Tribhuvan University

Institute of Engineering

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Computer Networks

Lab 9

Hardware Configuration of Router

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Title
Hardware Configuration of Router

Objectives

- To be familiar with Hardware Router Connections and their configurations

Required Tool

- Hardware routers
- PCs
- PuTTY

Activities
Following network was created by interconnecting hardware routers, switches and computers.

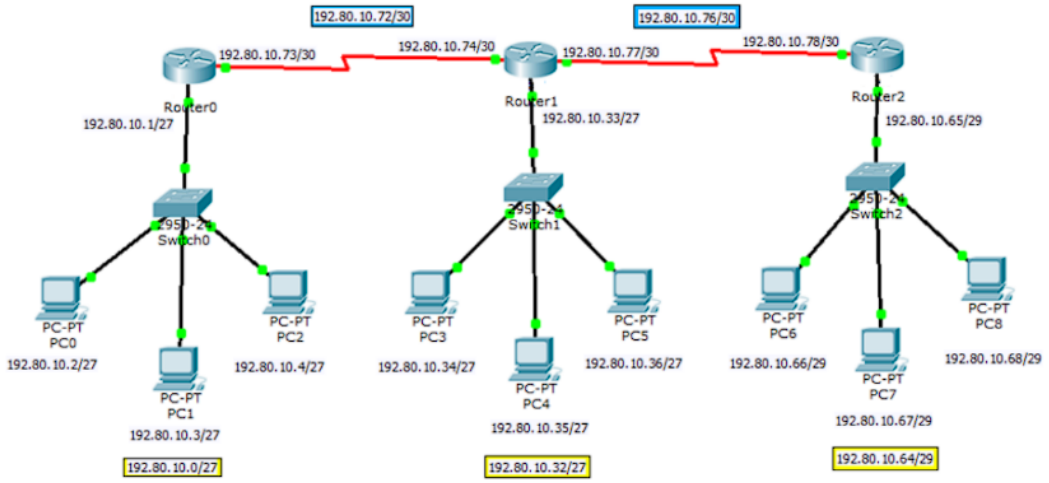

Figure 1: Initial Setup

1. Different interfaces of all routers with given IP addresses and subnet masks were configured. No shutdown command was used to activate the corresponding interface.

```
Router> enable
Router# configure terminal
Router(config)# interface serial 1
Router(config-if)# ip address 192.80.10.65 255.255.255.248
Router(config-if)# no shutdown
```

Serial clock rate was also set for cental router.

```
Router(config-if)# clock rate 56000
```

2. Static routes in each router was configured.

```
Router> enable
Router# configure terminal
Router(config)# ip route 192.80.10.0 255.255.255.224 192.80.10.77
Router(config)# ip route 192.80.10.32 255.255.255.224 192.80.10.77
Router(config)# ip route 192.80.10.72 255.255.255.252 192.80.10.77
```

3. Ping command was used to test the connectivity between PCs.
   All PCs and Router interfaces could be pinged from any other interface.

4. Traceroute command was used to test the routes between PCs.
   All routes were as expected i.e. they matched the output of simulated network.

5. Routing table of each router was observed.
   Routing table contained the static routes previously configured.

6. Static routes were removed and RIP was configured.

```
Router> enable
Router# configure terminal
Router(config)# router rip
Router(config-router)# version 2
Router(config-router)# network 192.80.10.76
Router(config-router)# network 192.80.10.64
```

7. Routing table was observed and also ping and traceroute commands were tested.
   Routing table consisted of RIP routes.
   All PCs could connect to each other.
   Traceroute showed expected results.

8. RIP were removed and OSPF was configured.

```
Router> enable
Router# configure terminal
Router(config)# router ospf 1
Router(config-router)# network 192.80.10.76 0.0.0.3 area 0
Router(config-router)# network 192.80.10.64 0.0.0.7 area 0
```

9. Routing table was observed and also ping and traceroute commands were tested.
   Routing table consisted of OSPF routes.
   All PCs could connect to each other.
   Traceroute showed expected results.

Conclusion
In this way "Lab 9: Hardware Configuration of Router" was completed by using physical devices.

Exercise

1. **What kind of differences have you experienced during this hardware based lab as compared with simulation based lab? Discuss briefly.**
   The differences experienced when performing hardware based lab as compared to simulation are:

   - PuTTY program had to be used to configure network which wasn't needed for simulation.
   - Wire management was time consuming which in simulation doesn't need to be managed.
   - Restarting routers and configuring network were slow whereas it could be "fast forwarded" in Cisco.
   - All commands and configurations were done through console. Cisco has GUI features for most.

2. **Note down the observations of each step with necessary commands used in activity A mentioned above and comment on it.**
   Refer to Activity section in lab sheet.