Laboratory 2: Routing Information Protocol (RIP) -I

Objective:

- To assign IP addresses to network interfaces automatically
- To configure and analyze the performance of RIP
- To understand the routing table of each router created by RIP
- To determine the path from one router to another router

Introduction

RIP is one of the Intra-domain distance vector based routing protocol. Each router builds a vector which consists of other router name and cost. The router distributes the routing table to its neighbors only. The router advertise the routing table every 30sec. A router sends also trigger update whenever a router entry is changed.

In this Lab you have to create a project-using RIP with three scenarios. In first scenario **(startrip)**, you will configure the router and RIP parameter and analyze the performance of startrip. In second scenario, you will observe the routing table and calculate the convergence time when one of the links is broken. Finally, in third scenario you determine the path when the broken link is recovered.

Create a project

First Scenario:

1. Create a project (**yourid_rip**) and first scenario (**start**).

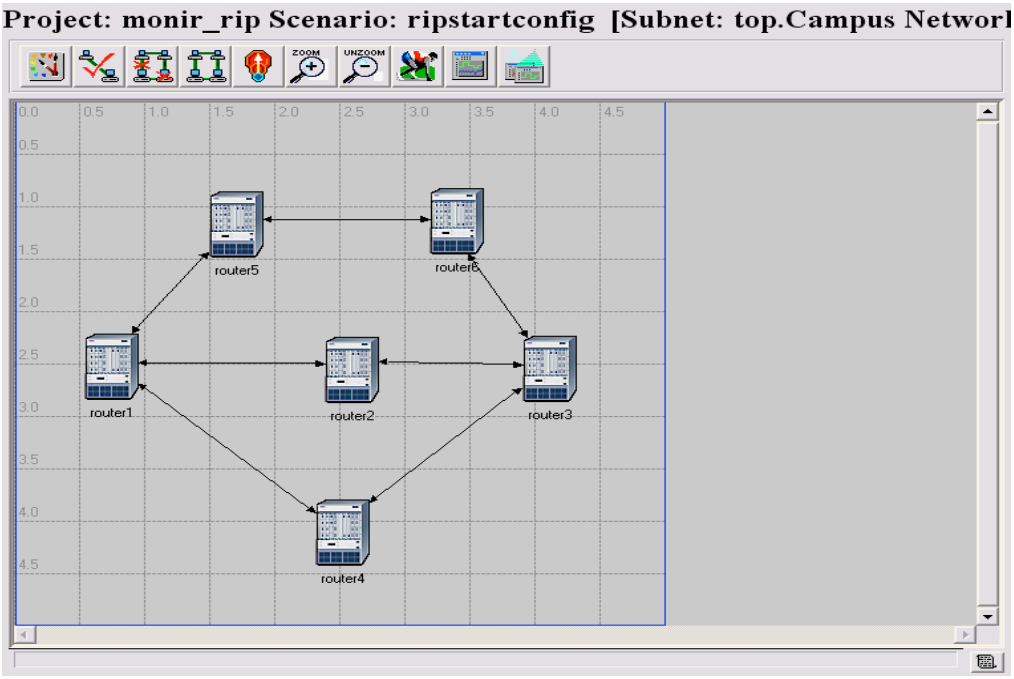
2. Select **create empty scenario** and click next

3. Select **Network Scale: Campus**

Network Size: 4 mi x 4 mi
Model family: internet_toolbox and routers

Now you will see an empty workspace.

4. Click the object Palette and bring ethernet2_slip8_gtwy (one of the routers) object to workspace and change the name router1. Now make 5 copies of router1 and give router name router2…….router6. Connect the router using PPP-DS1 link in the following way



Configure Router parameter:

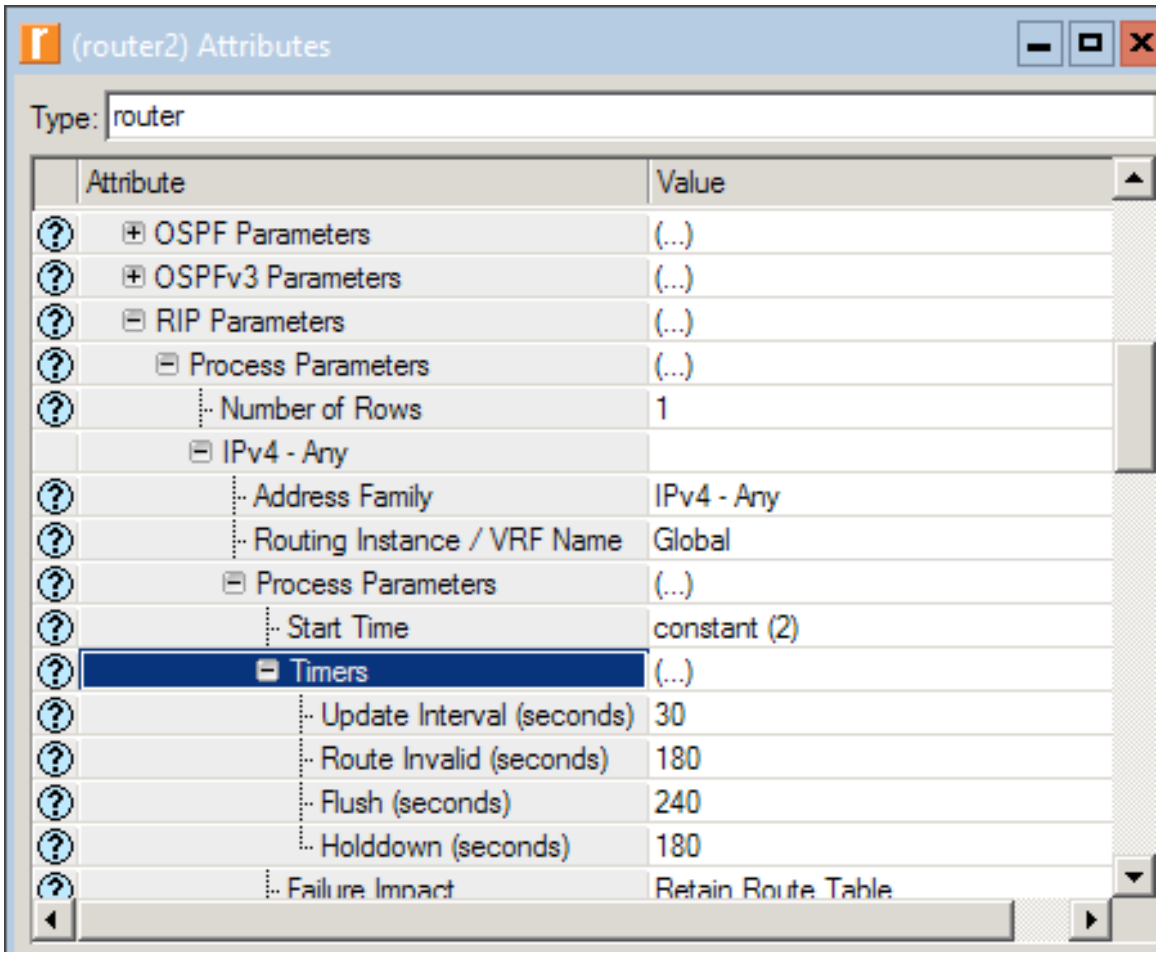
5. Now click one of the routers (say router1) and right click and **select similar nodes** from pull-down menu. Now right click one of the routers again and choose **Edit Attributes.** Click the box **Apply changes to selected objects.** Select and expand the **Report/ RIP Routing Table.**
Now set **Status** as enabled and select **Export time : Once at End of Simulation.**

Configure RIP parameter:

6. Click **IP Routing Protocols\RIP Parameters\Process Parameters\IPv4\Process Parameters** to expand the parameter list.

Select start time, set as constant and 2 sec.

Now click on the **Timers** to expand it and you will see the following default parameter setting:



You can click on the question mark on the left side to read information about each setting.

6. Save your project.

Configure Simulation statistics:

7. Right-click in any place of your workspace and select **Choose Individual Statistics** from the pup-up menu. Select the **Node** to expand the parameter. Then select **Route Table** to expand the parameter. Now click **Total number of updates.**

8. Click **OK** and save your project

Configure Simulation Parameters:

9. Click on the **Configure and Run** button from the menu. Now select the **IP** and change the following:

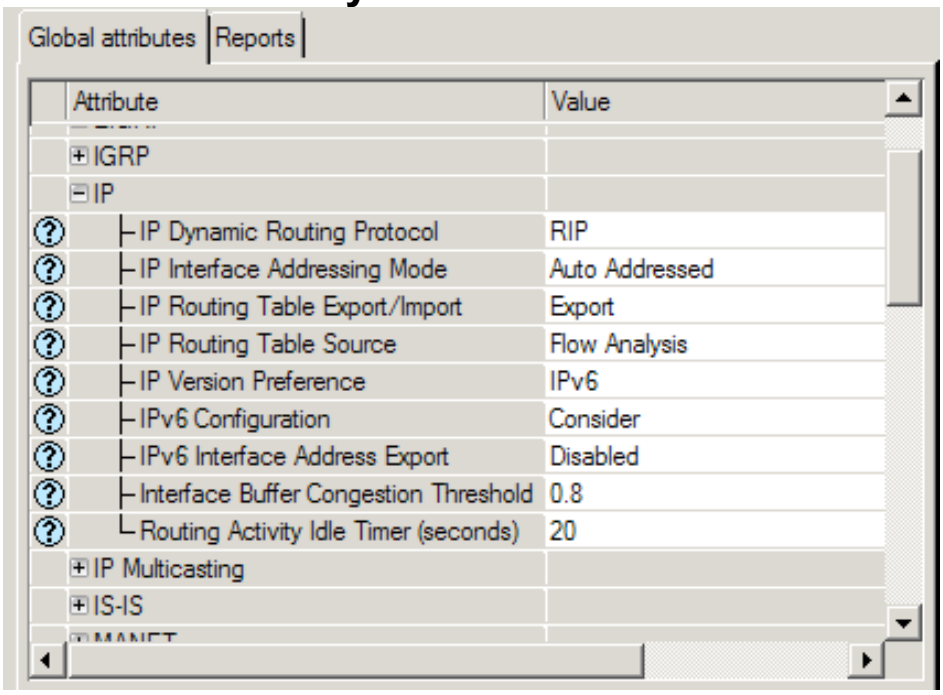
*** IP Dynamic Routing Protocol: RIP**

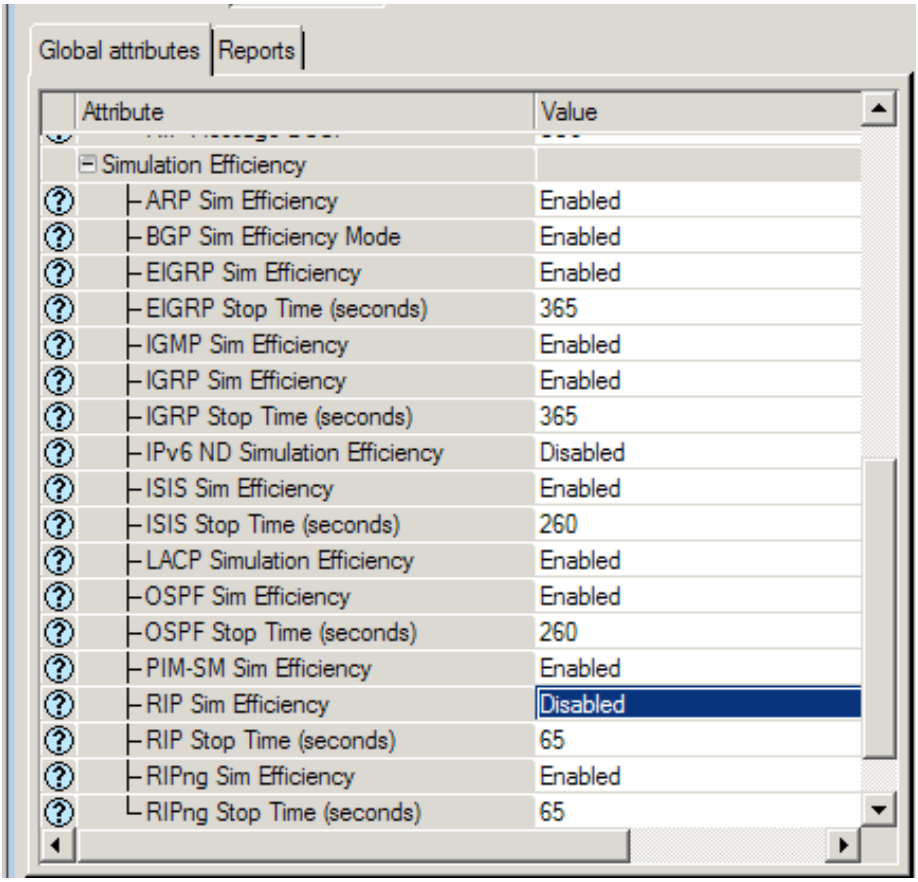
*** IP Interface Addressing Mode: Auto Addressed/Export**

*** IP Routing Table Export/Import: Export**

and select the **Simulation Efficiency** and set:

*** RIP Sim Efficiency: Disabled**





Run the Simulation:

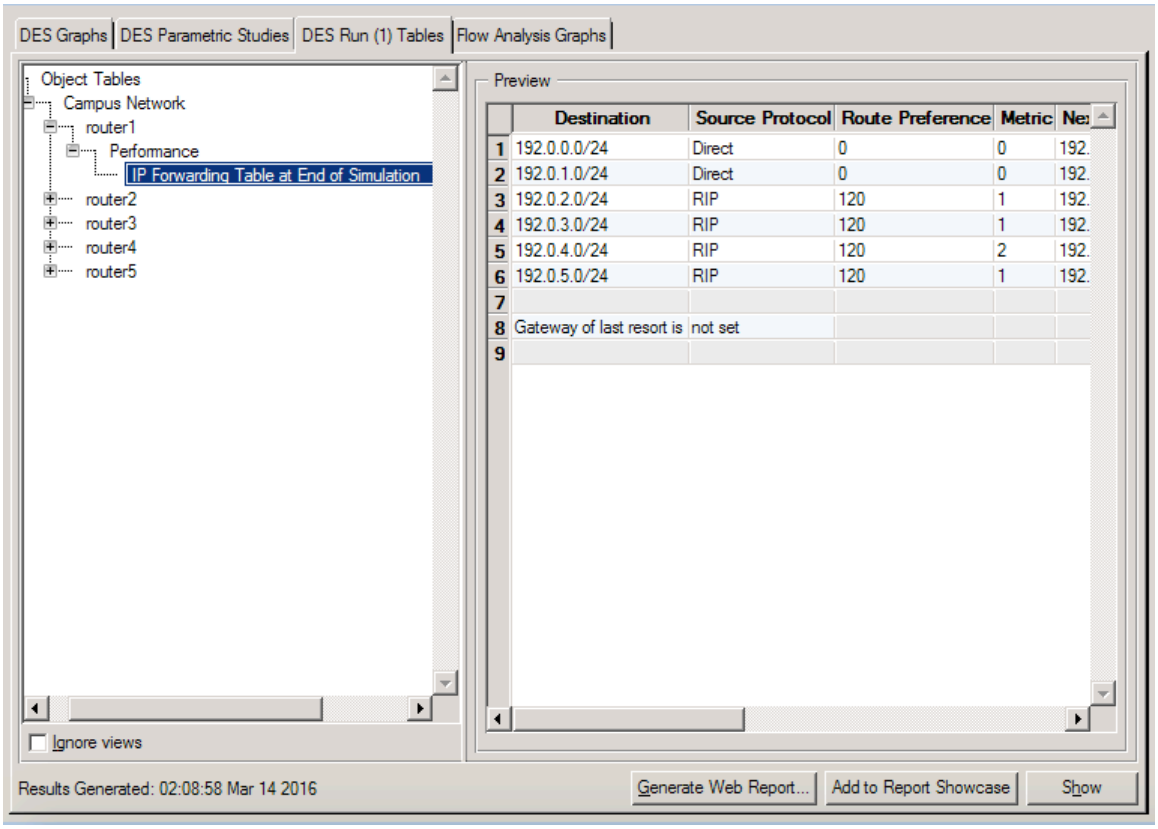
10. Click the **RUN** button to run the simulation for **200 sec and** collect statistics. Save the project

Collect the results:

Now we want to collect the router interface address, which is allocated automatically.

11. Select **DES/Results/View Results.**

12. Click on the **DES Run Table** tab, you can see the forwarding table of routers as following:



Task1:

13. Write down all the router interface address.

14. Observe all routers routing table and try to understand all information. (You need the IP addresses of the interfaces to help you understand the routing table).

**** Save the project in your folder because you will use the same model in order the complete Lab3 tasks on RIP.**