CEIS 191

Fundamentals of Information Technology and Networking

Introduction

- This course introduces the underlying technology of local area networks (LANs), wide area networks (WANs) and the Internet. Topics include the Open Systems Interconnection (OSI) model, Internet Protocol (IP) addressing, Transmission media, Transmission Control Protocol/Internet Protocol (TCP/IP) suite, an overview of routing and switching, network troubleshooting, and network security.

Challenges

- While taking this class I oversaw a large automation project in the Austin Chalk Basin of Central Texas after changing to a new company. I was working very long hours, so besides the live lectures I was not able to join any homework huddles. There was numerous times where I had to re-try network configurations to make sure everything was working properly
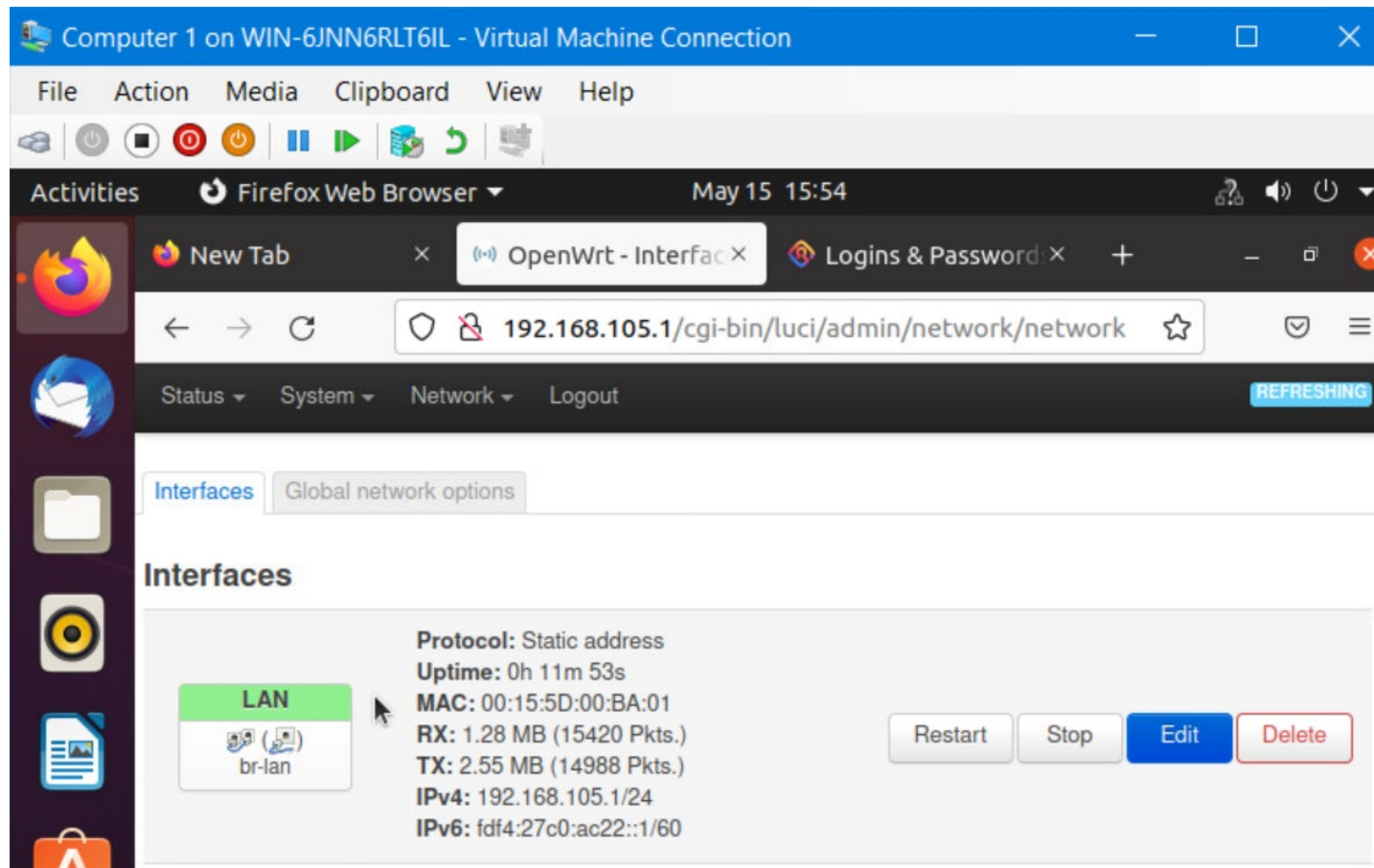
IPv4 Addressing

Preparation

Screenshot shown
includes the
terminal window
that shows the
default gateway IP
address.
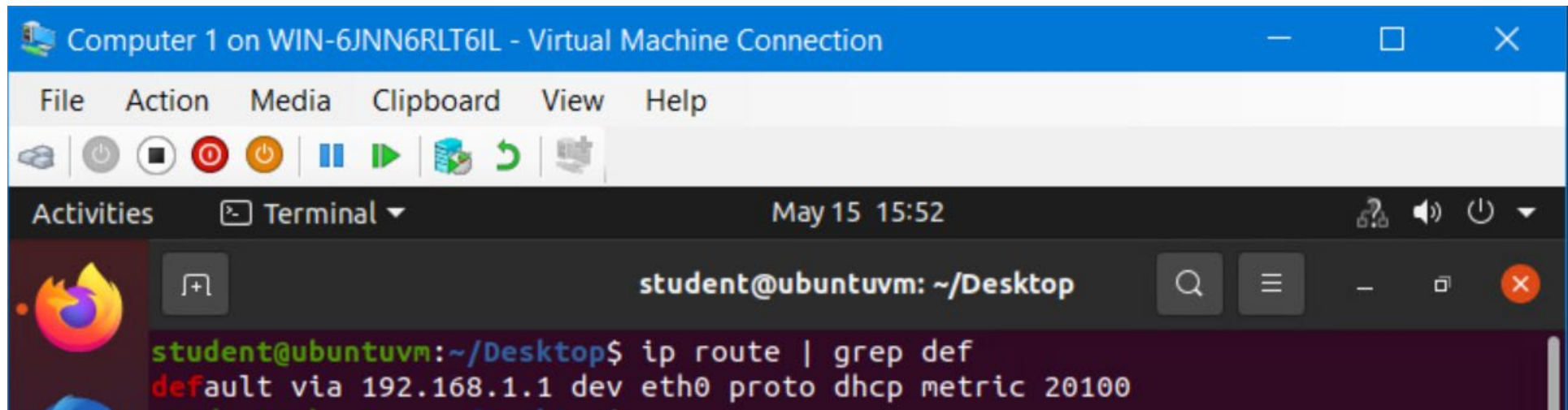
IPv4 Address Assignment
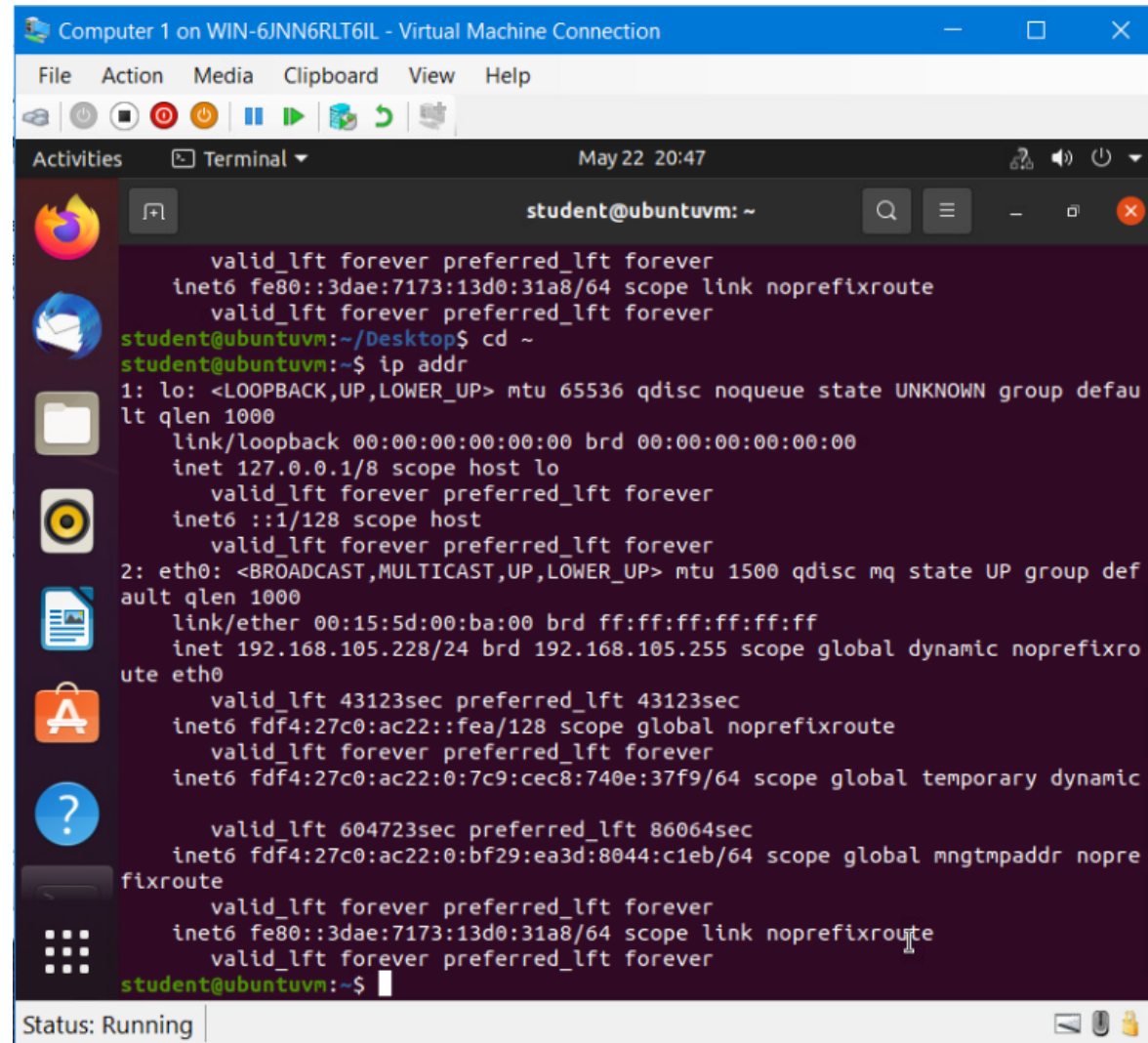
Connectivity Test

Dynamic IP Address Assignment

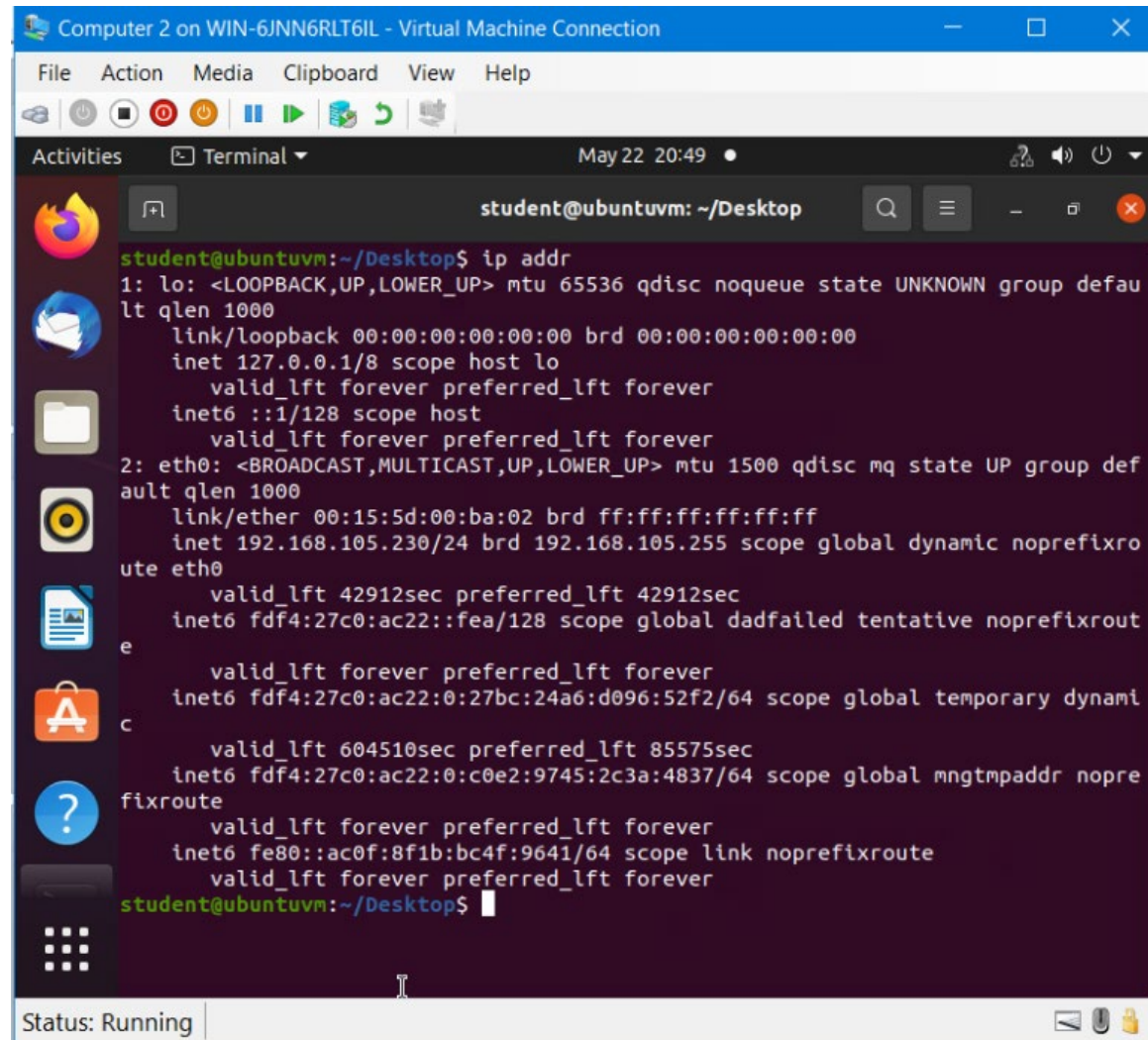Shown is the IPv4 address of the *Computer 1* VM.

Dynamic IP Address Assignment

Shown is the IPv4 address of the *Computer 2* VM.

Connectivity Test

Shown is the connectivity tests between the *Computer 1* VM and the other two devices (i.e., the *SOHO Router* VM and *Computer 2* VM).

Connectivity Test

Shown is the connectivity tests between the *Computer 2* VM and the other two devices (i.e., the *SOHO Router* VM and *Computer 1* VM).
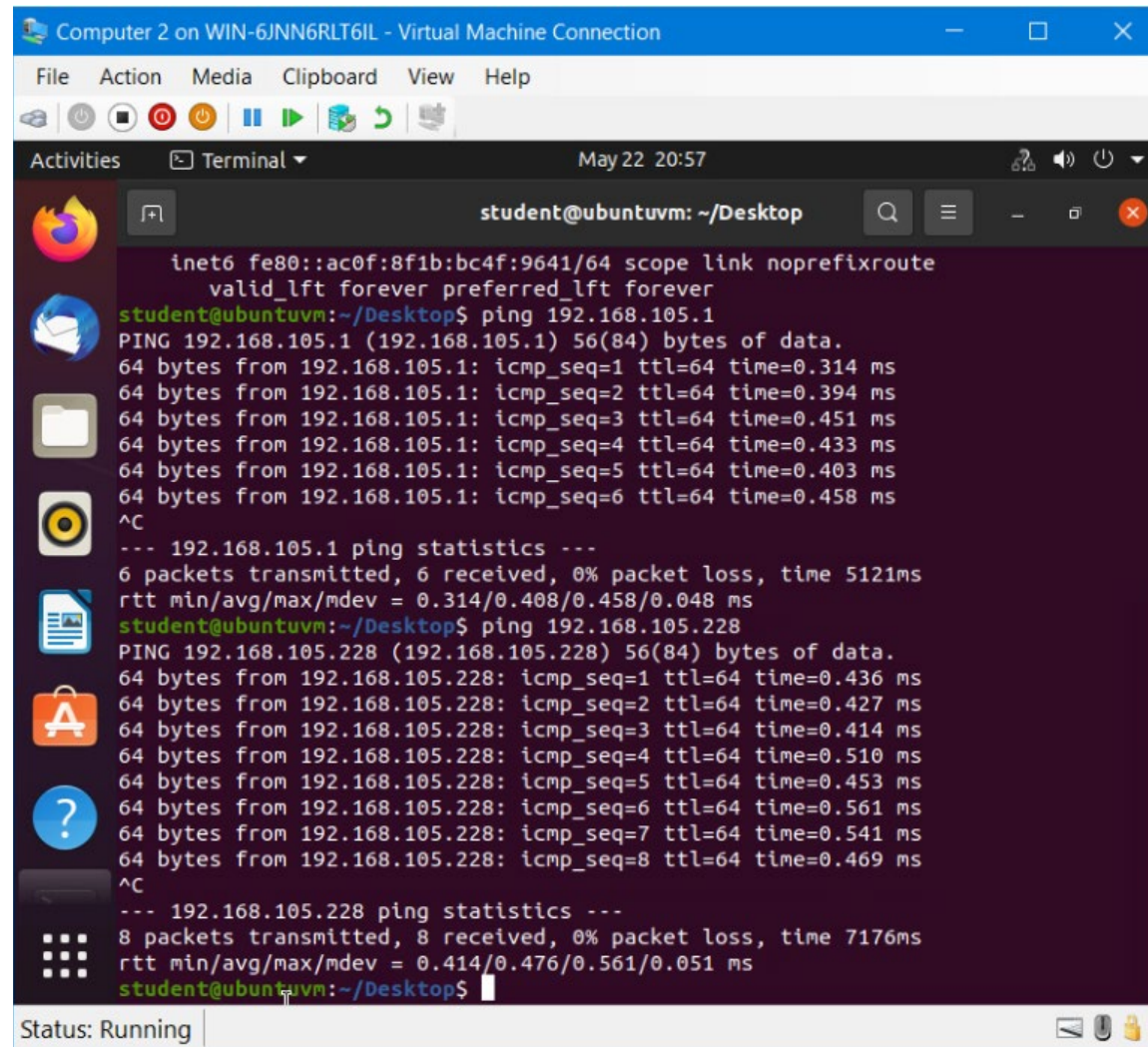
IP Subnetting and Loopback Interfaces

Subnetting Table

Subnet	Subnet Notation	Network Address	First Usable Host Address	Last Useable Host Address	Broadcast Address
The First Subnet	192.168.5.0/25	Challenge Question 2	Challenge Question 4	192.168.5.126	Challenge Question 6
The Second Subnet	Challenge Question 1	Challenge Question 3	192.168.5.129	Challenge Question 5	192.168.5.255

Challenge Question 1: 192.168.5.128/25

Challenge Question 2: 192.168.5.0

Challenge Question 3: 192.168.5.128

Challenge Question 4: 192.168.5.1

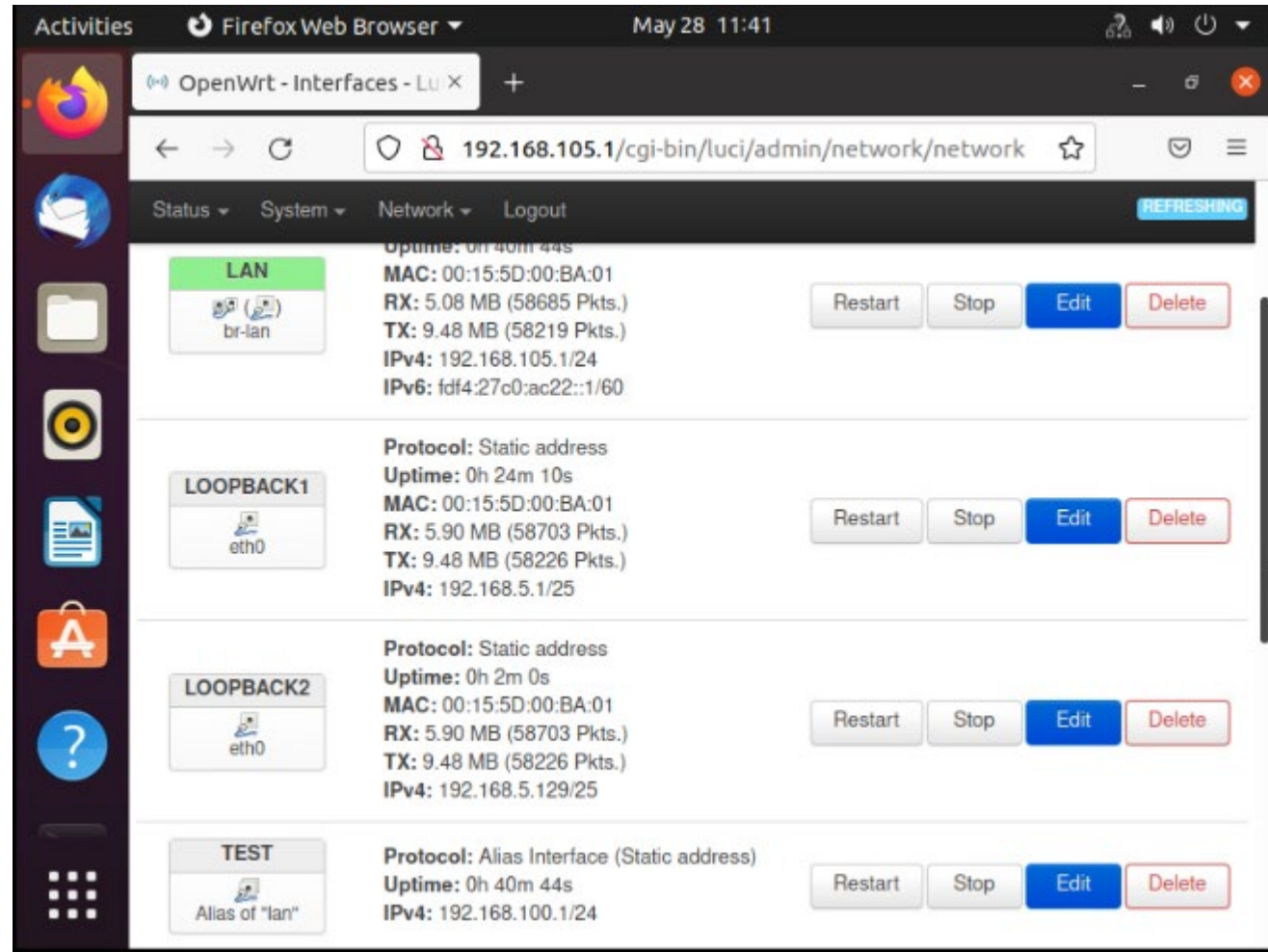Challenge Question 5: 192.168.5.254

Challenge Question 6: 192.168.5.127

Loopback Interfaces

Shown is the both Loopback1 and Loopback2 interfaces and their correct IPv4 addresses.
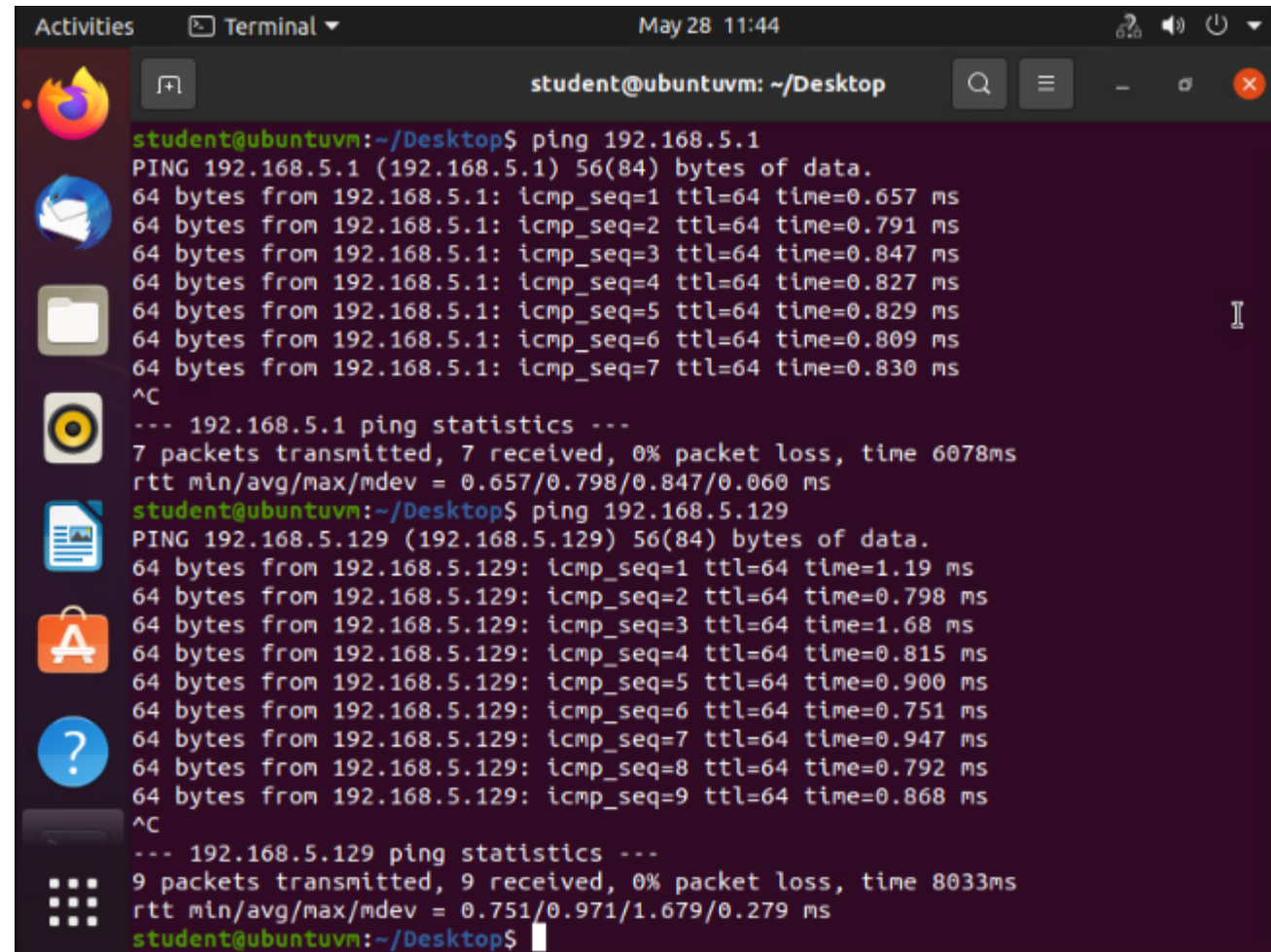
Connectivity Tests

Shown is the two successful ping tests from the *Computer 1* VM to the *Loopback 1* and *Loopback 2* interfaces.

Network Diagram

Network Diagram made on app.diagram.net
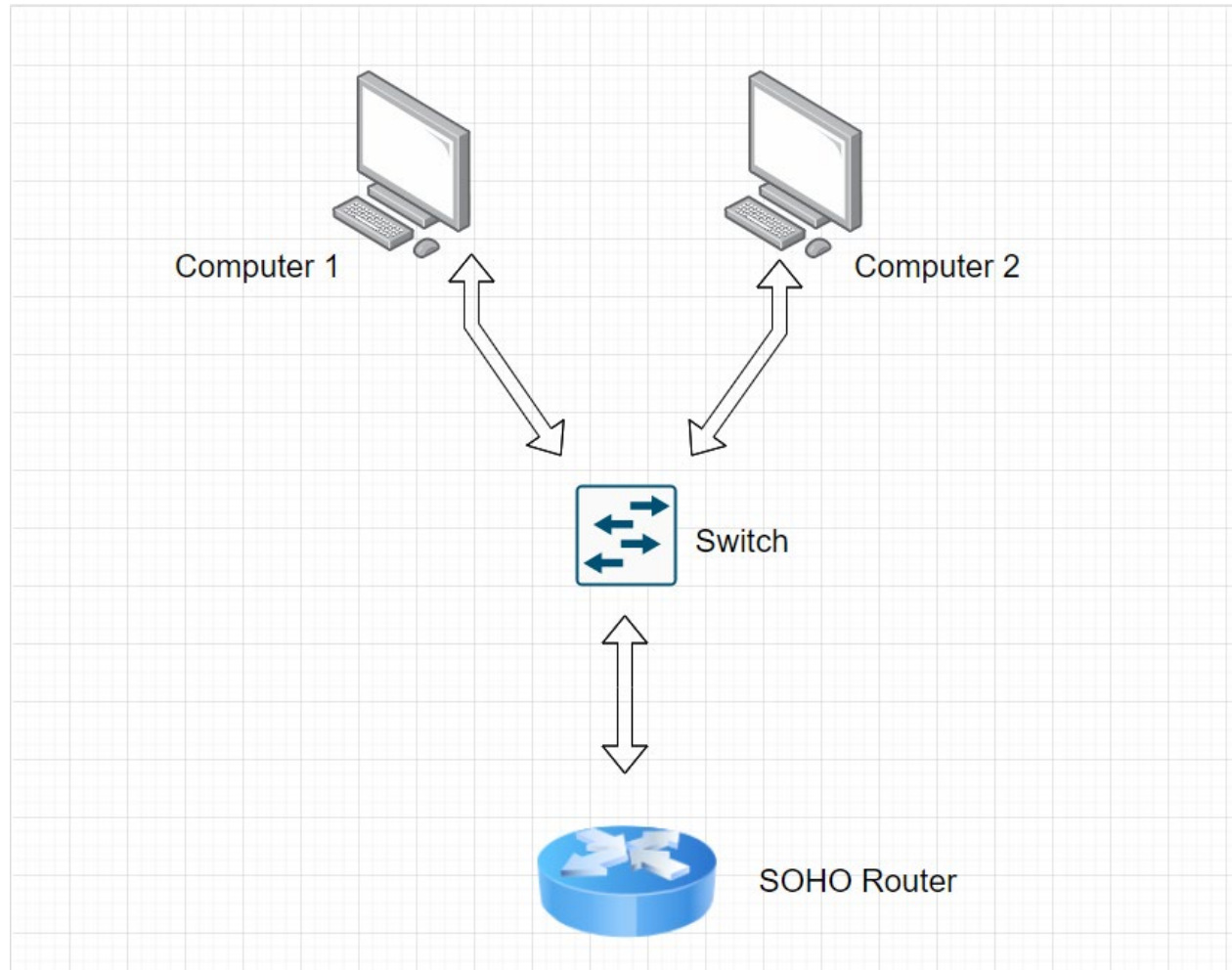
SOHO Wireless Network Security

SOHO Wireless Network Security

1. What are the factory default username and password of a TP-Link router? Why is it important to change the default username and password of a SOHO router?

Answer: admin / admin

It is important to change the default password because many of these routers are sold

across the world and many people have access to the same default password

2. To protect a SOHO wireless network with a small number of devices, which address management method provides more control, configuring the device IP addresses manually (static IP) or using a DHCP server (dynamic IP)? Why?

Answer: Static IP gives you more control over what your Ip will be changed to. As you will manually change the IP. A Dynamic IP using a DHCP server doesn't give you as

much control

3. What does MAC filtering do? If needed, when would you use deny filtering rules and when would you use allow filtering rules? What happens to devices that want to connect, if the "Allow the stations specified by any enabled entries in the list to access" function is enabled but there are no entries in the list?

Answer: MAC filtering allows an individual to control which machine accesses the network

through filtering out the specific MAC address of the machine. If the function is enables but

there are no MAC addresses entered then it wouldn't know which address to filter out and

deny all of them

SOHO Wireless Network Security

1. What wireless security settings are displayed on the Wireless Security page? Which one is recommended by the vendor? Why?

Answer: WPA/WPA2- Personal is recommended. This is because Enterprise and TKIP

encryption is not available with WPS enabled for Network Security

2. Among the configurations you explored in this module, which one is a true security function? Why?

Answer: I think using a DHCP server and making your IP dynamic along with using a mac

filter system is great protection, but the wireless network encryption is the best because it

offers the base level of security for the network

3. What would you do to protect your wireless network at home? Why?
Answer: A strong password including special characters and number, nothing with common phrases or names. Also a dynamic IP address.

Career Skills

- I added a lot of knowledge to my understanding of networks. I used the apps.diagrams.net website to help build out a wireless ethernet network for a client (shown below).
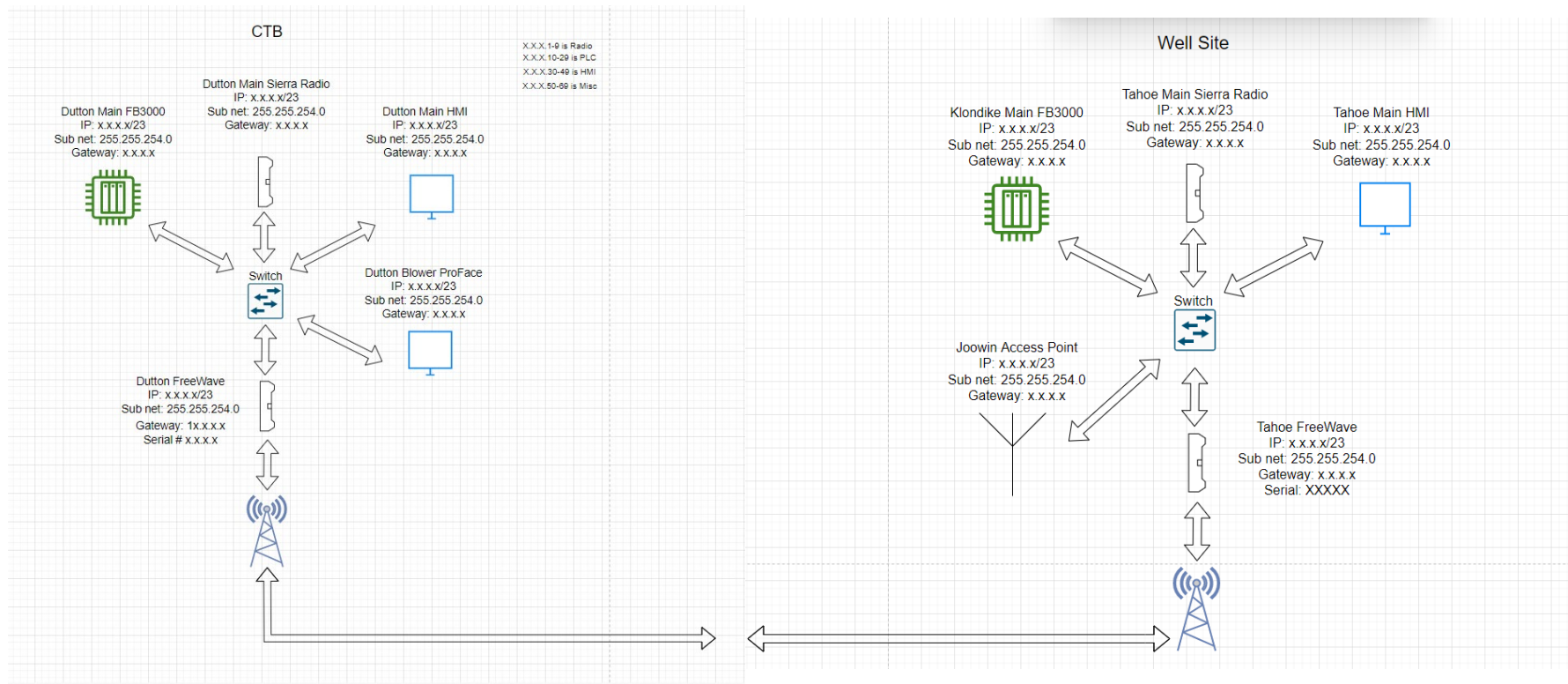
Conclusion

- I really enjoyed using Infosec Learning to continue networking. It is very user friendly and intuitive. I hope to carry over the knowledge I have learned into my career and further my understanding of networking.