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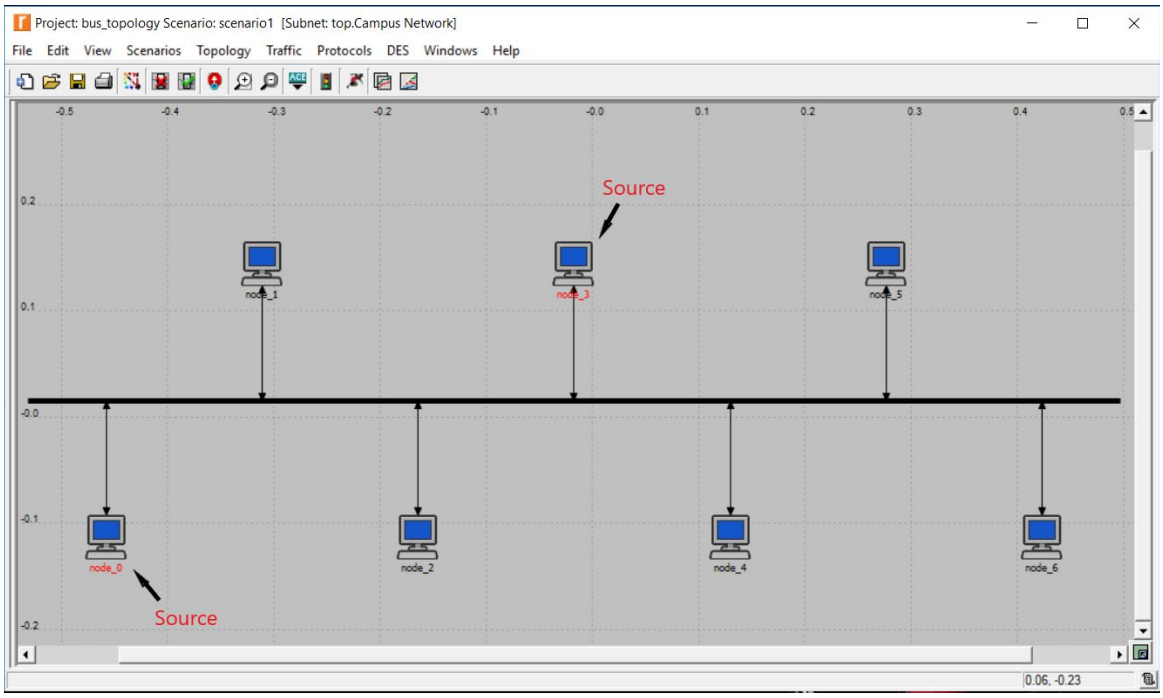
Assignment 5

26th September 2019

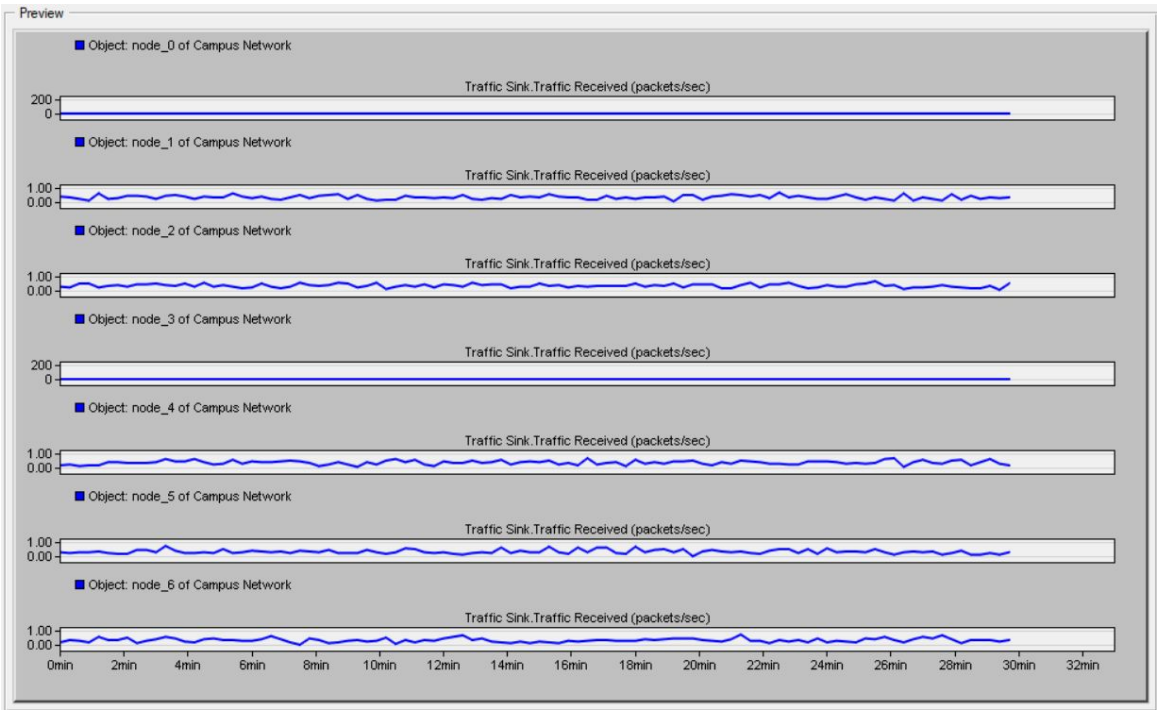
1. Using OPNET creates **Bus** topology among a set of N computer nodes out of which two nodes are the source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network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

   We set nodes 0 & 3 as our sources (send but do not receive) and the remaining as sinks (receive but do not send). We track parameters ‘Traffic received’ and ‘Traffic transmitted’ during our simulation and run the network for a duration of 30 minutes.

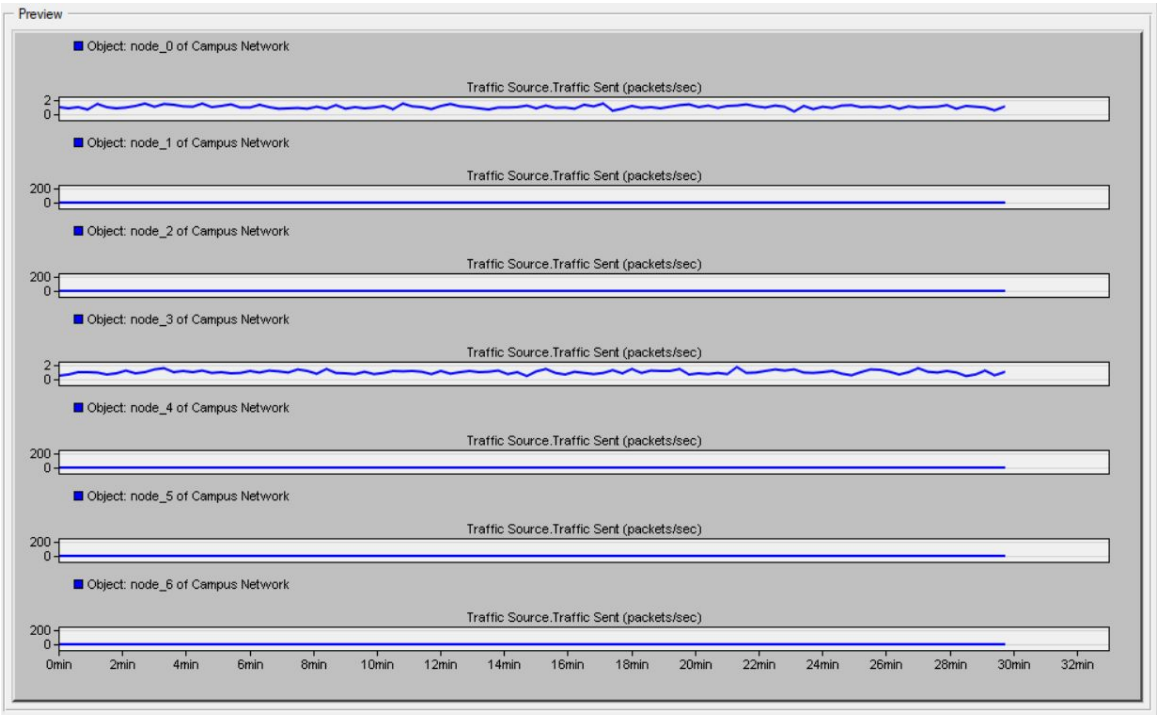


   Results for all nodes for both the parameters are as mentioned below.

   Traffic Received: Since n0 and n3 are the source, they do not receive any packets and the remaining nodes receive packets as shown in the plots.

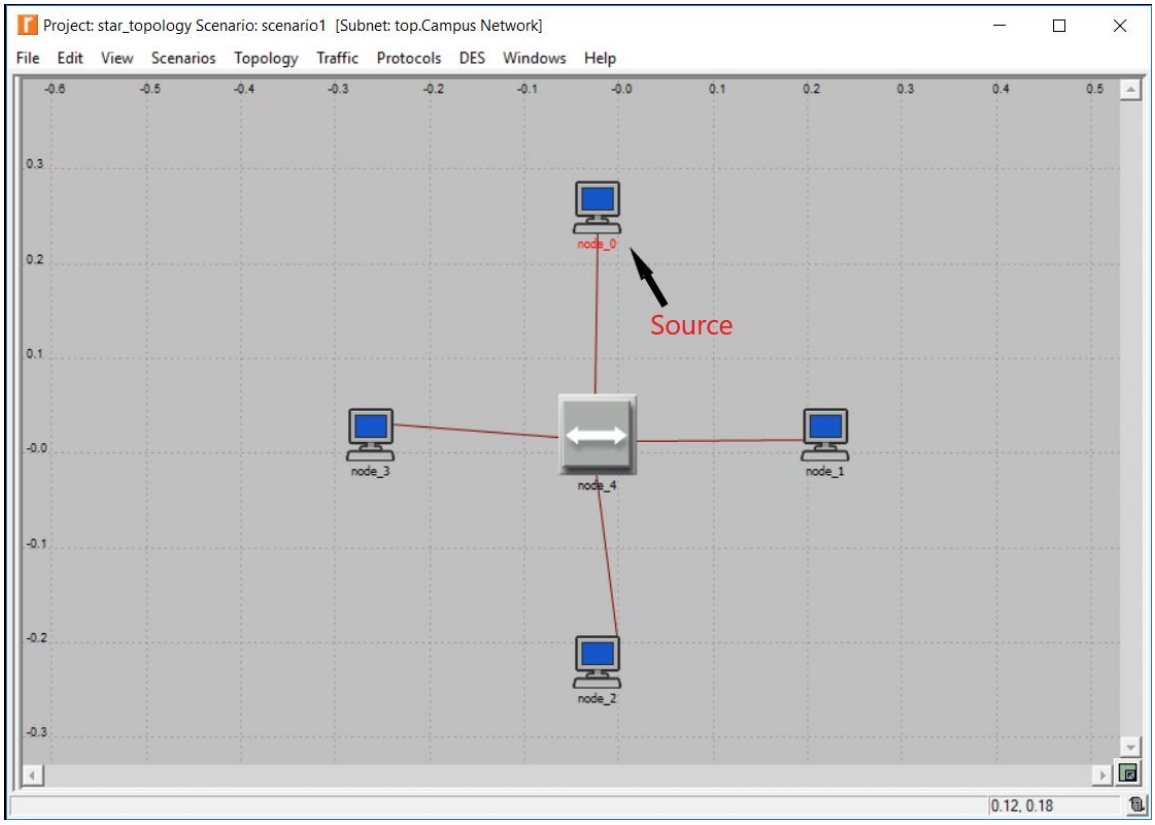


Traffic Sent: As expected, n0 and n3 are the only 2 nodes transmitting traffic and the remaining nodes (sinks) do not transmit any traffic.

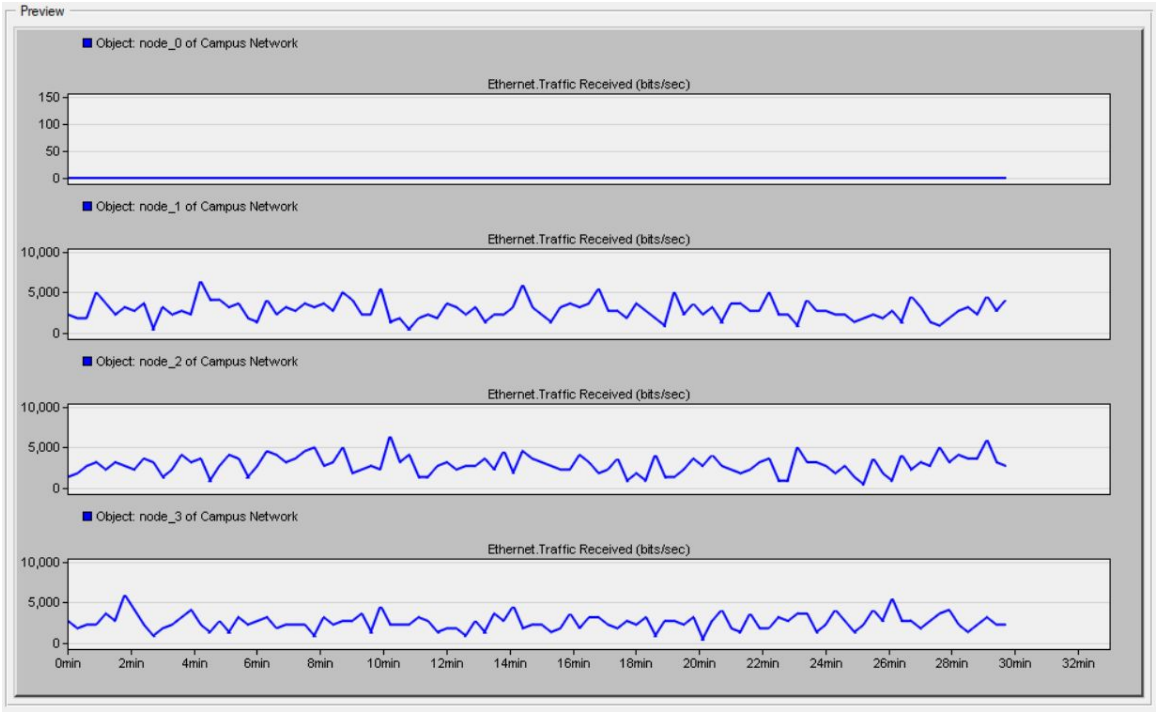


2. Using OPNET creates **Star** topology among a set of N computer nodes out of which one node is the source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network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

We set node 0 as the only source and the remaining nodes as a sink (by setting their Start time traffic parameter to ‘Never’) and run the network simulation for 30 minutes.



We select the central node as an ethernet_hub and set the remaining as ethernet_stations. The hub doesn’t redirect traffic to the sender. We track the parameters ‘Traffic received’ and ‘Traffic forwarded’ during the simulation. Only the central node shows a non-linear graph for traffic-forwarded, as expected. As we can see in the plots of Traffic-Received, all nodes except the sender/source receive traffic thus successfully playing the roles of network sinks.


Preview
Object: node_0 of Campus Network
Ethernet.Traffic Received (bits/sec)
150
100
50
0
Object: node_1 of Campus Network
Ethernet.Traffic Received (bits/sec)
10,000
5,000
0
Object: node_2 of Campus Network
Ethernet.Traffic Received (bits/sec)
10,000
5,000
0
Object: node_3 of Campus Network
Ethernet.Traffic Received (bits/sec)
10,000
5,000
0
0min
2min
4min
6min
8min
10min
12min
14min
16min
18min
20min
22min
24min
26min
28min
30min
32min