Experiment No.7
Perform environment simulation for Dynamic Routing using Cisco packet tracer/GNS3
Date of Performance:
Date of Submission:
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Experiment 7

Aim: To design a network with routers, hosts and simulate dynamic routing algorithm using Cisco packet tracer.

Theory:

Dynamic routing is all about configuring a network using dynamic routing protocols. Dynamic Routing Protocol is divided in to two main parts.

1.Interior Gateway Protocol

2.Exterior Gateway Protocol

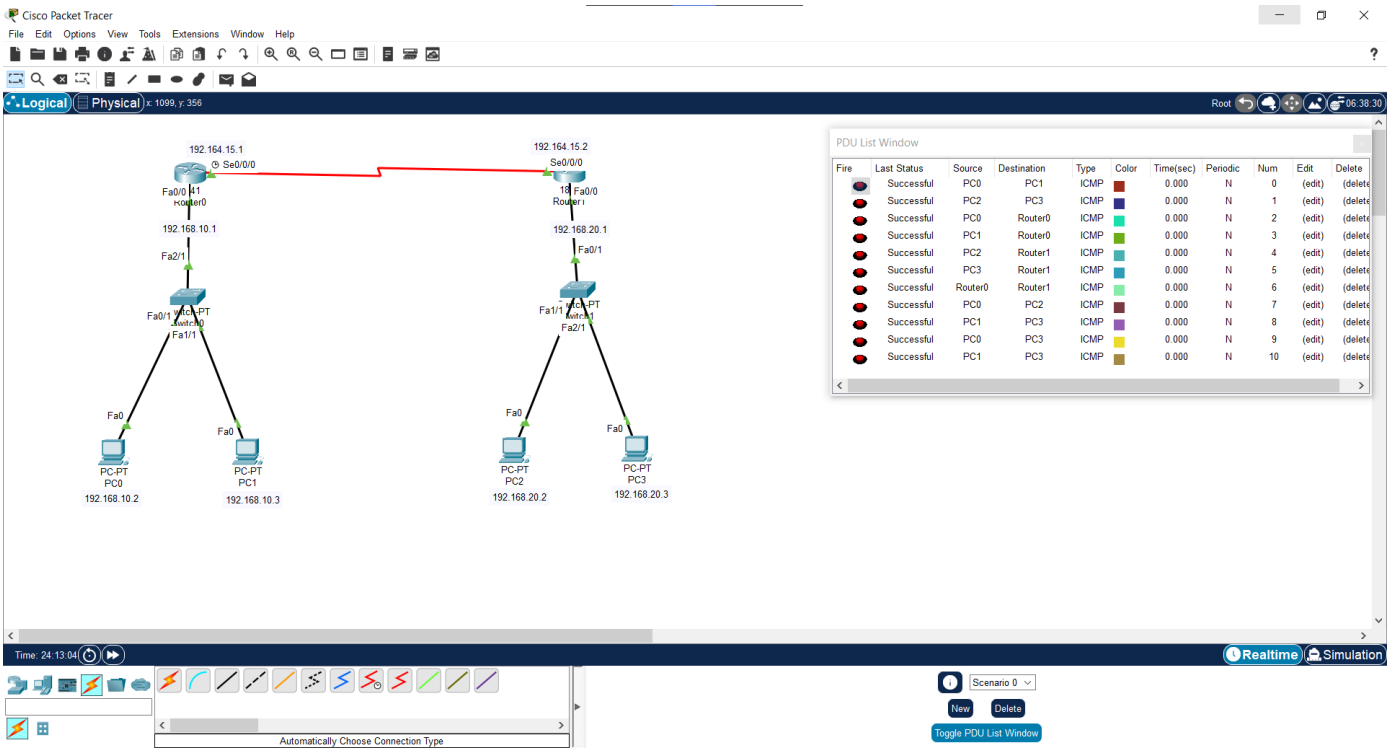
Interior Gateway Protocol is an autonomous system and handled by only one admin. this protocol is also divide into two parts,

1. Distant Vector Protocols(Bellman-Ford Algorithm) - distance is measured by `hop count` and use for simple networks

2. Link State Protocol(Dijkstra Algorithm) - this uses some other information like neighbour router info and this is best for complex network designs

Output:

Main:



Router CLI Configuration:

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastethernet 0/0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface serial 0/0/0
Router(config-if)#ip address 192.164.15.2 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write
Building configuration...
[OK]
Router#
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 192.168.20.0
Router(config-router)#network 192.168.10.0
Router(config-router)#network 192.164.15.0
Router(config-router)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
```

PC IPv4 Configuration:

Interface: FastEthernet0

IP Configuration

- DHCP
- Static

IPv4 Address	192.168.20.2
Subnet Mask	255.255.255.0
Default Gateway	192.168.20.1
DNS Server	0.0.0.0

Conclusion:

Simulating dynamic routing using Cisco Packet Tracer and GNS3 provides invaluable practical experience for both novice and experienced network engineers. These tools offer a realistic environment to study and experiment with complex routing protocols, ensuring that users can design, configure, and troubleshoot networks effectively. By mastering dynamic routing in these

simulated environments, network professionals can enhance their skills and better prepare for real-world networking challenges.