

Redes de Computadores - RECOMP – 2023/2024

Subnetting, Static Routing and DHCP

Lab Topology:

The lab network topology is illustrated below:

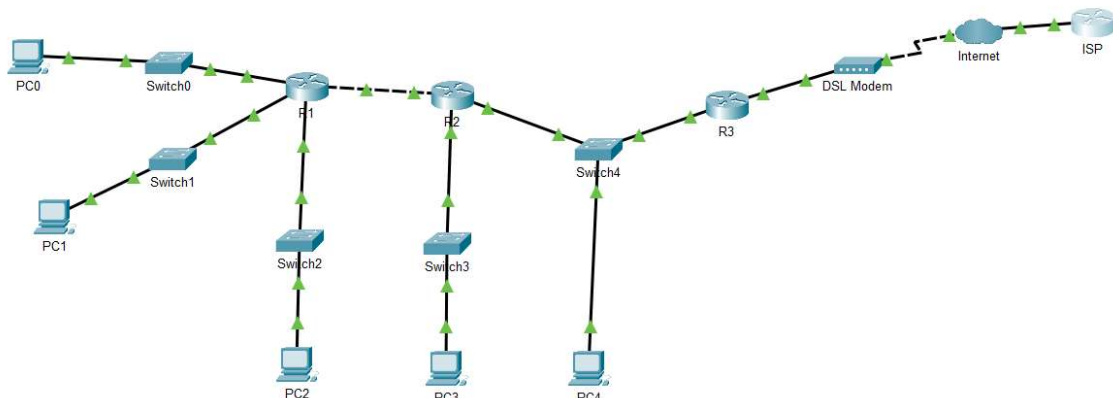


Figure 1- Lab Topology

Objectives

Part 1: Subnetting and Routing tables.

Part 2: Configure the routers' IP addresses and Static Routing.

Part 3: Configure DHCP.

Part 4: Test the connectivity between PCs.

Scenario

In this activity, you will configure Static Routing and DHCP in each router.

Instructions

Step 1: Subnetting and Routing tables

- Use the 172.16.0.0/18 addresses block to assign an address to each network displayed in Figure 2.
- Define each router's static routing table, and simplify, if possible.

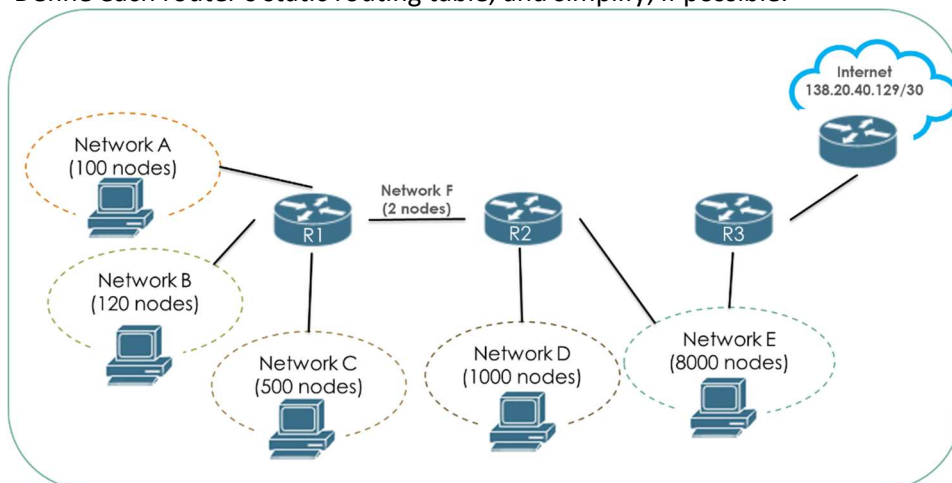


Figure 2- Network Topology

Note: An Excel file has been provided to simplify this step.

Step 2: Configure the routers' IP addresses and Static Routing.

- a) Assign to each router a hostname according to the topology diagram.

```
Router(config)#hostname ISP
```

- b) Configure in each router its IP in each of the networks.

```
ISP(config)#interface GigabitEthernet0/0  
ISP(config-if)#ip address 138.20.40.129 255.255.255.252  
ISP(config-if)#no shutdown
```

- c) Configure the routing table in each router.

```
ISP(config)#ip route 172.16.0.0 255.255.192.0 138.20.40.130
```

Step 3: Configure DHCP

- a) Configure DHCP in each of the routers.
- Router R1 is responsible for networks A (pool name **networkA**), B (pool name **networkB**) and C (pool name **networkC**).
 - Router R2 is responsible for network D (pool name **networkD**).
 - Router R3 is responsible for network E (pool name **networkE**).

Note: Do not forget to exclude the IPs already assigned to the router.

```
R1(config)#ip dhcp excluded-address 172.16.38.1  
R1(config)#ip dhcp pool networkA  
R1(dhcp-config)#network 172.16.38.0 255.255.255.128  
R1(dhcp-config)#default-router 172.16.38.1
```

- d) In each of the PCs activate DHCP.

Step 4: Test the connectivity.

- a) Test the connectivity between PCs and PCs and the Internet, every node must be able to communicate.