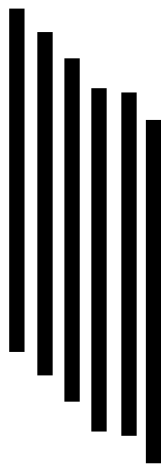




International College

**Lab Report on
Computer Networks (Dynamic Routing)**



B.Sc. (CSIT) 4th Semester

Lab Report Number: 03

Submitted By:

Ashitoush Rawal

Roll no: 11

Submitted to:

Bhas Raj Pathak

Lecturer

Lab Report 3

1)Dynamic Routing Protocol

Introduction

Dynamic routing is a networking technique that provides optimal data routing. Unlike static routing, dynamic routing enables routers to select paths according to real-time logical network layout changes.

Dynamic routing uses multiple algorithms and protocols. The most popular are Routing Information Protocol (RIP) and Open Shortest Path First (OSPF).

Dynamic routing protocols allow routers to share information about the network with other routers to allow them to select the best path to reach a destination.

Objective

The aim of this lab is to understand the concept of dynamic routing between 2 routers using different or same class IP Addresses.

#Why do we need Dynamic Routing?

As networks increase in size and complexity, using a dynamic routing protocol to provide network routing updates provides simplified administration. Dynamic routing protocols like RIP and OSPF share routing update information between the routers on the network to maintain current routing tables for all network traffic.

Difference Between Static and Dynamic Routing:

Static Routing	Dynamic Routing
Static routing is ideal for small networks.	Dynamic routing is suitable for large networks.
Configure static routes involve less cost and can be easily maintained by the network administrator.	Dynamic routing involves cost in terms of CPU processes and bandwidth on the network links.
Routers cannot be changed, until authorized by the network administrator.	Routing protocols find the routes for traversing the packets.
Routers are not updated dynamically in the routing table and hence cannot detect inactive routes.	Routing protocols update the routing table with the update's routes.

Procedure

From Figure Below, we have used devices (Router, Pc, Server, Switch) and cables (copper straight through, Serial DCE) in order to connect the devices with each other. Now, click on Pc from lower left part and click in the main window, follow same steps and drag and drop Server, Switch,

Router in the main window. Then click on connections (Thunder Symbol) click on copper straight through cable then connect the pc and switch together and again with same cable connect Router and switch. Follow same steps to connect switch with server on another side. Use Serial DCE cable to create connection between two routers (Router1, Router2).

•PC configuration

Click on PC then go to Desktop. Click on IP configuration. Add IPv4 Address then Default Gateway. Subnet Mask will be automatically generated according to IP address class. Just click on Subnet Mask input box.

•Server Configuration

Click on Server then go to Desktop. Click on IP configuration. Add IPv4 Address then Default Gateway. Subnet Mask will be automatically generated according to IP address class. Just click on Subnet Mask input box.

•Router Configuration

For router configuration, click on router and go to CLI and Hit enter to return. Same process is used in both routers. You can enter own IP address to configure router and other devices. Use the code given below in order to configure.

1)Configuring gigabitEthernet for Router 1

Route: enable

Route# configure terminal

Route(config)# interface gigabitEthernet 0/1

Router(config-if) # ip address 192.168.1.1 255.255.255.0

Router(config-if)# no shutdown

2)Configuring gigabitEthernet for Router 2

Route: enable

Route# configure terminal

Route(config)# interface gigabitEthernet 0/1

Router(config-if)#ip address 192.168.2.1 255.255.255.0

Router(config-if)# no shutdown

- Dynamic Routing

We can do dynamic routing using different Dynamic routing protocols. Here we are using the RIP (protocol).

1)Serial Configuration for Router 1

```
Route(config)#interface serial 0/3/0
Route(config-if)# ip address 192.168.1.1 255.255.0.0
Route(config-if)# no shutdown
Route(config-if)# ip rip //ip rip version2 for RIPv2
Route(config-if)# network 192.168.1.0
Route(config-if)# network 192.168.2.0
Route(config-if)# network 192.168.3.0
```

2)Serial Cable Configuration for Router 2

```
Route(config)# interface serial 0/3/0
Route(config-if)# ip address 192.168.2.1 255.255.0.0
Route(config-if)# no shutdown
Route(config-if)# ip rip
Route(config-if)# network 192.168.1.0
Route(config-if)# network 192.168.2.0
Route(config-if)# network 192.168.3.0
```

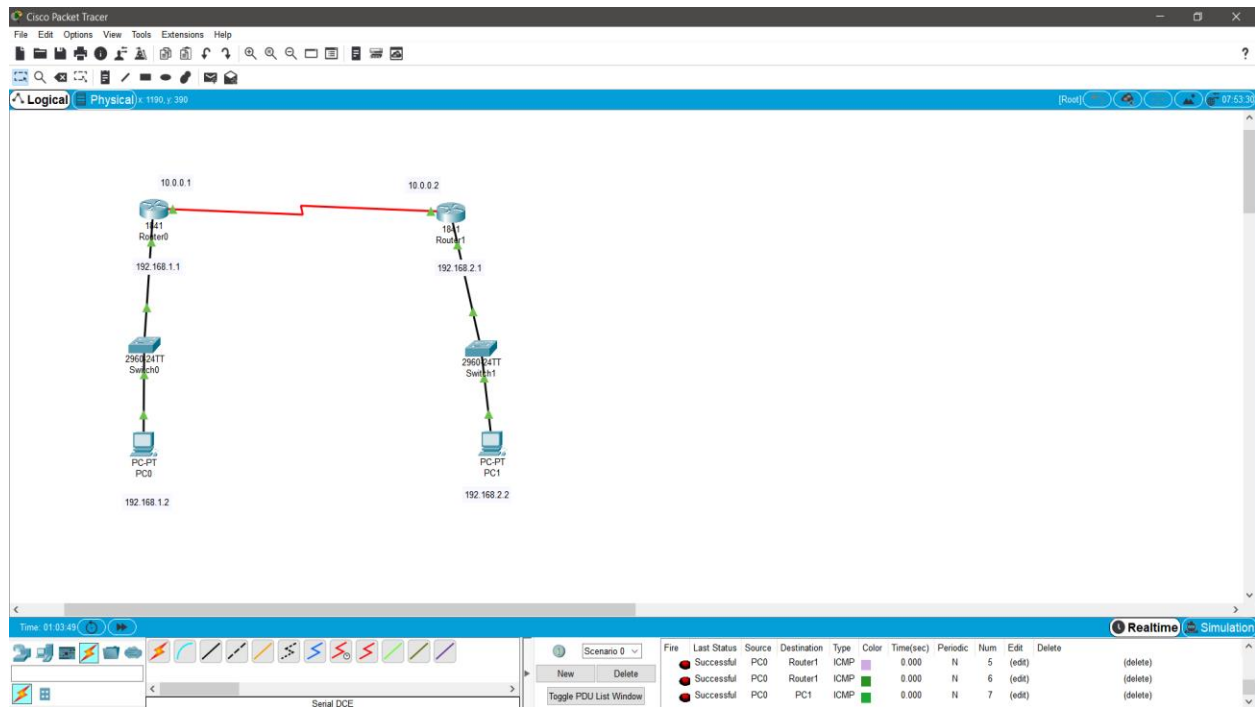
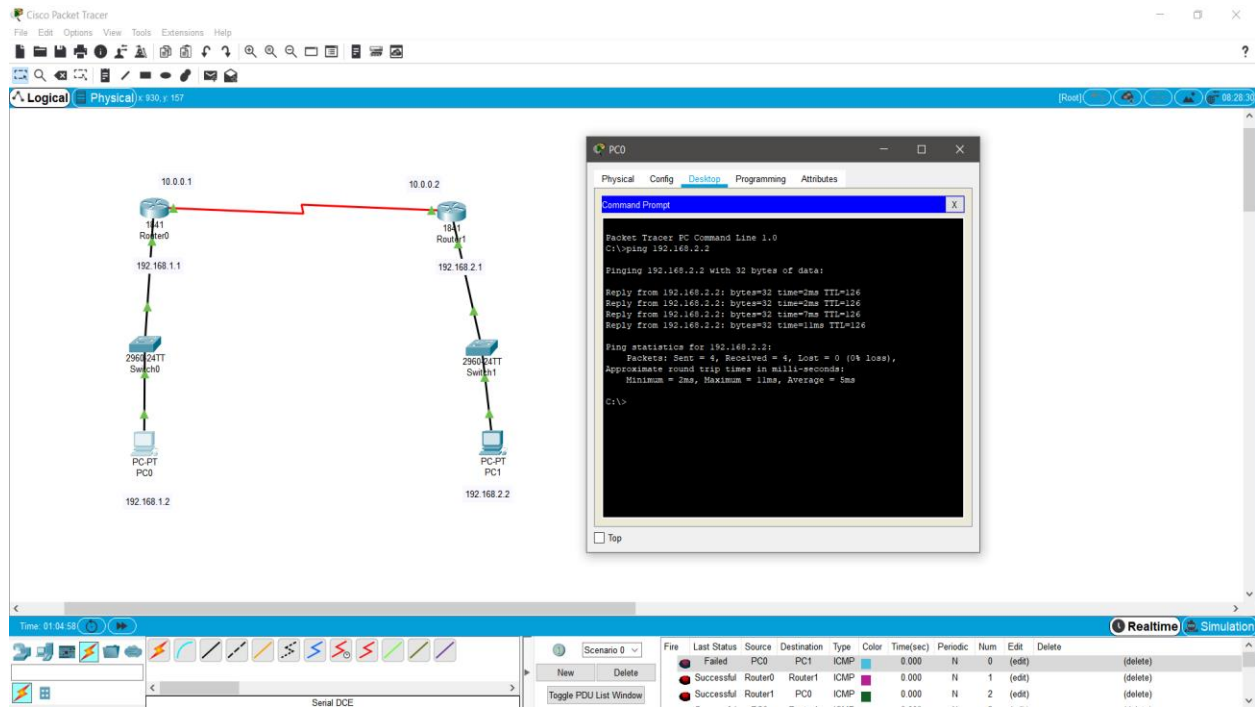


Figure: Dynamic Routing Configuration using 2 routes

Let's Ping in order to see if we are connected together or not. In order to ping, click on pc in the main window, go to Desktop then command prompt and type in the command given below.

C:\>ping 192.168.2.2

We send a ping request to the server from our pc. We can see packet sent and received in our cmd.



Conclusion

In this lab, we learned how to do dynamic routing Using RIP protocol between two routers by the help of CISCO Packet Tracer.