IP Interfaces: Part 2

Instructions

For the second lab, you will select IP addresses from 10.10.11.0/24 to configure R2, R3, and R4 in Area 1 as shown in the network diagram. Since R2, R3, and R4 are connected by different hubs, they are not in the same broadcast and collision domain, and therefore do not have direct access to each other via Ethernet.

You will configure four different subnets so that each pair of directly connected routers can communicate with each other. But you also must make sure that your subnets do not overlap.

Before configuring your VMs, fill in the table and verify that you have assigned appropriate subnets for all three VMs. Each subnet should be large enough to accommodate its routers, but no larger than necessary.

Note that you will assign a /28 on R4 (eth2) to be used later for a subsequent DHCP assignment.

VM (interface)	IP Address	Network Address	Broadcast Address	Range (usable addresses)
R2 (eth1)				
R3 (eth0)				
R2 (eth2)				
R4 (eth1)				
R3 (eth1)				
R4 (eth0)				
R4 (eth2)				

Part 1: Configuring Network Interfaces

Use **`vtysh`** to do the configurations (See Interface Commands under Zebra in the frrouting manual). Don't forget to write to memory or your changes will be lost.

You may use Linux's **`ifconfig`** command in order to verify that you have saved your network configuration (see man ifconfig).

Part 2: Questions

a) Why must we ensure that our subnets do not overlap? Discuss one example of something that could go wrong. (10 points)

b) Suppose there is another Router (R5) directly connected to the HUB between R3 and R4. Explain whether or not we would need to reconfigure the IP subnets on R3 and R4 in order to communicate with R5. (10 points)

c) Run Wireshark on R2 (eth1). Now *ping* R3(eth1) from R2. Identify what type of packet is used in *ping*. Why is R2 unable to reach R3 (eth1)? (10 points)

d) Briefly describe how Wireshark results compare when you *ping* R3 (eth0) from R2 (eth1). (5 points)

Submissions

[30 pts] Screenshot of the .conf file under /etc/frr/frr.conf from R2, R3, and R4
[20 pts] Your IP subnet table
[10 pts] Screenshot showing that pinging works between R2, R3, and R4
[5 pts] Screenshot of the ARP tables on R2, R3, and R4
[35 pts] Answers to questions 2a-2d.