

Experiment 2

Network Topologies

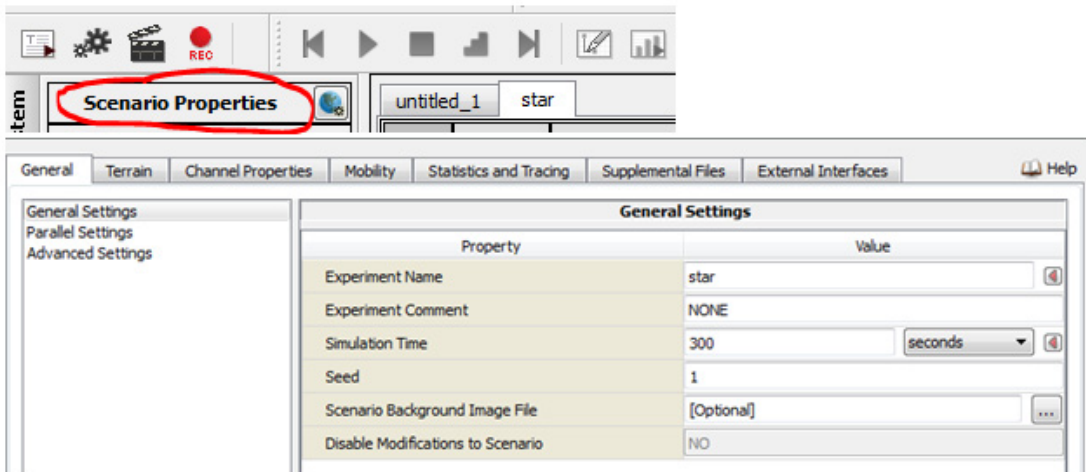
Objective: To Simulate and compare the performance of network with different topologies such as Star, Ring and Mesh.

A) Star Topology

Procedure: Go to file → New → Save as → star

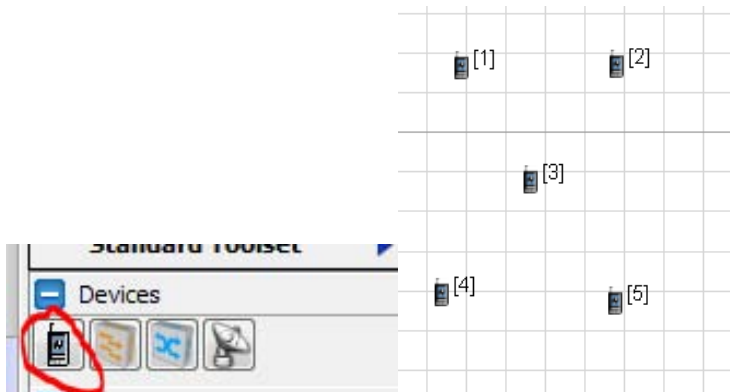
Go to Scenario Properties → General Setting → Give experiment name and simulation time

Click Apply, Ok

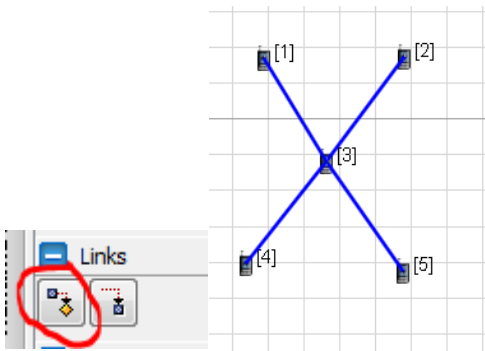


Keep the default value in other fields
Apply and click ok.

Step 1: Placing the nodes, click on the device and place the nodes in the form of star

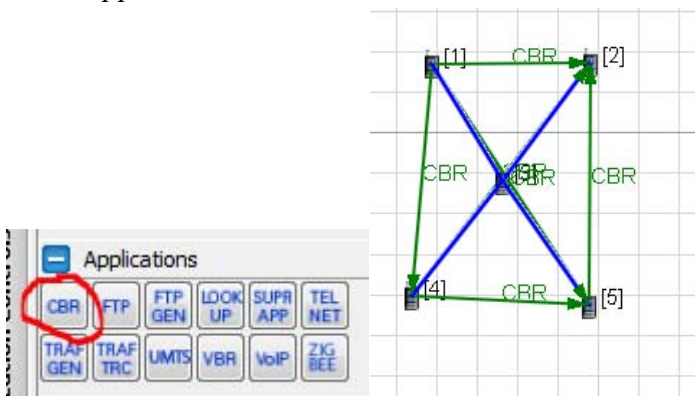


Step 2: Link to all nodes: click on the link and link all the nodes

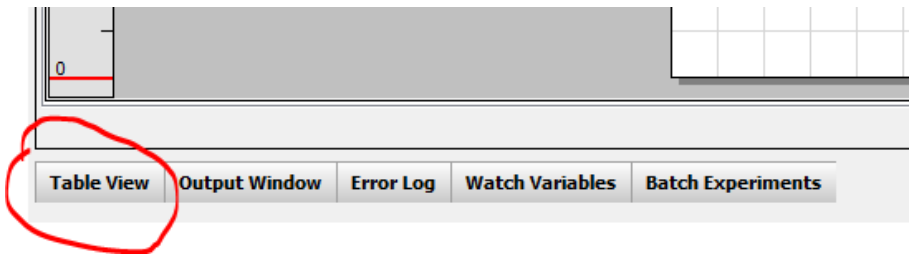


Save the scenarios: click save

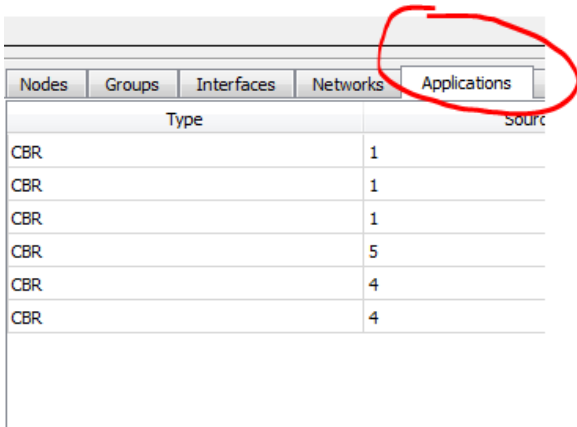
Step 3: Click on the CBR to give traffic between the nodes using CBR application under applications tab



Configure CBR applications: click table view



Click application Tab



Select all the CBR

Nodes	Groups	Interfaces	Networks	Applications	Hierarchies
Type		Source ID		Destination ID	
CBR		1		2	
CBR		1		4	
CBR		1		5	
CBR		5		2	
CBR		4		5	
CBR		4		2	

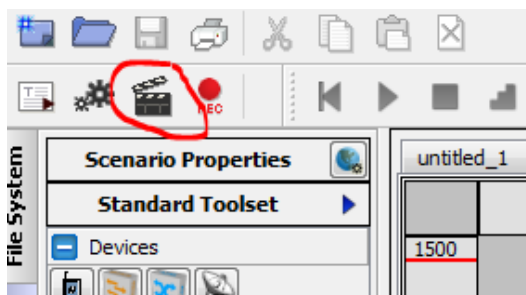
Right click go to properties

General Help

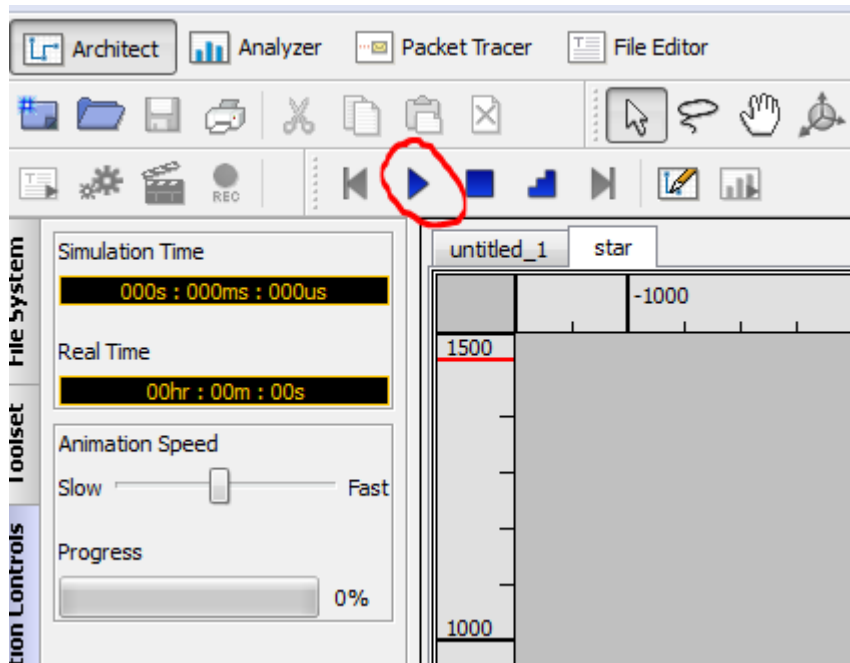
General Properties	
Property	Value
Source	1
Destination	2
Items to Send	100
Item Size (bytes)	512
Interval	1 seconds
Start Time	1 seconds
End Time	25 seconds
[-] Priority	Precedence
Precedence Value	0
Enable RSVP-TE	No
Enable MDP	No
Session Name	[Optional]

Click ok and save the scenario

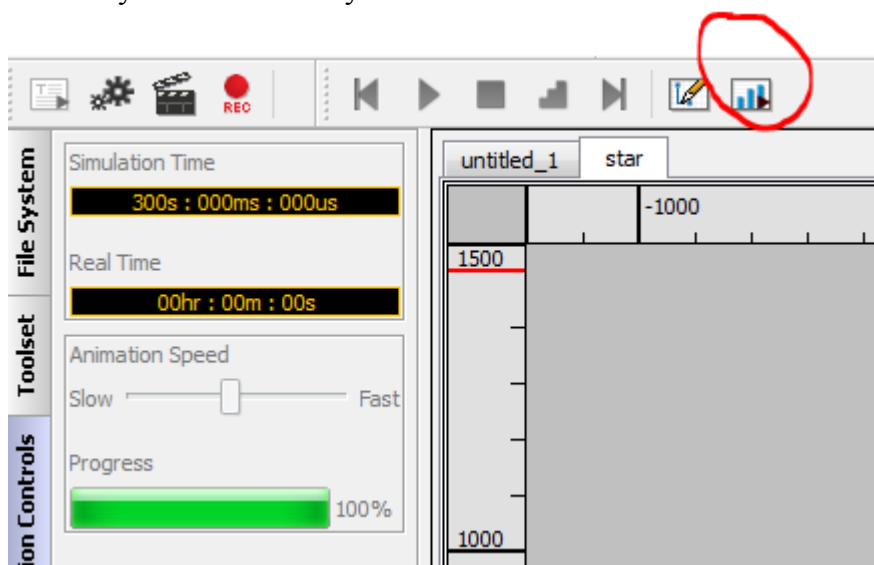
Step 4: Run the simulation

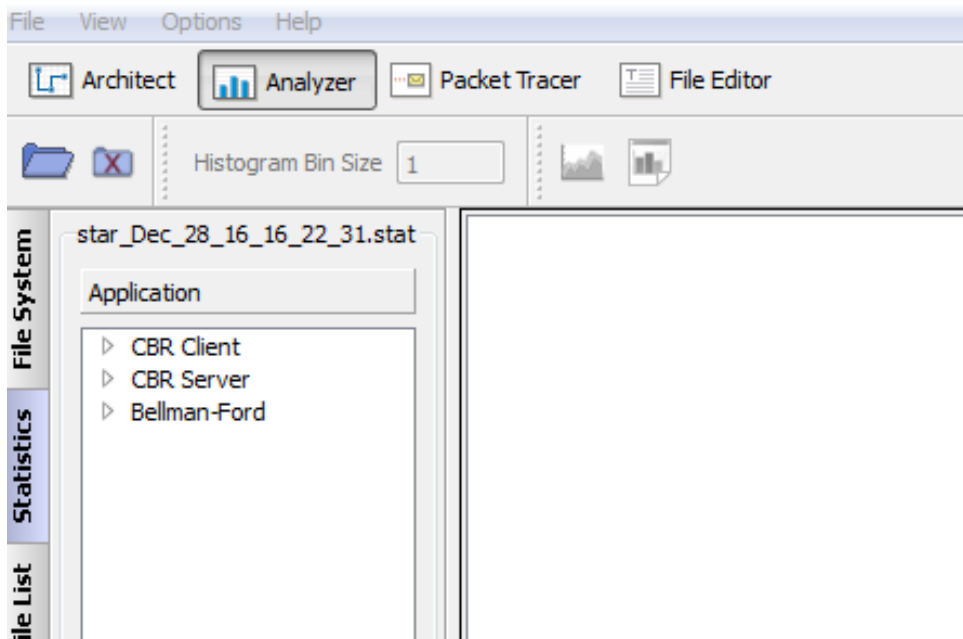


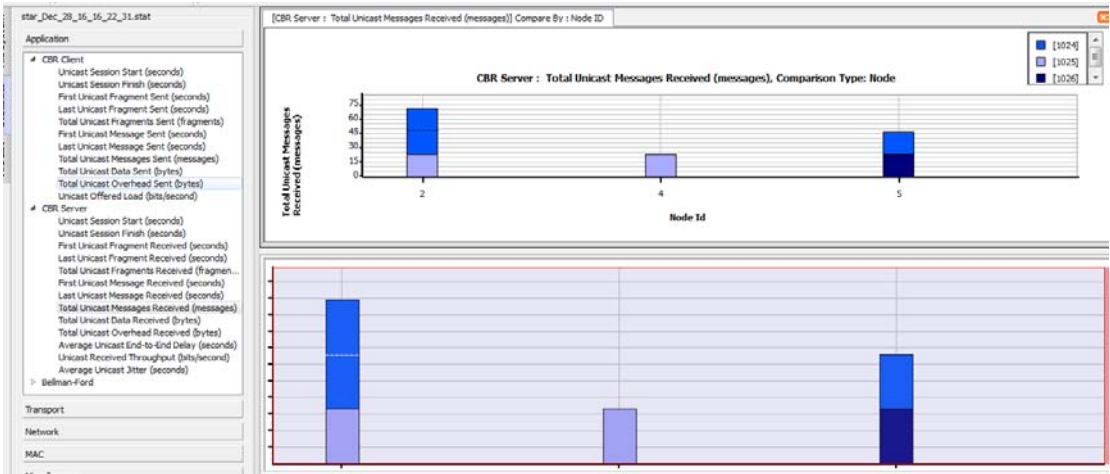
Play the scenario



Step 5: Go to analyser mode to analyse the statistics





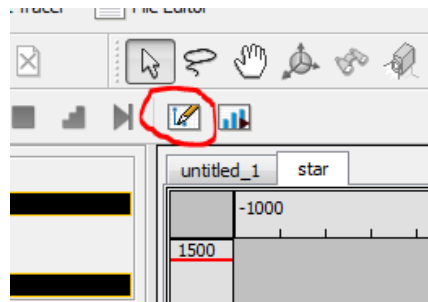


Repeat the same procedure for Ring and Mesh Topology

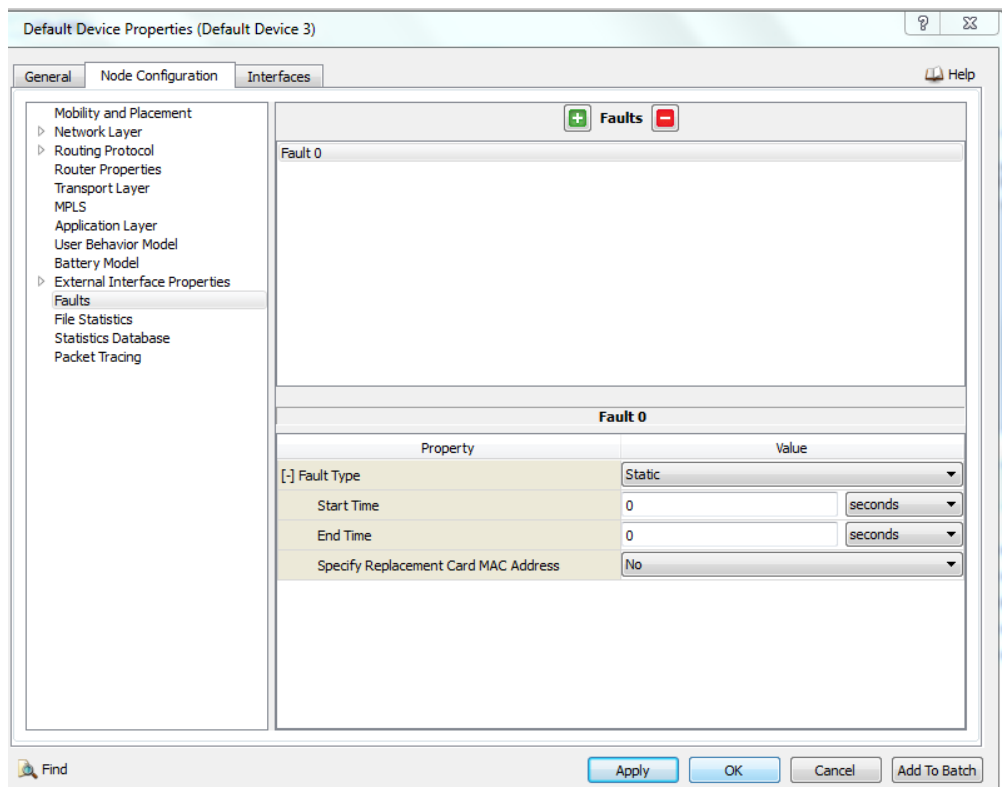
Note: Deactivate the Centre node and Analyze the statistics for all-star topology

Procedure to deactivate the Centre node

Step 6: Go to design mode

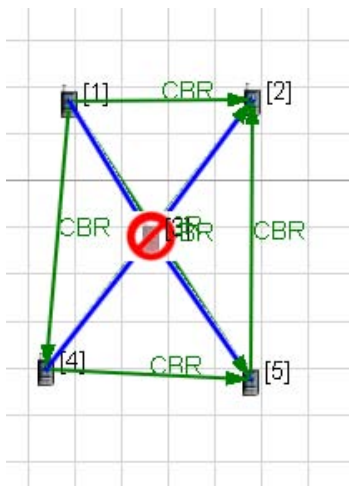


Step 7: Go to table view → Select node tab → select the node id of centre node → Edit properties

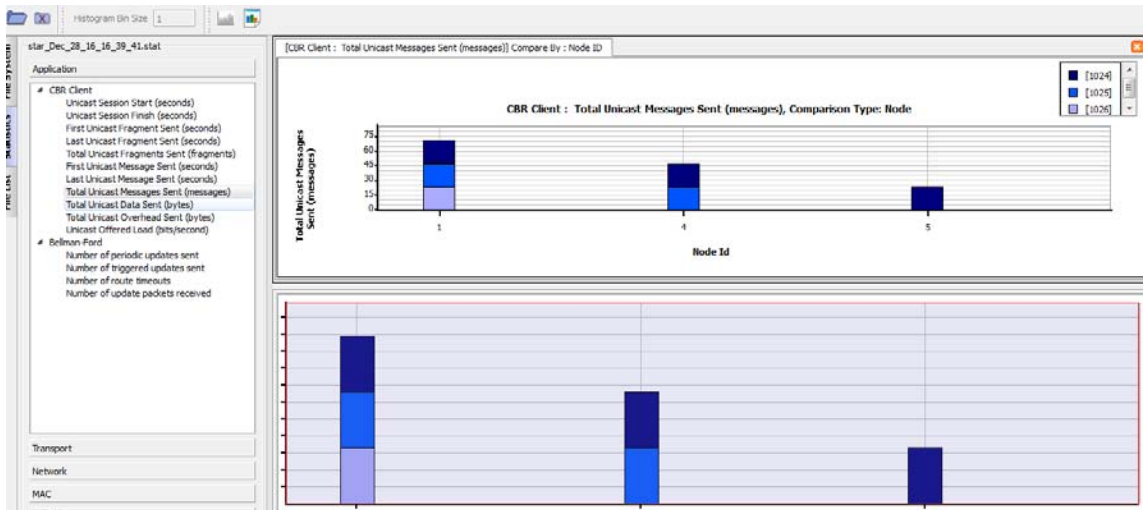


Click Apply and Ok

Step 8: Save the scenario and simulate



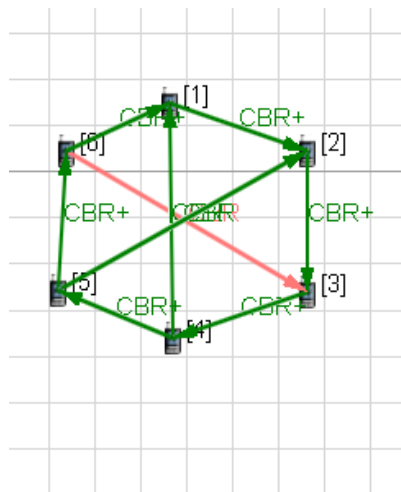
Step 9: Play the scenario→Analyze the statistics



Receiver is unable to receive the data due to deactivation of Centre node.

B) Ring Topology

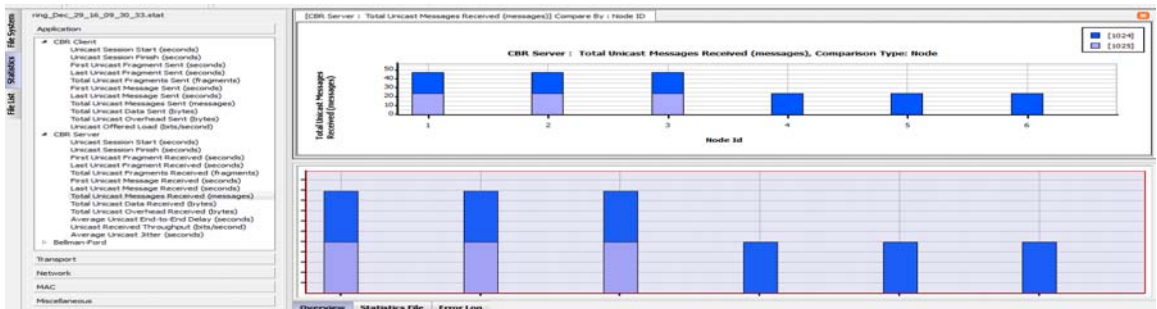
Procedure: Repeat the steps described in star topology.



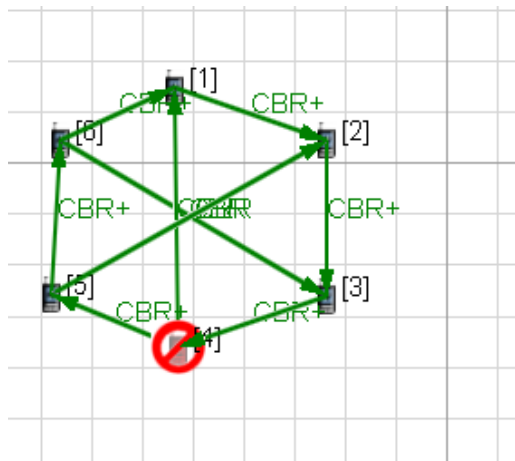
Total Unicast message sent



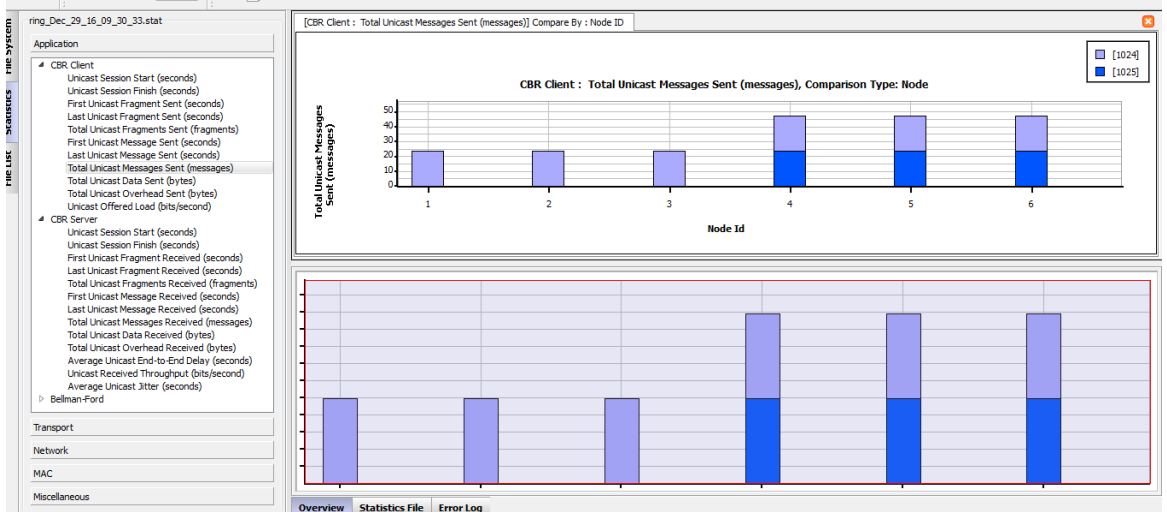
Total unicast message received



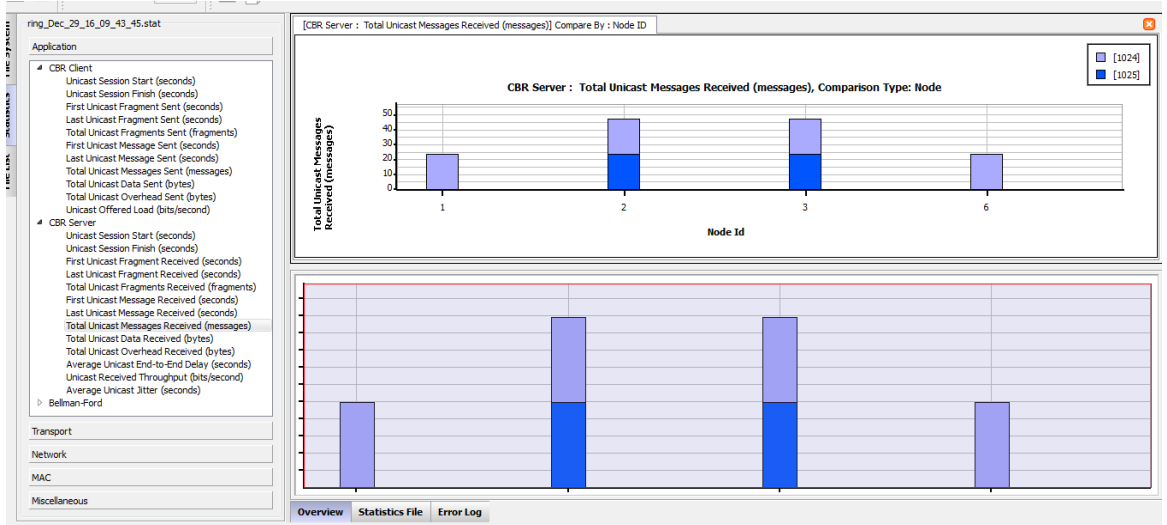
If any node is faulty in topology (4th node)



Total unicast message sent

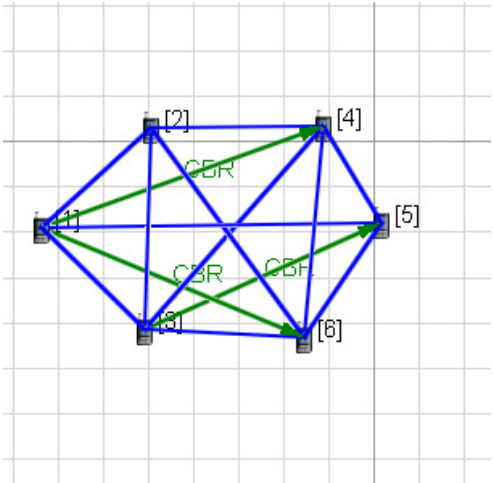


Total unicast message received



C) Mesh Topology

Procedure: Repeat the steps described in star topology.



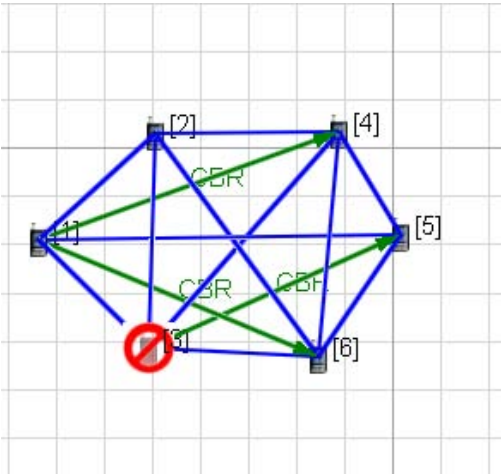
Total unicast message sent



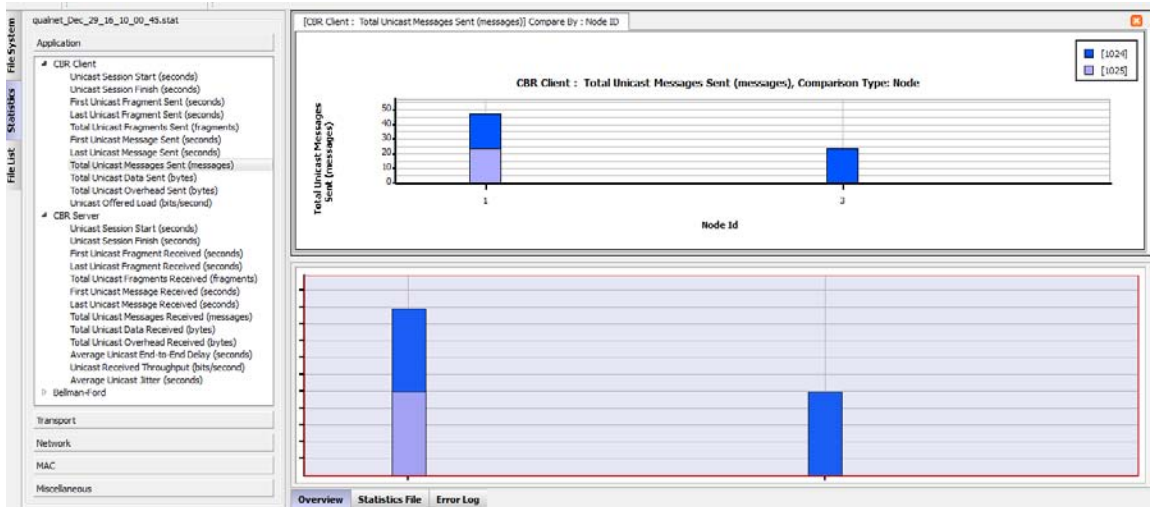
Total unicast message received



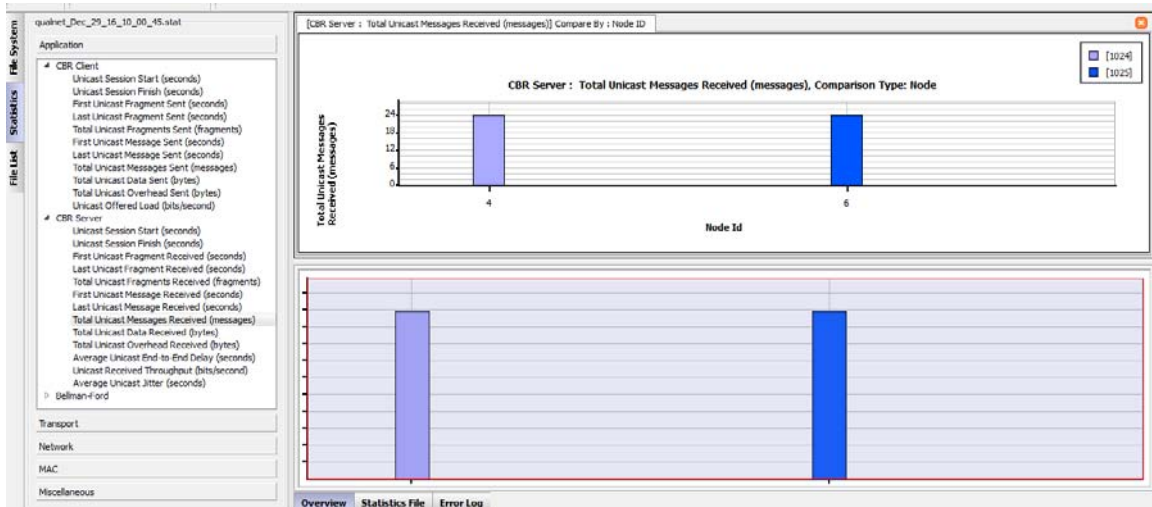
If node is faulty (3rd node is faulty)



Total message sent



Total message received



Exercise:

1. Simulate a point to point network consisting of 10 nodes and analyse the performance by introducing fault nodes.
2. Simulate an Ethernet LAN using n nodes (6-10), change data rate and compare throughput.