**Utilizing Star Topology through OPNET Network Simulator**

**Objective:**

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**Apparatus:**

**Procedure:**

**Create a New Project:**

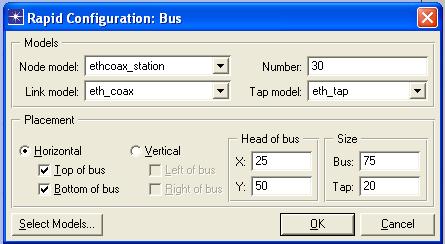
To create a new project for the Ethernet network:

1. Start OPNET Modeler 14.5⇒Choose New from the File menu.
2. Select Project ⇒ Click OK ⇒ Name the project <your initials>\_Ethernet, and the scenario Coax ⇒ Click OK.
3. In the Startup Wizard: Initial Topology dialog box, make sure that Create Empty Scenario is selected ⇒ Click Next ⇒ Choose Office from the Network Scale list ⇒ Click Next ⇒ Assign
4. to X Span and keep Y Span as 100 ⇒ Click Next twice ⇒ Click OK.
5. Close the Object Palette dialog box.

**Create the Network:**

To create our coaxial Ethernet network:

1. To create the network configuration, select Topology ⇒ Rapid Configuration. From the drop-down menu choose Bus and click Next.
2. Click the Select Models button in the Rapid Configuration dialog box. From the Model List drop-down menu choose ethcoax and click OK.
3. In the Rapid Configuration dialog box, set the following eight values and click OK.

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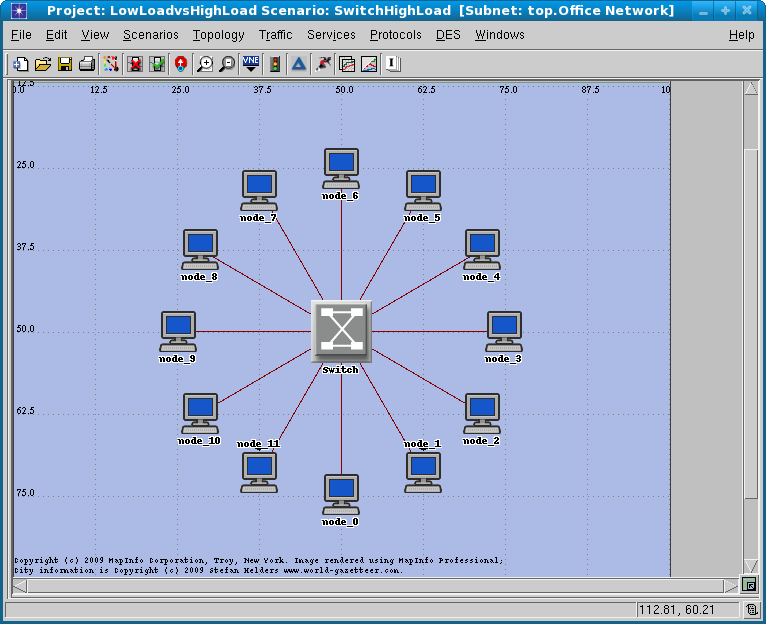
1. To configure the coaxial bus, right-click on the horizontal link ⇒ Select Edit Attributes (Advanced) from the menu:

a. Click on the value of the model attribute ⇒ Select Edit from the drop-down menu ⇒ Choose the eth\_coax\_adv model.

b. Assign the value 0.05 to the delay attributes (propagation delay in sec/m). c. Assign 5 to the thickness attribute.

d. Click OK.

1. Now you have created the network. It should look like the network below.
2. Make sure to save your project.



To configure the traffic generated by the nodes:

1. Right-click on any of the 30 nodes ⇒ Select Similar Nodes. Now all nodes in the network are selected.
2. Right-click on any of the 30 nodes ⇒ Edit Attributes.
3. Check the Apply Changes to Selected Objects check box. This is important to avoid reconfiguring each node individually.
4. Expand the Traffic Generation Parameters hierarchy:

a. Change the value of the ON State Time to exponential (100) ⇒ Change the value of the OFF State Time to exponential (1).(Note : Packets are generated only in the “ON” state.)

1. Expand the Packet Generation Arguments hierarchy:

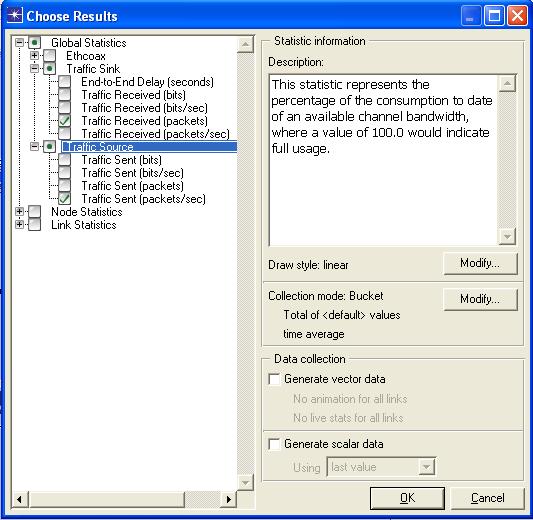
a. Change the value of the Packet Size attribute to constant (1024).

1. Click OK to return back to the Project Editor.
2. Make sure to save your project.

**Configure Statistics:**

To choose the statistics to be collected during the simulation:

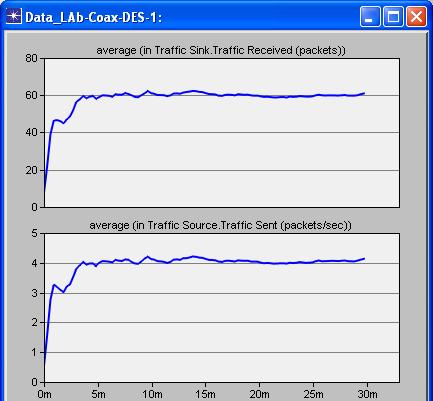
1. Select DES ⇒ Choose Individual Statistics ⇒ Expand Global Statistics.
2. Expand the Traffic Sink hierarchy ⇒ Click the check box next to
3. Traffic Received (packets/sec) (make sure you select the statistic with units of packets/sec).
4. Expand the Traffic Source hierarchy ⇒ Click the check box next to
5. Traffic Sent (packets/sec).
6. Click OK.

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**Configure/Run the Simulation:**

In order to run the Simulation:

1. Select DES⇒ Configure Run Discrete Event Simulation. Select the Simulation Duration to 30 Minutes.
2. Apply the Changes and Select RUN.
3. To check the Results select DES ⇒ Results ⇒ View Results.

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**Lab Task:**

*Perform the above mentioned steps in OPNET and attach the output*

**Conclusion:**

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