received traffic overload

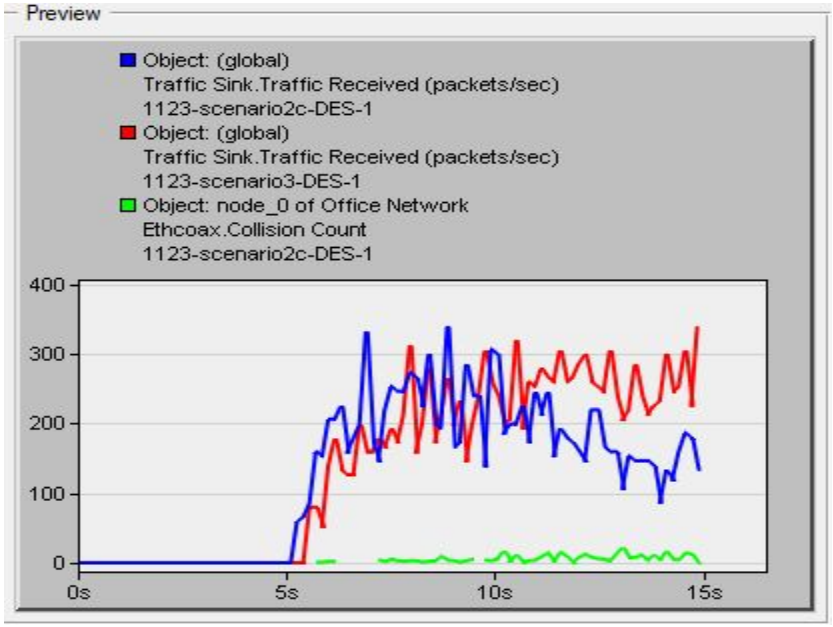



The 0's collision count of three overlaid scenarios.

According to the Received traffic analysis of 3 cases, it can be seen that at the graph's beginning the inter-arrival influences the received packets / sec. However, it can be found that the lowest inter-arrival time has the least number of packets received in the end, with the passing of time. Whereas over time the Coax Q2a and Coax Q2b increase slowly. The Coax Q2b, which is the medium inter-arrival time, has the maximum received packets / sec at the top.

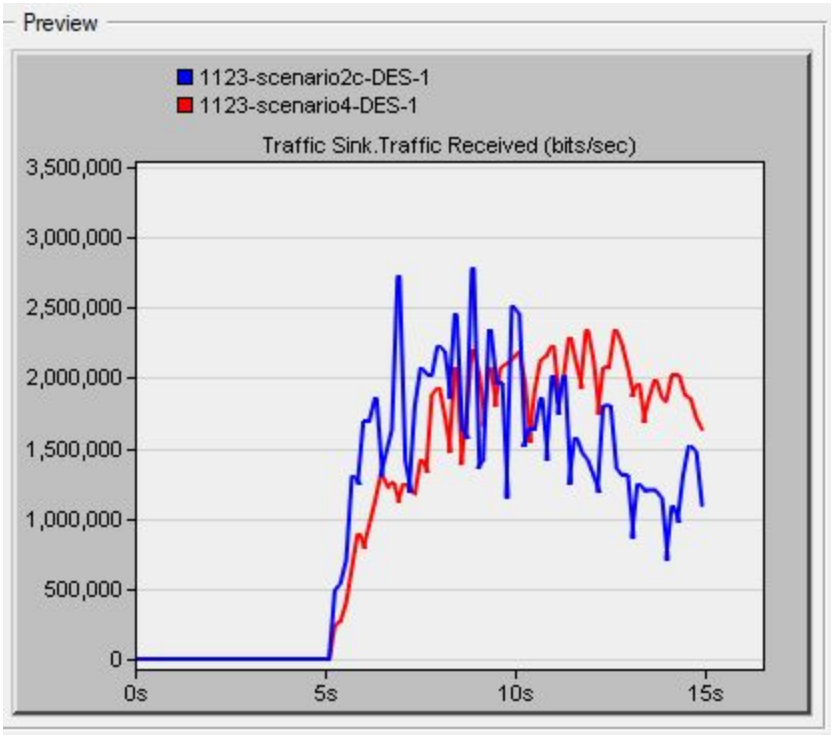
From the graph observation it can be shown that the greater the time of inter-arrival, the smaller the number of collisions of 0 is.

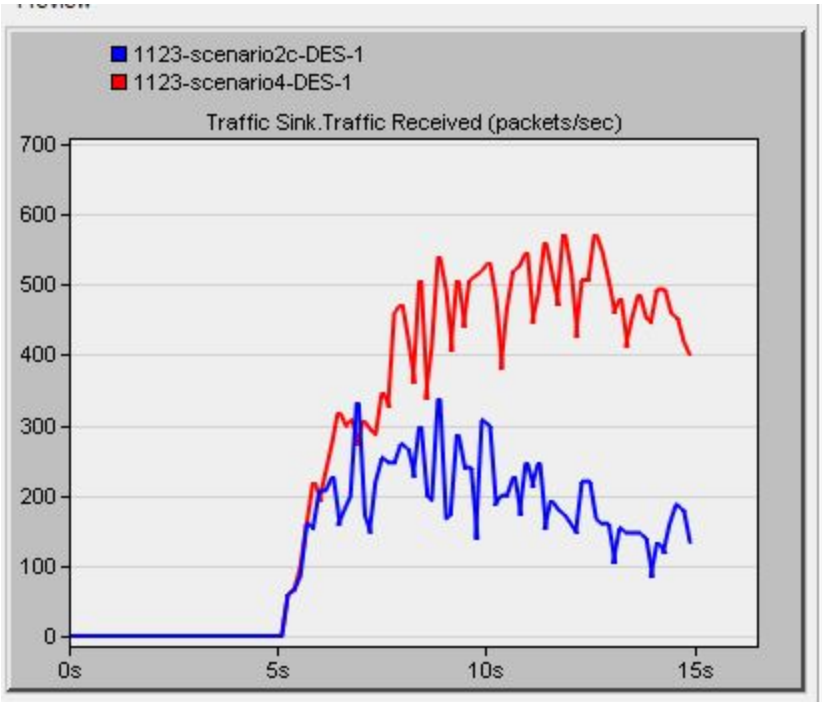
3)



We can consider that in the beginning less number of notes is worse but in the end traffic received increases. It leads to a smaller number of notes are better.

4)






From the figure it can be seen that the less bits are, the more It collects packets / sec as the time goes by. The same is true of figure 16, or distance as bits / sec. It can also be shown that the obtained bits / sec is remarkably higher at the top of the Q 2c 1 curve. Even better, as the time goes by, the bits obtained become less than the Q4 1 curve. That is because of the fact that the more bytes result in more network collisions.

## Conclusion

To summarize the whole information it was considered the relationship between nodes and traffic received. In addition, it was reviewed in different cases. It was shown node 0's collision. In the end, we can identify the importance of time interval, collision and bytes/sec.