

Castor, John Danielle [REDACTED]

Gador, John Edrick M. [REDACTED]

Lab Activity 4: IPv4 Routing - Hardware Version

Background

RJ45 Wire

Before starting the lab activity, each student was assigned to create an ethernet cable that follows the T-568B color coding standard. One more cable was also constructed to serve as a link for the router-to-router connection. The wires were then tested to ensure that they function as intended.



Figure 1: Ethernet Cable Test Results (Top- Gador, Bottom- Castor)

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1. IPv4 Subnet

To start with the activity, each student devised an IPv4 subnet [REDACTED] based on their student number [REDACTED]

CASTOR: 20.6.54.0/24

GADOR: 20.6.49.0/24

To access the router and configure the ethernet interfaces, the students plugged their machines to their router's respective eth0 ports via an ethernet cable, and accessed the command-line interface of the router using the command "ssh ubnt@192.168.1.1." The students also set the appropriate ip address, subnet mask, and gateway router of their PCs, as shown in Figure 3.



Figure 2: Router's eth0 to PC connection

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2. Setting up eth2

After connecting a laptop to a router via eth0, the eth2 interface of each student's router was configured with an IPv4 address from their respective subnet.

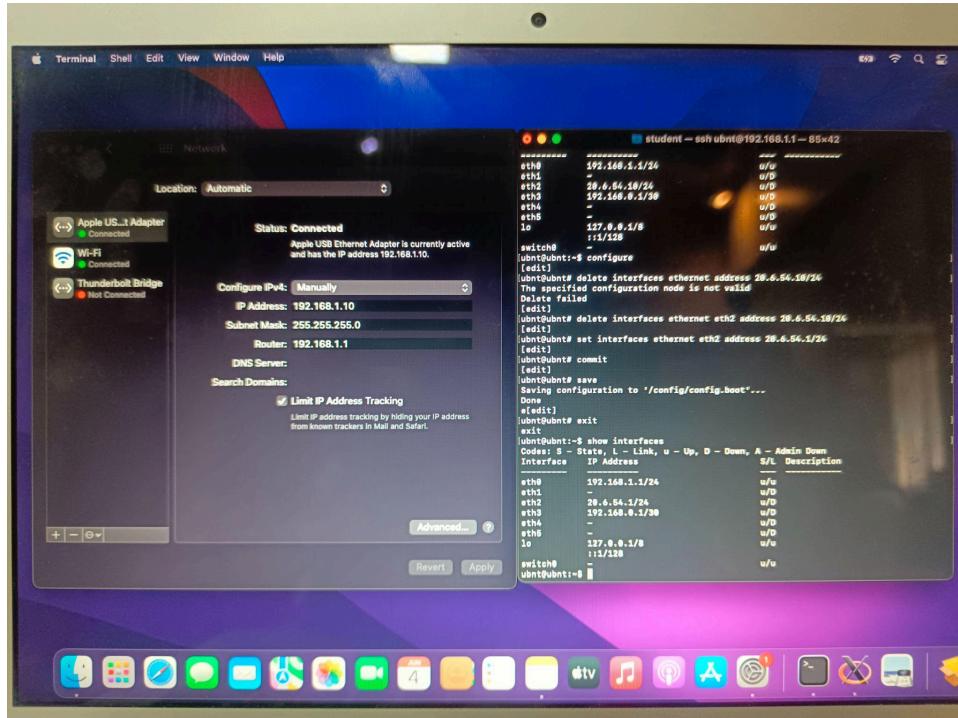
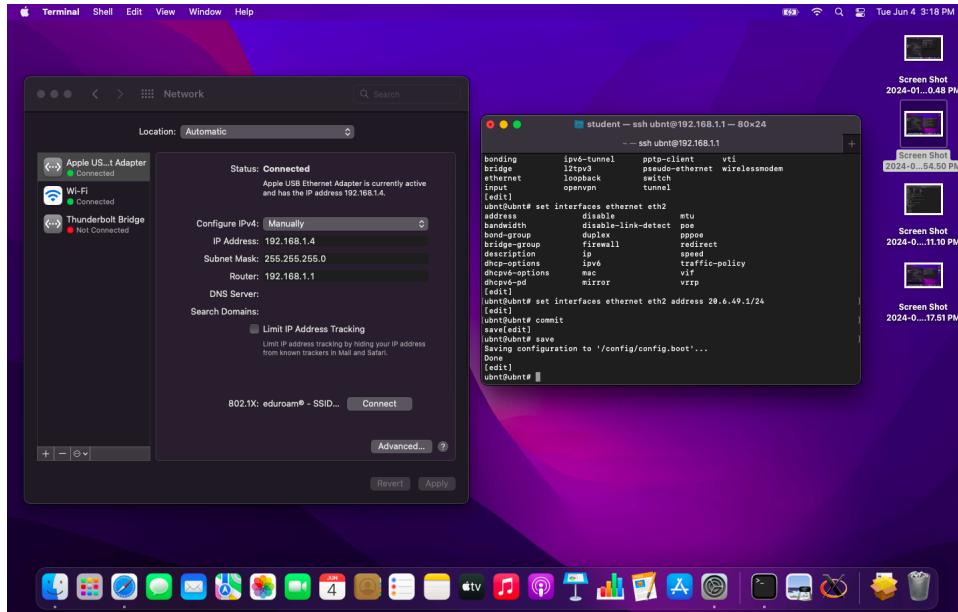


Figure 3: Eth2 Configuration (Top- Gador, Bottom- Castor)

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After which, the laptop is then unplugged from eth0 and plugged into eth2. From here, the laptop was configured to take in an IP address from the student's subnet. The commands used were "set interfaces ethernet eth<#> address <ip address>", commit, and save. To check the current interface configurations (if there were configurations done by other students who also used the same router), the "show interfaces" command was used.

Note: The students also configured eth3 here to save time.

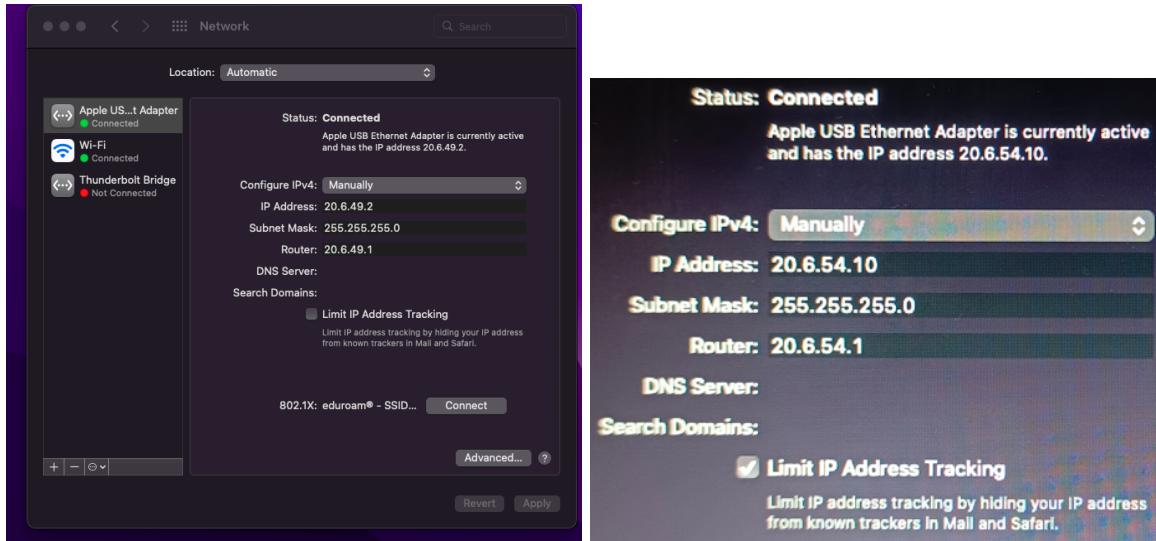


Figure 4: PC's IP Address Configuration (Left- Gador, Right- Castor)

2.1. PC-to-Router Link Setup

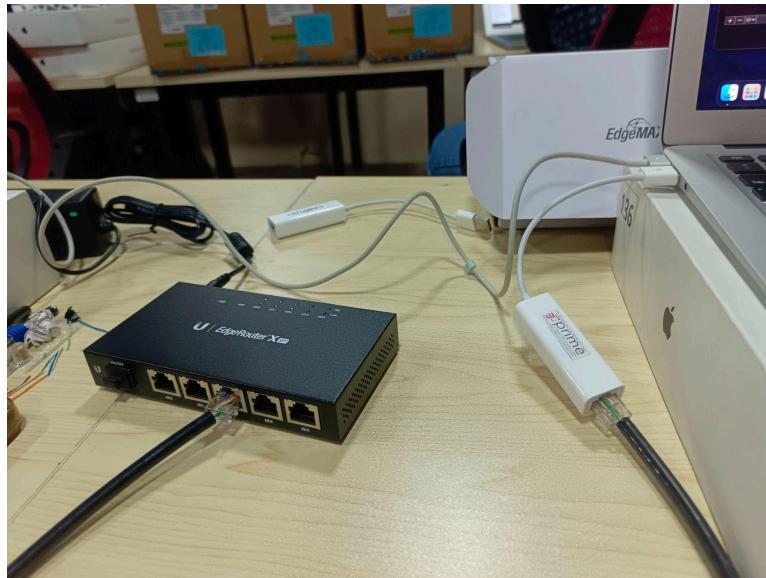


Figure 5: Router's eth2 to PC connection

2.2. Ping from PC to local router

To ping the router's eth2 interface, the “ping <ip address>” command was used.

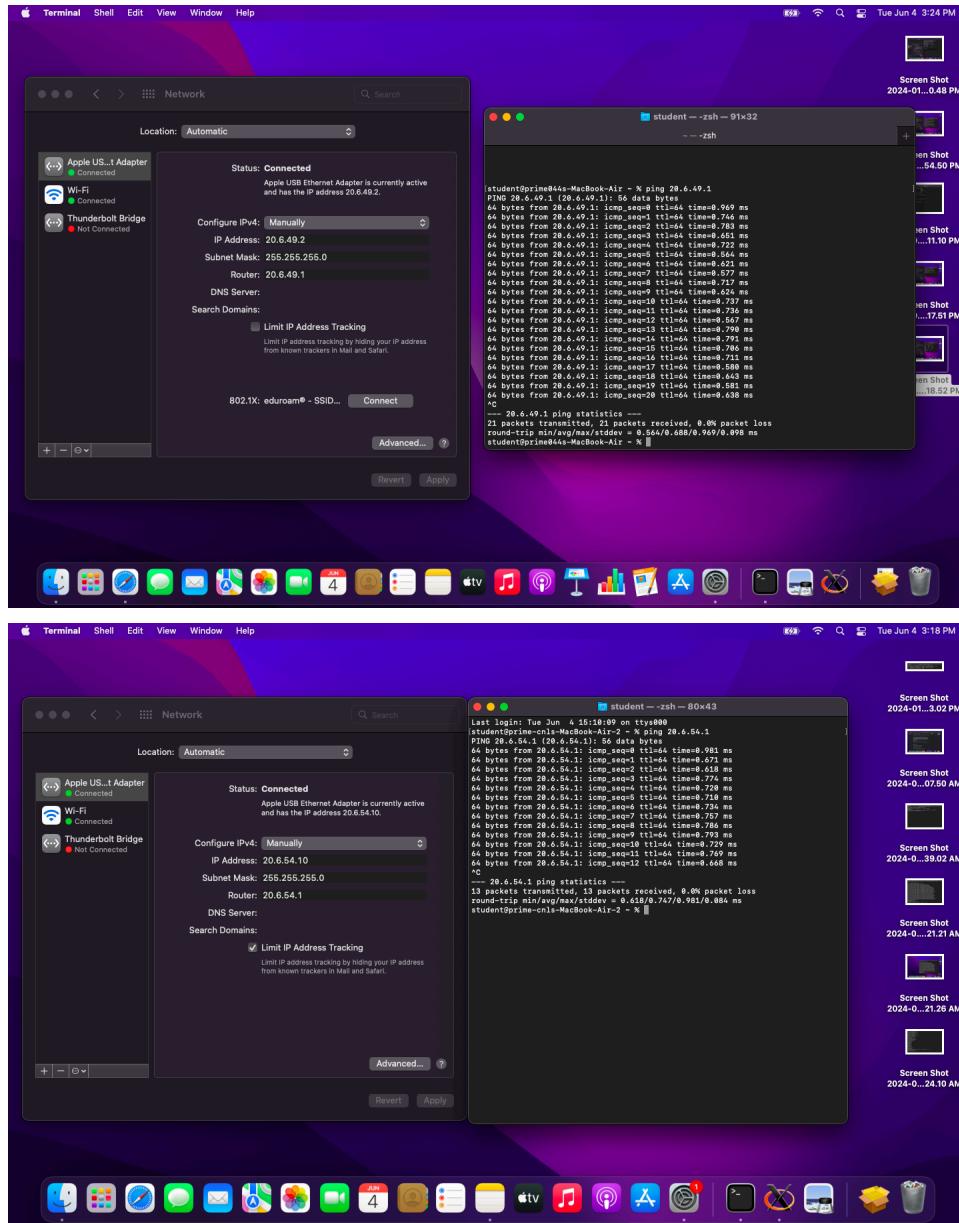


Figure 6: PC-to-Router Ping Results (Top- Gador, Bottom- Castor)

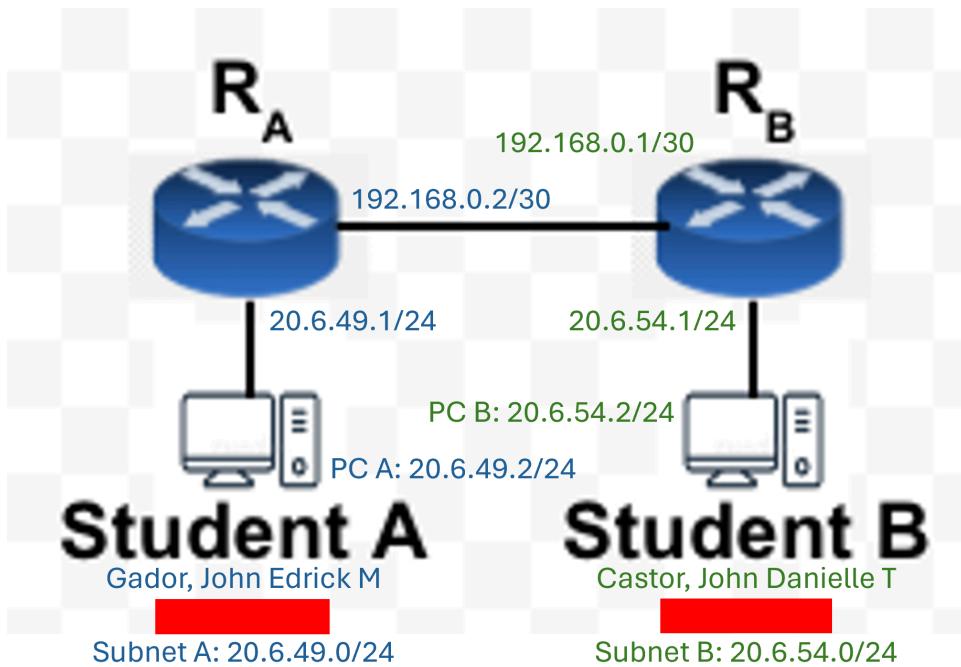
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3. Network Setup



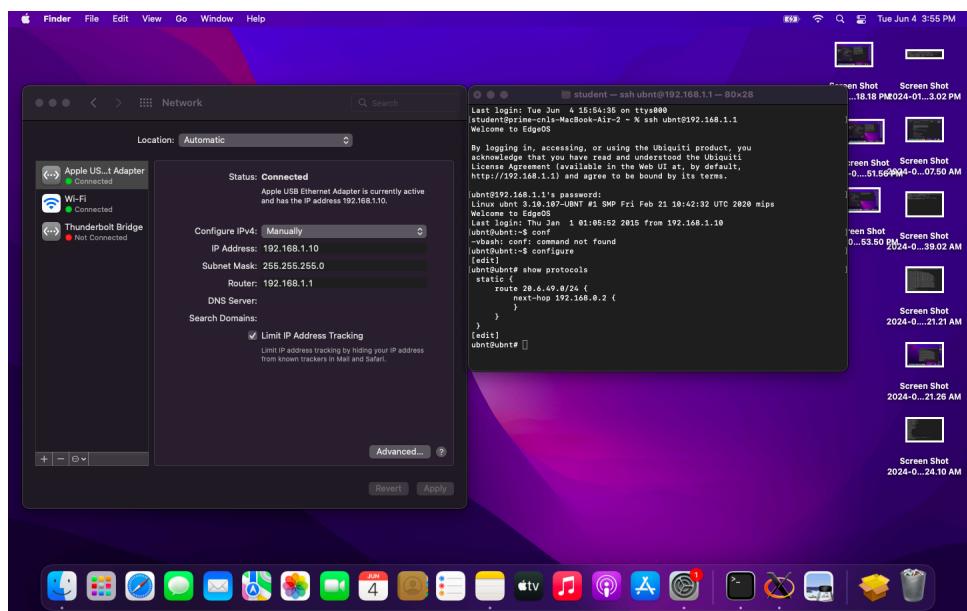
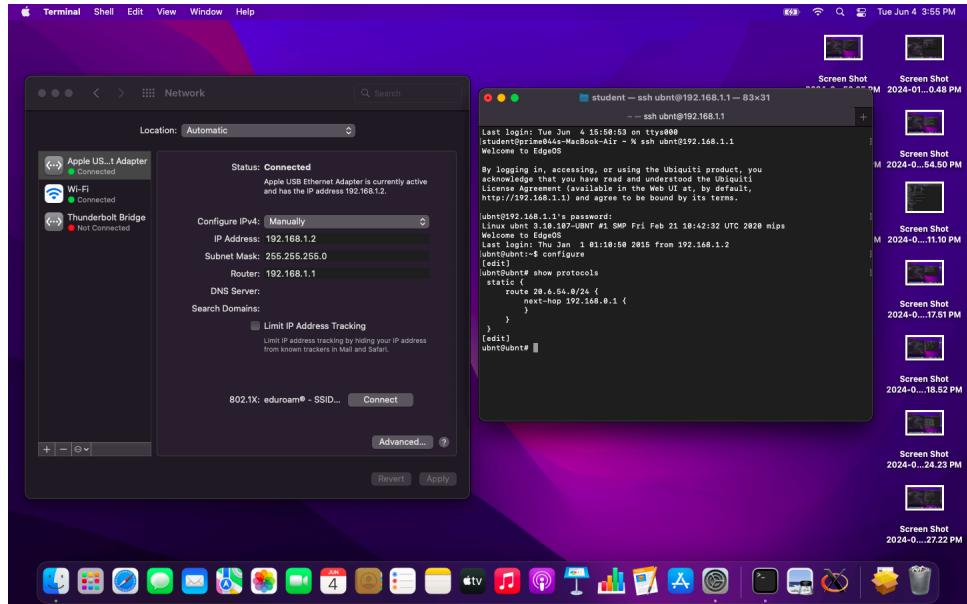
3.1. Network Diagram



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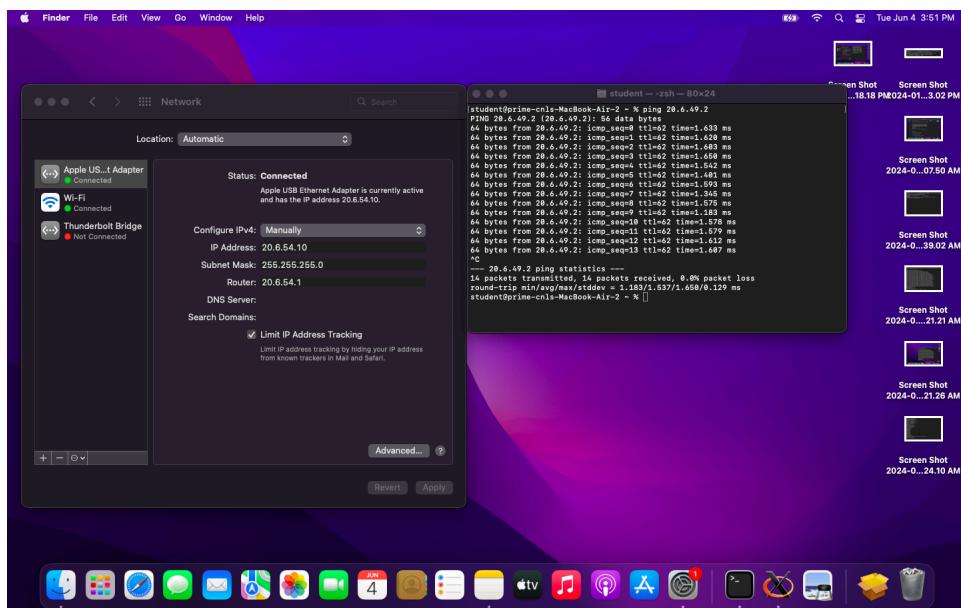
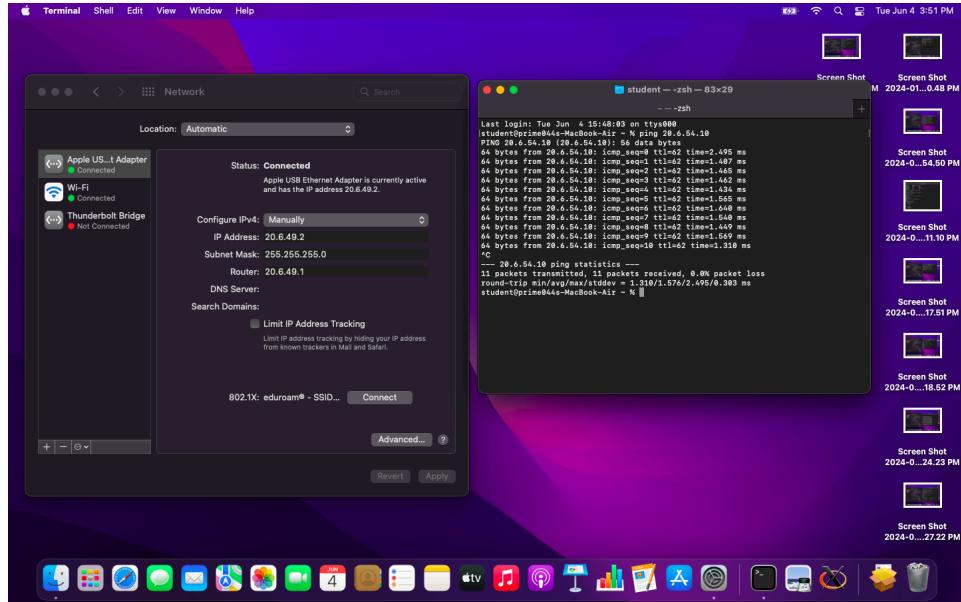
3.2. Routing Tables (Top- Gador, Bottom- Castor)

Here, the interface and protocols of eth3 were configured. The protocols were set, particularly for routing, via the “set protocols static route next-hop <ip address>” command.



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3.3. Ping the PC from Another Subnet (Top- Gador, Bottom- Castor)



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Gador, John Edrick M.

3.4. Traceroute Results (Top- Gador, Bottom- Castor)

