NETW 191 Course Project Fundamentals of Information Technology and Networking

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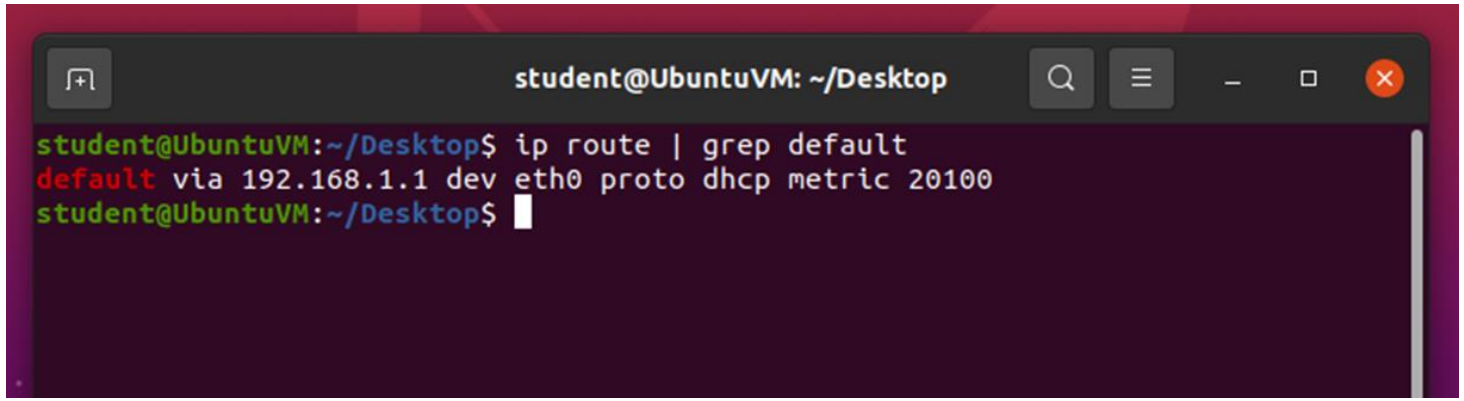
Introduction

- The following presentation will show the Interaction with a virtualized network environment utilizing principles of technology and Microsoft Azure and Visio
  - Slides three (3) through (5) show IPv4 addressing
  - Slides six (6) through nine (9) show Dynamic IPv4 addresses and Connectivity Test
  - Slides ten (10) through thirteen (13) show IP Subnetting and Loopback Interfaces
  - Slides fourteen (14) and fifteen (15) show a Network Diagram using Microsoft Visio
  - Slides sixteen (16) through eighteen (18) discuss SOHO Wireless Network Security
  - Slide twenty (19) list the Career Skills learned
  - Slide twenty-one (20) list the Challenges encountered
  - Slide twenty-two (21) is the Conclusion

We begin with IPv4 Addressing

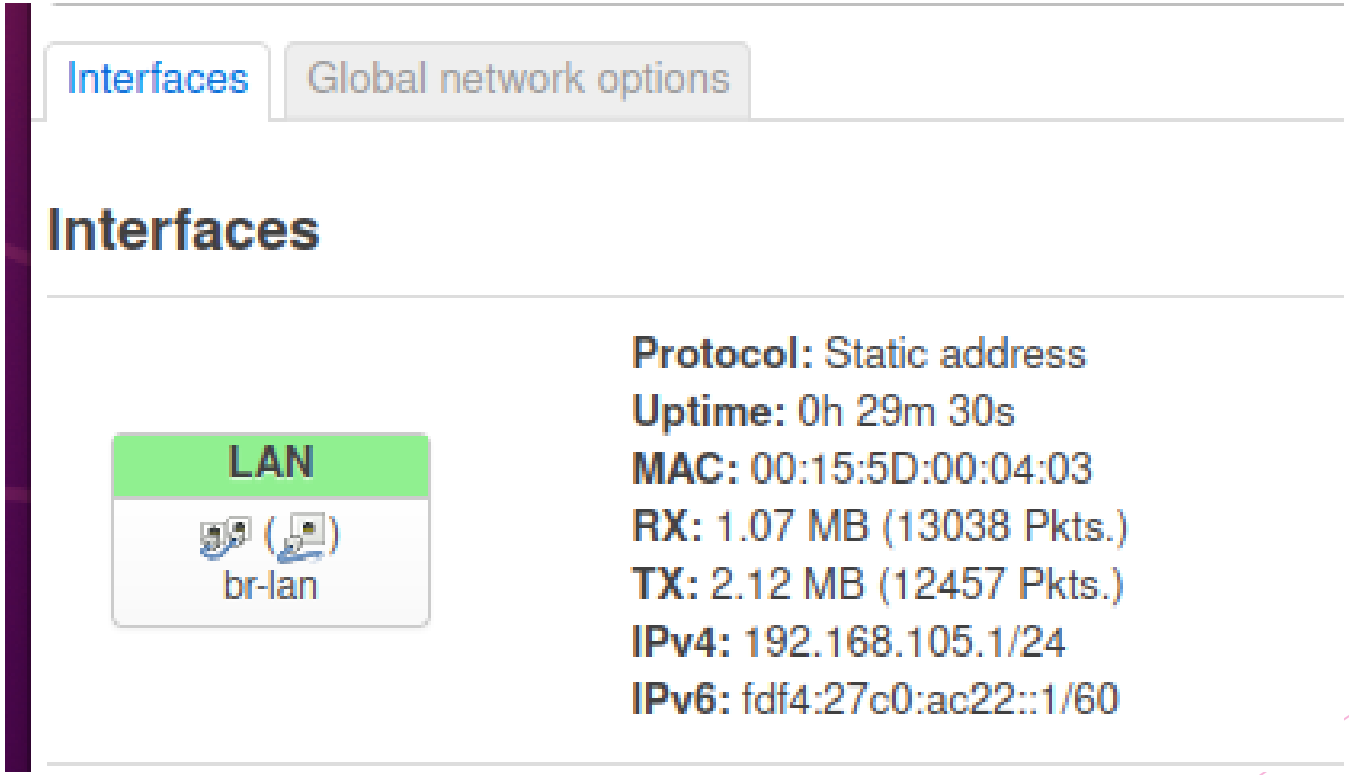
Preparation

This screenshot includes the terminal window that shows the default gateway IP address.



IPv4 Addressing

This screenshot includes the *Interfaces* page that shows the new IPv4 address on the LAN interface.

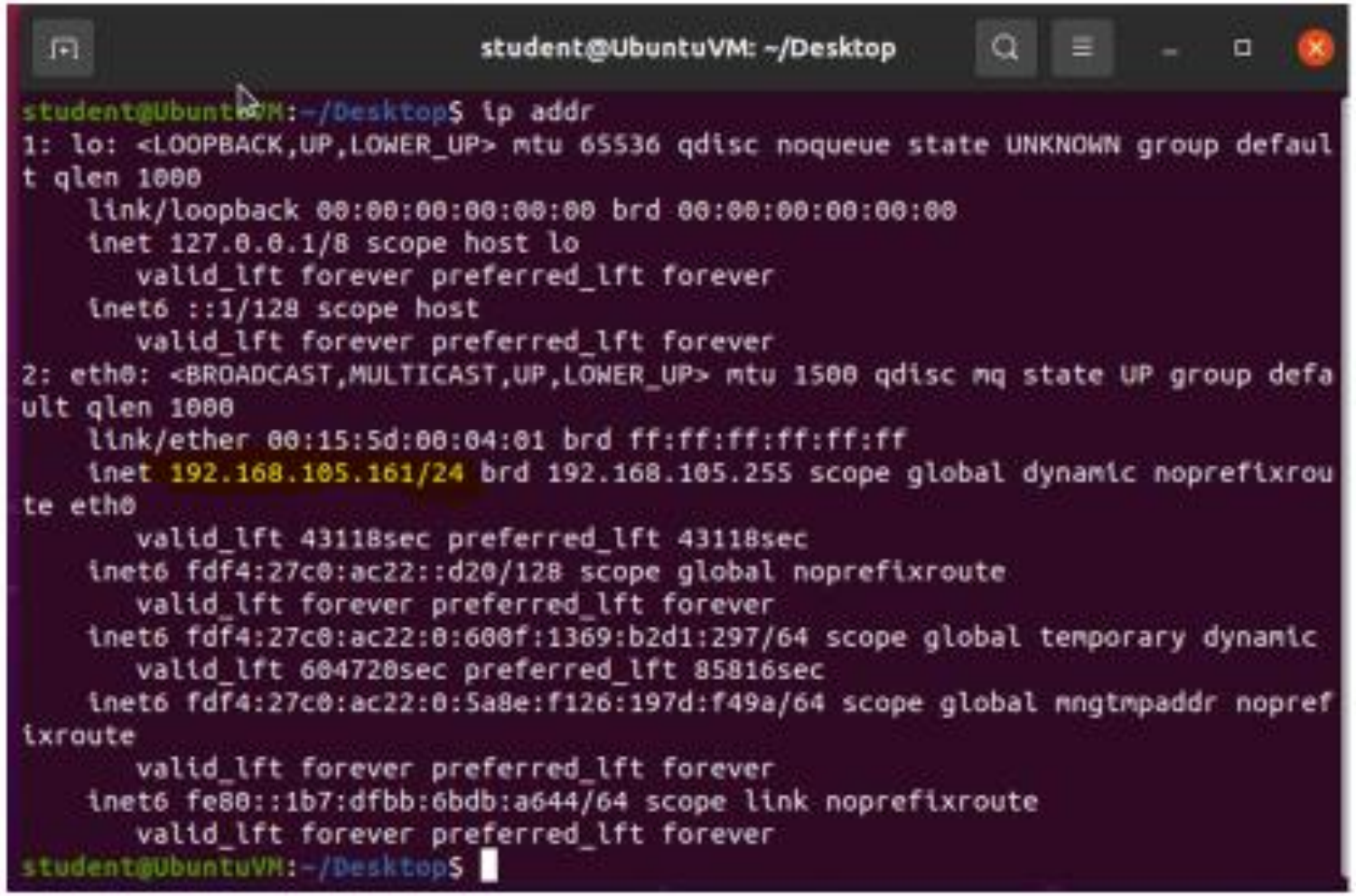


IPv4 Addresses and Connectivity Test

The next three slides will show the IPv4 addresses for the Computer 1 VM and Computer 2 VM, and Connectivity Test

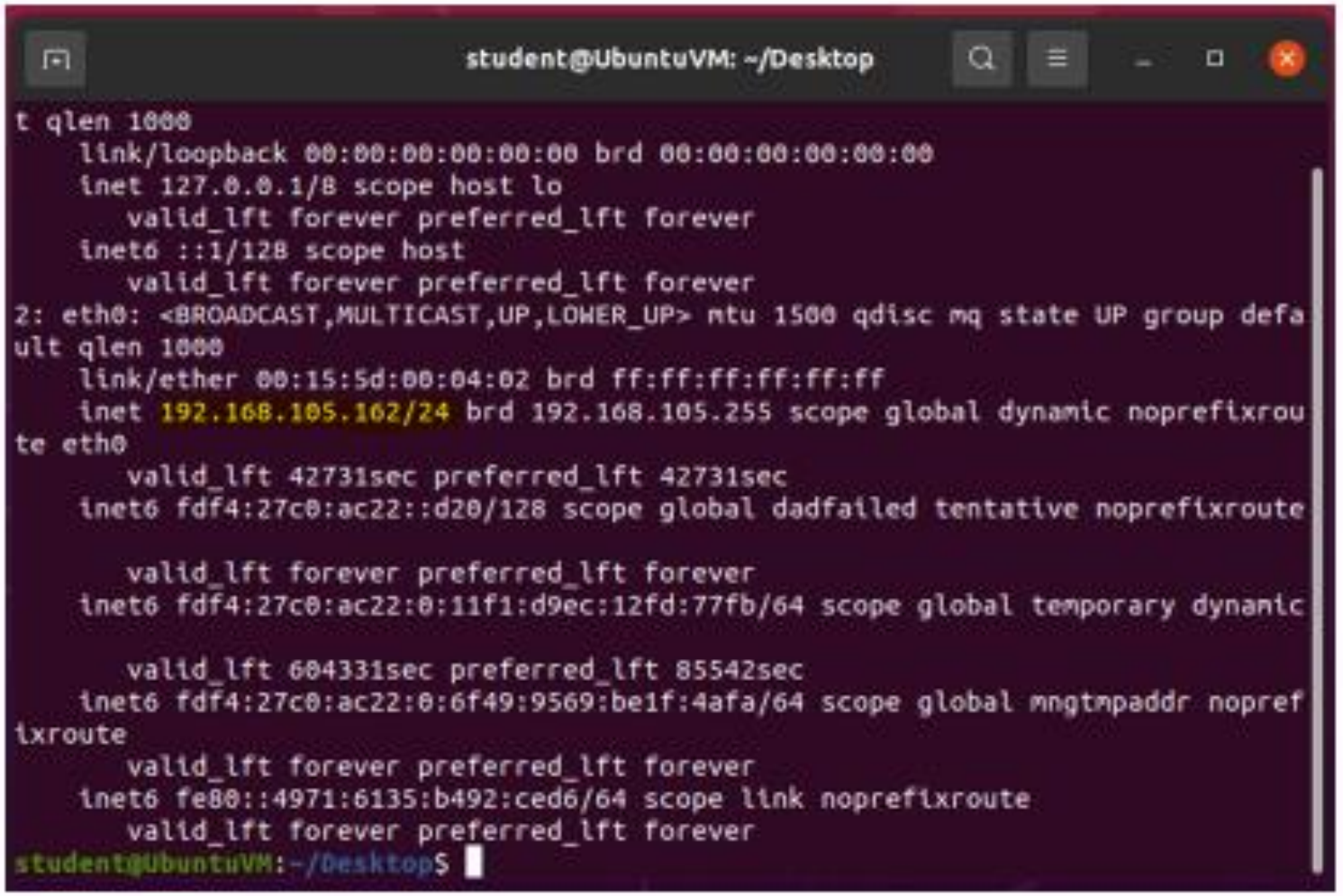
Dynamic IPv4 Address

This screenshot shows the IPv4 address of Computer 1 VM



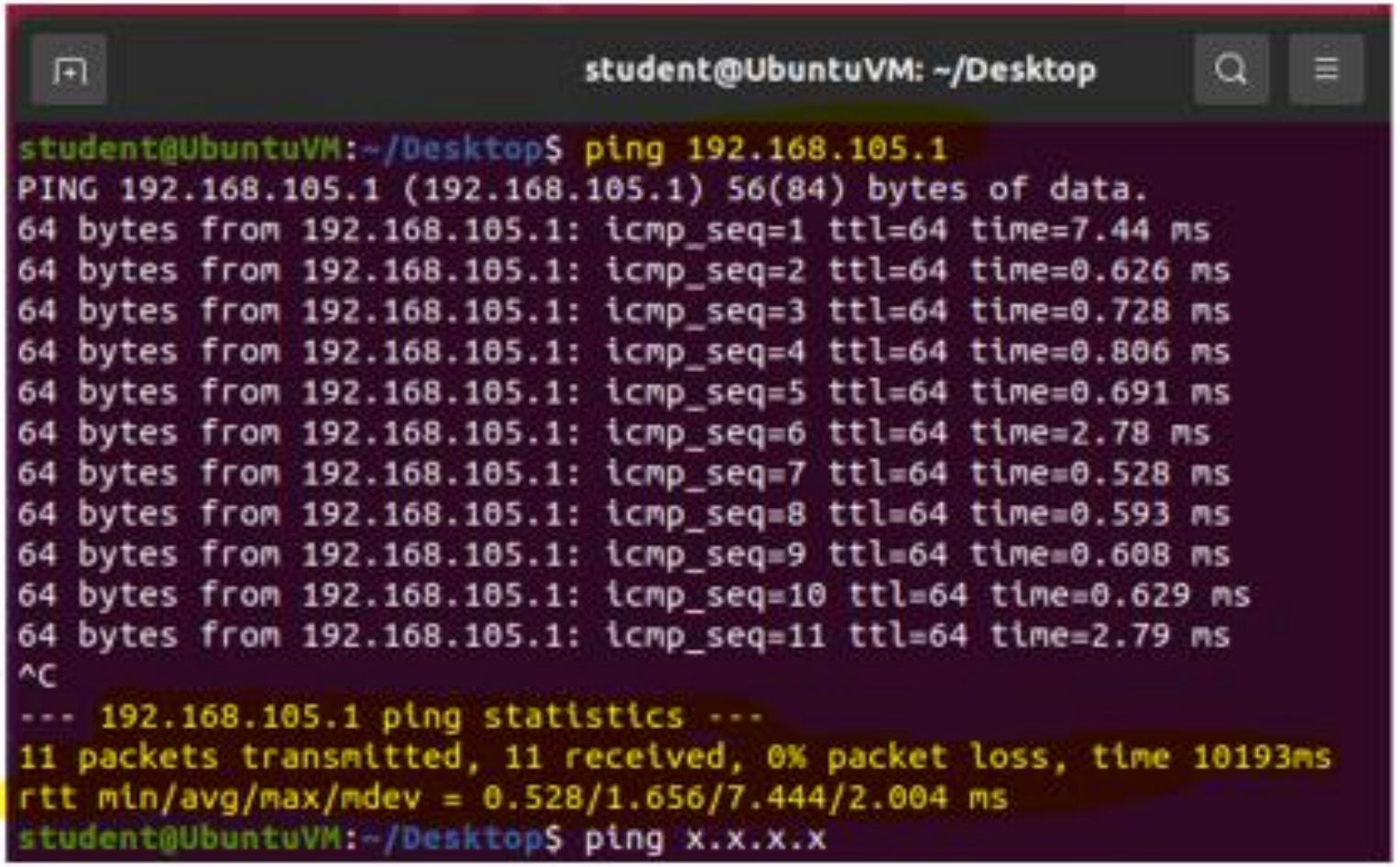
Dynamic IPv4 Address

This screenshot shows the IPv4 address of Computer 2 VM



Connectivity Test

This screenshot shows the connectivity tests between the Computer 1VM and the other two devices (i.e., the SOHO Router VM and Computer 2VM)



The next three slides we will show

IP Subnetting

Loopback Interfaces

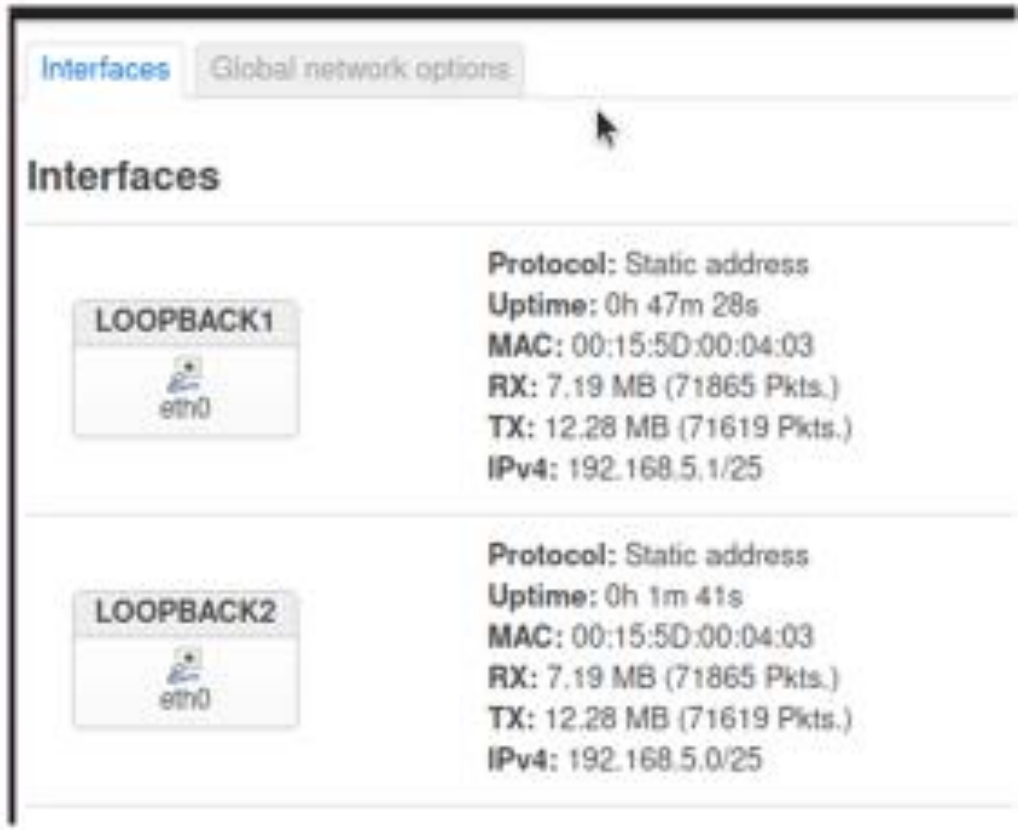
Connectivity Tests

Subnetting Table

bit		21	22	23	24	25	26	27	28	29	30	31	32
	...	8	4	2	1	128	64	32	16	8	4	2	1
						1	0	0	0	0	0	0	0
							0	0	0	0	0	0	1
							0	0	0	0	0	1	0
									...				
							1	1	1	1	1	1	0

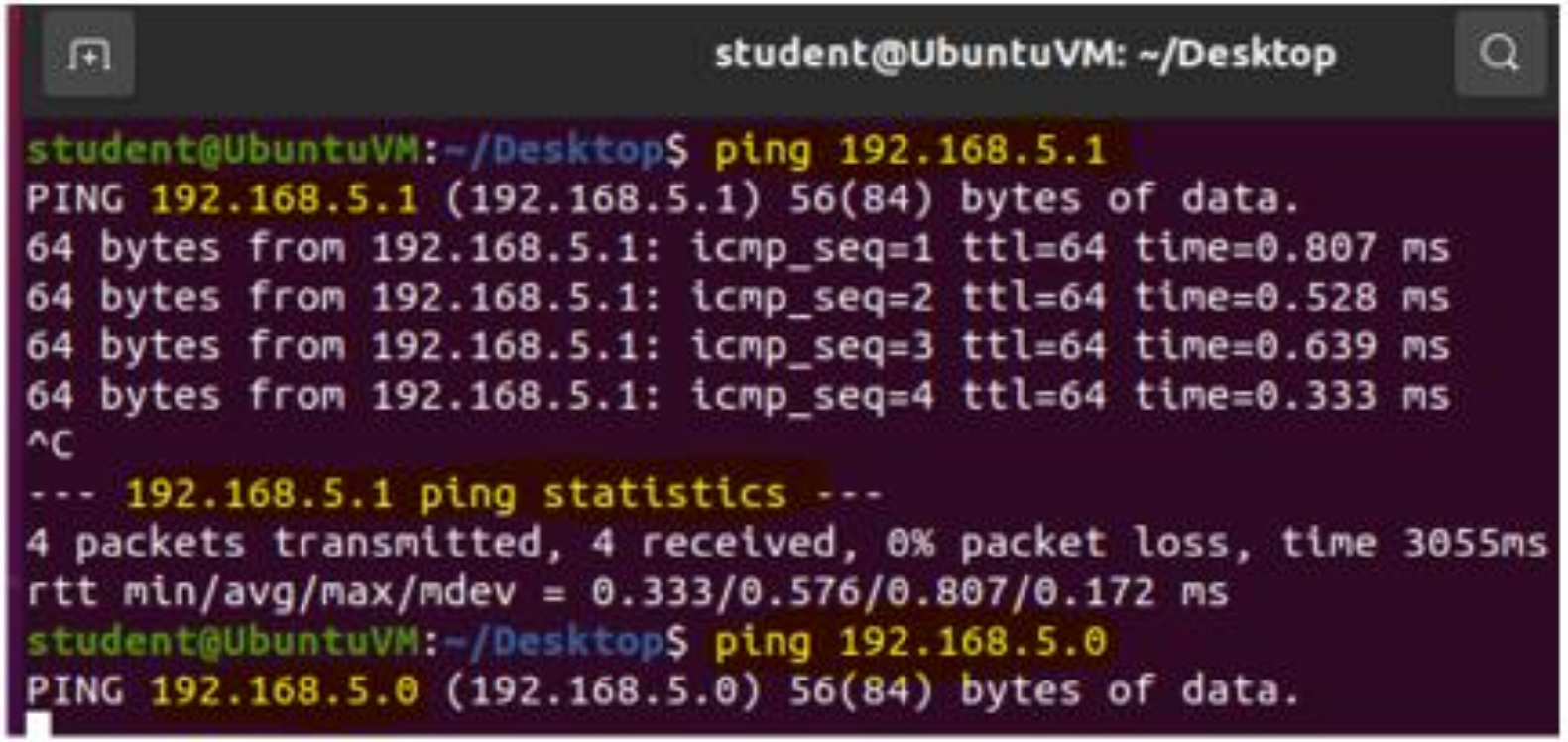
Loopback interfaces

This screenshot shows both Loopback1 and Loopback2 interfaces and their correct IPv4 addresses



Connectivity Tests

This screenshot shows two successful ping test from the Computer 1 VM to the Loopback 1 and Loopback 2 interfaces

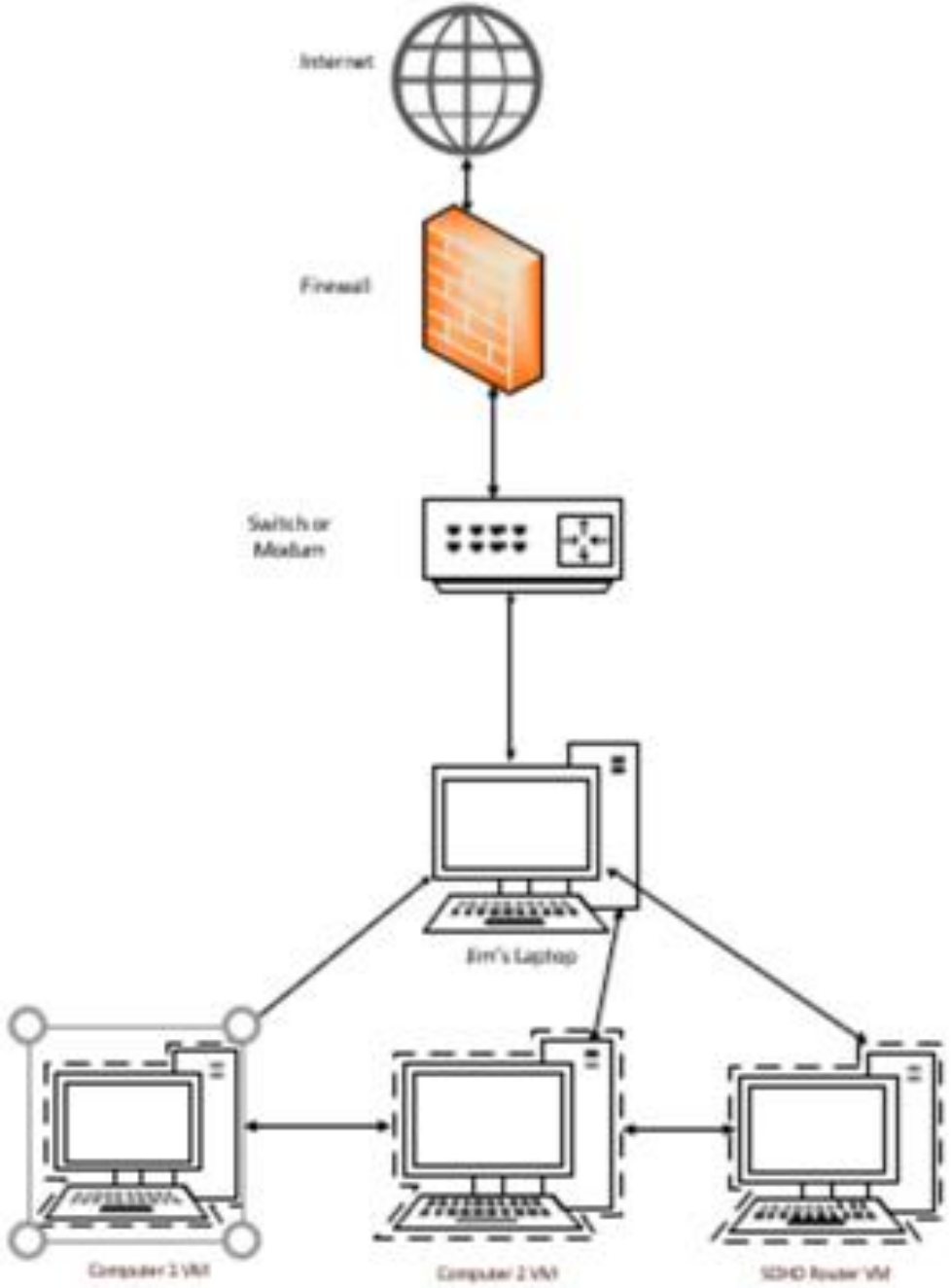


Visio Network Diagram

The next slide is self explanatory. It shows the Network Diagram created with Microsoft Visio

Microsoft Visio Network Diagram

This diagram illustrates the interconnection of Computer 1 VM, the Computer 2 VM, and the SOHO Router VM.



SOHO Wireless Network Security

The next two slides show questions and answers regarding SOHO Wireless Network Security, including references

Q & A regarding 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 is username and admin is password, For your own identity and security

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: Because small, static, but after reviewing the router emulator it looks like using the DHCP server and "dynamic IP" provides more control because you can add Client Name - The name of the DHCP client.**
- **MAC Address - The MAC address of the DHCP client.**
- **Assigned IP - The IP address that the device has allocated to the DHCP client.**
- **Lease Time - The time of the DHCP client leased.**

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: The Wireless MAC Address Filtering feature allows you to control the wireless stations accessing the AP, which depend on the station's MAC addresses. If needed they can't access the AP. And if no entries, no wireless stations can access the AP.

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:

WPA2-PSK, which is recommended by the vendor because it enables SECURITY!

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

Answer: WPA2-PSK because it enables SECURITY!

3. What would you do to protect your wireless network at home? Why?

Answer: WPA2-PSK, because it enables SECURITY and is highly recommended by the vendor.

References

1. https://www.tp-link.com/us/support/emulator/
2. https://www.routerpasswords.com/
3. https://emulator.tp-link.com/902AC_US_Emulator/Emulator_Router/index.htm

Career Skills

- I learned how to:

- Further develop communication skills for reports and presentations in various environments
- Work with Microsoft Azure and Microsoft Visio
- Learning ho to run Connectivity test for IPv4 and Loopbacks
- How to create Network diagrams with Microsoft Visio
- Further develop basic and advanced computer skills

Challenges

- Challenges included:
  - Learning the Login procedures for Azure
  - Learning how to work with Microsoft Visio
  - Connecting the IPv4 addresses and Loopbacks
  - Testing the additions at each stage

Conclusion

- I found this class: learning how to use both Microsoft Azure and Visio, and the Interaction with a virtualized network environment to be fascinating. Azure can be very useful when crating a Virtual Network and Visio for creating a diagram of a Virtual Network. As shown in the preceding slides, we created a Virtual Network that include the Computer 1 VM, the Computer 2 VM and the SOHO Router. I feel this project will help me in the future.