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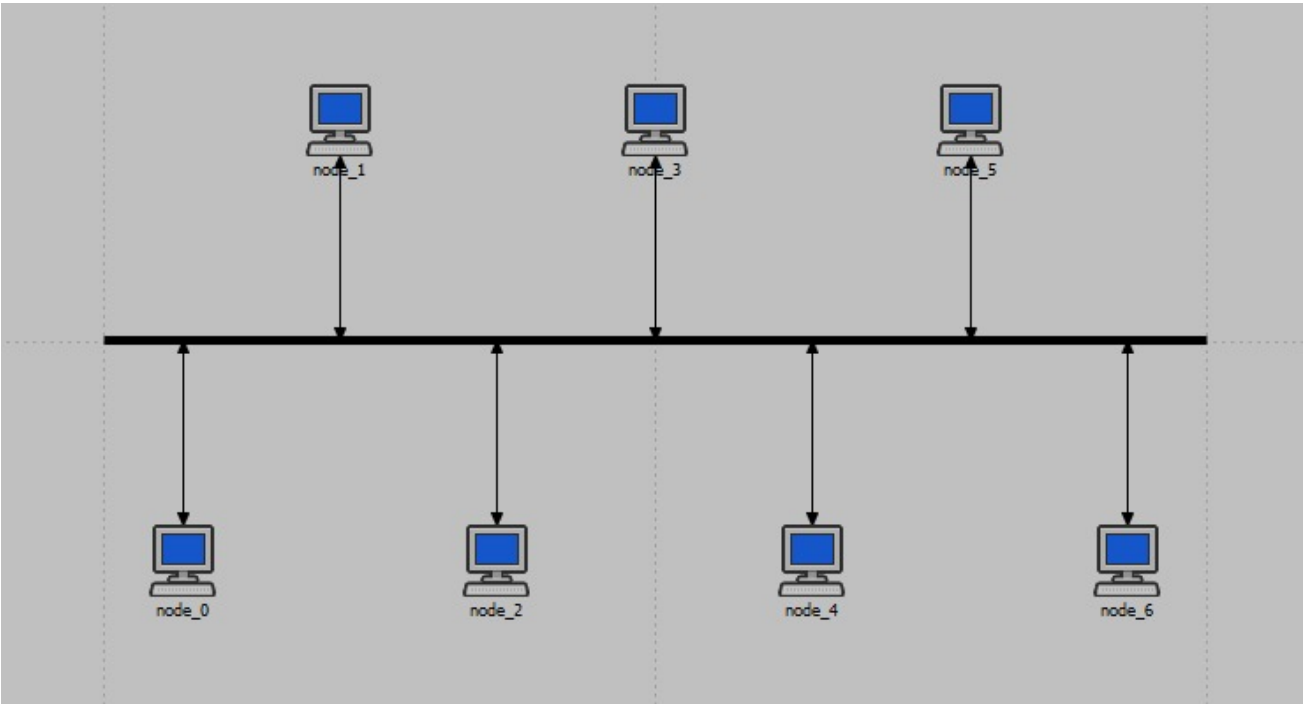
Lab Assignment 5

This assignment aims to make us familiar with the hardware and software aspects of computer networking.

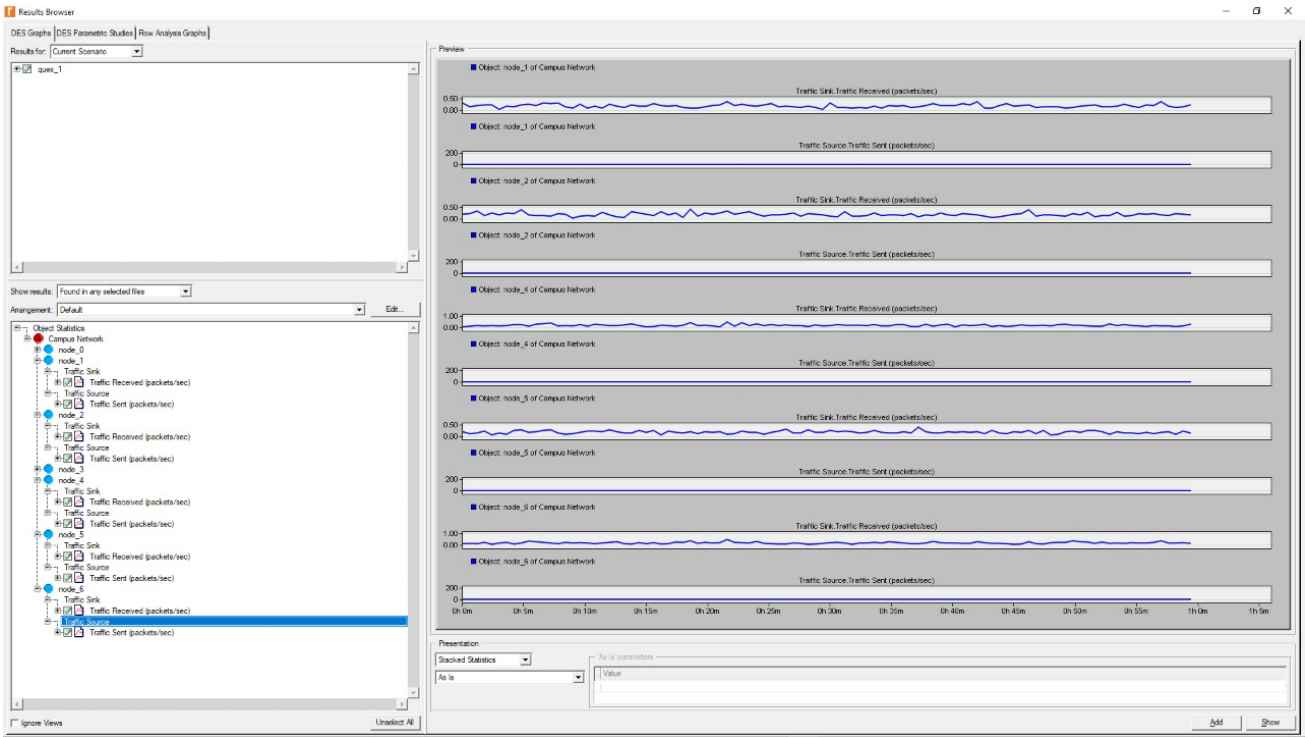
Problem Statement 1

Q: 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.

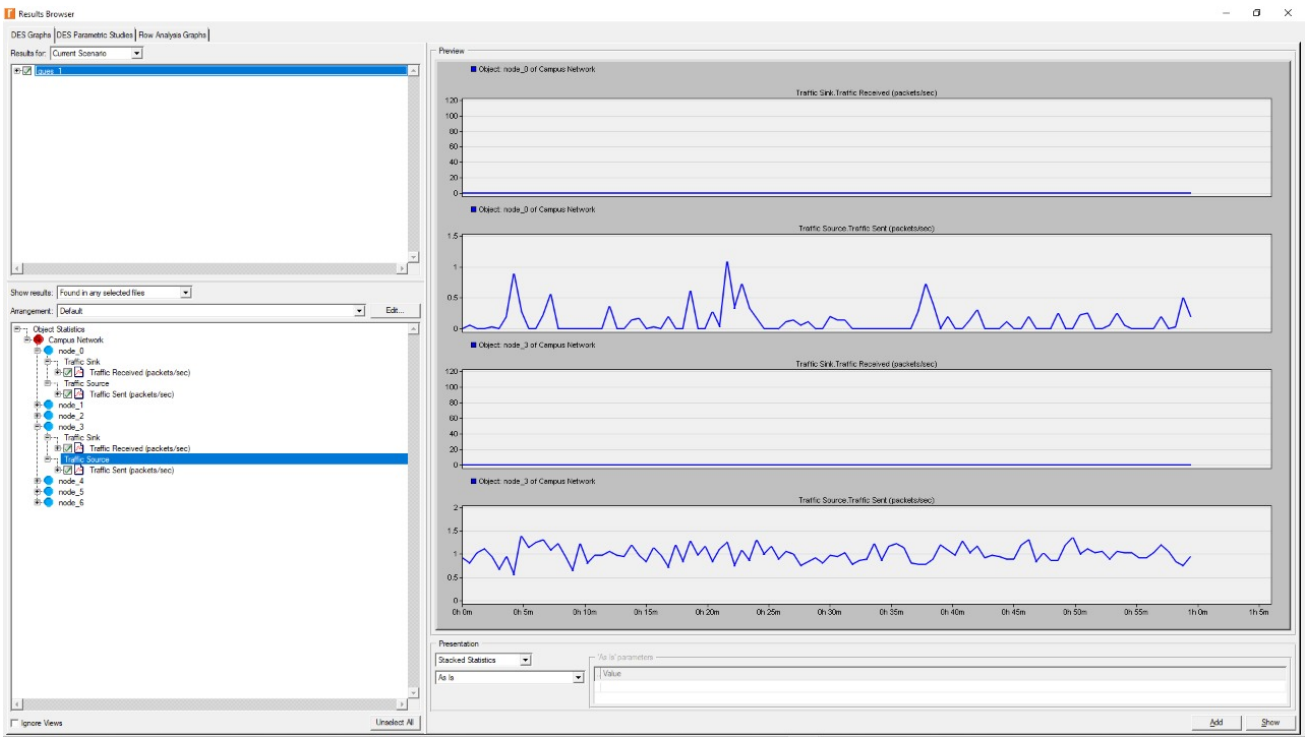
Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network scale as the “campus” of area 1km x 1km.



(Fig 1. Bus Topology with 7 nodes with node_0 and node_3 as source nodes and others as sink nodes)



(Fig 2. Graphs for sink nodes showing no transmission)



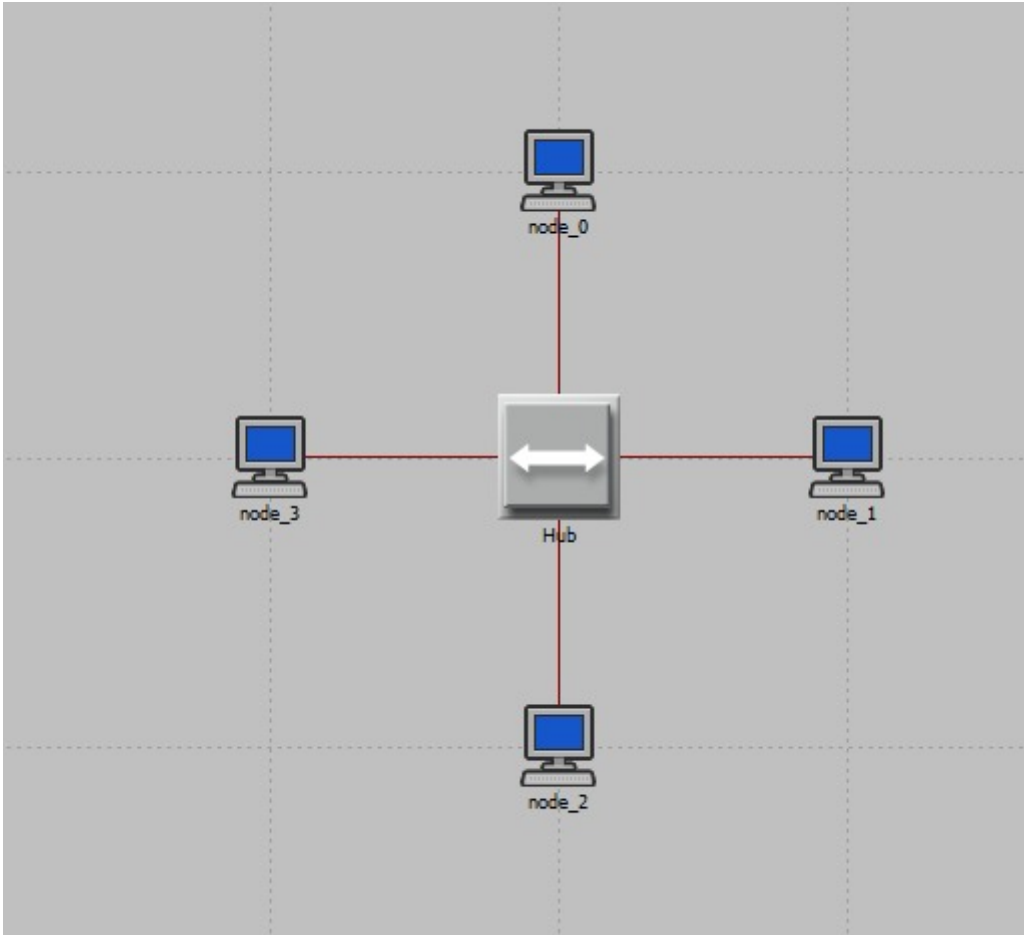
(Fig 3. Graphs of source nodes showing data transmission)

Fig 1 shows the Bus Topology designed using the Riverbed modeler. The tap line corresponding to node_0 and node_3 are modified such that they can only transmit data and not receive any. This implies that node_0 and node_3 will act as source nodes, transmitting data over the bus. Other nodes have edited attribute wrt “Traffic Generation Parameters” where packet start time is edited to “never” implying that packets will never be generated at these nodes. This makes sure that these nodes are sink nodes i.e. only receiving data and not transmitting any. Thus the complete topology works as described in the question with adequate transmission and received graphs attached in Fig 2 and Fig 3.

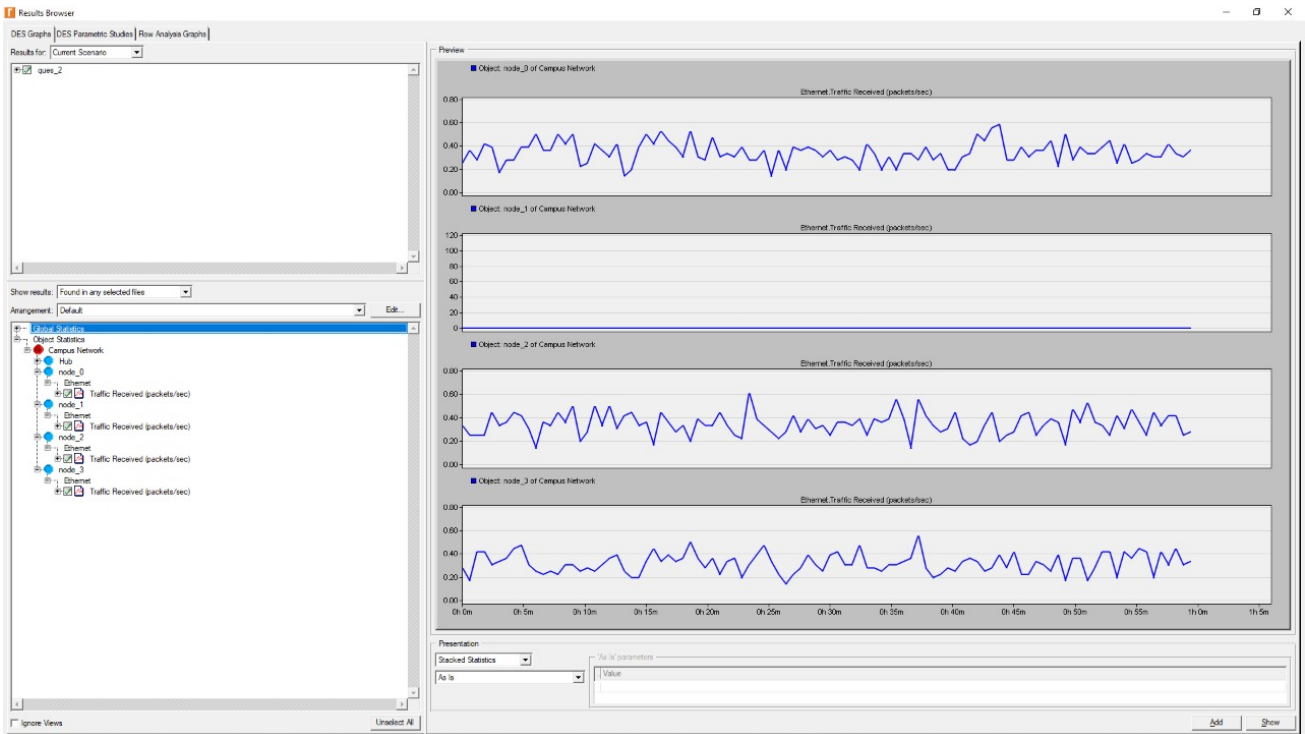
The graphs shown are prepared with exponential generation of packets at 1.0s where each packet size is 1024 bits. The graphs were simulated for a total run time of 1 hr.

Problem Statement 2

Q: 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.



(Fig 4. Star Topology with node_1 as source and others as sink)



(Fig 5. Shows traffic through the hub and traffic received at individual nodes)

Fig 4 shows the Star Topology designed using Riverbed modeler. Node 0, 2 and 3 have edited attribute wrt “Traffic Generation Parameters” where packet start time is edited to “never” implying that packets will never be generated at these nodes. This implies that packets created at Node 1 are the only ones transmitted through the channel. Thus Node 1 acts as a source node and other nodes acts as a sink node. Thus the complete topology works as described in the question with adequate transmission and received graphs attached in Fig 5.

The graphs shown are prepared with exponential generation of packets at 1.0s where each packet size is 1024 bits. The graphs were simulated for a total run time of 30min.