Computer Network Laboratory

Assignment 5

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Class: 3rd year, B.Tech CSE

Course: CSN-361

Github Link: https://github.com/hemant84/CSN-361

Problem Statements:

Problem 1 :

Using OPNET create Bus topology among a set of N computer nodes out of which two nodes are source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network scale as the “campus” of area 1km x 1km.

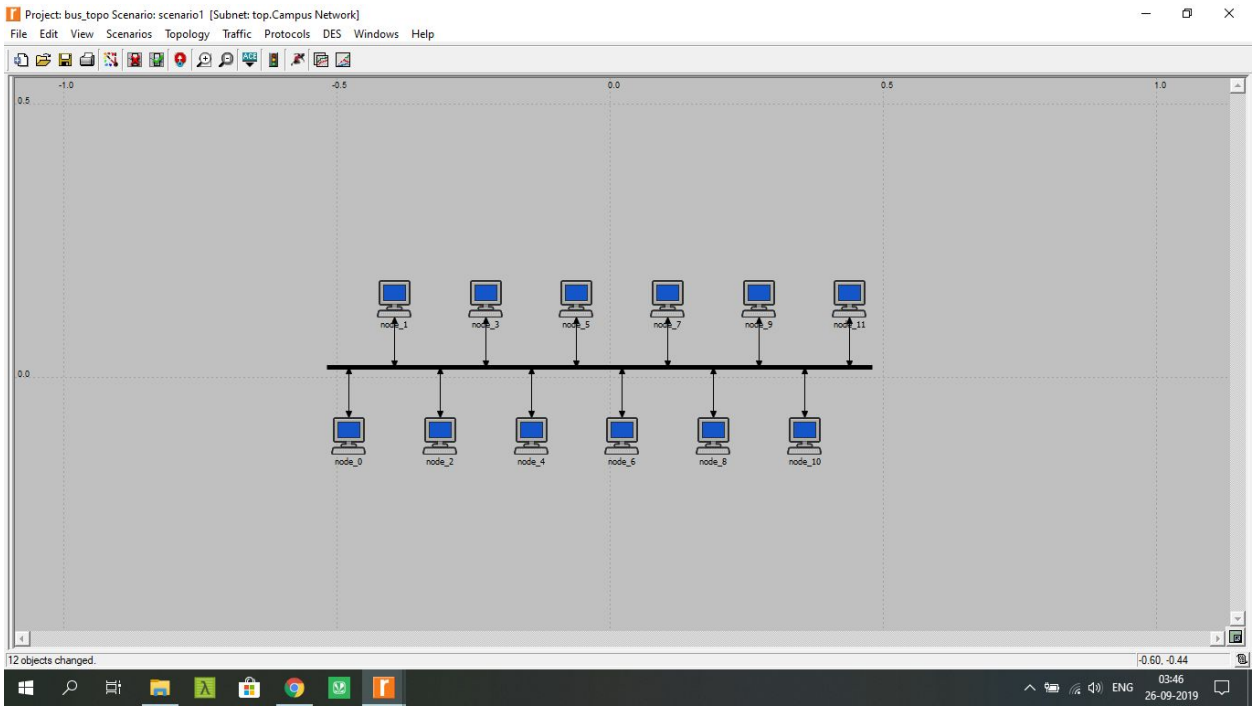
I have used the riverbed modeler to simulate the nodes and links between and shown the data transfer statistics. Here we have 12 nodes connected via bus. Node_0 and Node_1 are the source nodes and rest are sinks.

Algorithms used :

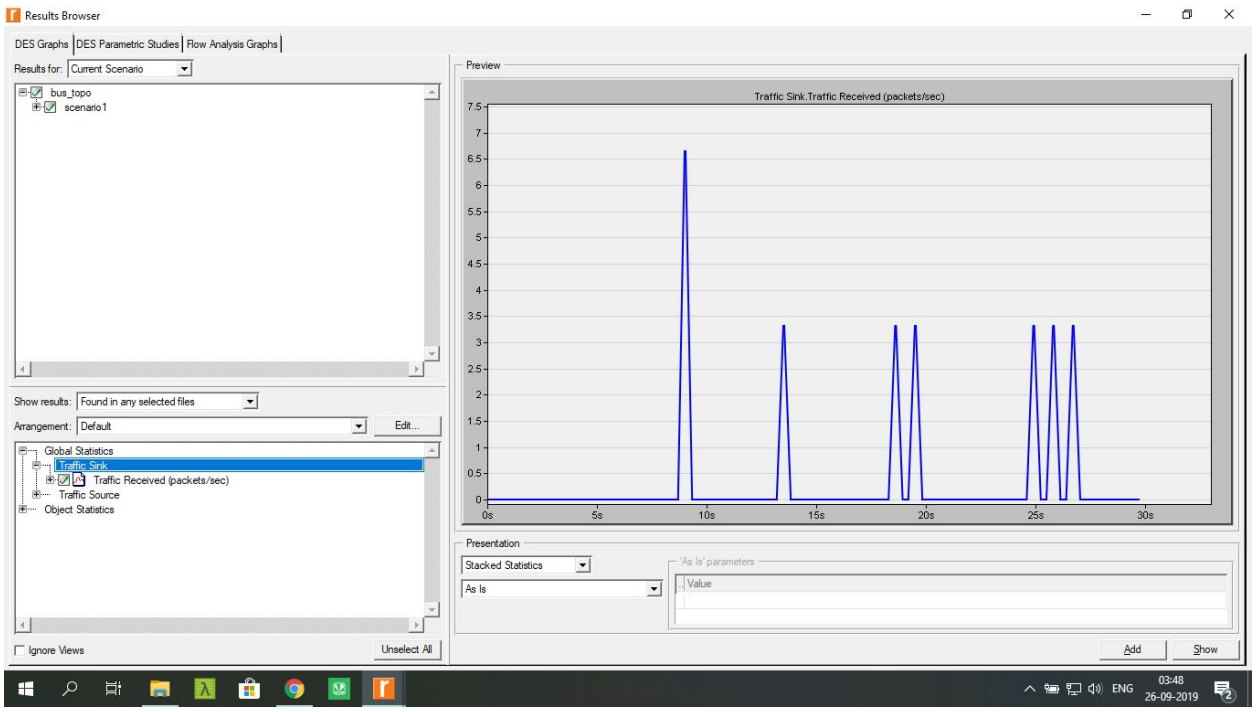
1. **Node:** Denotes the systems which are interacting through the network and we have used **ethcoax_station** model to implement them.
2. **Bus:** Denotes the link through which data is transferred between any two nodes in the network. We have used **eth_coax** model to implement the links.

Screenshot :

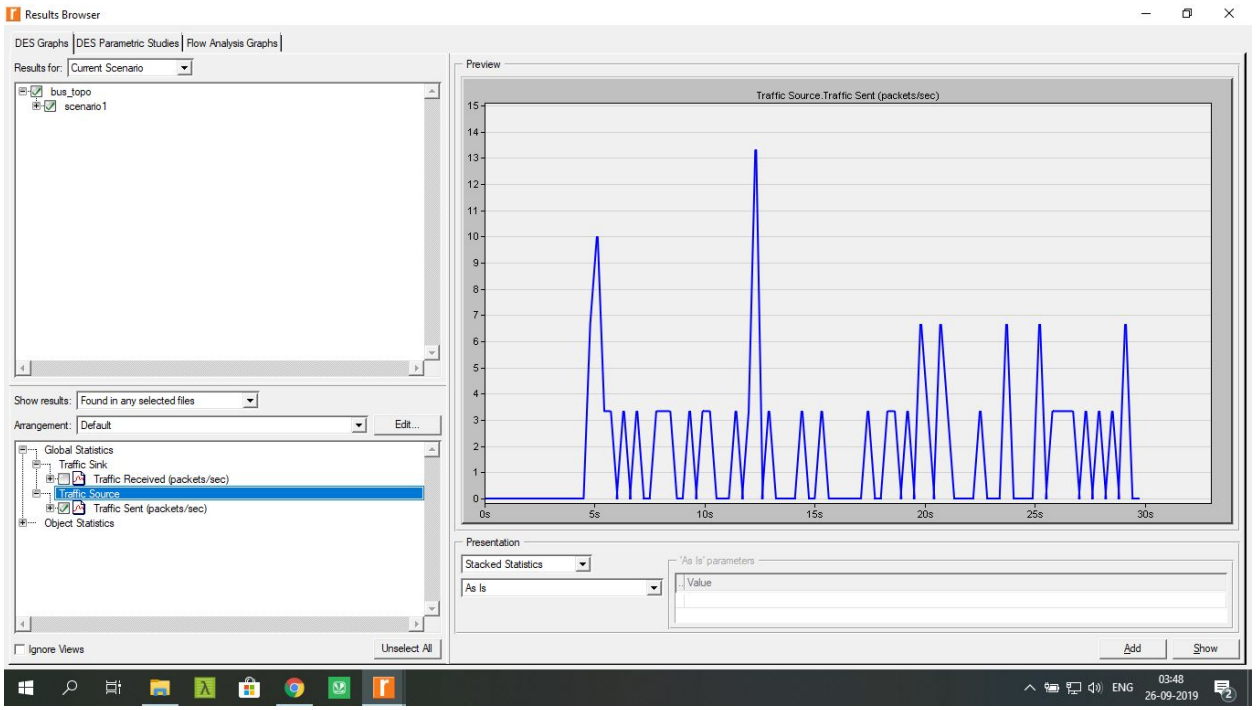
Simulation of the bus topology with 10 nodes:



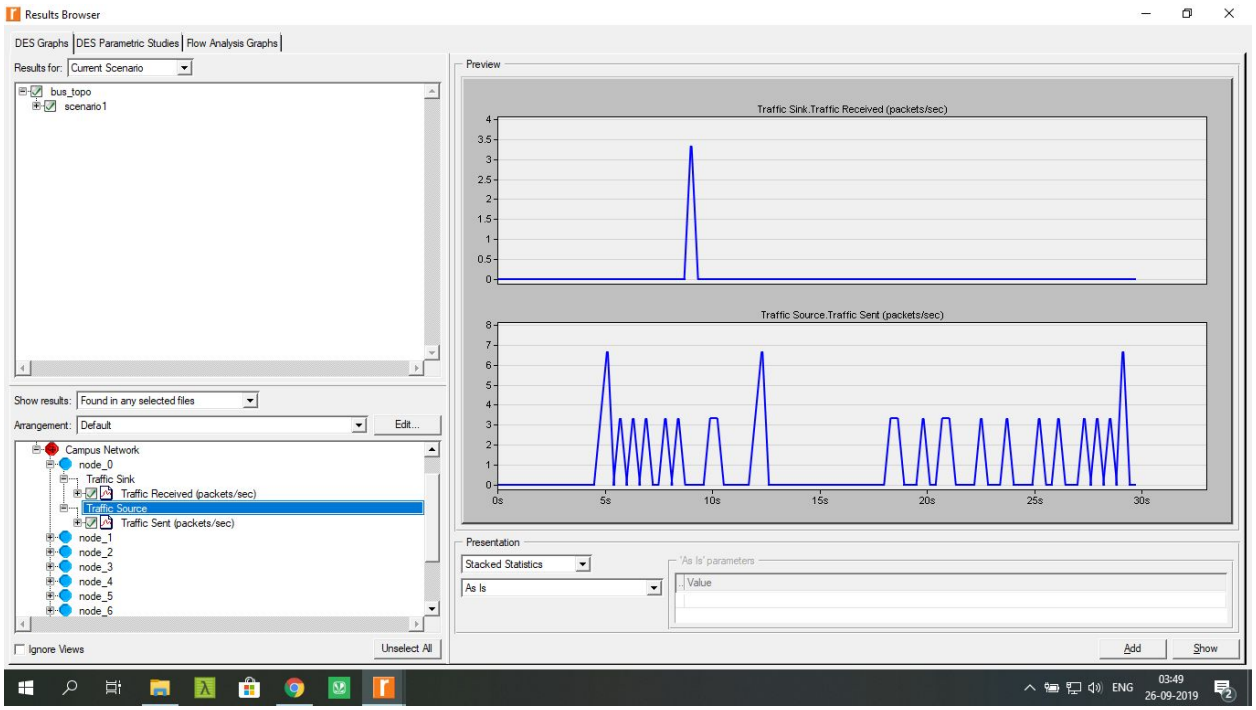
Overall packets received per second:



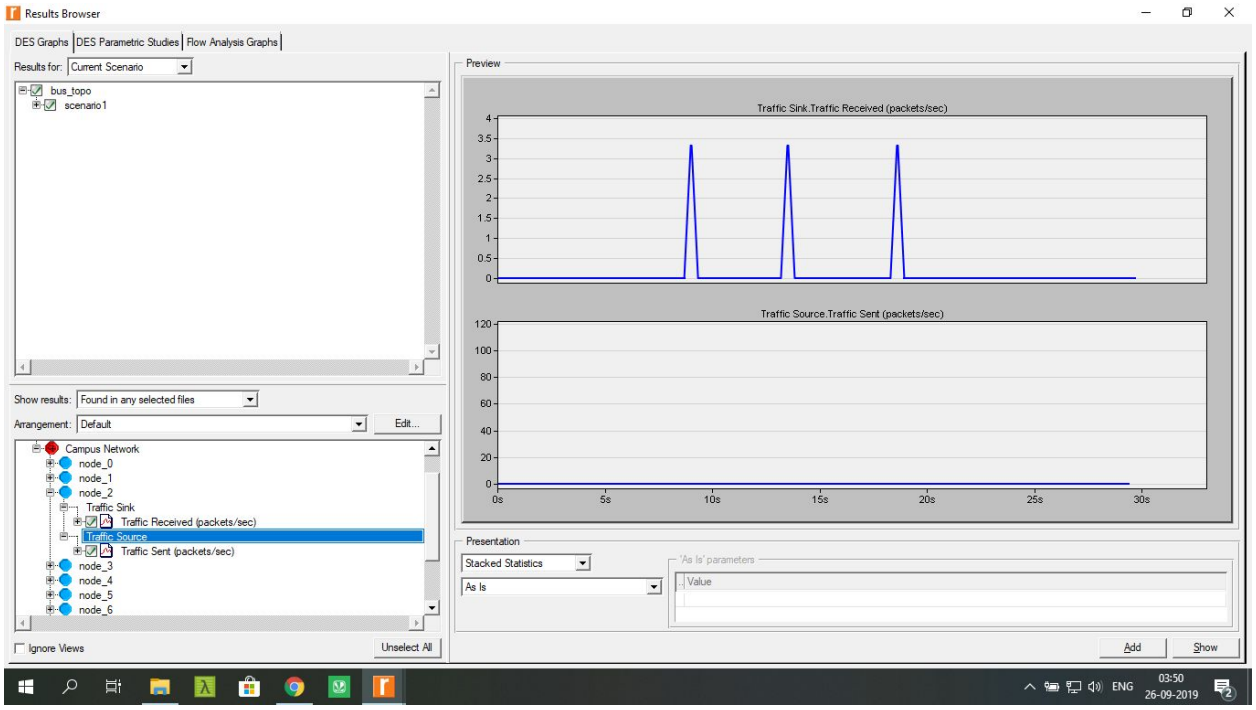
Overall packets sent per second:



For node_0(a source), packets received and sent per second:



For node_2(a sink), packets received and sent (0) per second:



Problem 2 :

Using OPNET create Star topology among a set of N computer nodes out of which one node is source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network scale as the “campus” of area 1km x 1km.

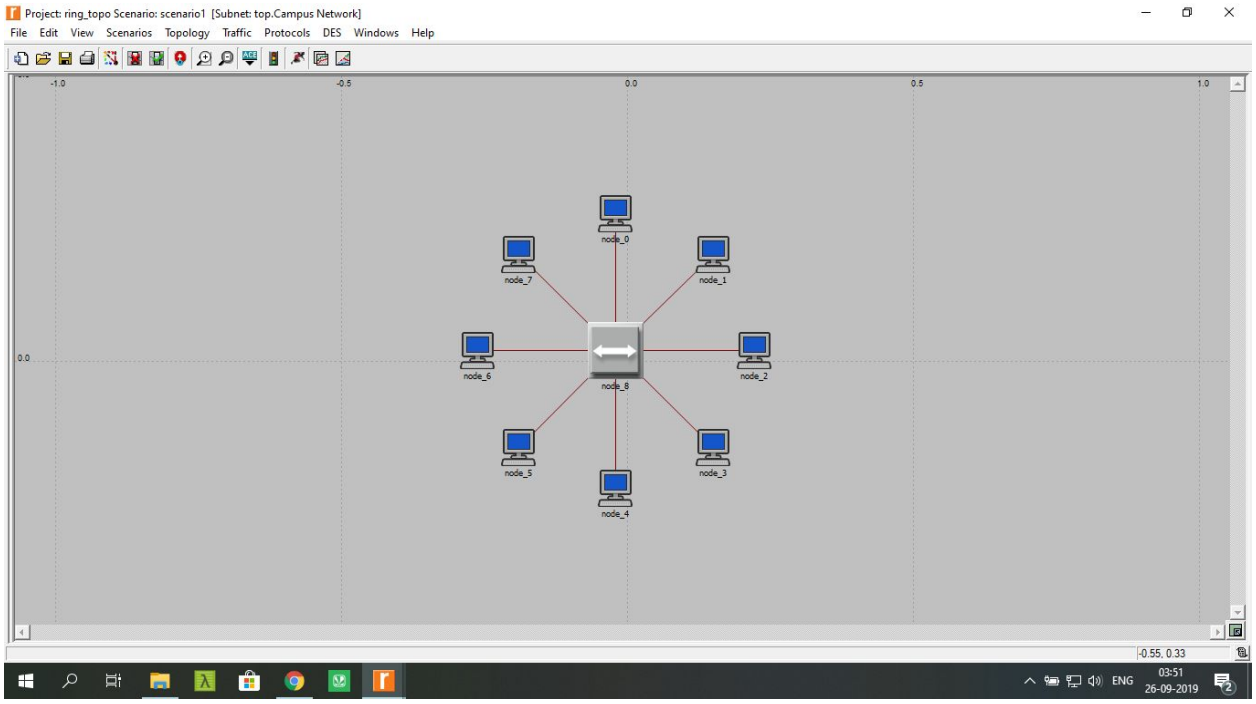
I have used the riverbed modeler to simulate the nodes and links between and shown the data transfer statistics. Here we have 8 peripheral nodes and a central node. Node_0 is the source node and rest are sinks.

Algorithms used :

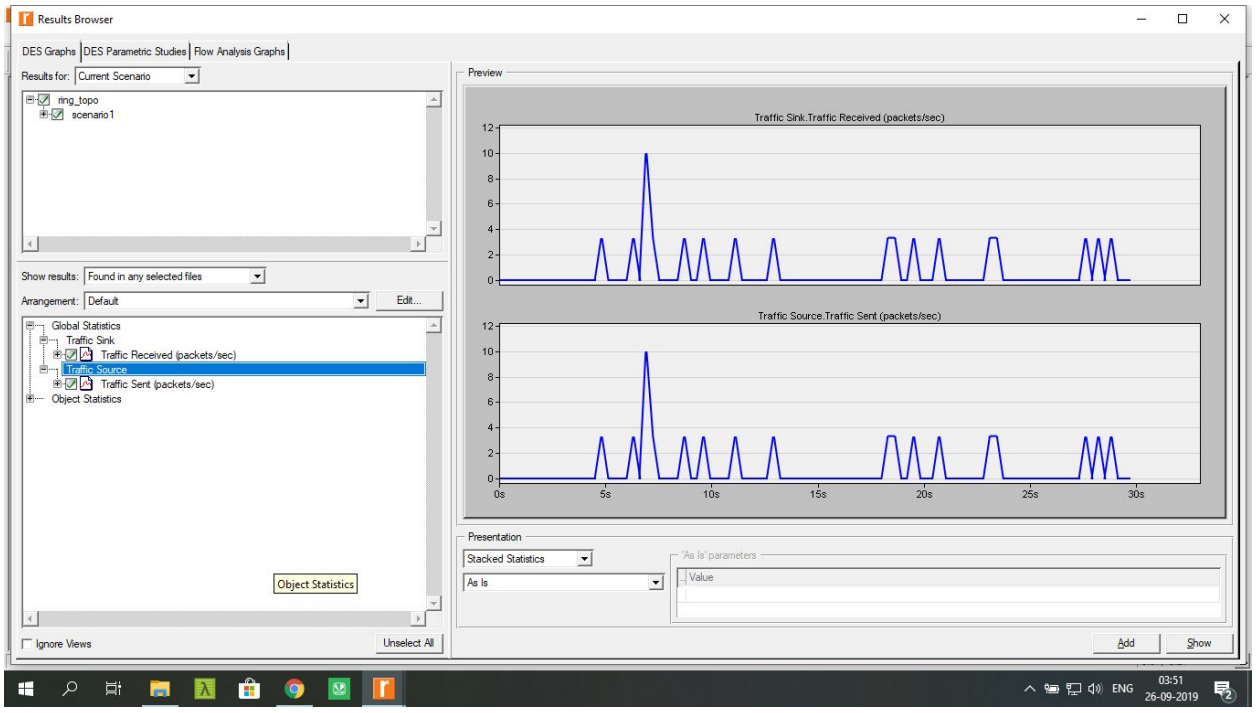
- **Node:** Denotes the systems which are interacting through the network and we have used **ethernet16_hub** and **ethernet_station** to implement central node and periphery node respectively.
- **Link:** Denotes the connection between the nodes and we have implemented it through **10BaseT** model.

Screenshot :

Star topology implementation :

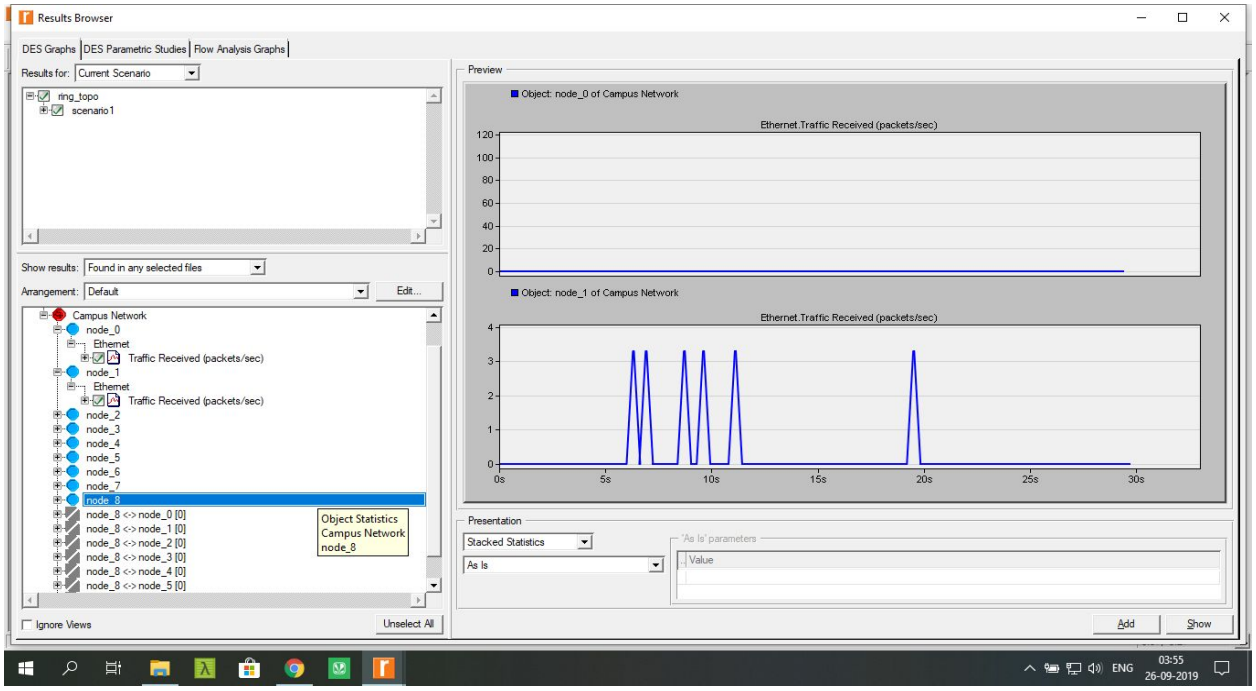


Overall data received and sent per second:



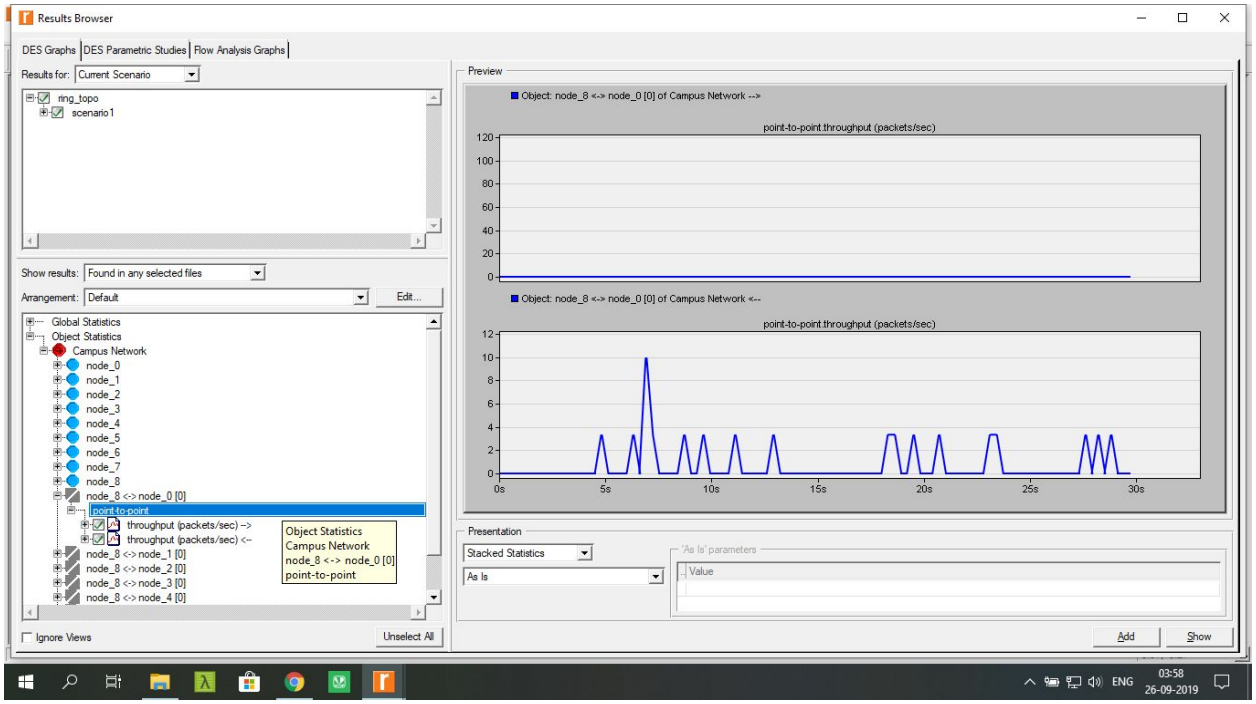
STATISTICS FOR NODES:

Node_0 is a source so traffic received is 0 and Node_1 being a sink is receiving packets:



STATISTICS FOR A LINK:

Point to point throughput of the link node_0 to node_8:



Traffic received for the link node_0 to node_8 in packets per second: