

Assignment 6

3rd October 2019

1. Use OPNET to implement OSPF (Open Shortest Path First) protocol. Create a scenario – Scenario1, of 8 routers of any type (e.g., slip8_gtwy) and configure the **Network topology** and the **Link costs** as shown in Fig. 1(a) and Fig. 1(b) respectively.

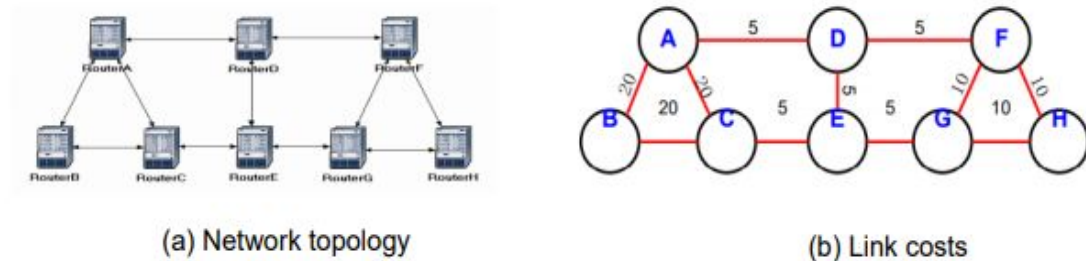


Fig. 1 Configuration of the network *Scenario1*

Create a duplicate scenario – Scenario2, where the routers in Scenario1 are partitioned into 3 different areas as follows (Fig 2):

Area1: RouterA, RouterB, RouterC

Area2: RouterD, RouterE

Area3: RouterF, RouterG, RouterH

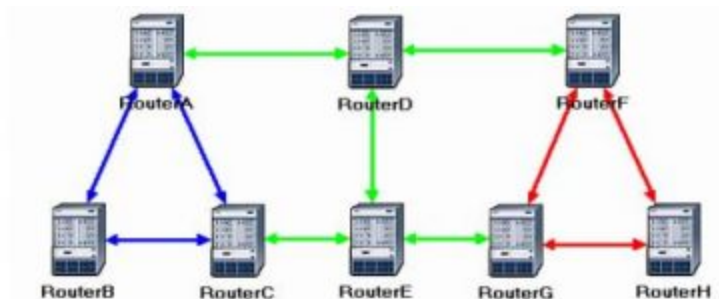


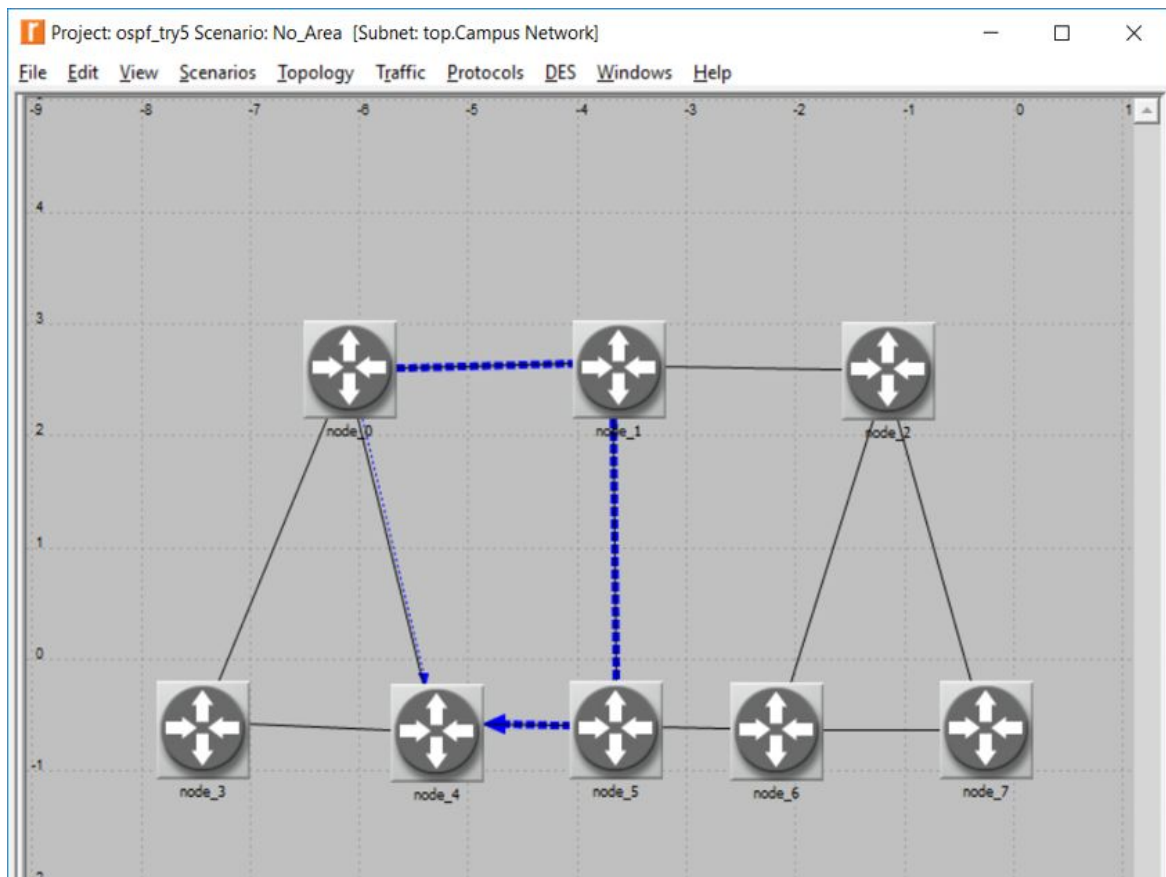
Fig. 2 Configuration of the network for *Scenario2*

Display the route for the traffic demand between RouterA and RouterC in Scenario1.

Display the route for the traffic demand between RouterA and RouterC in Scenario2.

OSPF introduces another layer of hierarchy into routing by allowing a domain to be partitioned into areas. This means that a router within a domain does not necessarily need to know how to reach every network within that domain; it may be sufficient for it to know how to get to the right area. Thus, there is a reduction in the amount of information that must be transmitted to and stored in each node. In addition, OSPF allows multiple routes to the same destination to be assigned the same cost and causes traffic to be distributed evenly over those routers.

Scenario 1:



Scenario 2:



2. Use OPNET to implement the RIP (Routing Information) protocol on the same network configurations as given in **Problem 1**.

Display the route for the traffic demand between RouterA and RouterC in *Scenario1*.

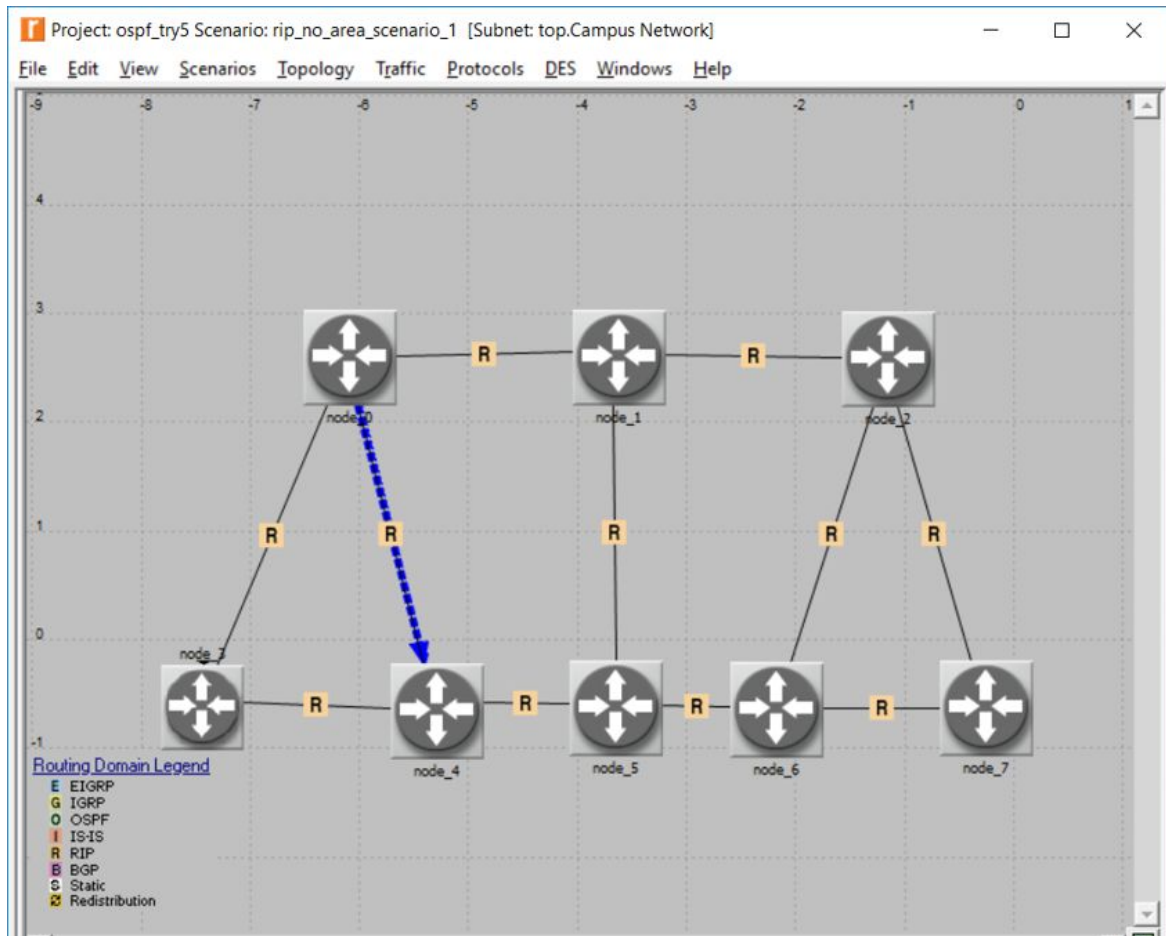
Display the route for the traffic demand between RouterA and RouterC in *Scenario2*.

Routing Information Protocol (RIP) is a dynamic routing protocol that uses hop count as a routing metric to find the best path between the source and the destination network. It is a distance-vector routing protocol that has AD value 120 and works on the application layer of the OSI model. RIP uses port number 520.

Features of RIP:

1. Updates of the network are exchanged periodically.
2. Updates (routing information) are always broadcast.
3. Full routing tables are sent in updates.
4. Routers always trust on routing information received from neighbor routers. This is also known as Routing on rumors.

Scenario 1:



Scenario 2:

