LAB ASSIGNMENT-6

CSN-361

Submitted by:
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Problem Statement 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.
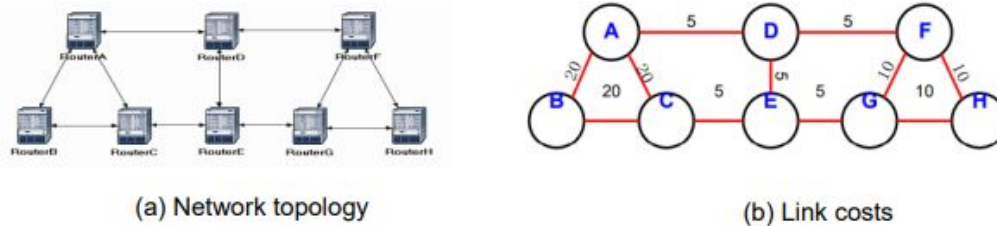

(a) Network topology

(b) Link costs

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
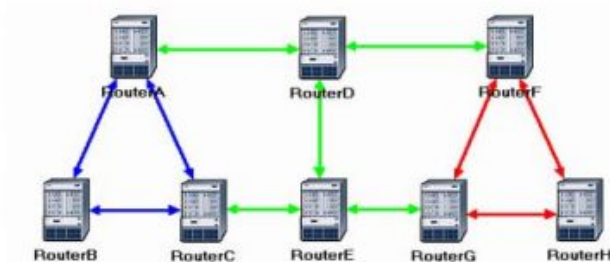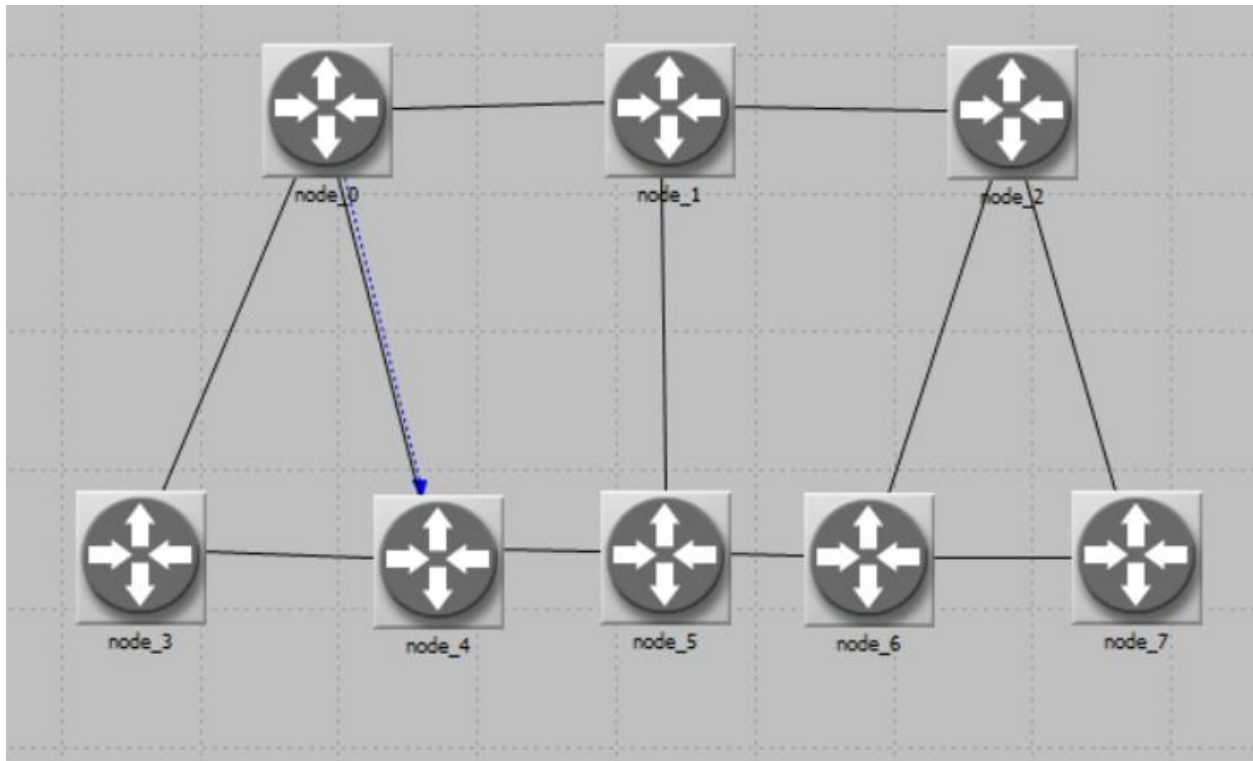Area3: RouterF, RouterG, RouterH

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*.
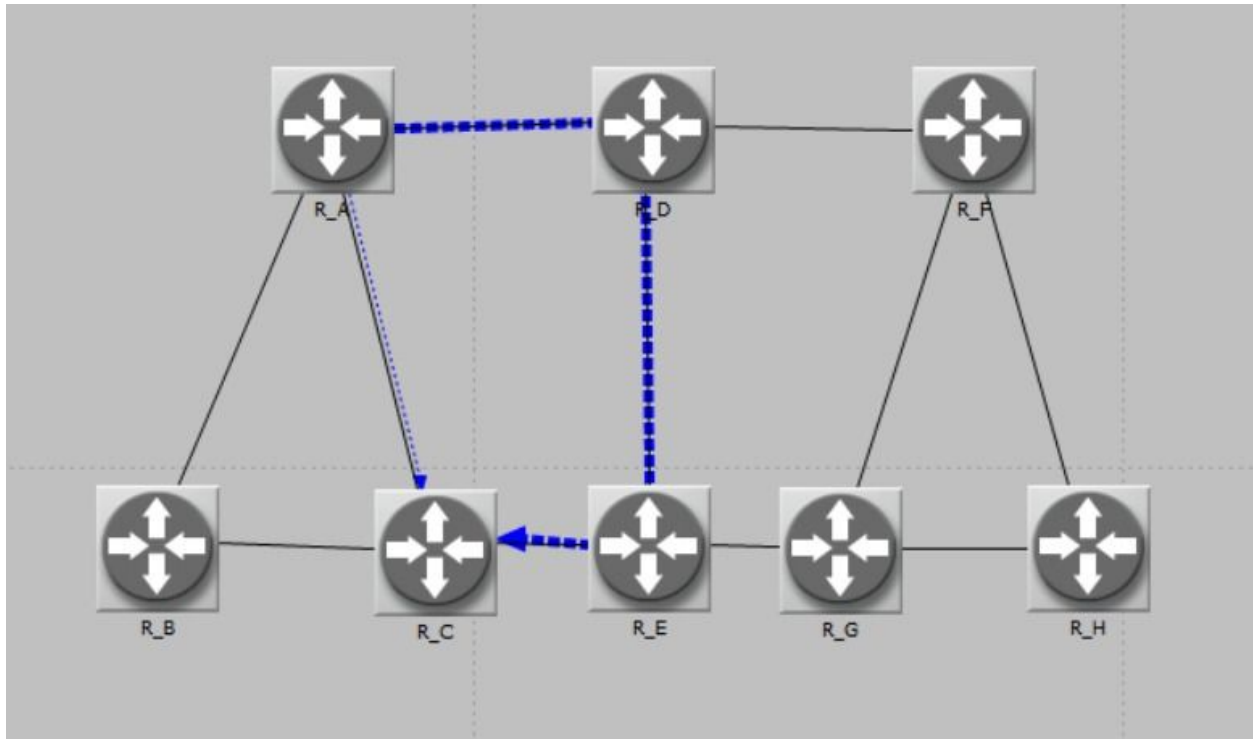
Solution

Initial Scenario:

Scenario 1 (no area)

Steps

As there is no area implemented, all of the falls in the same subnet. Consequently following the OSPF (Open Shortest Path First) protocol, the shortest of all of them is chosen. So for routers A and C, the least cost path is the one from A to B to E to C i.e, (5 + 5 + 5). The direct path between them has a cost of 20 which is more than 15.
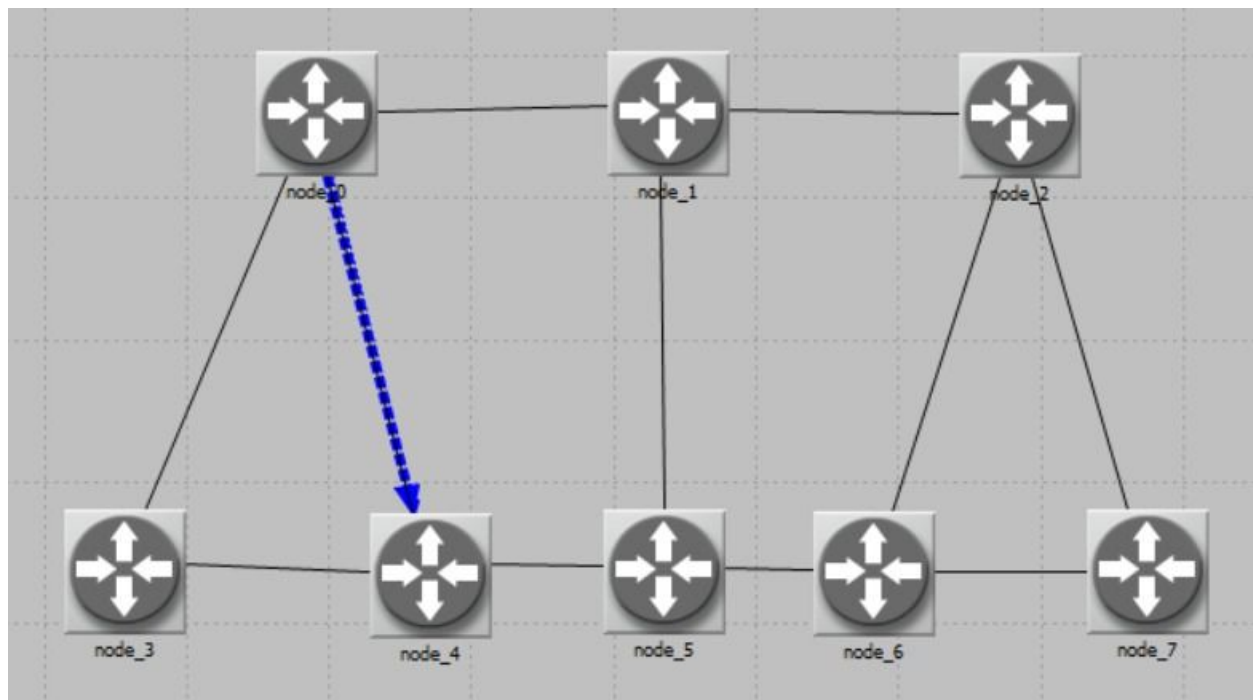
Scenario 2 (with the areas)
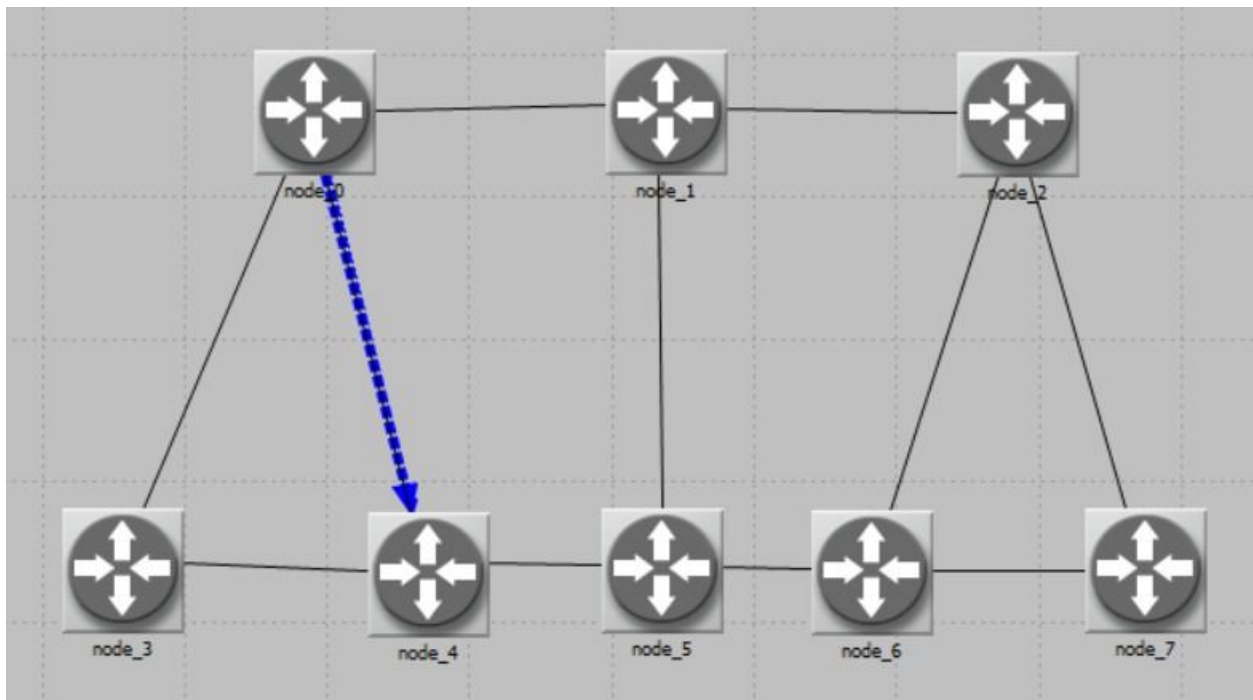
Here, owing to the presence of various subnets area, Routers A and C are in the same subnet and so they will first try the shortest path in their subnet, i.e, A to C direct link.

Problem Statement 2: Use OPNET to implement 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
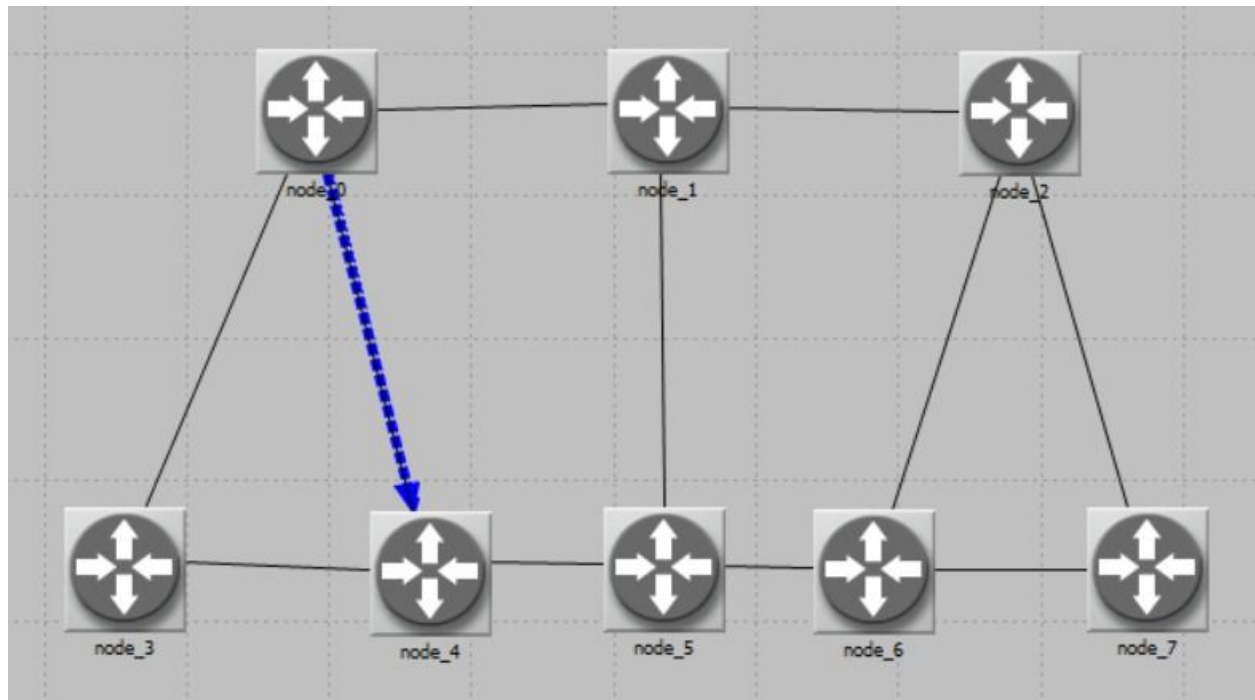
Solution

Scenario 1 (no areas)
The RIP (Routing Information) protocol uses hop counts to decide the route to take. Hence even if the cost of path is more, A to C is preferred

Scenario 2 (with the areas)

The RIP (Routing Information) protocol uses hop counts to decide the route to take. Hence even if the cost of the path is more, A to C is preferred. Also, the distance vector to every router is calculated and propagated, hence different subnets have no effect.